

## **Appendix C-1**

### **Methodology Statement**

**(Modified to reflect discussions at November 15, 2012 meeting with ACOE  
and to include alternatives determined to be practicable and consistent  
with the project purpose)**

# **Appendix C-1**

## **RIDGE ROAD EXTENSION**

**ACOE Permit Application Number: (SAJ-2011-00551 (IP-TEH))**

### **METHODOLOGY FOR ADDITIONAL TRANSPORTATION ANALYSIS**

**(Revised to reflect discussions at November 15, 2012 meeting with ACOE, and to include alternatives determined to be practicable and consistent with the project purpose.)**

**Prepared for:**

**Pasco County, Florida**

**Prepared by:**

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**Revised  
December 1, 2013  
119075-06.12**

**RIDGE ROAD EXTENSION**  
**ACOE Permit Application Number: (SAJ-2011-00551 (IP-TEH))**  
**METHODOLOGY FOR ADDITIONAL TRANSPORTATION ANALYSIS**

**Background**

Ridge Road is a new eight-mile transportation corridor in the Long-Range Transportation Plan (LRTP) of the Pasco County Metropolitan Planning Organization. The facility has been included in the LRTP since 1995. A permit to allow impacts to waters of the United States has been submitted to allow the new roadway corridor to be created. The location of the Ridge Road Extension corridor, additional roads of interest to the U.S. Army Corps of Engineers (ACOE), and surrounding roads, are illustrated in Figure 1.

