

**To:** Diana Spriggs, P.E., Regulatory Division Director, City of Port St. Lucie  
**From:** Myra E. Patino, P.E., PMP, Marlin Engineering, Inc.  
**Cc:** Muhammad Asif Khan, P.E., Marlin Engineering, Inc.  
**Date:** May 25, 2021  
**Subject:** Southern Grove DRI NOPC Traffic Analysis (1<sup>st</sup> Review Comments)

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MARLIN Engineering, Inc. has been retained by the City of Port St. Lucie to conduct a peer review of the Southern Grove Development of Regional Impact (DRI) located west of I-95 and south of Tradition Parkway in the City of Port St. Lucie, Florida. A Notice of Proposed Change (NOPC) Traffic Analysis report was prepared by Mackenzie Engineering & Planning, Inc. and dated June 2020. A thorough review was conducted by MARLIN, and the following comments were made for the 1st round of review:

**1) Study Area:**

- a. The study area limits described on page 6 seems very insignificant for the size and scope of the project. No reference is made to any of the criteria that was used previously to set the study limits in the approved DRI. Please consider including the following roadways in the analysis; otherwise, please demonstrate that these roadways do not trigger the previously set threshold criteria for roadway network maximum service volumes at the adopted level of service standards as applicable:
  - i. SW Becker Road east of I-95
  - ii. Crosstown Parkway east of I-95
  - iii. SW Gatlin Boulevard east I-95
  - iv. SW Citrus Boulevard/SW Port St Lucie Boulevard north of SW Becker Road
  - v. SW Savona Boulevard north of SW Becker Road
  - vi. SW Darwin Boulevard north of SW Becker Road
- b. A map of the study area should also be included in the transportation analysis. A proper location map seems to be missing. Since most of the roadways may not exist currently, it is suggested that a location map be added with an aerial background.

**2) Programmed Improvements**

- a. The Programmed Improvements on page 8 in Table 4 could not be verified as referenced in Appendix "C". Apparently only 4 FDOT projects are attached in Appendix "C" whereas about 10 improvements are listed in Table 4. Also, a column should be added in Table 4 for the item number listed in Appendix C for cross-reference and to identify item providing multiple improvements.
- b. The improvements on page 8 in Table 4 are short term (within 3 years); however, the improvements for years 2025 and 2026 are listed here.

- c. The reference to Table 3 on page 8 is incorrect it should be Table 4 instead.
- d. The reference to Table 4 on page 9 is incorrect it should be Table 5 instead.

### **3) Trip Generation/Pass-By Trips:**

- a. No discussion is made for modal split such as transit, bike and pedestrian reductions.
- b. The methodology to achieve net external trips is discussed on page 13. It should be noted that the pass-by trips are defined as trips already on the roadway network under existing conditions traversing along peripheral roadways, such as I-95 or SW Village Parkway for Southern Grove DRI. Therefore, the pass-by trips should not be deducted from development internal roadways.
- c. The Pass-by Capture is referenced on page 12 to be reported in Table 9-14. This should be Table 8-15.
- d. On page 5 and page 10, ITE 8th Edition and 10th Editions are mentioned. Whereas in the Appendices, the 9th Edition was also referenced. Please revise text to incorporate the use of the 9th Edition.
- e. In Appendix "A", the summation for Single Family Units on the first page looks incorrect. Instead of 3,775 it should be 2,396. Please verify and revise accordingly.
- f. Include the ITE land use codes in Table 1 on page 2 along with the land use types for clarification.
- g. , Daily and PM trips are included in Tables 8 thru 15 on pages 14 and 15. Please consider including the AM trips in these tables in order to validate if the AM transportation analysis can still be waived or not with the changes in the development plan.
- h. The land use for industrial uses is referenced differently throughout the report. In Table 1 it is "Industrial & Warehouse", in Appendix M it is "Industrial", in Appendix "G" it is "Industrial Park" and on page 2 it is described as industrial park. Please use a uniform description.
- i. It is unclear how the development intensity was reduced by 25% while estimating the pass-by trips in Appendix B.
- j. In Appendix "B", please state why the ITE 8th Edition trip generation manual was used.

### **4) Internal Capture Trips**

- a. On page 11, some of the internal capture rates are adopted from the WATS and Southern Grove 2012 Substantial Deviation Traffic Study. Please document the methods or standards that were used in those other studies and provide the supporting documents in the Appendix.
- b. On page 11 in Table 6, several LUC combinations are reported which were not accounted for in earlier studies and the internal capture rates are provided for such combinations. The ITE standards used for these rates should be mentioned and supporting documents should be provided in Appendix.

