

# Horsley Witten Group

**Sustainable Environmental Solutions**

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March 11, 2016

Mr. Nipun Jain  
City Planner  
City of Amesbury  
62 Friend Street  
Amesbury, MA 01913

Re: Site Plan Review- Response to comments  
Mill 77 Redevelopment  
77 Elm Street  
Amesbury, MA

Dear Nipun,

On behalf of applicant, the Horsley Witten Group, Inc. (HW) is pleased to provide the following response to the comments received via email February 16, 2016 from Stantec Consulting Services, Inc. (Stantec). Our response pertains to the site design and stormwater management for the proposed redevelopment project located at 77 Elm Street in Amesbury, Massachusetts (Project) and is based upon the site review conference call on March 2, 2016. Response to the comments pertaining to the traffic analysis and landscape design is provided by others under a separate letter.

## **Section XI.C.5 Material For Review:**

- a) ***Parcel information:** Most of the information is indicated on the plan provided. The location of the adjacent way noted as "passageway" on the existing conditions plan should be clarified per the bylaws and the limits indicated since improvements upon lot 268 are proposed in this area. Is this "passageway" a separate parcel as indicated on the assessor map? Please clarify. The information relative to the existing catch basin at the rear of the existing building is missing. In addition, we recommend that the Applicant provide zoning, setback, parking and open space requirements on the site plan.*

### **Response:**

- The "passageway" is not shown as a separate parcel on either assessor's map (A.P.) 40 or 53. The "passageway" identified on Lots 38 A.P. 53 and Lot 268 A.P. 40 (the abutting parcel to the north) is described in the deeds as a cross easement shared between the applicant and the abutter.
- A rim elevation has been added. Inverts and pipe sizes for the structure were not included on the survey plan provided by Eastern Land Surveying Associates, Inc. There is conflicting pipe size information and the project team will confirm with an on-site visit and coordination with the DPW. Once the pipe sizes and material is confirmed, the information will be added to a revised existing conditions plan.

- Zoning, setback, parking and open space requirements have been added to the site plan.

b) *Topographic and existing land features: Indicated in most of the proposed development area on the plans provided. The Applicant should indicate trees over 8" and the tree line on the plans in accordance with the bylaws.*

**Response:** A tree line has been added to the plans. There are no trees on either lot greater than 8" caliper. The building on Lot 139A A.P. 40 has been demolished and the lot has been cleared.

c) *Buildings: Most of the information is indicated on the plan provided. The Applicant should provide dimension of existing buildings, label the existing building heights, and confirm the number of stories (4?) consistent with the bylaw.*

**Response:** The building dimensions and number of stories have been added to the plans.

d) *Parking and driveways: Indicated in most of the proposed development area on the plans provided. The amount of required parking and proposed parking is not addressed. The Applicant should indicate and label all proposed loading areas and indicate access and egress intent throughout site with traffic flow arrows. See XI.C.8.b for additional comments.*

**Response:** The proposed loading areas and traffic arrows have been added to the plans. See additional comment response under XI.C.8.b

e) *Sidewalks, bike paths and recreational trails: Sidewalk reconstruction work, stairs and accessible access are indicated on plans provided. See XI.C.8.d for additional comments*

**Response:** See comments and response under XI.C.8.b

f) *Utilities: Information indicated on plans provided. See XI.C.8.m for additional comments.*

**Response:** See comments and response under XI.C.8.m

g) *Grading and Stormwater Drainage: Indicated on plans provided. See XI.C.8.e for additional comments.*

**Response:** See comments and response under XI.C.8.e

h) *Landscaping: Indicated on the plans provided. See XI.C.8.c for additional comments.*

**Response:** See response letter provided by Howard Snyder, RLA of Amory Land Design, LLC for response to landscape comments

i) *Lighting: Some indicated on the plans provided. A portion of the proposed lighting at the new parking lot does not comply with the requirements of the bylaws. See XI.C.8.i for additional comments.*

**Response:** The lighting plan has been revised by Omnilite and submitted with the revised plans. See comments and response under XI.C.8.m

- j) Signs: *None are addressed on the site plans. A sign is shown in the architectural elevations but not addressed in the submission. See XI.C.8.d for additional comments.*

**Response:** See architect's response under XI.C.8.d

- k) Open Space: *Not labeled on plan or listed and defined per bylaw on cover sheet. It is unknown if the site currently meets the open space requirement. The Applicant should provide additional information to clarify how this is achieved for the Planning Board's file.*

**Response:** Open space requirements have been added to the site plan. The project is a mill redevelopment in a high-density urban environment, therefore, a waiver from the open space requirements is requested.

- l) Traffic Generation: *Provided in the application submission. See XI.C.8.a for additional comments.*

**Response:** See response letter from Vanasse Associates, Inc.

- m) Building Facades and Floor Plans: *Indicated on plans provided.*

**Response:** None

**Section XI.C.6 Additional Review Material:**

- a) Surface and water pollution: *Information provided in the stormwater report. See XI.C.8.e for additional comments.*

**Response:** See comments and response under XI.C.8.e

- b) Soils: *Information provided on the site plans and in the stormwater report.*

**Response:** None

- c) General environmental impact: *Information provided in the stormwater report.*

**Response:** None

- d) Traffic impacts: *Provided in the application submission. See XI.C.8.a for additional comments.*

**Response:** See response letter from Vanasse Associates, Inc.

- e) Architectural Drawings: *Information provided. See XI.C.8.d for additional comments.*

**Response:** See architect's response under XI.C.8.d

- f) *Legal Documents: No Information provided. The Applicant proposes improvements in Fruit Place and the existing "passageway" noted as Fruit Place Extension. The Applicant shall provide all documents for the proposed improvements to Fruit Place acceptable to the Department of Public Works. The status of the "passageway" (Fruit Place Extension) is unknown. Is this a private way or public? The Applicant should clarify and revise the proposed improvements to Fruit Place Extension as necessary acceptable to the Planning Board.*

**Response:** The applicant has met with the DPW and they have reviewed the plans. Comments were received will be addressed accordingly in a separate response letter to the DPW. The "passageway" is not shown as a separate parcel on either assessor's map (A.P.) 40 or 53. The "passageway" identified on Lots 38 A.P. 53 and the abutting parcel to the north (268 A.P. 40) is described in the deeds as a cross easement shared between the applicant and the abutter. The applicant is in the process of securing the necessary documents and will provide to the planning board prior to construction.

- g) *Additional Information: No Information provided. We note that a previous variance granted for the use of off-site parking spaces for the subject lot has expired.*

**Response:** A variance for off-site parking is requested.

#### **Section XI.C.8 Development and Performance Standards:**

- a) *Access and traffic impacts: We note the following potential concerns:*
1. *The proposed parking shown along Fruit Place Extension adjacent to the existing building provides a travel way of 18 to 20 feet. The proposed parking and travel lane width are consistent with a proposed one-way traffic pattern as indicated in parking plans of Section VIII of the bylaws. However, the plans do not address traffic flow patterns per section XI.C.5.l and XI.C.8.a.5 of the bylaws. Two-way traffic would require a wider lane in accordance with the bylaws. The Applicant should revise the design as necessary in accordance with the bylaws and as acceptable to the Planning Board.*

**Response:** The proposed travel way dimensions have been discussed with the City, DPW and our traffic engineer. A waiver is requested from the 24' aisle width.

Due to the limited space available, an 18' – 20' wide travel-way is proposed. Based upon the traffic report and analysis, this is an acceptable distance for two-way low volume traffic. The proposed layout and dimensions are an overall improvement to the current access drive and unorganized rear parking.

2. *The proposed parking lot driveway located upon lot 139A does not appear to have adequate sight distance with cars approaching from the east per section XI.C.8.a.4 of the bylaws. A one-way travel direction toward the east would alleviate this concern. However, the plans and supporting information do not address traffic patterns. The Applicant should revise the design in accordance with the bylaws and as acceptable to the Board.*

**Response:** Fruit place and Fruit Place Extension currently allows two-way traffic, therefore, the proposed layout for two-way traffic is consistent with the existing traffic flow. As part of the proposed site improvements, both Fruit Place and Fruit Place Extension will be widened as indicated on the plans. This includes the widening of the road in the location of the parking lot entrance to 18 feet. This layout is consistent with our discussions with the City Planner and Fire Department during the site review meeting held on site September 29, 2015. Due to the limited space and the grade of Fruit Place, the parking lot driveway access is located in the best possible location. The parking lot will provide parking for the proposed office space with low traffic volume and speeds along Fruit Place. Based upon proposed building and parking lot use, it is anticipated that traffic volumes will be sufficiently served by the proposed road width and parking entrance location. Stop signs will be provided at the intersection of Fruit Place and Fruit Place Extension to alleviate this concern.

- 3. The proposed Fruit Place Extension travel lane varies from 18 to 20 feet. It appears that the 20-foot wide lane width is for one parallel parking space on a one-way lane, but the parking space does not meet the minimum nine foot width required in Section VIII of the bylaws. It appears access to this space would require travel along Fruit Place Extension in a southerly direction and opposite the direction to access the dumpster, and the handicap space shown opposite the dumpster. The Applicant should revise the design to provide appropriate parking in accordance with the bylaws and acceptable to the Board.*

**Response:** The parallel parking space has been eliminated. Fruit Place and Fruit Place Extension currently serves as a two-way street with widths ranging from 17 to 18 feet through the applicants property and 11 to 16' within the Fruit Place ROW. The proposed road and access drive width are an improvement to the existing conditions. See also response above.