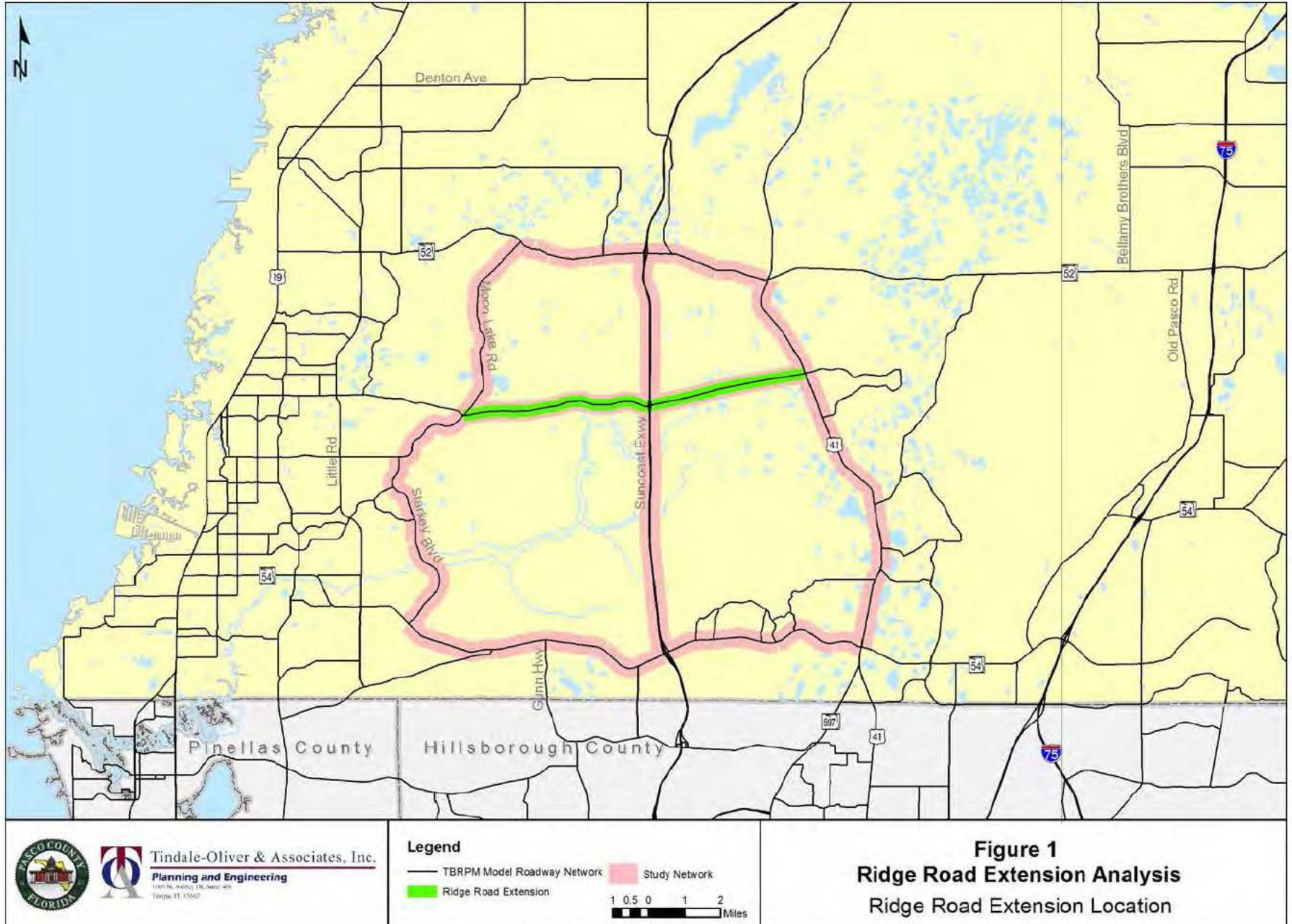
**Purpose and Objective**

The U.S. Army Corps of Engineers (ACOE) issued a request for additional transportation planning information dated July 23, 2012. The purpose of this document is to outline the procedures and assumptions to be used to generate information to estimate and compare the benefits and impacts of the Ridge Road Extension and alternatives to address Clean Water Act Section 404(b)(1) Guidelines and other regulations pertinent to the review of transportation system effects of the improvement by the ACOE.

**Methodology**

1. **Model to utilize:** The Tampa Bay Regional Planning Model version 7.1, which is the current official version as of this date, will be applied. The input files will be those of the adopted “2014 E+C” scenario, as distributed from the Tampa Bay Regional Transportation Analysis website. The roadway network will be reviewed to reflect roadway laneage and facility types reflective of 2013 conditions, plus roadway improvements for which ACOE permits are approved.

In addition, the four-laning of existing Ridge Road from Little Road to Moon Lake Road will be included. Socio-Economic data (growth forecasts) for five years in the future (e.g. 2018) will be developed by interpolation of other year TBRPM socio-economic data files (e.g. 2006 and 2035). All model input data files other than the road and transit network files will be held constant across all roadway network alternatives tested.



2. **Alternatives to be Evaluated:** Highway networks to be evaluated are summarized in Table 1, and are described and illustrated in Exhibit C-1-A. The first illustration in Exhibit C-1-A indicates the 2014 E+C network as it was finalized for the December, 2009 Plan adoption. Subsequent illustrations indicate the number of lanes, the geographic extent of lane changes, and the facility type to be applied to each facility (compared to the 2014 E+C network) for each Alternative. An excerpt from the Model Validation report for the TBRPM describing the facility type codes indicated in these illustrations is provided in Exhibit C-1-B.
3. **Performance Measures:** The ACOE has requested that “level of service” information be provided for the various alternative networks. The TBRPM does not provide road segment-specific level of service determinations (e.g. LOS A, B, C, etc); however, to provide information regarding segment-specific roadway performance, the peak season daily traffic volume and a volume:capacity ratio will be illustrated on maps. An example of such a map is provided in Exhibit C-1-C.

The TBRPM does provide the ability to compute various measures of transportation system performance that relate to the quality of service provided. Measures that will be reported include:

- Area-wide weighted volume:capacity ratio
- Area-wide vehicle-hours of travel
- Area-wide crashes
- Area-wide average speed (mph)

When comparing the performance of alternative transportation networks, it is difficult to assess how the volumes and volume:capacity ratios from several hundred individual road segments in one alternative compare with those of a different alternative. To address this difficulty, a weighted average volume:capacity ratio provides a single number to indicate the average degree of congestion motorists experience in the study network. The weighted average multiplies the vehicle-miles of travel on a road segment by the segment volume:capacity ratio, and divides the sum of those values over all segments in the study network by the total vehicle-miles of travel in the study network.