- c. Internal Capture rates between traffic analysis zones are reported on page 12 in Table 7 from previous Development Order pages (resolution 15-95). Please include the supporting documentation in the Appendix.
- d. Tables 8 thru 15 on pages 14 and 15 show internal trips twice for each scenario. First at the zonal level and secondly at the DRI level. The internal capture should not be considered between Southern Grove and nearby projects such as Riverland/Kennedy, Wilson Grove and Western Grove, since the trips are already outside the project on other roads.

#### **5) Roadway Capacity Analysis**

- a. The Roadway Capacity Analysis chapter on page 38 did not mention any analysis for existing or base year traffic conditions. Also, the AM analysis should be included at least for existing conditions.
- b. For the future traffic analysis on page 31, Phase 1 traffic is reported to be on the road. An occupancy analysis should be done to assure that all the Phase 1 developments are occupied and generating their full traffic.
- c. Though the Paar Drive Overpass is not viable now, the proposed lane configuration matches the existing configuration of SW Paar drive on the west of I-95, which can be utilized if a connection has to be made in the future. Therefore, the proposed 2L is sufficient on Paar Drive.
- d. Becker Road interchange improvements are acceptable for Phases 2 and 3.
- e. Peak-to-daily ratio (K) of 0.9 and a directional factor (D) of 0.55 are nominal rates and are acceptable.

#### **6) Travel Demand Model**

- a. On page 21, the travel demand model is stated to be interpolated for the years 2030 (Phase 2), 2035 (Phase 3), and 2040 (Phase 4). Whereas the proposed phases are shown as 2026, 2031, 2036 and 2041. No discussion is provided to cover for the one-year segregation for each scenario.
- b. The model trips associated with each zone were calibrated to match the net external ITE trips out of each zone. The report did not explain in detail how or which parameters were adjusted in the model to match the model trips with the ITE Trips.
- c. Appendix H shows the model output maps with daily traffic volumes for Phases 2, 3 and 4. For better visuals and comparison between the base year and the projected years, the report may need to develop maps that include flow patterns showing different volumes in the network for each road type.
- d. The report did not provide mode choice summary in number and percentage from the model.

**7) Development Order**

- a. In the Development Order, the first two lanes are mentioned to be the responsibility of others. Whereas the widening is mentioned to be done by the developers. Please note that the initial access roadways are usually provided by the developer.
- b. Instead of using trips as the threshold for widening or construction of roadways, please consider using the development units as the thresholds.
- c. In the Development Order, coordination with other agencies should be made for review and approvals regarding roadways under their jurisdictions.
- d. It is assumed that the Original ADA and other mentioned studies are already approved. Please confirm.

**8) Conclusion**

- a. Proposed changes:
  - i. The decrease in residential and commercial uses will reduce the traffic during the nominal (7AM to 9AM) AM and (4PM to 6PM) PM peak hours.
  - ii. The increase in industrial and warehouse use is acceptable since they will operate opposite to the nominal AM and PM peak hours.
  - iii. The addition of independent and ALF is also acceptable since these land uses are anticipated to utilize the other land uses internally.

**To:** Diana Spriggs, P.E., Regulatory Division Director, City of Port St. Lucie  
**From:** Myra E. Patino, P.E., PMP, Marlin Engineering, Inc.  
**Cc:** Walter Keller, P.E., AICP, Marlin Engineering, Inc.  
**Date:** July 30, 2021 (revised 8/9/21)  
**Subject:** Southern Grove DRI NOPC Traffic Analysis (2<sup>nd</sup> Review Comments)

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MARLIN Engineering, Inc. has been retained by the City of Port St. Lucie to conduct a peer review of the Southern Grove Development of Regional Impact (DRI) located west of I-95 and south of Tradition Parkway in the City of Port St. Lucie, Florida. A second review has been made of the revised Notice of Proposed Change (NOPC) Traffic Analysis report prepared and updated July 2021 by Mackenzie Engineering & Planning, Inc. and the accompanying response to comments, dated July 16, 2021. The following comments were made for the 2<sup>nd</sup> round of review:

**1) Study Area:**

- a. The study area limits described on page 6 seems very insignificant for the size and scope of the project. No reference is made to any of the criteria that was used previously to set the study limits in the approved DRI. Please consider including the following roadways in the analysis; otherwise, please demonstrate that these roadways do not trigger the previously set threshold criteria for roadway network maximum service volumes at the adopted level of service standards as applicable:
- i. SW Becker Road east of I-95
  - ii. Crosstown Parkway east of I-95
  - iii. SW Gatlin Boulevard east I-95
  - iv. SW Citrus Boulevard/SW Port St Lucie Boulevard north of SW Becker Road
  - v. SW Savona Boulevard north of SW Becker Road
  - vi. SW Darwin Boulevard north of SW Becker Road

**Applicant's Response:** *The scope of the analysis is limited for the following reasons:*

1. *The project is already approved.*
2. *The changes in use proposed reduces daily trips by 67,753.*
3. *The project is mitigating its impacts by constructing the roads through its property.*

**City's Response:** **Accepted.**

- b. A map of the study area should also be included in the transportation analysis. A proper location map seems to be missing. Since most of the roadways may not exist currently, it is suggested that a location map be added with an aerial background.

**Applicant's Response:** *The study area boundary was added to Figure 1.*

**City's Response:** **Accepted.**

## 2) Programmed Improvements

- a. The Programmed Improvements on page 8 in Table 4 could not be verified as referenced in Appendix "C". Apparently only 4 FDOT projects are attached in Appendix "C" whereas about 10 improvements are listed in Table 4. Also, a column should be added in Table 4 for the item number listed in Appendix C for cross-reference and to identify item providing multiple improvements.

*Applicant's Response: Acknowledged, see updated report.*

**City's Response: Accepted.**

- b. The improvements on page 8 in Table 4 are short term (within 3 years); however, the improvements for years 2025 and 2026 are listed here.

*Applicant's Response: (No response provided).*

**City's Response: The programmed improvements provided in Appendix C is will suffice. No further action is required.**

- c. The reference to Table 3 on page 8 is incorrect it should be Table 4 instead.

*Applicant's Response: Acknowledged, see updated report.*

**City's Response: No further comments.**

- d. The reference to Table 4 on page 9 is incorrect it should be Table 5 instead.

*Applicant's Response: Acknowledged, see updated report.*

**City's Response: Accepted.**

## 3) Trip Generation/Pass-By Trips:

- a. No discussion is made for modal split such as transit, bike and pedestrian reductions.

*Applicant's Response: The applicant is constructing roadways with multi-modal pathways and sidewalks. In addition, the applicant is collaborating with BEEP to provide an autonomous shuttle throughout the Community and to ultimately connect to other nearby communities and St. Lucie Transit. However, in order to provide a conservative analysis, the benefits of these multi-modal options are not included.*

**City's Response: Accepted.**

- b. The methodology to achieve net external trips is discussed on page 13. It should be noted that the pass-by trips are defined as trips already on the roadway network under existing conditions traversing along peripheral roadways, such as I-95 or SW Village Parkway for Southern Grove DRI. Therefore, the pass-by trips should not be deducted from development internal roadways.

*Applicant's Response: Trip generation is completed on a per TAZ basis, not a DRI basis. Therefore, pass-by trips were reduced from each TAZ. Also, traffic from numerous developments to the north and west pass-by the site because the property is constructing roads that pass by and through the site. Specifically, there are projected to be 20,000 homes west of Southern Grove and approximately 10,000 homes north of Southern Grove. The traffic from those properties creates pass-by traffic opportunities.*

