Traffic Study:
Levy County Advanced Reactor Site
Levy County, Florida

Kimley-Horn and Associates, Inc. March 2009

Traffic Study

Levy County
Advanced Reactor Site

Levy County, Florida

Prepared for:

The Shaw Group, Inc.
Inglis, Florida

Prepared by:

Kimley-Horn and Associates, Inc.
Tampa, Florida

March 2009
148907000

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INTRODUCTION

Kimley-Horn and Associates, Inc. has been retained by The Shaw Group, Inc. to conduct a transportation impact analysis to evaluate the anticipated operation and construction activities of Progress Energy's proposed Levy County Advanced Reactor Site in Levy County, Florida. This study focused on project traffic impacts at project driveways and adjacent public intersections during the peak of construction (anticipated to be between 2014 and 2015) and at buildout of the development (anticipated to be 2017). Findings of this analysis will be used to support the driveway permit applications required for the project driveways.

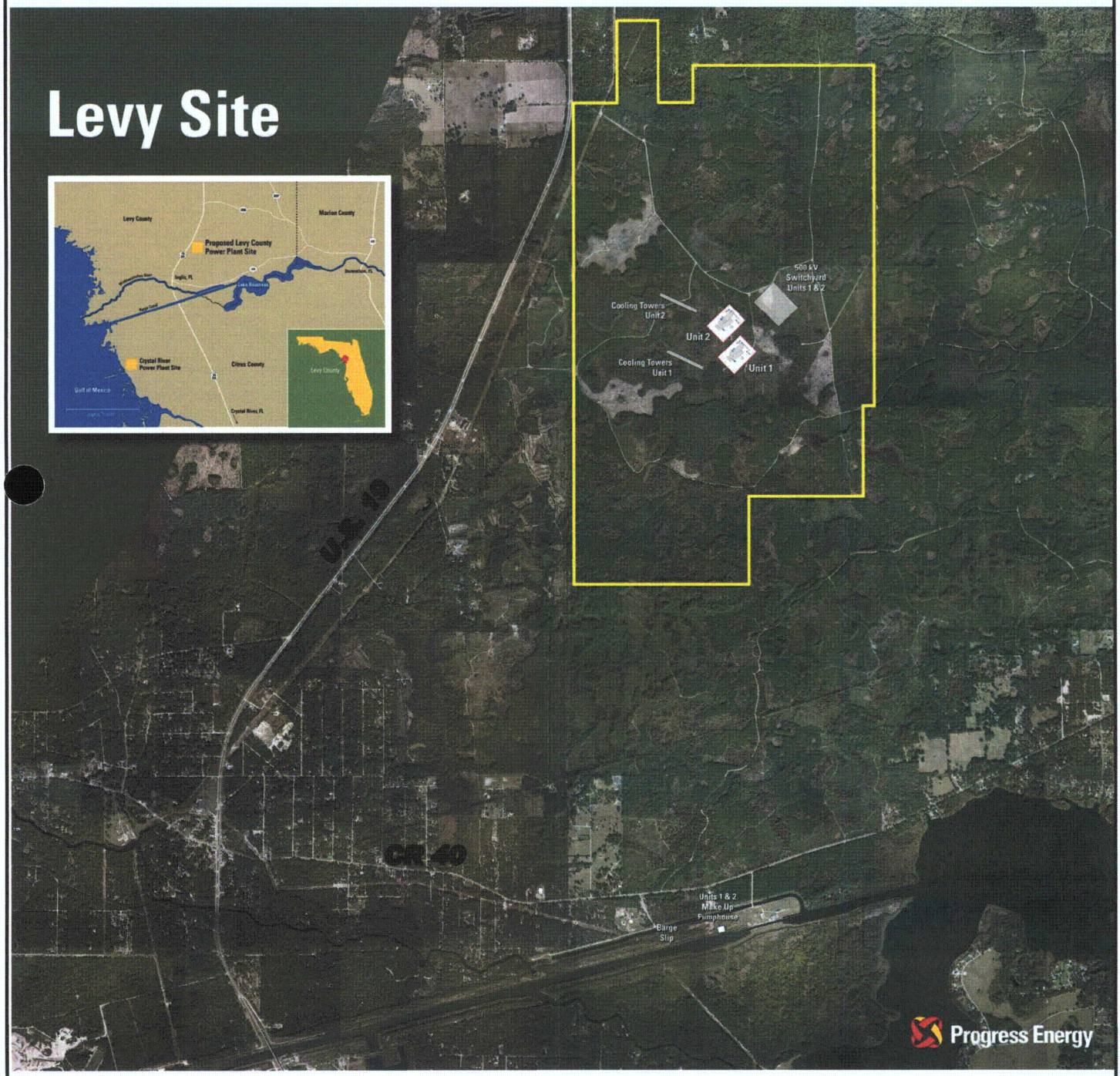
The proposed project site is located on the east side of US 19, approximately 5.5 miles south of the US 19 & SR 121 intersection and approximately 4.0 miles north of the US 19 & CR 40 intersection, in Levy County, Florida. The facility will primarily consist of two (2) nuclear reactors and required ancillary buildings to support the training and operation of these reactors. The Levy County Advanced Reactor project will be designed and constructed as a "third-generation" nuclear facility; which requires fewer workers than older nuclear facilities.

Access to the site is proposed through two driveways on US 19, and a heavy haul road intersection crossing CR 40. The northern US 19 driveway is proposed as a "construction only" driveway, while the southern US 19 driveway is proposed as the main site access upon completion of construction. During construction of the facility, no rail access was assumed and transport of bulk commodities to the site were defined consistent with the anticipated Barge/Truck shipment schedule. Based upon discussions with The Shaw Group, Inc., during the peak of construction a total of up to 3,300 construction workers may be required. In addition to the construction workers, up to 500 operational employees will be trained during the peak of construction, which coincides with the construction of Unit 1.

After construction is completed on Unit 1 and Unit 2, it was assumed that the site will be served by up to 800 full-time operational employees. Also as required, a refueling outage is periodically planned every 18 months for the site. During this time, 800 additional workers will be on-site to assist with this periodic maintenance (refueling). These 800 workers are anticipated to access the site via the Construction Driveway.

Construction on the first reactor is planned to be completed by 2016, and the second reactor is anticipated to be completed by 2017. Figure 1 illustrates the location of the project site, including the adjacent public roadway network.

Prior to conducting this analysis, an initial transportation methodology meeting was conducted for the study on November 25, 2008, with Levy County transportation staff and the Florida Department of Transportation (FDOT) District Two staff. As discussed at the methodology meeting, the intent of this study was to analyze the operational conditions at the proposed project driveway locations so that intersection improvements can be designed to accommodate the anticipated transportation impacts during and after construction of the proposed nuclear facility.



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Kimley-Horn and Associates, Inc.

Project Location Map
Levy County Advanced Reactor Site
Levy County, Florida

DATE:	SCALE:	FIGURE:
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PROJECT TRAFFIC

Project traffic used in this analysis is defined as the vehicle trips expected to be generated in association with the construction and operation of the advanced reactor site. These trips were distributed and assigned throughout the study roadway network.

Existing and Proposed Land Uses

The proposed advanced reactor site is currently vacant and is expected to consist of two (2) "third-generation" nuclear reactors. Access to the proposed site is expected to be provided to US 19 through one northern driveway (Construction Driveway) and one southern driveway (Operations "Main" Driveway), and to CR 40 through the Heavy Haul Road crossing.

Trip Generation

The a.m. and p.m. peak hour trip generation potential of the proposed advanced reactor site was estimated based upon data collected at a similar, existing nuclear facility (i.e., Shearon Harris site in New Hill, North Carolina) and information provided by The Shaw Group, Inc. The trip generation for the proposed advanced reactor site was broken down into three categories: construction workforce, commodities delivery, and operational workforce.

For the purposes of this analysis, two trip generation estimates were conducted. The first estimate was based upon the "Peak Construction Workforce" scenario, which included construction workforce traffic, commodities delivery (truck) traffic, and operational workforce traffic. The following assumptions were considered as part of the "Peak Construction Workforce" traffic estimates:

- 3,300 construction workers at the peak of construction (year 2014-2015);
- Two shifts – one large (70% of construction workers) and one small (30% of construction workers);
- Construction workers of the large shift enter the site during the a.m. peak hour and exit the site during the p.m. peak hour;

- Vehicle occupancy rate of 1.8 construction workers per vehicle;
- 150 vehicles and trucks associated with construction were assumed in the off-peak direction during the peak hours;
- The 500 operational employees that will be trained on-site during the peak of construction enter and exit the site during the a.m. and p.m. peak hours consistent with the directional split determined at the existing Shearon Harris Nuclear Plant; and
- 20% of daily vendor trucks (5 trucks) and 100% of the commodity delivery truck fleet (15 trucks) traveling in the peak direction during the a.m. and p.m. peak hours.

The second estimate was based upon the "Peak Operational Workforce" scenario, which included only operational workforce traffic at buildout of the facility. The following assumptions were considered as part of the "Peak Operational Workforce" traffic estimates:

- 800 operational employees at buildout of the nuclear facility (year 2017);
- Operational employees entering and exiting the site during the a.m. and p.m. peak hours were defined based upon the directional split at the existing Shearon Harris Nuclear Plant; and
- Peak hour trip rates based upon trip generation survey conducted at the existing Shearon Harris Nuclear Plant.

The daily, a.m. peak-hour and p.m. peak-hour trip generation potential for the two scenarios described above are summarized in Table 1 and documented in Appendix A.

TABLE 1 Project Trip Generation Estimates						
	Daily		A.M. Peak Hour		P.M. Peak Hour	
Scenario	Entering	Exiting	Entering	Exiting	Entering	Exiting
Peak Construction Workforce (3,300 construction workers and 500 operational employees)	2,262	2,262	1,433	163	163	1,415
Peak Operational Workforce (800 operational employees)	531	531	212	20	20	185

It should be noted that during the study methodology meeting on November 25, 2008, FDOT staff recommended conducting a trip generation study at the existing Crystal River nuclear facility to estimate the trip generation potential of the proposed Levy County Advanced Reactor site. However, the Crystal River facility is not a "third-generation" nuclear power facility and includes several coal burning power plants. Based upon this information, the Crystal River facility has different traffic generating characteristics than the proposed "third-generation" nuclear facility in Levy County. Therefore, the operational trip generation estimates collected from a similar nuclear facility (i.e. Shearon Harris Nuclear Plant with approximately 800 operational employees) was used in this analysis.

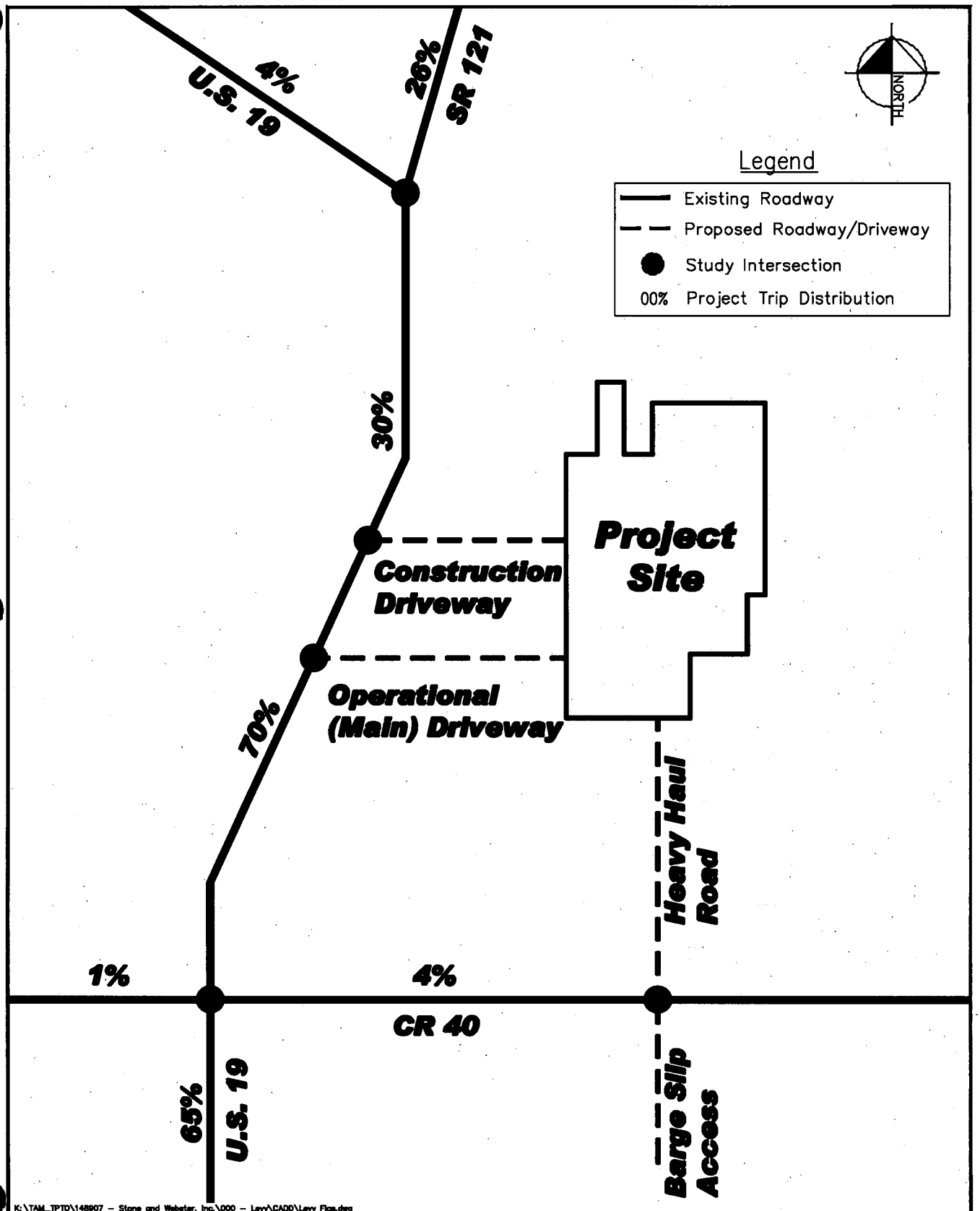
Trip Distribution and Trip Assignment

The trip distribution and trip assignment of project traffic was based upon a manual gravity model and supplemented with engineering judgment. The manual gravity model was based upon population estimates within a 35-mile radius from the proposed project site. The population data was published by the U.S. Census Bureau and the Bureau of Economic and Business Research (BEBR), including 2000 Census data and 2007 population estimates. It should be noted that a manual gravity model was used in place of a travel demand forecasting model (i.e., FSUTMS model) because no such model currently exists for Levy County.

The population estimates of each of the incorporated, and unincorporated, cities and towns documented by the U.S. Census Bureau, within a 35-mile radius of the project site, were included in the manual gravity model calculations. In addition, the manual gravity model also included the travel distance from each of these cities and towns to the project site.

The results of the manual gravity model calculation are provided in Table A of Appendix A. The results of the gravity model calculation indicated 30% of project traffic is expected to travel to/from north of the project site on US 19 and 70% is expected to travel to/from south of the project site on US 19, which was consistent with previous traffic studies completed for this site.

The resulting percentages were applied to the trip generation estimates shown in Table 1 above to estimate project trips within the vicinity of the project site. The distribution of project traffic, in terms of percentages, is shown in Figure 2.



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Kimley-Horn and Associates, Inc. © 2009	Project Trip Distribution Percentages Levy County Advanced Reactor Site Levy County, Florida	DATE: 03/09	SCALE: NTS	FIGURE: 2

SCHEDULED IMPROVEMENTS

A review of the Work Programs for Levy County and FDOT District 2 revealed no improvements are currently under construction or scheduled for construction within the next several years near the project site. Currently, FDOT District 7 is widening the US 19 bridge crossing the Florida Bypass Canal from the existing two-lanes to four-lanes. Based upon this information, existing lane geometry and traffic controls were used in the analysis of existing and future conditions for all intersections and roadways evaluated.

STUDY AREA

The extent of the roadway network to be studied was based upon all roadway segments for which project traffic is expected to consume at least five percent (5%) of the two-way, peak-hour LOS standard service volume for each specific segment. Based upon the low number of p.m. peak-hour trips expected to be generated during the Peak Operational Workforce traffic conditions (205 trips), only three (3) segments meet this criteria:

- US 19 from the Project Site to CR 40;
- SR 121 from US 19 to SE 80th Street/NW 27th Street; and
- US 41 from SE 80th Street/NW 27th Street to CR 328.

In addition to these impacted roadway segments, the first directly accessed roadway segments of US 19 from SR 121 to the project site and CR 40 from US 19 to Heavy Haul Road Access were evaluated in this analysis. It should be noted that no other segments of US 41 are significantly impacted by project traffic. The results of the study area determination are shown in Appendix A.

In addition to the above study roadway segments, the following intersections were evaluated:

- US 19 & SR 121;
- US 19 & CR 40;
- the two (2) proposed project access locations along US 19; and
- the one (1) proposed project access location along CR 40 (Heavy Haul Road Access).

US 19 is a four-lane, divided highway classified as an emerging Strategic Intermodal System (SIS) facility, with a level of service (LOS) standard of 'B'. SR 121 is a two-lane, undivided highway, with a LOS standard of 'C'. US 41 is a two-lane, undivided highway, with a LOS standard of 'C'. CR 40 is a two-lane, undivided major collector facility, with a LOS standard of 'C'. In addition, it should be noted that CR 40 currently has a 10 ton truck limit.

The existing US 19 & SR 121 study intersection is currently an unsignalized T-intersection with left-turn and/or right-turn lanes on each approach. The existing US 19 & CR 40 study intersection is currently signalized with left-turn and/or right-turn lanes on each approach. It should be noted that the adopted LOS performance standard for both of these study intersections is LOS C. This performance standard was compared to the existing and future operating conditions shown in later sections of this report to determine the traffic impacts of this development on these two intersections.

The northernmost project access location (i.e., Construction Driveway) along US 19 is proposed to be full-access, with an exclusive northbound right-turn lane, dual southbound left-turn lanes, dual westbound left-turn lanes, an exclusive westbound right-turn lane, and a traffic signal. The adopted LOS performance standard for the US 19 & Construction Driveway intersection is LOS B.

As previously mentioned, a periodic refueling outage is planned for the site every 18 months. During this time, an additional 800 workers (in addition to the 800 full-time operations workers) will be on-site assisting with the refueling process. It is planned that the additional 800 part-time workers will access the facility through the signalized construction driveway. After construction of the site, the existing traffic signal should operate in flashing mode, with periodic use during the refueling outage. Since the traffic signal is planned for flashing mode after construction, one of the southbound left-turn lanes should be restriped so that it is not used during the "flashing" signal intersection control. It is anticipated that the second southbound left-turn lane will not be required during the refueling. In addition, in the event that an Emergency Response/Fire Rescue facility is constructed on-site, the traffic signal could be modified for emergency signal use.

The southernmost project access location (i.e., Operations (Main) Driveway) along US 19 is proposed to be a full-access, unsignalized driveway with an exclusive northbound right-turn lane, an exclusive southbound left-turn lane, an exclusive westbound left-turn lane, and an exclusive westbound right-turn lane. The Operations (Main) Driveway is expected to remain unsignalized

at buildout of the nuclear facility. The adopted LOS performance standard for the US 19 & Operations (Main) Driveway intersection is LOS B.

It should be noted that, as currently planned, the proposed project access locations will not align with existing full-access median openings along US 19. Median modifications, including closing and relocating existing median openings, are anticipated to be required. Further discussions with the FDOT are planned in regards to the driveway access locations.

The proposed "Heavy Haul Road" is a private road planned to connect the Florida Bypass Canal with the proposed site. This road will allow for the hauling of commodities required during construction of the site. This private road will intersect CR 40. Full access will be required at the crossing with CR 40, and an eastbound right turn-lane is proposed for truck use from CR 40. Although many of the commodities will be transported through standard 15 ton trucks, periodic modules to be delivered to the site will require a special heavy haul crawler that travels 3 to 5 miles per hour. Due to the unique characteristics of the crawler, it is recommended that right-of-way be granted to the crawler across CR 40 during the times of transport of periodic modules. In an effort to facilitate a safe crossing for these modules, it is recommended that, at a minimum, two (2) trained/certified flagmen direct traffic during the time the heavy hauler is crossing CR 40. Depending upon the outcome of discussions with the appropriate public agencies, other special traffic control methods may be required. The adopted LOS performance standard for the CR 40 & Heavy Haul Road intersection is LOS C.

It should be noted that the project access locations along US 19 and CR 40 were evaluated for both the a.m. and p.m. peak hours. However, the off-site study intersections and roadways were evaluated for the p.m. peak-hour, peak-season condition only because, typically, this is the time when the highest amount of background traffic occurs.

EXISTING TRAFFIC CONDITIONS

Existing traffic conditions were evaluated for the study roadway segments and study intersections previously identified. The procedures used in this analysis are discussed below.

Vehicle turning movement volume counts were obtained by KHA at the two (2) existing study intersections, as identified in the previous section of this report, during the p.m. peak period (4:00 P.M. to 6:00 P.M.) to quantify existing p.m. peak-hour conditions near the proposed project site. The counts were conducted in November and December 2008, and the raw counts are provided in Appendix B. Existing a.m. and p.m. peak-hour traffic volumes near the proposed project access locations were estimated based upon the average of a three-day, 24-hour machine count (converted to a.m. and p.m. peak-hour volumes) along both US 19 and CR 40. The 24-hour machine count data, which was collected in July 2008, was obtained from a traffic study (*Levy County Nuclear Power Plant*, July 2008 – Lincks and Associates) previously submitted to Levy County and is included in Appendix B. Existing p.m. peak-hour traffic volumes along US 41, from SE 80th Street/NW 27th Street to CR 328, were estimated based upon the average of a two-day, 24-hour machine count (converted to a.m. peak-hour volumes) conducted by the FDOT and documented in the *2007 Florida Traffic Information DVD*.

The vehicle counts at the two (2) existing study intersections and the 24-hour machine counts were adjusted to reflect peak-season conditions. This modification was performed using the FDOT seasonal adjustment factors for Levy County. The appropriate factors used, including the existing peak-season traffic volumes, are provided in Appendix C.

Using the existing peak-season traffic volumes identified in Appendix C, an intersection analysis was conducted for the two (2) existing study intersections during the p.m. peak hour. The intersection analysis was performed using the *HCS+* (Release 5.21) program for signalized and unsignalized intersections. As part of this analysis, existing lane geometry and traffic controls were used for the study intersections.

The results of this analysis are summarized in Table 2 and indicate that both study intersections are currently operating at an acceptable LOS performance standard during the p.m. peak hour. Summary worksheets of the intersection analysis are provided in Appendix D.

TABLE 2
2008 P.M. Peak-Hour Existing Intersection Conditions

Intersection	Overall Intersection LOS		Approach LOS			
	Standard	Existing Traffic	NB	SB	EB	WB
US 19 & SR 121 (unsignalized)	C	A*	---	---	---	A
US 19 & CR 40 (signalized)	C	B	B	B	C	C

*LOS on cross-street approach for the unsignalized intersection.

In addition to the intersection analysis, a roadway analysis was conducted for the study roadway segments of US 19 (from SR 121 to CR 40), SR 121 (from US 19 to SE 80th Street/NW 27th Street), US 41 (from SE 80th Street/NW 27th Street to CR 328), and CR 40 (from US 19 to the proposed Heavy Haul Road) for the p.m. peak hour. Service volumes were defined using the FDOT's *2007 Quality/Level of Service Tables* and accompanying FDOT *LOSPlan 2007* software based upon the existing roadway characteristics. The use of the service volumes found in the FDOT *2007 Quality/Level of Service Tables* provided a conservative (worst-case) estimate of operating conditions along the study roadway segments.

The results of the roadway analysis, which are summarized in Table 3, indicated that the study roadway segments along US 19, SR 121, US 41, and CR 40 are currently operating at an acceptable LOS performance standard during the p.m. peak hour. Worksheets documenting the roadway analysis are provided in Appendix D.

TABLE 3
2008 P.M. Peak-Hour Existing Roadway Conditions

Roadway	LOS Standard	Roadway LOS (Two-Way)
US 19 SR 121 to Project Site	B	A
US 19 Project Site to CR 40	B	A
SR 121 US 19 to NW 27th Street	C	A
US 41 SE 80th Street/NW 27th Street to CR 328	C	B
CR 40 US 19 to Heavy Haul Driveway	C	C

FUTURE TRAFFIC VOLUMES

Future traffic volumes consist of two components: project traffic and background (non-project) traffic estimates. Project traffic volumes have been previously identified in this report. Future background traffic volumes, including the procedures used to develop these estimates, are provided below.

Future background traffic is defined as expected traffic on the roadway network in the future year for specific development levels of the proposed project. For the purposes of this analysis, two "future" year scenarios were evaluated: the "Peak Construction Workforce" scenario (anticipated to be between years 2014 and 2015) and the "Peak Operational Workforce" scenario (anticipated being year 2017). The following procedure was undertaken to develop the future 2015 (representing the worst-case construction year) and 2017 background traffic volumes. These volumes considered existing traffic volumes adjusted by an annual growth rate and estimated volumes from other approved and/or planned developments in the area.

To develop the future background volumes, the existing 2008 peak-season volumes, as previously identified in Appendix C, were first adjusted by an annual growth rate of 2.2% to reflect 2015 and 2017 conditions. The determination of this percentage was based upon historical traffic data in the area, as documented by the FDOT. The growth rate, as documented in Appendix C, was also applied to the existing traffic counts at the study intersections.

In addition to the annual growth rate, traffic volumes associated with approved and/or planned developments in the area were added to the adjusted existing traffic volumes to determine background traffic estimates. Based upon discussions with Levy County and FDOT staff, only one proposed development (Tarmac Lime-Rock Mine) was provided. It is understood that, based upon these discussions with Levy County and FDOT staff, the Tarmac Lime-Rock Mine is currently not approved but may be approved in 2009. In an effort to provide a conservative analysis, the trip generation potential of this development was included in the analysis as if it has

been approved based on the TIA performed by Grimail Crawford and submitted in November 2007.

The traffic volumes from the Tarmac Lime-Rock Mine development were added to the adjusted (to year 2015 and 2017) peak-season existing traffic volumes to produce both future 2015 and 2017 a.m. and p.m. peak-hour background traffic volume estimates.

The future background traffic volumes, including the Tarmac Lime-Rock Mine development traffic, are documented in Appendix C. The project traffic volumes, as previously shown, were then added to these background traffic volumes to determine 2015 and 2017 total traffic volumes for both peak hours. The total traffic volumes for both the a.m. and p.m. peak hours are documented in Appendix C.

PEAK CONSTRUCTION WORKFORCE TRAFFIC CONDITIONS

The Peak Construction Workforce traffic scenario was evaluated for year 2015 conditions of the development during both the a.m. and p.m. peak-hour scenarios. It should be noted that the Peak Construction Workforce scenario includes two (2) separate commodity delivery routes planned for truck commodity deliveries. It should also be noted that regardless of the truck commodity delivery plans, that the Heavy Haul Road will be required for use of periodic module deliveries (accessing the site via the crawler). In the preferred route, deliveries from the barge slip will access the site using the Heavy Haul Road with a return ("unloaded truck") trip to the barge slip along US 19 and CR 40. An alternative route is provided if the preferred route cannot be used. The alternative route proposes loaded truck commodity deliveries access the site by traversing west on CR 40, then north on US 19, and enter the site via the Construction Driveway, with a similar return ("unloaded truck") route to the preferred route. For the purpose of this analysis, both routes were analyzed separately. For these analyses, Peak Construction Workforce traffic estimates and existing/proposed traffic controls and lane geometry, as previously discussed, were considered.

A determination of the impact of the Peak Construction Workforce traffic volumes, as documented in Appendix C, on the roadway network was made, including LOS conditions for the intersections and roadway segments within the study area. The analysis procedures used in this evaluation were similar to those used to evaluate existing traffic conditions. As previously mentioned, the proposed project access locations along US 19 and CR 40 were evaluated for both the a.m. and p.m. peak hours. However, the off-site study intersections and roadways were evaluated for the p.m. peak-hour, peak-season condition only.

The results of the a.m. peak-hour intersection analysis conducted for both of the heavy haul truck routes are summarized in Table 4 and indicate that each of the proposed project access locations are expected to operate at an acceptable LOS performance standard with the proposed traffic controls and lane geometry identified in the "Study Area" section of this report. Summary worksheets of the intersection analysis are provided in Appendix E.

TABLE 4
2015 A.M. Peak-Hour
Peak Construction Workforce Traffic Intersection Conditions

Intersection	Overall Intersection LOS		Approach LOS			
	Standard	Construction Traffic	NB	SB	EB	WB
Preferred Commodity Delivery Route						
US 19 & Construction Driveway (signalized)	B	B*	B	C	---	D
US 19 & Operations (Main) Driveway (unsignalized)	B	C**	---	---	---	C
CR 40 & Heavy Haul Driveway (unsignalized)	C	B**	B	B	---	---
Alternative Commodity Delivery Route						
US 19 & Construction Driveway (signalized)	B	B*	B	C	---	D
US 19 & Operations (Main) Driveway (unsignalized)	B	C**	---	---	---	C
CR 40 & Heavy Haul Driveway (unsignalized)	C	B**	B	B	---	---

* LOS based upon proposed lane geometry and traffic controls.
**LOS on cross-street approach for the unsignalized intersection, including the proposed lane geometry and traffic controls.

In addition to the intersection analysis performed during the a.m. peak hour, an intersection analysis was conducted at the two (2) existing study intersections and at the proposed project access locations along US 19 and CR 40 during the p.m. peak hour, for both of the heavy haul truck routes. The analysis procedures used in this evaluation were similar to those used to evaluate existing traffic conditions.

The results of the p.m. peak-hour intersection analysis conducted for both of the commodity delivery routes plans are summarized in Table 5 and indicated that the study intersections and two (2) of the proposed access locations are expected to operate at an acceptable LOS performance standard without any additional improvements, beyond those previously identified in the "Study Area" section of this report.

TABLE 5
2015 P.M. Peak-Hour
Peak Construction Workforce Traffic Intersection Conditions

Intersection	Overall Intersection LOS		Approach LOS			
	Standard	Construction Traffic	NB	SB	EB	WB
Preferred Commodity Delivery Route						
US 19 & SR 121 (unsignalized)	C	B*	---	---	---	B
US 19 & CR 40 (signalized)	C	B	B	B	C	C
US 19 & Construction Driveway (signalized)	B	C**	B	B	---	D
US 19 & Operations (Main) Driveway (unsignalized)	B	B***	---	---	---	B
CR 40 & Heavy Haul Driveway (unsignalized)	C	B***	B	B	---	---
Alternative Commodity Delivery Route						
US 19 & SR 121 (unsignalized)	C	B*	---	---	---	B
US 19 & CR 40 (signalized)	C	B	B	B	C	C
US 19 & Construction Driveway (signalized)	B	C**	B	B	---	D
US 19 & Operations (Main) Driveway (unsignalized)	B	B***	---	---	---	B
CR 40 & Heavy Haul Driveway (unsignalized)	C	B***	B	B	---	---

*LOS on cross-street approach for the unsignalized intersection.
**LOS based upon proposed lane geometry and traffic controls.
***LOS on cross-street approach for the unsignalized intersection, including the proposed lane geometry and traffic controls.

The one exception is the US 19 & Construction Driveway access location. This intersection is expected to operate at an overall LOS C. However, the US 19 mainline approaches are expected to operate at an acceptable LOS. Considering the fact that the traffic signal at the Construction Driveway will only operate periodically during construction and refueling, and that the mainline approaches are both operating at an acceptable LOS, no additional improvements, beyond those previously identified in the "Study Area" section of this report, are recommended.

In addition to the intersection analyses, a p.m. peak-hour roadway analysis was conducted for the previously identified study roadway segments within the study area, for both of the commodity delivery route plans. The analysis procedures for this evaluation were similar to those used to evaluate existing traffic conditions.

The results of the p.m. peak-hour roadway analysis are summarized in Table 6 and indicate that the study roadway segments along US 19, SR 121, US 41, and CR 40 have adequate capacity and are expected to operate at an acceptable LOS with Peak Construction Workforce traffic, without any roadway improvements required. Worksheets documenting the intersection and roadway analyses are provided in Appendix E.

TABLE 6 2015 P.M. Peak-Hour Peak Construction Workforce Traffic Roadway Conditions		
Roadway	**LOS Standard**	**Roadway LOS**
Preferred Commodity Delivery Route		
US 19: SR 121 to Project Site	B	A
US 19: Project Site to CR 40	B	B
SR 121: US 19 to NW 27th Street	C	C
US 41: SE 80th Street/NW 27th Street to CR 328	C	C*
CR 40: US 19 to Heavy Haul Driveway	C	C
Alternative Commodity Delivery Route		
US 19: SR 121 to Project Site	B	A
US 19: Project Site to CR 40	B	B
SR 121: US 19 to NW 27th Street	C	C
US 41: SE 80th Street/NW 27th Street to CR 328	C	C*
CR 40: US 19 to Heavy Haul Driveway	C	C

*LOS based upon a detailed *HIGHPLAN* analysis of the segment.

PEAK OPERATIONAL WORKFORCE TRAFFIC CONDITIONS

The Peak Operational Workforce traffic scenario was evaluated for the 2017 buildout year of the site during the both the a.m. and p.m. peak hour scenarios. For this analysis, Peak Operational Workforce traffic estimates and existing/proposed traffic controls and lane geometry, as previously discussed, were considered.

A determination of the impact of the Peak Operational Workforce traffic volumes, as documented in Appendix C, on the roadway network was made, including LOS conditions for the intersections and roadway segments within the study area. The analysis procedures used in this evaluation were similar to those used to evaluate existing traffic conditions. As previously mentioned, the proposed project access locations along US 19 and CR 40 were evaluated for both the a.m. and p.m. peak hours. However, the off-site study intersections and roadways were evaluated for the p.m. peak-hour, peak-season condition only. It should be noted that at the completion of construction, the Construction Driveway and Heavy Haul Driveway are expected to have minimal, if any, traffic. Therefore, for the 2017 buildout conditions, these two project access locations were not evaluated.

The results of the a.m. peak-hour intersection analysis for the US 19 & Operations (Main) Driveway project access location are summarized in Table 7 and indicate that this project access location is expected to operate at an acceptable LOS with no additional intersection improvements, beyond those previously identified in the "Study Area" section of this report, required. Summary worksheets of the intersection analysis are provided in Appendix E.

TABLE 7 2017 A.M. Peak-Hour Peak Operational Workforce Traffic Intersection Conditions						
	Overall Intersection LOS		Approach LOS			
Intersection	Standard	Total Traffic	NB	SB	EB	WB
US 19 & Operations (Main) Driveway (unsignalized)	B	B*	---	---	---	B

* LOS on cross-street approach for the unsignalized intersection.

During the time of a periodic refueling outage planned every 18 months, an additional 800 workers (in addition to the 800 full-time operations workers) will be on-site to assist with the refueling outage. It is planned that the additional 800 workers will access the facility through the Construction Driveway. Impacts associated with the refueling are less than those evaluated during the Peak Construction Workforce scenario. Therefore, the improvements described in the "Study Area" section of this report are anticipated to be sufficient to serve the additional traffic associated with the refueling outage.

In addition to the intersection analysis performed for the a.m. peak hour, an intersection analysis was conducted at the two (2) existing study intersections and the Operations (Main) Driveway during the p.m. peak hour. The analysis procedures used in this evaluation were similar to those used to evaluate existing traffic conditions.

The results of the p.m. peak-hour intersection analysis are summarized in Table 8 and indicate that both study intersections and the Operations (Main) Driveway are expected to operate at an acceptable LOS without any additional improvements, beyond those previously identified in the "Study Area" section of this report. Summary worksheets of the intersection analysis are provided in Appendix E.

TABLE 8 2017 P.M. Peak-Hour Peak Operational Workforce Traffic Intersection Conditions						
	Overall Intersection LOS		Approach LOS			
Intersection	Standard	Total Traffic	NB	SB	EB	WB
US 19 & SR 121 (unsignalized)	C	B*	---	---	---	B
US 19 & CR 40 (signalized)	C	B	B	B	C	C
US 19 & Operations (Main) Driveway (unsignalized)	B	B*	---	---	---	B

*LOS on cross-street approach for the unsignalized intersection.

In addition to the intersection analyses, a p.m. peak-hour roadway analysis was undertaken on the previously identified study roadway segments within the study area. The analysis procedures for this evaluation were similar to those used to evaluate existing and background traffic conditions.

The results of the p.m. peak-hour roadway analysis are summarized in Table 9 and indicate that the study roadway segments along US 19, SR 121, US 41, and CR 40 have adequate capacity and are expected to operate at an acceptable LOS with Peak Operational Workforce traffic, without any required roadway improvements. Worksheets documenting the roadway analyses are provided in Appendix E.

TABLE 9 2017 P.M. Peak-Hour Peak Operational Workforce Traffic Roadway Conditions		
Roadway	**LOS Standard**	**Roadway LOS**
US 19: SR 121 to Project Site	B	A
US 19: Project Site to CR 40	B	A
SR 121: US 19 to NW 27th Street	C	A
US 41: SE 80th Street/NW 27th Street to CR 328	C	C
CR 40: US 19 to Heavy Haul Driveway	C	C

TURN LANE ANALYSIS

In addition to the analyses contained in earlier sections of this report, a turn-lane analysis was conducted to determine anticipated turn-lane length requirements for the proposed intersection improvements (i.e. left-turn lanes and right-turn lanes) into the project site at the project access locations on US 19 and CR 40. As previously indicated, these turn lanes are required to support the construction and operation of the site.

In addition, at the US 19 & CR 40 intersection, the southbound left-turn lane and the westbound right-turn lane were also reviewed for turn-lane length requirements because a significant number of project-related trips are anticipated to utilize these movements.

The procedures used for this evaluation follow FDOT plans preparation design guidelines for turn lanes at signalized and unsignalized intersections to determine the appropriate deceleration length and queue length requirements. The results of this evaluation are provided in Table 10 and the worksheets summarizing the turn-lane calculations are documented in Appendix F.

The total turn-lane length requirements for turn lanes into the project site at each of the three project driveways along US 19 (Construction Driveway and Operations (Main) Driveway) and CR 40 (Heavy Haul Road) are shown in Table 10.

In addition, for the intersection of US 19 & CR 40, the total turn-lane length (requirement) for the southbound left-turn lane needs to be lengthened from 340 feet to 450 feet, and the westbound right-turn lane needs to be lengthened from 195 feet to 340 feet.

TABLE 10 Turn Lane Length Requirements (Worst-Case Traffic Scenario)		
Intersection (Worst-Case Traffic Scenario)	**Movement and Lane(s)**	**Turn Lane Length per Lane (Includes deceleration and queue length)**
US 19 & Construction Driveway (Peak Construction Workforce)	NB Right-Turn Dual SB Left-Turn	1,610 feet (new construction) 785 feet (new construction)
US 19 & Operations (Main) Driveway (Peak Operational Workforce)	NB Right-Turn SB Left-Turn	460 feet (new construction) 510 feet (new construction)
US 19 & CR 40 (Peak Construction Workforce)	SB Left-Turn WB Right-Turn	Lengthen from 340 feet to 450 feet Lengthen from 195 feet to 340 feet
CR 40 & Heavy Haul Driveway (Peak Construction Workforce)	EB Right-Turn	405 feet (new construction)

CONCLUSION

Evaluating the existing transportation network based upon the anticipated traffic impacts from the proposed Levy County Advanced Reactor during the Peak Construction Workforce Traffic and Peak Operational Workforce Traffic conditions, the following recommended intersection improvements were determined to be necessary to accommodate the anticipated impacts. The recommended improvements, based upon the worst-case traffic conditions at each intersection, are as follows:

- US 19 & CR 40 (Peak Construction Workforce)
  - -Extend existing southbound left-turn lane from 340 feet to 450 feet.
  - -Extend existing westbound right-turn lane from 195 feet to 340 feet.
- US 19 & Construction Driveway (Peak Construction Workforce)
  - -Installation of a traffic signal.
  - -Construct one (1) northbound right-turn lane approximately 1,610 feet.
  - -Construct two (2) southbound left-turn lanes approximately 785 feet each.
  - -Construct two (2) westbound left-turn lanes exiting the site.
  - -Construct one (1) westbound right-turn lane exiting the site.
- US 19 & Operations (Main) Driveway (Peak Operational Workforce)
  - -Construct one (1) northbound right-turn lane approximately 460 feet.
  - -Construct one (1) southbound left-turn lane approximately 510 feet.
  - -Construct one (1) westbound left-turn lane exiting the site.
  - -Construct one (1) westbound right-turn lane exiting the site.
- CR 40 & Heavy Haul Driveway (Peak Construction Workforce)
  - -Construct one (1) northbound approach lane.
  - -Construct one (1) eastbound right-turn lane approximately 405 feet.
  - -At a minimum, provide two (2) trained/certified flagmen to direct traffic during the time the heavy hauler is crossing the roadway.

Traffic Study

Levy County
Advanced Reactor Site

Levy County, Florida

Prepared for:

The Shaw Group, Inc.
Inglis, Florida

Prepared by:

Kimley-Horn and Associates, Inc.
Tampa, Florida

March 2009
148907000

APPENDIX A:
Project Trip Generation, Trip Distribution, and Study Area Worksheets

Levy County Nuclear Reactor
Peak Construction Workforce Trip Generation (2014-2015)

	Daily			AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Construction Workforce	1,830	1,830	3,660	1,280	150	1,430	150	1,280	1,430
Commodity Deliveries (Trucks)	100	100	200	20	0*	20	0*	20	20
Operational Employees	332	332	664	133	13	146	13	115	128
Total Trips	**2,262**	**2,262**	**4,524**	**1,433**	**163**	**1,596**	**163**	**1,415**	**1,578**

Notes: 1. Assumes 500 operational employees during the peak of construction.
2. Assumes a construction workforce of 3,300 employees at the peak of construction.
3. Assumes a maximum impact of 15 truck fleet during peak hour and 5 vendor trucks (20% of daily vendor trucks) during peak hour.
* Truck traffic included in off-peak workforce assumptions.

Levy County Nuclear Reactor
Peak Operational Workforce Trip Generation (2017 Buildout)

	Daily			AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Construction Workforce	-	-	-	-	-	-	-	-	-
Commodity Deliveries (Trucks)	-	-	-	-	-	-	-	-	-
Operational Employees	531	531	1,062	212	20	232	20	185	205
Total Trips	**531**	**531**	**1,062**	**212**	**20**	**232**	**20**	**185**	**205**

Notes: 1. Assumes 800 operational employees upon construction completion.

