

QUESTION 21 - TRANSPORTATION

See State Comprehensive Plan (Chapter 187, F.S.)

GOAL (11); POLICY (2)

GOAL (12); POLICIES (3), (4)

GOAL (16); POLICIES (1)

GOAL (18); POLICIES (1), (3), (4), (6)

GOAL (20); POLICIES (2), (3), (8), (9), (10), (12), (13), (15)

GOAL (25); POLICY (5)

SEE FOLLOWING LETTER FOR THE ANSWERS TO QUESTION 21.

- A. *Using Map J or a table as a base, indicate existing conditions on the highway network within the study area (as previously defined on Map J), including AADT, peak-hour trips directional, traffic split, levels of service and maximum service volumes for the adopted level of service (LOS). Identify the assumptions used in this analysis, including "K" factor, directional "D" factor, facility type, number of lanes and existing signal locations. (If levels of service are based on some methodology other than the most recent procedures of the Transportation Research Board and FDOT, this should be agreed upon at the preapplication conference stage.) Identify the adopted LOS standards of the FDOT, appropriate regional planning council, and local government for roadways within the identified study area. Identify what improvements or new facilities within this study area are planned, programmed, or committed for improvement. Attach appropriate excerpts from published capital improvements plans, budgets and programs showing schedules and types of work and letters from the appropriate agencies stating the current status of the planned, programmed and committed improvements.*

LAUDERHILL CITY CENTER DRI

- B. *Provide a projection of vehicle trips expected to be generated by this development. State all standards and assumptions used, including trip end generation rates by land use types, sources of data, modal split, persons per vehicle, etc., as appropriate. The acceptable methodology to be used for projecting trip generation (including the Florida Standard Urban Model Structure or the Institute of Transportation Engineers trip generation rates) shall be determined at the preapplication conference stage.*
- C. *Estimate the internal/external split for the generated trips at the end of each phase of development as identified in (B) above. Use the format below and include a discussion of what aspects of the development (i.e., provision of on-site shopping and recreation facilities, on-site employment opportunities, etc.) will account for this internal/external split. Provide supporting documentation showing how splits were estimated, such as the results of the Florida Standard Urban Transportation Model Structure (FSUTMS) model application. Describe the extent to which the proposed design and land use mix will foster a more cohesive, internally supported project.*
- D. *Provide a projection of total peak hour directional traffic, with the DRI, on the highway network within the study area at the end of each phase of development. If these projections are based on a validated FSUTMS, state the source, date and network of the model and of the TAZ projections. If no standard model is available or some other model or procedure is used, describe it in detail and include documentation showing its validity. Describe the procedure used to estimate and distribute traffic with full DRI development in subzones at buildout and at interim phase-end years. These assignments may reflect the effects of any new road or improvements which are programmed in adopted capital improvements programs and/or comprehensive plans to be constructed during DRI construction; however, the inclusion of such roads should be clearly identified. Show these link projections on maps or tables of the study area network, one map or table for each phase-end year. Describe how these conclusions were reached.*
- E. *Assign the trips generated by this development as shown in (B) and (C) above and show, on separate maps or tables for each phase-end year, the DRI traffic on each link of the then-existing network within the study area. Include peak-hour directional trips. If local data is available, compare average trip lengths by purpose for the project and local jurisdiction. For the year of buildout and at the end of each phase estimate the percent impact, in terms of peak hour directional DRI trips/ total peak hour directional trips and in terms of peak hour directional DRI trips/ existing peak hour service volume for desired LOS, on each regionally significant roadway in the study area. Identify facility type, number of lanes and projected signal locations for the regionally significant roads.*
- F. *Based on the assignment of trips as shown in (D) and (E) above, what modifications in the highway network (including intersections) will be necessary at the end of each phase of development, to attain and maintain local and regional level of service standards? Identify*

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which of the above improvements are required by traffic not associated with the DRI at the end of each phase. For those improvements which will be needed earlier as a result of the DRI, indicate how much earlier. Where applicable, identify Transportation System Management (TSM) alternatives (e.g., signalization, one-way pairs, ridesharing, etc.) that will be used and any other measures necessary to mitigate other impacts such as increased maintenance due to a large number of truck movements.