**City's Response: Accepted.**

- c. The Pass-by Capture is referenced on page 12 to be reported in Table 9-14. This should be Table 8-15.  
*Applicant's Response: Acknowledged, see updated report.*  
**City's Response: Accepted.**
- d. On page 5 and page 10, ITE 8th Edition and 10th Editions are mentioned. Whereas in the Appendices, the 9th Edition was also referenced. Please revise text to incorporate the use of the 9th Edition.  
*Applicant's Response: 8th and 10th edition ITE rates were used for Southern Grove. A statement on page 5 is added stating that Western Grove trip generation was performed using Trip Generation, 9th Edition.*  
**City's Response: Accepted.**
- e. In Appendix "A", the summation for Single Family Units on the first page looks incorrect. Instead of 3,775 it should be 2,396. Please verify and revise accordingly.  
*Applicant's Response: Acknowledged, see updated report.*  
**City's Response: Accepted.**
- f. Include the ITE land use codes in Table 1 on page 2 along with the land use types for clarification.  
*Applicant's Response: Acknowledged, see updated report.*  
**City's Response: Note, LUC 253 for Independent Living Facility and LUC 254 for Assisted Living use different independent variables. Both Land uses are listed for Beds; however, ITE only has dwelling units as an independent variable for LUC 253. Note: any changes to the development program will require the applicant to submit a revised traffic study.**
- g. Daily and PM trips are included in Tables 8 thru 15 on pages 14 and 15. Please consider including the AM trips in these tables in order to validate if the AM transportation analysis can still be waived or not with the changes in the development plan.  
*Applicant's Response: The analysis is based on daily trips with an applied K & D factor. Therefore, AM peak hour analysis being not necessary.*  
**City's Response: Accepted.**
- h. The land use for industrial uses is referenced differently throughout the report. In Table 1 it is "Industrial & Warehouse", in Appendix M it is "Industrial", in Appendix "G" it is "Industrial Park" and on page 2 it is described as industrial park. Please use a uniform description.  
*Applicant's Response: Labels have been updated to "Industrial". Please see updated report.*  
**City's Response: Accepted.**
- i. It is unclear how the development intensity was reduced by 25% while estimating the pass-by trips in Appendix B.  
*Applicant's Response: In order to provide a conservative estimate of trips on the roadway in the transportation demand model, pass-by capture was effectively reduced by 25%.*  
**City's Response: Please provide supporting documentation for the 25% pass-by reduction.**

- j. In Appendix "B", please state why the ITE 8th Edition trip generation manual was used.  
*Applicant's Response:* Trip generation was previously approved based on the 8th editions ITE. Further, previous reviewers of the traffic study requested an evaluation based on the 8<sup>th</sup> edition of ITE to better understand the change in trips resulting in updating the analysis from the 8<sup>th</sup> to the 10<sup>th</sup> editions of ITE.  
**City's Response: Accepted.**

#### 4) Internal Capture Trips

- a. On page 11, some of the internal capture rates are adopted from the WATS and Southern Grove 2012 Substantial Deviation Traffic Study. Please document the methods or standards that were used in those other studies and provide the supporting documents in the Appendix.  
*Applicant's Response:* Report was updated to include WATS trip generation in the Appendix N.  
**City's Response: Accepted.**
- b. On page 11 in Table 6, several LUC combinations are reported which were not accounted for in earlier studies and the internal capture rates are provided for such combinations. The ITE standards used for these rates should be mentioned and supporting documents should be provided in Appendix.  
*Applicant's Response:* There is no direct supporting documentation available. Therefore, the rates consider R&D as employment similar to office use.  
**City's Response: Agreed.**
- c. Internal Capture rates between traffic analysis zones are reported on page 12 in Table 7 from previous Development Order pages (resolution 15-95). Please include the supporting documentation in the Appendix.  
*Applicant's Response:* Report was updated to include resolution 15-R95 in Appendix O.  
**City's Response: Agreed.**
- d. Tables 8 thru 15 on pages 14 and 15 show internal trips twice for each scenario. First at the zonal level and secondly at the DRI level. The internal capture should not be considered between Southern Grove and nearby projects such as Riverland/Kennedy, Wilson Grove and Western Grove, since the trips are already outside the project on other roads.  
*Applicant's Response:* There is no internal capture between Southern Grove and other projects (e.g. Riverland/Kennedy, Wilson grove, and Western Grove. Internal capture happens as the zonal level and then between the eight (8) Southern Grove Zones.  
**City's Response: Accepted.**

#### 5) Roadway Capacity Analysis

- a. The Roadway Capacity Analysis chapter on page 38 did not mention any analysis for existing or base year traffic conditions. Also, the AM analysis should be included at least for existing conditions.

**Applicant's Response:** *The existing or base year analysis does not pertain to the analysis because that is now and the existing roadway conditions within Southern Grove are acceptable.*

**City's Response:** **Accepted.**

- b. For the future traffic analysis on page 31, Phase 1 traffic is reported to be on the road. An occupancy analysis should be done to assure that all the Phase 1 developments are occupied and generating their full traffic.

**Applicant's Response:** *Phase 1 conditions are not proposed for modification and are not necessary. Monitoring is performed for this during the annual report stage.*

**City's Response:** **Since the biennial report is dated 2018-2019, it is difficult to confirm if the traffic generated from Phase 1 is operational.**

- c. Though the Paar Drive Overpass is not viable now, the proposed lane configuration matches the existing configuration of SW Paar drive on the west of I-95, which can be utilized if a connection has to be made in the future. Therefore, the proposed 2L is sufficient on Paar Drive.