2011 through 2016
Peak Construction Workforce Traffic

Levy County Advanced Reactor Construction Trip Generation

Construction Workforce Assumptions

Peak construction workforce:	3,300	workers
Number of shifts per day:	2	
Percent of workforce during largest shift:	70%	
Vehicle occupancy rate:	1.8	workers per vehicle
Off-peak construction traffic:	150	vehicles (including trucks in off-peak)
Anticpated vendor trucks per day:	25	vehicles per day

Construction Workforce Calculations (Peak Hour)

1. Determine peak construction workforce for largest shift.

Anticipated construction workforce:	3,300	workers
Percent of workforce during large shift:	70%	
Construction workforce (large shift):	2,310	workers
Construction workforce (small shift):	990	workers

2. Determine anticipated peak demand for construction workforce during largest shift.

Construction workforce (large shift):	2,310	workers
Construction workforce (small shift):	990	workers
Vehicle occupancy rate:	1.8	workers per vehicle
Peak vehicle demand (large shift):	**1,280**	**peak hour vehicles (rounded)**
Peak vehicle demand (small shift):	550	peak hour vehicles (rounded)
Total vehicle demand:	**1,830**	**vehicles per day**

3. Add anticipated truck traffic to construction workforce peak demand.

Commodity peak truck traffic:	15	(based upon a 15 truck fleet size)
Vendor trucks:	5	assume 20% vender trucks during peak hour
Total truck traffic:	**20**	**trucks during peak traffic**

4. Peak hour traffic conditions at peak of construction.

Peak construction shift vehicles:	1,280	peak hour vehicles (rounded)
Anticipated peak trucks during construction:	20	trucks during peak traffic
Total peak traffic:	**1,300**	**vehicles and truck peak demands**

2009 through 2016
Anticipated Construction Truck Traffic

Site Preparation Anticipated Truck Schedule (2nd Quarter 2009 to 3rd Quarter 2012)

Commodity	Monday	Tuesday	Wednesday	Thursday	Friday	Total
Rebar	2				2	**4**
Cement	6	6	6	6	6	**30**
Vendors	25	25	25	25	25	**125**
Aggregate		39	39	39		**117**
Total	**33**	**70**	**70**	**70**	**33**	**276**

Note: Reactor Module shipments, one every 2 weeks for 216 weeks, starting on 1/1/2011.

Reactor Construction Truck Delivery Schedule (3rd Quarter 2012 to 2nd Quarter 2016)

Commodity	Monday	Tuesday	Wednesday	Thursday	Friday	Total
Rebar	2				2	**4**
Cement	9	9	9	9	9	**45**
Vendors	25	25	25	25	25	**125**
Aggregate		66	66	66		**198**
Total	**36**	**100**	**100**	**100**	**36**	**372**

Note: Reactor Module shipments, one every 2 weeks for 216 weeks, starting on 1/1/2011.

Operational Workforce Traffic
(Based upon Existing Harris Advanced Reactor Trip Generation)

Existing Harris Advanced Reactor Trip Generation
(Operational employee traffic at existing facility)

Harris Advanced Reactor: 754 Existing Employees

Daily Trips	In	Out	Total
Trip Ends (Estimated)	500	500	1000
Directional Distribution	50%	50%	100%
AM Peak Hour Trips	**In**	**Out**	**Total**
Trip Ends	200	19	219
Directional Distribution	91%	9%	100%
PM Peak Hour Trips	**In**	**Out**	**Total**
Trip Ends	19	174	193
Directional Distribution	10%	90%	100%

Trip Generation Summary

Daily	
Rate	**Unit**
1.33	Employee
AM Peak Hour	
Rate	**Unit**
0.29	Employee
PM Peak Hour	
Rate	**Unit**
0.26	Employee

Levy County Advanced Reactor Trip Generation
(Peak operational employee traffic during construction)

Operational employees during construction: 500

Daily Trips	In	Out	Total
Trip Ends	332	332	664
Directional Distribution	50%	50%	100%
AM Peak Hour Trips	**In**	**Out**	**Total**
Trip Ends	133	13	146
Directional Distribution	91%	9%	100%
PM Peak Hour Trips	**In**	**Out**	**Total**
Trip Ends	13	115	128
Directional Distribution	10%	90%	100%

Levy County Advanced Reactor Trip Generation
(Operational employee traffic in 2017 after the completion of construction of both reactors)

Operational employees after construction: 800

Daily Trips	In	Out	Total
Trip Ends	531	531	1062
Directional Distribution	50%	50%	100%
AM Peak Hour Trips	**In**	**Out**	**Total**
Trip Ends	212	20	232
Directional Distribution	91%	9%	100%
PM Peak Hour Trips	**In**	**Out**	**Total**
Trip Ends	20	185	205
Directional Distribution	10%	90%	100%

TABLE A

Levy County Advanced Reactor
Site Traffic Distribution
12/04/08

ROUTE	COUNTY	CITY	DISTRIBUTION	POPULATION	DISTANCE	GRAVITY
See Maps	ALACHUA	~~Alachua~~		~~7,854~~	~~61.2~~	
		Archer	0.41%	1,229	38.4	0.833
		~~Gainsville~~		~~122,671~~	~~49.4~~	
		~~Hawthorne~~		~~1,401~~	~~60.5~~	
		~~High Springs~~		~~4,739~~	~~65.3~~	
		~~LaCrosse~~		~~195~~	~~62.5~~	
		~~Micanopy~~		~~637~~	~~46.0~~	
		~~Newberry~~		~~4,787~~	~~47.6~~	
		~~Waldo~~		~~831~~	~~61.9~~	
	CITRUS	Crystal River	8.68%	3,737	14.5	17.774
		Inverness	3.45%	7,286	32.1	7.071
		Beverly Hills	8.96%	9,959	23.3	18.344
		Black Diamond	0.75%	831	23.3	1.531
		Citrus Hills	3.65%	4,825	25.4	7.479
		Pine Ridge	4.86%	6,574	25.7	9.953
		Citrus Springs	5.02%	4,978	22.0	10.285
		Floral City	1.93%	5,974	38.9	3.948
		Homosassa	2.22%	2,747	24.6	4.539
		Homosassa Springs	15.91%	14,918	21.4	32.575
		Sugarmill Woods	3.78%	7,675	31.5	7.735
		Hernando	6.07%	9,883	28.2	12.428
	GILCHRIST	~~Bell~~		~~452~~	~~52.2~~	
		~~Fanning Springs~~		~~350~~	~~40.1~~	
		~~Trenton~~		~~1,690~~	~~41.7~~	
	HERNANDO	Brooksville	1.82%	7,309	44.3	3.724
		~~Weeki Wachee~~		~~8~~	~~43.1~~	
	LEVY	Bronson	0.56%	1,143	31.6	1.145
		Cedar Key	0.27%	927	41.0	0.551
		Chiefland	1.14%	2,338	31.6	2.341
		~~Fanning Springs~~		~~596~~	~~40.1~~	
		Inglis	*	1,731	4.1	*
		Otter Creek	0.18%	147	19.9	0.371
		Williston	1.68%	2,557	27.3	3.431
		Yankeetown	*	760	5.6	*
		Andrews	0.30%	822	36.6	0.614
		East Bronson	0.50%	1,248	34.9	1.025
		East Williston	0.67%	1,122	28.5	1.381
		Manatee Road	0.80%	2,249	37.0	1.643
		Williston Highlands	1.62%	1,610	22.0	3.326
	MARION	Belleview	0.91%	3,998	46.3	1.865
		Dunnellon	3.06%	2,031	18.0	6.269
		~~McIntosh~~		~~451~~	~~44.4~~	
		Ocala	20.67%	54,238	35.8	42.319
		Reddick	0.14%	523	43.3	0.279
		~~Silver Springs Shores~~		~~8,543~~	~~48.2~~	
	SUMTER	~~Bushnell~~		~~2,338~~	~~54.2~~	
		~~Center Hill~~		~~912~~	~~61.2~~	
		~~Coleman~~		~~647~~	~~59.0~~	
		~~Webster~~		~~777~~	~~61.1~~	
		~~Wildwood~~		~~4,895~~	~~57.9~~	
			100.00%			204.780

Notes: Blue font = generally inside 35 mile radius. Red font = generally outside 35 mile radius.
* - Excluded from distribution calculation due to abnormally high gravity factor.

% Distribution North
28.94% -> 30.0%

% Distribution South
71.06% -> 70.0%

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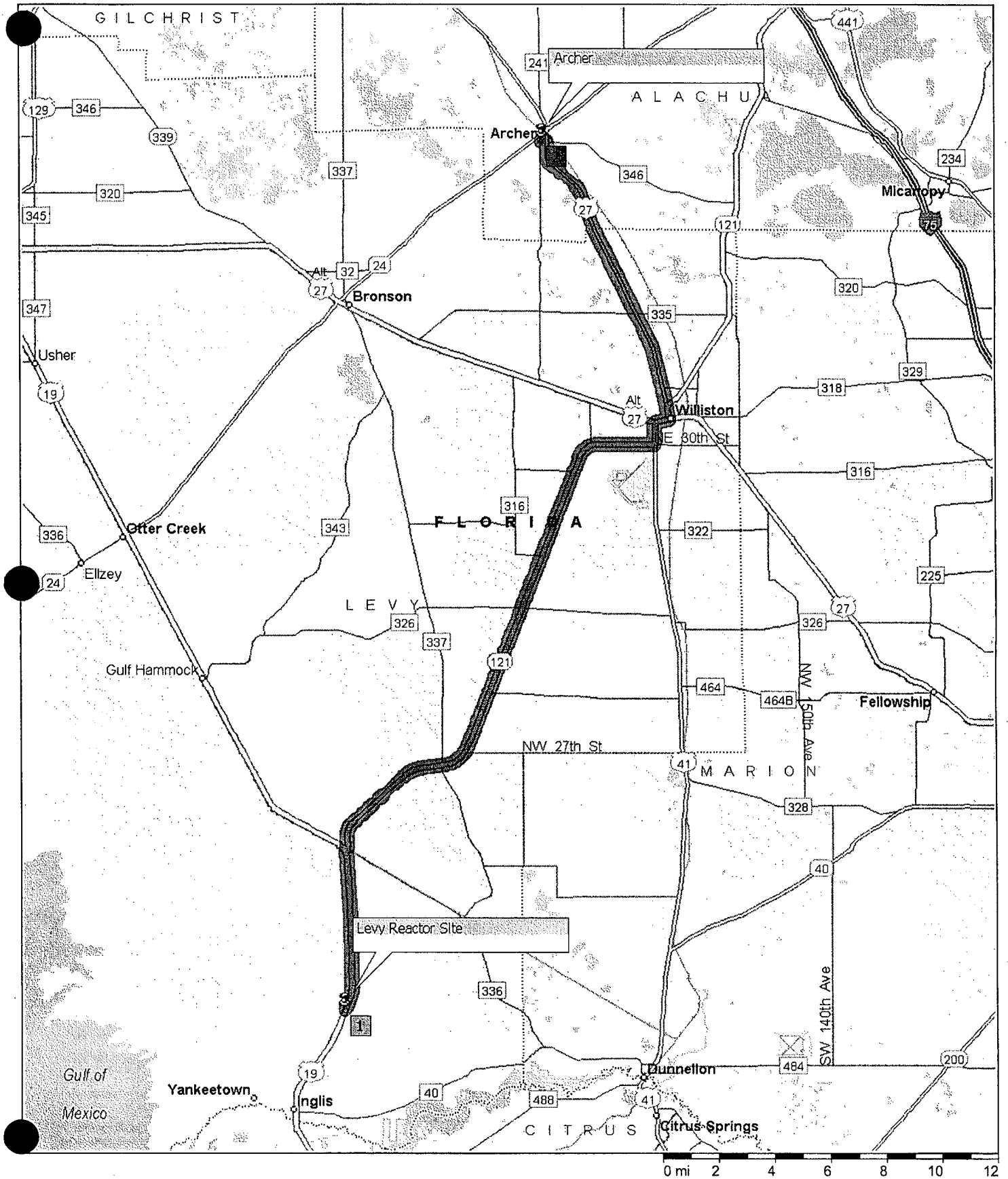
Print Time = 12:58 PM

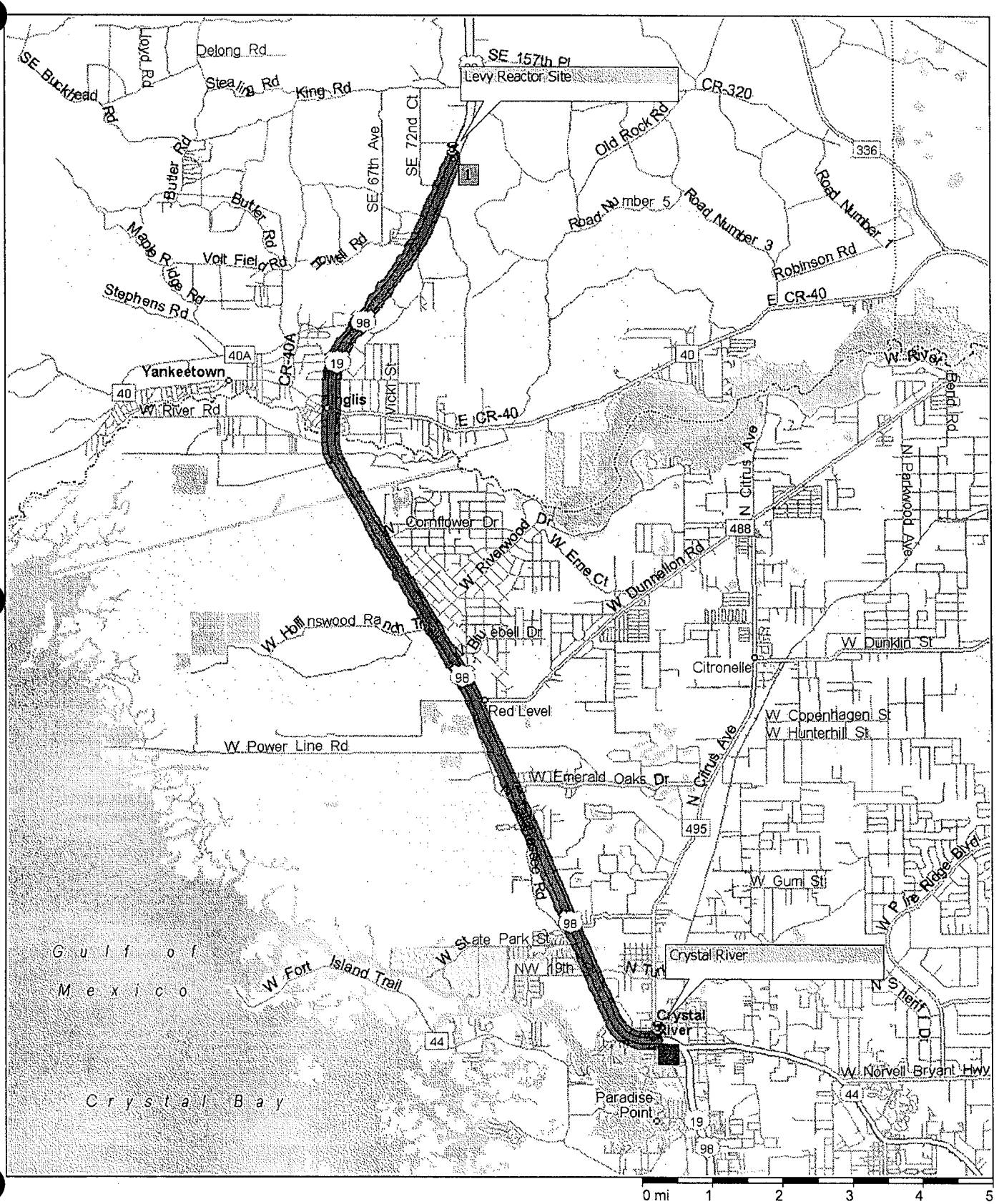
Levy Reactor Site to Archer

38.4 miles; 42 minutes



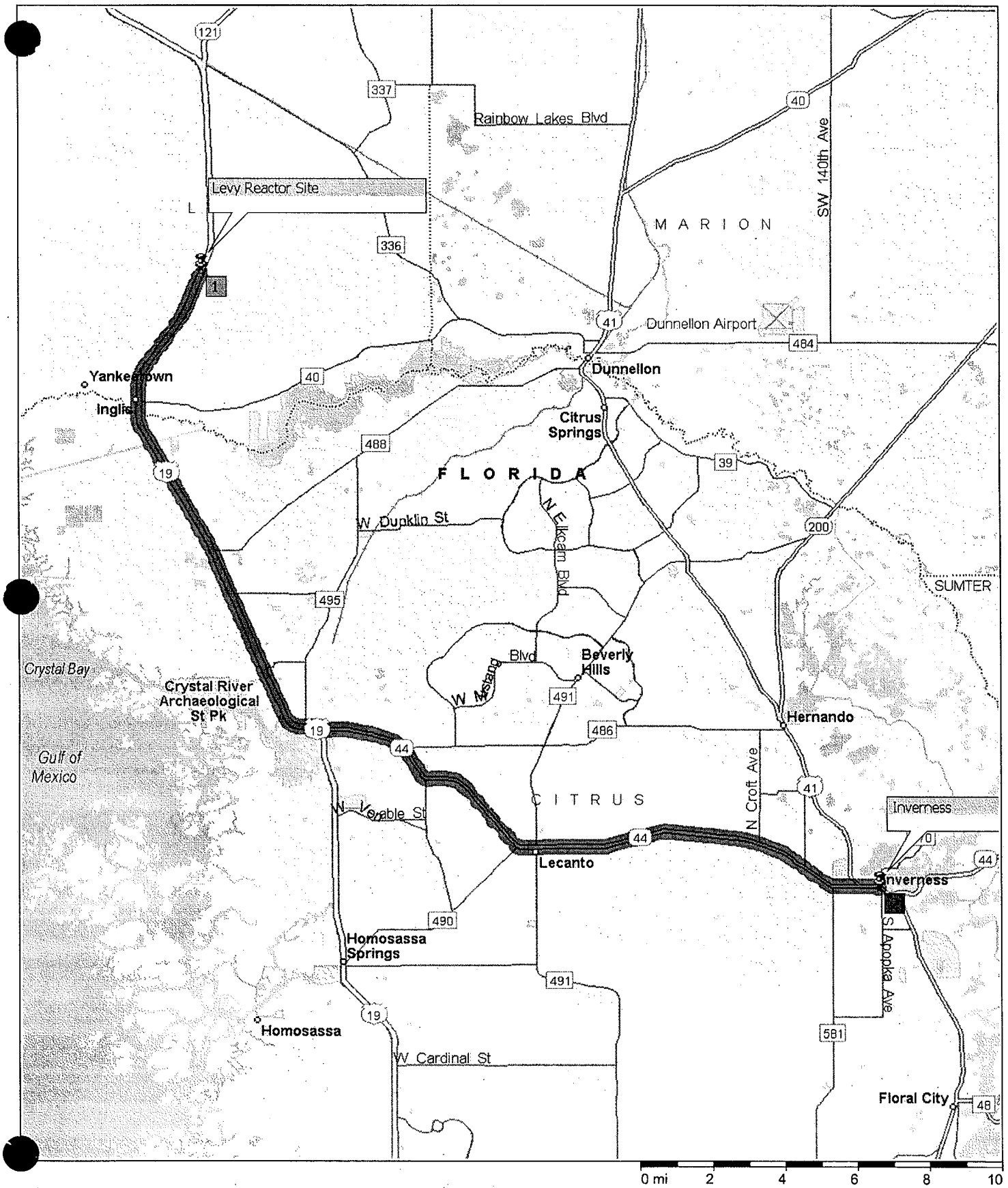
Levy Reactor Site to Crystal River

14.5 miles; 15 minutes



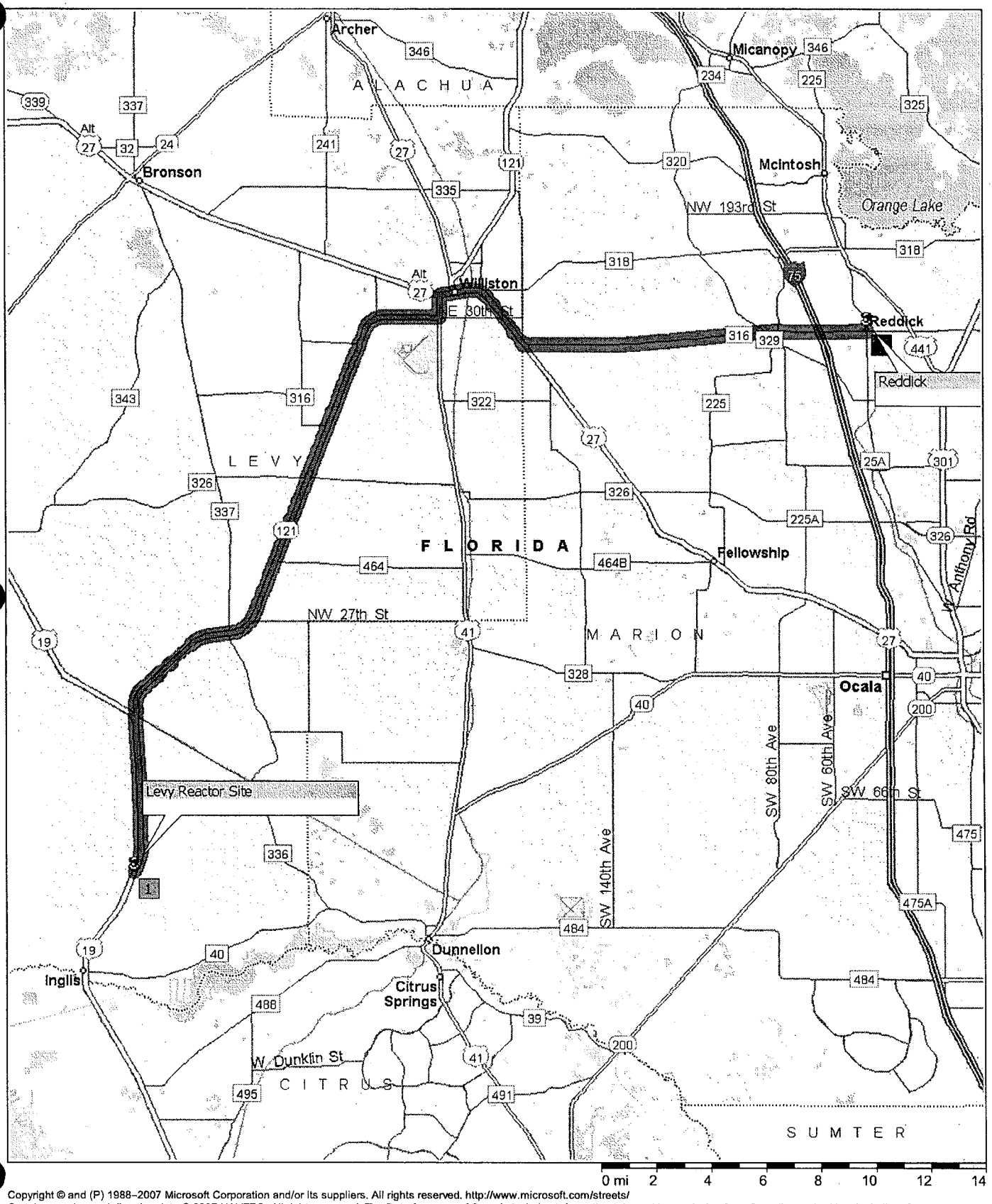
Levy Reactor Site to Inverness

32.1 miles; 35 minutes



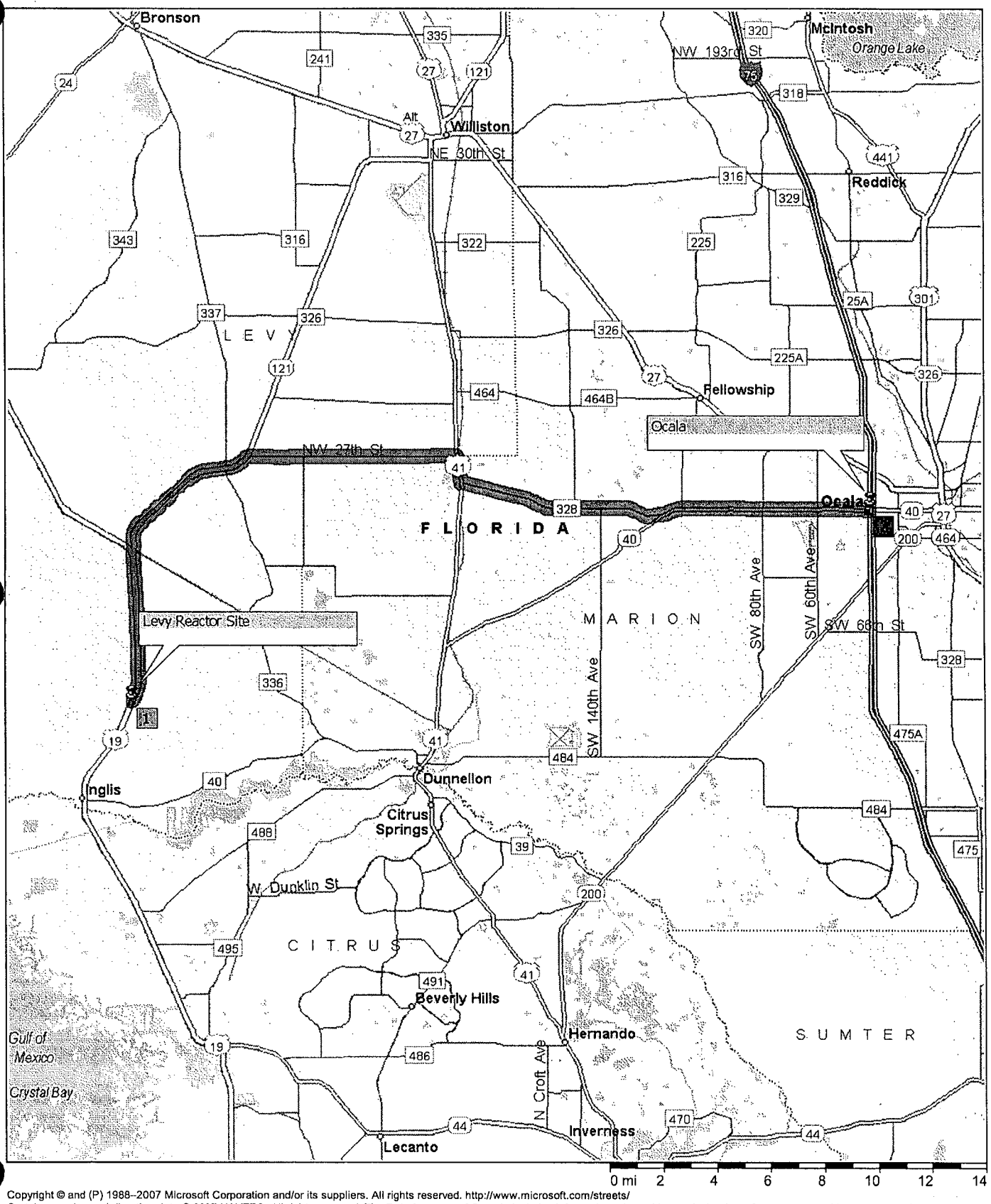
Levy Reactor Site to Reddick

43.3 miles; 47 minutes



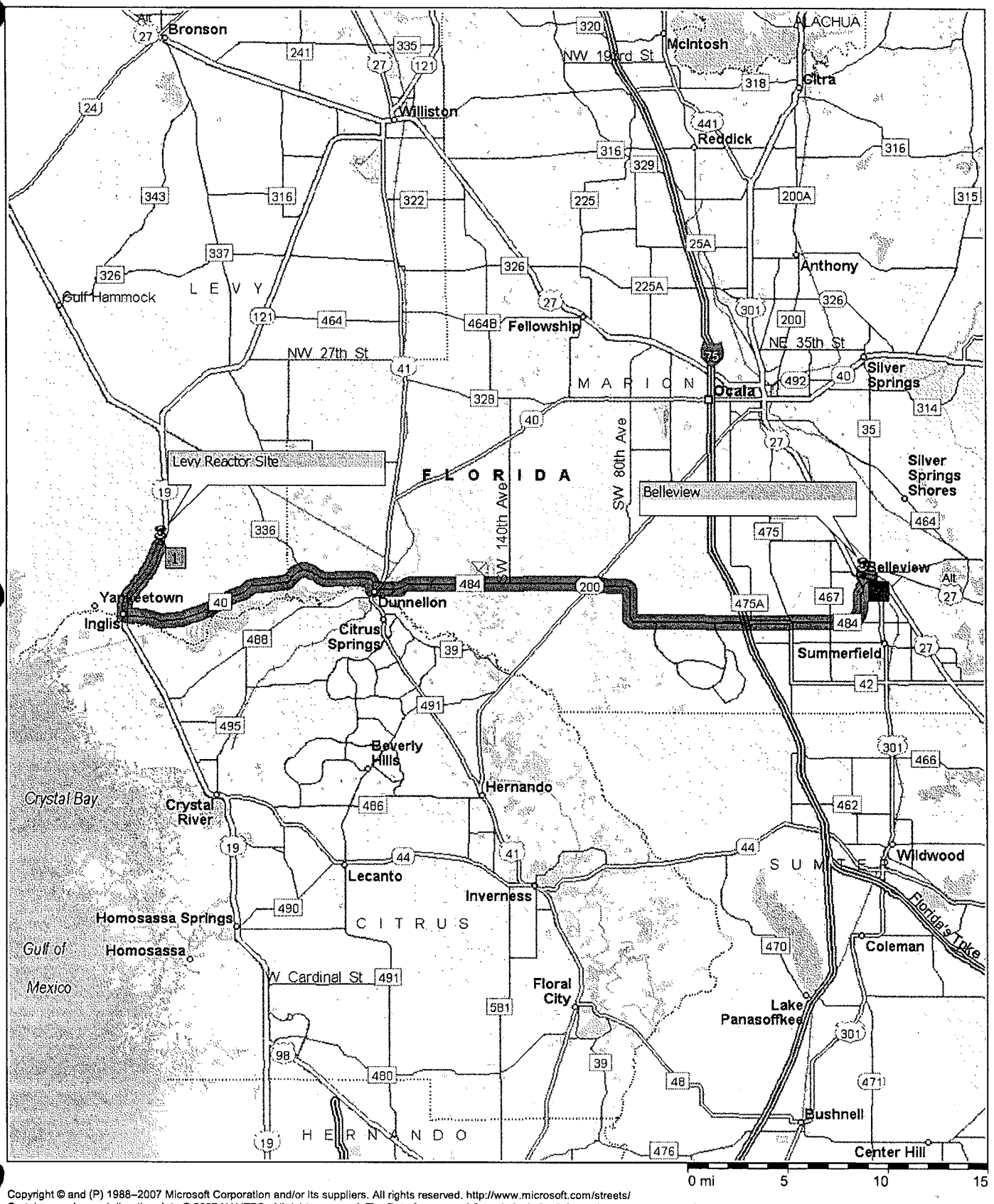
Levy Reactor Site to Ocala

35.8 miles; 45 minutes



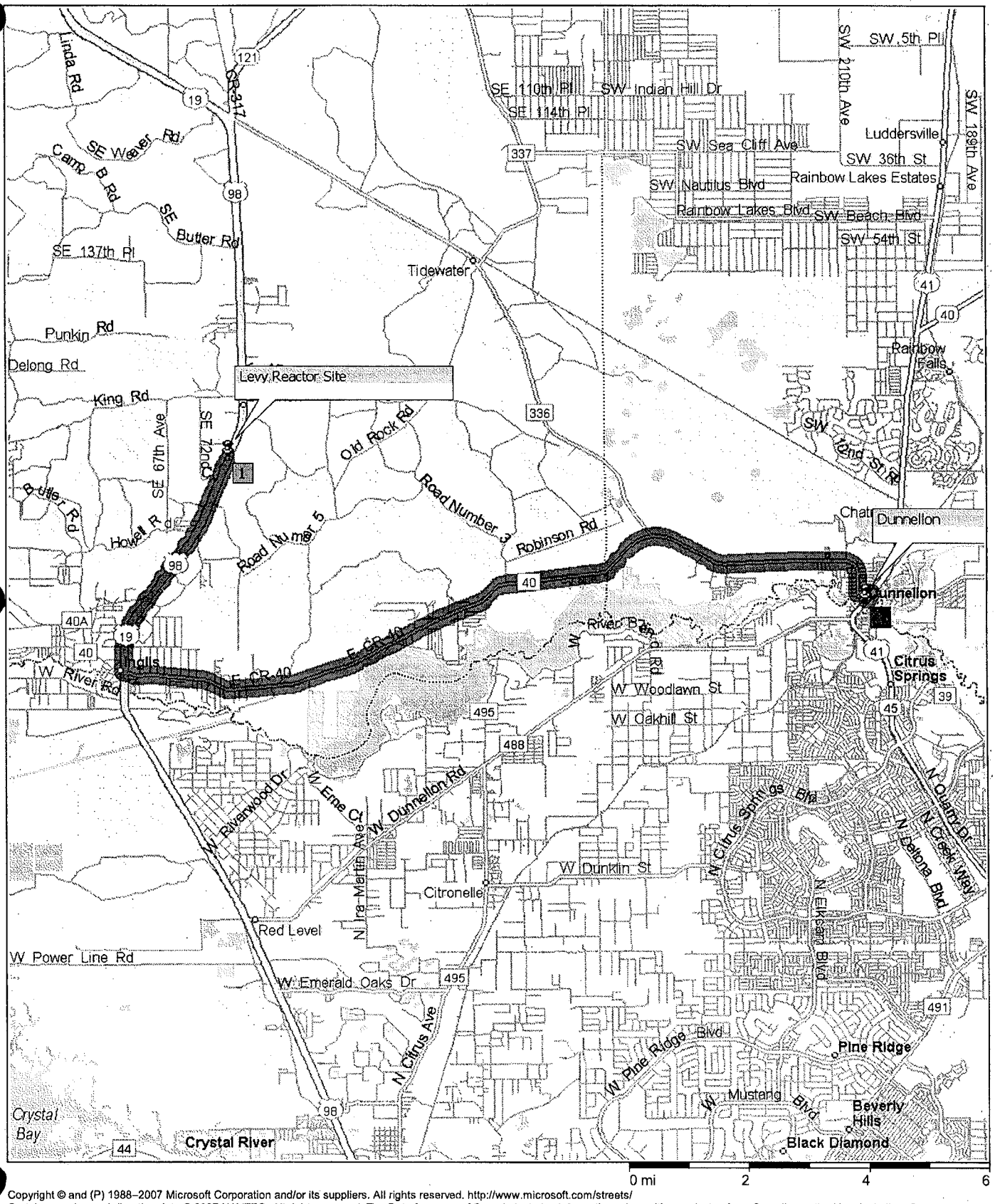
Levy Reactor Site to Belleview

46.3 miles; 57 minutes



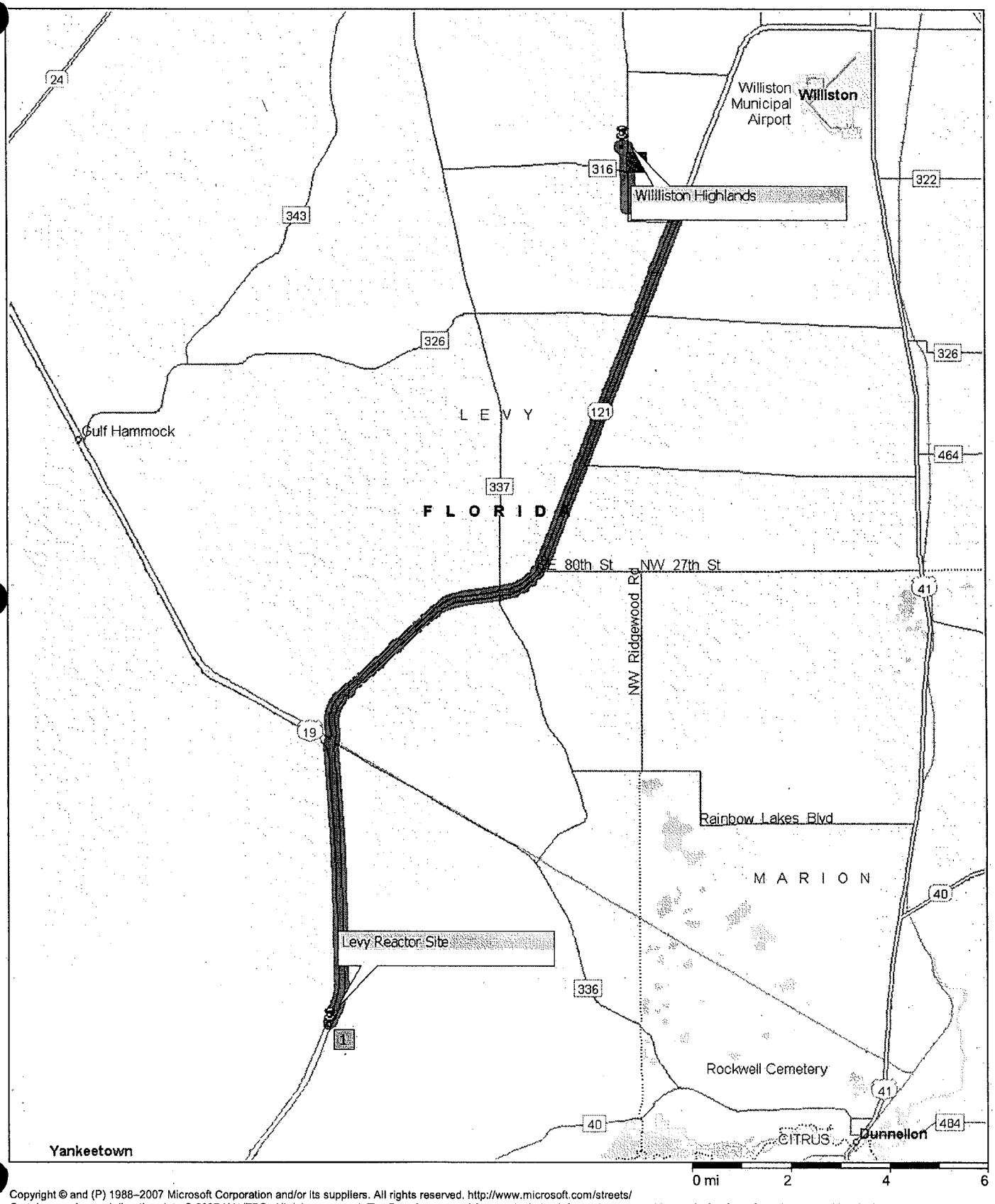
Levy Reactor Site to Dunnellon

18.0 miles; 24 minutes



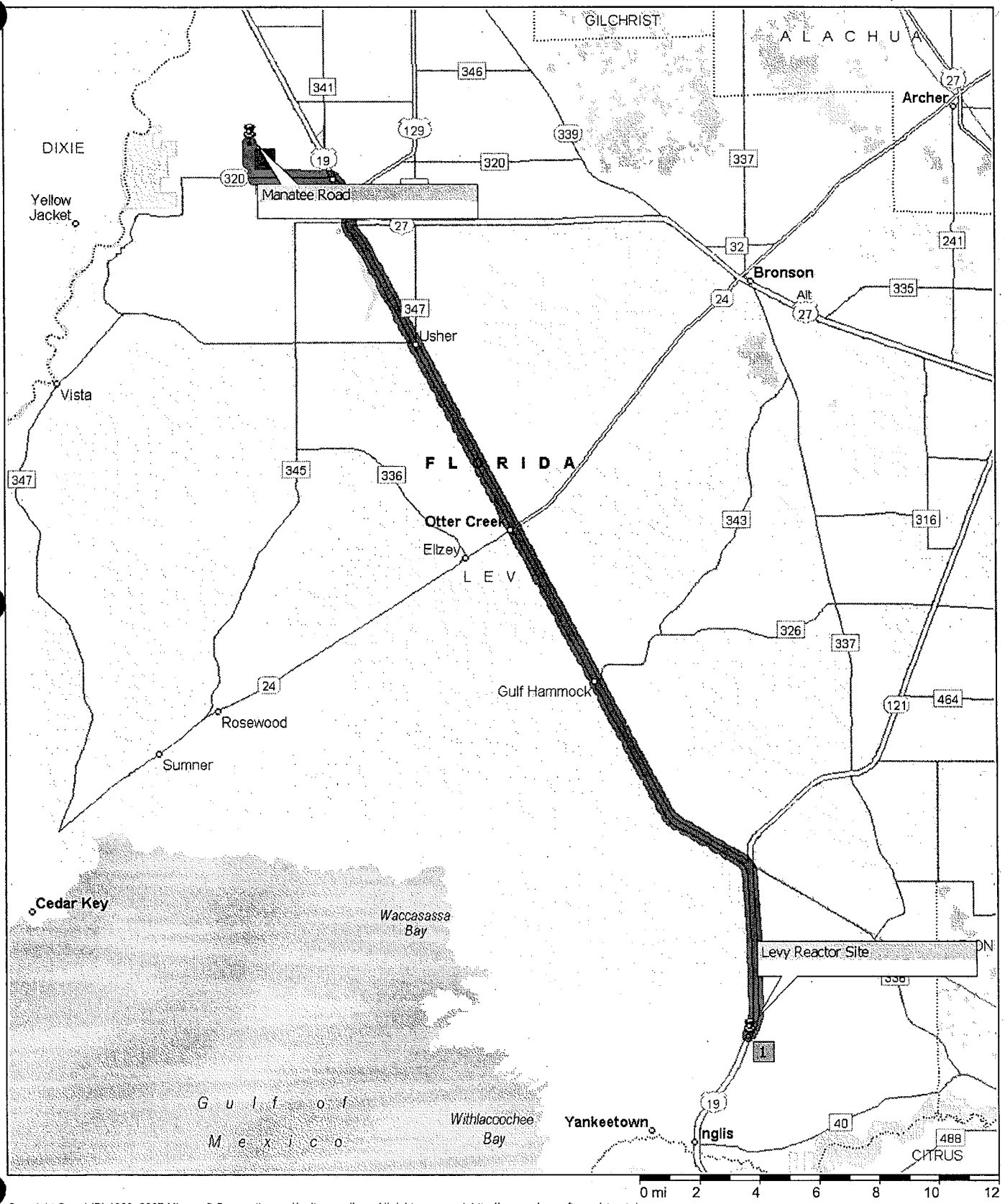
Levy Reactor Site to Williston Highlands