- G. Identify the anticipated number and general location of access points for driveways, median openings and roadways necessary to accommodate the proposed development. Describe how the applicant's access plan will minimize the impacts of the proposed development and preserve or enhance traffic flow on the existing and proposed transportation system. This information will assist the applicant and governmental agencies in reaching conceptual agreement regarding the anticipated access points. While the ADA may constitute a conceptual review for access points, it is not a permit application and, therefore, the applicant is not required to include specific design requirements (geometry) until the time of permit application.*
- H. If applicable, describe how the project will complement the protection of existing, or development of proposed, transportation corridors designated by local governments in their comprehensive plans. In addition, identify what commitments will be made to protect the designated corridors such as interlocal agreements, right-of-way dedication, building set-backs, etc.*
- I. What provisions, including but not limited to sidewalks, bicycle paths, internal shuttles, ridesharing and public transit, will be made for the movement of people by means other than private automobile? Refer to internal design, site planning, parking provisions, location, etc.*



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**RE: Lauderhill City Center Development of Regional Impact (DRI) - Broward County
Transportation Methodology (Third Version)
McMahon Project No.: L06598.01**

Dear Ms. Sesodia:

Please accept this letter as the third version of the proposed Traffic Methodology to be used in response to "Question 21 – Transportation" of the Application for Development Approval (ADA) for the above-referenced land development project. This letter includes those items discussed and concluded in three successive meetings with relevant agency staff. The proposed project site is currently occupied by the Lauderhill Mall located on the west side of SR-7/US-441 between NW 12th Street and NW 16th Street in the City of Lauderhill.

21. A - Existing Conditions

1. Existing Year (2007) AM and PM peak-hour, turning-movement counts will be collected at major intersections where the proposed project traffic is anticipated to have significant impact, and may be collected at the currently existing driveway connections. Preliminary analysis will be performed to determine the approximate impact area. Seventy-two hour continuous machine counts will also be collected throughout the study area. Collected counts will be adjusted to reflect peak-season, peak-hour traffic counts by applying a peak-season conversion factor obtained from the *2005 Florida Department of Transportation (FDOT) Peak Season Factor Category Report*.
2. Existing physical and operating characteristics of the roadway network within the development's radius of influence will be inventoried. The study area, for which existing traffic conditions analysis will be performed, is generally bounded by I-595/SR-84 to the south, Commercial Boulevard to the north, SW 100th Avenue to the west and Andrews Avenue to the east. Data to be acquired within the study radius will include the number and type of traffic lanes for each major thoroughfare, intersection geometrics, signal timings and other appropriate physical and operating characteristics. A field visit may be required to obtain additional data necessary for corridor analysis to be performed.

3. Level of Service "D" criteria will be utilized on state and county roadways to determine whether or not the study area links operate at an acceptable level of service. For local roadways, Level of Service criteria will be in compliance with local comprehensive plans.
4. The Level of Service capacities will be based on the generalized tables included in the FDOT *Quality/Level of Service Handbook*, 2002 Edition.
5. Roadway improvements included within the first three years of the FDOT Work Program and the Broward County Metropolitan Planning Organization (BCMPO) Transportation Improvement Program (TIP) will be assumed as committed for the analysis.

21. B - Trip Generation – Gross Trips

1. The site of the proposed Lauderhill City Center is currently occupied by the Lauderhill Mall and an existing office building. The Lauderhill Mall consists of approximately 596,909 square feet of retail space, while the existing office space consists of approximately 82,210 square feet. The Lauderhill City Center is anticipated to be developed in three phases. The completion of the phasing plans are expected as follows:
 - a. Phase 1: Year 2018 – During this phase, it is anticipated that reconstruction will occur on portions of the existing Lauderhill Mall, in addition to new development totaling approximately 175,000 square feet of retail development, 125,000 square feet of office and 665 residential units. Several existing retail developments, or approximately 135,004 square feet, of the existing mall will also be demolished. The existing bus station will be relocated onsite.
 - b. Phase 2: Year 2023 – During this phase of the development, an additional 387,500 square feet of retail will be added, as well as 300,000 square feet of office space and 665 high-rise residential dwelling units. Approximately 125,000 square feet of the existing mall will also be demolished during this phase of development.
 - c. Phase 3: Year 2033 - During this final phase, approximately 1,170 high-rise residential dwelling units are anticipated to be constructed, as well as approximately 87,500 square feet of retail development. In addition, it is projected that the remaining part of the existing mall, approximately 336,905 square feet of retail, will be demolished in this phase.
2. The Institute of Transportation Engineers' (ITE), *Trip Generation*, 7th Edition, rates or equations will be utilized to estimate the daily and peak-hour trips expected to be generated by the proposed project. Vested trips associated with the existing development will be considered and adjustments will be made to account for vacancies in the existing retail component. Trips associated with the current development on the site, approximately 596,909 square feet of Retail and 82,210 square feet of office, will be included in the analysis, and the net new