- 4. The proposed design indicated a 3-inch high bituminous berm to be provided only along one side of Fruit Place that does not comply with the section 7.09.G of the Subdivision Rules and Regulations requiring granite curb on both sides. In addition, portions of Fruit Place Extension indicate concrete curb that does not comply with the regulations. The proposed roadway reconstruction should be revised in compliance with the regulations and acceptable to the Board.*

**Response:** All berm and concrete curb has been replaced with granite curbing or sloped granite curbing along both sides of Fruit Place, Fruit Place Extension and the parking lot.

- 5. The proposed design of Fruit Place to Fruit Place Extension does not appear to provide a suitable radius for emergency vehicles. The proposed dumpster is an obstruction along the travel lane at this curve location, and is not an appropriate location for the site. The roadway design of the curve connection of Fruit Place to Fruit Place Extension should be adequate for emergency vehicles at a minimum and acceptable to the Fire Department, Department of Public Works and Planning Board. This may require relocation of the proposed retaining wall and dumpster. The Applicant should revise the design accordingly.*

**Response:** A representative from the Amesbury Fire department was present at the initial site review meeting and site walk on September 29, 2015. At that meeting, the fire access, as shown on the submitted plans, was discussed and comments addressed. The curve radii connecting the Fruit Place extension is 26' feet and is adequate for a 100' HP Arial fire truck. This is an improvement to the current conditions. An AutoTURN template is provided, based upon truck specifications provided by the Amesbury Fire Department. After further review and discussion, the dumpster has been relocated to better accommodate vehicular circulation. The plans have been revised accordingly.

6. *The design approach for the proposed dumpster requires the service vehicle to cross oncoming traffic and travel along the left side of the opposing travel lane to access the dumpster. Please note that vehicles approaching from the south have reduced visibility due to the proposed retaining wall, and would not likely have adequate stopping sight distance from the dumpster service vehicle. We recommend that the dumpster be relocated to a more suitable location with a proper approach. The design should be revised acceptable to the Planning Board.*

**Response:** The dumpster has been relocated and the plans have been revised accordingly.

7. *The Applicant has submitted a traffic impact analysis and we note the following relative to the submitted report (comments I-viii):*

**Response:** See letter provided by Vanasse & Associates, Inc. for response to comments 7i-viii

b) *Parking: We recommend the Applicant clarify the following:*

1. *The submitted plan does not include calculations or information to clarify the existing or revised parking is appropriate and adequate. Please review the parking requirements of the bylaws and provide additional information and appropriate notes on the plans relative to the existing and proposed use, and the associated parking requirements on the site plan that demonstrate compliance with Section VIII of the bylaws is achieved.*

**Response:** Parking calculations have been provided on the site plan. Due to the limited space typical of urban mill re-development projects, the applicant is requesting a variance from parking requirements and working with the City on off-site parking options.

2. *The parking lot design on lot 139A appears to indicate spaces would be within the front setback and does not comply with section XI.C.8.b.2 of the bylaws. Please note that the project plans do not include setbacks. The Applicant should indicate the setbacks on the plans and should revise the parking lot design in compliance with the bylaws.*

**Response:** Setbacks have been added to the plans. Due to the limited space typical of urban mill re-development projects, a waiver is requested to allow parking within the setbacks.

3. *The Applicant proposes concrete curb and has a LID for the parking area. The parking lot design does not provide granite curbing at the entry radii per VIII.G.6 or slope granite curbing along the parking lot. The Applicant should revise the design in compliance with the bylaws.*

**Response:** Granite curb has been added to right of way and entrance radii.

4. *The entrance/exit driveway to the proposed parking lot is dimensioned as 20 feet and is less than the minimum 24 feet for two-way traffic note in Section VIII. The Applicant should revise the design in compliance with the bylaws.*

**Response:** Due to limited space typical of mill redevelopment in a high-density urban environment, a 20' access drive is proposed. Although narrower than typical driveways, the proposed width meets acceptable standards for two-way traffic and is necessary to maximize parking. An AutoTURN turning radius template has been provided.

5. *Fruit Place Extension indicates proposed parking spaces that would back onto the existing access way and is inconsistent with the current conditions and intent of VII.G.12 of the bylaws. The Applicant should revise the design acceptable to the Board.*

**Response:** Fruit Place Extension is not a public way and the proposed parking is consistent with existing conditions. Due to limited space, the layout provides a 20' aisle width with 18'x9' parking spaces and allows for 3-point turn maneuverability.

6. *The design does not identify snow storage areas for lot 38 and along Fruit Place Extension to clarify that, the site has adequate snow storage and complies with Section VIII.G.14 of the bylaws. The Applicant should revise the design in compliance with the bylaws.*

**Response:** Snow storage and removal along "Fruit Place Extension" will be consistent with current practices.

7. *The design does not indicate or label existing and proposed loading areas/spaces and does not address compliance with section VIII.F of the bylaws. The Applicant should revise the design in compliance with the bylaws.*

**Response:** As a mill redevelopment project space is very limited. A 10'x35' loading zone within Fruit Place Extension has been added to the revised plans on sheet C-5. Based upon the proposed building use, the loading area is anticipated to have limited use. A waiver is requested for the smaller loading zone

- c. *Landscaping: We recommend the Applicant address the following:*

**Response:** See response letter provided by Howard Snyder, RLA of Amory Land Design, LLC for response to comments c1-9

- d. *Site Plan and Architectural Design: We recommend the Applicant clarify the following:*
1. *The building architectural plans indicate an elevator is proposed for the existing building. However, the plans appear to indicate that the elevator does not serve the ground floor of the building. We recommend the Applicant discuss the proposed design with the Planning Board and Building Department and update as acceptable to the City.*
  2. *The west building elevation indicates a sign to be attached along the building façade. However, the plans do not include information to address conformance with section VII of the bylaws. The Applicant should review the bylaws and update the plan set accordingly.*

**Architect's Response:**

- Existing building dimensions, heights and number of stories are indicated on our drawings. The City has reviewed without objections.
- Elevator: the ground floor is not connected with the levels above and it has been determined through our building code review that there is no need for elevator access to that level. The City is aware of this determination and has expressed no objections.
- Signage: we have shown one suggested intent for building signage. The City has reviewed and noted that they will respond with allowable criteria.
- Lighting: A building lighting package has been submitted to the City for the building. Site related lighting is to be by others.

- e. *Stormwater runoff: We recommend the Applicant clarify the following:*
1. *The project bio retention design elevations indicate a portion of the bio retention 2 bottom will be 5 to 6 feet below the existing grading and located below the noted water table of 38" in the test pits. Please clarify and address how this system would infiltrate when it is located below the water table and does not provide a separation from the water table. Please review and revise accordingly.*

**Response:** As described in the Stormwater Analysis and Drainage Report, the parking lot location is approximately 24 feet above the Back River MHW. Based upon the existing topography and Back River estimated water elevation, depth of the test pits and site soil evaluation data the mottling observed 21-38" below grade has been determine to be a "perched" water table. The test pits were excavated to depths of 101 inches and groundwater seepage was not observed. A layer of dense hardpan is trapping surface runoff just below the surface. Due to the sites poor soils, underdrains are provided for both bioretention area and the underground recharge chamber. The HydroCAD model has been revised accordingly.

2. *The project stormwater detention chamber design indicates the chamber bottom at elevation 34.17 and would be placed varying from 3 to 7 feet below the existing ground and located below the noted water table of 38" in the test pits. Please clarify and address how this system would provide the storage volumes noted in the analysis.*

**Response:** See response to Comment 1 above. The underground recharge system is designed with an underdrain to drain the system and infiltration is not included in the model.

3. *Information contained in the stormwater portion of the application package includes the site description, bio retention calculations, drainage calculations and soil information.*

*We note the following:*

- i. *The sediment forebay designs for the bio retention areas are not adequately sized to provide the minimum size required (10% of WQv). We note that the overall size of the bio retention areas appear to be adequately sized and could be adjusted to provide the minimum sedimentation treatment area and recommend the Applicant review and revise the design accordingly.*

**Response:** The sediment forebays for bioretention areas 1 & 2 have sufficient area to provide more than 10% of the WQv.

- ii. *The analysis does not address all of the post development impacts. We note the Applicant proposed changes to the "courtyard area" noted in the description but does not completely address the pre and post conditions. The Applicant should revise the design as necessary to properly address all the proposed impacts.*

**Response:** A reduction of impervious cover is provided in the courtyard using planters and other areas of contained soil that will serve to collect and store precipitation that will be absorbed by plant material.

However, due to the poor subsoil, the existing asphalt pavement in the courtyard is not proposed to be removed entirely. Poor soils consisting of highly compacted urban soil not conducive to water infiltration is anticipated. In addition, a large portion of the courtyard is a concrete slab covering the large culvert channeling the underground river and cannot be removed. The drainage design has been updated to include the courtyard area.

- iii. *Under the predevelopment condition, the subcatchment calculations include woods poor that should be indicated as woods good in accordance with legend on the pre-development and post development area plans. In addition, we would anticipate that under the post development conditions, the woods for the same subcatchment would also be the same, and not change as indicated. Please update the post development condition calculations for woods to be consistent with the predevelopment conditions.*

**Response:** The post development conditions have been adjusted and the Stormwater Analysis and Drainage Report has been revised accordingly.

- iv. *Under the proposed design, the Applicant proposes to connect to the City's existing drainage system, but no information was provided to clarify the existing drainage system is adequately sized for the various storms and that the proposed change to the drainage system meets the requirement of no increase in runoff in accordance with the bylaws. We recommend the Applicant update the report indicating that the existing system is adequately sized and proposed changes to the existing drainage system do not impact the site or neighboring properties for inclusion in the Planning Board's project file.*

**Response:** There is conflicting pipe size information between the existing conditions survey plan and the most recent Elm Street Transportation Improvement Project plans by VHB. The applicant is working with the DPW to clarify the existing pipe sizes and HW will visit the site to confirm. Required pipe sizing calculations will be provided in the revised Stormwater Analysis and Drainage Report.

