

# TRAFFIC TECHNICAL MEMORANDUM

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## PROJECT DEVELOPMENT AND ENVIRONMENT STUDY WESTSHORE REGIONAL MULTIMODAL CENTER WPI Segment No: 415348-1

Hillsborough County, Florida

Prepared for:



Florida Department of Transportation District Seven

June 2014

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June 2014

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## **TRAFFIC ANALYSIS**

The Florida Department of Transportation (FDOT), District Seven, is conducting a Project Development and Environment (PD&E) study to determine the configuration, benefits, costs, and impacts of developing and operating a Westshore Regional Multimodal Center (WRMC) within the Westshore Business District area of Tampa, Florida. The “*Westshore Multimodal Study and Strategic Transportation Plan*”, completed in February 2012, identified four viable site locations (A, C, D, and S) (see **Figure 1**, Location Map). This PD&E Study has identified Site C, the redevelopment of a strip of parcels north of I-275 between Trask Street and Manhattan Avenue, as the proposed recommended site for the WRMC. Site C would utilize the parcel where Charley’s Restaurant is currently located. Prior to conducting the analysis, the project team met with FDOT staff to outline an approach to the effort. Discussions revolved around the proposed study area, existing traffic data, potential uses at the WRMC, and how future year traffic projections would be developed.

### **1.0 Study Area**

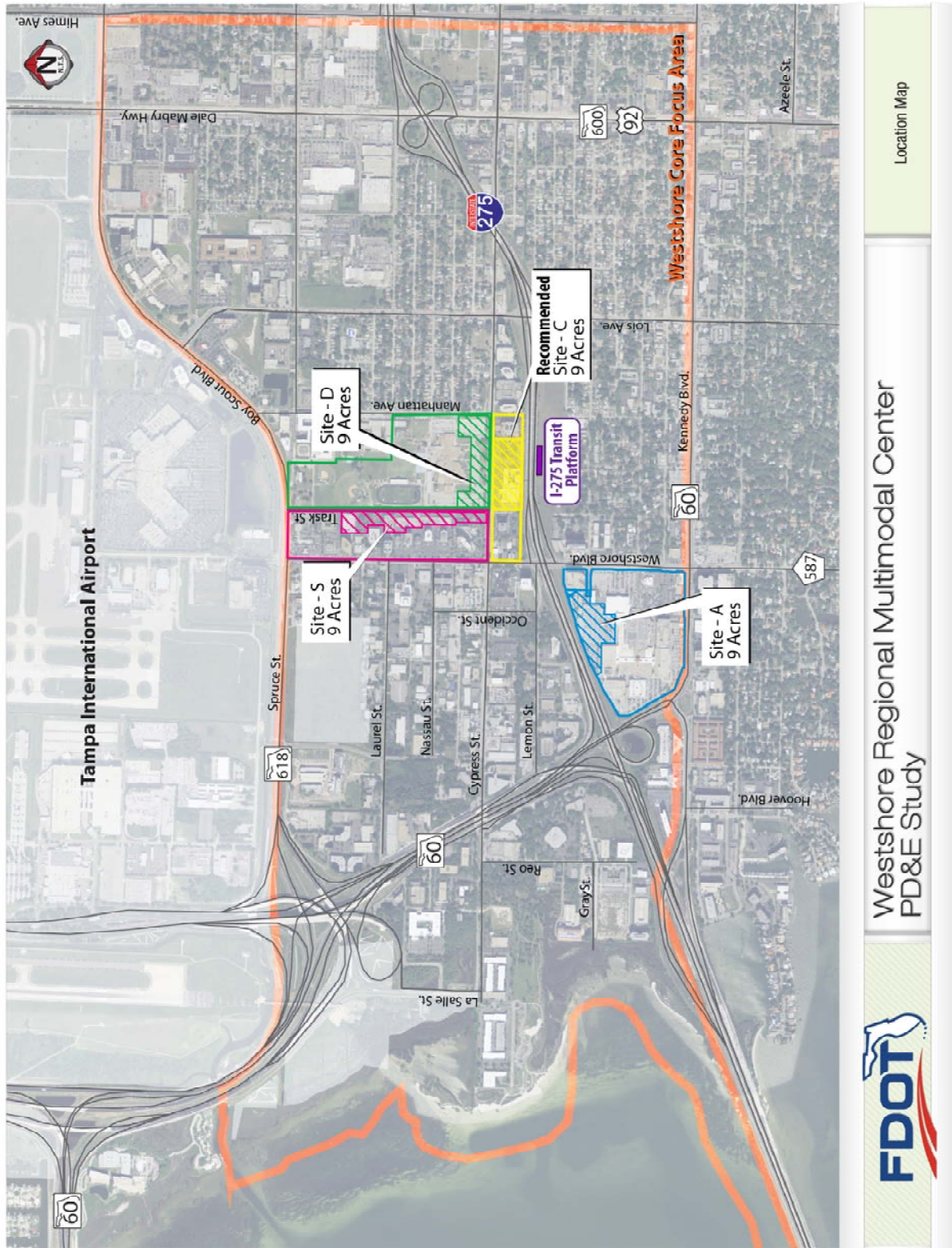
It is anticipated that the WRMC will not create new vehicular traffic impacts on a regional basis, as the expanded transit options at the facility will encourage people to use automobiles less. That said, there will likely be circulation impacts within a localized area surrounding the proposed Recommended Site C. As such, it was determined that the study area for the traffic analysis would include Cypress Street between Westshore Boulevard and Lois Avenue, as well as segments of Westshore Boulevard and Lois Avenue just north and south of Cypress Street.