The last three measures are reported by the TBRPM as a standard output, and were developed for evaluating the benefits and costs of alternative transportation

Table C-1-1

### Summary of Alternatives and Number of Lanes

(Revised to reflect alternatives deemed practicable and meeting project purpose)

Roadway	No-Build		6 D,E,F,G and 8 "Build"	
	West*	East*	West	East
SR 52	6	2	6	2
RRE	0	0	4	4
Tower	0	0	0	0
SR 54	6	6	6	6
Totals	12	8	16	12

\* Denotes west of the Suncoast Parkway and east denotes east of the Suncoast Parkway.

systems. They have been used for many years in the Federally mandated (MPO) urban area transportation systems planning process.

4. **Geographic scope of roadways on which to report:** The above measures will be reported for the roads identified in Figure 1 as the Ridge Road Extension itself and "Major Area Roadways".
5. **Additional Information:** If additional relevant information is determined during the analysis, the County reserves the ability to submit additional information as it deems appropriate.

## **Exhibit C-1-A**

### **Description of Alternatives and Network Coding Maps**

## **Exhibit C-1-A**

### **Description of Alternatives for Analysis**

This Exhibit provides narrative descriptions of each of the road network alternatives and maps illustrating how they will be coded for each application of the Tampa Bay Regional (Transportation Systems) Planning Model. Descriptions for all the alternatives are provided on the following pages, but the figures illustrating the final coding for each alternative have been deleted from this Exhibit and are now provided in Appendix C-2.

#### **Alternative 1 – No Build**

The No Build alternative assumes that none of the proposed build alternatives are constructed.

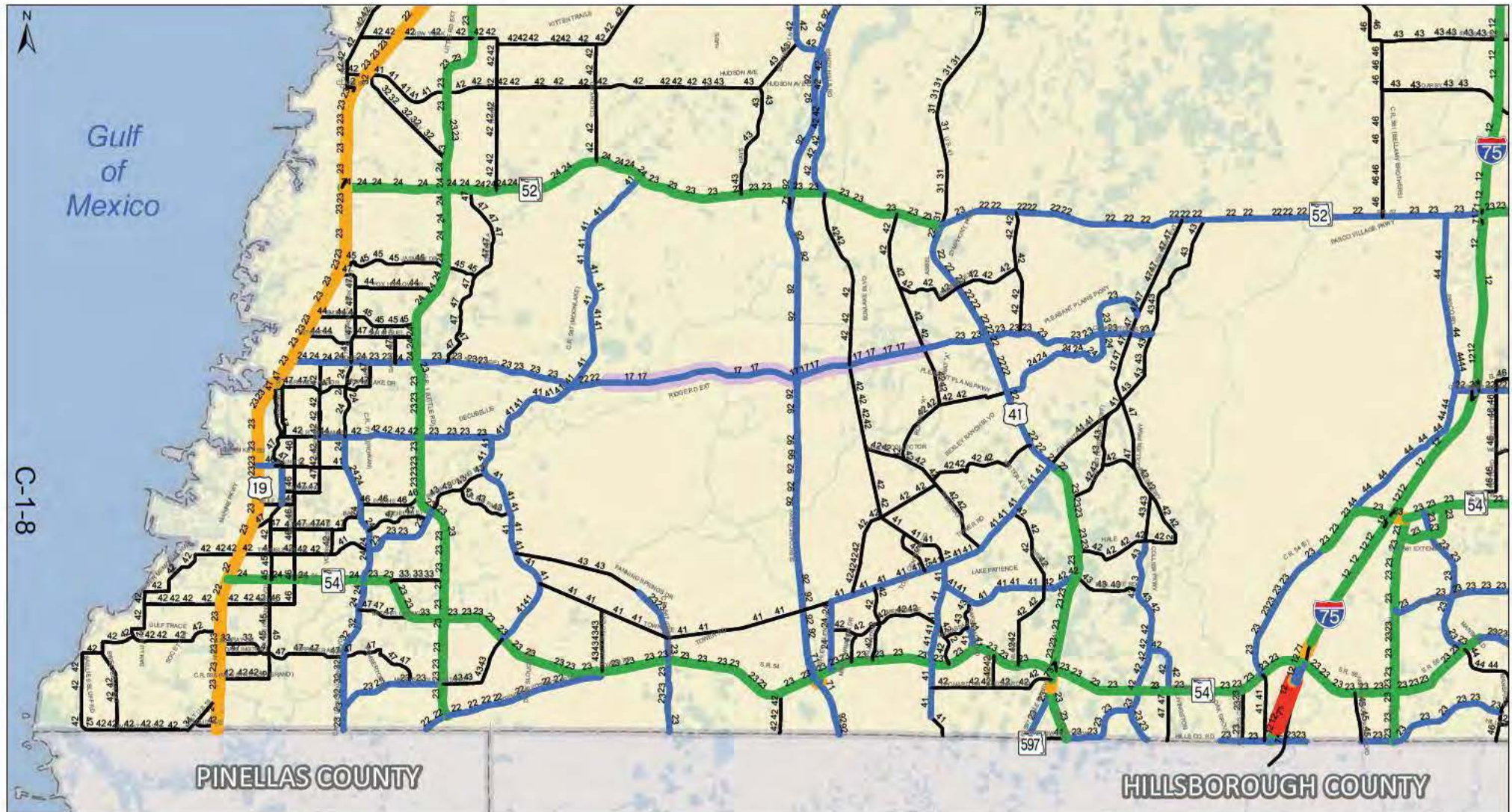
#### **Alternatives 6D, 6E, 6F, 6G – Four Lane Divided Ridge Road Extension**