- v. *The post development pond calculations for the bio retention areas include an infiltration rate of 2.47 inches per hour that is higher than that stated in the soils information rate of 0.27 inches per hour provide in Appendix A of the report. Please review and clarify the infiltration calculations used.*

**Response:** Infiltration is not included in the bioretention areas, due to the poor soil conditions. The 2.47 inches per hour represents the infiltration rate (Device 3) of the bio soil prior to reaching the underdrain (represented as a 4" culvert in the model). However, the rate was incorrectly entered as 2.47 in per hour and been adjusted to 2.41, the standard rate used for a loamy sand.

4. *The Applicant should provide additional spot elevations adjacent to the proposed improvements along the existing building and parking area, and transformer to clarify the proposed grading intent. In addition, spot elevations along the abutting lot 268 building north of the handicap parking and retaining wall should be provided by the Applicant.*

**Response:** The parking in this area has been revised and spot grades have been added.

5. *The proposed design include two connections to the existing drainage system, for a drain manhole and a separate new catch basin, but information relative to the existing pipe type and if the pipes are in adequate conditions for the proposed connections was not included. The Applicant should verify and provide documentation that the proposed connections and existing pipes are adequate, and the existing piping system can accept the proposed additional project flow acceptable to the Department of Public Works for the Planning Board's file. In addition, the Applicant should verify if the hood in the proposed catch basin is acceptable to the Department of Public Works.*

**Response:** See comment for # 3iv above.

f. *Erosion Control: We recommend the Applicant clarify the following:*

1. *We recommend an erosion control barrier be provided along the courtyard area between the existing buildings adjacent to the proposed improvement area.*

**Response:** A silt sock has been added in the courtyard area on sheet C-4.

2. *We recommend the temporary construction storage and staging areas be identified on the erosion control plan.*

**Response:** A construction staging area has been added to sheet C-4

3. *The plan set includes a construction entrance detail, but the grading plan does not address the proposed location of this feature. The Applicant should clarify and update the plan as necessary.*

**Response:** The construction entrance has been added to sheet C-4.

g. *Water Quality: The project design proposes to install two bio-retention areas with sediment forebays to address the first inch of runoff for the proposed parking lot. The design also includes installation of two new catch basins with hooded outlets. We note the project construction will also impact an existing catch basin#3 on the site and we recommend that the catch basin be retrofitted with a hooded outlet at a minimum to improve water quality in the proposed work area consistent with the performance standards outlined in the bylaws.*

**Response:** A hood has been added to the catch basin outlet and a detail provided.

h. *Hazardous Materials and Explosive Materials: The submitted information does not include or address this performance standard for the site and it is unknown if it is applicable. We recommend the Applicant provide a note on the site plan that provides documentation for the project file that demonstrates compliance of this standard and is acceptable to the Fire Department and Planning Board.*

**Response:** A note has been added to the Construction Notes on sheet C-3.

i. *Lighting: We recommend the Applicant clarify the following:*

1. *The lighting plan appears to indicate the lighting levels at the proposed parking located on lot 139A are exceeded at the property lines and does not comply with the performance standard of section XI.C.8.i.3 of the bylaws. The Applicant should revise the design in compliance with the bylaws.*

**Response:** Due to limited space available for parking, lighting options are limited. The lighting levels at the property lines have been reduced by dialing each fixture down, using glare shields, and incorporating an external house side shield to prevent light spill onto adjacent properties. A revised photometric plan has been provided by Omnilite.

2. *The lighting plan only addresses lighting for the proposed parking lot and access drive and does not address the entire site such as the courtyard area and along Elm Street. The Applicant should update the lighting plan to include the lighting of the entire site and clarify the performance standard is met for the entire site.*

**Response:** New lighting fixtures are provided for the proposed parking lot and access drive (Fruit Place Extension) improvements only. Overhead string lighting is proposed over the courtyard and new lighting is not proposed along Elm Street

3. *The Applicant should update the lighting plan or utility plan to indicate the power supply to serve the proposed lighting.*

**Response:** The applicant is currently working with National Grid on the proposed new electrical service connections and improvement plans. Each proposed parking light fixture draws approximately 60 watts at its max capacity and the necessary power will be provided in coordination with National Grid.

4. *The Applicant should update the lighting plan to indicate the westerly lot line with abutting lot 139*

**Response:** All light levels have been shown extended to zero foot-candles to demonstrate the impact to abutters. The photometric plan has been revised accordingly.

- j. Environmental Performance Standards: The application submittal did not include a general environmental impact report per Section XI.C. 6.c of Bylaws or information relative to meeting the performance standard of Section XI.C.8.j. The Applicant should prepare and provide the required information and include a narrative on how the project has met the development and performance standards of the Bylaws for review and consideration of the Planning Board and for the project file.

**Response:** The project is mill re-development and a waiver to the environmental performance standards is requested.

- k. Noise: The application submittal did not include information relative to noise per Section XI.C.8.k of the Bylaws. The Applicant should prepare and provide the required information that demonstrates how the project has met the development and performance standards for review and consideration of the Planning Board and for the project file.

**Response:** Based upon the proposed building use (office and limited retail) the noise standards will be met. During construction, noise levels will be managed by maintaining typical working hours consistent with any City requirements.

- l. *Wetlands: The project plans indicate the site does not include any on-site wetland areas, but a portion of the site and the existing building is within 100 feet of the wetlands and culvert that carries Back River under Elm Street. We understand the Applicant has submitted a NOI application to the Conservation Commission that is currently under consideration by the*

*Commission. We recommend the project plans include the description of proposed measures consistent with the Conservation Commission recommendations for this project.*

**Response:** The applicant has met and reviewed the project designs with the City conservation agent. Review comments have been received and addressed accordingly. A separate letter will be provided to address the comments.

*m. Utilities: We recommend the Applicant clarify the following:*

- 1. The plan indicates several utility poles are to be removed and a transformer and underground conduits are proposed to serve abutting lot 268. We note the proposed transformer is to be placed on the subject site in close proximity to the existing gas line and meters that serve the existing building on lot 38. The proposed transformer does not appear to serve this existing building. The Applicant should provide documentation that the utility provider has agreed to the proposed design and layout as indicated for the Planning Board's file.*

**Response:** Final electrical layout plans are typically not required as part of the permit review and addressed during the development of final construction documents. The applicant is working closely with National Grid to develop a final electrical connection plan and the proper documentation will be provided. If necessary the plans will be revised based upon the approved National Grid design.

- 2. The design indicates a proposed hydrant is to be installed along Fruit Place Extension from an existing water line from Clark Street. However, it is unclear where the existing water line is along the remainder of Fruit Place Extension. In addition, we note the water line along Fruit Place appears to end near abutting lot 268. The Applicant should note the size and type of the existing water lines, clarify the water line location along Fruit Place Extension and identify any conflicts with proposed improvements. In addition, please verify and provide documentation that the proposed fire hydrant location meets the approval of the Fire Department and Department of Public Works.*

**Response:** A representative from the Amesbury Department of Public Works (DPW) was present at the initial site review meeting and site walk on September 29, 2015. At the meeting, the fire hydrant location was discussed. It was agreed the DPW will work with the applicant on the hydrant location and installation. The DPW records and plans have been provide and the exact water line location is uncertain. The proposed hydrant is shown to connect to the water line located in Clarke Road. Plans will be submitted to the DPW and Fire Department for approval.

- 3. The Applicant should update the plan to note the adjustment of the sewer manholes to finish grade on sheet 6.*

**Response:** A note to adjust rim grades has been provided on sheet C-4.

*n. Roadways and Sidewalks: We recommend the Applicant clarify the following:*

- 1. The plan indicates improvements to Fruit Place including regrading of the roadway. The improvements also include placement of a proposed retaining wall in the City's existing*

*right of way. The proposed retaining wall should be placed along the edge of the right of way. The Applicant should revise the design acceptable to the Department of Public Works.*

**Response:** The wall has been located in consultation with City officials to widen Fruit Place and minimize disturbance to abutting lot.

- 2. The proposed pavement radius from Fruit Place to Fruit Place Extension is not labeled. It is unclear what type of vehicle is intended to be served by the proposed roadway design. It appears that some vehicles would require the entire roadway to negotiate this turn. The Applicant should provide Auto-turn templates to clarify the proposed design is adequately configured for emergency vehicles at a minimum and is acceptable to the Fire Department and Department of Public Works, and to include in the Planning Board's files.*

**Response:** A radius label has been added to Sheet C-4 and a turning radius template has been provided. The AutoTURN template is based upon truck specifications provided by the Amesbury Fire Department.

- 3. Sheet 4 indicates the existing access driveway will be "Fruit Place Extension" implying that this could be a dedicated public way, but placement of a dumpster in a travel way is not typically allowed or recommended. The Applicant should revise the proposed design acceptable to the Planning Board.*

**Response:** An easement will be granted to City for Fruit Place Extension, but it will not be a dedicated public way. The dumpster has been relocated.

- 4. Fruit Place has an existing travel lane width of 16 feet. Please note that the project proposes to change and increase the amount of traffic that will access Fruit Place and travel to the parking lot as identified in the traffic report. The Applicant should address any additional improvements to Fruit Place with the Planning Board and update the project design as necessary.*

**Response:** The applicant is working closely with the City planner to address Fruit Street and Clarke Street improvements. Fruit Place is proposed to be widened to 18' between the parking lot access and Lot.

- 5. The design indicates portions the roadway will be placed upon lot 139A that would require appropriate easements and/or other legal documents. The Applicant should provide all appropriate documents related tie the proposed design acceptable to the Planning Board.*

**Response:** The applicant is working closely with the City and the abutters to secure the appropriate easements. Proper documentation will be provided once the easements are completed.