### **1.1 Existing Year Traffic Analysis**

Traffic count data is collected on a regular basis by FDOT as well as the City of Tampa. During discussions with FDOT, it was decided that available traffic count data should be used for conducting the existing conditions analysis. No new traffic count data was to be collected, since the ongoing I-275 construction has greatly affected circulation in the area. Average Annual Daily Traffic (AADT) information was compiled from FDOT and the City of Tampa. Most of the roadways had data from as recently as 2011 or 2012, but some were as far back as 2008. The older traffic counts are still reflective of current conditions, as traffic volumes have not changed much in the Tampa Bay area (or Florida in general) over the past 6-8 years.

FDOT staff recommended that the analysis be conducted for the PM peak hour and that roadways be evaluated in both peak and off-peak directions. In order to convert the AADT traffic counts to PM peak hour, the statewide standard K-factor of 0.09 was

FIGURE 1 – PROJECT LOCATION MAP



Westshore Regional Multimodal Center  
PD&E Study



Location Map

employed. From there, the standard D-factor of 0.582 was used to calculate PM peak hour directional traffic. **Table 1** provides a summary of the AADT, PM Peak Hour two-way, and PM Peak Hour directional traffic volumes for the roadways in the study area. The existing traffic volumes in the study area are also depicted on **Figure 2**.

**TABLE 1: EXISTING TRAFFIC VOLUMES**

| Roadway        | Segment                 | Number of Lanes | AADT   | K Factor | PM Peak Hour Volume | D Factor | Peak Direction Volume | Off-Peak Direction Volume |
|----------------|-------------------------|-----------------|--------|----------|---------------------|----------|-----------------------|---------------------------|
| Cypress Street | West of Westshore Blvd  | 4               | 14,900 | 0.09     | 1,341               | 0.582    | 780                   | 561                       |
| Cypress Street | Westshore Blvd to Site  | 4               | 23,400 | 0.09     | 2,106               | 0.582    | 1,226                 | 880                       |
| Cypress Street | Site to Lois Avenue     | 4               | 23,400 | 0.09     | 2,106               | 0.582    | 1,226                 | 880                       |
| Cypress Street | East of Lois Avenue     | 4               | 14,800 | 0.09     | 1,332               | 0.582    | 775                   | 557                       |
| Westshore Blvd | I-275 to Cypress Street | 4               | 29,000 | 0.09     | 2,610               | 0.582    | 1,519                 | 1,091                     |
| Westshore Blvd | North of Cypress Street | 4               | 29,000 | 0.09     | 2,610               | 0.582    | 1,519                 | 1,091                     |
| Lois Avenue    | I-275 to Cypress Street | 4               | 31,200 | 0.09     | 2,808               | 0.582    | 1,634                 | 1,174                     |
| Lois Avenue    | North of Cypress Street | 4               | 17,600 | 0.09     | 1,584               | 0.582    | 922                   | 662                       |