22.0 miles; 26 minutes



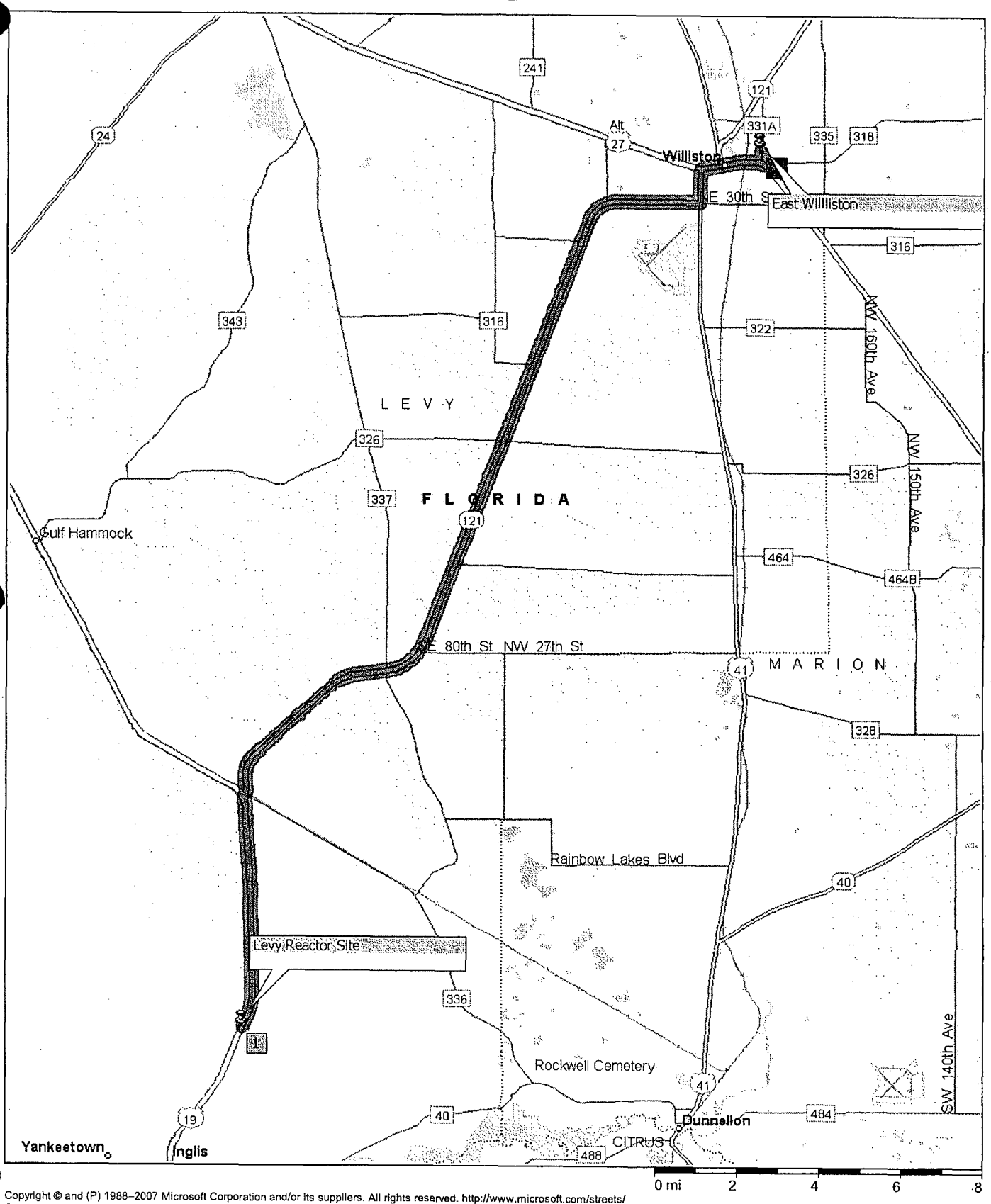
Levy Reactor Site to Manatee Road

37.0 miles; 39 minutes



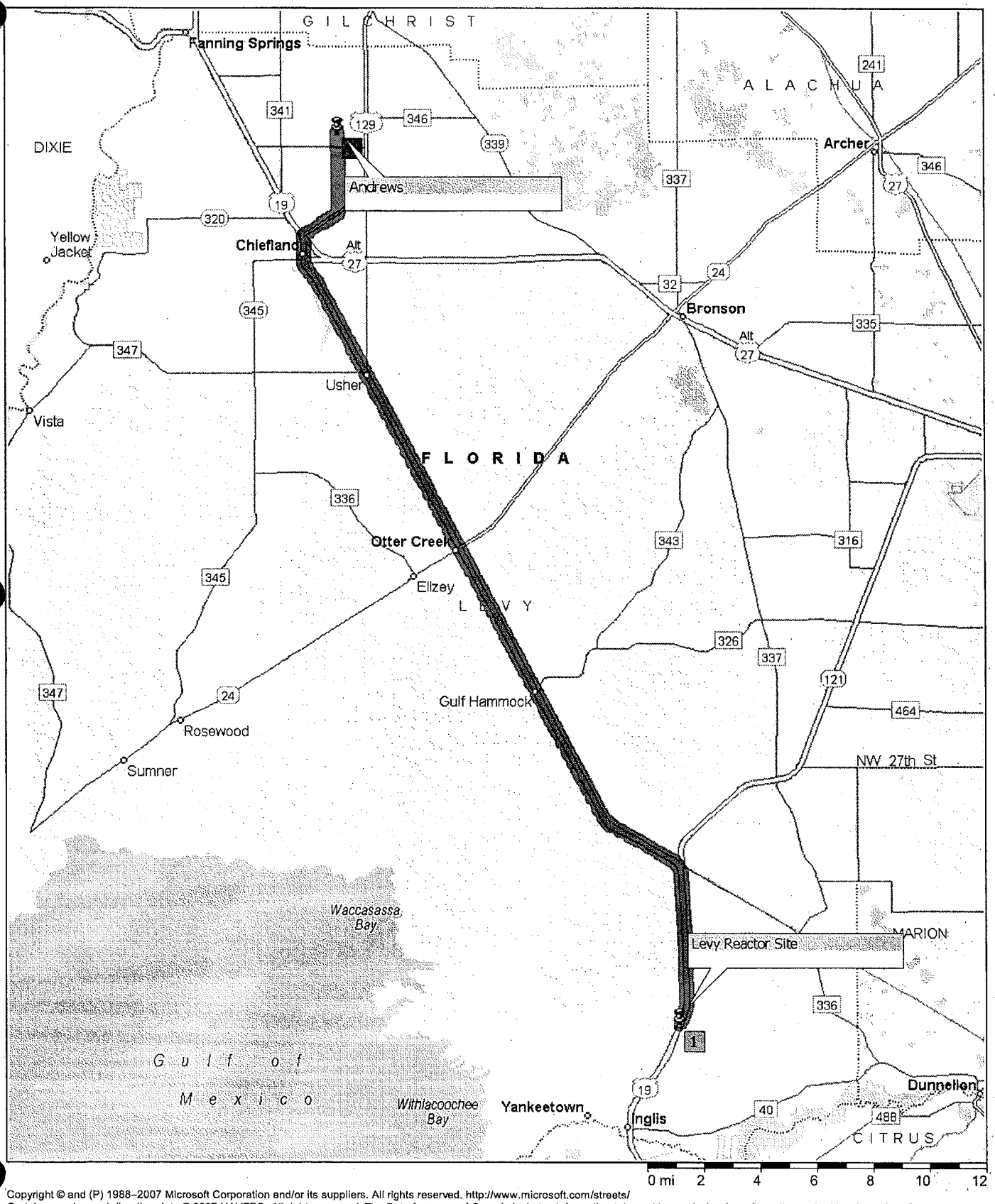
Levy Reactor Site to East Williston

28.5 miles; 30 minutes



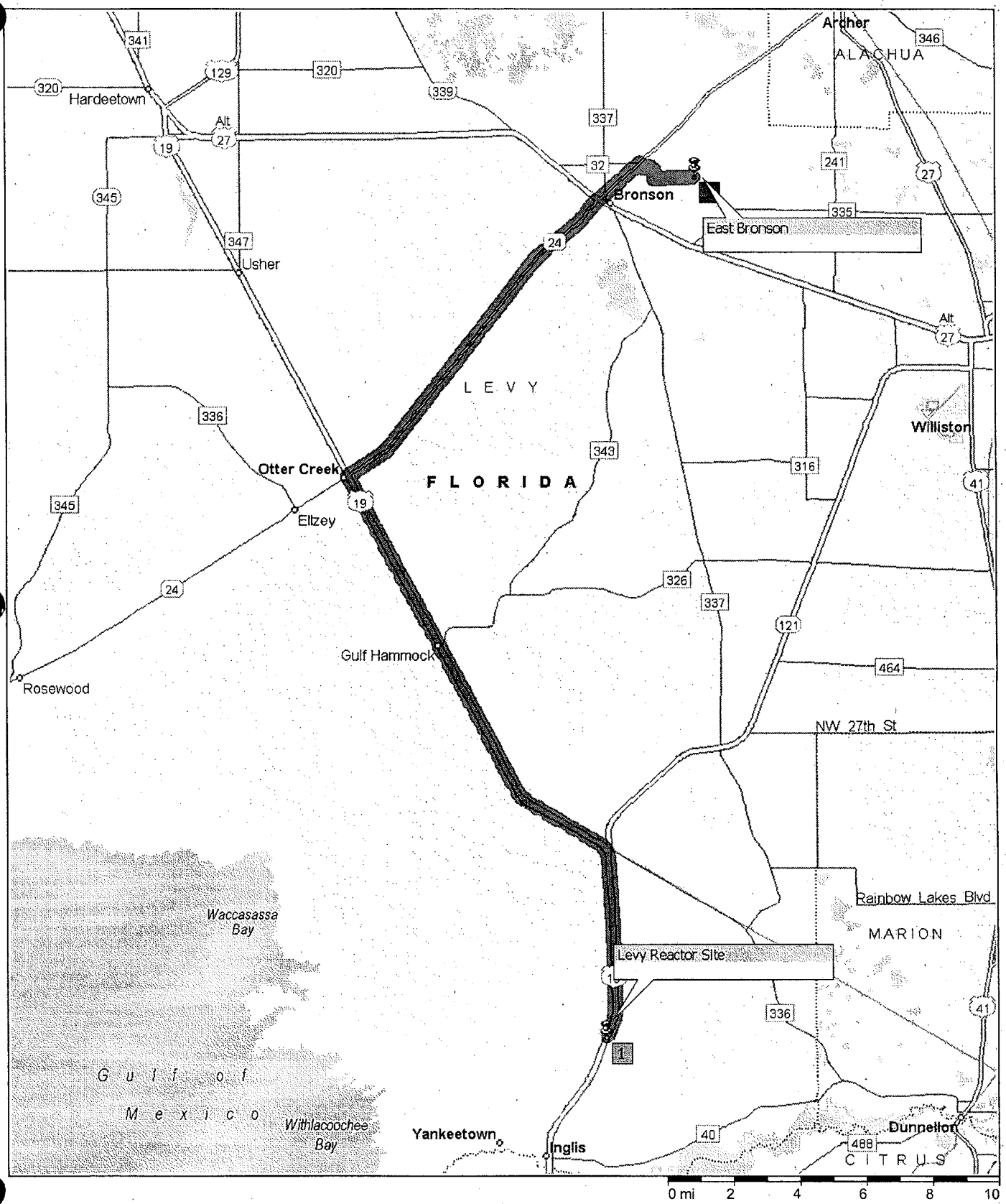
Levy Reactor Site to Andrews

36.6 miles; 38 minutes



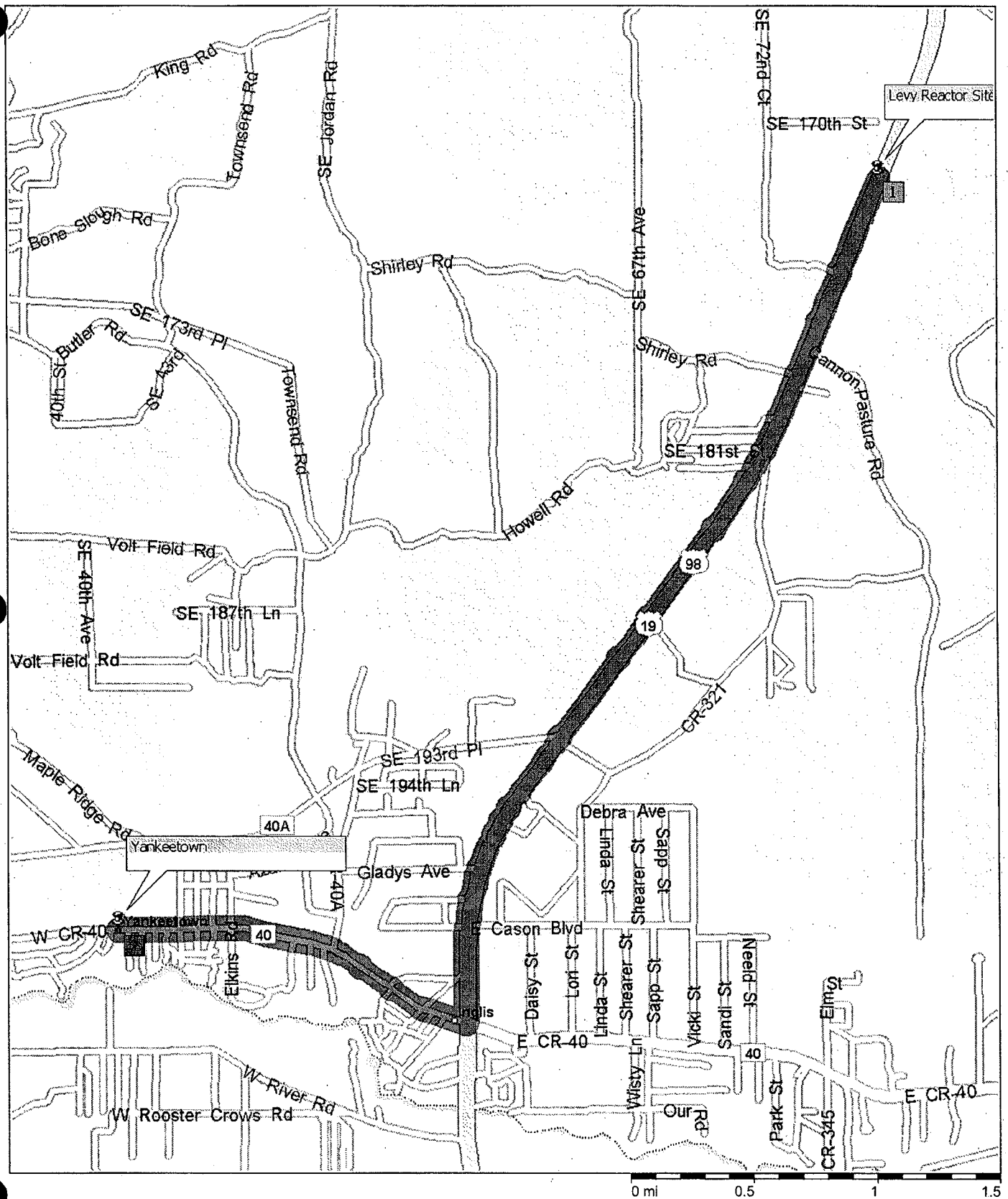
Levy Reactor Site to East Bronson

34.9 miles; 40 minutes



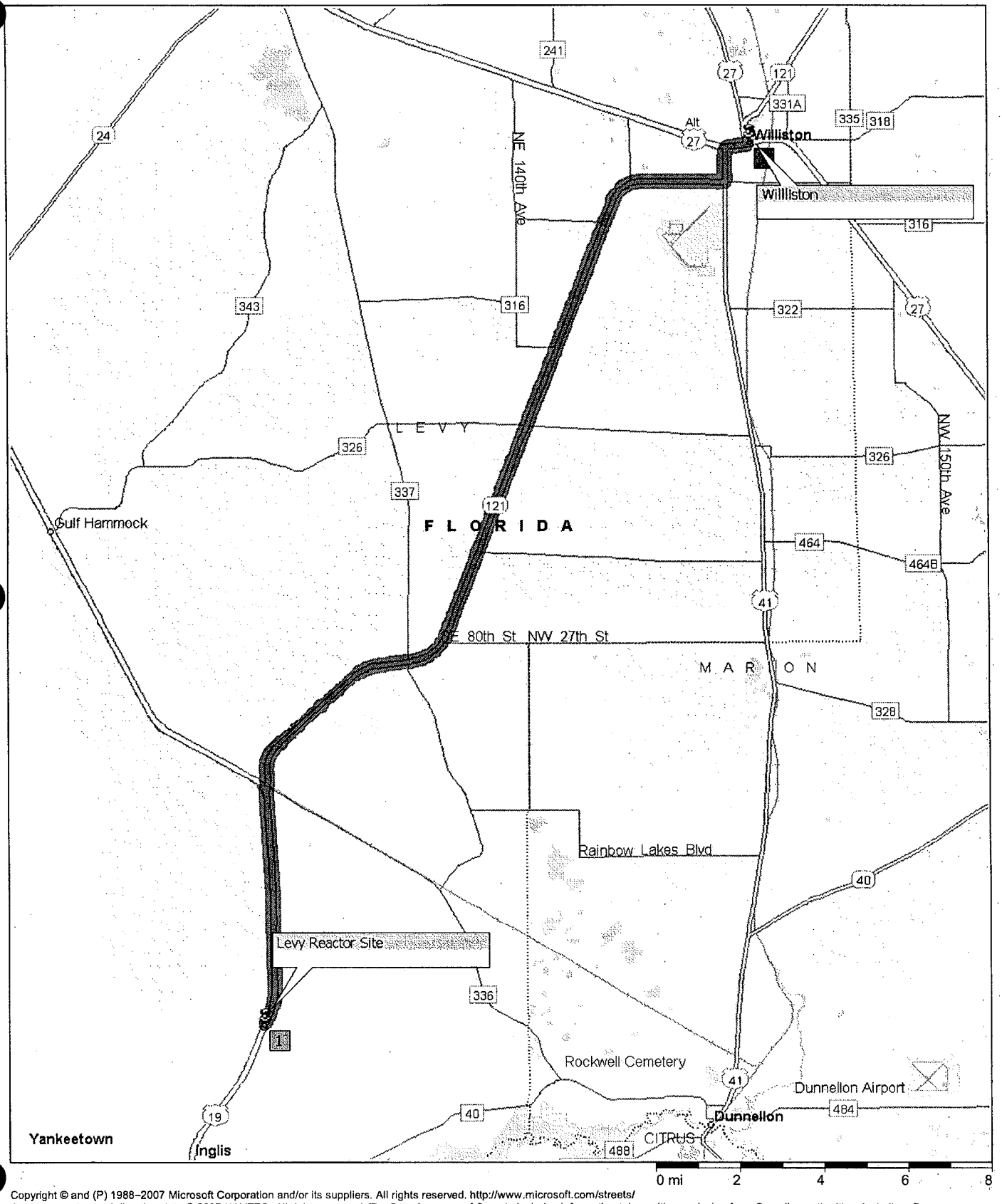
Levy Reactor Site to Yankeetown

5.6 miles; 6 minutes



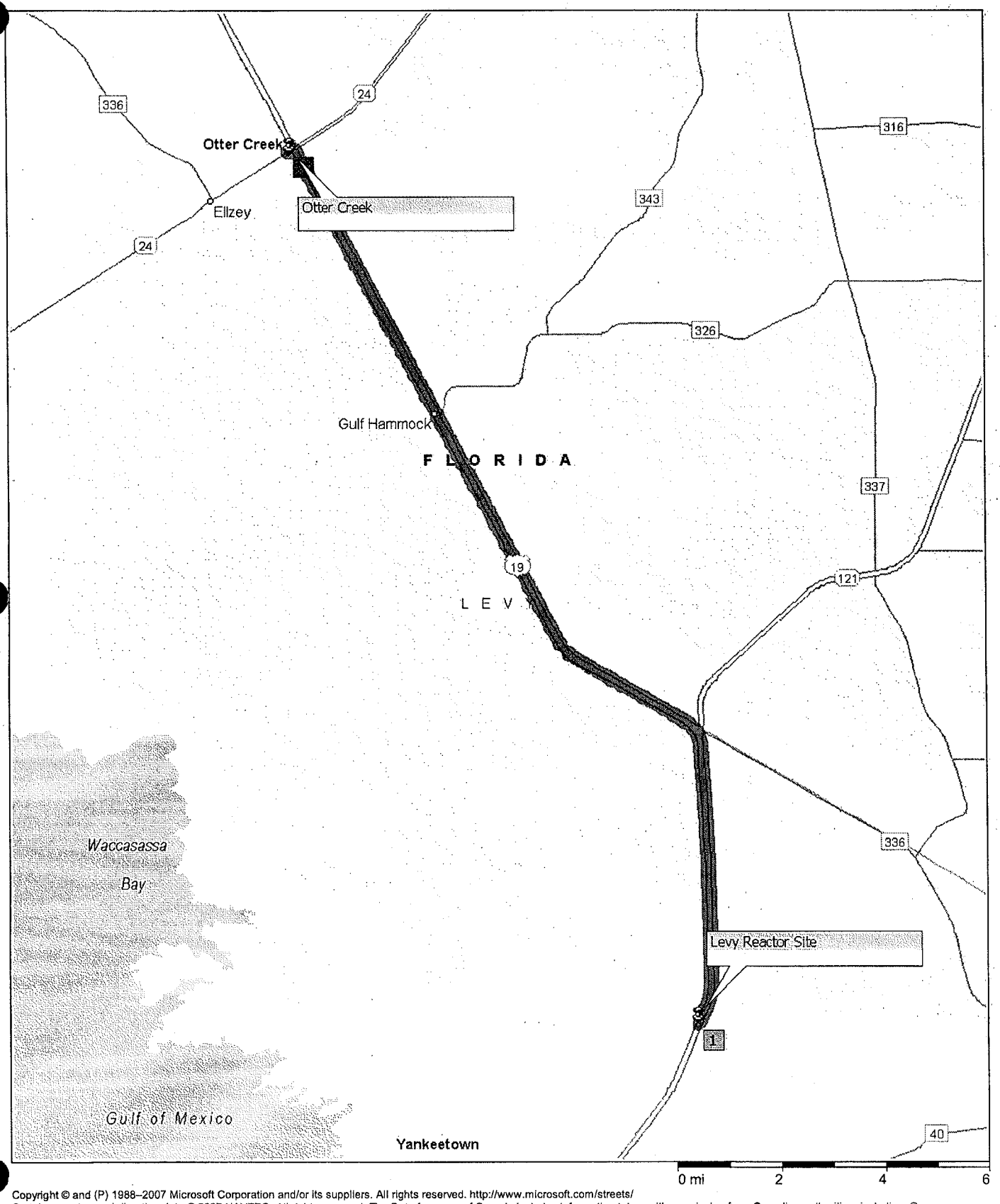
Levy Reactor Site to Williston

27.3 miles; 27 minutes



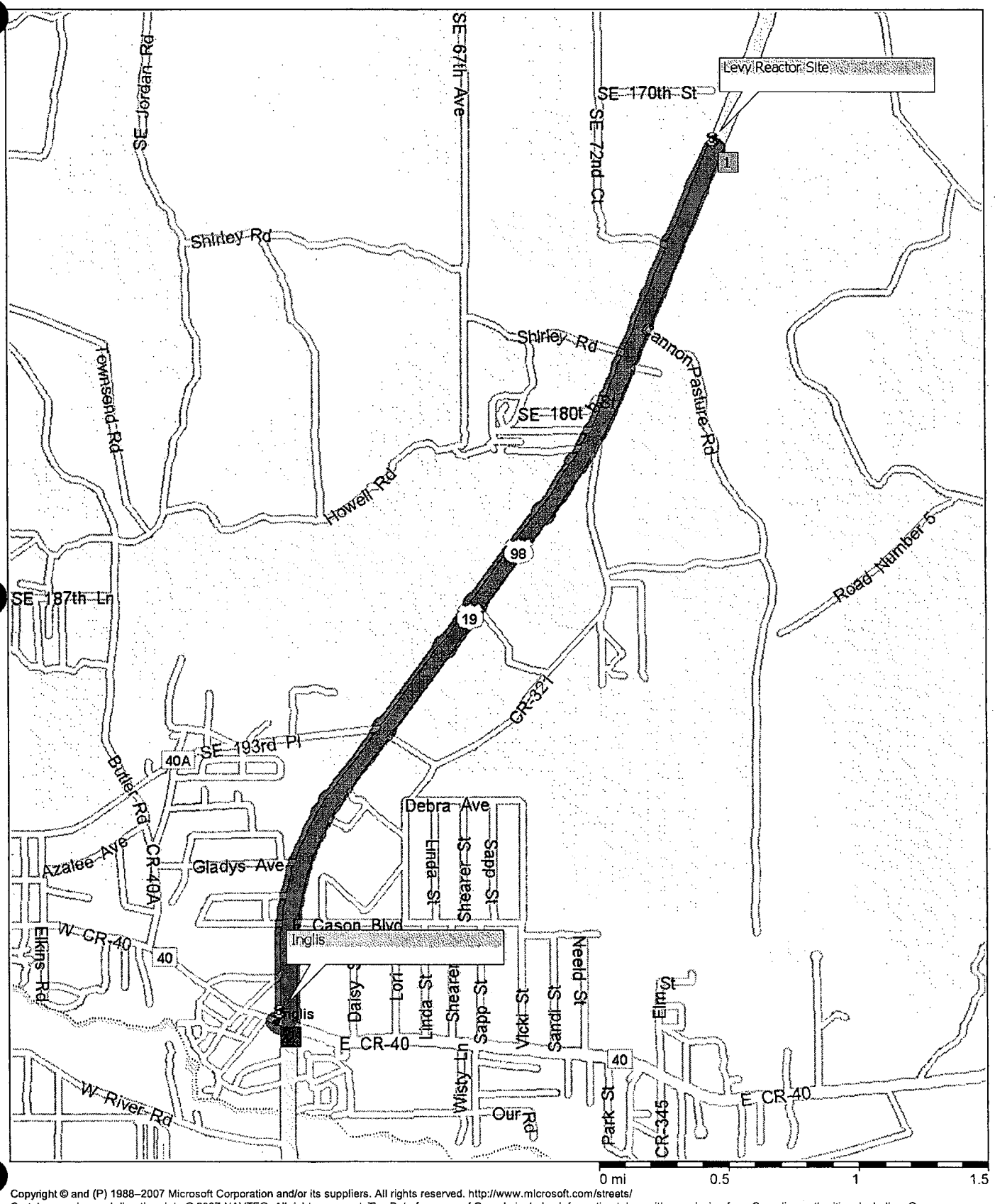
Levy Reactor Site to Otter Creek

19.9 miles; 17 minutes



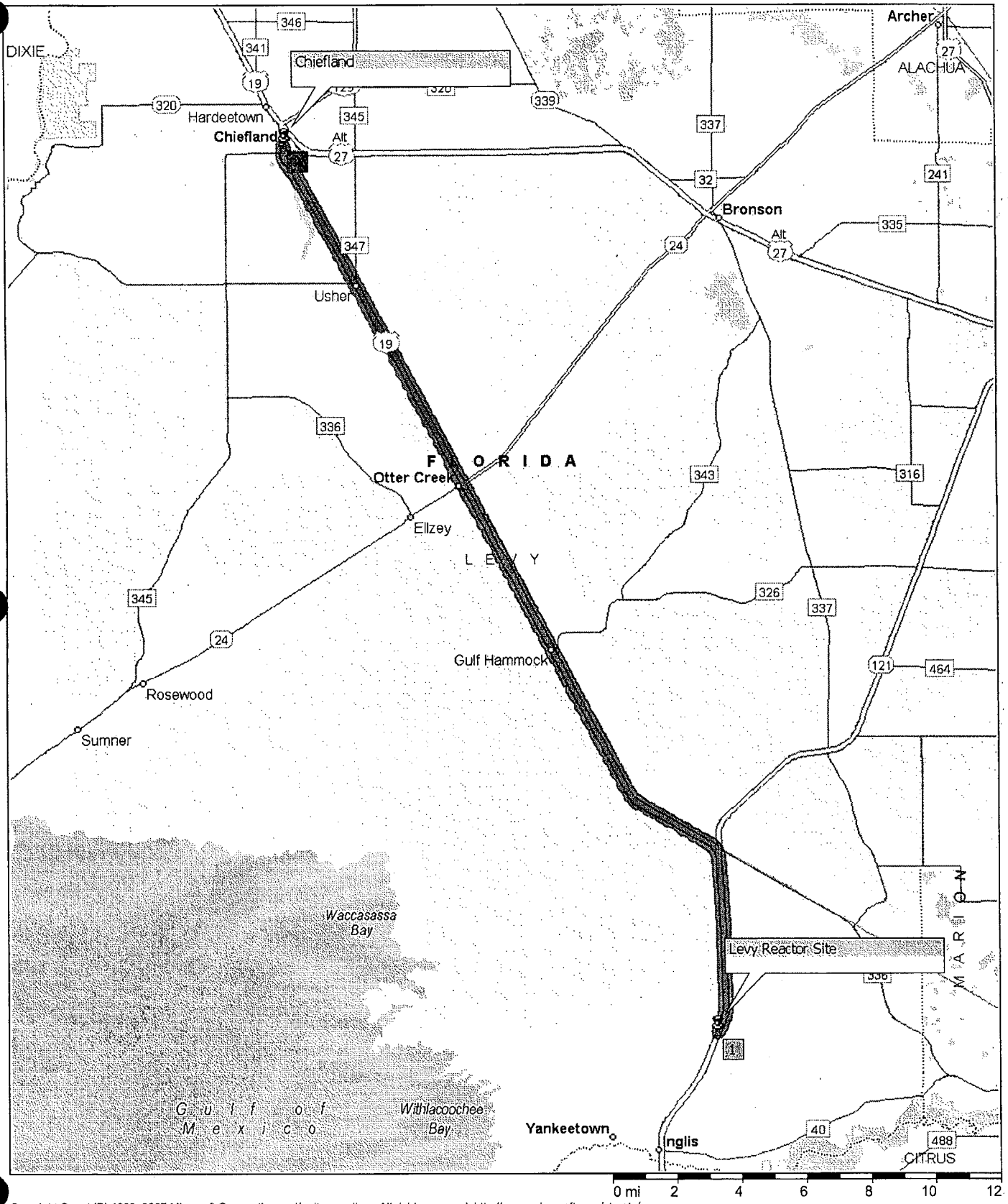
Levy Reactor Site to Inglis

4.1 miles; 4 minutes



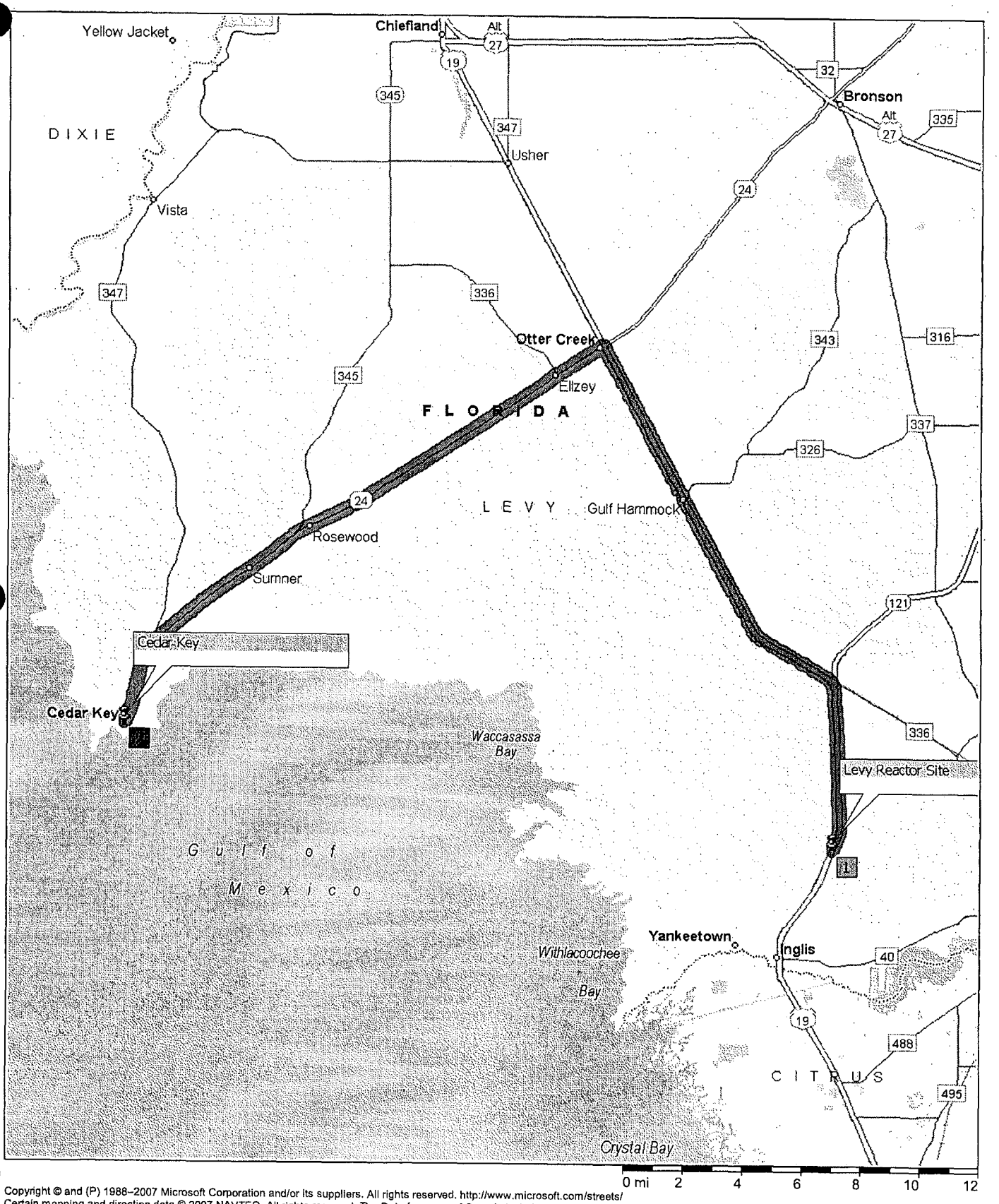
Levy Reactor Site to Chiefland

31.6 miles; 27 minutes



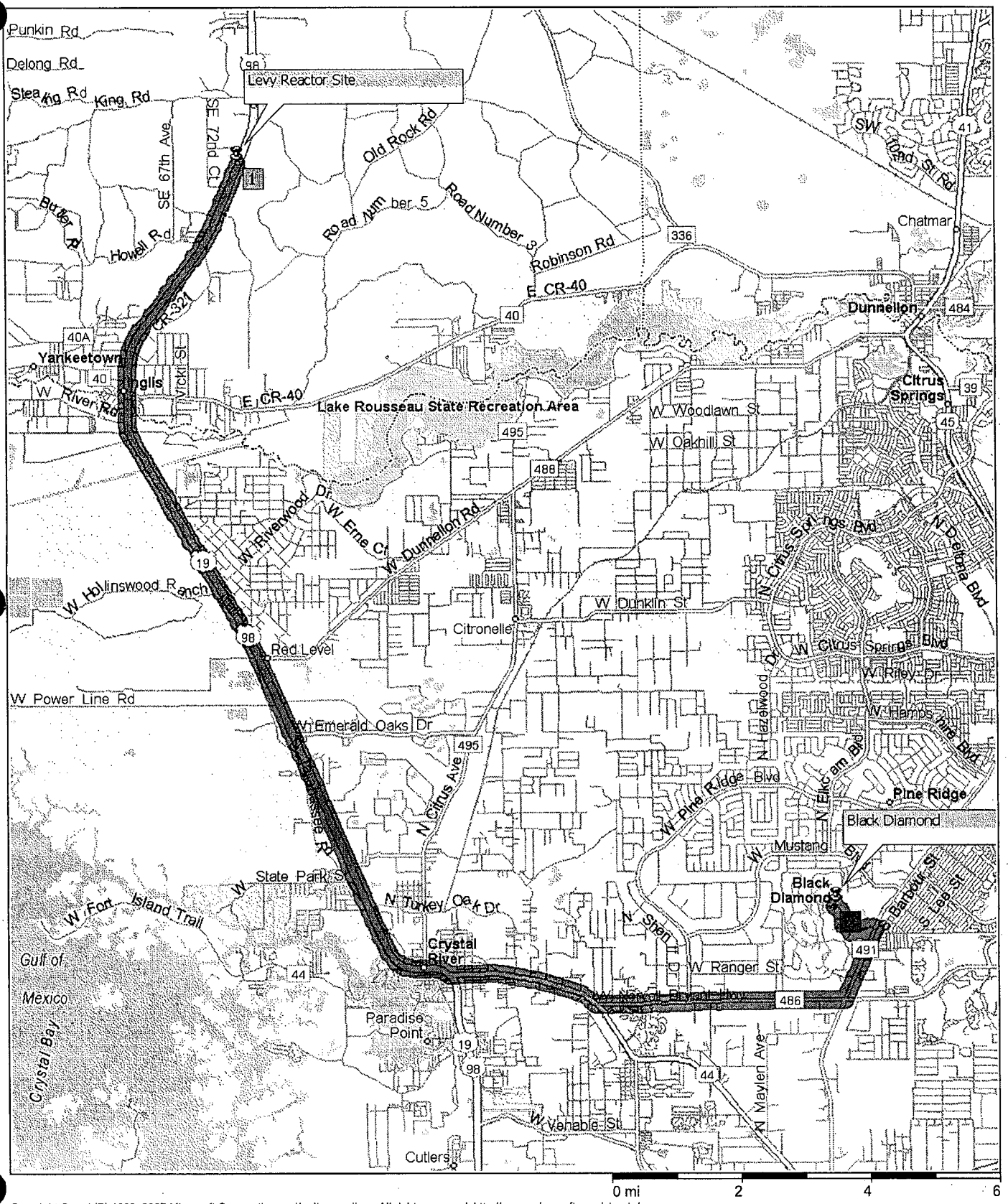
Levy Reactor Site to Cedar Key

41.0 miles; 43 minutes



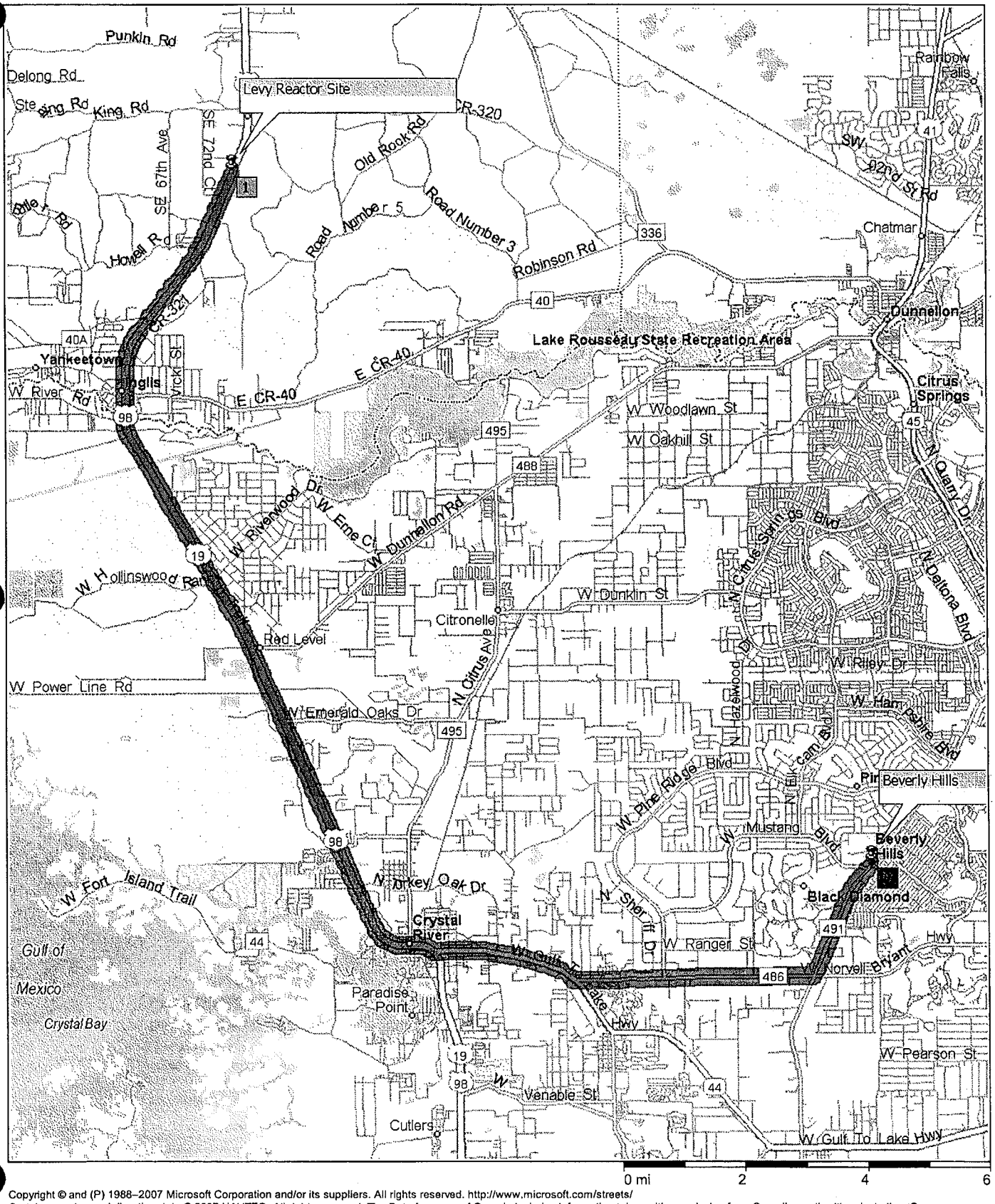
Levy Reactor Site to Black Diamond

23.3 miles; 27 minutes



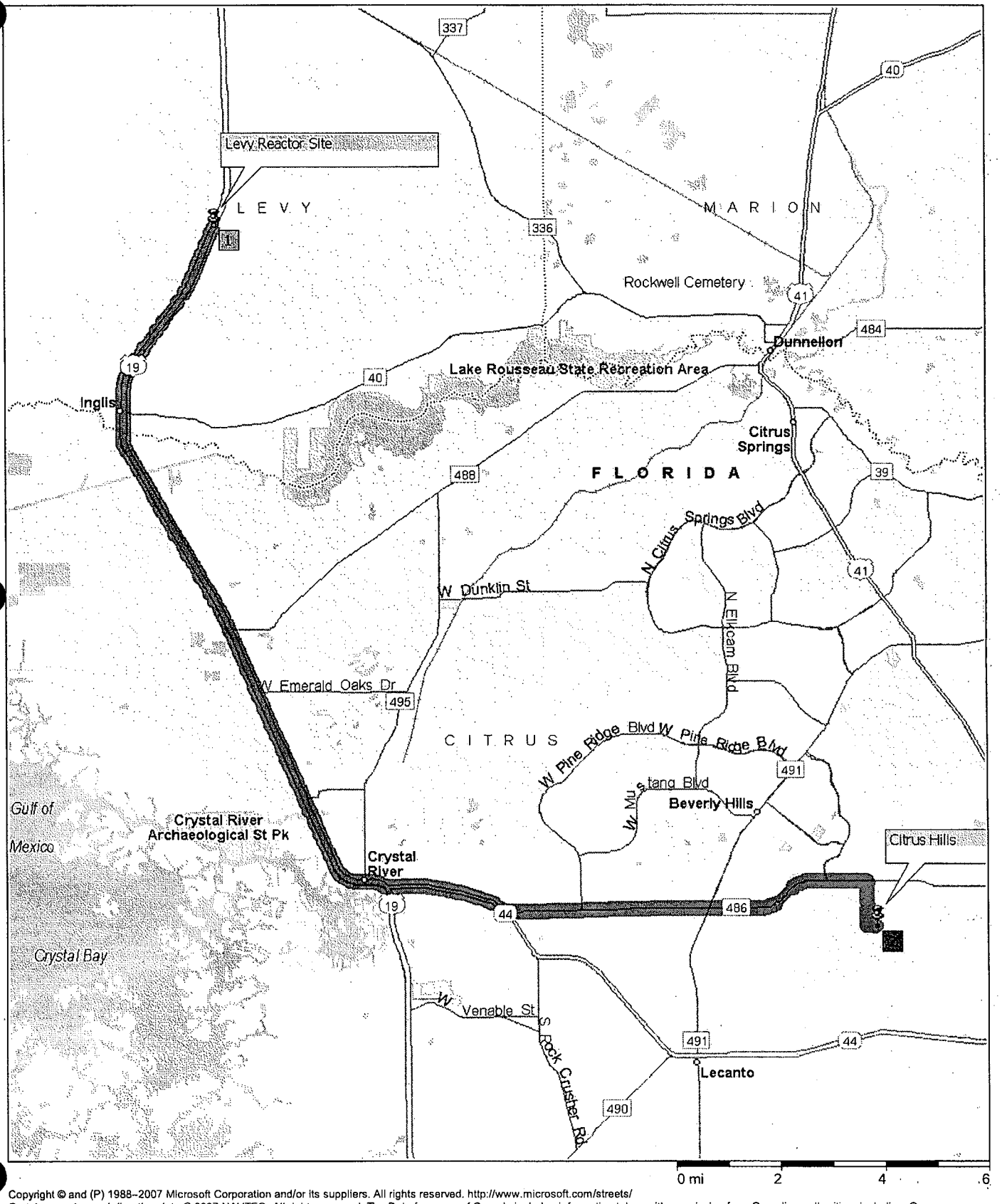
Levy Reactor Site to Beverly Hills

23.3 miles; 26 minutes



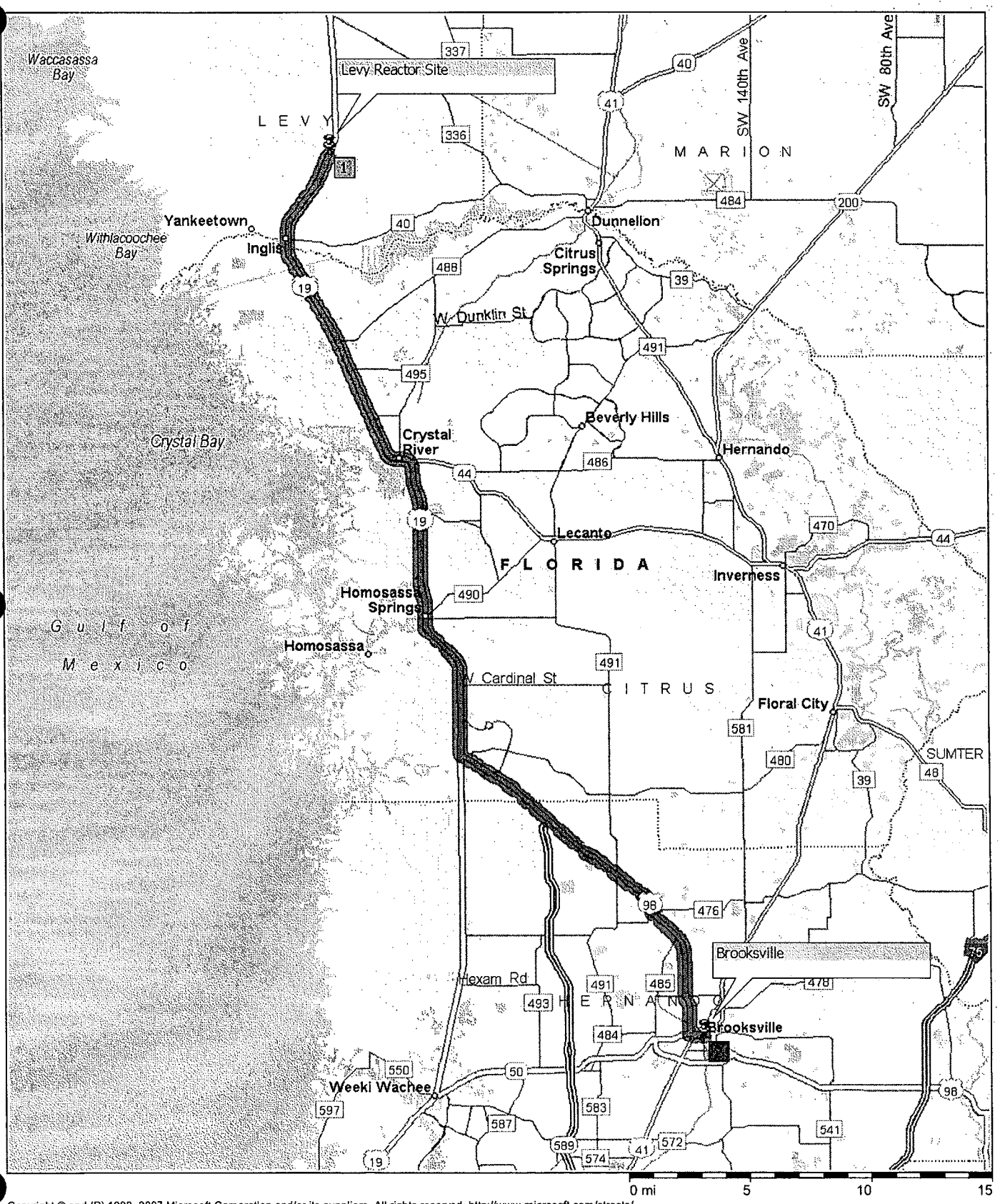
Levy Reactor Site to Citrus Hills

25.4 miles; 30 minutes



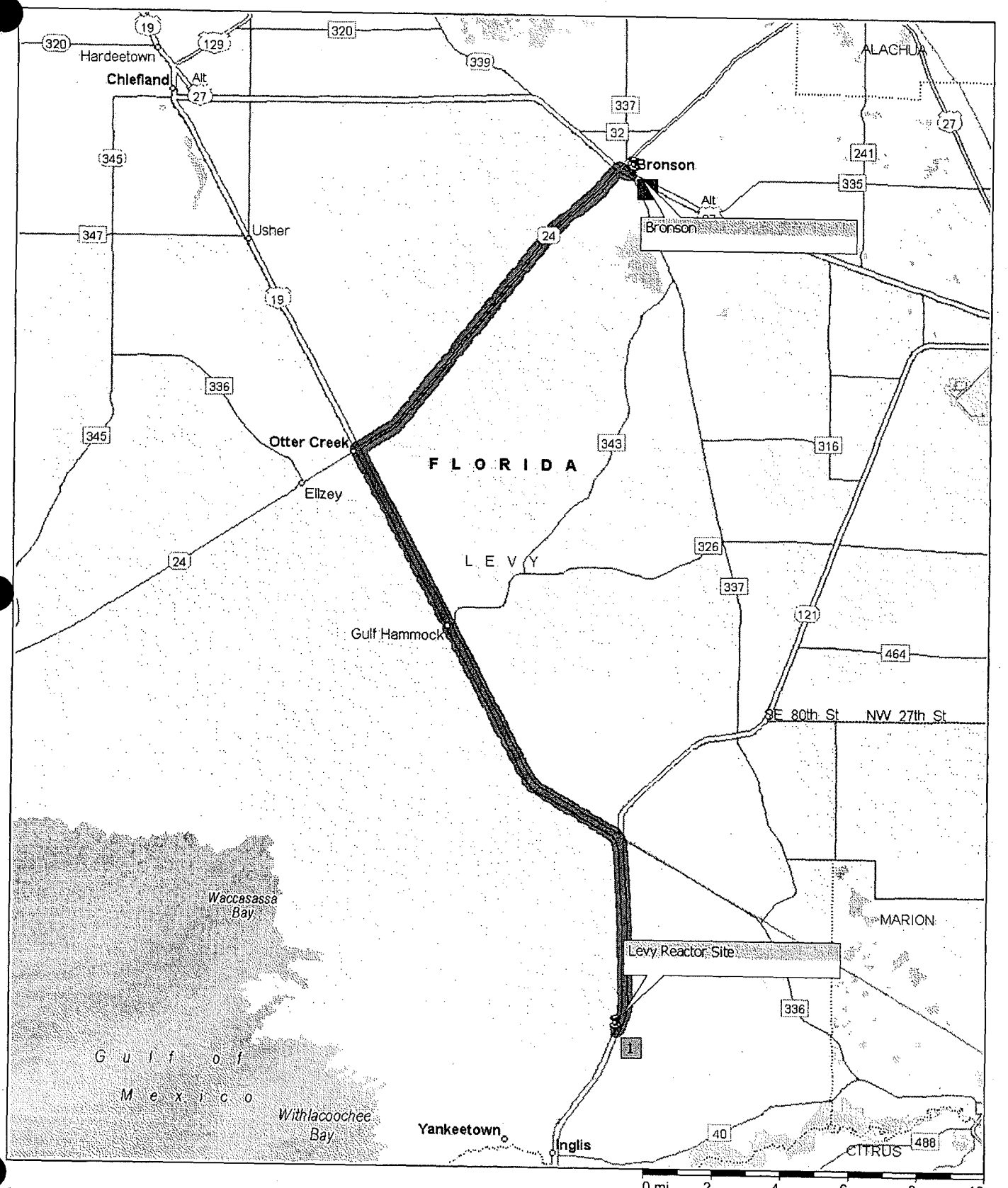