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- o. Marina or Docking Facilities: This performance standard does not appear to apply to this application.

**Response:** None

- p. *Specific Design and Construction Standards: We recommend the Applicant clarify the following:*
  - 1. *The proposed drainage system is noted to be HDPE that does not comply with section 8.04.A.1 of the Subdivision Rules and Regulations requiring concrete pipe. The Applicant should revise the design accordingly.*

**Response:** HDPE is provided and a waiver is requested.

- 2. *The bituminous pavement detail does not provide the minimum 12" gravel base in accordance with section 8.03.4 of the Subdivision Rules and Regulations. The Applicant should revise the design accordingly.*

**Response:** The detail has been revised accordingly.

We believe our response sufficiently addresses the City and peer review comments. Revised plans, Stormwater Analysis and Drainage Report and proper easement documentation will be provided accordingly. We look forward to working with the City of Amesbury Planning Board. If you have any additional questions and/or require further clarification, please contact me at (508) 833-6600 ext 155 or [bkuchar@horsleywitten.com](mailto:bkuchar@horsleywitten.com).

Sincerely,  
HORSLEY WITTEN GROUP, INC.



Brian Kuchar, R.L.A., P.E., LEED A.P.  
Senior Landscape Architect/Engineer

Enclosures

cc: David Martin – Martin Development, LLC  
Nick Cracknell - Keystone Planning & Design  
Jeffrey S. Dirk, P.E., PTOE, FITE – Vanasse and Associates, Inc.  
Howard Snyder - Amory Land Design, LLC  
Michael Leach – Stantec Consulting Services, Inc.



Ref: 7176

March 10, 2016

Mr. Nipun Jain  
City Planner  
City of Amesbury  
62 Friend Street  
Amesbury, MA 01913

Re: Response to Peer Review Comments  
Proposed Mixed-Use Commercial Development – 77 Elm Street  
Amesbury, Massachusetts

Dear Nipun:

Vanasse & Associates, Inc. (VAI) is providing responses to the comments that were raised in the February 5, 2016 memorandum from Stantec Consulting Services, Inc. (Stantec) concerning their review on behalf of the City of the December 2015 *Transportation Impact Assessment* (the “December 2015 TIA”) prepared in support of the proposed renovation of the existing commercial building located at 77 Elm Street in Amesbury, Massachusetts (hereafter referred to as the “Project”). Responses to the remaining comments will be provided by others under separate cover. Listed below are the comments concerning the December 2015 TIA that were raised in Stantec’s letter followed by our detailed response on behalf of the Applicant.

**Comment 7 i.** *The proposed development includes 21,204 sf of building of which 14,459 sf is proposed as office space and 6,745 sf of retail/restaurant space. The trip generation estimate applies ITE Land Use Codes (LUC) 710 General Office Building; LUC 820 Shopping Center; and LUC 932 High Turnover (Sit Down) Restaurant. LUC 820 Shopping Center is applied to 1,990 sf. The LUC 820 trip rate is far less than the LUC 932. This will be an issue if the proportions of the 6,745 sf split between retail and restaurant use changes. As estimated in the submitted report, the project would generate less than 100 trips in the peak hour.*

**Response:** As detailed in the December 2015 TIA, the ground floor of the building will be configured to accommodate 1,990 square feet (sf) of retail space and 4,755 sf of retail or restaurant space. As such, the trip-generation calculations for this this portion of the Project were calculated using Institute of Transportation Engineers (ITE)<sup>1</sup> Land Use Code (LUC) 820, Shopping Center, for the 1,990 sf of ground floor space that will be configured for retail use, and the higher trip rates of LUC 932, *High-Turnover (Sit-Down) Restaurant*, for the balance of the space (4,755 sf) that could be either retail or restaurant space. This methodology provides a reasonable basis to establish the trip-generation calculations for the retail/restaurant component of the Project based on the current development proposal. If the entirety of the ground floor of the building were to consist of restaurant uses, the net increase in peak-hour trips over

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<sup>1</sup>*Trip Generation*, 9<sup>th</sup> Edition; Institute of Transportation Engineers; Washington, DC; 2012.

the development program that was assessed in the December 2015 TIA would be 20 or fewer vehicles, or (1) additional vehicle every (3) minutes which, when dispersed onto the roadway network, would not result in a material change in operating conditions (i.e., motorist delays or vehicle queuing) from the conditions that were reported in the December 2015 TIA.

**Comment 7 ii.** *As shown in Figure 6, all project trips including 49 entering trips during the morning peak hour and 39 entering trips during the evening peak hours are routed to Fruit Place and Fruit Place Extension yet there are only 23 parking spaces provided. Where are the other parking spaces for the estimated trips to serve the site?*

**Response:** If the arriving vehicles are unable to find a parking space within the proposed parking lot that is to be constructed off Fruit Place, employees and patrons of the Project would use public parking available in the area, including on-street parking along Market Street and Water Street, and in the municipal parking lot located off Water Street, all of which are within a reasonable walking distance of the Project site. If and when off-site parking is used, Project-related traffic assigned to Fruit Place and Fruit Place Extension would be less than that predicted in the December 2015 TIA thereby resulting in a less pronounced impact on these roadways and greater dispersal of trips.

**Comment 7 iii.** *The trip generation estimate includes Pass-by reductions on Market Street although Market Street is not adjacent to the site. Table 5 appears to apply a pass-by trip reduction regardless of the trip route although all trips are routed to the Fruit Place parking lot and/or along Fruit Place Extension and there are only 1 or 2 existing vehicles on those roadways during the peak hours as shown on Figure 3. Please explain.*

**Response:** Pass-by trips for the Project would be applied to Elm Street and Clark Street; however, since the parking for the Project is located off Fruit Place and Clark Street is currently a one-way roadway (toward Elm Street), the pass-by trip reduction would most appropriately be applied to Clark Street (vs. Market Street). As such, the assignment of Project-generated traffic was revised to reflect the use of Clark Street by pass-by trips. The revised traffic volume networks and the associated traffic operations analysis (2022 Build) are attached, with Table 8R summarizing the analysis results.

As can be seen in Table 8R, with the exception of an improvement in the reported level-of-service (LOS) for the Fruit Place approach to Market Street (LOS “B” vs. “C” as reported in the December 2015 TIA), there were no reported changes in LOS from the conditions that were documented in the December 2015 TIA, with minor changes in motorist delay (less than 1.5 seconds) and vehicle queuing (a reduction of (1) vehicle on the Fruit Place approach to Market Street) noted.

**Comment 7 iv.** *No existing volume information is provided on Figure 3 for the Clark Street and Fruit Place Extension intersection. Please explain.*

**Response:** The current unimproved Fruit Place Extension conveys nominal traffic volumes during the peak hours (less than 5 vehicles per hour).

**Comment 7 v.** *Under the proposed project, Fruit Place will continue to operate as a 16-foot wide two-way street. How will this very narrow roadway serve this dramatic increase in traffic volumes? How are pedestrians accommodated on Fruit Place, particularly those pedestrians to the existing homes? How will snowfall affect the two way operation of vehicles and pedestrians?*

**Response:** Traffic volumes and vehicle travel speeds along Fruit Place will continue to be relatively low, with a projected average weekday traffic volume of less than 500 vehicles per day and peak-hour volumes of less than 45 vehicles per hour. That being said, the Applicant will work with the City and abutting property owners to improve Fruit Place with consideration of pedestrian activity and the slow travel speed environment.

**Comment 7 vi.** *Levels of service are reported for intersections at Market Street/Fruit Place and Elm Street/Clark Street/Railroad Street. However, the queuing conditions at these intersections are not reported. Will the queues affect the site circulation?*

**Response:** Table 8 of the December 2015 TIA (and Table 8R attached hereto) includes projected vehicle queues at the study intersections both with and without the Project. As indicated therein, with the exception of the Elm Street/Clark Street intersection, vehicle queues at the study intersections were shown to range from 0 to 1 vehicle during the peak hours and would not impact site circulation. At the Elm Street/Clark Street intersection, vehicle queues on the Clark Street approach were shown to range from 5 to 8 vehicles under 2022 No-Build conditions and from 5 to 9 vehicles under 2022 Build conditions. During those periods when vehicle queues on the Clark Street approach to Elm Street exceed 2 to 3 vehicles, Fruit Place Extension would be blocked, requiring vehicles seeking to enter or exit Fruit Place Extension to wait for an available gap in traffic.

**Comment 7 vii.** *At the intersection with Market Street, the width of Fruit Place and the ability for vehicles to turn into and out of Fruit Place is constricted with a water hydrant on one side and a utility pole on the other side. Under existing low volume conditions, vehicles turning in and/or out infrequently encounter an opposing vehicle. Under the proposed condition, how will the presence of stopped vehicles on Fruit Place attempting to enter Market Street affect the ability to turn into Fruit Place?*

**Response:** Traffic volumes along Fruit Place will continue to be relatively low, with peak-hour volumes of less than 45 vehicles per hour. While the potential for conflicts between entering and exiting vehicles will increase with the Project, these occasions will continue to be infrequent and, given the superior operating conditions reported at the Market Street/Fruit Place intersection, there is more than sufficient capacity for a vehicle to wait on Market Street while a vehicle exits from Fruit Place.