Once the existing traffic volumes had been developed, a roadway segment level of service (LOS) analysis was conducted. This was done using the FDOT Quality/Level of Service Handbook’s Generalized Tables, and based on an adopted LOS standard of “D”. Since the tables do not provide for off-peak direction capacity, it was decided that this would be estimated by subtracting the peak-hour peak-direction capacity (Table 7 in the handbook) from the peak-hour two-way capacity (Table 4 in the handbook).

The new generalized LOS tables estimate capacity based on posted speed limits, versus signal density as previous versions did. Both Westshore Boulevard and Cypress Street have posted speed limits of 40 miles per hour (mph) or higher, so they are considered Class I roadways. Lois Avenue is a Class II roadway in that its posted speed is 35 mph. Furthermore, it should be noted that none of the roadways in the immediate study area are state arterials, so a 10% reduction in roadway capacity was taken.

**Table 2** shows the peak hour directional volumes, maximum capacities at LOS D, and calculated LOS for the roadways in the study area. As shown on the table, the only roadway segment that is failing is Lois Avenue between I-275 and Cypress Street.

**FIGURE 2: EXISTING PM PEAK HOUR TRAFFIC**



Westshore Regional Multimodal Center  
PD&E Study

Existing  
PM Peak Hour Traffic

**TABLE 2: EXISTING ROADWAY LOS**

| Roadway        | Segment                 | Number of Lanes | Peak Direction Volume | Off-Peak Direction Volume | Two-Way Peak Capacity | Peak Direction Capacity | Off-Peak Direction Capacity | Peak Direction LOS | Off-Peak Direction LOS |
|----------------|-------------------------|-----------------|-----------------------|---------------------------|-----------------------|-------------------------|-----------------------------|--------------------|------------------------|
| Cypress Street | West of Westshore Blvd  | 4               | 780                   | 561                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | Westshore Blvd to Site  | 4               | 1,226                 | 880                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | Site to Lois Avenue     | 4               | 1,226                 | 880                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | East of Lois Avenue     | 4               | 775                   | 557                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Westshore Blvd | I-275 to Cypress Street | 4               | 1,519                 | 1,091                     | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Westshore Blvd | North of Cypress Street | 4               | 1,519                 | 1,091                     | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Lois Avenue    | I-275 to Cypress Street | 4               | 1,634                 | 1,174                     | 2,630                 | 1,465                   | 1,165                       | F                  | E                      |
| Lois Avenue    | North of Cypress Street | 4               | 922                   | 662                       | 2,630                 | 1,465                   | 1,165                       | D                  | D                      |

**1.2 2035 No-Build Scenario Traffic Analysis**

The buildout analysis year for the WRMC has been determined to be 2035. This coincides with the Hillsborough County Metropolitan Planning Organization’s (MPO) adopted Long-Range Transportation Plan (LRTP). It is also consistent with the horizon year of the Tampa Bay Regional Planning Model (TBRPM), jointly developed by FDOT District Seven and the MPOs in the area. The TBRPM is often modified for specific purposes, including conducting subarea and corridor studies. As part of on-going managed lanes studies in the district, FDOT has developed a specialized version of the 2035 TBRPM.

During the methodology approach meeting with FDOT, use of this specialized model for the purposes of estimating 2035 background traffic for this study was agreed upon. Significant growth in the Westshore area is projected to occur by 2035, with additional residential complexes being constructed, as well as commercial and service employment expanding. In addition, the model reflects the proposed widening of Westshore Boulevard to six lanes from I-275 to Spruce Street. However, since this funding for this project is not currently committed, the additional capacity was not assumed in the analysis.