For these alternatives, it is assumed that a 4-lane divided Ridge Road Extension is constructed from the current terminus of Ridge Road at the Moon Lake/DeCubellis Road intersection to US 41. A connection with the Suncoast Parkway is assumed at the location of an existing overpass structure. Each of the different letter designations indicate slightly different roadway alignments, which have no bearing of substance on the traffic circulation analysis.

#### **Alternative 8 – Four Lane Divided Ridge Road Extension - Portions Elevated through Serenova**

This alternative is the same as Alternative 7 except that Ridge Road Extension will be constructed elevated for reduced segments and will be at grade through additional areas of uplands within Serenova.





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## Pasco County Ridge Road Analysis

### Legend

- 2 lanes
- 4 lanes
- 6 lanes
- 8 lanes
- 10 lanes
- 12 lanes

- Location of Network Change
- 24 Facility Type

0 0.75 1.5 2.25 3  
Miles

Figure A-7

Alternative 6, 7 & 8

## **Exhibit C-1-B**

### **Facility Type Descriptions**

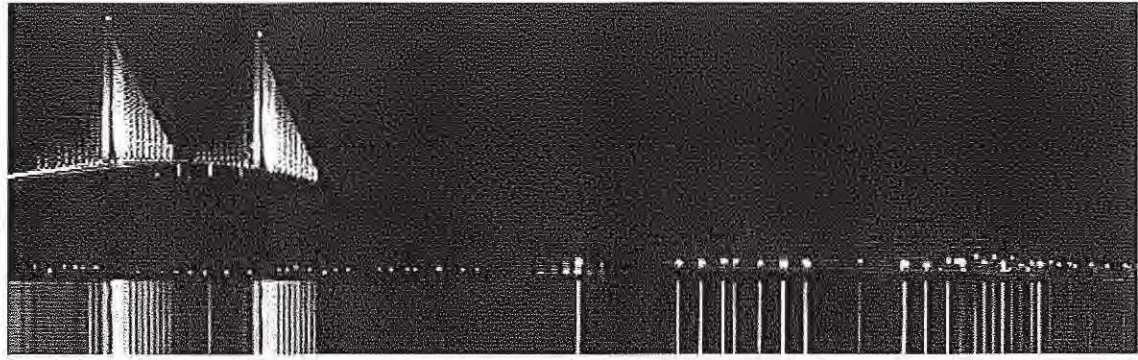
**(Excerpt from Technical Report 1 – Tampa Bay Regional Planning  
Model (TBRPM) Version 7.0 Validation Report)**

**Exhibit C-1-B**  
**Facility Type Descriptions**  
**(Excerpt from Technical Report 1 – Tampa Bay Regional Planning Model**  
**(TBRPM) Version 7.0 Validation Report)**

The following excerpt from the Tampa Bay Regional Model validation report provides narrative descriptions of the various facility types used to describe roadways of different characteristics.