**Comment 7 viii.** *The intersection of Clark Street at Elm Street appears to operate at volume levels that exceed MUTCD 8-Hour Traffic Signal Warrant conditions during the peak*

*hours. Recognizing the Level of Service F condition experienced during the peak hours and the data that crashes that have occurred at this intersection, would a traffic signal be warranted at this location?*

**Response:**

A review of the Four-Hour Vehicular Volume warrant specified in the *Manual on Uniform Traffic Control Devices*<sup>2</sup> (an 8-hour traffic count was not available for the intersection) indicates that the Elm Street/Clark Street intersection would satisfy the Four-Hour Vehicular Volume warrant under 2022 No-Build conditions independent of the Project. The motor vehicle crash analysis that was presented in the November 2015 TIA indicated that the intersection experienced six (6) crashes between 2009 and 2013, or an average of 1.2 crashes per year, and that the calculated motor vehicle crash rate was below both the Massachusetts Department of Transportation (MassDOT) Statewide and District 4 average crash rate for an unsignalized intersection.

As detailed in the November 2015 TIA, the City is currently considering reintroducing two-way traffic to Clark Street in an effort to reduce vehicle queuing at the intersection and improve traffic circulation in area, a measure that the Applicant supports. Recognizing the minimal impact of the Project and the relatively low volume of traffic processed by the intersection, no immediate improvements beyond those currently being considered by the City appear to be required to accommodate the minor increase in traffic that the Project represents (15 or fewer vehicles would be added to the Clark Street approach during the peak hours, or no more than one (1) additional vehicle every four (4) minutes).

We trust that this information is responsive to the comments that were raised in Stantec's February 5, 2016 memorandum concerning the December 2015 TIA prepared in support of the Project. If you should have any questions regarding our responses or would like to discuss this information in more detail, please feel free to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.



Jeffrey S. Dirk, P.E., PTOE, FITE  
Principal

JSD/jsd

cc: D. Martin - Martin Development LLC (via email)  
N. Cracknell - Keystone Planning & Design, LLC (via email)  
B. Kuchar, R.L.A., P.E., LEED AP – Horsley Witten Group (via email)  
File

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<sup>2</sup>*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.



**Table 8R**  
**UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY**

Unsignalized Intersection/Peak Hour/Movement	2015 Existing				2022 No-Build				2022 Build			
	Demand <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup> 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>
<b><i>Elm Street at Clark Street and Railroad Street</i></b>												
<i>Weekday Morning:</i>												
Clark Street EB LT/TH/RT	178	>50.0	F	6	190	>50.0	F	8	198	>50.0	F	9
Railroad Street WB LT/TH/RT	12	15.1	C	0	13	15.7	C	0	13	15.9	C	0
Elm Street NB LT/TH/RT	461	0.0	A	0	494	0.0	A	0	494	0.0	A	0
Elm Street SB LT/TH/RT	357	0.3	A	0	383	0.3	A	0	393	0.3	A	0
<i>Weekday Evening:</i>												
Clark Street EB LT/TH/RT	114	43.9	E	3	122	>50.0	F	5	137	>50.0	F	5
Railroad Street WB LT/TH/RT	20	19.5	C	1	22	21.6	C	1	22	22.0	C	1
Elm Street NB LT/TH/RT	427	0.0	A	0	457	0.0	A	0	457	0.0	A	0
Elm Street SB LT/TH/RT	600	0.0	A	0	643	0.0	A	0	649	0.0	A	0
<i>Saturday MIDDAY:</i>												
Clark Street EB LT/TH/RT	120	>50.0	F	4	128	>50.0	F	6	141	>50.0	F	7
Railroad Street WB LT/TH/RT	11	17.2	C	0	12	18.2	C	1	12	18.5	C	1
Elm Street NB LT/TH/RT	500	0.0	A	0	536	0.0	A	0	536	0.0	A	0
Elm Street SB LT/TH/RT	560	0.0	A	0	600	0.0	A	0	608	0.0	A	0
<b><i>Market Street at Clark Street</i></b>												
<i>Weekday Morning:</i>												
Market Street NB TH/RT	263	0.0	A	0	282	0.0	A	0	311	0.0	A	0
Market Street SB LT/TH	483	3.0	A	1	518	3.0	A	1	523	3.0	A	1
<i>Weekday Evening:</i>												
Market Street NB TH/RT	446	0.0	A	0	479	0.0	A	0	498	0.0	A	0
Market Street SB LT/TH	321	1.8	A	0	344	1.9	A	1	352	1.8	A	1
<i>Saturday MIDDAY:</i>												
Market Street NB TH/RT	384	0.0	A	0	412	0.0	A	0	436	0.0	A	0
Market Street SB LT/TH	378	2.0	A	1	404	2.1	A	1	412	2.1	A	1
<b><i>Market Street at Fruit Place</i></b>												
<i>Weekday Morning:</i>												
Fruit Place WB LT/RT	1	10.0	B	0	1	10.2	B	0	11	13.9	B	0
Market Street NB TH/RT	254	0.0	A	0	272	0.0	A	0	286	0.0	A	0
Market Street SB LT/TH	484	0.0	A	0	519	0.0	A	0	530	0.3	A	0
<i>Weekday Evening:</i>												
Fruit Place WB LT/RT	0	0.0	A	0	0	0.0	A	0	17	14.8	B	0
Market Street NB TH/RT	437	0.0	A	0	469	0.0	A	0	478	0.0	A	0
Market Street SB LT/TH	321	0.0	A	0	344	0.0	A	0	351	0.2	A	0
<i>Saturday MIDDAY:</i>												
Fruit Place WB LT/RT	2	12.9	B	0	2	13.5	B	0	17	14.3	B	0
Market Street NB TH/RT	370	0.0	A	0	397	0.0	A	0	409	0.0	A	0
Market Street SB LT/TH	379	0.0	A	0	406	0.0	A	0	416	0.2	A	0

See notes at end of table.



**Table 8R (Continued)**  
**UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY**

Unsignalized Intersection/Peak Hour/Movement	2015 Existing				2022 No-Build				2022 Build			
	Demand <sup>a</sup>	Delay <sup>b</sup>	LOS <sup>c</sup>	Queue <sup>d</sup> 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>	Demand	Delay	LOS	Queue 95 <sup>th</sup>
<b>Clark Street at Fruit Place</b>												
<i>Weekday Morning:</i>												
Clark Street EB LT/TH	--	--	--	--	--	--	--	--	205	0.8	A	0
Fruit Place SB LT	--	--	--	--	--	--	--	--	17	10.1	B	0
<i>Weekday Evening:</i>												
Clark Street EB LT/TH	--	--	--	--	--	--	--	--	132	1.0	A	0
Fruit Place SB LT	--	--	--	--	--	--	--	--	24	9.6	B	0
<i>Saturday Midday:</i>												
Clark Street EB LT/TH	--	--	--	--	--	--	--	--	140	1.1	A	0
Fruit Place SB LT	--	--	--	--	--	--	--	--	23	9.6	A	0
<b>Fruit Place at the Project Site Driveway</b>												
<i>Weekday Morning:</i>												
Fruit Place EB TH/RT	--	--	--	--	--	--	--	--	26	0.0	A	0
Fruit Place WB LT/TH	--	--	--	--	--	--	--	--	25	7.0	A	0
Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	27	8.7	A	0
<i>Weekday Evening:</i>												
Fruit Place EB TH/RT	--	--	--	--	--	--	--	--	16	0.0	A	0
Fruit Place WB LT/TH	--	--	--	--	--	--	--	--	19	7.3	A	0
Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	41	8.7	A	0
<i>Saturday Midday:</i>												
Fruit Place EB TH/RT	--	--	--	--	--	--	--	--	25	0.0	A	0
Fruit Place WB LT/TH	--	--	--	--	--	--	--	--	24	6.7	A	0
Project Site Driveway NB LT/RT	--	--	--	--	--	--	--	--	39	8.7	A	0

<sup>a</sup>Demand in vehicles per hour.

<sup>b</sup>Average control delay per vehicle (in seconds).

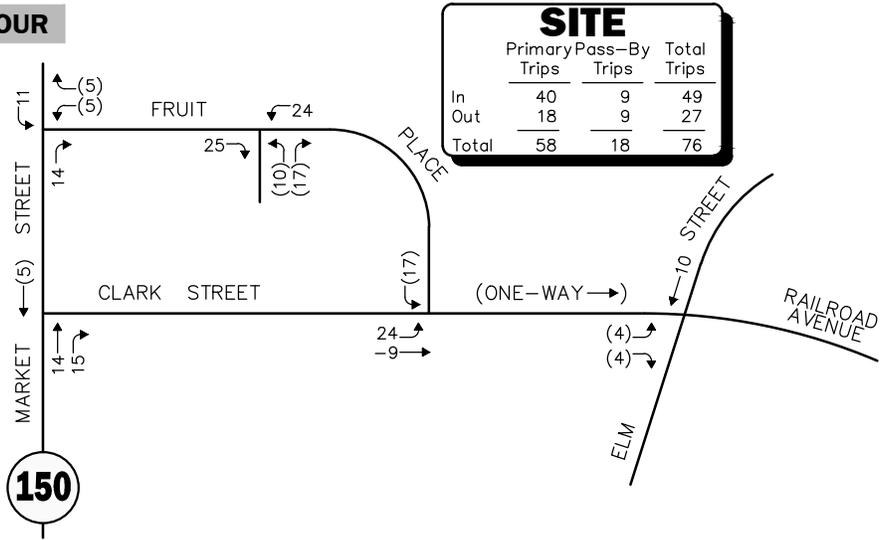
<sup>c</sup>Level-of-Service.

<sup>d</sup>Queue length in vehicles.