**Table 3** depicts the 2035 AADT volumes from the model, as well as the calculated growth rate from the existing traffic. The 2035 no-build traffic volumes are also depicted on **Figure 3**. While traffic on Cypress Street between Westshore and Lois is not expected to grow significantly, there is considerable growth on other area roadways. It should be noted that the large increase on Cypress Street east of Lois and the decrease on Lois Avenue south of Cypress are related. As part of the I-275 widening project currently under construction, the westbound off-ramp is being moved from Lois Avenue to Cypress Street.



**TABLE 3: 2035 NO-BUILD SCENARIO TRAFFIC VOLUMES**

| Roadway        | Segment                 | Number of Lanes | 2035 TBRPM AADT | 2014-2035 Growth Rate | K Factor | PM Peak Hour Volume | D Factor | Peak Direction Volume | Off-Peak Direction Volume |
|----------------|-------------------------|-----------------|-----------------|-----------------------|----------|---------------------|----------|-----------------------|---------------------------|
| Cypress Street | West of Westshore Blvd  | 4               | 21,700          | 46%                   | 0.09     | 1,953               | 0.582    | 1,137                 | 816                       |
| Cypress Street | Westshore Blvd to Site  | 4               | 26,100          | 12%                   | 0.09     | 2,349               | 0.582    | 1,367                 | 982                       |
| Cypress Street | Site to Lois Avenue     | 4               | 26,100          | 12%                   | 0.09     | 2,349               | 0.582    | 1,367                 | 982                       |
| Cypress Street | East of Lois Avenue     | 4               | 28,900          | 95%                   | 0.09     | 2,601               | 0.582    | 1,514                 | 1,087                     |
| Westshore Blvd | I-275 to Cypress Street | 4               | 53,200          | 83%                   | 0.09     | 4,788               | 0.582    | 2,787                 | 2,001                     |
| Westshore Blvd | North of Cypress Street | 4               | 43,100          | 49%                   | 0.09     | 3,879               | 0.582    | 2,258                 | 1,621                     |
| Lois Avenue    | I-275 to Cypress Street | 4               | 25,300          | -19%                  | 0.09     | 2,277               | 0.582    | 1,325                 | 952                       |
| Lois Avenue    | North of Cypress Street | 4               | 21,700          | 23%                   | 0.09     | 1,953               | 0.582    | 1,137                 | 816                       |


Future year roadway LOS was calculated using the same methodology as the existing year analysis detailed above. As noted above, there are no committed capacity projects in the study area, so the same FDOT generalized capacities were carried forward to 2035. As shown on **Table 4**, the segments of Westshore Boulevard from I-275 to Cypress Street and north of Cypress Street are projected to be LOS F. If the roadway was expanded to six lanes, consistent with the adopted 2035 Hillsborough County MPO LRTP, the segment north of Cypress Street would operate at LOS C. The only other change from the existing year analysis is that Lois Avenue between I-275 and Cypress Street improved to LOS D. This is due to reduced volumes associated with moving the I-275 ramp to Cypress Street.