Levy Reactor Site to Brooksville

44.3 miles; 48 minutes



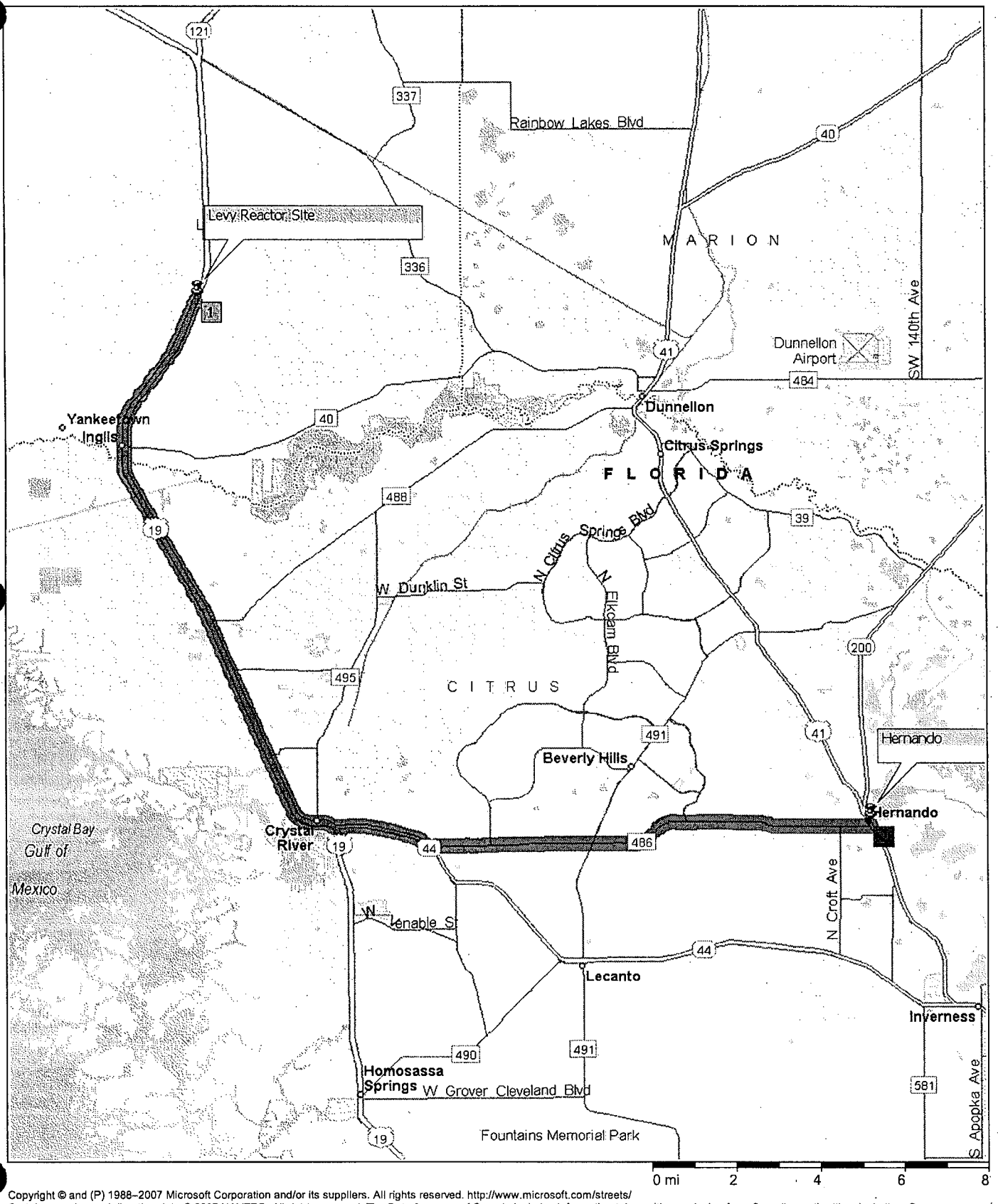
Levy Reactor Site to Bronson

31.6 miles; 32 minutes



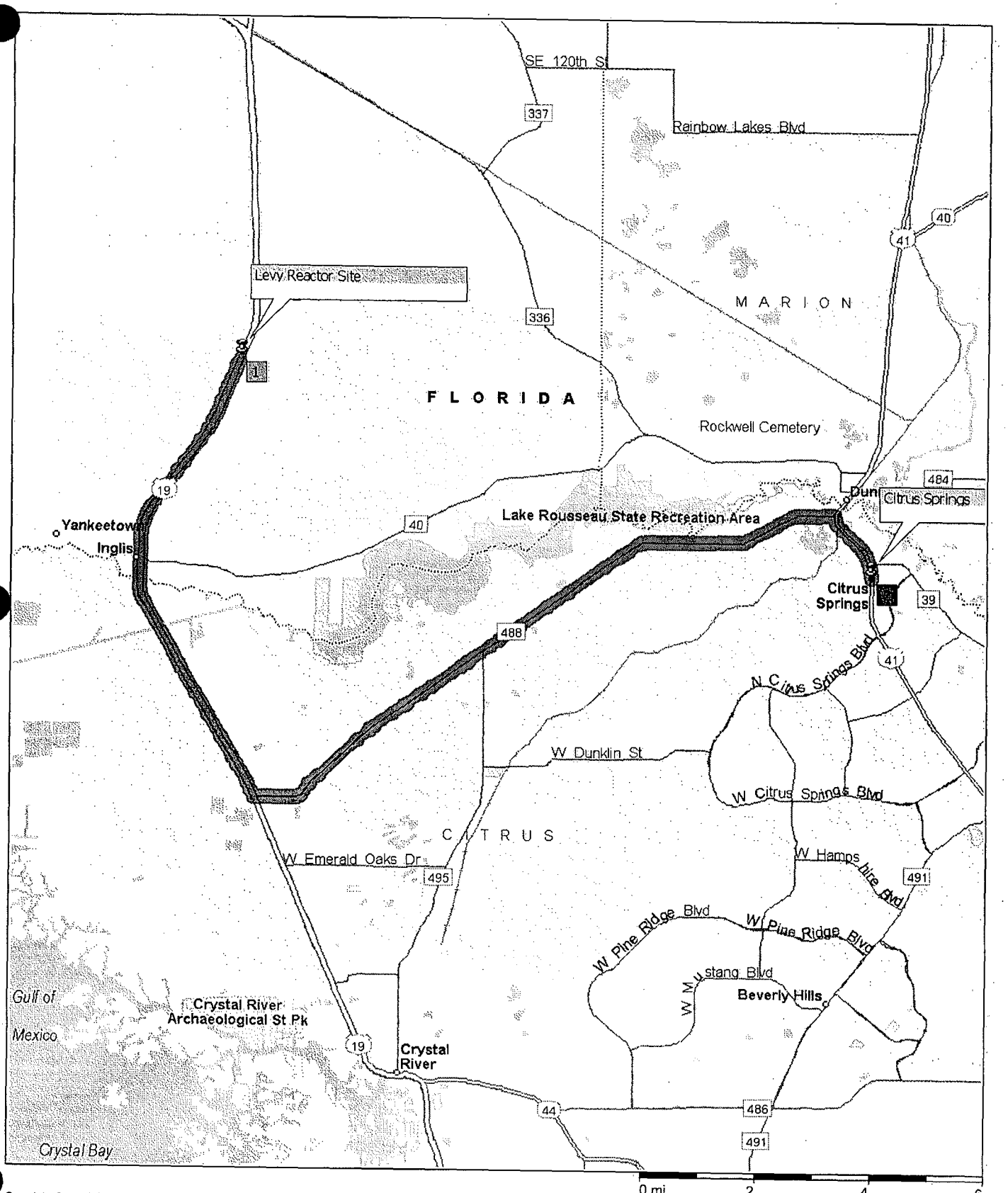
Levy Reactor Site to Hernando

28.2 miles; 32 minutes



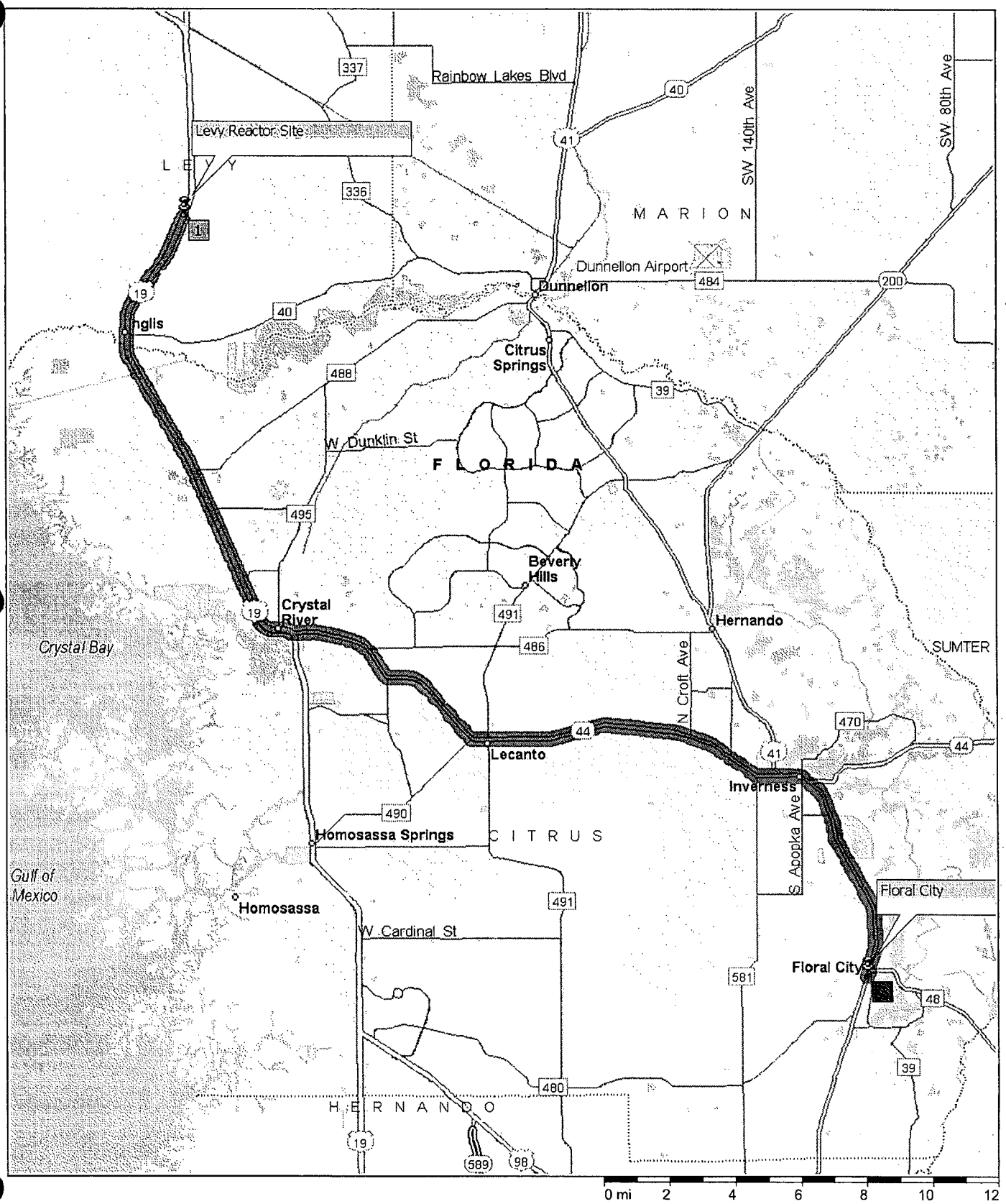
Levy Reactor Site to Citrus Springs

22.0 miles; 25 minutes



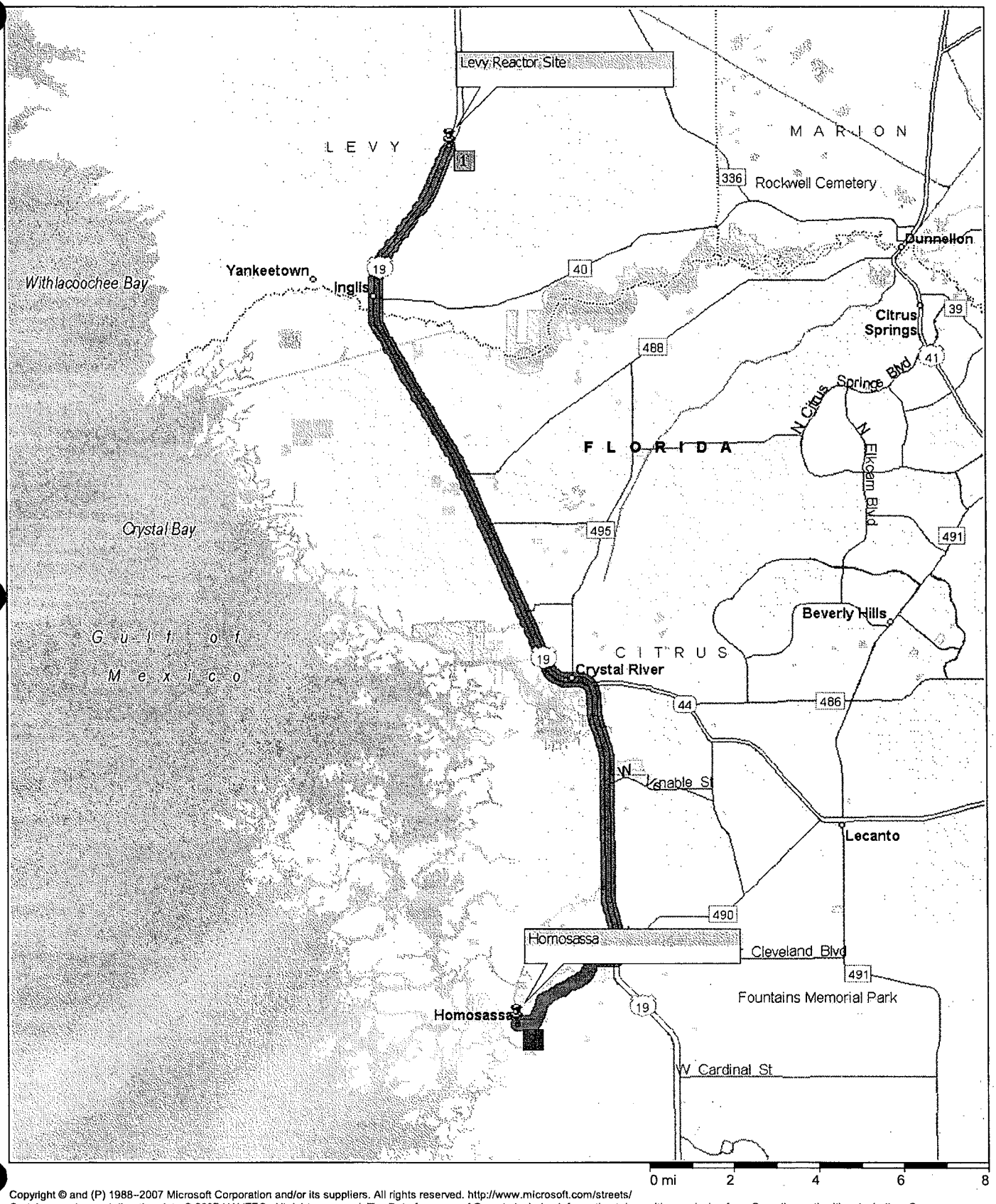
Levy Reactor Site to Floral City

38.9 miles; 44 minutes



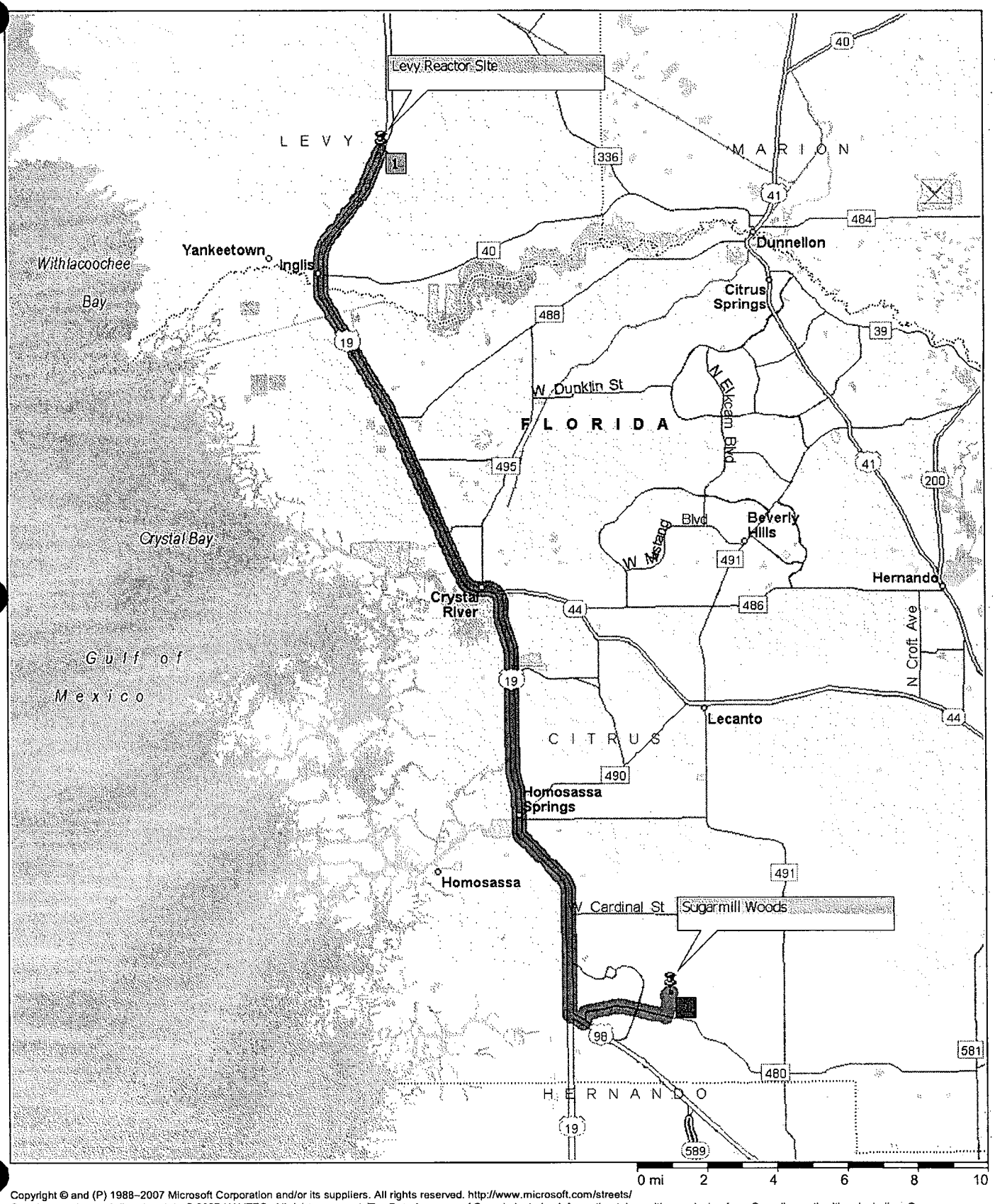
Levy Reactor Site to Homosassa

24.6 miles; 30 minutes



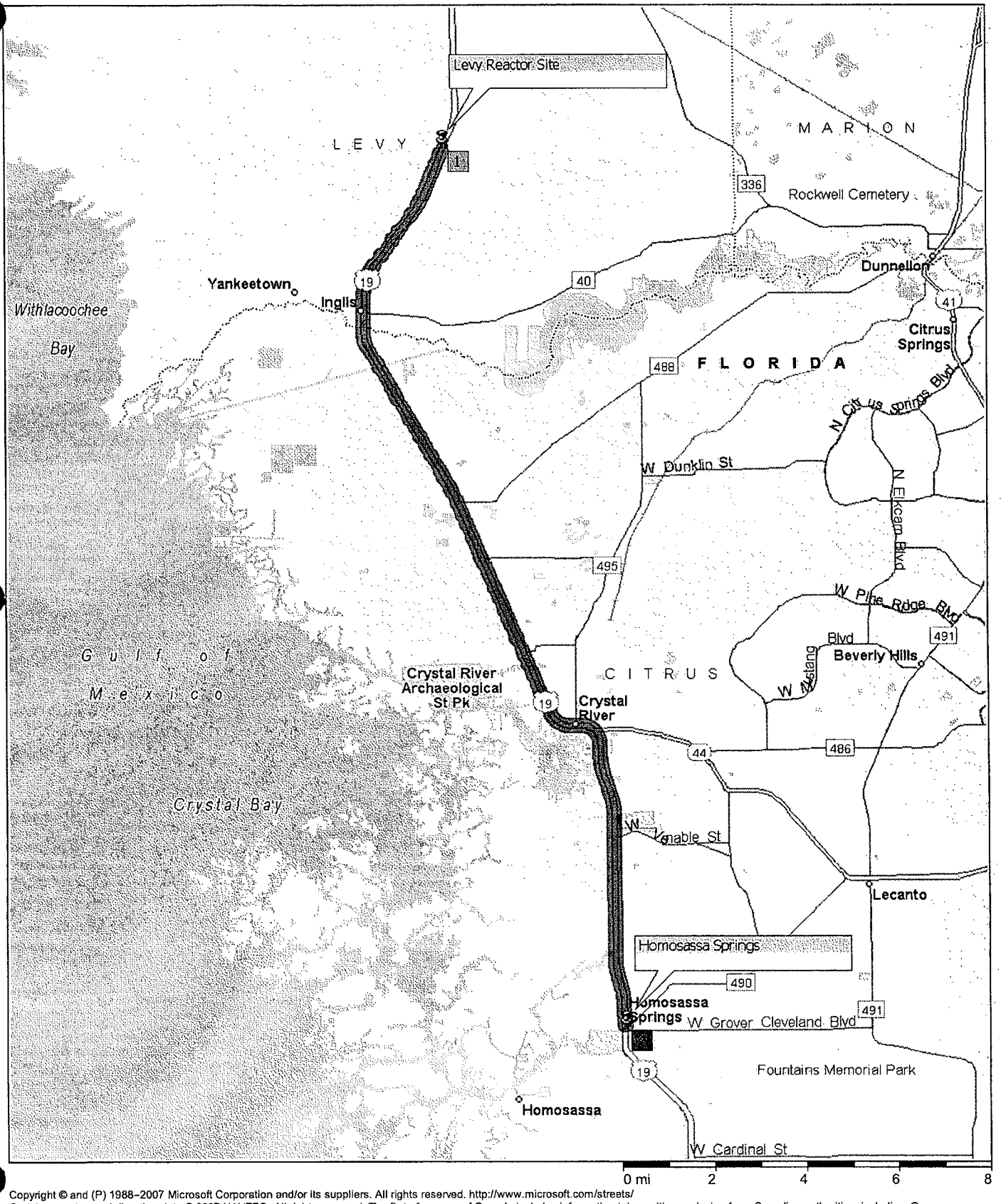
Levy Reactor Site to Sugarmill Woods

31.5 miles; 37 minutes



Levy Reactor Site to Homosassa Springs

21.4 miles; 23 minutes

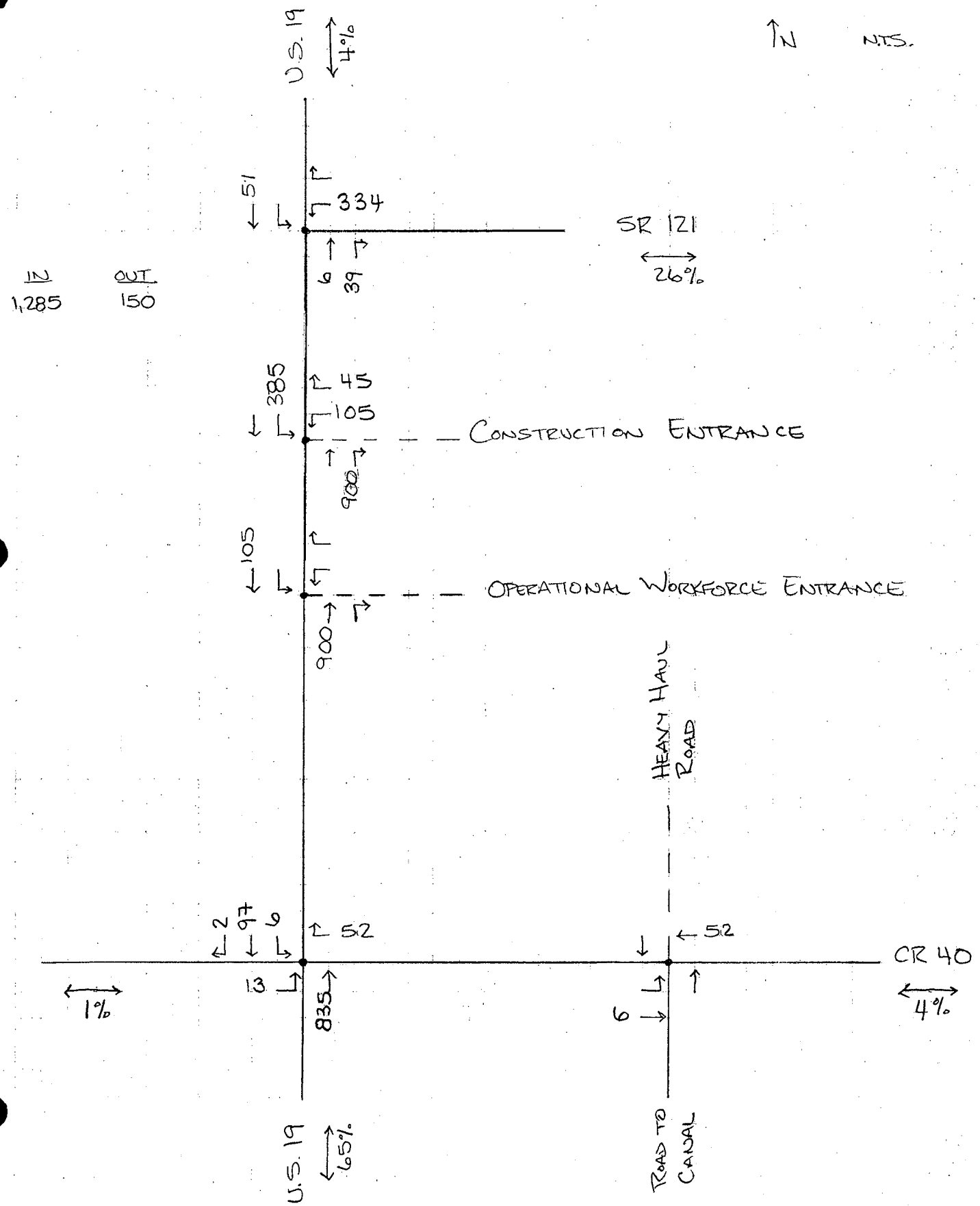


Kimley-Horn and Associates, Inc.

LEVY COUNTY — A.M. PEAK-HOUR (2015) CONSTRUCTION WORKERS — Sheet No. ____ of ____

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Job No. ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08

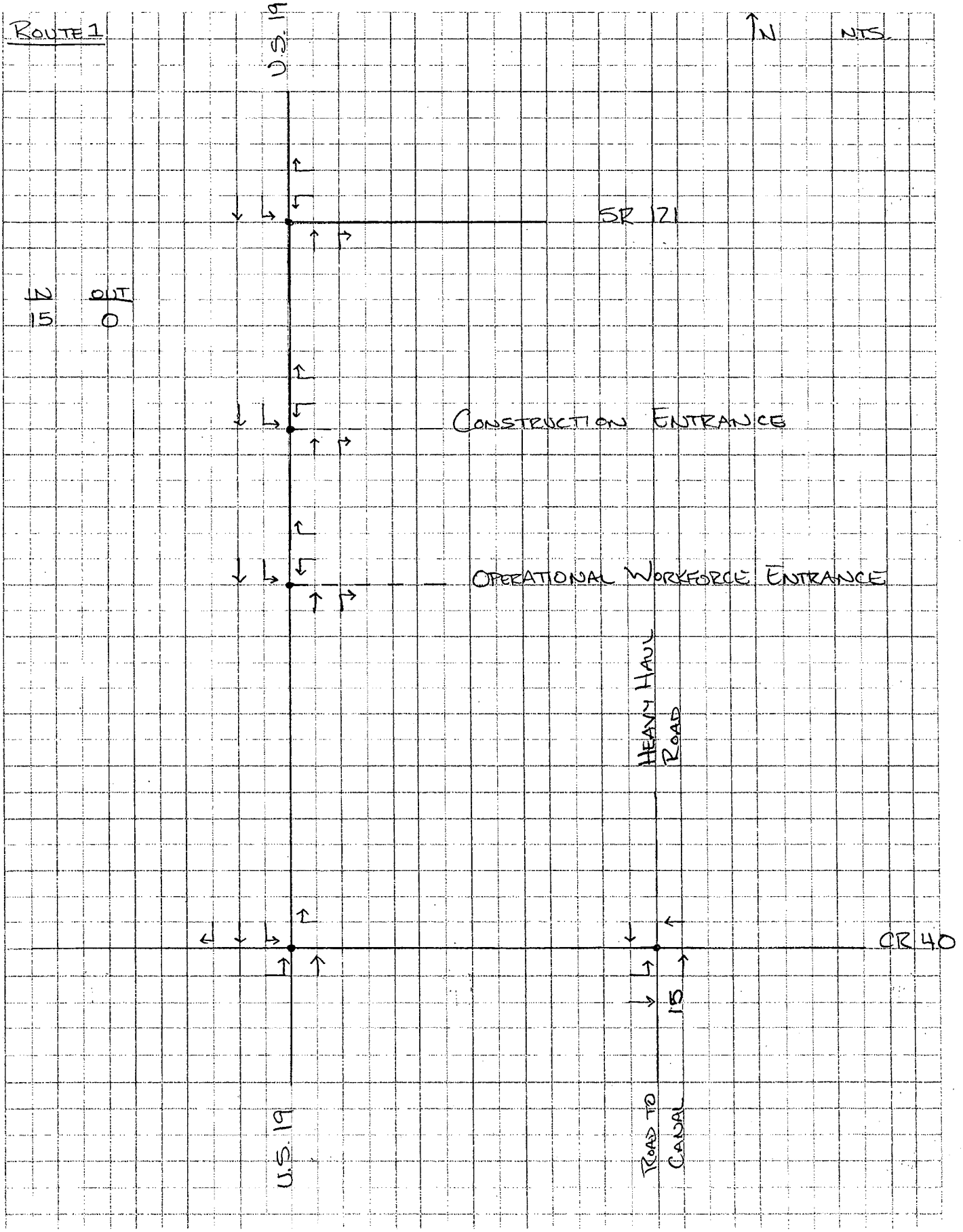


Kimley-Horn and Associates, Inc.

LEVY COUNTY — A.M. PEAK-HOUR (2015) COMMODITY DELIVERIES

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Sheet No. ____ of ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08 Job No. ____

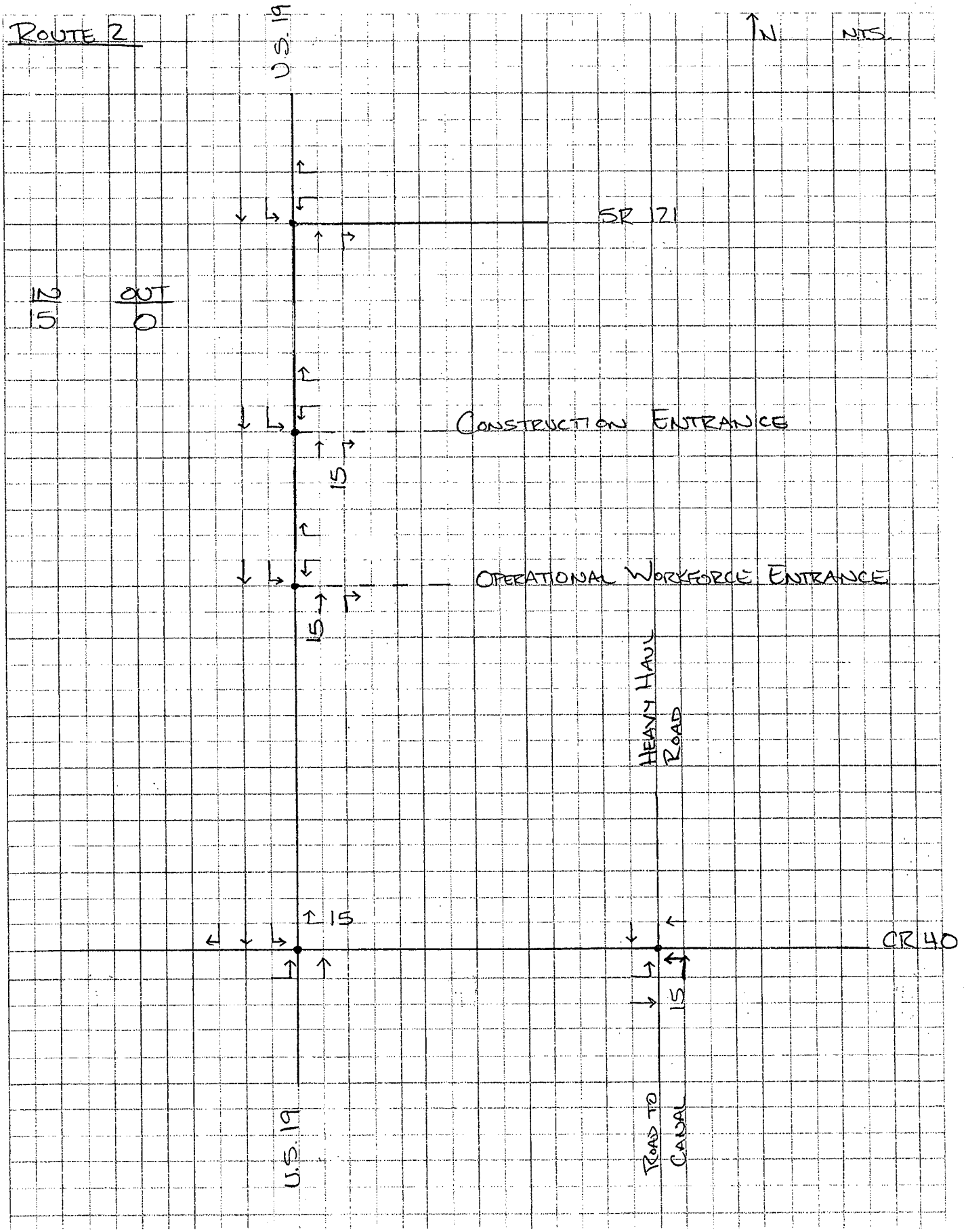


Kimley-Horn and Associates, Inc.