**Applicant's Response:** *Acknowledged.*

**City's Response:** **No further comments.**

- d. Becker Road interchange improvements are acceptable for Phases 2 and 3.

**Applicant's Response:** *Acknowledged.*

**City's Response:** **No further comments.**

- e. Peak-to-daily ratio (K) of 0.9 and a directional factor (D) of 0.55 are nominal rates and are acceptable.

**Applicant's Response:** *Acknowledged.*

**City's Response:** **No further comments.**

## 6) Travel Demand Model

- a. On page 21, the travel demand model is stated to be interpolated for the years 2030 (Phase 2), 2035 (Phase 3), and 2040 (Phase 4). Whereas the proposed phases are shown as 2026, 2031, 2036 and 2041. No discussion is provided to cover for the one-year segregation for each scenario.

**Applicant's Response:** *The one-year difference between the projected phase dates and model years corresponding to the final three phases of the project is not expected to result in a significant change in trips because the trips are based on the model and on projected growth from Southern Grove and the surrounding DRIs. Additionally, the roadway conditions are based on the DRI development trips and monitoring of actual conditions on the roadways.*

**City's Response:** **Agreed. Please document in the report.**

- b. The model trips associated with each zone were calibrated to match the net external ITE trips out of each zone. The report did not explain in detail how or which parameters were adjusted in the model to match the model trips with the ITE Trips.

**Applicant's Response:** *Acknowledged, see updated report Page 22.*

**City's Response: Accepted.**

- c. Appendix H shows the model output maps with daily traffic volumes for Phases 2, 3 and 4. For better visuals and comparison between the base year and the projected years, the report may need to develop maps that include flow patterns showing different volumes in the network for each road type.

*Applicant's Response: Maps are consistent throughout the report and provide sufficient evidence of location. Please let us know if you need the model output files.*

**City's Response: Please advise if these output files would be in the form of network/maps, database/charts, or tables. Maps are preferable since they will give a better visual understanding of the traffic volumes over the three phases.**

- d. The report did not provide mode choice summary in number and percentage from the model.

*Applicant's Response: This area of the Treasure Coast Model does not include mode choice therefore the analysis is conservative. Further, trips in the model were substantially increased to match ITE trips.*

**City's Response: It is understood that the Treasure Coast Model does not provide mode choice; however, please expand on how the model trips were increased to match ITE trips.**

**7) Development Order**

- a. In the Development Order, the first two lanes are mentioned to be the responsibility of others. Whereas the widening is mentioned to be done by the developers. Please note that the initial access roadways are usually provided by the developer.

*Applicant's Response: Acknowledged. Becker Road from Village Parkway to Rangeline Road has unique conditions and is the subject of a lawsuit with the City. Southern Grove is responsible for constructing the remaining 2-lane roadways within the project. The resolution of the lawsuit is expected to require minor changes to the Becker Road Conditions.*

**City's Response: No comment.**

- b. Instead of using trips as the threshold for widening or construction of roadways, please consider using the development units as the thresholds.

*Applicant's Response: Acknowledged. The first 2-lanes of Marshall Parkway west of Village Parkway are now revised to unit thresholds. Paar Driveway remains a phase 3 conditions based on total driveway trips.*

**City's Response: Accepted.**

- c. In the Development Order, coordination with other agencies should be made for review and approvals regarding roadways under their jurisdictions.

*Applicant's Response: This is not necessary. This update is based on state law and the DRI is proposing a significant reduction in trips.*

**City's Response: Accepted.**

- d. It is assumed that the Original ADA and other mentioned studies are already approved. Please confirm.

*Applicant's Response: The Original ADA and other mentioned studies are already approved.*

**City's Response: Accepted.**

## 8) Conclusion

- a. Summary of Proposed changes:

- i. The decrease in residential and commercial uses will reduce the traffic during the nominal (7AM to 9AM) AM and (4PM to 6PM) PM peak hours.

*Applicant's Response: Acknowledged.*

**City's Response: No further comments.**

- ii. The increase in industrial and warehouse use is acceptable since they will operate opposite to the nominal AM and PM peak hours.

*Applicant's Response: Acknowledged.*

**City's Response: No further comments.**

- iii. The addition of independent and ALF is also acceptable since these land uses are anticipated to utilize the other land uses internally.

*Applicant's Response: Acknowledged.*

**City's Response: No further comments.**