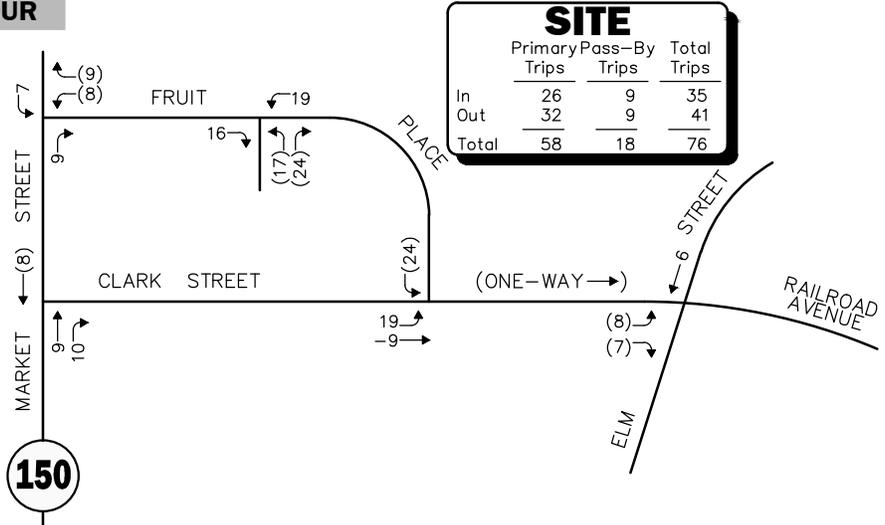
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; SEB = southeastbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.



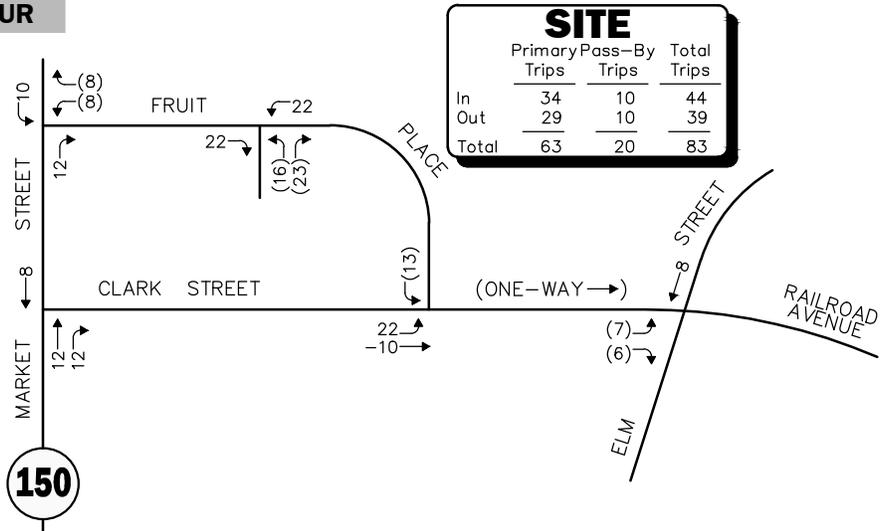
**WEEKDAY MORNING PEAK HOUR**  
(7:30-8:30 AM)



**WEEKDAY EVENING PEAK HOUR**  
(5:00-6:00 PM)



**SATURDAY MIDDAY PEAK HOUR**  
(11:30 AM - 12:30 PM)



**Legend:**  
XX Entering Trips  
(XX) Exiting Trips

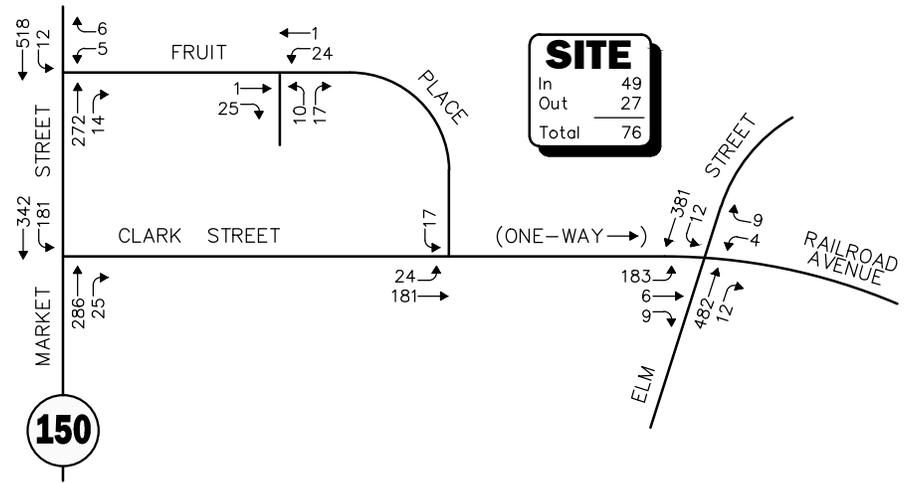
Not To Scale



**Figure 6R**  
**Project-Generated**  
**Peak Hour Traffic Volumes**

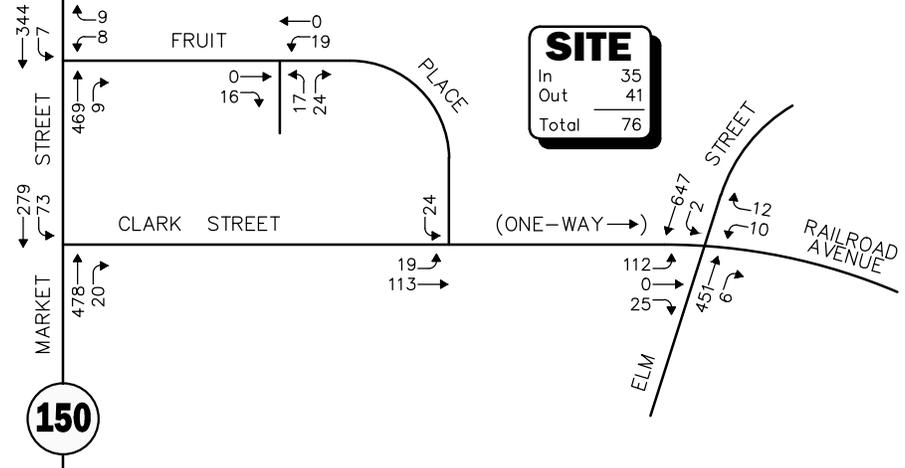
**WEEKDAY MORNING PEAK HOUR**

(7:30-8:30 AM)



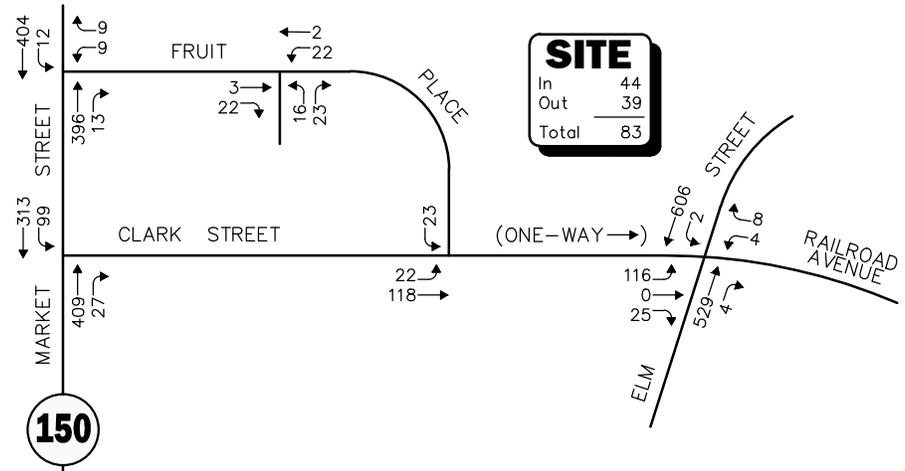
**WEEKDAY EVENING PEAK HOUR**

(5:00-6:00 PM)



**SATURDAY MIDDAY PEAK HOUR**

(11:30 AM - 12:30 PM)



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 7R



2022 Build  
Peak Hour Traffic Volumes

**Institute of Transportation Engineers (ITE)**  
**Trip Generation , 9th Edition**  
**Land Use Code (LUC) 932 - High-Turnover (Sit-Down) Restaurant**

Average Vehicle Trips Ends vs: 1000 Square Feet Gross Floor Area  
Independent Variable (X): 6.745

**AVERAGE WEEKDAY DAILY**

$T = 127.15 * (X)$   
 $T = 127.15 * 6.745$   
 $T = 857.63$   
 $T = 858$  vehicle trips  
with 50% ( 429 vpd) entering and 50% ( 429 vpd) exiting.

**WEEKDAY MORNING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$T = 10.81 * (X)$   
 $T = 10.81 * 6.745$   
 $T = 72.91$   
 $T = 73$  vehicle trips  
with 55% ( 40 vph) entering and 45% ( 33 vph) exiting.

**WEEKDAY EVENING PEAK HOUR OF ADJACENT STREET TRAFFIC**

$T = 9.85 * (X)$   
 $T = 9.85 * 6.745$   
 $T = 66.44$   
 $T = 66$  vehicle trips  
with 60% ( 40 vph) entering and 40% ( 26 vph) exiting.

**SATURDAY DAILY**

$T = 158.37 * (X)$   
 $T = 158.37 * 6.745$   
 $T = 1068.21$   
 $T = 1,068$  vehicle trips  
with 50% ( 534 vpd) entering and 50% ( 534 vpd) exiting.

**SATURDAY MIDDAY PEAK HOUR OF GENERATOR**

$T = 14.07 * (X)$   
 $T = 14.07 * 6.745$   
 $T = 94.90$   
 $T = 95$  vehicle trips  
with 53% ( 50 vph) entering and 47% ( 45 vph) exiting.