external trips, based upon the 7th Edition generation rates, will be distributed to the surrounding roadway network to determine the traffic impacts.

3. In addition to the standard trip generation analyses that will be evaluated, equivalency matrices will also be performed for the proposed site. Equivalency matrices will reflect net external trips by land use adjusted to reflect internal and pass-by capture, as well as the effects of transit usage as quantified through Sections 21.C.1, 21.C.2, 21.D.5, and 21.D.6 below. When performing the trip-equivalency matrices, the land-use intensities will be increased or decreased accordingly in 10 percent increments.
4. While it is expected that transit usage will result in a reduction of project-related traffic throughout all phases of development, it is anticipated that the third phase of development will only occur under the condition that net additional traffic generated by this phase is accommodated through transit usage. That is, beneficial effects of the project's transit-oriented development in combination with public agency, public transit initiatives will be used to establish credits in earlier phases. These credits will be applied to net external trips to be generated in phase three.
5. In order to determine the most appropriate multi-modal vehicular-trip reductions/credits that should be applied to the proposed Lauderhill City Center development, McMahon reviewed several research reports/studies prepared by private and public agencies. The findings of this effort are summarized in a document called "**Multi-Modal, Trip-Reduction Justification.**" This document was submitted, on May 30, 2007, to the South Florida Regional Planning Council and was distributed to the other reviewing agencies on June 1, 2007. The findings of this document are briefly summarized below.

Several proposed transit-amenity improvements are anticipated to be included in the redevelopment of the site. These amenities, along with their expected contribution to a ridership increase, include the following:

- Unique/Attractive Shelter: 2% Increase
- Illumination: 2% Increase
- Passenger Amenities: 3% Increase
- Passenger Services: 3% Increase
- High-Frequency Service: 4% Increase
- Off-Vehicle Fare Collection: 3% Increase
- Level Boarding: 5% Increase

Recommended Overall: 15% Increase

Although the above bulleted improvements have an accumulative total of 22 percent, it was agreed at the methodology meeting, held on June 7, 2007, that a 15 percent increase could be applied to the existing transit ridership in order to estimate proposed transit usage. The

resulting, future, transit percentages should then be summed together with existing walking/bicycle percentages to determine total, future, multi-modal trip reductions.

Based on the increase of the 15 percent in transit ridership and the existing walking/bicycle components, a 19 percent and a 14 percent multi-modal reduction is proposed for the AM peak-hour and PM peak-hour, respectively.

21. C – Internal and Pass-By Capture

1. The estimated internal capture rates included in the ITE Trip Generation Handbook are based on data collected at a limited number of multi-use sites in Florida. ITE recognizes the limitation of the data and the potential for higher internal capture rates in mixed-used developments such as the Lauderhill City Center DRI. In an effort to determine the most appropriate internal capture rates for multi-use developments, McMahon reviewed several research studies and prepared a research document called "**Internal Capture Rates Justification.**" This document was also submitted, on May 30, 2007, to the South Florida Regional Planning Council and was distributed to the other reviewing agencies on June 1, 2007. A brief description of the findings is summarized below:

Density, diversity, design, and accessibility highly influence the traveler's trip making decisions and therefore, higher internal capture rates are expected. The proposed Lauderhill City Center DRI will have the above-mentioned components, making the project suitable for applying higher internal capture rates. The proposed DRI will have **fully integrated land uses**—all uses are combined with shared parking and internal connections that make walking a convenient travel mode. The proposed DRI is designed as a **diverse development** with a good mix of residential, retail, and office land uses that could produce all day activities, capturing most of the trips within the site. The design of the **at-grade** street crossings will provide good and convenient connectivity (short paths/direct paths) among the different land uses.