**TABLE 4: 2035 NO-BUILD SCENARIO ROADWAY LOS**

| Roadway        | Segment                 | Number of Lanes | Peak Direction Volume | Off-Peak Direction Volume | Two-Way Peak Capacity | Peak Direction Capacity | Off-Peak Direction Capacity | Peak Direction LOS | Off-Peak Direction LOS |
|----------------|-------------------------|-----------------|-----------------------|---------------------------|-----------------------|-------------------------|-----------------------------|--------------------|------------------------|
| Cypress Street | Westshore Blvd to Site  | 4               | 1,367                 | 982                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | Site to Lois Avenue     | 4               | 1,367                 | 982                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | East of Lois Avenue     | 4               | 1,514                 | 1,087                     | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Westshore Blvd | I-275 to Cypress Street | 4               | 2,787                 | 2,001                     | 3,220                 | 1,800                   | 1,420                       | F                  | F                      |
| Westshore Blvd | North of Cypress Street | 4               | 2,258                 | 1,621                     | 3,220                 | 1,800                   | 1,420                       | F                  | F                      |
| Lois Avenue    | I-275 to Cypress Street | 4               | 1,325                 | 952                       | 2,630                 | 1,465                   | 1,165                       | D                  | D                      |
| Lois Avenue    | North of Cypress Street | 4               | 1,137                 | 816                       | 2,630                 | 1,465                   | 1,165                       | D                  | D                      |

**FIGURE 3: 2035 NO-BUILD PM PEAK HOUR TRAFFIC**




  
**Westshore Regional Multimodal Center**  
**PD&E Study**

2035 No-Build  
PM Peak Hour Traffic

### 1.3 WRMC Trip Generation and Distribution

In order to evaluate potential traffic impacts from development of the WRMC, it is first necessary to estimate trips generated by the facility. Often, the Institute for Transportation Engineers (ITE) reports are used in estimating trips for proposed developments. The *ITE Trip Generation, 9<sup>th</sup> Edition* was used where possible in estimating trips generated by the WRMC. As shown on Table 5, ITE provided data that could be used for the park & ride component of the facility, as well as the ancillary retail and office uses. It was determined that approximately 400 parking spaces would be provided on-site and that the ancillary uses would be no more than 3,000 square feet each.

Furthermore, it was determined that up to 40 buses could utilize the site during the PM peak hour. This figure was arrived by assuming up to 10 buses serving local routes, 24 bus rapid transit (BRT) buses, 2 express buses to/from Pinellas County, and 4 regional buses to/from Pasco, Hernando, Polk, Manatee, and/or Sarasota Counties. **Table 5** depicts the PM peak hour trips generated by the facility. As is expected, there are far more existing trips than entering trips in the PM peak hour.

**TABLE 5: WRMC TRIP GENERATION**

| Proposed Uses   | Intensity of Use | ITE Code | PM Peak Hour Trips | PM Peak Enter Trips | PM Peak Exit Trips |
|-----------------|------------------|----------|--------------------|---------------------|--------------------|
| Bus Stops       | 40 buses         | N/A      | 80                 | 40                  | 40                 |
| Park & Ride Lot | 400 spaces       | 090      | 248                | 57                  | 191                |
| Retail          | 3,000 sq. ft.    | 820      | 13                 | 6                   | 7                  |
| Office          | 3,000 sq. ft.    | 710      | 9                  | 2                   | 7                  |
| Total Trips     |                  |          | 350                | 105                 | 245                |

The projected trips were manually distributed onto the roadways in the study area. Existing and potential future bus routes, as well as regional travel patterns, were taken into consideration. As shown on **Figure 4**, it was assumed that more trips would exit the facility and head east in order to access I-275 to Tampa. Those heading to Pinellas County or northwest Hillsborough County would exit the facility and head west. Similar assumptions were made regarding entering trips.

FIGURE 4: PROJECT TRIP DISTRIBUTION



Project  
Trip Distribution

Westshore Regional Multimodal Center  
PD&E Study



## 1.4 2035 Build Scenario Traffic Analysis

Project trips were added to the 2035 No-Build Scenario volumes to arrive at 2035 Build Scenario volumes on the study area roadways. This information is summarized on **Table 6**. The 2035 build traffic volumes are also depicted on **Figure 5**. As can be seen, the addition of project-related trips is not significant, with traffic volumes on roadways increasing by no more than 11%, with many segments increasing by less than 5%.