LEVY COUNTY — A.M. PEAK-HOUR (2015) COMMODITY DELIVERIES

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Sheet No. ____ of ____

Designed by ____ Date ____ Checked by ____ Job No. ____ Date 12/8/08

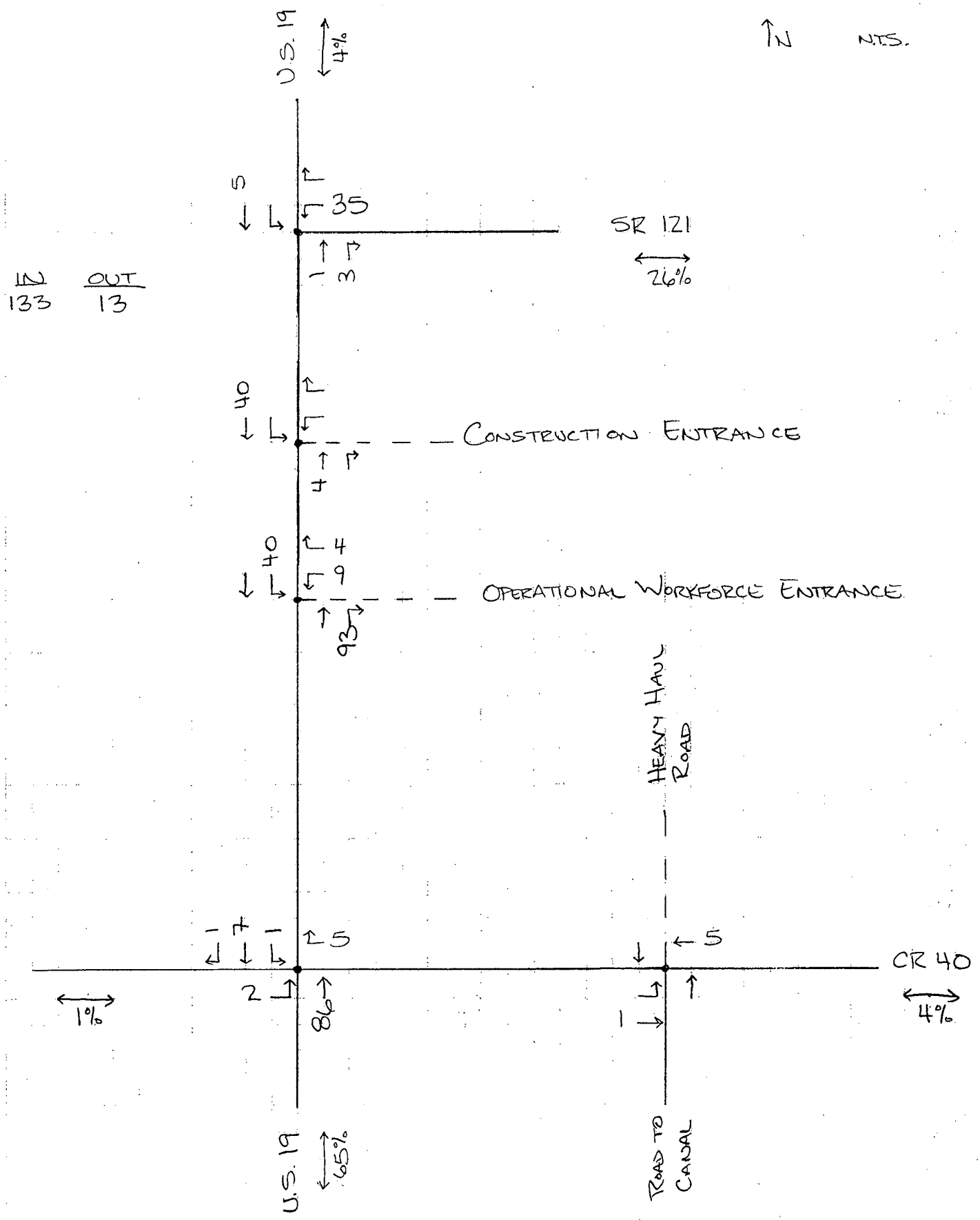


Kimley-Horn and Associates, Inc.

LEVY COUNTY — AM. PEAK-HOUR (2015) OPERATIONAL WORKERS — Sheet No. ____ of ____

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Job No. ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08

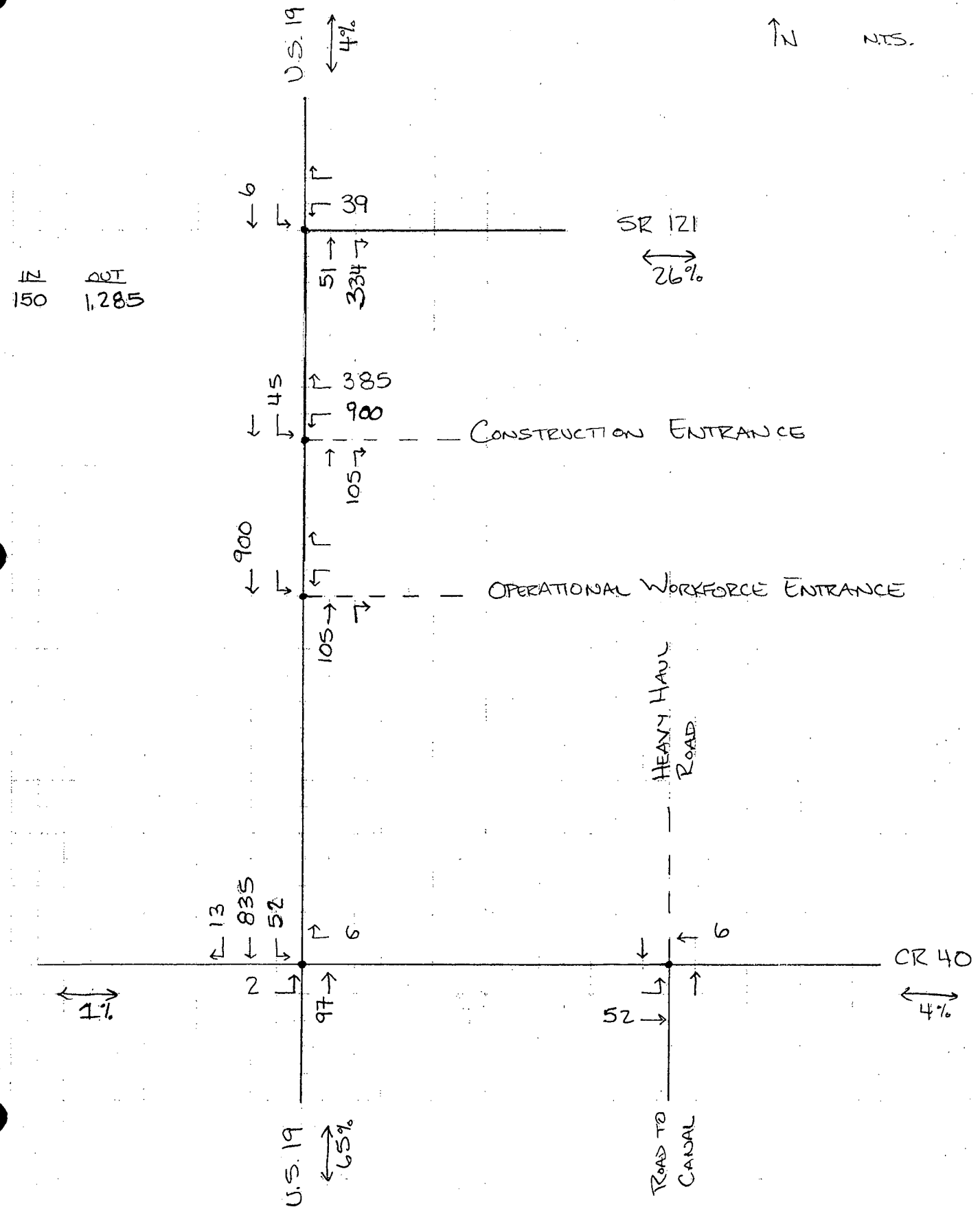


Kimley-Horn and Associates, Inc.

LEVY COUNTY — P.M. PEAK-HOUR (2015) CONSTRUCTION WORKERS

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Sheet No. ____ of ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08 Job No. ____



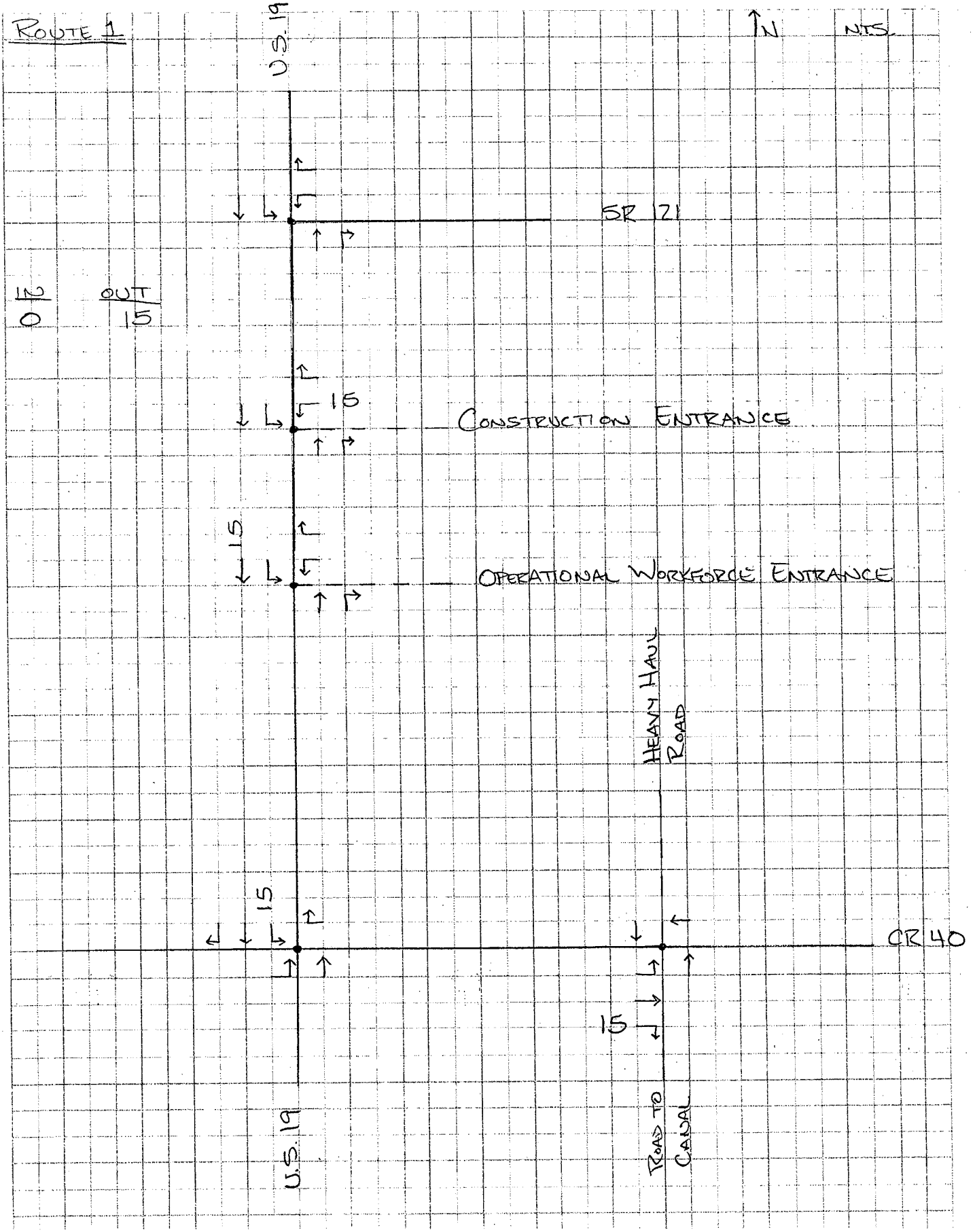
Kimley-Horn and Associates, Inc.

LEVY COUNTY — P.M. PEAK-HOUR (2015) COMMODITY DELIVERIES — Sheet No. ____ of ____

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Job No. ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08

ROUTE 1

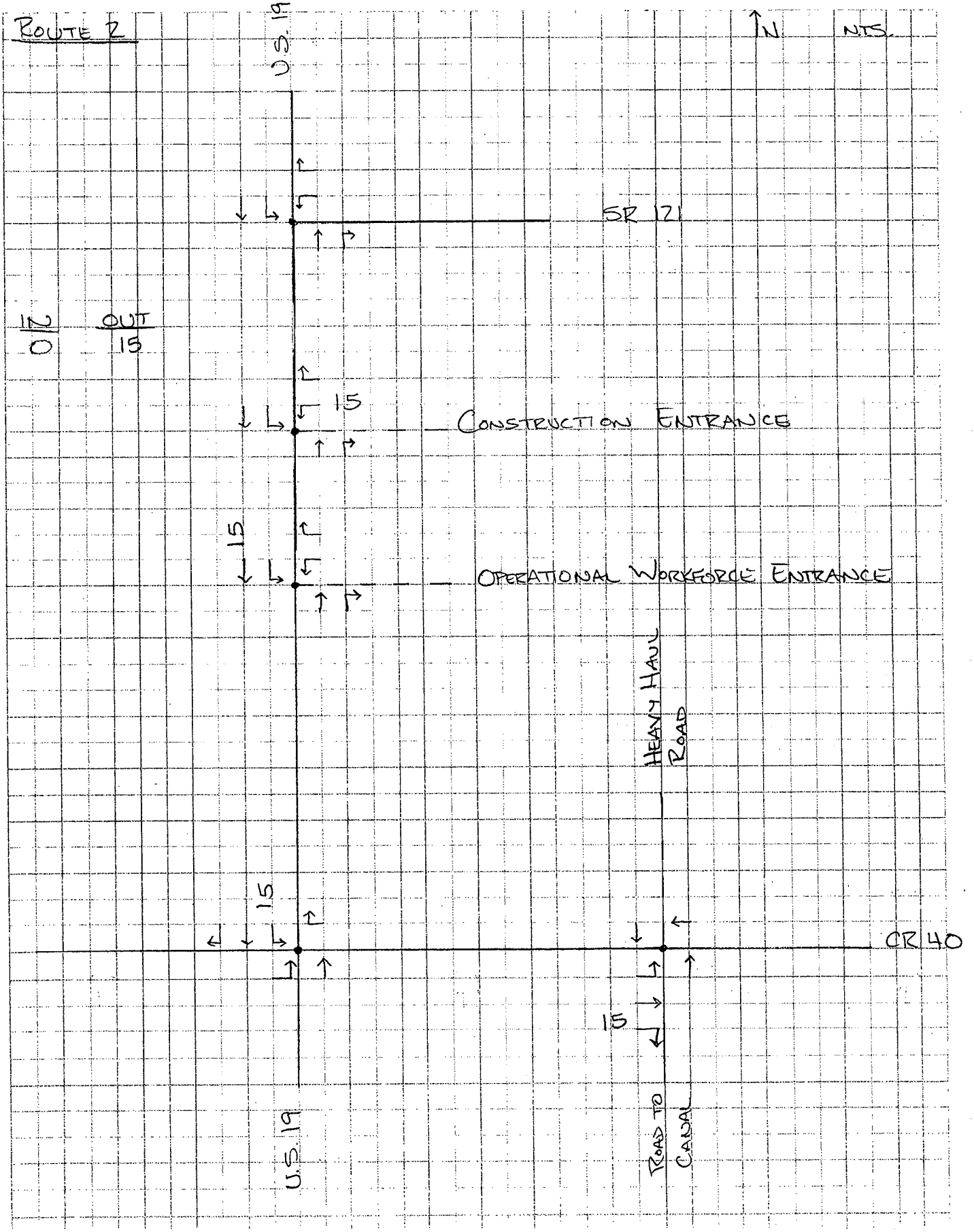


Kimley-Horn and Associates, Inc.

LEVY COUNTY — P.M PEAK-HOUR (2015) COMMODITY DELIVERIES — Sheet No. ____ of ____

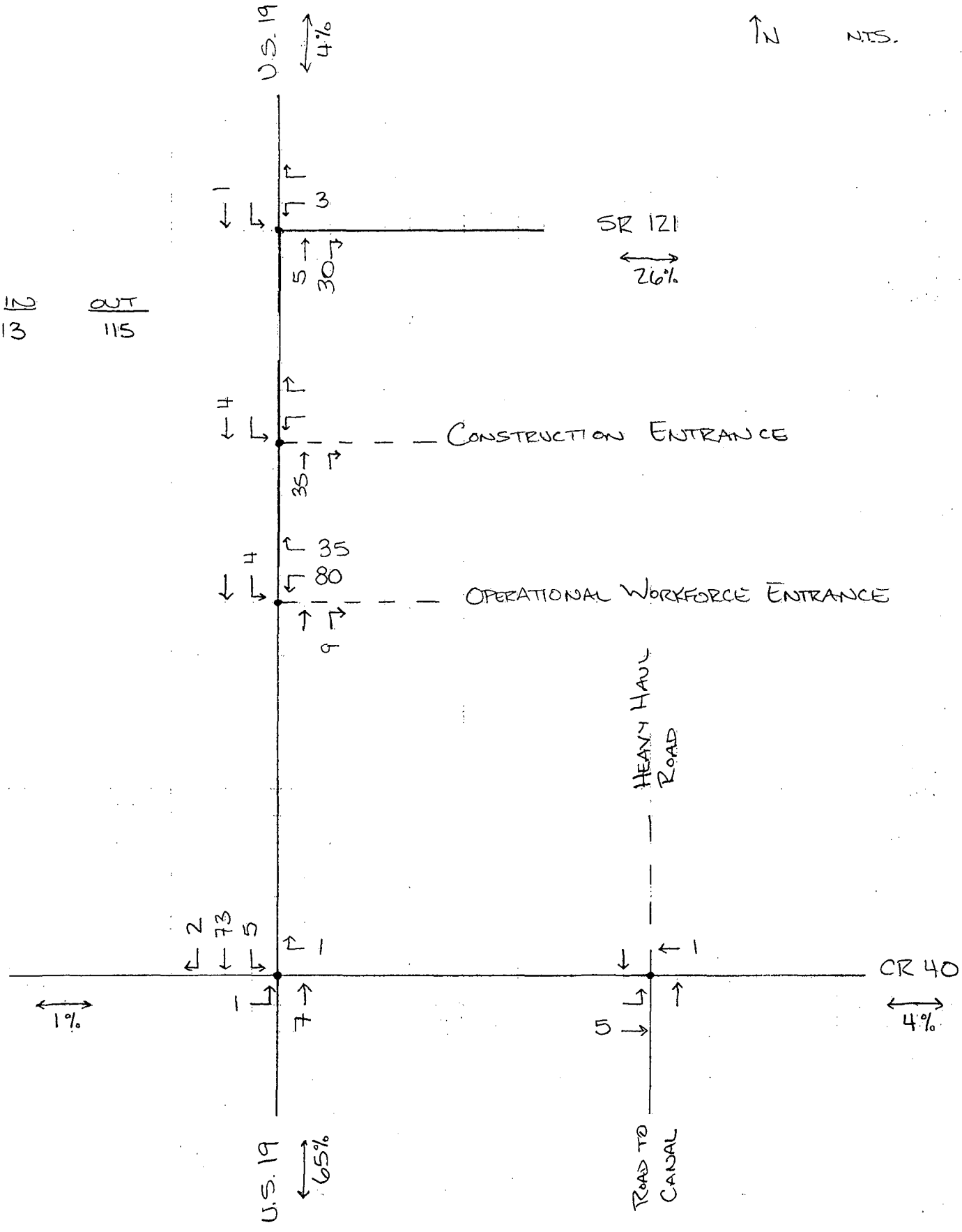
Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Job No. ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08



Kimley-Horn and Associates, Inc.

LEVY COUNTY — P.M. PEAK-HOUR (2015) OPERATIONAL WORKERS
Job ADVANCED REACTOR Subject TRIP DISTRIBUTION
Sheet No. ____ of ____
Job No. ____
Designed by ____ Date ____ Checked by ____ Date 12/8/08

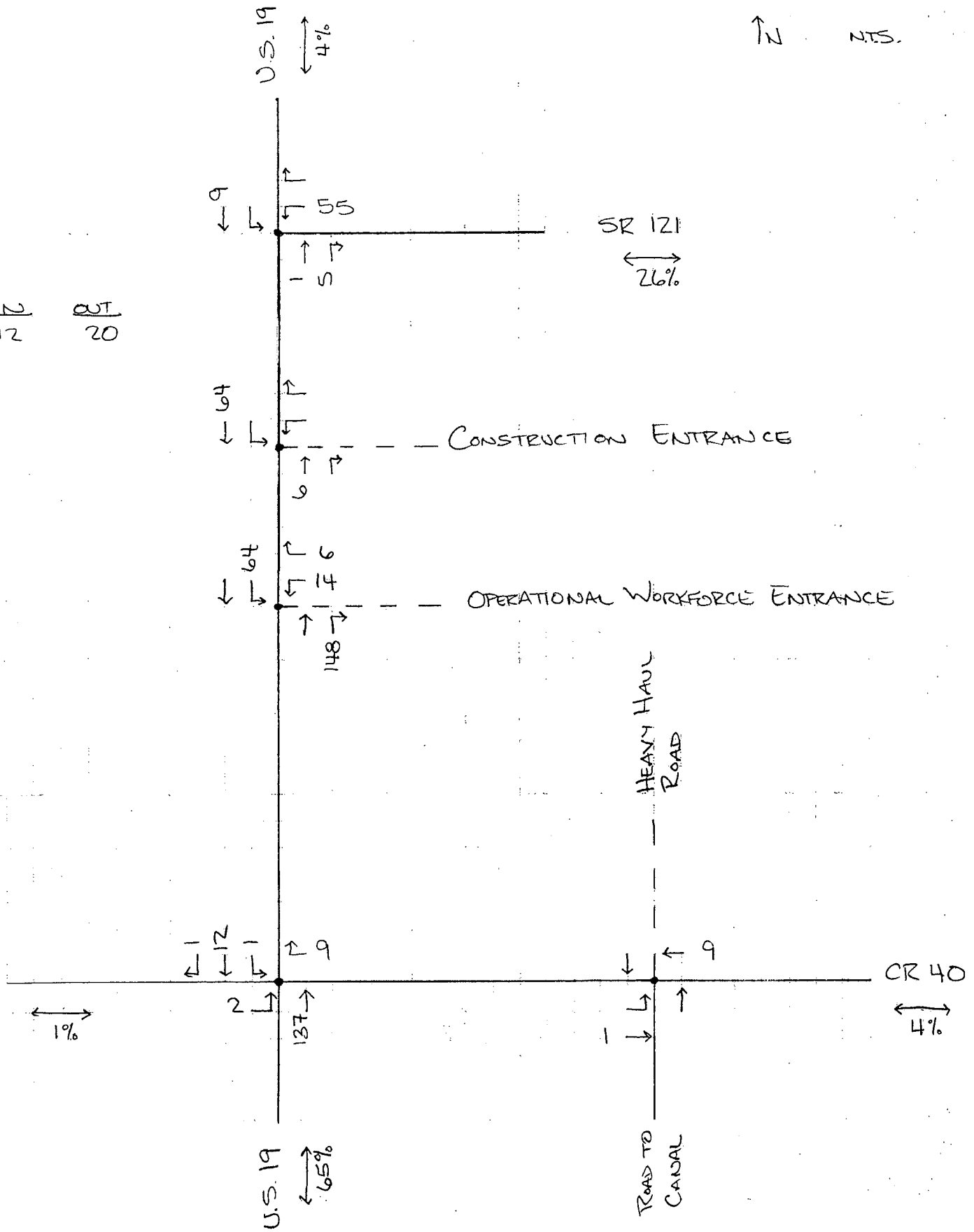


Kimley-Horn and Associates, Inc.

LEVY COUNTY — A.M. PEAK-HOUR (2017) OPERATIONAL WORKERS

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Sheet No. ____ of ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08 Job No. ____

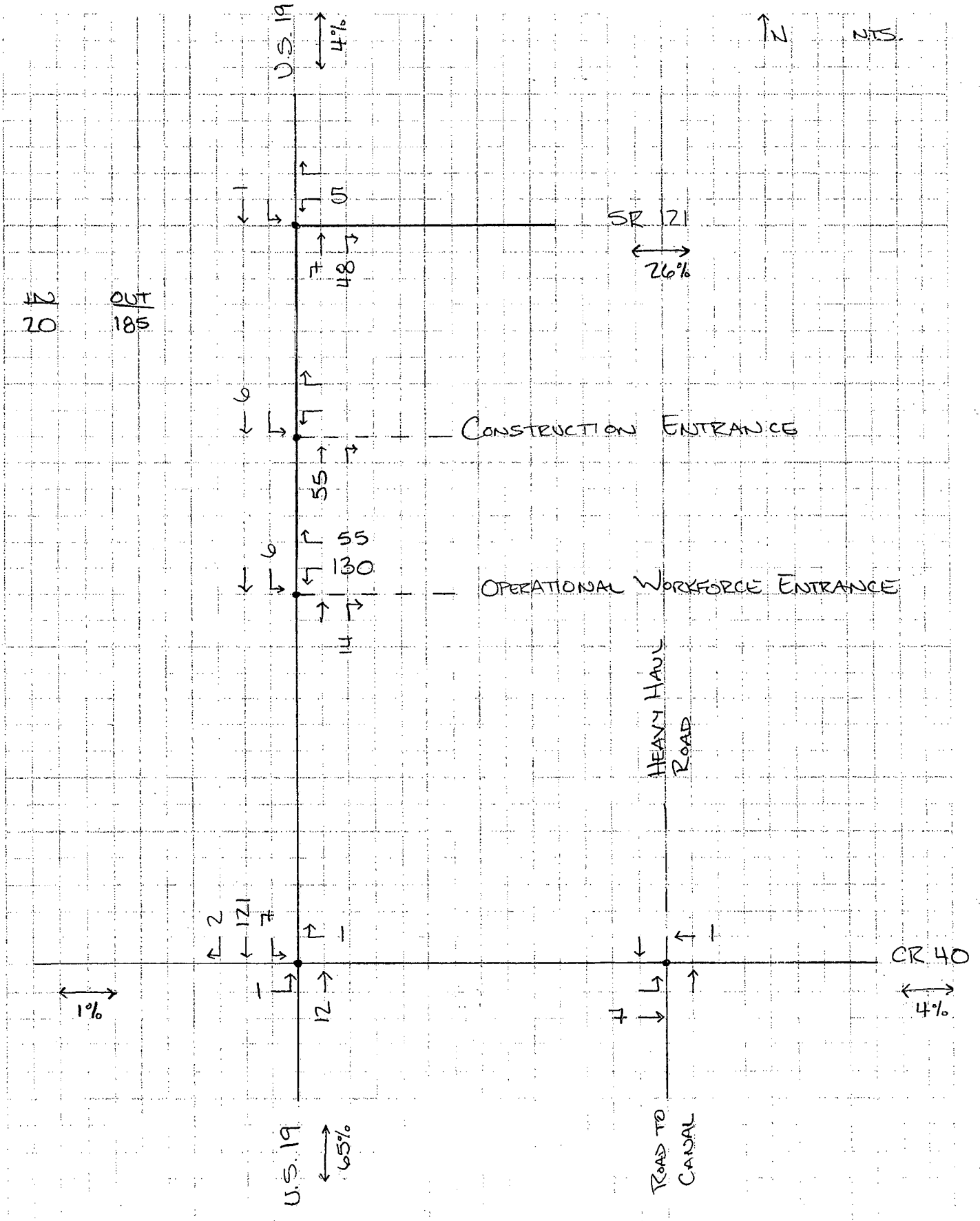


Kimley-Horn and Associates, Inc.

LEVY COUNTY — P.M. PEAK-HOUR (2017) OPERATIONAL WORKERS

Job ADVANCED REACTOR Subject TRIP DISTRIBUTION Sheet No. ____ of ____

Designed by ____ Date ____ Checked by ____ Date 12/8/08 Job No. ____



LEVY COUNTY ADVANCED NUCLEAR FACILITY

P.M. PEAK HOUR SIGNIFICANCE TEST

Scenario: Operational Workforce Traffic

Roadway	From	To	No. 2-Way Lanes	Service Volume Capacity	LOS Std	Project Traffic Volume	Project Impact	Significant (Yes/No)
US 19	CR 488	CR 40	4	2,800	B	133	4.75%	
	CR 40	Project Site	4	2,800	B	144	5.14%	Yes
	Project Site	SR 121	4	2,800	B	62	2.21%	
	SR 121	CR 326	4	2,800	B	8	0.29%	
SR 121	US 19	NW 27th Street	2	770	C	53	6.88%	Yes
	NW 27th Street	US 41	2	770	C	9	1.17%	
US 41	CR 328	SE 80th Street/NW 27th Street	2	770	C	42	5.45%	Yes
	SE 80th Street/NW 27th Street	SR 121	2	770	C	0	0.00%	
	SR 121	S.C.L. of Williston	2	770	C	6	0.78%	
	S.C.L. of Williston	SR 500	2	1,070	C	6	0.56%	
SE 80th Street/NW 27th Street	SR 121	US 41	2	1,340	D	42	3.13%	
CR 40	US 19	CR 336	2	770	C	8	1.04%	
	CR 336	US 41	2	770	C	8	1.04%	
CR 328	US 41	SR 40	2	1,340	D	42	3.13%	

APPENDIX B:
Existing Traffic Count Data

Adams Traffic, Inc.
P.O. Box 997
Plant City, FL 33564
Tel:(813) 763-7763 Fax:(813) 659-8688

Project No.: 08141

Turning Movement Count
Field Data Sheet

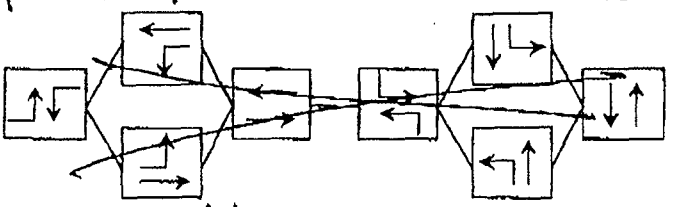
Date: 12/2/08 Count Times: 4-6pm

Major Street: US 19 Direction: N-S Speed Limit: 65 mph

Minor Street: SR 121 Direction: E-W Speed Limit: 35 mph

City/County: Levy County Weather: Clear

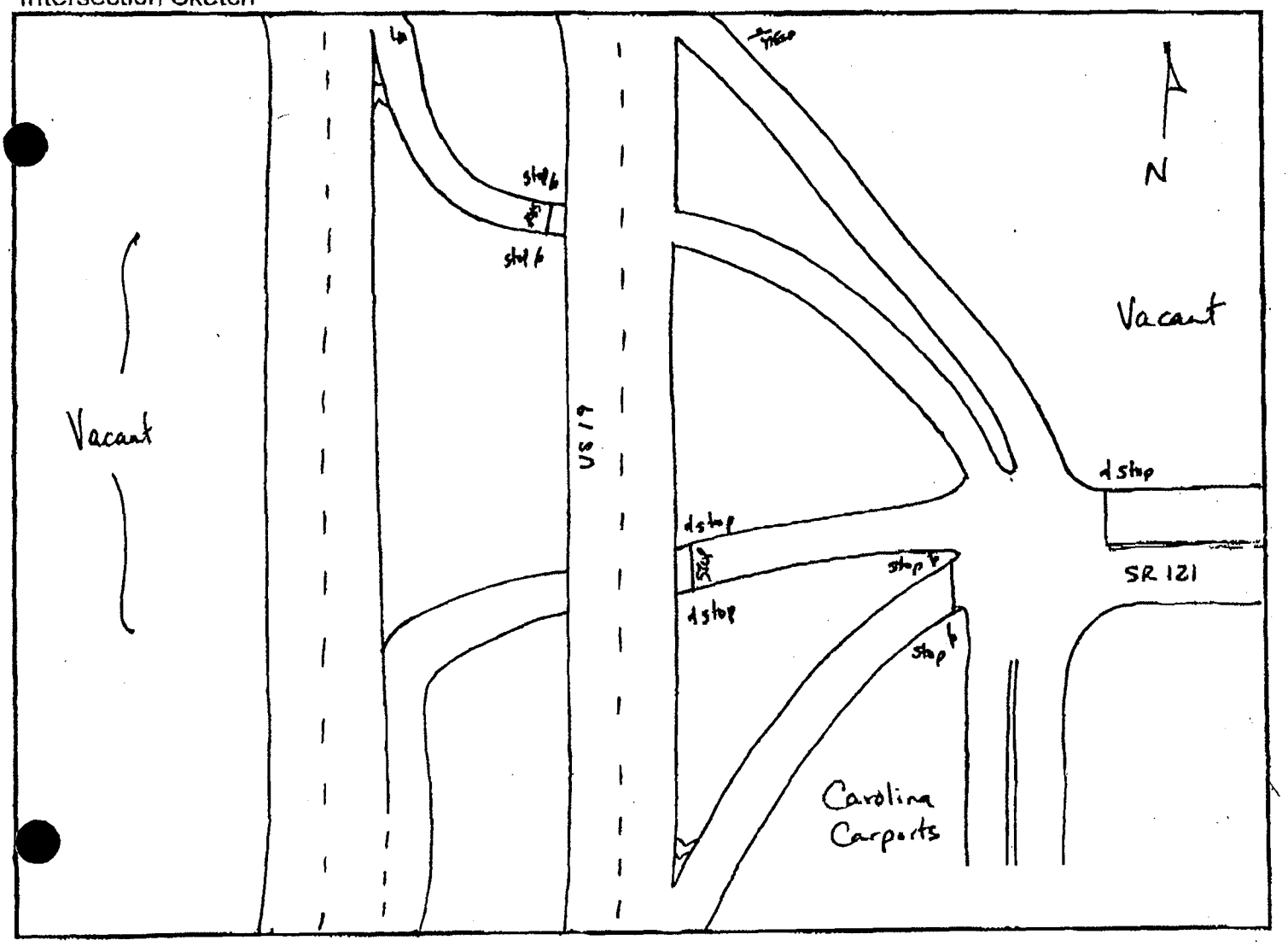
Phasing:



3 Cycles Measured:

Unsignalized

Intersection Sketch



Kimley-Horn and Associates, Inc.
10117 Princess Palm Ave, Suite 300
Tampa, FL 33610
813-620-1460

City/County: Levy County
Weather: Clear
Comments:

File Name : US19SR~1
Site Code : 00000000
Start Date : 12/2/2008
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles - U-Turns

	SR 121 Westbound				US 19 Northbound				US 19 Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	12	0	2	14	0	25	3	28	3	26	0	29	71
04:15 PM	17	0	1	18	0	23	12	35	6	44	0	50	103
04:30 PM	12	0	2	14	0	19	6	25	3	22	0	25	64
04:45 PM	16	0	1	17	0	19	12	31	4	36	0	40	88
Total	57	0	6	63	0	86	33	119	16	128	0	144	326
05:00 PM	17	0	3	20	0	17	11	28	4	26	0	30	78
05:15 PM	14	0	2	16	0	25	10	35	4	33	0	37	88
05:30 PM	15	0	1	16	0	34	8	42	4	26	0	30	88
05:45 PM	8	0	0	8	0	28	14	42	4	24	0	28	78
Total	54	0	6	60	0	104	43	147	16	109	0	125	332
Grand Total	111	0	12	123	0	190	76	266	32	237	0	269	658
Apprch %	90.2	0.0	9.8		0.0	71.4	28.6		11.9	88.1	0.0		
Total %	16.9	0.0	1.8	18.7	0.0	28.9	11.6	40.4	4.9	36.0	0.0	40.9	

	SR 121 Westbound				US 19 Northbound				US 19 Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1													
Intersection	04:45 PM												
Volume	62	0	7	69	0	95	41	136	16	121	0	137	342
Percent	89.9	0.0	10.1		0.0	69.9	30.1		11.7	88.3	0.0		
05:30 Volume	15	0	1	16	0	34	8	42	4	26	0	30	88
Peak Factor													0.972
High Int.	05:00 PM				05:30 PM				04:45 PM				
Volume	17	0	3	20	0	34	8	42	4	36	0	40	
Peak Factor				0.863				0.810				0.856	

Kimley-Horn and Associates, Inc.
10117 Princess Palm Ave, Suite 300
Tampa, FL 33610
813-620-1460

City/County: Levy County
Weather: Clear
Comments:

File Name : US19SR~1
Site Code : 00000000
Start Date : 12/2/2008
Page No : 1

Groups Printed- Heavy Vehicles

	SR 121 Westbound				US 19 Northbound				US 19 Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	0	1	0	2	0	2	0	1	0	1	4
04:15 PM	2	0	0	2	0	0	1	1	0	4	0	4	7
04:30 PM	0	0	0	0	0	1	2	3	0	1	0	1	4
04:45 PM	0	0	0	0	0	0	1	1	0	1	0	1	2
Total	3	0	0	3	0	3	4	7	0	7	0	7	17
05:00 PM	1	0	0	1	0	0	2	2	0	1	0	1	4
05:15 PM	0	0	0	0	0	1	0	1	0	3	0	3	4
05:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
05:45 PM	0	0	0	0	0	2	0	2	0	5	0	5	7
Total	1	0	0	1	0	3	2	5	0	11	0	11	17
Grand Total	4	0	0	4	0	6	6	12	0	18	0	18	34
Apprch %	100.0	0.0	0.0		0.0	50.0	50.0		0.0	100.0	0.0		
Total %	11.8	0.0	0.0	11.8	0.0	17.6	17.6	35.3	0.0	52.9	0.0	52.9	

	SR 121 Westbound				US 19 Northbound				US 19 Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1													
Intersection	04:00 PM												
Volume	3	0	0	3	0	3	4	7	0	7	0	7	17
Percent	100.0	0.0	0.0		0.0	42.9	57.1		0.0	100.0	0.0		
04:15 Volume	2	0	0	2	0	0	1	1	0	4	0	4	7
Peak Factor													0.607
High Int.	04:15 PM				04:30 PM				04:15 PM				
Volume	2	0	0	2	0	1	2	3	0	4	0	4	
Peak Factor				0.375				0.583				0.438	

HV %

NS: (11) → 4%
EW: (1) → 1%

Adams Traffic, Inc.
P.O. Box 997
Plant City, FL 33564
Tel:(813) 763-7763 Fax:(813) 659-8688

Project No.: 08141

Turning Movement Count
Field Data Sheet

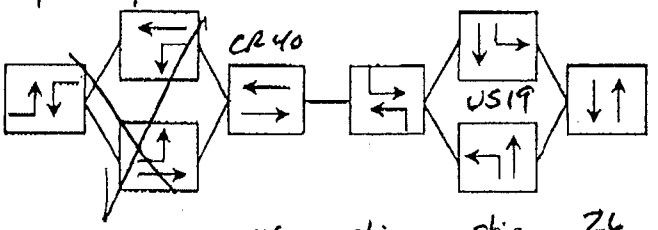
Date: 11/20/08 Count Times: 4-6pm

Major Street: US 19 Direction: N-S Speed Limit: 45 mph

Minor Street: CR 40 / Follow That Dream Pkwy Direction: E-W Speed Limit: 35 mph

City/County: Inglis / Levy Weather: Clear

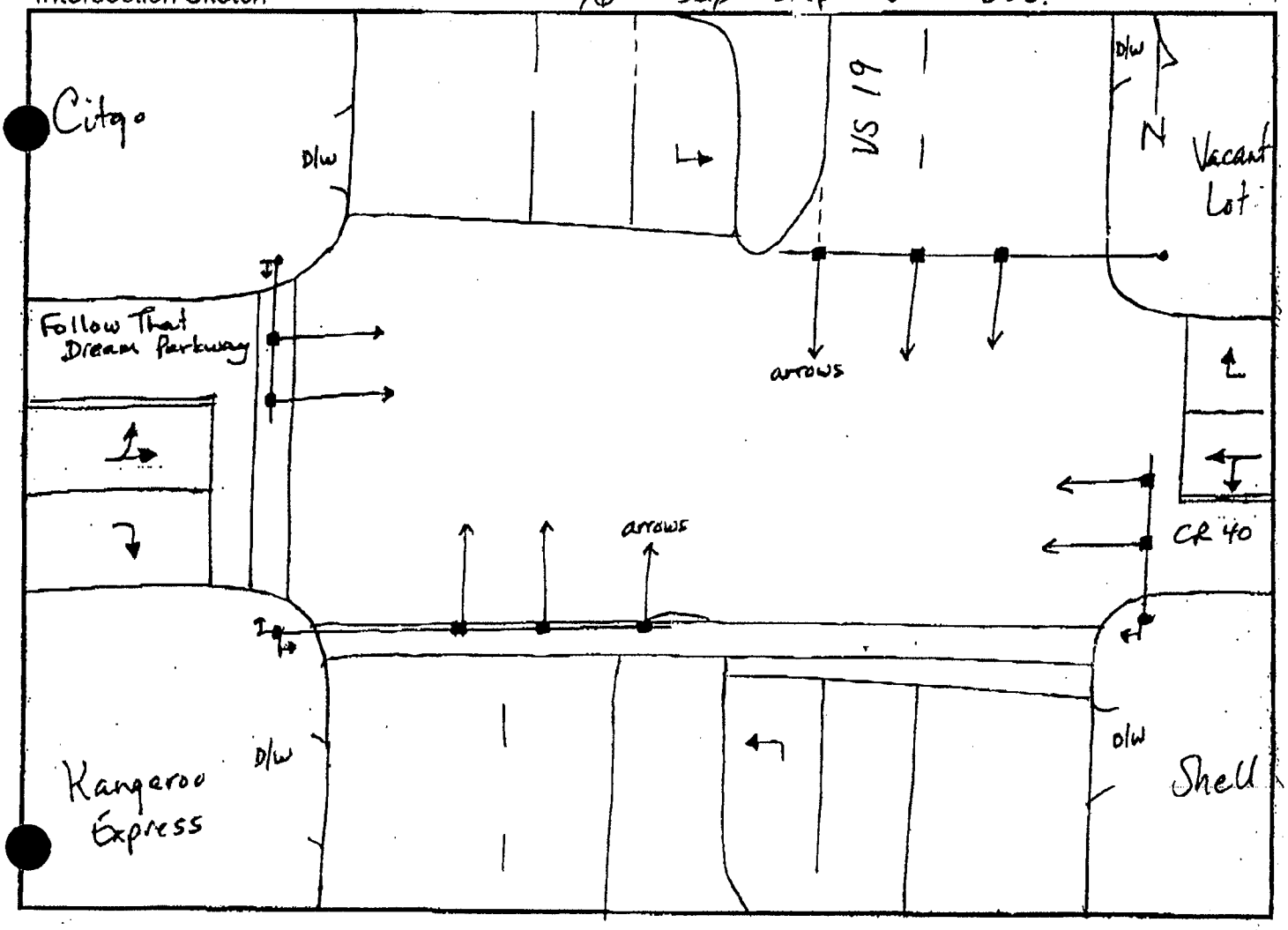
Phasing:



3 Cycles Measured:

14	skip	skip	26 - 40s.
26	19	skip	29 - 74s.
16	skip	skip	67 - 83s.