The reader's attention is directed to an error in the report that is noted with hand-written notes in the margin of the excerpt. In Table 4.2, facility types 21 and 22 are correctly denoted as unsignalized arterials (where driveways and median openings would be expected), and facility types 23, 24, and 25 are correctly denoted as Class I, II, and III/IV signalized arterials. In the narrative descriptions that follow later, facility types 22, 23, and 24 are incorrectly described as the Class I, II, and III/IV signalized arterials. The hand-written notes denote the correct assignment of facility type numbers.





DRAFT

**Technical Report 1 - Tampa Bay Regional  
Planning Model (TBRPM) Version 7.0  
*Validation Report***

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MAY 2010



## 4.2.2 TWO-DIGIT FACILITY TYPES

Facility types are used to classify each roadway link according to its function and (or) design characteristics. Historically, FSUTMS used single-digit codes for area types and facility types. In order to provide for a greater variation in link speeds and to better reflect capacity values recommended in the FDOT Level of Service (LOS) Manual, previous versions of the TBRPM were modified to accept two-digit codes for area types and facility types. These two-digit area type and facility type were retained for v7.0. Table 4.2 shows the two-digit facility type codes as approved by the FDOT, Central Office, System Planning, Model Task Force; while Figure 4.3 visually depicts the TBRPM v7.0 coded Facility Types, collapsed to the one digit level. Facility type 96 and 97 were added to the Toll Facilities category, while facility type 49 was added to the Collectors category as a transit only facility type, and truck restricted facility.

Table 4.2 –TBRPM v7.0 Two-Digit Facility Types

Facility Type	Description
<b>1X -- Freeways and Expressways</b>	
11	Urban Freeway Group 1 (cities of 500,000 or more)
12	Other Freeway (not in Group 1)
15	Collector / Distributor Freeway Lanes / Facilities
16	Controlled Access Expressways
17	Controlled Access Parkways
<b>2X -- Divided Arterials</b>	
21	Divided Arterial Unsignalized (55 mph)
22	Divided Arterial Unsignalized (45 mph)
23	Divided Arterial Class I
24	Divided Arterial Class II
25	Divided Arterial Class III / IV
<b>3X -- Undivided Arterials</b>	
31	Undivided Arterial Unsignalized with Turn Bays
32	Undivided Arterial Class I with Turn Bays
33	Undivided Arterial Class II with Turn Bays
34	Undivided Arterial Class III / IV with Turn Bays
35	Undivided Arterial Unsignalized without Turn Bays
36	Undivided Arterial Class I without Turn Bays
37	Undivided Arterial Class II without Turn Bays
38	Undivided Arterial Class III / IV without Turn Bays

FT 23 described correctly here. See p. 68 for descriptions

Facility Type	Description
<b>4X -- Collectors</b>	
41	Major Local Divided Roadway
42	Major Local Undivided Roadway with Turn Bays
43	Major Local Undivided Roadway without Turn Bays
44	Other Local Divided Roadway
45	Other Local Undivided Roadway with Turn Bays
46	Other Local Divided Roadway without Turn Bays
47	Low Speed Local Collector
48	Very Low Speed Local Collector
49	Truck Restricted Facilities
<b>5X -- Centroid Connectors</b>	
51	Basic Centroid Connector
52	External Station Centroid Connector
53	Dummy Zone Centroid Connectors
<b>6X -- One-Way Facilities</b>	
61	One-Way Facilities Unsignalized
62	One-Way Facilities Class I
63	One-Way Facilities Class II
64	One-Way Facilities Class III / IV
65	Frontage Road Unsignalized
66	Frontage Road Class I
67	Frontage Road Class II
68	Frontage Road Class III / IV
<b>7X -- Ramps</b>	
71	Freeway On / Off Ramp
72	Freeway On / Off Loop Ramp
73	Other On / Off Ramp
74	Other On / Off Loop Ramp
75	Freeway-Freeway Ramp
76	Truck-Only Ramp
<b>8X -- HOV Facilities</b>	
81	Freeway Group 1 HOV Lane (Barrier Separated)
82	Other Freeway HOV Lane (Barrier Separated)