**TABLE 6: 2035 BUILD SCENARIO TRAFFIC VOLUMES**

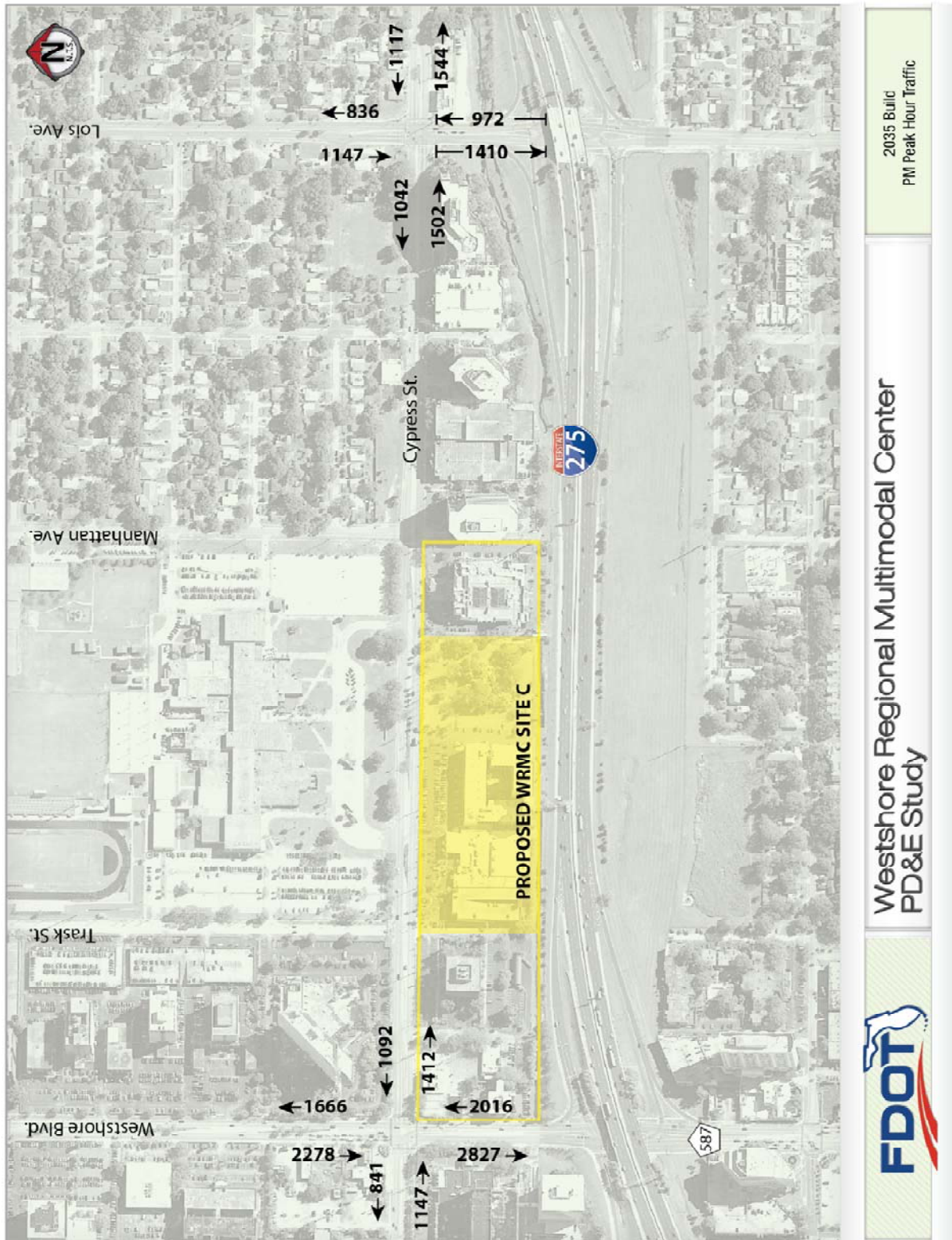
| Roadway        | Segment                 | Number of Lanes | No-Build Volume Peak Direction | No-Build Volume Off-Peak Direction | Project Trips Peak Direction | Project Trips Off-Peak Direction | Total Volume Peak Direction | Total Volume Off-Peak Direction |
|----------------|-------------------------|-----------------|--------------------------------|------------------------------------|------------------------------|----------------------------------|-----------------------------|---------------------------------|
| Cypress Street | West of Westshore Blvd  | 4               | 1,137                          | 816                                | 10                           | 25                               | 1,147                       | 841                             |
| Cypress Street | Westshore Blvd to Site  | 4               | 1,367                          | 982                                | 45                           | 110                              | 1,412                       | 1,092                           |
| Cypress Street | Site to Lois Avenue     | 4               | 1,367                          | 982                                | 135                          | 60                               | 1,502                       | 1,042                           |
| Cypress Street | East of Lois Avenue     | 4               | 1,514                          | 1,087                              | 30                           | 30                               | 1,544                       | 1,117                           |
| Westshore Blvd | I-275 to Cypress Street | 4               | 2,787                          | 2,001                              | 40                           | 15                               | 2,827                       | 2,016                           |
| Westshore Blvd | North of Cypress Street | 4               | 2,258                          | 1,621                              | 20                           | 45                               | 2,278                       | 1,666                           |
| Lois Avenue    | I-275 to Cypress Street | 4               | 1,325                          | 952                                | 85                           | 20                               | 1,410                       | 972                             |
| Lois Avenue    | North of Cypress Street | 4               | 1,137                          | 816                                | 10                           | 20                               | 1,147                       | 836                             |