2022 Build Weekday AM Peak  
 2: Market Street & Clark Street

2/16/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	286	25	181	342
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	13
Link Speed (mph)	30		30			30
Link Distance (ft)	440		470			280
Travel Time (s)	10.0		10.7			6.4
Peak Hour Factor	0.92	0.92	0.78	0.78	0.90	0.90
Heavy Vehicles (%)	0%	0%	4%	0%	0%	3%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	399	0	0	581

Intersection Summary  
 Area Type: CBD

2022 Build Weekday AM Peak  
2: Market Street & Clark Street

2/16/2016

Intersection	
Intersection Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	286	25	181	342
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	78	78	90	90
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	0	0	367	32	201	380

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1165	383	0
Stage 1	383	-	-
Stage 2	782	-	-
Follow-up Headway	3.5	3.3	2.2
Pot Capacity-1 Maneuver	217	669	1171
Stage 1	694	-	-
Stage 2	454	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	170	669	1171
Mov Capacity-2 Maneuver	170	-	-
Stage 1	694	-	-
Stage 2	355	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	3
HCM LOS	A		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	0	1171	-
HCM Lane V/C Ratio	-	-	+	0.172	-
HCM Control Delay (s)	-	-	0	8.711	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	+	0.619	-

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday PM Peak  
 2: Market Street & Clark Street

2/16/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	478	20	73	279
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	13
Link Speed (mph)	30		30			30
Link Distance (ft)	440		470			280
Travel Time (s)	10.0		10.7			6.4
Peak Hour Factor	0.92	0.92	0.85	0.85	0.95	0.95
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	586	0	0	371

Intersection Summary

Area Type: CBD

2022 Build Weekday PM Peak  
2: Market Street & Clark Street

2/16/2016

Intersection

Intersection Delay, s/veh 0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	478	20	73	279
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	85	85	95	95
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	0	0	562	24	77	294

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1021	574	0
Stage 1	574	-	-
Stage 2	447	-	-
Follow-up Headway	3.5	3.3	2.2
Pot Capacity-1 Maneuver	264	522	999
Stage 1	567	-	-
Stage 2	649	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	240	522	999
Mov Capacity-2 Maneuver	240	-	-
Stage 1	567	-	-
Stage 2	589	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	1.8
HCM LOS	A		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	0	999	-
HCM Lane V/C Ratio	-	-	+	0.077	-
HCM Control Delay (s)	-	-	0	8.904	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	+	0.249	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Saturday Midday Peak  
 2: Market Street & Clark Street

2/16/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	0	0	409	27	99	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	10	12	12	13
Link Speed (mph)	30		30			30
Link Distance (ft)	440		470			280
Travel Time (s)	10.0		10.7			6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	474	0	0	453

Intersection Summary

Area Type: CBD

2022 Build Saturday Midday Peak  
2: Market Street & Clark Street

2/16/2016

Intersection

Intersection Delay, s/veh 1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	0	0	409	27	99	313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	91	91
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	445	29	109	344

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1021	459	0
Stage 1	459	-	-
Stage 2	562	-	-
Follow-up Headway	3.5	3.3	2.2
Pot Capacity-1 Maneuver	264	606	1099
Stage 1	641	-	-
Stage 2	575	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	232	606	1099
Mov Capacity-2 Maneuver	232	-	-
Stage 1	641	-	-
Stage 2	504	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	2.1
HCM LOS	A		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	0	1099	-
HCM Lane V/C Ratio	-	-	+	0.099	-
HCM Control Delay (s)	-	-	0	8.635	0
HCM Lane LOS			A	A	A
HCM 95th %tile Q(veh)	-	-	+	0.329	-

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday AM Peak  
3: Market Street & Fruit Place

2/16/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	5	6	272	14	12	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	12	10	12	12	12
Link Speed (mph)	30		30			30
Link Distance (ft)	301		280			377
Travel Time (s)	6.8		6.4			8.6
Peak Hour Factor	0.92	0.92	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	0%	0%	4%	0%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	371	0	0	589

Intersection Summary

Area Type: CBD

2022 Build Weekday AM Peak  
3: Market Street & Fruit Place

2/16/2016

Intersection

Intersection Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	5	6	272	14	12	518
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	77	77	90	90
Heavy Vehicles, %	0	0	4	0	0	2
Mvmt Flow	5	7	353	18	13	576

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	964	362	0
Stage 1	362	-	-
Stage 2	602	-	-
Follow-up Headway	3.5	3.3	2.2
Pot Capacity-1 Maneuver	286	687	1199
Stage 1	709	-	-
Stage 2	551	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	281	687	1199
Mov Capacity-2 Maneuver	281	-	-
Stage 1	709	-	-
Stage 2	542	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0.2
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	415	1199	-
HCM Lane V/C Ratio	-	-	0.029	0.011	-
HCM Control Delay (s)	-	-	13.9	8.036	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.089	0.034	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday PM Peak  
 3: Market Street & Fruit Place

2/16/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	8	9	469	9	7	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	12	10	12	12	12
Link Speed (mph)	30		30			30
Link Distance (ft)	300		280			377
Travel Time (s)	6.8		6.4			8.6
Peak Hour Factor	0.92	0.92	0.85	0.85	0.95	0.95
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	563	0	0	369

Intersection Summary

Area Type: CBD

2022 Build Weekday PM Peak  
3: Market Street & Fruit Place

2/16/2016

**Intersection**

Intersection Delay, s/veh 0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	8	9	469	9	7	344
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	85	85	95	95
Heavy Vehicles, %	0	0	1	0	0	0
Mvmt Flow	9	10	552	11	7	362

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	934	557	0
Stage 1	557	-	-
Stage 2	377	-	-
Follow-up Headway	3.5	3.3	2.2
Pot Capacity-1 Maneuver	297	534	1019
Stage 1	578	-	-
Stage 2	698	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	294	534	1019
Mov Capacity-2 Maneuver	294	-	-
Stage 1	578	-	-
Stage 2	692	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0.2
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	386	1019	-
HCM Lane V/C Ratio	-	-	0.048	0.007	-
HCM Control Delay (s)	-	-	14.8	8.559	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.15	0.022	-

**Notes**

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Saturday Midday Peak  
 3: Market Street & Fruit Place

2/16/2016

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	9	8	396	13	12	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	12	10	12	12	12
Link Speed (mph)	30		30			30
Link Distance (ft)	290		280			377
Travel Time (s)	6.6		6.4			8.6
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	440	0	0	447

Intersection Summary

Area Type: CBD

2022 Build Saturday Midday Peak  
3: Market Street & Fruit Place

2/16/2016

Intersection	
Intersection Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	9	8	396	13	12	404
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	10	9	426	14	13	434

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	893	433	0
Stage 1	433	-	-
Stage 2	460	-	-
Follow-up Headway	3.5	3.3	2.2
Pot Capacity-1 Maneuver	315	627	1131
Stage 1	658	-	-
Stage 2	640	-	-
Time blocked-Platoon, %			
Mov Capacity-1 Maneuver	310	627	1131
Mov Capacity-2 Maneuver	310	-	-
Stage 1	658	-	-
Stage 2	630	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	0.2
HCM LOS	B		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	1131	-
HCM Lane V/C Ratio	-	-	0.045	0.011	-
HCM Control Delay (s)	-	-	14.3	8.22	0
HCM Lane LOS			B	A	A
HCM 95th %tile Q(veh)	-	-	0.142	0.035	-

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday AM Peak  
4: Clark Street & Fruit Place

2/16/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	24	181	0	1	17	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)		30	30		30	
Link Distance (ft)		440	243		275	
Travel Time (s)		10.0	5.5		6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	223	1	0	18	0

Intersection Summary

Area Type: Other

2022 Build Weekday AM Peak  
4: Clark Street & Fruit Place

2/16/2016

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	24	181	0	1	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	197	0	1	18	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	250
Stage 1	-	-	1
Stage 2	-	-	249
Follow-up Headway	2.218	-	3.518
Pot Capacity-1 Maneuver	1622	-	739
Stage 1	-	-	1022
Stage 2	-	-	792
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1622	-	726
Mov Capacity-2 Maneuver	-	-	726
Stage 1	-	-	1022
Stage 2	-	-	778

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	10.1
HCM LOS			B

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	726
HCM Lane V/C Ratio	0.016	-	-	-	0.025
HCM Control Delay (s)	7.256	0	-	-	10.1
HCM Lane LOS	A	A			B
HCM 95th %tile Q(veh)	0.049	-	-	-	0.078

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday PM Peak  
4: Clark Street & Fruit Place

2/16/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	19	113	0	1	24	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)		30	30		30	
Link Distance (ft)		440	243		275	
Travel Time (s)		10.0	5.5		6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	144	1	0	26	0

Intersection Summary

Area Type: Other

2022 Build Weekday PM Peak  
4: Clark Street & Fruit Place

2/16/2016

Intersection	
Intersection Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	19	113	0	1	24	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	123	0	1	26	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	165
Stage 1	-	-	1
Stage 2	-	-	164
Follow-up Headway	2.218	-	3.518
Pot Capacity-1 Maneuver	1622	-	826
Stage 1	-	-	1022
Stage 2	-	-	865
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1622	-	814
Mov Capacity-2 Maneuver	-	-	814
Stage 1	-	-	1022
Stage 2	-	-	853

Approach	EB	WB	SB
HCM Control Delay, s	1	0	9.6
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	814
HCM Lane V/C Ratio	0.013	-	-	-	0.032
HCM Control Delay (s)	7.248	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.039	-	-	-	0.099

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Saturday Midday Peak  
 4: Clark Street & Fruit Place

2/16/2016

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	22	118	0	1	23	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)		30	30		30	
Link Distance (ft)		440	243		275	
Travel Time (s)		10.0	5.5		6.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	152	1	0	25	0