Results of the research documents revealed the following findings:

- Based on survey results, approximately 23% of the trips to a mixed-use development are associated with multiple stops (two or more trip purposes) within the mixed-use site.
- The split between internal and external trips could be 45% / 55% in AM peak, 55% / 45% in PM peak and 51% / 49% daily.
- In developments with major commercial components, capture rates could be 30% or higher.
- An average of 24.6% daily internal capture rate was found to occur on a survey of 22 multi-use developments in South Florida.

At the methodology meeting, held on June 7, 2007, it was agreed that ITE trip internal-capture rates would not be utilized for the proposed Lauderhill City Center DRI. Based on the nature of the proposal, it was recommended that an overall internal-capture rate of 30 percent be used for

both the AM and PM peak periods. This overall internal-capture rate will be applied to all phases of the project.

2. Pass-By capture will be determined from information provided in the *ITE Trip Generation Handbook*. The pass-by capture rate was calculated to be approximately 23 percent based on the equation provided in the ITE handbook. McMahon will verify to ensure that the pass-by trips do not exceed 10 percent of the adjacent street background traffic.

21. D – Future Link Analysis

1. Total future link volumes will include background traffic, which will be calculated by applying a compound growth rate to existing traffic, committed development traffic and project traffic. AM and PM peak-hour analyses will be performed.
2. Growth rates will be determined for the study-area roadways and will be applied to existing peak-season, peak-hour traffic to determine background traffic conditions at the phasing years for the project. Growth rates throughout the study area will be determined based on a review of several methodologies:
 - a. Observed growth rates between Year 2000 volumes, from the 2000 Validation Year Broward County Transportation Model, and Year 2030 traffic volumes, from the 2030 Cost Feasible Broward County Transportation Model.
 - b. Observed growth rates between the 2005 two-way daily traffic and the 2030 two-way daily traffic from the Broward County *Roadway Level of Service* tables.
 - c. Observed growth rates between the 2005 two-way peak-hour traffic and the 2030 two-way peak-hour traffic from the Broward County *Roadway Level of Service* tables.
 - d. Observed growth rates from trend analyses, which will include historical traffic volume data and future 2030 traffic from the 2030 Cost Feasible Broward County Transportation Model.
 - e. Observed growth rates for the Florida Turnpike obtained from the Florida Turnpike Enterprise.

McMahon will review the above and coordinate with reviewing agencies to determine the appropriate growth rates that will be utilized for the analyses.

3. The 2030 Cost Feasible Broward County Transportation Model was recently updated to include the most recent Land Use Plan Amendments for Broward County. Additional committed developments not included in the updated model within the study area will be reviewed and included in the analysis accordingly. Approved committed development information will be obtained from the following sources:
 - Broward County Development Management Division

- City of Lauderhill
- City of Lauderdale lakes
- City of Plantation
- City of Fort Lauderdale

A map will be provided showing the location of the committed developments.

4. Project trips will be calculated based on the expected number of trips, from the trip generation analysis, and the trip assignment. Trip assignment will be based on trip distribution from the site using the 2030 Cost Feasible Broward County Transportation Model. A more detailed explanation is included in Section 21.E - Trip Assignment.
5. Several bus routes exist along the SR-7/US-441 corridor in the vicinity of the proposed project. Further, a transit terminal for several bus routes currently exists on the site. It is expected that the existing bus terminal will remain onsite as part of the proposed development (although the location is expected to shift). Existing ridership information will be obtained from Broward County to determine what transit reduction may be applied to the proposed uses for the site. McMahan will coordinate with responsible governmental agencies to determine the projected transit use along roadways within the study area and the application of those projections to the Lauderhill City Center development. In addition, *FDOT's Transit Capacity and Quality of Service Manual* methodology will be employed to assess future multi-modal impacts on levels of service.
6. The Level of Service capacities will be based on the generalized tables included in the *FDOT Quality/Level of Service Handbook*, 2002 Edition.