Once again, the roadway LOS was calculated using the same methodology as the existing year and 2035 no-build analyses detailed above. As shown on **Table 7**, there is projected to be no LOS degradation from the build scenario as compared with the 2035 no-build scenario.

**TABLE 7: 2035 BUILD SCENARIO ROADWAY LOS**

| Roadway        | Segment                 | Number Of Lanes | Peak Direction Volume | Off-Peak Direction Volume | Two-Way Peak Capacity | Peak Direction Capacity | Off-Peak Direction Capacity | Peak Direction LOS | Off-Peak Direction LOS |
|----------------|-------------------------|-----------------|-----------------------|---------------------------|-----------------------|-------------------------|-----------------------------|--------------------|------------------------|
| Cypress Street | West of Westshore Blvd  | 4               | 1,147                 | 841                       | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | Westshore Blvd to Site  | 4               | 1,412                 | 1,092                     | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | Site to Lois Avenue     | 4               | 1,502                 | 1,042                     | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Cypress Street | East of Lois Avenue     | 4               | 1,544                 | 1,117                     | 3,220                 | 1,800                   | 1,420                       | C                  | C                      |
| Westshore Blvd | I-275 to Cypress Street | 4               | 2,827                 | 2,016                     | 3,220                 | 1,800                   | 1,420                       | F                  | F                      |
| Westshore Blvd | North of Cypress Street | 4               | 2,278                 | 1,666                     | 3,220                 | 1,800                   | 1,420                       | F                  | F                      |
| Lois Avenue    | I-275 to Cypress Street | 4               | 1,410                 | 972                       | 2,630                 | 1,465                   | 1,165                       | D                  | D                      |
| Lois Avenue    | North of Cypress Street | 4               | 1,147                 | 836                       | 2,630                 | 1,465                   | 1,165                       | D                  | D                      |

**FIGURE 5: 2035 BUILD PM PEAK HOUR TRAFFIC**



## 1.5 Summary of Findings

The analysis presented above reveals that there is currently only limited traffic congestion in the localized study area, with the only failing roadway being the short segment of Lois Avenue from I-275 to Cypress Street. Access changes to and from I-275 that are under construction now will alleviate this deficiency in the future; however growth in the area will lead to Westshore Boulevard reaching LOS F by 2035. The analysis also shows that proposed recommended Site C, the redevelopment of the parcels along Cypress Street between Trask Street and Manhattan Avenue, for the WRMC will not create any new roadway deficiencies in the vicinity of the site. Furthermore, it is anticipated that the WRMC will not create new vehicular traffic impacts on a regional basis, as any new trips will be offset by expanded transit options, encouraging people to use automobiles less.