Facility Type	Description
83	Freeway Group 1 HOV Lane (Non-Barrier Separated)
84	Other Freeway HOV Lane (Non-Barrier Separated)
85	Non Freeway HOV Lane
86	AM & PM Peak HOV Ramp
87	AM Peak Only HOV Ramp
88	PM Peak Only HOV Ramp
89	All Day HOV Ramp
<b>9X -- Toll Facilities</b>	
91	Freeway Group 1 Toll Facility
92	Other Freeway Toll Facility
93	Expressway / Parkway Toll Facility
94	Divided Arterial Toll Facility
95	Undivided Arterial Toll Facility
96	Freeway Group 1 REL Toll Facility (Reversible Elevated Lanes)
97	Other Freeway REL Toll Facility (Reversible Elevated Lanes)
98	Acceleration / Deceleration Lanes - Toll Facility
99	Toll Plaza - Toll Facility

Detailed definitions of each code are provided below. Facility Type 1x (Freeways / Expressways) facilities are as follows:

- **11: Freeway Group 1**  
Freeways which are within an urbanized area over 500,000 in population and either leading to or within 5 miles of the primary city CBD.
- **12: Other Freeway**  
All other freeways not classified in Group 1.
- **15: Collector / Distributor Lanes**  
Auxiliary lane(s) parallel to, but physically separated from, a freeway, usually between close interchanges. All access to the C/D lanes is provided via ramps.
- **16: Controlled-Access Expressway**  
These are high capacity, high speed facilities with controlled access primarily through grade-separated interchanges. Expressways may also include a few at-grade intersections as well as slip ramps for access to and from frontage roads and side streets. Frontage road systems are often included within the corridor. Posted speed is generally lower, and access more frequent, than on a typical freeway.





- **17: Controlled-Access Parkway**

These facilities are similar to Controlled-Access Expressways, but typically designed for more moderate speeds. Design may include more landscaping, more curving alignment, tighter access controls, and other features to make the facility more visually pleasing. Parkways generally are more compatible with residential, rural, or park type land uses and / or less attractive for commercial development.

Facility Type 2x (Divided Arterials), 3x (Undivided Arterials), and 6x (One-Way Streets) facility types are stratified by LOS groups, as follows:

- **21, 31, & 61: Unsignalized**

<sup>22</sup> No signalized intersections.

- **<sup>23</sup> 22, 32, & 62: Class I**

Up to 2.49 signalized intersections per mile in urban areas or up to 1.50 signalized intersections per mile in rural areas.

- **<sup>24</sup> 23, 33, & 63: Class II**

2.50 to 4.50 signalized intersections per mile in urban areas or more than 1.50 signalized intersections per mile in rural areas.

- **<sup>25</sup> 24, 34, & 64: Class III / IV**

More than 4.50 signalized intersections per mile. Class III applies to those facilities within the primary city CBD of an urbanized area with over 500,000 population.

- **35-38: Undivided Arterials without Turn Bays**

31-34 are Undivided Arterials with Turn Bays. 35-38 use the same four classes as above, but without turn bays or turn lanes.

- **65-68: Frontage Roads**

One-Way streets providing access to parallel freeways and expressways via slip ramps. Frontage Roads generally include driveway access and at grade intersections with crossroads. Use the same four classes as above for the other 2's, 3's, and 6's.

Facility Type 4x (Collectors) are local road facilities and are classified as follows:

- **41: Major Local Divided Roadway**

Streets that are divided local collector facilities which primarily provide access between arterials and major activity centers.

- **42: Major Local Undivided Roadway with Turn Bays**

Streets that are undivided local collector facilities with turn bays which primarily provide access between arterials and major activity centers.





- **43: Major Local Undivided Roadway without Turn Bays**  
Streets that are undivided local collector facilities without turn bays which primarily provide access between arterials and major activity centers.
- **44: Other Local Divided Roadways**  
Streets that are divided local collector facilities that primarily provide access to major residential areas.
- **45: Other Local Undivided Roadways with Turn Bays**  
Streets that are undivided local collector facilities with turn bays that primarily provide access to major residential areas.
- **46: Other Local Undivided Roadways without Turn Bays**  
Streets that are undivided local collector facilities without turn bays that primarily provide access to major residential areas.
- **47: Low Speed Local Collectors**  
Streets that are sub-collector facilities for internal circulation within residential and commercial developments.
- **48: Very Low Speed Local Collectors**  
Streets that are sub-collector facilities for internal circulation that exhibit traffic calming design characteristics such as speed bumps.
- **49: Truck Restricted Facilities**  
Streets which are restricted from truck utilization.