Intersection Sketch



Kimley-Horn and Associates, Inc.
10117 Princess Palm Ave, Suite 300
Tampa, FL 33610
813-620-1460

City/County: Inglis/Levy
Weather: Clear
Comments:

File Name : US19&C~1
Site Code : 00000000
Start Date : 11/20/2008
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles - U-Turns

	FOLLOW THAT DREAM PARKWAY Eastbound					CR 40 Westbound					US 19 Northbound					US 19 Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
04:00 PM	2	13	13	7	35	7	16	2	4	29	19	54	11	4	88	12	45	2	2	61	213
04:15 PM	3	12	8	4	27	15	13	8	4	40	19	49	7	4	79	8	56	3	3	70	216
04:30 PM	3	18	13	1	35	12	15	4	4	35	22	59	11	5	97	9	48	1	0	58	225
04:45 PM	3	14	12	7	36	14	10	4	6	34	13	52	11	8	84	9	45	1	1	56	210
Total	11	57	46	19	133	48	54	18	18	138	73	214	40	21	348	38	194	7	6	245	864
05:00 PM	6	14	10	5	35	16	9	10	6	41	22	43	13	7	85	11	55	1	1	68	229
05:15 PM	7	9	9	5	30	15	11	4	2	32	37	61	13	11	122	13	52	1	2	68	252
05:30 PM	4	20	11	7	42	12	19	4	5	40	27	65	15	7	114	9	42	4	1	56	252
05:45 PM	4	10	3	7	24	12	9	5	9	35	26	52	8	2	88	10	41	1	0	52	199
Total	21	53	33	24	131	55	48	23	22	148	112	221	49	27	409	43	190	7	4	244	932
Grand Total	32	110	79	43	264	103	102	41	40	286	185	435	89	48	757	81	384	14	10	489	1796
Apprch %	12.1	41.7	29.9	16.3		36.0	35.7	14.3	14.0		24.4	57.5	11.8	6.3		16.6	78.5	2.9	2.0		
Total %	1.8	6.1	4.4	2.4	14.7	5.7	5.7	2.3	2.2	15.9	10.3	24.2	5.0	2.7	42.1	4.5	21.4	0.8	0.6	27.2	

	FOLLOW THAT DREAM PARKWAY Eastbound					CR 40 Westbound					US 19 Northbound					US 19 Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	20	57	42	24	143	57	49	22	19	147	99	221	52	33	405	42	194	7	5	248	943
Percent	14.0	39.9	29.4	16.8		38.8	33.3	15.0	12.9		24.4	54.6	12.8	8.1		16.9	78.2	2.8	2.0		
05:30 Volume	4	20	11	7	42	12	19	4	5	40	27	65	15	7	114	9	42	4	1	56	252
Peak Factor																					0.936
High Int.	05:30 PM					05:00 PM					05:15 PM					05:00 PM					
Volume	4	20	11	7	42	16	9	10	6	41	37	61	13	11	122	11	55	1	1	68	
Peak Factor					0.851					0.896					0.830					0.912	

Kimley-Horn and Associates, Inc.
10117 Princess Palm Ave, Suite 300
Tampa, FL 33610
813-620-1460

City/County: Inglis/Levy
Weather: Clear
Comments:

File Name : US19&C~1
Site Code : 00000000
Start Date : 11/20/2008
Page No : 1

Groups Printed- Heavy Vehicles

	FOLLOW THAT DREAM PARKWAY Eastbound					CR 40 Westbound					US 19 Northbound					US 19 Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	3	0	0	3	10
04:15 PM	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	1	2	0	0	3	6
04:30 PM	0	1	0	0	1	0	0	0	0	0	1	5	1	0	7	0	1	0	0	1	9
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	3
Total	0	2	0	0	2	0	1	0	0	1	3	13	1	0	17	1	7	0	0	8	28
05:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	5
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	4	0	0	4	0	2	0	0	2	7
05:30 PM	1	1	0	0	2	1	0	0	0	1	0	4	2	0	6	0	2	0	0	2	11
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
Total	1	2	0	0	3	1	1	0	0	2	0	12	2	0	14	0	7	0	0	7	26
Grand Total	1	4	0	0	5	1	2	0	0	3	3	25	3	0	31	1	14	0	0	15	54
Apprch %	20.0	80.0	0.0	0.0		33.3	66.7	0.0	0.0		9.7	80.6	9.7	0.0		6.7	93.3	0.0	0.0		
Total %	1.9	7.4	0.0	0.0	9.3	1.9	3.7	0.0	0.0	5.6	5.6	46.3	5.6	0.0	57.4	1.9	25.9	0.0	0.0	27.8	

	FOLLOW THAT DREAM PARKWAY Eastbound					CR 40 Westbound					US 19 Northbound					US 19 Southbound					
Start Time	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	0	2	0	0	2	0	1	0	0	1	3	13	1	0	17	1	7	0	0	8	28
Percent	0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		17.6	76.5	5.9	0.0		12.5	87.5	0.0	0.0		
04:00 Volume	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	3	0	0	3	10
Peak Factor																					0.700
High Int.	04:30 PM					04:15 PM					04:00 PM					04:00 PM					
Volume	0	1	0	0	1	0	1	0	0	1	0	7	0	0	7	0	3	0	0	3	
Peak Factor					0.500					0.250					0.607					0.667	

HV% N/S: (20) → 3%

E/W: (6) → 2%

TABLE A-2

Roadway	Location	Count Date	Count Time	PM Peak Hour NB/EB	PM Peak Hour SB/WB	PM Peak Hour Total	FDOT Peak Season Adjustment Factor	Peak Season Peak Hour Volume NB/EB	Peak Season Peak Hour Volume SB/WB	Peak Season Peak Hour Volume Total
US 19	Between SR 336 and project access	7/22/2008	4:00 PM	182	198	380				
		7/23/2008	4:00 PM	209	194	403				
		7/24/2008	4:45 PM	210	203	413				
				200	198	398	1.10%	220	218	438
US 19	Project access and CR 40	7/22/2008	4:00 PM	189	194	383				
		7/23/2008	4:00 PM	221	201	422				
		7/24/2008	4:00 PM	222	194	416				
				211	196	407	1.10%	232	216	448
CR 40	US 19 and CR 40A	7/22/2008	4:00 PM	64	80	144				
		7/23/2008	4:00 PM	78	77	155				
		7/24/2008	4:00 PM	67	73	140				
				70	77	147	1.10%	77	85	162
CR 40	US 19 to Marion County	7/22/2008	5:00 PM	82	79	161				
		7/23/2008	4:00 PM	80	71	151				
		7/24/2008	5:00 PM	90	65	155				
				84	72	156	1.10%	92	79	171

FLORIDA DEPARTMENT OF TRANSPORTATION
2007 Annual Average Daily Traffic Report - Report Type: ALL

County: 34 LEVY

Site	Site Type	Description	Direction 1	Direction 2	AADT Two-Way	"K" Fctr	Demand K100	"D" Fctr	"T" Fctr
0039		SR 45 150' S OF CR 326	N 0	S 0	4400 C	12.52F	11.10	59.16F	5.99F

Site Type : P= Portable; T= Telemetered
AADT Flags : C= Computed; E= Manual Est; F= First Yr Est P= Prior Year; S= Second Yr Est; T= Third Yr Est; X= Unknown
"K/D" Flags : A= Actual; F= Volume Fctr Catg; D= Dist/Func. Class; P= Prior Year; S= State-wide Default; W= One-Way Road
"T" Flags : A= Actual; F= Axle Fctr Catg; D= Dist/Func. Class; P= Prior Year; S= State-wide Default; X= Cross-Reference

County: 34
Station: 0039
Description: SR 45 150' S OF CR 326
Start Date: 08/07/2007
Start Time: 0000

Direction: B

Time	1st	2nd	3rd	4th	Total
0000	10	5	5	4	24
0100	2	2	1	3	8
0200	2	2	2	4	10
0300	6	1	5	10	22
0400	8	9	14	10	41
0500	21	19	50	55	145
0600	71	70	68	72	281
0700	77	76	77	67	297
0800	69	51	70	61	251
0900	59	60	57	55	231
1000	55	70	60	69	254
1100	62	71	64	77	274
1200	75	57	66	74	272
1300	73	72	57	53	255
1400	83	73	76	54	286
1500	71	87	89	100	347
1600	86	99	80	75	340
1700	91	81	67	69	308
1800	77	64	43	61	245
1900	45	41	49	48	183
2000	35	33	35	28	131
2100	30	18	23	19	90
2200	13	9	15	9	46
2300	11	6	11	8	36
24-Hour Totals:					4377

Peak Volume Information

	Hour	Volume
A.M.	0645	302
P.M.	1530	374
Daily	1530	374

County: 34
Station: 0039
Description: SR 45 150' S OF CR 326
Start Date: 08/08/2007
Start Time: 0000

Direction: B

Time	1st	2nd	3rd	4th	Total
0000	9	5	4	2	20
0100	1	4	0	5	10
0200	5	2	2	5	14
0300	3	2	2	12	19
0400	8	8	12	16	44
0500	19	38	31	56	144
0600	64	51	63	71	249
0700	66	68	98	61	293
0800	80	75	67	66	288
0900	51	47	58	60	216
1000	65	61	68	61	255
1100	78	67	59	55	259
1200	70	65	65	79	279
1300	76	54	69	57	256
1400	79	73	66	83	301
1500	55	76	82	93	306
1600	99	89	91	82	361
1700	70	96	90	102	358
1800	59	63	57	50	229
1900	46	49	40	34	169
2000	46	47	38	39	170
2100	29	26	24	22	101
2200	20	22	13	12	67
2300	15	4	5	5	29
24-Hour Totals:					4437

Peak Volume Information

	Hour	Volume
A.M.	0730	314
P.M.	1545	372
Daily	1545	372

APPENDIX C:
Existing and Future Traffic Volume Worksheets

2007 Weekly Axle Factor Category Report - Report Type: ALL

County: 34 - LEVY

Week	Dates	3401 US27A	3402 SR121, SR55 - SR45	3403 SR45/US41	3404 SR55, CR347 - SR500
1	01/01/2007 - 01/06/2007	0.94	0.95	0.95	0.96
2	01/07/2007 - 01/13/2007	0.93	0.95	0.95	0.96
3	01/14/2007 - 01/20/2007	0.92	0.95	0.95	0.96
4	01/21/2007 - 01/27/2007	0.92	0.95	0.95	0.96
5	01/28/2007 - 02/03/2007	0.92	0.95	0.95	0.96
6	02/04/2007 - 02/10/2007	0.92	0.95	0.95	0.96
7	02/11/2007 - 02/17/2007	0.92	0.95	0.95	0.96
8	02/18/2007 - 02/24/2007	0.92	0.95	0.95	0.96
9	02/25/2007 - 03/03/2007	0.92	0.95	0.95	0.96
10	03/04/2007 - 03/10/2007	0.92	0.95	0.95	0.96
11	03/11/2007 - 03/17/2007	0.91	0.95	0.95	0.96
12	03/18/2007 - 03/24/2007	0.92	0.95	0.95	0.96
13	03/25/2007 - 03/31/2007	0.92	0.95	0.95	0.96
14	04/01/2007 - 04/07/2007	0.92	0.95	0.95	0.96
15	04/08/2007 - 04/14/2007	0.92	0.95	0.95	0.96
16	04/15/2007 - 04/21/2007	0.92	0.95	0.95	0.96
17	04/22/2007 - 04/28/2007	0.92	0.95	0.95	0.96
18	04/29/2007 - 05/05/2007	0.92	0.95	0.95	0.96
19	05/06/2007 - 05/12/2007	0.92	0.95	0.95	0.96
20	05/13/2007 - 05/19/2007	0.91	0.95	0.95	0.96
21	05/20/2007 - 05/26/2007	0.91	0.95	0.95	0.96
22	05/27/2007 - 06/02/2007	0.91	0.95	0.95	0.96
23	06/03/2007 - 06/09/2007	0.91	0.95	0.95	0.96
24	06/10/2007 - 06/16/2007	0.91	0.95	0.95	0.96
25	06/17/2007 - 06/23/2007	0.92	0.95	0.95	0.96
26	06/24/2007 - 06/30/2007	0.92	0.95	0.95	0.96
27	07/01/2007 - 07/07/2007	0.92	0.95	0.95	0.96
28	07/08/2007 - 07/14/2007	0.92	0.95	0.95	0.96
29	07/15/2007 - 07/21/2007	0.92	0.95	0.95	0.96
30	07/22/2007 - 07/28/2007	0.92	0.95	0.95	0.96
31	07/29/2007 - 08/04/2007	0.92	0.95	0.95	0.96
32	08/05/2007 - 08/11/2007	0.92	0.95	0.95	0.96
33	08/12/2007 - 08/18/2007	0.93	0.95	0.95	0.96
34	08/19/2007 - 08/25/2007	0.93	0.95	0.95	0.96
35	08/26/2007 - 09/01/2007	0.93	0.95	0.95	0.96
36	09/02/2007 - 09/08/2007	0.93	0.95	0.95	0.96
37	09/09/2007 - 09/15/2007	0.93	0.95	0.95	0.96
38	09/16/2007 - 09/22/2007	0.93	0.95	0.95	0.96
39	09/23/2007 - 09/29/2007	0.93	0.95	0.95	0.96
40	09/30/2007 - 10/06/2007	0.93	0.95	0.95	0.96
41	10/07/2007 - 10/13/2007	0.93	0.95	0.95	0.96
42	10/14/2007 - 10/20/2007	0.93	0.95	0.95	0.96
43	10/21/2007 - 10/27/2007	0.93	0.95	0.95	0.96
44	10/28/2007 - 11/03/2007	0.93	0.95	0.95	0.96
45	11/04/2007 - 11/10/2007	0.93	0.95	0.95	0.96
46	11/11/2007 - 11/17/2007	0.93	0.95	0.95	0.96
47	11/18/2007 - 11/24/2007	0.93	0.95	0.95	0.96
48	11/25/2007 - 12/01/2007	0.93	0.95	0.95	0.96
49	12/02/2007 - 12/08/2007	0.93	0.95	0.95	0.96
50	12/09/2007 - 12/15/2007	0.94	0.95	0.95	0.96
51	12/16/2007 - 12/22/2007	0.93	0.95	0.95	0.96
52	12/23/2007 - 12/29/2007	0.92	0.95	0.95	0.96
53	12/30/2007 - 12/31/2007	0.92	0.95	0.95	0.96

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: U.S. 19 & Construction Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								180			132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								79			92	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								30			22	
2015 NON-PROJECT TRAFFIC								289			246	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				105		45		4	900	385	40	
TOTAL PROJECT TRAFFIC					105		45		4	900	385	40	
2015 TOTAL TRAFFIC					105		45		293	900	385	286	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: U.S. 19 & Operations Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								180			132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								79			92	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								30			22	
2015 NON-PROJECT TRAFFIC								289			246	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				9		4		900	93	40	105	
TOTAL PROJECT TRAFFIC					9		4		900	93	40	105	
2015 TOTAL TRAFFIC					9		4		1,189	93	40	351	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: CR 40 & Heavy Haul Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS		56			53							

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC		0			0							
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH		9			9							
2015 NON-PROJECT TRAFFIC		65			62							

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New		7			57			15				
TOTAL PROJECT TRAFFIC			7			57			15				
2015 TOTAL TRAFFIC			72			119			15				

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: U.S. 19 & SR 121
COUNT DATE: December 2, 2008
TIME PERIOD: 4:45 p.m. - 5:45 p.m.
PEAK HOUR FACTOR: 0.97

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements				62		7		95	41	16	121	
Peak Season Correction Factor	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090
2008 EXISTING CONDITIONS				68		8		104	45	17	132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC				0		0		15	0	0	9	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH				11		1		17	7	3	22	
2015 NON-PROJECT TRAFFIC				79		9		136	52	20	163	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				42				56	364		7	
TOTAL PROJECT TRAFFIC					42		0		56	364	0	7	
2015 TOTAL TRAFFIC					121		9		192	416	20	170	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: U.S. 19 & CR 40
COUNT DATE: November 20, 2008
TIME PERIOD: 4:45 p.m. - 5:45 p.m.
PEAK HOUR FACTOR: 0.94

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	20	57	66	57	49	41	99	221	85	42	194	12
Peak Season Correction Factor	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070
2008 EXISTING CONDITIONS	21	61	71	61	52	44	106	236	91	45	208	13

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC	0	0	0	0	0	0	0	35	0	0	59	0
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH	3	10	12	10	9	7	17	39	15	7	34	2
2015 NON-PROJECT TRAFFIC	24	71	83	71	61	51	123	310	106	52	301	15

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New	3					7		104		72	908	15
TOTAL PROJECT TRAFFIC		3	0	0	0	0	7	0	104	0	72	908	15
2015 TOTAL TRAFFIC		27	71	83	71	61	58	123	414	106	124	1,209	30

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: U.S. 19 & Construction Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								216			232	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								35			59	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								36			38	
2015 NON-PROJECT TRAFFIC								287			329	

"PROJECT TRAFFIC" LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project Trips	Pass - By												
	Net New				900		385		35	105	45	4	
TOTAL PROJECT TRAFFIC					900		385		35	105	45	4	
2015 TOTAL TRAFFIC					900		385		322	105	45	333	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: U.S. 19 & Operations Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								216			232	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								35			59	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								36			38	
2015 NON-PROJECT TRAFFIC								287			329	

"PROJECT TRAFFIC"													
LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project Trips	Pass - By												
	Net New				80		35		105	9	4	900	
TOTAL PROJECT TRAFFIC					80		35		105	9	4	900	
2015 TOTAL TRAFFIC					80		35		392	9	4	1,229	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 1)

INTERSECTION: CR 40 & Heavy Haul Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS		77			85							

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC		0			0							
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH		13			14							
2015 NON-PROJECT TRAFFIC		90			99							

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New		57	15		7							
TOTAL PROJECT TRAFFIC			57	15		7							
2015 TOTAL TRAFFIC			147	15		106							

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: U.S. 19 & Construction Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								180			132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								79			92	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								30			22	
2015 NON-PROJECT TRAFFIC								289			246	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				105		45		4	900	385	40	
TOTAL PROJECT TRAFFIC					105		45		4	900	385	40	
2015 TOTAL TRAFFIC					105		45		293	900	385	286	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: U.S. 19 & Operations Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								180			132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								79			92	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								30			22	
2015 NON-PROJECT TRAFFIC								289			246	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				9		4		900	93	40	105	
TOTAL PROJECT TRAFFIC					9		4		900	93	40	105	
2015 TOTAL TRAFFIC					9		4		1,189	93	40	351	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: CR 40 & Heavy Haul Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS		56			53							

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC		0			0							
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH		9			9							
2015 NON-PROJECT TRAFFIC		65			62							

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New		7			57		15					
TOTAL PROJECT TRAFFIC			7			57		15					
2015 TOTAL TRAFFIC			72			119		15					

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: U.S. 19 & SR 121
COUNT DATE: December 2, 2008
TIME PERIOD: 4:45 p.m. - 5:45 p.m.
PEAK HOUR FACTOR: 0.97

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements				62		7		95	41	16	121	
Peak Season Correction Factor	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090
2008 EXISTING CONDITIONS				68		8		104	45	17	132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC				0		0		15	0	0	9	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH				11		1		17	7	3	22	
2015 NON-PROJECT TRAFFIC				79		9		136	52	20	163	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				42				56	364		7	
TOTAL PROJECT TRAFFIC					42		0		56	364	0	7	
2015 TOTAL TRAFFIC					121		9		192	416	20	170	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: U.S. 19 & CR 40
COUNT DATE: November 20, 2008
TIME PERIOD: 4:45 p.m. - 5:45 p.m.
PEAK HOUR FACTOR: 0.94

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	20	57	66	57	49	41	99	221	85	42	194	12
Peak Season Correction Factor	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070
2008 EXISTING CONDITIONS	21	61	71	61	52	44	106	236	91	45	208	13

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC	0	0	0	0	0	0	0	35	0	0	59	0
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH	3	10	12	10	9	7	17	39	15	7	34	2
2015 NON-PROJECT TRAFFIC	24	71	83	71	61	51	123	310	106	52	301	15

"PROJECT TRAFFIC" LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New	3					7		104		72	908	15
TOTAL PROJECT TRAFFIC		3	0	0	0	0	7	0	104	0	72	908	15
2015 TOTAL TRAFFIC		27	71	83	71	61	58	123	414	106	124	1,209	30

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: U.S. 19 & Construction Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								216			232	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								35			59	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								36			38	
2015 NON-PROJECT TRAFFIC								287			329	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				900		385		35	105	45	4	
TOTAL PROJECT TRAFFIC					900		385		35	105	45	4	
2015 TOTAL TRAFFIC					900		385		322	105	45	333	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: U.S. 19 & Operations Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								216			232	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								35			59	
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								36			38	
2015 NON-PROJECT TRAFFIC								287			329	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				80		35		105	9	4	900	
TOTAL PROJECT TRAFFIC					80		35		105	9	4	900	
2015 TOTAL TRAFFIC					80		35		392	9	4	1,229	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Construction Traffic, Heavy Haul Route 2)

INTERSECTION: CR 40 & Heavy Haul Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS		77			85							

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC		0			0							
Years To Buildout	7	7	7	7	7	7	7	7	7	7	7	7
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH		13			14							
2015 NON-PROJECT TRAFFIC		90			99							

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New		57	15		7							
TOTAL PROJECT TRAFFIC			57	15		7							
2015 TOTAL TRAFFIC			147	15		106							

TRAFFIC VOLUMES AT STUDY INTERSECTION
(A.M. Peak-Hour, Peak Operations Traffic)

INTERSECTION: U.S. 19 & Operations Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								180			132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								79			92	
Years To Buildout	9	9	9	9	9	9	9	9	9	9	9	9
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								39			29	
2017 NON-PROJECT TRAFFIC								298			253	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				14		6			148	64		
TOTAL PROJECT TRAFFIC					14		6		0	148	64	0	
2017 TOTAL TRAFFIC					14		6		298	148	64	253	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Operations Traffic)

INTERSECTION: U.S. 19 & SR 121
COUNT DATE: December 2, 2008
TIME PERIOD: 4:45 p.m. - 5:45 p.m.
PEAK HOUR FACTOR: 0.97

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements				62		7		95	41	16	121	
Peak Season Correction Factor	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090	1.090
2008 EXISTING CONDITIONS				68		8		104	45	17	132	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC				0		0		15	0	0	9	
Years To Buildout	9	9	9	9	9	9	9	9	9	9	9	9
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH				15		2		23	10	4	29	
2017 NON-PROJECT TRAFFIC				83		10		142	55	21	170	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				5				7	48		1	
TOTAL PROJECT TRAFFIC					5		0		7	48	0	1	
2017 TOTAL TRAFFIC					88		10		149	103	21	171	

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Operations Traffic)

INTERSECTION: U.S. 19 & CR 40
COUNT DATE: November 20, 2008
TIME PERIOD: 4:45 p.m. - 5:45 p.m.
PEAK HOUR FACTOR: 0.94

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Raw Turning Movements	20	57	66	57	49	41	99	221	85	42	194	12
Peak Season Correction Factor	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070	1.070
2008 EXISTING CONDITIONS	21	61	71	61	52	44	106	236	91	45	208	13

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC	0	0	0	0	0	0	0	35	0	0	59	0
Years To Buildout	9	9	9	9	9	9	9	9	9	9	9	9
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH	5	13	15	13	11	10	23	51	20	10	45	3
2017 NON-PROJECT TRAFFIC	26	74	86	74	63	54	129	322	111	55	312	16

"PROJECT TRAFFIC" LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New	1					1		12		7	121	2
TOTAL PROJECT TRAFFIC		1	0	0	0	0	1	0	12	0	7	121	2
2017 TOTAL TRAFFIC		27	74	86	74	63	55	129	334	111	62	433	18

TRAFFIC VOLUMES AT STUDY INTERSECTION
(P.M. Peak-Hour, Peak Operations Traffic)

INTERSECTION: U.S. 19 & Operations Driveway
PEAK HOUR FACTOR: 0.95

"EXISTING TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
2008 EXISTING CONDITIONS								216			232	

"BACKGROUND TRAFFIC"	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
TOTAL "VESTED" TRAFFIC								35			59	
Years To Buildout	9	9	9	9	9	9	9	9	9	9	9	9
Yearly Growth Rate	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
BACKGROUND TRAFFIC GROWTH								47			50	
2017 NON-PROJECT TRAFFIC								298			341	

"PROJECT TRAFFIC"

LAND USE	TYPE	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Project	Pass - By												
Trips	Net New				130		55			14	6		
TOTAL PROJECT TRAFFIC					130		55		0	14	6	0	
2017 TOTAL TRAFFIC					130		55		298	14	6	341	

ROADWAY PEAK-HOUR CALCULATIONS

Station # 0039

US 41 => South of CR 326

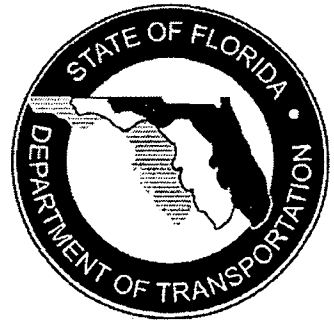
			Maximum Values		PHF	PSCF	Weekly Axle Factor
Number of Count Days:	2		370		0.93	1.11	0.95

Day 1 TWO-WAY	Day 2 TWO-WAY	Time of Day	Existing Peak-Season Avg. TWO-WAY	15-Min Two-Way	Hourly TWO-WAY		Growth Rate	2015 Background Hourly TWO-WAY	2017 Background Hourly TWO-WAY
86	99	4:00	98	98	370	400-500 pm	2.80%	449	474
99	89	4:15	99	99	357				
80	91	4:30	90	90	351				
75	82	4:45	83	83	344				
91	70	5:00	85	85	351				
81	96	5:15	93	93					
67	90	5:30	83	83					
69	102	5:45	90	90					

$$\text{AVG TWO-WAY} = \left[\frac{\text{DAY 1 TWO-WAY} + \text{DAY 2 TWO-WAY}}{2}\right] \times (\text{PSCF}) \times (\text{WEEKLY AXLE FACTOR})$$

FLORIDA STATE HIGHWAY SYSTEM
LEVEL OF SERVICE REPORT

2007



FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT TWO

August 2008

2007 DISTRICT T[illegible]D LOS ANALYSIS

Road Location	Map ID	Local Lanes	Facility AreaType	System Status	W.P Committed Section	Miles	S/MI	FDOT Jur	Count Station #		MIN LOS STD	Maximum Service Volume	2006 Count	2007 Count	LOS	Growth Rate	Projections 2008	LOS	2011	LOS	2021	LOS
Levy																						
SR 24	*43* D St.				**From 2nd Street to N.C.L. of Cedar Key**																	K_{100}: 11.10%
Town of Cedar Key		2/U	Arterial	SHS	☐	0.91	0.0	☐	340155	AADT:	C	11,000	2,800	2,500	C	1%	2,500	C	2,600	C	2,900	C
			Rural Dev		*34070000*					Peak Hr:	C	1,070		278	C		278	C	289	C	322	C
SR 24	*29*				**From N.C.L. of Cedar Key to S.W.C.L. of Otter Creek**																	K_{100}: 12.18%
Levy County		2/U	Highway	SHS	☐	19.55		☐	340008	AADT:	C	7,900	2,131	1,962	A	1%	2,000	A	2,000	A	2,200	A
			Rural Undev		*34070000*				340155	Peak Hr:	C	770		239	B		244	B	244	B	268	B
									340239													
SR 24	*42* 2nd Ave.				**From S.W.C.L. of Otter Creek to N.E.C.L. of Otter Creek**																	K_{100}: 11.10%
Town of Otter Creek		2/U	Arterial	SHS	☐	1.42	0.0	☐	340024	AADT:	C	11,000	1,400	1,275	B	1%	1,300	B	1,300	B	1,400	B
			Rural Dev		*34070000*				340224	Peak Hr:	C	1,070		142	B		144	B	144	B	155	B
SR 24	*30*				**From N.E.C.L. of Otter Creek to S.W.C.L. of Bronson**																	K_{100}: 11.10%
Levy County		2/U	Highway	SHS	☐	9.83		☐	340224	AADT:	C	7,900	1,400	1,150	A	1%	1,200	A	1,200	A	1,300	A
			Rural Undev		*34070000*					Peak Hr:	C	770		128	A		133	A	133	A	144	A
SR 24	*37* Thrasher Dr.				**From S.W.C.L. of Bronson to N.E.C.L. of Bronson**																	K_{100}: 11.10%
City of Bronson		2/U	Arterial	SHS	☐	2.77	0.4	☐	340117	AADT:	C	11,000	3,700	3,600	C	2.2%	4,100	C	4,400	C	5,300	C
			Rural Dev		*34070000*					Peak Hr:	C	1,070		400	C		455	C	488	C	588	C
SR 24	*31*				**From N.E.C.L. of Bronson to Alachua Co. Line**																	K_{100}: 11.10%
Levy County		2/U	Highway	SHS	☐	5.27		☐	340117	AADT:	C	7,900	3,700	3,600	B	2.2%	4,100	B	4,400	B	5,300	C
			Rural Undev		*34070000*					Peak Hr:	C	770		400	B		455	C	488	C	588	C
→ **SR 45**	*27* US 41/ SW 7th St.				**From Marion Co. Line to S.C.L. of Williston**																	K_{100}: 11.10%
Levy County		2/U	Highway	SHS	☐	11.29		☐	340039	AADT:	C	7,900	4,700	4,700	C	2.8%	5,200	C	5,700	C	7,100	C
			Rural Undev		*34040000*				340223	Peak Hr:	C	770		522	C		577	C	633	C	788	D
SR 45	*39* US 41/ SW 7th St.				**From S.C.L. of Williston to SR 500**																	K_{100}: 11.10%
Town of Williston		2/U	Arterial	SHS	☐	0.61	1.0	☐	340143	AADT:	C	11,000	10,250	8,950	C	2.1%	10,100	C	10,700	C	12,900	D
			Rural Dev		*34040000*				345015	Peak Hr:	C	1,070		993	C		1,121	D	1,188	D	1,432	E

Road Location	Map ID	Local Lanes	Facility AreaType	System Status	W.P Committed Section	Miles	S/MI	FDOT Jur	Count Station #		MIN LOS STD	Maximum Service Volume	2006 Count	2007 Count	LOS	Growth Rate	Projecti 2008	LOS	2011	LOS	2021	LOS
Levy																						
SR 45	*22* US 27A				**From W.C.L. of Williston to SR 45 (North)**																	K_{100}: 11.10%
Town of Williston	4/D	Arterial Rural Dev	Emerging SIS	☐ *34010000*	0.80	1.0	☑	340122 340139 345014	AADT: Peak Hr:	B B	5,300 520	14,366	14,267 1,584	C C	1.9%	14,900 1,654	C C	15,700 1,743	C C	18,600 2,065	C C
SR 45	*40* N Main St.				**From NE 1st Ave to SR 121**																	K_{100}: 11.10%
Town of Williston	4/U	Arterial Rural Dev	SHS	☐ *34040000*	0.37	0.0	☐	345013	AADT: Peak Hr:	C C	25,500 2,470	9,000	10,000 1,110	C C	Var	10,100 1,121	C C	10,400 1,154	C C	11,400 1,265	C C
SR 45	*41* N Main St.				**From SR 121 to N.C.L. of Williston**																	K_{100}: 11.10%
Town of Williston	2/U	Arterial Rural Dev	SHS	☐ *34040000*	0.50	0.0	☐	340150 345011	AADT: Peak Hr:	C C	11,000 1,070	4,300	4,250 472	C C	2.2%	4,500 500	C C	4,800 533	C C	5,700 633	C C
SR 45	*28* N Main St.				**From N.C.L. of Williston to Alachua Co. Line**																	K_{100}: 11.10%
Levy County	2/U	Highway Rural Undev	SHS	☐ *34040000*	6.45		☐	340150	AADT: Peak Hr:	C C	7,900 770	3,800	4,000 444	B C	2.9%	4,100 455	B C	4,400 488	B C	5,600 622	C C
SR 49	*34* US 129				**From SR 55 to N.E.C.L. of Chiefland**																	K_{100}: 11.10%
City of Chiefland	2/U	Arterial Rural Dev	SHS	☐ *34020000*	0.22	0.0	☐	340089	AADT: Peak Hr:	C C	11,000 1,070	3,600	3,100 344	C C	2.6%	3,500 388	C C	3,800 422	C C	4,700 522	C C
SR 49	*24* US 129				**From N.E.C.L. of Chiefland to Gilchrist Co. Line**																	K_{100}: 11.10%
Levy County	2/U	Highway Rural Undev	SHS	☐ *34020000*	7.61		☐	340089	AADT: Peak Hr:	C C	7,900 770	3,600	3,100 344	B B	2.6%	3,500 388	B B	3,800 422	B B	4,700 522	C C
SR 55	*18* US 19/98				**From N.C.L. of Inglis to S.C.L. of Inglis**																	K_{100}: 11.10%
Town of Inglis	4/D	Arterial Rural Dev	Emerging SIS	☐ *34050000*	1.07	0.9	☑	340030 340069	AADT: Peak Hr:	B B	5,300 520	6,700	6,450 716	C C	1.9%	7,100 788	C C	7,500 832	C C	8,800 977	C C
SR 55	*4* US 19/98				**From SR 121 to N.C.L. of Inglis**																	K_{100}: 11.10%
Levy County	4/D	Highway Rural Undev	Emerging SIS	☐ *34050000*	9.05		☑	340030	AADT: Peak Hr:	B B	28,600 2,800	5,200	4,900 544	A A	2.2%	5,300 588	A A	5,600 622	A A	6,800 755	A A
SR 55	*3* US 19/98				**From S.C.L. of Otter Creek to SR 121**																	K_{100}: 11.10%
Levy County	4/D	Highway Rural Undev	Emerging SIS	☐ *34050000*	13.31		☑	340011 340016	AADT: Peak Hr:	B B	28,600 2,800	4,000	3,400 377	A A	1%	4,000 444	A A	4,100 455	A A	4,500 500	A A

APPENDIX D:
2008 Existing Intersection and Roadway Analyses Worksheets

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2008 Existing Traffic Conds
Project ID: Levy County Advanced Reactor
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		104	45	17	132	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Hourly Flow Rate, HFR		107	46	17	136	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	68		8			
Peak Hour Factor, PHF	0.97		0.97			
Hourly Flow Rate, HFR	70		8			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		17	70		8			
C(m) (vph)		1411	812		1016			
v/c		0.01	0.09		0.01			
95% queue length		0.04	0.28		0.02			
Control Delay		7.6	9.9		8.6			
LOS		A	A		A			
Approach Delay				9.7				
Approach LOS				A				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2008 Existing Traffic Conds
Project ID: Levy County Advanced Reactor
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		104	45	17	132	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Peak-15 Minute Volume		27	12	4	34	
Hourly Flow Rate, HFR		107	46	17	136	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	68		8			
Peak Hour Factor, PHF	0.97		0.97			
Peak-15 Minute Volume	18		2			
Hourly Flow Rate, HFR	70		8			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		4	1		1			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.2	6.8		6.2			
2-stage		4.2	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		4	1		1			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		153	209		54			
s								
Px								
V c,u,x								

C r,x	
C plat,x	

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	107	102						
s		3000						
P(x)								
V(c,u,x)								

C(r,x)	

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	54	
Potential Capacity	1016	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1016	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	153	
Potential Capacity	1411	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1411	
Probability of Queue free St.	0.99	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.99	0.99
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	209	
Potential Capacity	763	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.99
Maj. L, Min T Adj. Imp Factor.		0.99
Cap. Adj. factor due to Impeding mvmnt	0.99	0.98
Movement Capacity	754	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	811	762
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.99
Movement Capacity	811	753
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	762	775
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.99	1.00
Movement Capacity	753	775
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.99	0.99
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	107	
Potential Capacity	909	849
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.99
Movement Capacity	909	839
Part 2 - Second Stage		
Conflicting Flows	102	
Potential Capacity	914	969
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.99	0.99
Movement Capacity	903	961
Part 3 - Single Stage		
Conflicting Flows	209	
Potential Capacity	763	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.99
Maj. L, Min T Adj. Imp Factor.		0.99
Cap. Adj. factor due to Impeding mvmnt	0.99	0.98
Movement Capacity	754	
Results for Two-stage process:		
a	0.95	0.95
y	1.04	
C t	812	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	70		8			
Movement Capacity (vph)	812		1016			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	812		1016			
Volume	70		8			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		17	70		8			
C(m) (vph)		1411	812		1016			
v/c		0.01	0.09		0.01			
95% queue length		0.04	0.28		0.02			
Control Delay		7.6	9.9		8.6			
LOS		A	A		A			
Approach Delay				9.7				
Approach LOS				A				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.99
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		7.6
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/8/2008
Period: P.M. Peak Hour
Project ID: Levy County Advanced Reactor
E/W St: CR 40/Follow That Dream Pkwy

Inter.: U.S. 19 & CR 40
Area Type: All other areas
Jurisd: FDOT District 2
Year : 2008 Existing Traffic Conds
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Volume	21	61	71	61	52	44	106	236	91	45	208	13
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	10.0					10.0	25.0		
Yellow	4.0					4.0	4.0		
All Red	1.0					1.0	1.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	309	1684	0.28	0.18	21.6	C	21.4	C
R	290	1583	0.17	0.18	20.9	C		
Westbound								
LT	268	1460	0.45	0.18	23.0	C	22.5	C
R	290	1583	0.09	0.18	20.5	C		
Northbound								
L	321	1752	0.35	0.18	22.1	C		
TR	1477	3408	0.21	0.43	10.7	B	13.7	B
Southbound								
L	321	1752	0.15	0.18	20.8	C		
TR	1513	3492	0.15	0.43	10.4	B	12.2	B

Intersection Delay = 15.6 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & CR 40
Area Type: All other areas
Jurisdiction: FDOT District 2
Analysis Year: 2008 Existing Traffic Conds
Project ID: Levy County Advanced Reactor
E/W St: CR 40/Follow That Dream Pkwy N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	21	61	71	61	52	44	106	236	91	45	208	13
% Heavy Veh	2	2	2	2	2	2	3	3	3	3	3	3
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PK 15 Vol	6	16	19	16	14	12	28	63	24	12	55	4
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900	1900	1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5
Adj Flow		87	50		120	27	113	313		48	230	
%InSharedLn												
Prop LTs		0.253			0.542			0.000			0.000	
Prop RTs	0.000		1.000	0.000		1.000	0.198			0.039		
Peds Bikes	0			0			0			0		
Buses		0	0		0	0	0	0		0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Arriv. Type		3	3		3	3	3	3		3	3	
Unit Ext.		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Ext of g		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Ped Min g		3.2			3.2			3.2			3.2	

PHASE DATA

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	10.0					10.0	25.0		
Yellow	4.0					4.0	4.0		
All Red	1.0					1.0	1.0		

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	21	61	71	61	52	44	106	236	91	45	208	13
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj flow	22	65	50	65	55	27	113	251	62	48	221	9
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Adj flow		87	50		120	27	113	313		48	230	
Prop LTs		0.253			0.542			0.000			0.000	
Prop RTs	0.000	1.000		0.000	1.000		0.198			0.039		

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LT	R		LT	R		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes	1	1	0	1	1		1	2	0	1	2	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	0.980	0.980		0.980	0.980		0.971	0.971		0.971	0.971	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fA	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fLU	1.000	1.000		1.000	1.000		1.000	0.952		1.000	0.952	
fRT	1.000	0.850		1.000	0.850			0.970			0.994	
fLT	0.904			0.784			0.950	1.000		0.950	1.000	
Sec.												
fLpb	1.000			1.000			1.000	1.000		1.000	1.000	
fRpb	1.000	1.000		1.000	1.000			1.000			1.000	
S	1684	1583		1460	1583		1752	3408		1752	3492	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio

Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LT	87	1684	0.05	0.18	309	0.28
Right	R	50	1583	0.03	0.18	290	0.17
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LT	120	1460	# 0.08	0.18	268	0.45
Right	R	27	1583	0.02	0.18	290	0.09
Northbound							
Prot							
Perm							
Left	L	113	1752	# 0.06	0.18	321	0.35
Prot							
Perm							
Thru	TR	313	3408	# 0.09	0.43	1477	0.21
Right							
Southbound							
Prot							
Perm							
Left	L	48	1752	0.03	0.18	321	0.15
Prot							
Perm							
Thru	TR	230	3492	0.07	0.43	1513	0.15
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.24
Total lost time per cycle, L = 12.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.30

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LT	0.28	0.18	21.1	1.000	309	0.11	0.5	0.0	21.6	C	21.4	C
R	0.17	0.18	20.7	1.000	290	0.11	0.3	0.0	20.9	C		
Westbound												
LT	0.45	0.18	21.8	1.000	268	0.11	1.2	0.0	23.0	C	22.5	C
R	0.09	0.18	20.4	1.000	290	0.11	0.1	0.0	20.5	C		
Northbound												
L	0.35	0.18	21.4	1.000	321	0.11	0.7	0.0	22.1	C		
TR	0.21	0.43	10.6	1.000	1477	0.11	0.1	0.0	10.7	B	13.7	B
Southbound												
L	0.15	0.18	20.6	1.000	321	0.11	0.2	0.0	20.8	C		
TR	0.15	0.43	10.3	1.000	1513	0.11	0.0	0.0	10.4	B	12.2	B

Intersection delay = 15.6 (sec/veh) Intersection LOS = B

2008 Roadway Analysis

U.S. 19	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes	
			Existing Traffic	
Segment	LOS	Volume wo-way)*	Volume (Two-way)**	LOS
SR 121 to Project Site	B	2,800	438	A
Project Site to CR 40	B	2,800	448	A

SR 121	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes	
			Existing Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)**	LOS
U.S. 19 to NW 27th Street	C	770	138	A

US 41	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes	
			Existing Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)**	LOS
SE 80th Street/NW 27th Street to CR 328	C	770	370	B

CR 40	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes	
			Existing Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)**	LOS
U.S. 19 to Heavy Haul Driveway	C	1,070		C

*These volumes were attained from the FDOT 2007 Generalized Level of Service Tables.