21. E – Trip Assignment

The distribution of vehicle trips expected to be generated by the Lauderhill City Center will be estimated. The acceptable methodology to be used for projecting trip distribution will involve application of the 2030 Broward County Florida Standard Urban Transportation Model Structure (FSUTMS). McMahan will coordinate with staff from the various reviewing agencies to confirm agreement on the output distribution results from the proposed model.

The general approach to distribution modeling tasks is as follows:

1. Project trip generation will be estimated as indicated above based on the *ITE Trip Generation*, 7th Edition. Vehicular traffic generated by the proposed development will be distributed to the access driveway(s) and to the surrounding roadway network. These volumes will be added to existing, background and committed development traffic as required to develop total future traffic volumes for the agreed upon analyses years.

2. The FSUTMS model zonal structure will be refined to reflect the proposed Lauderhill City Center development and its connections to the regional roadway network. The zonal data (ZDATA) input files for the model ZDATA will be modified. As necessary, adjustments will be made to the project zonal data sets to achieve model generated net external daily project trips, which are within five percent of the external daily project trips calculated utilizing the ITE *Trip Generation*, 7th Edition, capture methodology described in Task 3 – Project Traffic above.
3. The study-area model roadway network will be updated to reflect roadway geometries based on the existing roadway network plus network information included within the first three years of the FDOT Work Program and the BCMPO TIP.
4. The model will be utilized to perform a select zone analysis to isolate the daily project trips in order to determine their distribution and assignment onto the roadway network.
5. The study area for the project is defined by major roadway links where total project traffic is equal to, or exceeds five (5) percent of the adopted peak-hour directional Level of Service volume. Should ramp analyses be required, ramp analyses will be performed where the ramps are impacted by more than 200 total project trips during AM and PM peak hours.

21. F – Roadway Improvements

1. Required link improvements will be summarized in a table should a link fail to operate at an acceptable level of service.
2. Intersections will be analyzed where project traffic has a five (5) percent impact on any approach and the total future link volumes exceed 90 percent of the adopted LOS volumes.
3. The intersection analyses will include the following scenarios:
 - a. Existing traffic with existing roadway geometries
 - b. Background traffic with programmed roadway improvements
 - c. Total traffic with programmed roadway improvements
 - d. Total traffic with recommended roadway improvements
4. Intersections will be evaluated using LOS D criteria.
5. It is recommended that Synchro 6 be utilized for signalized intersection analyses throughout the study area. The analysis will be performed using HCM methodologies, and the HCM output from Synchro will be provided. The latest version of the *Highway Capacity Manual* software, HCS Plus, is proposed to be utilized for all unsignalized intersections as well as for any ramp analyses. All input files will be provided.

21. G – Site Access

The project site currently has six driveway connections to SR-7/US-441, as well as three driveway connections to NW 16th Street and four driveway connections to NW 12th street. The connections to SR-7/US-441 are directional driveway connections. Further, some connections only allow inbound movements, while others only serve outbound movements. All driveway connections to NW 12th Street and two of the driveway connections to NW 16th Street are full-access driveway connections. The existing site plan is planned to reduce the number of driveway connections from the proposed site. The driveway locations will be clearly identified.

21. H – Consistency With Other Approved Documents

The FDOT Work Program, BCMPO TIP, Broward County Long-Range Transportation Plan, Transit Development Plan and other relevant documents will be reviewed for consistency in determining recommended roadway improvements.

21. I – Alternative Transportation

Alternative methods of external transportation to the site will be evaluated. It is anticipated that coordination will occur between the Applicant and the City of Lauderdale, City of Lauderdale Lakes, City of Plantation, City of Fort Lauderdale, Broward County and the FDOT Office of Modal Development (OMD) on these matters. Internal transportation within the site will also be addressed.

We would appreciate your review and approval of this methodology at your earliest opportunity. Should you have any questions, please do not hesitate to contact Natalia McGuckian or myself at (954) 771-0776.

Very truly yours,



Thomas A. Hall
Associate & General Manager – Fort Lauderdale

TAH/nlm/arp