Intersection Summary

Area Type: Other

2022 Build Saturday Midday Peak  
4: Clark Street & Fruit Place

2/16/2016

Intersection	
Intersection Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	22	118	0	1	23	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	128	0	1	25	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1	0	177
Stage 1	-	-	1
Stage 2	-	-	176
Follow-up Headway	2.218	-	3.518
Pot Capacity-1 Maneuver	1622	-	813
Stage 1	-	-	1022
Stage 2	-	-	855
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1622	-	800
Mov Capacity-2 Maneuver	-	-	800
Stage 1	-	-	1022
Stage 2	-	-	841

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.6
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1622	-	-	-	800
HCM Lane V/C Ratio	0.015	-	-	-	0.031
HCM Control Delay (s)	7.253	0	-	-	9.6
HCM Lane LOS	A	A			A
HCM 95th %tile Q(veh)	0.045	-	-	-	0.097

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday AM Peak  
5: Site Drive & Fruit Place

2/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↓	↘	↗
Volume (vph)	1	25	24	1	10	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	301			121	123	
Travel Time (s)	6.8			2.8	2.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	28	0	0	27	29	0

Intersection Summary

Area Type: Other

2022 Build Weekday AM Peak  
5: Site Drive & Fruit Place

2/16/2016

Intersection	
Intersection Delay, s/veh	5.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	1	25	24	1	10	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	27	26	1	11	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	68	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	53	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1585	-	937	1065
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	970	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1585	-	922	1065
Mov Capacity-2 Maneuver	-	-	-	-	922	-
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	954	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7	8.7
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1007	-	-	1585	-
HCM Lane V/C Ratio	0.029	-	-	0.016	-
HCM Control Delay (s)	8.7	-	-	7.309	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.09	-	-	0.05	-

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Weekday PM Peak  
5: Site Drive & Fruit Place

2/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕			↕	↕	
Volume (vph)	0	16	19	0	17	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	300			120	107	
Travel Time (s)	6.8			2.7	2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	21	44	0

Intersection Summary

Area Type: Other

2022 Build Weekday PM Peak  
5: Site Drive & Fruit Place

2/16/2016

Intersection

Intersection Delay, s/veh 6.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	0	16	19	0	17	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	21	0	18	26

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	17	0	50	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	41	-
Follow-up Headway	-	-	2.218	-	3.518	3.318
Pot Capacity-1 Maneuver	-	-	1600	-	959	1073
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	981	-
Time blocked-Platoon, %	-	-	-	-	-	-
Mov Capacity-1 Maneuver	-	-	1600	-	947	1073
Mov Capacity-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.7
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1017	-	-	1600	-
HCM Lane V/C Ratio	0.044	-	-	0.013	-
HCM Control Delay (s)	8.7	-	-	7.279	0
HCM Lane LOS	A			A	A
HCM 95th %tile Q(veh)	0.137	-	-	0.039	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2022 Build Saturday Midday Peak  
 5: Site Drive & Fruit Place

2/16/2016

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	3	22	22	2	16	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			30	30	
Link Distance (ft)	290			130	140	
Travel Time (s)	6.6			3.0	3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	0	26	42	0

Intersection Summary

Area Type: Other

2022 Build Saturday Midday Peak  
5: Site Drive & Fruit Place

2/16/2016

Intersection	
Intersection Delay, s/veh	5.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	3	22	22	2	16	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	24	24	2	17	25

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	15
Stage 1	-	-	15
Stage 2	-	-	50
Follow-up Headway	-	2.218	3.518
Pot Capacity-1 Maneuver	-	1587	1065
Stage 1	-	-	1008
Stage 2	-	-	972
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	-	1587	927
Mov Capacity-2 Maneuver	-	-	927
Stage 1	-	-	1008
Stage 2	-	-	957

Approach	EB	WB	NB
HCM Control Delay, s	0	6.7	8.7
HCM LOS			A

Minor Lane / Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1004	-	-	1587	-
HCM Lane V/C Ratio	0.042	-	-	0.015	-
HCM Control Delay (s)	8.7	-	-	7.303	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.132	-	-	0.046	-

Notes  
~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

March 8<sup>th</sup>, 2016

Howard A. Snyder, RLA  
Amory Land Design, LLC  
Newburyport, MA  
01950

Mr. Nipun Jain  
City Planner  
City of Amesbury  
62 Friend Street  
Amesbury, MA 01913

Re: Site Plan Review- Response to comments  
Mill 77 Redevelopment  
77 Elm Street  
Amesbury, MA

Dear Nipun,

On behalf of applicant, Amory Land Design is providing this letter to provide responses to the comments issued by Stantec Consulting Services, Inc. (Stantec) via email on February 16<sup>th</sup>, 2016. Our response pertains to landscape and applicable site plan design comments regarding the proposed redevelopment of property at 77 Elm Street in Amesbury, Massachusetts.

**Section XI.C.8 Development and Performance Standards:**

c) Landscaping: We recommend the Applicant address the following:

1. The proposed parking lot design does not provide a 10-foot landscape buffer in accordance with section XI.C.8.c.1 of the bylaws. The Applicant should update the landscape plan to provide the appropriate buffer strip in accordance with the bylaws and/or as acceptable to the Planning Board.

**Response:** The depth of the landscape buffer area is pre-determined by the parking area layout and Fruit Place improvements. The landscape buffer area, as proposed, will be planted to visually screen vehicles and headlights from nearby residential structures while also serving as snow storage.

2. The submitted landscape plans indicate proposed landscaping in the "courtyard", including a tree and shrubs, but the plans do not address removal of the existing paved surface for these features. The Applicant should clarify and update the plan accordingly for proper construction.

**Response:** The proposed courtyard improvements do not include removal of the existing asphalt pavement. Instead, a pedestal paver system is proposed to level the courtyard area, to better accommodate the uses and elements proposed for the courtyard while also better managing stormwater.

3. The proposed design indicates several retaining walls are part of the proposed development, but details and design of the wall are not provided in the submission. We note that the proposed retaining wall along the parking lot along Fruit Place and Fruit Place Extension varies in height up to 13 feet in height and exceeds the 3-foot height along a right of way noted in section XI.C.8.c.3.a of the bylaws. We understand a stepped wall design is preferred for walls over 6 feet high. A guardrail should be provided along the retaining wall at the parking lot area. In addition, a pedestrian rail would also be required for this wall. The Board should request that the Applicant provide the structural design of the proposed walls for review by the Board.

**Response:** There is an on-going coordination effort between landscape drawings and civil drawings regarding retaining wall designs. The retaining wall design and layout has been revised and full structural plans and details will be provided to the City.

4. A portion of the proposed retaining wall to serve the parallel parking space appears to be placed at the property line of abutting lot 37 and requires an agreement with the abutter. We note this wall varies in height up to 8 feet or more. We note that the construction of the retaining wall along the bio-retention area #2 would likely impact lot 37 and require agreement with the abutter. It is unclear what the height of the wall at the property corner of lot 37 would be, since there are no spot elevations or top of wall notes. It appears the wall could be up to 16 feet in height. In addition, a pedestrian / safety rail would also be required for these walls. The Board should request that the Applicant provide documentation the abutter at lot 37 has agreed to the proposed improvements to his lot for the Board's file. In addition, the Board should request that the Applicant provide the structural design of the proposed walls for review by the Board.

**Response:** The parallel parking space and wall identified in the comments has been removed. Top and bottom of wall elevations have been added to the plans. The applicant is working with the abutting property owners to secure the necessary temporary construction easements required to construct the proposed retaining wall. The retaining wall design and layout has been revised and full structural plans and details will be provided to the City.

5. The site design includes a stairway placed between proposed retaining walls, but the plans do not include information on this feature such as dimensions, railings, etc. The Board should request that the Applicant provide the structural design of the proposed stairs for review by the Board.

**Response:** There is an on-going coordination effort between landscape drawings, civil drawings and structural drawings. The retaining wall design and layout has been revised and full structural plans and details will be provided to the City.

6. It is unclear from the landscape plan if appropriate screening at the dumpster in accordance with section XI.C.8.c.5 of the bylaws is provided. We recommend that the

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Applicant provide additional information such as labeling of the proposed design intent to clarify compliance with the bylaws.

**Response:** The dumpster has been relocated and screening is provided by a fence as shown in the details on the civil drawings. The selected plant material includes vines that will, along with the proposed dumpster enclosure, be part of the dumpster screening.

7. The Applicant should provide notes on the plan to clarify how compliance with section XI.C.8.c.6 of the bylaws will be achieved.

**Response:** Section XI.C.8.c.6 states "All landscape areas shall be properly maintained. Shrubs or trees which die shall be replaced within one growing season." This statement will be made part of the performance specifications sheet of the landscape drawing sheet set to be reviewed and approved by the Planning Board.

8. The Applicant should provide details for the proper installation of the proposed landscaping, such as trees and shrubs, for proper construction in the plan set.

**Response:** Landscape planting details will be shown in the landscape drawing sheet set that will be provided for review and approval by the Planning Board.

9. The landscape details include a "living wall", but it is unclear if this feature is proposed. The Applicant should update the landscape plan to specify the number and location of the proposed plantings as listed in the legend for proper construction.

**Response:** Landscape detail of proposed site elements will be shown in the landscape drawing sheet set that will be provided for review and approval by the Planning Board.

I believe the response provided above address the peer review comments sufficiently so that the applicant may proceed further in working with the City of Amesbury Planning Board. Landscape Architectural drawings will be submitted shortly to finalize responses to the peer review comments. If you have any questions or require clarification, please contact me directly at 978.764.6155 or via email at [howard.snyder@me.com](mailto:howard.snyder@me.com).

Sincerely,



Howard A. Snyder, RLA  
Amory Land Design, LLC

cc: David Martin  
Nick Cracknell