**These volumes along segments between counted intersections were estimated based upon the average of the intersection volumes counted along the segment.

APPENDIX E:
Future Intersection and Roadway Analyses Worksheets

Peak Construction Workforce Traffic Conditions

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/11/2008
Period: A.M. Peak Hour
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
E/W St: Construction Access

Inter.: U.S. 19 & Construction Access
Area Type: All other areas
Jurisd: FDOT
Year : 2015 Peak Construction Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Volume				105		45		293	900	385	286	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru					Thru	A		
Right					Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru					Thru	A	A	
Right	A				Right			
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right	A		
Green	10.0					20.0	75.0	
Yellow	4.0					4.0	4.0	
All Red	1.0					1.0	1.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	315	3437	0.35	0.09	51.8	D		
							45.5	D
R	475	1583	0.10	0.30	30.4	C		
Northbound								
T	2203	3478	0.14	0.63	8.9	A	11.5	B
R	1200	1583	0.79	0.76	12.4	B		
Southbound								
L	601	3437	0.67	0.17	49.3	D		
T	2927	3478	0.10	0.84	1.7	A	29.0	C

Intersection Delay = 19.9 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Construction Access
Area Type: All other areas
Jurisdiction: FDOT
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
E/W St: Construction Access N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				105		45		293	900	385	286	
% Heavy Veh				2		2		4	2	2	4	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
PK 15 Vol				28		12		77	237	101	75	
Hi Ln Vol												
% Grade					0			0			0	
Ideal Sat				1900		1900		1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			
Adj Flow				111		47		308	947	405	301	
%InSharedLn												
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	
Peds Bikes	0			0			0					
Buses				0		0		0	0	0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0	0.0	0.0	0.0	
Arriv. Type				3		3		3	3	3	3	
Unit Ext.				3.0		3.0		3.0	3.0	3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0	2.0	2.0	2.0	
Ext of g				3.0		3.0		3.0	3.0	3.0	3.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8

EB	Left			NB	Left		
	Thru				Thru		A
	Right				Right		A
	Peds				Peds		
WB	Left		A	SB	Left	A	
	Thru				Thru	A	A
	Right		A		Right		
	Peds				Peds		
NB	Right		A	EB	Right		
SB	Right			WB	Right	A	
Green		10.0				20.0	75.0
Yellow		4.0				4.0	4.0
All Red		1.0				1.0	1.0

Cycle Length: 120.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V				105		45		293	900	385	286	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
Adj flow				111		47		308	947	405	301	
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
Lane group				L		R		T	R	L	T	
Adj flow				111		47		308	947	405	301	
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG				L		R		T	R	L	T	
So				1900		1900		1900	1900	1900	1900	
Lanes	0	0	0	2	0	1	0	2	1	2	2	0
fW				1.000		1.000		1.000	1.000	1.000	1.000	
fHV				0.980		0.980		0.962	0.980	0.980	0.962	
fG				1.000		1.000		1.000	1.000	1.000	1.000	
fP				1.000		1.000		1.000	1.000	1.000	1.000	
fBB				1.000		1.000		1.000	1.000	1.000	1.000	
fA				1.000		1.000		1.000	1.000	1.000	1.000	
fLU				0.971		1.000		0.952	1.000	0.971	0.952	
fRT						0.850		1.000	0.850		1.000	
fLT				0.950				1.000		0.950	1.000	
Sec.												
fLpb				1.000				1.000		1.000	1.000	
fRpb						1.000		1.000	1.000		1.000	
S				3437		1583		3478	1583	3437	3478	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							

Perm							
Left							
Prot							
Perm							
Thru							
Right							
Westbound							
Prot							
Perm							
Left	L	111	3437	0.03	0.09	315	0.35
Prot							
Perm							
Thru							
Right	R	47	1583	0.03	0.30	475	0.10
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	T	308	3478	0.09	0.63	2203	0.14
Right	R	947	1583	# 0.60	0.76	1200	0.79
Southbound							
Prot							
Perm							
Left	L	405	3437	# 0.12	0.17	601	0.67
Prot							
Perm							
Thru	T	301	3478	0.09	0.84	2927	0.10
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.72
Total lost time per cycle, L = 3.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.73

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
Westbound												
L	0.35	0.09	51.2	1.000	315	0.11	0.7	0.0	51.8	D		
R	0.10	0.30	30.3	1.000	475	0.11	0.1	0.0	30.4	C	45.5	D
Northbound												
T	0.14	0.63	8.9	1.000	2203	0.11	0.0	0.0	8.9	A	11.5	B
R	0.79	0.76	8.7	1.000	1200	0.34	3.6	0.0	12.4	B		
Southbound												
L	0.67	0.17	46.3	1.000	601	0.25	3.0	0.0	49.3	D		
T	0.10	0.84	1.6	1.000	2927	0.11	0.0	0.0	1.7	A	29.0	C

Intersection delay = 19.9 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1189	93	40	351	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		1251	97	42	369	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9		4			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	9		4			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		42	9		4			
C(m) (vph)		507	216		482			
v/c		0.08	0.04		0.01			
95% queue length		0.27	0.13		0.03			
Control Delay		12.7	22.4		12.5			
LOS		B	C		B			
Approach Delay				19.4				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		1189	93	40	351	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		313	24	11	92	
Hourly Flow Rate, HFR		1251	97	42	369	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2 1		1	2	
Configuration		T R		L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	9		4			
Peak Hour Factor, PHF	0.95		0.95			
Peak-15 Minute Volume	2		1			
Hourly Flow Rate, HFR	9		4			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.8		6.2			
2-stage		4.1	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		1348	1519		626			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	1251	268						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	626	
Potential Capacity	482	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	482	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	1348	
Potential Capacity	507	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	507	
Probability of Queue free St.	0.92	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	0.92
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	1519	
Potential Capacity	110	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.92
Maj. L, Min T Adj. Imp Factor.		0.94
Cap. Adj. factor due to Impeding mvmnt	0.92	0.93
Movement Capacity	101	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	246	573
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.92
Movement Capacity	246	526
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	573	221
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	1.00
Movement Capacity	526	221
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	0.92
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	1251	
Potential Capacity	233	613
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.92
Movement Capacity	233	562
Part 2 - Second Stage		
Conflicting Flows	268	
Potential Capacity	753	501
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	0.99
Movement Capacity	691	497
Part 3 - Single Stage		
Conflicting Flows	1519	
Potential Capacity	110	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.92
Maj. L, Min T Adj. Imp Factor.		0.94
Cap. Adj. factor due to Impeding mvmnt	0.92	0.93
Movement Capacity	101	
Results for Two-stage process:		
a	0.95	0.95
y	0.22	
C t	216	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	9		4			
Movement Capacity (vph)	216		482			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	216		482			
Volume	9		4			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		42	9		4			
C(m) (vph)		507	216		482			
v/c		0.08	0.04		0.01			
95% queue length		0.27	0.13		0.03			
Control Delay		12.7	22.4		12.5			
LOS		B	C		B			
Approach Delay				19.4				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.92
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		12.7
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: A.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	72	0	0	119	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	75	0	0	125	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided /					
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	15	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	15	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		15			1	
C(m) (vph)	1026	1078		553			553	
v/c	0.00	0.00		0.03			0.00	
95% queue length	0.00	0.00		0.08			0.01	
Control Delay	8.5	8.3		11.7			11.5	
LOS	A	A		B			B	
Approach Delay				11.7			11.5	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: A.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	0	72	0	0	119	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	19	0	0	31	0
Hourly Flow Rate, HFR	0	75	0	0	125	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	0	15	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	4	0	0	0	0
Hourly Flow Rate, HFR	0	15	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	75	125
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	100	100	100	100	100	100	100	100
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	5.1	5.1	8.1	7.5	7.2	8.1	7.5	7.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20	2.20	3.50	4.00	3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	100	100	100	100	100	100	100	100
t(f)	3.1	3.1	4.4	4.9	4.2	4.4	4.9	4.2

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(1,prot)	V(t)	V(1,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x	125	75	201	200	75	207	200	125
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)								
s		1500		1500		1500		1500
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	75	125
Potential Capacity	770	717
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	770	717
Probability of Queue free St.	1.00	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	75	125
Potential Capacity	1078	1026
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1078	1026
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.	1.00	1.00
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows	200	200
Potential Capacity	553	553
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	553	553
Probability of Queue free St.	0.97	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	201	207
Potential Capacity	587	581
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	0.97
Maj. L, Min T Adj. Imp Factor.	1.00	0.98
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	586	569

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	200	200

Potential Capacity	553	553
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	553	553
Result for 2 stage process:		
a		
y		
C t	553	553
Probability of Queue free St.	0.97	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	201	207
Potential Capacity	587	581
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	0.97
Maj. L, Min T Adj. Imp Factor.	1.00	0.98
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	586	569
Results for Two-stage process:		
a		
y		
C t	586	569

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	0	15	0	0	1	0
Movement Capacity (vph)	586	553	770	569	553	717
Shared Lane Capacity (vph)		553			553	

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	586	553	770	569	553	717
Volume	0	15	0	0	1	0
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max								
C sh			553				553	
SUM C sep								
n								
C act								

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		15			1	
C(m) (vph)	1026	1078		553			553	
v/c	0.00	0.00		0.03			0.00	
95% queue length	0.00	0.00		0.08			0.01	
Control Delay	8.5	8.3		11.7			11.5	
LOS	A	A		B			B	
Approach Delay				11.7			11.5	
Approach LOS				B			B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(il), Volume for stream 2 or 5	75	125
v(i2), Volume for stream 3 or 6	0	0
s(il), Saturation flow rate for stream 2 or 5	1700	1700
s(i2), Saturation flow rate for stream 3 or 6	1700	1700
P*(oj)	1.00	1.00
d(M,LT), Delay for stream 1 or 4	8.5	8.3
N, Number of major street through lanes	1	1
d(rank,1) Delay for stream 2 or 5	0.0	0.0

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		192	416	20	170	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Hourly Flow Rate, HFR		197	428	20	175	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	121		9			
Peak Hour Factor, PHF	0.97		0.97			
Hourly Flow Rate, HFR	124		9			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		20	124		9			
C(m) (vph)		939	732		960			
v/c		0.02	0.17		0.01			
95% queue length		0.07	0.61		0.03			
Control Delay		8.9	10.9		8.8			
LOS		A	B		A			
Approach Delay				10.8				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		192	416	20	170	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Peak-15 Minute Volume		49	107	5	44	
Hourly Flow Rate, HFR		197	428	20	175	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2 1		1	2	
Configuration		T R		L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	121		9			
Peak Hour Factor, PHF	0.97		0.97			
Peak-15 Minute Volume	31		2			
Hourly Flow Rate, HFR	124		9			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		4	1		1			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.2	6.8		6.2			
2-stage		4.2	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		4	1		1			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R
V c,x		625	324		98			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	197	127						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	98	
Potential Capacity	960	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	960	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	625	
Potential Capacity	939	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	939	
Probability of Queue free St.	0.98	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	324	
Potential Capacity	647	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.98
Cap. Adj. factor due to Impeding mvmnt	0.98	0.97
Movement Capacity	633	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	742	729
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	742	713
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	729	480
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	1.00
Movement Capacity	713	480
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	197	
Potential Capacity	820	806
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	820	789
Part 2 - Second Stage		
Conflicting Flows	127	
Potential Capacity	888	921
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.99
Movement Capacity	869	912
Part 3 - Single Stage		
Conflicting Flows	324	
Potential Capacity	647	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.98
Cap. Adj. factor due to Impeding mvmnt	0.98	0.97
Movement Capacity	633	
Results for Two-stage process:		
a	0.95	0.95
y	0.79	
C t	732	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	124		9			
Movement Capacity (vph)	732		960			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	732		960			
Volume	124		9			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		20	124		9			
C(m) (vph)		939	732		960			
v/c		0.02	0.17		0.01			
95% queue length		0.07	0.61		0.03			
Control Delay		8.9	10.9		8.8			
LOS		A	B		A			
Approach Delay				10.8				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.98
v(i1), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(i1), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		8.9
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/8/2008
Period: P.M. Peak Hour
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
E/W St: CR 40/Follow That Dream Pkwy

Inter.: U.S. 19 & CR 40
Area Type: All other areas
Jurisd: FDOT District 2
Year : 2015 Peak Construction Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Volume	27	71	83	71	61	58	123	414	106	124	1209	30
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru		A		
	Right	A					Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.5						10.0	25.5		
Yellow		4.0						4.0	4.0		
All Red		1.0						1.0	1.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	287	1640	0.37	0.17	22.6	C	22.3	C
R	277	1583	0.23	0.17	21.7	C		
Westbound								
LT	253	1444	0.56	0.17	25.4	C	24.4	C
R	277	1583	0.15	0.17	21.2	C		
Northbound								
L	321	1752	0.41	0.18	22.5	C		
TR	1516	3433	0.34	0.44	11.1	B	13.4	B
Southbound								
L	321	1752	0.41	0.18	22.5	C		
TR	1546	3501	0.85	0.44	19.7	B	19.9	B

Intersection Delay = 18.7 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & CR 40
Area Type: All other areas
Jurisdiction: FDOT District 2
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
E/W St: CR 40/Follow That Dream Pkwy N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	27	71	83	71	61	58	123	414	106	124	1209	30
% Heavy Veh	2	2	2	2	2	2	3	3	3	3	3	3
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PK 15 Vol	7	19	22	19	16	15	33	110	28	33	322	8
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900	1900	1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5
Adj Flow		105	63		141	41	131	518		132	1313	
%InSharedLn												
Prop LTs		0.276			0.539			0.000			0.000	
Prop RTs	0.000	1.000		0.000	1.000		0.151			0.021		
Peds Bikes	0			0			0			0		
Buses		0	0		0	0	0	0		0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Arriv. Type		3	3		3	3	3	3		3	3	
Unit Ext.		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Ext of g		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Ped Min g		3.2			3.2			3.2			3.2	

PHASE DATA

Phase Combination	1	2	3	4		5	6	7	8

EB	Left	A		NB	Left	A	
	Thru	A			Thru		A
	Right	A			Right		A
	Peds				Peds		
WB	Left	A		SB	Left	A	
	Thru	A			Thru		A
	Right	A			Right		A
	Peds				Peds		
NB	Right			EB	Right		
SB	Right			WB	Right		

Green	9.5	10.0	25.5
Yellow	4.0	4.0	4.0
All Red	1.0	1.0	1.0

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	27	71	83	71	61	58	123	414	106	124	1209	30
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj flow	29	76	63	76	65	41	131	440	78	132	1286	27
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Adj flow		105	63		141	41	131	518		132	1313	
Prop LTs		0.276			0.539			0.000			0.000	
Prop RTs		0.000	1.000		0.000	1.000		0.151			0.021	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LT	R		LT	R		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes 0	1	1	0	1	1		1	2	0	1	2	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	0.980	0.980		0.980	0.980		0.971	0.971		0.971	0.971	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fA	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fLU	1.000	1.000		1.000	1.000		1.000	0.952		1.000	0.952	
fRT	1.000	0.850		1.000	0.850			0.977			0.997	
fLT	0.880			0.775			0.950	1.000		0.950	1.000	
Sec.												
fLpb	1.000			1.000			1.000	1.000		1.000	1.000	
fRpb	1.000	1.000		1.000	1.000			1.000			1.000	
S	1640	1583		1444	1583		1752	3433		1752	3501	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							

Perm							
Left							
Prot							
Perm							
Thru	LT	105	1640	0.06	0.17	287	0.37
Right	R	63	1583	0.04	0.17	277	0.23
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LT	141	1444	# 0.10	0.17	253	0.56
Right	R	41	1583	0.03	0.17	277	0.15
Northbound							
Prot							
Perm							
Left	L	131	1752	0.07	0.18	321	0.41
Prot							
Perm							
Thru	TR	518	3433	0.15	0.44	1516	0.34
Right							
Southbound							
Prot							
Perm							
Left	L	132	1752	# 0.08	0.18	321	0.41
Prot							
Perm							
Thru	TR	1313	3501	# 0.38	0.44	1546	0.85
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.55
Total lost time per cycle, L = 12.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.69

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
LT	0.37	0.17	21.8	1.000	287	0.11	0.8	0.0	22.6	C	22.3	C
R	0.23	0.17	21.3	1.000	277	0.11	0.4	0.0	21.7	C		
Westbound												
LT	0.56	0.17	22.6	1.000	253	0.15	2.7	0.0	25.4	C	24.4	C
R	0.15	0.17	21.0	1.000	277	0.11	0.2	0.0	21.2	C		
Northbound												
L	0.41	0.18	21.6	1.000	321	0.11	0.8	0.0	22.5	C		
TR	0.34	0.44	11.0	1.000	1516	0.11	0.1	0.0	11.1	B	13.4	B
Southbound												
L	0.41	0.18	21.6	1.000	321	0.11	0.9	0.0	22.5	C		
TR	0.85	0.44	15.0	1.000	1546	0.38	4.7	0.0	19.7	B	19.9	B

Intersection delay = 18.7 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/11/2008
Period: P.M. Peak Hour
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
E/W St: Construction Access

Inter.: U.S. 19 & Construction Access
Area Type: All other areas
Jurisd: FDOT
Year : 2015 Peak Construction Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Volume				900		385		322	105	45	333	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru					Thru	A		
Right					Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru					Thru	A	A	
Right	A				Right			
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right	A		
Green	35.0					10.0	60.0	
Yellow	4.0					4.0	4.0	
All Red	1.0					1.0	1.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	1031	3437	0.92	0.30	53.3	D		
							45.8	D
R	673	1583	0.60	0.43	28.2	C		
Northbound								
T	1768	3478	0.19	0.51	16.1	B	12.6	B
R	1332	1583	0.08	0.84	1.6	A		
Southbound								
L	315	3437	0.15	0.09	50.4	D		
T	2203	3478	0.16	0.63	9.0	A	13.9	B

Intersection Delay = 33.2 (sec/veh) Intersection LOS = C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & Construction Access
Area Type: All other areas
Jurisdiction: FDOT
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
E/W St: Construction Access N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				900		385		322	105	45	333	
% Heavy Veh				2		2		4	2	2	4	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
PK 15 Vol				237		101		85	28	12	88	
Hi Ln Vol												
% Grade					0			0			0	
Ideal Sat				1900		1900		1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			
Adj Flow				947		405		339	111	47	351	
%InSharedLn												
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	
Peds Bikes	0			0			0					
Buses				0		0		0	0	0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0	0.0	0.0	0.0	
Arriv. Type				3		3		3	3	3	3	
Unit Ext.				3.0		3.0		3.0	3.0	3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0	2.0	2.0	2.0	
Ext of g				3.0		3.0		3.0	3.0	3.0	3.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8

EB	Left			NB	Left		
	Thru				Thru		A
	Right				Right		A
	Peds				Peds		
WB	Left		A	SB	Left	A	
	Thru				Thru	A	A
	Right		A		Right		
	Peds				Peds		
NB	Right		A	EB	Right		
SB	Right			WB	Right	A	
Green			35.0			10.0	60.0
Yellow			4.0			4.0	4.0
All Red			1.0			1.0	1.0

Cycle Length: 120.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V				900		385		322	105	45	333	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
Adj flow				947		405		339	111	47	351	
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
Lane group				L		R		T	R	L	T	
Adj flow				947		405		339	111	47	351	
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG			L		R		T	R		L	T	
So			1900		1900		1900	1900		1900	1900	
Lanes	0	0	2	0	1	0	2	1		2	2	0
fW			1.000		1.000		1.000	1.000		1.000	1.000	
fHV			0.980		0.980		0.962	0.980		0.980	0.962	
fG			1.000		1.000		1.000	1.000		1.000	1.000	
fP			1.000		1.000		1.000	1.000		1.000	1.000	
fBB			1.000		1.000		1.000	1.000		1.000	1.000	
fA			1.000		1.000		1.000	1.000		1.000	1.000	
fLU			0.971		1.000		0.952	1.000		0.971	0.952	
fRT					0.850		1.000	0.850			1.000	
fLT			0.950				1.000			0.950	1.000	
Sec.												
fLpb			1.000				1.000			1.000	1.000	
fRpb					1.000		1.000	1.000			1.000	
S			3437		1583		3478	1583		3437	3478	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							

Perm								
Left								
Prot								
Perm								
Thru								
Right								
Westbound								
Prot								
Perm								
Left	L	947	3437	#	0.28	0.30	1031	0.92
Prot								
Perm								
Thru								
Right	R	405	1583		0.26	0.43	673	0.60
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	T	339	3478	#	0.10	0.51	1768	0.19
Right	R	111	1583		0.07	0.84	1332	0.08
Southbound								
Prot								
Perm								
Left	L	47	3437	#	0.01	0.09	315	0.15
Prot								
Perm								
Thru	T	351	3478		0.10	0.63	2203	0.16
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.39
Total lost time per cycle, L = 12.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.43

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
Westbound												
L	0.92	0.30	40.6	1.000	1031	0.44	12.7	0.0	53.3	D		
											45.8	D
R	0.60	0.43	26.7	1.000	673	0.19	1.5	0.0	28.2	C		
Northbound												
T	0.19	0.51	16.1	1.000	1768	0.11	0.1	0.0	16.1	B	12.6	B
R	0.08	0.84	1.6	1.000	1332	0.11	0.0	0.0	1.6	A		
Southbound												
L	0.15	0.09	50.2	1.000	315	0.11	0.2	0.0	50.4	D		
T	0.16	0.63	9.0	1.000	2203	0.11	0.0	0.0	9.0	A	13.9	B

Intersection delay = 33.2 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		392	9	4	1229	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		412	9	4	1293	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	80		35			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	84		36			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		4	84		36			
C(m) (vph)		1135	405		833			
v/c		0.00	0.21		0.04			
95% queue length		0.01	0.77		0.14			
Control Delay		8.2	16.2		9.5			
LOS		A	C		A			
Approach Delay				14.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		392	9	4	1229	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		103	2	1	323	
Hourly Flow Rate, HFR		412	9	4	1293	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	80		35			
Peak Hour Factor, PHF	0.95		0.95			
Peak-15 Minute Volume	21		9			
Hourly Flow Rate, HFR	84		36			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.8		6.2			
2-stage		4.1	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1	4	7	8	9	10	11	12
	L	L	L	T	R	L	T	R
V c,x		421	1066		206			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	412	654						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	206	
Potential Capacity	833	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	833	
Probability of Queue free St.	0.96	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	421	
Potential Capacity	1135	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1135	
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	1066	
Potential Capacity	217	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.95
Movement Capacity	216	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	598	233
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	598	232
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	233	592
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	232	592
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	412	
Potential Capacity	637	223
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	637	222
Part 2 - Second Stage		
Conflicting Flows	654	
Potential Capacity	479	814
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.96
Movement Capacity	477	779
Part 3 - Single Stage		
Conflicting Flows	1066	
Potential Capacity	217	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.95
Movement Capacity	216	
Results for Two-stage process:		
a	0.95	0.95
y	1.61	
C t	405	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	84		36			
Movement Capacity (vph)	405		833			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	405		833			
Volume	84		36			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		4	84		36			
C(m) (vph)		1135	405		833			
v/c		0.00	0.21		0.04			
95% queue length		0.01	0.77		0.14			
Control Delay		8.2	16.2		9.5			
LOS		A	C		A			
Approach Delay				14.2				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(i1), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(i1), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		8.2
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: P.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	147	15	0	106	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	154	15	0	111	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided /					
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	1	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	1	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		1			1	
C(m) (vph)	1040	982		504			493	
v/c	0.00	0.00		0.00			0.00	
95% queue length	0.00	0.00		0.01			0.01	
Control Delay	8.5	8.7		12.2			12.3	
LOS	A	A		B			B	
Approach Delay				12.2			12.3	
Approach LOS				B			B	

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: P.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 1
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	0	147	15	0	106	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	39	4	0	28	0
Hourly Flow Rate, HFR	0	154	15	0	111	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	0	1	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	0	0	0	0	0
Hourly Flow Rate, HFR	0	1	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No	/		No	/
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	154	111
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	100	100	100	100	100	100	100	100
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	5.1	5.1	8.1	7.5	7.2	8.1	7.5	7.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20	2.20	3.50	4.00	3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	100	100	100	100	100	100	100	100
t(f)	3.1	3.1	4.4	4.9	4.2	4.4	4.9	4.2

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x	111	169	266	265	154	273	280	111
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)								
s	1500		1500		1500		1500	
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	154	111
Potential Capacity	688	732
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	688	732
Probability of Queue free St.	1.00	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	169	111
Potential Capacity	982	1040
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	982	1040
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.	1.00	1.00
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows	265	280
Potential Capacity	504	493
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	504	493
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	266	273
Potential Capacity	527	521
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	1.00
Maj. L, Min T Adj. Imp Factor.	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	526	520

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	265	280

Potential Capacity	504	493
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	504	493
Result for 2 stage process:		
a		
y		
C t	504	493
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	266	273
Potential Capacity	527	521
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	1.00
Maj. L, Min T Adj. Imp Factor.	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	526	520
Results for Two-stage process:		
a		
y		
C t	526	520

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	0	1	0	0	1	0
Movement Capacity (vph)	526	504	688	520	493	732
Shared Lane Capacity (vph)		504			493	

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	526	504	688	520	493	732
Volume	0	1	0	0	1	0
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max		
C sh	504	493
SUM C sep		
n		
C act		

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		1			1	
C(m) (vph)	1040	982		504			493	
v/c	0.00	0.00		0.00			0.00	
95% queue length	0.00	0.00		0.01			0.01	
Control Delay	8.5	8.7		12.2			12.3	
LOS	A	A		B			B	
Approach Delay				12.2			12.3	
Approach LOS				B			B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(il), Volume for stream 2 or 5	154	111
v(i2), Volume for stream 3 or 6	0	0
s(il), Saturation flow rate for stream 2 or 5	1700	1700
s(i2), Saturation flow rate for stream 3 or 6	1700	1700
P*(oj)	1.00	1.00
d(M,LT), Delay for stream 1 or 4	8.5	8.7
N, Number of major street through lanes	1	1
d(rank,1) Delay for stream 2 or 5	0.0	0.0

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/11/2008
Period: A.M. Peak Hour
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
E/W St: Construction Access

Inter.: U.S. 19 & Construction Access
Area Type: All other areas
Jurisd: FDOT
Year : 2015 Peak Construction Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Volume				105		45		293	900	385	286	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left					NB Left				
Thru					Thru		A		
Right					Right		A		
Peds					Peds				
WB Left	A				SB Left	A			
Thru					Thru	A	A		
Right	A				Right				
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right	A			
Green	10.0					20.0	75.0		
Yellow	4.0					4.0	4.0		
All Red	1.0					1.0	1.0		

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	315	3437	0.35	0.09	51.8	D		
							45.5	D
R	475	1583	0.10	0.30	30.4	C		
Northbound								
T	2203	3478	0.14	0.63	8.9	A	11.5	B
R	1200	1583	0.79	0.76	12.4	B		
Southbound								
L	601	3437	0.67	0.17	49.3	D		
T	2927	3478	0.10	0.84	1.7	A	29.0	C

Intersection Delay = 19.9 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Construction Access
Area Type: All other areas
Jurisdiction: FDOT
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
E/W St: Construction Access N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				105		45		293	900	385	286	
% Heavy Veh				2		2		4	2	2	4	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
PK 15 Vol				28		12		77	237	101	75	
Hi Ln Vol												
% Grade					0			0			0	
Ideal Sat				1900		1900		1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			
Adj Flow				111		47		308	947	405	301	
%InSharedLn												
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	
Peds Bikes	0			0			0					
Buses				0		0		0	0	0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0	0.0	0.0	0.0	
Arriv. Type				3		3		3	3	3	3	
Unit Ext.				3.0		3.0		3.0	3.0	3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0	2.0	2.0	2.0	
Ext of g				3.0		3.0		3.0	3.0	3.0	3.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8

EB	Left			NB	Left		
	Thru				Thru		A
	Right				Right		A
	Peds				Peds		
WB	Left		A	SB	Left	A	
	Thru				Thru	A	A
	Right		A		Right		
	Peds				Peds		
NB	Right		A	EB	Right		
SB	Right			WB	Right	A	
Green		10.0				20.0	75.0
Yellow		4.0				4.0	4.0
All Red		1.0				1.0	1.0

Cycle Length: 120.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V				105		45		293	900	385	286	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
Adj flow				111		47		308	947	405	301	
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
Lane group				L		R		T	R	L	T	
Adj flow				111		47		308	947	405	301	
Prop LTs								0.000			0.000	
Prop RTs						1.000	0.000		1.000	0.000		

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG				L		R		T	R	L	T	
So				1900		1900		1900	1900	1900	1900	
Lanes	0	0	0	2	0	1	0	2	1	2	2	0
fW				1.000		1.000		1.000	1.000	1.000	1.000	
fHV				0.980		0.980		0.962	0.980	0.980	0.962	
fG				1.000		1.000		1.000	1.000	1.000	1.000	
fP				1.000		1.000		1.000	1.000	1.000	1.000	
fBB				1.000		1.000		1.000	1.000	1.000	1.000	
fA				1.000		1.000		1.000	1.000	1.000	1.000	
fLU				0.971		1.000		0.952	1.000	0.971	0.952	
fRT						0.850		1.000	0.850		1.000	
fLT				0.950				1.000		0.950	1.000	
Sec.												
fLpb				1.000				1.000		1.000	1.000	
fRpb						1.000		1.000	1.000		1.000	
S				3437		1583		3478	1583	3437	3478	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
	Prot						

Perm							
Left							
Prot							
Perm							
Thru							
Right							
Westbound							
Prot							
Perm							
Left	L	111	3437	0.03	0.09	315	0.35
Prot							
Perm							
Thru							
Right	R	47	1583	0.03	0.30	475	0.10
Northbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	T	308	3478	0.09	0.63	2203	0.14
Right	R	947	1583	# 0.60	0.76	1200	0.79
Southbound							
Prot							
Perm							
Left	L	405	3437	# 0.12	0.17	601	0.67
Prot							
Perm							
Thru	T	301	3478	0.09	0.84	2927	0.10
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.72
Total lost time per cycle, L = 3.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.73

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
Westbound												
L	0.35	0.09	51.2	1.000	315	0.11	0.7	0.0	51.8	D		
											45.5	D
R	0.10	0.30	30.3	1.000	475	0.11	0.1	0.0	30.4	C		
Northbound												
T	0.14	0.63	8.9	1.000	2203	0.11	0.0	0.0	8.9	A	11.5	B
R	0.79	0.76	8.7	1.000	1200	0.34	3.6	0.0	12.4	B		
Southbound												
L	0.67	0.17	46.3	1.000	601	0.25	3.0	0.0	49.3	D		
T	0.10	0.84	1.6	1.000	2927	0.11	0.0	0.0	1.7	A	29.0	C

Intersection delay = 19.9 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1189	93	40	351	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		1251	97	42	369	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9		4			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	9		4			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		42	9		4			
C(m) (vph)		507	216		482			
v/c		0.08	0.04		0.01			
95% queue length		0.27	0.13		0.03			
Control Delay		12.7	22.4		12.5			
LOS		B	C		B			
Approach Delay				19.4				
Approach LOS				C				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		1189	93	40	351	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		313	24	11	92	
Hourly Flow Rate, HFR		1251	97	42	369	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2 1		1	2	
Configuration		T R		L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	9		4			
Peak Hour Factor, PHF	0.95		0.95			
Peak-15 Minute Volume	2		1			
Hourly Flow Rate, HFR	9		4			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.8		6.2			
2-stage		4.1	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		1348	1519		626			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	1251	268						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	626	
Potential Capacity	482	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	482	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	1348	
Potential Capacity	507	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	507	
Probability of Queue free St.	0.92	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	0.92
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	1519	
Potential Capacity	110	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.92
Maj. L, Min T Adj. Imp Factor.		0.94
Cap. Adj. factor due to Impeding mvmnt	0.92	0.93
Movement Capacity	101	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	246	573
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.92
Movement Capacity	246	526
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	573	221
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	1.00
Movement Capacity	526	221
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	0.92
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	1251	
Potential Capacity	233	613
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.92
Movement Capacity	233	562
Part 2 - Second Stage		
Conflicting Flows	268	
Potential Capacity	753	501
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.92	0.99
Movement Capacity	691	497
Part 3 - Single Stage		
Conflicting Flows	1519	
Potential Capacity	110	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.92
Maj. L, Min T Adj. Imp Factor.		0.94
Cap. Adj. factor due to Impeding mvmnt	0.92	0.93
Movement Capacity	101	
Results for Two-stage process:		
a	0.95	0.95
y	0.22	
C t	216	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	9		4			
Movement Capacity (vph)	216		482			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	216		482			
Volume	9		4			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		42	9		4			
C(m) (vph)		507	216		482			
v/c		0.08	0.04		0.01			
95% queue length		0.27	0.13		0.03			
Control Delay		12.7	22.4		12.5			
LOS		B	C		B			
Approach Delay				19.4				
Approach LOS				C				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.92
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		12.7
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: A.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	72	0	0	119	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	75	0	0	125	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided /					
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	15	0	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	15	0	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		15			1	
C(m) (vph)	1026	1078		586			553	
v/c	0.00	0.00		0.03			0.00	
95% queue length	0.00	0.00		0.08			0.01	
Control Delay	8.5	8.3		11.3			11.5	
LOS	A	A		B			B	
Approach Delay				11.3			11.5	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: A.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	0	72	0	0	119	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	19	0	0	31	0
Hourly Flow Rate, HFR	0	75	0	0	125	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	15	0	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	4	0	0	0	0	0
Hourly Flow Rate, HFR	15	0	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

	Upstream Signal Data						
	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	75	125
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	100	100	100	100	100	100	100	100
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	5.1	5.1	8.1	7.5	7.2	8.1	7.5	7.2
2-stage								

Follow-Up Time Calculations								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20	2.20	3.50	4.00	3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	100	100	100	100	100	100	100	100
t(f)	3.1	3.1	4.4	4.9	4.2	4.4	4.9	4.2

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x	125	75	201	200	75	200	200	125
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)								
s	1500		1500		1500		1500	
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	75	125
Potential Capacity	770	717
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	770	717
Probability of Queue free St.	1.00	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	75	125
Potential Capacity	1078	1026
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1078	1026
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.	1.00	1.00
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows	200	200
Potential Capacity	553	553
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	553	553
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	201	200
Potential Capacity	587	588
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	1.00
Maj. L, Min T Adj. Imp Factor.	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	586	588

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	200	200

Potential Capacity	553	553
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	553	553
Result for 2 stage process:		
a		
y		
C t	553	553
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	201	200
Potential Capacity	587	588
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	1.00
Maj. L, Min T Adj. Imp Factor.	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	586	588
Results for Two-stage process:		
a		
y		
C t	586	588

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	15	0	0	0	1	0
Movement Capacity (vph)	586	553	770	588	553	717
Shared Lane Capacity (vph)		586			553	

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	586	553	770	588	553	717
Volume	15	0	0	0	1	0
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max		
C sh	586	553
SUM C sep		
n		
C act		

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		15			1	
C(m) (vph)	1026	1078		586			553	
v/c	0.00	0.00		0.03			0.00	
95% queue length	0.00	0.00		0.08			0.01	
Control Delay	8.5	8.3		11.3			11.5	
LOS	A	A		B			B	
Approach Delay				11.3			11.5	
Approach LOS				B			B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(i1), Volume for stream 2 or 5	75	125
v(i2), Volume for stream 3 or 6	0	0
s(i1), Saturation flow rate for stream 2 or 5	1700	1700
s(i2), Saturation flow rate for stream 3 or 6	1700	1700
P*(oj)	1.00	1.00
d(M,LT), Delay for stream 1 or 4	8.5	8.3
N, Number of major street through lanes	1	1
d(rank,1) Delay for stream 2 or 5	0.0	0.0

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		192	416	20	170	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Hourly Flow Rate, HFR		197	428	20	175	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	121		9			
Peak Hour Factor, PHF	0.97		0.97			
Hourly Flow Rate, HFR	124		9			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		20	124		9			
C(m) (vph)		939	732		960			
v/c		0.02	0.17		0.01			
95% queue length		0.07	0.61		0.03			
Control Delay		8.9	10.9		8.8			
LOS		A	B		A			
Approach Delay				10.8				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		192	416	20	170	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Peak-15 Minute Volume		49	107	5	44	
Hourly Flow Rate, HFR		197	428	20	175	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2 1		1	2	
Configuration		T R		L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	121		9			
Peak Hour Factor, PHF	0.97		0.97			
Peak-15 Minute Volume	31		2			
Hourly Flow Rate, HFR	124		9			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		4	1		1			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.2	6.8		6.2			
2-stage		4.2	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		4	1		1			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)	
g(q2)	
g(q)	

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(1,prot)	V(t)	V(1,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		625	324		98			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	197	127						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	98	
Potential Capacity	960	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	960	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	625	
Potential Capacity	939	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	939	
Probability of Queue free St.	0.98	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	324	
Potential Capacity	647	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.98
Cap. Adj. factor due to Impeding mvmnt	0.98	0.97
Movement Capacity	633	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	742	729
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	742	713
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	729	480
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	1.00
Movement Capacity	713	480
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	197	
Potential Capacity	820	806
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	820	789
Part 2 - Second Stage		
Conflicting Flows	127	
Potential Capacity	888	921
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.99
Movement Capacity	869	912
Part 3 - Single Stage		
Conflicting Flows	324	
Potential Capacity	647	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.98
Cap. Adj. factor due to Impeding mvmnt	0.98	0.97
Movement Capacity	633	
Results for Two-stage process:		
a	0.95	0.95
y	0.79	
C t	732	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	124		9			
Movement Capacity (vph)	732		960			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	732		960			
Volume	124		9			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		20	124		9			
C(m) (vph)		939	732		960			
v/c		0.02	0.17		0.01			
95% queue length		0.07	0.61		0.03			
Control Delay		8.9	10.9		8.8			
LOS		A	B		A			
Approach Delay				10.8				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.98
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		8.9
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/8/2008
Period: P.M. Peak Hour
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
E/W St: CR 40/Follow That Dream Pkwy

Inter.: U.S. 19 & CR 40
Area Type: All other areas
Jurisd: FDOT District 2
Year : 2015 Peak Construction Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Volume	27	71	83	71	61	58	123	414	106	124	1209	30
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.5						10.0	25.5		
Yellow	4.0						4.0	4.0		
All Red	1.0						1.0	1.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	287	1640	0.37	0.17	22.6	C	22.3	C
R	277	1583	0.23	0.17	21.7	C		
Westbound								
LT	253	1444	0.56	0.17	25.4	C	24.4	C
R	277	1583	0.15	0.17	21.2	C		
Northbound								
L	321	1752	0.41	0.18	22.5	C		
TR	1516	3433	0.34	0.44	11.1	B	13.4	B
Southbound								
L	321	1752	0.41	0.18	22.5	C		
TR	1546	3501	0.85	0.44	19.7	B	19.9	B

Intersection Delay = 18.7 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & CR 40
Area Type: All other areas
Jurisdiction: FDOT District 2
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
E/W St: CR 40/Follow That Dream Pkwy N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	27	71	83	71	61	58	123	414	106	124	1209	30
% Heavy Veh	2	2	2	2	2	2	3	3	3	3	3	3
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PK 15 Vol	7	19	22	19	16	15	33	110	28	33	322	8
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900	1900	1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5
Adj Flow		105	63		141	41	131	518		132	1313	
%InSharedLn												
Prop LTs		0.276			0.539			0.000			0.000	
Prop RTs		0.000	1.000		0.000	1.000		0.151			0.021	
Peds Bikes		0			0			0			0	
Buses		0	0		0	0	0	0		0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Arriv. Type		3	3		3	3	3	3		3	3	
Unit Ext.		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Ext of g		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Ped Min g		3.2			3.2			3.2			3.2	

PHASE DATA

Phase Combination	1	2	3	4		5	6	7	8

EB	Left	A		NB	Left	A
	Thru	A			Thru	A
	Right	A			Right	A
	Peds				Peds	
WB	Left	A		SB	Left	A
	Thru	A			Thru	A
	Right	A			Right	A
	Peds				Peds	
NB	Right			EB	Right	
SB	Right			WB	Right	

Green	9.5		10.0	25.5
Yellow	4.0		4.0	4.0
All Red	1.0		1.0	1.0

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	27	71	83	71	61	58	123	414	106	124	1209	30
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj flow	29	76	63	76	65	41	131	440	78	132	1286	27
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Adj flow		105	63		141	41	131	518		132	1313	
Prop LTs		0.276			0.539			0.000			0.000	
Prop RTs		0.000	1.000		0.000	1.000		0.151			0.021	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LT	R		LT	R		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes 0	1	1	0	1	1		1	2	0	1	2	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	0.980	0.980		0.980	0.980		0.971	0.971		0.971	0.971	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fA	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fLU	1.000	1.000		1.000	1.000		1.000	0.952		1.000	0.952	
fRT	1.000	0.850		1.000	0.850			0.977			0.997	
fLT	0.880			0.775			0.950	1.000		0.950	1.000	
Sec.												
fLpb	1.000			1.000			1.000	1.000		1.000	1.000	
fRpb	1.000	1.000		1.000	1.000			1.000			1.000	
S	1640	1583		1444	1583		1752	3433		1752	3501	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							

Perm							
Left							
Prot							
Perm							
Thru	LT	105	1640	0.06	0.17	287	0.37
Right	R	63	1583	0.04	0.17	277	0.23
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LT	141	1444	# 0.10	0.17	253	0.56
Right	R	41	1583	0.03	0.17	277	0.15
Northbound							
Prot							
Perm							
Left	L	131	1752	0.07	0.18	321	0.41
Prot							
Perm							
Thru	TR	518	3433	0.15	0.44	1516	0.34
Right							
Southbound							
Prot							
Perm							
Left	L	132	1752	# 0.08	0.18	321	0.41
Prot							
Perm							
Thru	TR	1313	3501	# 0.38	0.44	1546	0.85
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.55
Total lost time per cycle, L = 12.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.69