Facility Type 5x (Centroid Connectors) representing neighborhood streets and other connectors are classified as follows:

- **51: Basic Centroid**  
Centroid connectors providing access to TAZs with socio-economic data except those connecting external zones to the model network.
- **52: External Centroid**  
Those centroid connectors that provide access between external zones and the model network.
- **53: Dummy Centroid**  
Centroid connectors used as placeholders for TAZs not being used in the current validation of future year networks. (These can be used for other traffic studies as needed).



Facility Type 7x (Ramps) are classified as follows:

- **71: Ramps**  
Generally diamond and slip ramps for freeways on and off (speeds generally greater than 30 mph).
- **72: Loop Ramps**  
Generally loop / cloverleaf ramps for freeways on and off (speeds generally less than 30 mph).
- **73: Other Ramps**  
Generally diamond and slip ramps for facilities other than freeways (speeds generally greater than 30 mph).
- **74: Other Loop Ramps**  
Generally loop / cloverleaf ramps for facilities other than freeways (speeds generally less than 30 mph).
- **75: Freeway-Freeway Ramps**  
High capacity, high speed ramps providing connection between two freeways (generally fly-over ramps).
- **76: Truck Only Ramp**  
High capacity, high speed ramps for trucks. Added for the new I-4 Crosstown Express Connector for trucks entering and leaving the Port area.

Facility Type 8x (HOV Facilities) are High Occupancy Vehicle facilities and are classified as follows:

- **Barrier Separated:** Physically separated from general use lanes with some form of raised median.
- **Non-Separated:** HOV lane "painted" to distinguish from general use lanes.
- **Group 1:** HOV lanes which are within an urbanized area over 500,000 population and either leading to or within 5 miles of the primary city CBD.
- **Other:** All other HOV lanes not classified in Group 1.
- **Non-Freeway:** HOV lanes along expressways or divided arterials.
- **HOV Ramps:** Categorized by time-of-day restrictions (e.g., FT 86 would be restricted to HOVs during both AM and PM peak periods while FT 87 and FT 88 are restricted to HOVs during only AM and PM peak periods respectively).

Facility Type 9x (Toll Facilities) are Toll facilities and are classified as follows:

- **91: Freeway Group 1 Toll Facility**  
Assumed to be equivalent to FT 11.
- **92: Other Freeway Toll Facility**  
Assumed to be equivalent to FT 12.