Control Delay and LOS Determination

Appr/ Lane Grp	Ratios v/c	Ratios g/C	Unf Del d1	Prog Adj Fact	Lane Grp Cap	Incremental Factor Del k	Incremental Del d2	Res Del d3	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound												
LT	0.37	0.17	21.8	1.000	287	0.11	0.8	0.0	22.6	C	22.3	C
R	0.23	0.17	21.3	1.000	277	0.11	0.4	0.0	21.7	C		
Westbound												
LT	0.56	0.17	22.6	1.000	253	0.15	2.7	0.0	25.4	C	24.4	C
R	0.15	0.17	21.0	1.000	277	0.11	0.2	0.0	21.2	C		
Northbound												
L	0.41	0.18	21.6	1.000	321	0.11	0.8	0.0	22.5	C		
TR	0.34	0.44	11.0	1.000	1516	0.11	0.1	0.0	11.1	B	13.4	B
Southbound												
L	0.41	0.18	21.6	1.000	321	0.11	0.9	0.0	22.5	C		
TR	0.85	0.44	15.0	1.000	1546	0.38	4.7	0.0	19.7	B	19.9	B

Intersection delay = 18.7 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/11/2008
Period: P.M. Peak Hour
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
E/W St: Construction Access

Inter.: U.S. 19 & Construction Access
Area Type: All other areas
Jurisd: FDOT
Year : 2015 Peak Construction Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Volume				900		385		322	105	45	333	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru					Thru	A		
Right					Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru					Thru	A	A	
Right	A				Right			
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right	A		
Green	35.0					10.0	60.0	
Yellow	4.0					4.0	4.0	
All Red	1.0					1.0	1.0	

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
L	1031	3437	0.92	0.30	53.3	D		
							45.8	D
R	673	1583	0.60	0.43	28.2	C		
Northbound								
T	1768	3478	0.19	0.51	16.1	B	12.6	B
R	1332	1583	0.08	0.84	1.6	A		
Southbound								
L	315	3437	0.15	0.09	50.4	D		
T	2203	3478	0.16	0.63	9.0	A	13.9	B

Intersection Delay = 33.2 (sec/veh) Intersection LOS = C

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst:	KHA
Agency/Co.:	KHA
Date Performed:	12/11/2008
Analysis Time Period:	P.M. Peak Hour
Intersection:	U.S. 19 & Construction Access
Area Type:	All other areas
Jurisdiction:	FDOT
Analysis Year:	2015 Peak Construction Traffic

Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
E/W St: Construction Access N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume				900		385		322	105	45	333	
% Heavy Veh				2		2		4	2	2	4	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
PK 15 Vol				237		101		85	28	12	88	
Hi Ln Vol												
% Grade					0			0			0	
Ideal Sat				1900		1900		1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
LGConfig				L		R		T	R	L	T	
Lane Width				12.0		12.0		12.0	12.0	12.0	12.0	
RTOR Vol						0			0			
Adj Flow				947		405		339	111	47	351	
%InSharedLn												
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	
Peds Bikes	0				0			0				
Buses				0		0		0	0	0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet				0.0		0.0		0.0	0.0	0.0	0.0	
Arriv. Type				3		3		3	3	3	3	
Unit Ext.				3.0		3.0		3.0	3.0	3.0	3.0	
I Factor					1.000			1.000			1.000	
Lost Time				2.0		2.0		2.0	2.0	2.0	2.0	
Ext of g				3.0		3.0		3.0	3.0	3.0	3.0	
Ped Min g		3.2			3.2			3.2				

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8

EB	Left		NB	Left		
	Thru			Thru	A	
	Right			Right	A	
	Peds			Peds		
WB	Left	A	SB	Left	A	
	Thru			Thru	A	A
	Right	A		Right		
	Peds			Peds		
NB	Right	A	EB	Right		
SB	Right		WB	Right	A	

Green	35.0	10.0	60.0
Yellow	4.0	4.0	4.0
All Red	1.0	1.0	1.0

Cycle Length: 120.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V				900		385		322	105	45	333	
PHF				0.95		0.95		0.95	0.95	0.95	0.95	
Adj flow				947		405		339	111	47	351	
No. Lanes	0	0	0	2	0	1	0	2	1	2	2	0
Lane group				L		R		T	R	L	T	
Adj flow				947		405		339	111	47	351	
Prop LTs								0.000			0.000	
Prop RTs						1.000		0.000	1.000		0.000	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG				L		R		T	R	L	T	
So				1900		1900		1900	1900	1900	1900	
Lanes	0	0	0	2	0	1	0	2	1	2	2	0
fW				1.000		1.000		1.000	1.000	1.000	1.000	
fHV				0.980		0.980		0.962	0.980	0.980	0.962	
fG				1.000		1.000		1.000	1.000	1.000	1.000	
fP				1.000		1.000		1.000	1.000	1.000	1.000	
fBB				1.000		1.000		1.000	1.000	1.000	1.000	
fA				1.000		1.000		1.000	1.000	1.000	1.000	
fLU				0.971		1.000		0.952	1.000	0.971	0.952	
fRT						0.850		1.000	0.850		1.000	
fLT				0.950				1.000		0.950	1.000	
Sec.												
fLpb				1.000				1.000		1.000	1.000	
fRpb						1.000		1.000	1.000		1.000	
S				3437		1583		3478	1583	3437	3478	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio
Eastbound							
Prot							

Perm								
Left								
Prot								
Perm								
Thru								
Right								
Westbound								
Prot								
Perm								
Left	L	947	3437	#	0.28	0.30	1031	0.92
Prot								
Perm								
Thru								
Right	R	405	1583		0.26	0.43	673	0.60
Northbound								
Prot								
Perm								
Left								
Prot								
Perm								
Thru	T	339	3478	#	0.10	0.51	1768	0.19
Right	R	111	1583		0.07	0.84	1332	0.08
Southbound								
Prot								
Perm								
Left	L	47	3437	#	0.01	0.09	315	0.15
Prot								
Perm								
Thru	T	351	3478		0.10	0.63	2203	0.16
Right								

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.39
Total lost time per cycle, L = 12.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.43

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
Westbound												
L	0.92	0.30	40.6	1.000	1031	0.44	12.7	0.0	53.3	D		
											45.8	D
R	0.60	0.43	26.7	1.000	673	0.19	1.5	0.0	28.2	C		
Northbound												
T	0.19	0.51	16.1	1.000	1768	0.11	0.1	0.0	16.1	B	12.6	B
R	0.08	0.84	1.6	1.000	1332	0.11	0.0	0.0	1.6	A		
Southbound												
L	0.15	0.09	50.2	1.000	315	0.11	0.2	0.0	50.4	D		
T	0.16	0.63	9.0	1.000	2203	0.11	0.0	0.0	9.0	A	13.9	B

Intersection delay = 33.2 (sec/veh) Intersection LOS = C

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		392	9	4	1229	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		412	9	4	1293	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	80		35			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	84		36			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		4	84		36			
C(m) (vph)		1135	405		833			
v/c		0.00	0.21		0.04			
95% queue length		0.01	0.77		0.14			
Control Delay		8.2	16.2		9.5			
LOS		A	C		A			
Approach Delay				14.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		392	9	4	1229	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		103	2	1	323	
Hourly Flow Rate, HFR		412	9	4	1293	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	80		35			
Peak Hour Factor, PHF	0.95		0.95			
Peak-15 Minute Volume	21		9			
Hourly Flow Rate, HFR	84		36			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.8		6.2			
2-stage		4.1	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		421	1066		206			
s								
Px								
V c,u,x								

C r,x	
C plat,x	

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	412	654						
s		3000						
P(x)								
V(c,u,x)								

C(r,x)	

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	206	
Potential Capacity	833	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	833	
Probability of Queue free St.	0.96	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	421	
Potential Capacity	1135	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1135	
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	1066	
Potential Capacity	217	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.95
Movement Capacity	216	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	598	233
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	598	232
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	233	592
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	232	592
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	412	
Potential Capacity	637	223
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	637	222
Part 2 - Second Stage		
Conflicting Flows	654	
Potential Capacity	479	814
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.96
Movement Capacity	477	779
Part 3 - Single Stage		
Conflicting Flows	1066	
Potential Capacity	217	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.95
Movement Capacity	216	
Results for Two-stage process:		
a	0.95	0.95
y	1.61	
C t	405	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	84		36			
Movement Capacity (vph)	405		833			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	405		833			
Volume	84		36			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		4	84		36			
C(m) (vph)		1135	405		833			
v/c		0.00	0.21		0.04			
95% queue length		0.01	0.77		0.14			
Control Delay		8.2	16.2		9.5			
LOS		A	C		A			
Approach Delay				14.2				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		8.2
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: P.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	147	15	0	106	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	154	15	0	111	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided /					
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	1	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR	0	1	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		1			1	
C(m) (vph)	1040	982		504			493	
v/c	0.00	0.00		0.00			0.00	
95% queue length	0.00	0.00		0.01			0.01	
Control Delay	8.5	8.7		12.2			12.3	
LOS	A	A		B			B	
Approach Delay				12.2			12.3	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/15/2008
Analysis Time Period: P.M. Peak Hour
Intersection: CR 40 & Heavy Haul Driveway
Jurisdiction: Levy County
Units: U. S. Customary
Analysis Year: 2015 Peak Construction Traffic
Project ID: Levy County Advanced Reactor - Heavy Haul Route 2
East/West Street: CR 40
North/South Street: Heavy Haul Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	0	147	15	0	106	0
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	39	4	0	28	0
Hourly Flow Rate, HFR	0	154	15	0	111	0
Percent Heavy Vehicles	100	--	--	100	--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	0	1	1	0	1	0
Configuration	LT		R	LTR		
Upstream Signal?	No			No		

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	0	1	0	0	1	0
Peak Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Peak-15 Minute Volume	0	0	0	0	0	0
Hourly Flow Rate, HFR	0	1	0	0	1	0
Percent Heavy Vehicles	100	100	100	100	100	100
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		No /
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:	154	111
Shared ln volume, major rt vehicles:	0	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t(c,hv)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(hv)	100	100	100	100	100	100	100	100
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage	5.1	5.1	8.1	7.5	7.2	8.1	7.5	7.2
2-stage								

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)	2.20	2.20	3.50	4.00	3.30	3.50	4.00	3.30
t(f,HV)	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
P(HV)	100	100	100	100	100	100	100	100
t(f)	3.1	3.1	4.4	4.9	4.2	4.4	4.9	4.2

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2 V(t)	Movement 2 V(l,prot)	Movement 5 V(t)	Movement 5 V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(1,prot)	V(t)	V(1,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x	111	169	266	265	154	273	280	111
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)								
s	1500		1500		1500		1500	
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	154	111
Potential Capacity	688	732
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	688	732
Probability of Queue free St.	1.00	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	169	111
Potential Capacity	982	1040
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	982	1040
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.	1.00	1.00
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows	265	280
Potential Capacity	504	493
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	504	493
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	266	273
Potential Capacity	527	521
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	1.00
Maj. L, Min T Adj. Imp Factor.	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	526	520

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Probability of Queue free St.		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	265	280

Potential Capacity	504	493
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	504	493
Result for 2 stage process:		
a		
y		
C t	504	493
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor		
Cap. Adj. factor due to Impeding mvmnt		
Movement Capacity		
Part 3 - Single Stage		
Conflicting Flows	266	273
Potential Capacity	527	521
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	1.00	1.00
Maj. L, Min T Adj. Imp Factor.	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	526	520
Results for Two-stage process:		
a		
y		
C t	526	520

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	0	1	0	0	1	0
Movement Capacity (vph)	526	504	688	520	493	732
Shared Lane Capacity (vph)		504			493	

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	526	504	688	520	493	732
Volume	0	1	0	0	1	0
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max		
C sh	504	493
SUM C sep		
n		
C act		

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	0	0		1			1	
C(m) (vph)	1040	982		504			493	
v/c	0.00	0.00		0.00			0.00	
95% queue length	0.00	0.00		0.01			0.01	
Control Delay	8.5	8.7		12.2			12.3	
LOS	A	A		B			B	
Approach Delay				12.2			12.3	
Approach LOS				B			B	

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(il), Volume for stream 2 or 5	154	111
v(i2), Volume for stream 3 or 6	0	0
s(il), Saturation flow rate for stream 2 or 5	1700	1700
s(i2), Saturation flow rate for stream 3 or 6	1700	1700
P*(oj)	1.00	1.00
d(M,LT), Delay for stream 1 or 4	8.5	8.7
N, Number of major street through lanes	1	1
d(rank,1) Delay for stream 2 or 5	0.0	0.0

2015 Roadway Analysis

U.S. 19	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2015 Background Traffic**		Project Traffic	2015 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
SR 121 to Project Site	B	2,800	510	A	469	979	A
Project Site to CR 40	B	2,800	522	A	1,109	1,631	B

SR 121	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2015 Background Traffic**		Project Traffic	2015 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
U.S. 19 to NW 27th Street	C	770	160	A	406	566	C

US 41	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2015 Background Traffic**		Project Traffic	2015 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
SE 80th Street/NW 27th Street to CR 328	C	770	449	C	326	775	C***

CR 40	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2015 Background Traffic**		Project Traffic	2015 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
U.S. 19 to Heavy Haul Driveway	C	1,070	199	C	79	278	C

*These volumes were attained from the FDOT 2007 Generalized Level of Service Tables.

**These two-way volumes along segments between counted intersections were estimated based upon the average of the intersection volumes counted along the segment.

***LOS is based on a detailed *HIGHPLAN* analysis of the segment.

HIGHPLAN 2007 Conceptual Planning Analysis

Description/File Information

File Name	HP_US 41.xml	**Road Name**	US 41	**Study Period**	K100
Analyst	KHA	**From**	CR 328	**Analysis Type**	Segment
Date Prepared	2/24/2009	**To**	NW 27th Street	**Version Date**	11/9/07
Agency	FDOT	**Peak Direction**	Northbound		
District	2	**Off Peak Direction**	Southbound		
User Notes					

Segment Data

Roadway Variables				Traffic Variables			
Area Type	Rural Undeveloped	**Segment Length**	1	**AADT**	4400	**PHF**	.93
# Thru Lanes	2	**Median**	No	**K**	.111	**% Heavy Vehicles**	3
Terrain	Level	**Left Turn Lanes**	Yes	**D**	.5916	**Base Capacity**	1700
Posted Speed	60	**Pass Lane Spacing**	N/A	**Peak Dir. Hrly. Vol.**	289	**Local Adj. Factor**	1
Free Flow Speed	65	**% NPZ**	20	**Off Peak Dir. Hrly. Vol.**	199	**Adjusted Capacity**	1675

LOS Results

v/c Ratio	0.18	**Density**	N/A	**PTSF**	53.66	**ATS**	58.8	**% FFS**	90.40
FFS Delay	5.90	**LOS Thresh. Delay**	0.00	**Service Measure**	PTSF	**LOS**	C		

Service Volumes

Note: The maximum normally acceptable directional service volume for LOS E in Florida for this facility type and area type is 1500 vphpl.

	A	B	C	D	E
Lanes	**Hourly Volume In Peak Direction**				
1	130	250	460	790	1570
2					
3					
4					
Lanes	**Hourly Volume In Both Directions**				
2	220	420	780	1340	2650
4					
6					
8					
Lanes	**Annual Average Daily Traffic**				
2	2000	3800	7000	12100	23900
4					
6					

8					
Lanes	**Service Measure Thresholds**				
1	35.00	50.00	65.00	80.00	80.00
2					
3					
4					

Cannot be achieved based on input data provided.

Peak Operational Workforce Traffic Conditions

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TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2017 Peak Operations Traffic
Project ID: Levy County Advanced Reactor
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		298	148	64	253	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		313	155	67	266	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1		1	2
Configuration		T	R		L	T
Upstream Signal?		No				No

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	14		6			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	14		6			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		67	14		6			
C(m) (vph)		1090	582		888			
v/c		0.06	0.02		0.01			
95% queue length		0.20	0.07		0.02			
Control Delay		8.5	11.3		9.1			
LOS		A	B		A			
Approach Delay				10.7				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: A.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2017 Peak Operations Traffic
Project ID: Levy County Advanced Reactor
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		298	148	64	253	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		78	39	17	67	
Hourly Flow Rate, HFR		313	155	67	266	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	14		6			
Peak Hour Factor, PHF	0.95		0.95			
Peak-15 Minute Volume	4		2			
Hourly Flow Rate, HFR	14		6			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.8		6.2			
2-stage		4.1	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		468	580		156			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	313	267						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	156	
Potential Capacity	888	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	888	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	468	
Potential Capacity	1090	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1090	
Probability of Queue free St.	0.94	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.94	0.94
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	580	
Potential Capacity	445	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.94
Maj. L, Min T Adj. Imp Factor.		0.95
Cap. Adj. factor due to Impeding mvmnt	0.94	0.95
Movement Capacity	418	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	661	605
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.94
Movement Capacity	661	568
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	605	565
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.94	1.00
Movement Capacity	568	565
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.94	0.94
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	313	
Potential Capacity	715	652
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.94
Movement Capacity	715	612
Part 2 - Second Stage		
Conflicting Flows	267	
Potential Capacity	754	862
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.94	0.99
Movement Capacity	708	856
Part 3 - Single Stage		
Conflicting Flows	580	
Potential Capacity	445	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.94
Maj. L, Min T Adj. Imp Factor.		0.95
Cap. Adj. factor due to Impeding mvmnt	0.94	0.95
Movement Capacity	418	
Results for Two-stage process:		
a	0.95	0.95
y	1.02	
C t	582	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	14		6			
Movement Capacity (vph)	582		888			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	582		888			
Volume	14		6			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		67	14		6			
C(m) (vph)		1090	582		888			
v/c		0.06	0.02		0.01			
95% queue length		0.20	0.07		0.02			
Control Delay		8.5	11.3		9.1			
LOS		A	B		A			
Approach Delay				10.7				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.94
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		8.5
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2017 Peak Operations Traffic
Project ID: Levy County Advanced Reactor
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		149	103	21	171	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Hourly Flow Rate, HFR		153	106	21	176	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	88		10			
Peak Hour Factor, PHF	0.97		0.97			
Hourly Flow Rate, HFR	90		10			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		21	90		10			
C(m) (vph)		1288	762		987			
v/c		0.02	0.12		0.01			
95% queue length		0.05	0.40		0.03			
Control Delay		7.8	10.4		8.7			
LOS		A	B		A			
Approach Delay				10.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & SR 121
Jurisdiction: FDOT District 2
Units: U. S. Customary
Analysis Year: 2017 Peak Operations Traffic
Project ID: Levy County Advanced Reactor
East/West Street: SR 121
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		149	103	21	171	
Peak-Hour Factor, PHF		0.97	0.97	0.97	0.97	
Peak-15 Minute Volume		38	27	5	44	
Hourly Flow Rate, HFR		153	106	21	176	
Percent Heavy Vehicles		--	--	4	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1	1	2	
Configuration		T	R	L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	88		10			
Peak Hour Factor, PHF	0.97		0.97			
Peak-15 Minute Volume	23		3			
Hourly Flow Rate, HFR	90		10			
Percent Heavy Vehicles	1		1			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0
Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		4	1		1			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.2	6.8		6.2			
2-stage		4.2	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		4	1		1			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				
Rp (from Exhibit 16-11)				
Proportion vehicles arriving on green P				

g(q1)
g(q2)
g(q)

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p	0.000		0.000	

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process								
Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		259	283		76			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	153	130						
s		3000						
P(x)								
V(c,u,x)								
C(r,x)								

C(plat,x)

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	76	
Potential Capacity	987	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	987	
Probability of Queue free St.	0.99	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	259	
Potential Capacity	1288	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1288	
Probability of Queue free St.	0.98	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	283	
Potential Capacity	687	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.99
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity	676	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	775	726
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	775	714
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	726	697
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	1.00
Movement Capacity	714	697
Part 3 - Single Stage		
Conflicting Flows		

Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	153	
Potential Capacity	862	803
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.98
Movement Capacity	862	790
Part 2 - Second Stage		
Conflicting Flows	130	
Potential Capacity	885	944
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.98	0.99
Movement Capacity	871	934
Part 3 - Single Stage		
Conflicting Flows	283	
Potential Capacity	687	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		0.98
Maj. L, Min T Adj. Imp Factor.		0.99
Cap. Adj. factor due to Impeding mvmnt	0.98	0.98
Movement Capacity	676	
Results for Two-stage process:		
a	0.95	0.95
y	0.95	
C t	762	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	90		10			
Movement Capacity (vph)	762		987			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	762		987			
Volume	90		10			
Delay						
Q sep						
Q sep +1						
round (Qsep +1)						

n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		21	90		10			
C(m) (vph)		1288	762		987			
v/c		0.02	0.12		0.01			
95% queue length		0.05	0.40		0.03			
Control Delay		7.8	10.4		8.7			
LOS		A	B		A			
Approach Delay				10.2				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	0.98
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		7.8
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

HCS+: Signalized Intersections Release 5.3

Analyst: KHA
Agency: KHA
Date: 12/8/2008
Period: P.M. Peak Hour
Project ID: Levy County Advanced Reactor
E/W St: CR 40/Follow That Dream Pkwy

Inter.: U.S. 19 & CR 40
Area Type: All other areas
Jurisd: FDOT District 2
Year : 2017 Peak Operations Traffic
N/S St: U.S. 19

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Volume	27	74	86	74	63	55	129	334	111	62	433	18
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	10.0						10.0	25.0		
Yellow	4.0						4.0	4.0		
All Red	1.0						1.0	1.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	302	1648	0.36	0.18	22.1	C	21.8	C
R	290	1583	0.23	0.18	21.3	C		
Westbound								
LT	264	1440	0.55	0.18	24.8	C	23.9	C
R	290	1583	0.13	0.18	20.7	C		
Northbound								
L	321	1752	0.43	0.18	22.6	C		
TR	1479	3412	0.30	0.43	11.2	B	13.9	B
Southbound								
L	321	1752	0.21	0.18	21.1	C		
TR	1515	3497	0.31	0.43	11.3	B	12.5	B

Intersection Delay = 15.6 (sec/veh) Intersection LOS = B

Phone: Fax:
E-Mail:

OPERATIONAL ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/8/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & CR 40
Area Type: All other areas
Jurisdiction: FDOT District 2
Analysis Year: 2017 Peak Operations Traffic
Project ID: Levy County Advanced Reactor
E/W St: CR 40/Follow That Dream Pkwy N/S St: U.S. 19

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	27	74	86	74	63	55	129	334	111	62	433	18
% Heavy Veh	2	2	2	2	2	2	3	3	3	3	3	3
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PK 15 Vol	7	20	23	20	17	15	34	89	30	16	115	5
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900	1900		1900	1900	1900	1900		1900	1900	
ParkExist												
NumPark												
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
LGConfig		LT	R		LT	R	L	TR		L	TR	
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			24			19			33			5
Adj Flow		108	66		146	38	137	438		66	475	
%InSharedLn												
Prop LTs		0.269			0.541			0.000			0.000	
Prop RTs	0.000		1.000	0.000		1.000	0.189			0.029		
Peds Bikes	0			0			0			0		
Buses		0	0		0	0	0	0		0	0	
%InProtPhase												

Duration 0.25 Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Arriv. Type		3	3		3	3	3	3		3	3	
Unit Ext.		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0	2.0		2.0	2.0	2.0	2.0		2.0	2.0	
Ext of g		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Ped Min g		3.2			3.2			3.2			3.2	

PHASE DATA

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	10.0					10.0	25.0	
Yellow	4.0					4.0	4.0	
All Red	1.0					1.0	1.0	

Cycle Length: 60.0 secs

VOLUME ADJUSTMENT AND SATURATION FLOW WORKSHEET

Volume Adjustment

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume, V	27	74	86	74	63	55	129	334	111	62	433	18
PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj flow	29	79	66	79	67	38	137	355	83	66	461	14
No. Lanes	0	1	1	0	1	1	1	2	0	1	2	0
Lane group		LT	R		LT	R	L	TR		L	TR	
Adj flow		108	66		146	38	137	438		66	475	
Prop LTs		0.269			0.541			0.000			0.000	
Prop RTs		0.000	1.000		0.000	1.000		0.189			0.029	

Saturation Flow Rate (see Exhibit 16-7 to determine the adjustment factors)

	Eastbound			Westbound			Northbound			Southbound		
LG	LT	R		LT	R		L	TR		L	TR	
So	1900	1900		1900	1900		1900	1900		1900	1900	
Lanes 0	1	1	0	1	1		1	2	0	1	2	0
fW	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fHV	0.980	0.980		0.980	0.980		0.971	0.971		0.971	0.971	
fG	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fP	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fBB	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fA	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
fLU	1.000	1.000		1.000	1.000		1.000	0.952		1.000	0.952	
fRT	1.000	0.850		1.000	0.850			0.972			0.996	
fLT	0.885			0.773			0.950	1.000		0.950	1.000	
Sec.												
fLpb	1.000			1.000			1.000	1.000		1.000	1.000	
fRpb	1.000	1.000		1.000	1.000			1.000			1.000	
S	1648	1583		1440	1583		1752	3412		1752	3497	
Sec.												

CAPACITY AND LOS WORKSHEET

Capacity Analysis and Lane Group Capacity

Appr/ Mvmt	Lane Group	Adj Flow Rate (v)	Adj Sat Flow Rate (s)	Flow Ratio (v/s)	Green Ratio (g/C)	--Lane Group-- Capacity (c)	v/c Ratio

Eastbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LT	108	1648	0.07	0.18	302	0.36
Right	R	66	1583	0.04	0.18	290	0.23
Westbound							
Prot							
Perm							
Left							
Prot							
Perm							
Thru	LT	146	1440	# 0.10	0.18	264	0.55
Right	R	38	1583	0.02	0.18	290	0.13
Northbound							
Prot							
Perm							
Left	L	137	1752	# 0.08	0.18	321	0.43
Prot							
Perm							
Thru	TR	438	3412	0.13	0.43	1479	0.30
Right							
Southbound							
Prot							
Perm							
Left	L	66	1752	0.04	0.18	321	0.21
Prot							
Perm							
Thru	TR	475	3497	# 0.14	0.43	1515	0.31
Right							

Sum of flow ratios for critical lane groups, Yc = Sum (v/s) = 0.32
Total lost time per cycle, L = 12.00 sec
Critical flow rate to capacity ratio, Xc = (Yc)(C)/(C-L) = 0.39

Control Delay and LOS Determination

Appr/ Lane	Ratios		Unf Del	Prog Adj	Lane Grp	Incremental Factor	Del	Res Del	Lane Group		Approach	
Grp	v/c	g/C	d1	Fact	Cap	k	d2	d3	Delay	LOS	Delay	LOS
Eastbound												
LT	0.36	0.18	21.4	1.000	302	0.11	0.7	0.0	22.1	C	21.8	C
R	0.23	0.18	20.9	1.000	290	0.11	0.4	0.0	21.3	C		
Westbound												
LT	0.55	0.18	22.3	1.000	264	0.15	2.5	0.0	24.8	C	23.9	C
R	0.13	0.18	20.5	1.000	290	0.11	0.2	0.0	20.7	C		
Northbound												
L	0.43	0.18	21.7	1.000	321	0.11	0.9	0.0	22.6	C		
TR	0.30	0.43	11.1	1.000	1479	0.11	0.1	0.0	11.2	B	13.9	B
Southbound												
L	0.21	0.18	20.8	1.000	321	0.11	0.3	0.0	21.1	C		
TR	0.31	0.43	11.1	1.000	1515	0.11	0.1	0.0	11.3	B	12.5	B

Intersection delay = 15.6 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst:	KHA
Agency/Co.:	KHA
Date Performed:	12/11/2008
Analysis Time Period:	P.M. Peak Hour
Intersection:	U.S. 19 & Operations Access
Jurisdiction:	FDOT
Units: U. S. Customary	
Analysis Year:	2017 Peak Operations Traffic
Project ID:	Levy County Advanced Reactor
East/West Street:	Operations Access
North/South Street:	U.S. 19
Intersection Orientation: NS	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		298	14	6	341	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Hourly Flow Rate, HFR		313	14	6	358	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2	1		1	2
Configuration		T	R		L	T
Upstream Signal?		No				No

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	130		55			
Peak Hour Factor, PHF	0.95		0.95			
Hourly Flow Rate, HFR	136		57			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		6	136		57			
C(m) (vph)		1229	633		888			
v/c		0.00	0.21		0.06			
95% queue length		0.01	0.81		0.21			
Control Delay		7.9	12.2		9.3			
LOS		A	B		A			
Approach Delay				11.4				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.3

Phone: Fax:
E-Mail:

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: KHA
Agency/Co.: KHA
Date Performed: 12/11/2008
Analysis Time Period: P.M. Peak Hour
Intersection: U.S. 19 & Operations Access
Jurisdiction: FDOT
Units: U. S. Customary
Analysis Year: 2017 Peak Operations Traffic
Project ID: Levy County Advanced Reactor
East/West Street: Operations Access
North/South Street: U.S. 19
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume		298	14	6	341	
Peak-Hour Factor, PHF		0.95	0.95	0.95	0.95	
Peak-15 Minute Volume		78	4	2	90	
Hourly Flow Rate, HFR		313	14	6	358	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Raised curb			/ 2		
RT Channelized?			No			
Lanes		2 1		1	2	
Configuration		T R		L	T	
Upstream Signal?		No			No	

Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume	130		55			
Peak Hour Factor, PHF	0.95		0.95			
Peak-15 Minute Volume	34		14			
Hourly Flow Rate, HFR	136		57			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Pedestrian Volumes and Adjustments

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0
Lane Width (ft)	12.0	12.0	12.0	12.0
Walking Speed (ft/sec)	4.0	4.0	4.0	4.0

Percent Blockage	0	0	0	0

Upstream Signal Data

	Prog. Flow vph	Sat Flow vph	Arrival Type	Green Time sec	Cycle Length sec	Prog. Speed mph	Distance to Signal feet
S2 Left-Turn							
Through							
S5 Left-Turn							
Through							

Worksheet 3-Data for Computing Effect of Delay to Major Street Vehicles

	Movement 2	Movement 5
Shared ln volume, major th vehicles:		
Shared ln volume, major rt vehicles:		
Sat flow rate, major th vehicles:		
Sat flow rate, major rt vehicles:		
Number of major street through lanes:		

Worksheet 4-Critical Gap and Follow-up Time Calculation

Critical Gap Calculation

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(c,base)		4.1	7.5		6.2			
t(c,hv)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
P(hv)		2	2		2			
t(c,g)			0.20	0.20	0.10	0.20	0.20	0.10
Percent Grade			0.00	0.00	0.00	0.00	0.00	0.00
t(3,lt)		0.00	0.70		0.00			
t(c,T): 1-stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-stage	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
t(c) 1-stage		4.1	6.8		6.2			
2-stage		4.1	5.8		6.2			

Follow-Up Time Calculations

Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
t(f,base)		2.20	3.50		3.30			
t(f,HV)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
P(HV)		2	2		2			
t(f)		2.2	3.5		3.3			

Worksheet 5-Effect of Upstream Signals

Computation 1-Queue Clearance Time at Upstream Signal

	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
V prog				
Total Saturation Flow Rate, s (vph)				
Arrival Type				
Effective Green, g (sec)				
Cycle Length, C (sec)				

Rp (from Exhibit 16-11)	
Proportion vehicles arriving on green P	
g(q1)	
g(q2)	
g(q)	

Computation 2-Proportion of TWSC Intersection Time blocked	Movement 2		Movement 5	
	V(t)	V(l,prot)	V(t)	V(l,prot)
alpha				
beta				
Travel time, t(a) (sec)				
Smoothing Factor, F				
Proportion of conflicting flow, f				
Max platooned flow, V(c,max)				
Min platooned flow, V(c,min)				
Duration of blocked period, t(p)				
Proportion time blocked, p		0.000		0.000

Computation 3-Platoon Event Periods	Result
p(2)	0.000
p(5)	0.000
p(dom)	
p(subo)	
Constrained or unconstrained?	

Proportion unblocked for minor movements, p(x)	(1) Single-stage Process	(2) Two-Stage Process Stage I	(3) Two-Stage Process Stage II
p(1)			
p(4)			
p(7)			
p(8)			
p(9)			
p(10)			
p(11)			
p(12)			

Computation 4 and 5 Single-Stage Process Movement	1 L	4 L	7 L	8 T	9 R	10 L	11 T	12 R
V c,x		327	504		156			
s								
Px								
V c,u,x								
C r,x								
C plat,x								

Two-Stage Process	7		8		10		11	
	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
V(c,x)	313	191						
s		3000						
P(x)								
V(c,u,x)								

C(r,x)	
C(plat,x)	

Worksheet 6-Impedance and Capacity Equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	156	
Potential Capacity	888	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	888	
Probability of Queue free St.	0.94	1.00
Step 2: LT from Major St.	**4**	**1**
Conflicting Flows	327	
Potential Capacity	1229	
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1229	
Probability of Queue free St.	1.00	1.00
Maj L-Shared Prob Q free St.		
Step 3: TH from Minor St.	**8**	**11**
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	**7**	**10**
Conflicting Flows	504	
Potential Capacity	497	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.93
Movement Capacity	495	

Worksheet 7-Computation of the Effect of Two-stage Gap Acceptance

Step 3: TH from Minor St.	8	11
Part 1 - First Stage		
Conflicting Flows		
Potential Capacity	661	624
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	661	621
Probability of Queue free St.	1.00	1.00
Part 2 - Second Stage		
Conflicting Flows		
Potential Capacity	624	651
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	621	651

Part 3 - Single Stage		
Conflicting Flows		
Potential Capacity		
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity		
Result for 2 stage process:		
a	0.95	0.95
y		
C t		
Probability of Queue free St.	1.00	1.00
Step 4: LT from Minor St.	7	10
Part 1 - First Stage		
Conflicting Flows	313	
Potential Capacity	715	675
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	1.00
Movement Capacity	715	672
Part 2 - Second Stage		
Conflicting Flows	191	
Potential Capacity	822	862
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.94
Movement Capacity	818	807
Part 3 - Single Stage		
Conflicting Flows	504	
Potential Capacity	497	
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor		1.00
Maj. L, Min T Adj. Imp Factor.		1.00
Cap. Adj. factor due to Impeding mvmnt	1.00	0.93
Movement Capacity	495	
Results for Two-stage process:		
a	0.95	0.95
y	0.68	
C t	633	

Worksheet 8-Shared Lane Calculations

Movement	7 L	8 T	9 R	10 L	11 T	12 R
Volume (vph)	136		57			
Movement Capacity (vph)	633		888			
Shared Lane Capacity (vph)						

Worksheet 9-Computation of Effect of Flared Minor Street Approaches

Movement	7 L	8 T	9 R	10 L	11 T	12 R
C sep	633		888			
Volume	136		57			
Delay						
Q sep						

Q sep +1	
round (Qsep +1)	
n max	
C sh	
SUM C sep	
n	
C act	

Worksheet 10-Delay, Queue Length, and Level of Service

Movement	1	4	7	8	9	10	11	12
Lane Config		L	L		R			
v (vph)		6	136		57			
C(m) (vph)		1229	633		888			
v/c		0.00	0.21		0.06			
95% queue length		0.01	0.81		0.21			
Control Delay		7.9	12.2		9.3			
LOS		A	B		A			
Approach Delay				11.4				
Approach LOS				B				

Worksheet 11-Shared Major LT Impedance and Delay

	Movement 2	Movement 5
p(oj)	1.00	1.00
v(il), Volume for stream 2 or 5		
v(i2), Volume for stream 3 or 6		
s(il), Saturation flow rate for stream 2 or 5		
s(i2), Saturation flow rate for stream 3 or 6		
P*(oj)		
d(M,LT), Delay for stream 1 or 4		7.9
N, Number of major street through lanes		
d(rank,1) Delay for stream 2 or 5		

2017 Roadway Analysis

U.S. 19	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			Background Traffic**		Project Traffic	2017 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
SR 121 to Project Site	B	2,800	533	A	61	594	A
Project Site to CR 40	B	2,800	545	A	144	689	A

SR 121	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2017 Background Traffic**		Project Traffic	2017 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
U.S. 19 to NW 27th Street	C	770	169	A	53	222	A

US 41	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2017 Background Traffic**		Project Traffic	2017 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
SE 80th Street/NW 27th Street to CR 328	C	770	474	C	42	516	C

CR 40	Adopted Minimum Standard		P.M. Peak-Hour Roadway Traffic Volumes				
			2017 Background Traffic**		Project Traffic	2017 Total Traffic	
Segment	LOS	Volume (Two-way)*	Volume (Two-way)	LOS	Volume (Two-way)	Volume (Two-way)	LOS
U.S. 19 to Heavy Haul Driveway	C	1,070	208	C	8	216	C

*These volumes were attained from the FDOT 2007 Generalized Level of Service Tables.

**These two-way volumes along segments between counted intersections were estimated based upon the average of the intersection volumes counted along the segment.

APPENDIX F:
Turn-Lane Length Requirements Worksheets

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	U.S. 19 & Construction Driveway
Scenario:	Peak Construction, Heavy Haul Route 2
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	AM Peak Hour
Approach:	Northbound
Traffic Control:	Signalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Right-Turn Lane
Number of Lanes:	1
Design Speed:	65 Miles per Hour

SIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	700 vph
Cycle Length:	120 sec
Peak Factor:	2

SIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	700 vph
Cycle Length:	120 sec
Seconds per Hour:	3600 sec
Cycles Per Hour:	30
Vehicles per Cycle:	23.3
Vehicle Length:	25 feet
Average Vehicle Queue:	582.5 feet
Peak Factor:	2
Peak Storage Length:	1165 feet
Minimum Storage Length:	25 feet
Number of Lanes:	1
Required Design Storage per Lane:	1150 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length (incl. Taper):	1610 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	1150 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length (incl. Taper):	1610 feet

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	U.S. 19 & Construction Driveway
Scenario:	Peak Construction, Heavy Haul Route 2
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	AM Peak Hour
Approach:	Southbound
Traffic Control:	Signalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Left-Turn Lane
Number of Lanes:	2
Design Speed:	65 Miles per Hour

SIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	385 vph
Cycle Length:	120 sec
Peak Factor:	2

SIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	385 vph
Cycle Length:	120 sec
Seconds per Hour:	3600 sec
Cycles Per Hour:	30
Vehicles per Cycle:	12.8
Vehicle Length:	25 feet
Average Vehicle Queue:	320 feet
Peak Factor:	2
Peak Storage Length:	640 feet
Minimum Storage Length:	50 feet
Number of Lanes:	2
Required Design Storage per Lane:	325 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length (incl. Taper):	785 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	325 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length (incl. Taper):	785 feet

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	U.S. 19 & Operations Driveway
Scenario:	Peak Operations
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	AM Peak Hour
Approach:	Northbound
Traffic Control:	Unsignalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Right-Turn Lane
Number of Lanes:	1
Design Speed:	65 Miles per Hour

UNSIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	148 vph
Peak Cycle Factor:	30

UNSIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	148 vph
Peak Cycle Factor:	30
Expected Vehicle Queue:	N/A
Vehicle Length:	25 feet
Peak Storage Length:	N/A feet
Minimum Storage Length:	0 feet
Number of Lanes:	1
Required Design Storage per Lane:	0 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length:	460 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	0 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length (incl. Taper):	460 feet

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	U.S. 19 & Operations Driveway
Scenario:	Peak Operations
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	AM Peak Hour
Approach:	Northbound
Traffic Control:	Unsignalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Left-Turn Lane
Number of Lanes:	1
Design Speed:	65 Miles per Hour

UNSIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	64 vph
Peak Cycle Factor:	30

UNSIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	64 vph
Peak Cycle Factor:	30
Expected Vehicle Queue:	2.1
Vehicle Length:	25 feet
Peak Storage Length:	52.5 feet
Minimum Storage Length:	50 feet
Number of Lanes:	1
Required Design Storage per Lane:	50 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length:	510 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	50 feet
Total Deceleration Distance:	460 feet
Total Turn Lane Length (incl. Taper):	510 feet

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	CR 40 & Heavy Haul Driveway
Scenario:	Peak Construction, Heavy Haul Route 1 & 2
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	PM Peak Hour
Approach:	Eastbound
Traffic Control:	Unsignalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Right-Turn Lane
Number of Lanes:	1
Design Speed:	60 Miles per Hour

UNSIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	15 vph
Peak Cycle Factor:	30

UNSIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	15 vph
Peak Cycle Factor:	30
Expected Vehicle Queue:	N/A
Vehicle Length:	25 feet
Peak Storage Length:	N/A feet
Minimum Storage Length:	0 feet
Number of Lanes:	1
Required Design Storage per Lane:	0 feet
Total Deceleration Distance:	405 feet
Total Turn Lane Length:	405 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	0 feet
Total Deceleration Distance:	405 feet
Total Turn Lane Length (incl. Taper):	405 feet

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	U.S. 19 & CR 40
Scenario:	Peak Construction, Heavy Haul Route 1 & 2
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	PM Peak Hour
Approach:	Southbound
Traffic Control:	Signalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Left-Turn Lane
Number of Lanes:	1
Design Speed:	55 Miles per Hour

SIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	124 vph
Cycle Length:	60 sec
Peak Factor:	2

SIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	124 vph
Cycle Length:	60 sec
Seconds per Hour:	3600 sec
Cycles Per Hour:	60
Vehicles per Cycle:	2.1
Vehicle Length:	25 feet
Average Vehicle Queue:	52.5 feet
Peak Factor:	2
Peak Storage Length:	105 feet
Minimum Storage Length:	50 feet
Number of Lanes:	1
Required Design Storage per Lane:	100 feet
Total Deceleration Distance:	350 feet
Total Turn Lane Length (incl. Taper):	450 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	100 feet
Total Deceleration Distance:	350 feet
Total Turn Lane Length (incl. Taper):	450 feet

TURN LANE CALCULATIONS

Calculations based upon FDOT Guidelines

Intersection:	U.S. 19 & CR 40
Scenario:	Peak Construction, Heavy Haul Route 2
Date of Analysis:	12/17/2008
Analyst:	KHA

GENERAL INFORMATION	
Time of Day:	PM Peak Hour
Approach:	Westbound
Traffic Control:	Signalized Intersection
Geometric Conditions:	Rural Conditions
Turn Lane Type:	Right-Turn Lane
Number of Lanes:	1
Design Speed:	40 Miles per Hour

SIGNALIZED INPUT PARAMETERS	
Turning Traffic Volume:	58 vph
Cycle Length:	60 sec
Peak Factor:	2

SIGNALIZED TURN LANE CALCULATIONS	
Turning Traffic Volume:	58 vph
Cycle Length:	60 sec
Seconds per Hour:	3600 sec
Cycles Per Hour:	60
Vehicles per Cycle:	1
Vehicle Length:	25 feet
Average Vehicle Queue:	25 feet
Peak Factor:	2
Peak Storage Length:	50 feet
Minimum Storage Length:	25 feet
Number of Lanes:	1
Required Design Storage per Lane:	50 feet
Total Deceleration Distance:	290 feet
Total Turn Lane Length (incl. Taper):	340 feet

TURN LANE CALCULATION RESULTS	
Design Storage Length:	50 feet
Total Deceleration Distance:	290 feet
Total Turn Lane Length (incl. Taper):	340 feet