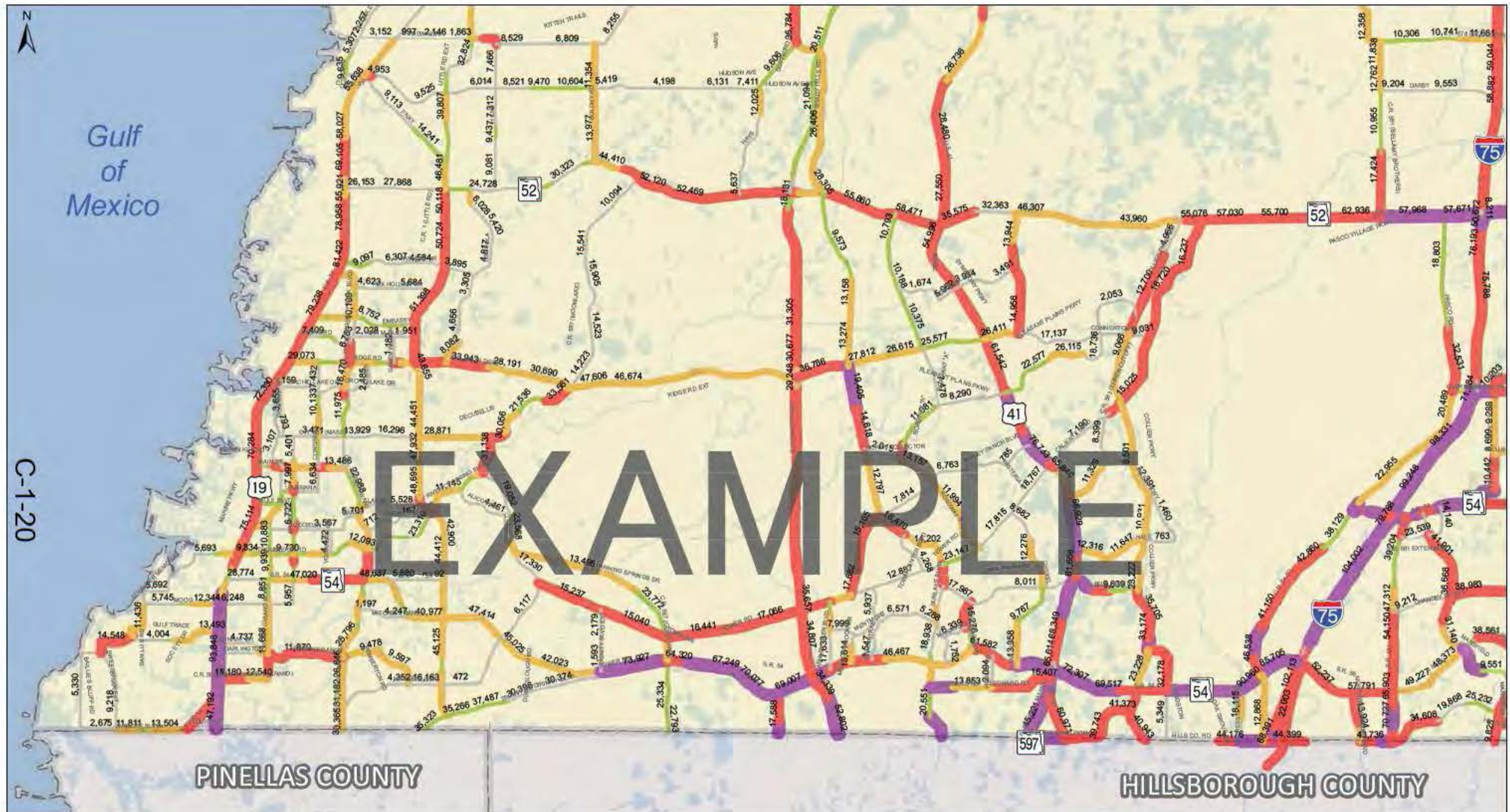
- **93: Expressway / Parkway Toll Facility**  
Assumed to be equivalent to FT 16 or 17.
- **94: Divided Arterial Toll Facility**  
Assumed to be equivalent to FT 23 (Class Ia) Examples include Bob Sikes Bridge (Pensacola Beach), Cape Coral Bridge (Fort Myers).
- **95: Undivided Arterial Toll Facility**  
Assumed to be equivalent to FT 32 (Class Ia) Examples include Navarre Bridge (Navarre Beach), Pinellas Bayway (Pinellas County), Card Sound Road (Key Largo).
- **96: Freeway Group 1 Reversible Elevated Lane Toll Facility**  
Crosstown Expressway reversible elevated roadway which are within an urbanized area over 500,000 in population and either leading to or within 5 miles of the primary city CBD.
- **97: Other Freeway Reversible Elevated Lane Toll Facility**  
Crosstown Expressway reversible elevated roadway not classified in Group 1.
- **98: Toll Ramps**  
These are assumed to be equivalent to FT 71 (Freeway On / Off-Ramps) but for toll facilities. FT 98 should be used only for ramps with toll plazas on the ramp itself (if not use FT 7x series). The toll plaza itself should be coded as FT 99.
- **99: Toll Plazas**  
All toll plazas need to be coded with three links per direction - a deceleration link, the toll plaza itself, and an acceleration link. The distances should be 0.2, 0.1, and 0.2 miles respectively. All links coded as FT 99 will automatically bypass the SPDCAP file and receive all necessary information from the TOLLINK file. (all FT 99 links are used for Accel+Decel so speeds are adjusted by toll model on these links)



## **Exhibit C-1-C**

### **Example Output Network Map**

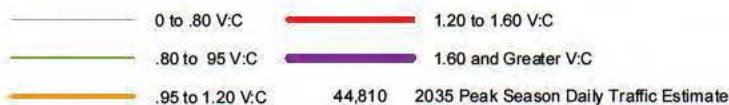




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### Pasco County Ridge Road Analysis

#### Legend



0 0.75 1.5 2.25 3  
Miles

Figure C-1

**2035 Cost Affordable Plan  
Volume to Capacity Ratios  
with Daily Volumes**