

April 5, 2022

Jennifer Hager
Dir. Planning and Economic Development
Town of Sutton
4 Uxbridge Road
Sutton, MA 01590

Matthew C. Benoit
Director of Community Development
Town of Douglas
29 Depot Street
Douglas, MA 01516

Subject: Transportation Peer Review Services
61 Duval Road – Proposed Subdivision
Sutton, MA

Dear Ms. Hager and Mr. Benoit:

MDM Transportation Consultants, Inc. (MDM) is pleased to provide you with the following initial transportation review comments for the above-referenced project. Our review includes a review of the Traffic Impact and Access Study and Site Development Plan submitted by the Applicant with respect to accepted Traffic Engineering and Transportation Planning practices, adequacy of Site access, impacts to local roadways and adequacy of proposed mitigation. These comments have been prepared based on a site visit in March 2022 and review of the documents identified below. To facilitate response by Applicant, review items requiring response are noted in ***Bold Italic***.

MDM finds that the Traffic Impact and Access Study (TIAS) has been prepared in general conformance with industry standards and Town requirements with noted points of clarification relative to baseline traffic conditions and site trip generation characteristics. MDM identifies additional mitigative actions that should be considered by the Applicant relative to signs, markings and roadside regrading to enhance sight lines to enhance travel safety along Duval Road and study intersections in both communities.

Documents Reviewed

MDM has reviewed the following documents to gain an understanding of the project and determine if industry standards have been applied in determining the potential impacts of the project. The following relevant documents were reviewed:

- *Transportation Impact and Assessment, Proposed Residential Development, 61 Duval Road, Sutton, Massachusetts*, prepared by TetraTech dated September 2021.
- *Definitive Plan, Sutton Douglas Development, Sutton and Douglas MA* prepared by Land Design Collaborative dated February 10, 2022.

Proposed Development

The Project will entail the construction of a 30-lot single family subdivision on 130-acre property located in the Towns of Sutton (5-acre portion) and Douglas (125-acre portion). Access for the project will be provided via a subdivision roadway intersecting Duval Road in Sutton proximate to 61 Duval Road and a subdivision roadway intersecting Forest Street in Douglas. Both of these driveways are to be located on roadways subject to local jurisdiction.

Traffic Impact and Access Study Comments

Existing Conditions

1. *Study Area*: The TIAS presents a study area that includes four (4) existing unsignalized intersections and the two subject property driveways.

Comment 1: The study intersections included in the TIA provide a reasonable basis for evaluating project trip impacts; intersections beyond these study locations will sustain modest impacts that fall well below thresholds that define significant impact (100 vehicle increase per MassDOT guidance).

2. *Traffic Volumes*: Traffic volumes for study locations were conducted in July 2021 for the weekday AM (7:00 – 9:00 AM) and weekday PM (4:00 to 6:00 PM) periods. Seasonal adjustment factors were considered in the TIAS to estimate average/typical travel conditions for the area;

however these adjustments were not applied as July represents an above-average month per MassDOT seasonal indices. No adjustment factor for Pandemic conditions was discussed or applied.

Comment 2: Baseline traffic data collected in July 2021 has not been adjusted to reflect Pandemic conditions. However, while regional travel trends during the height of the Pandemic indicate that peak-hour trips have significantly declined from typical conditions¹, peak hour trip activity has begun to normalize in many areas of the Commonwealth. Likewise, the TIAS has not reduced count data to represent average seasonal conditions (July data is approximately 8 percent higher than average months per MassDOT seasonal indices). As such, MDM anticipates that the baseline volumes used in the study represent a reasonable basis for analysis. Nonetheless, to ensure consistency with industry practice applicant should provide calculations that confirm baseline data used in the analysis properly reflect pre-Pandemic average seasonal conditions by tabular comparison. Given the relatively low volumes that exist on local roadways serving the Project, no further analysis is requested.

3. *Accidents/Crash Data:* The TIAS presents relevant crash data for the study intersections for the period 2015-2020. Study locations are not listed as Highway Safety Improvement Program (HSIP) crash clusters. Crash experience at study locations do not exhibit any notable trends that would require safety countermeasures.

Comment 3: MDM concurs that there are no specific crash trends within the study area that warrant safety countermeasures. However, placement of certain advance warning signs, markings and traffic controls are appropriate along Duval Road in the vicinity of the proposed subdivision road to enhance travel safety and provide positive driver guidance as described in more detail under comment No. 10 (Mitigation).

¹ Count data comparison at the Route 146/Route 16 Interchange in Uxbridge pre-Covid (2017) versus 2020 indicate more than a 20 percent reduction in trips per inventory my MDM Transportation Consultants, Inc.

4. *Driveway Sight Distance:* Measured 85th percentile speeds are presented in the TIAS that serve as the basis for sight line requirements at proposed driveways (40 mph along Duval Road and 18 mph along Forest Street). The TIAS also presents that the required minimum stopping sight distance (SSD) and intersection sight distance criteria for regulatory and 85th percentile speeds. The Forest Street driveway will meet applicable minimum criteria; however, the Duval Road driveway SSD and ISD criteria are only met for regulatory (prima facie) speed limits. Sight line criteria for measured 85th percentile speeds along Duval Road are not met for the eastbound travel direction, indicating the need for roadside regrading, selective vegetative clearing and additional traffic controls/signs to maximize sight lines and enhance travel safety looking west from the driveway.

Comment 4: MDM concurs that minimum sight line criteria are met at both subdivision roadway intersection locations base on prima facie speed limits. However, field measurements conducted by MDM for the Duval Road eastbound approach to the Project roadway confirm that roadside embankment, vegetation and roadway grade present a limiting factor for sight lines (both SSD and ISD) such that minimum criteria per AASHTO are not met for 85th percentile travel speeds. We also note that while the Definitive Plan sheet C-355 presents ISD measurements and profiles, additional details are needed to more specifically confirm proposed limits of grading and associated line-of-sight profiles for SSD (along the roadway) and ISD (along the roadside) to maximize sight lines. Roadside regrading looking west of the Project along Duval Road may impact trees, walls, mailboxes, etc. which should be specifically identified on the plans. The applicable driveway sight line triangles should also be shown on the Site Plans for both subdivision intersections. The Site Plans should also include a note citing that "Signs, landscaping and other features located within sight triangle areas shall be designed, installed and maintained so as not to exceed 2.5-feet in height. Snow windrows located within sight triangle areas that exceed 3.5-feet in height or that would otherwise inhibit sight lines shall be promptly removed."

Given the importance of meeting applicable minimum sight line criteria, and recognizing that 85th percentile speeds are well above regulatory (prima facie) limits MDM further recommends the Applicant consider additional signs/traffic controls and markings along Duval Road to advise motorists of limited sight line, appropriate speed advisory signs in conformance with current MUTCD guidance and potentially driver speed feedback signs to encourage lower travel speeds along Duval Road in the Project vicinity.

5. *Public Transportation:* The TIAS documents area public transportation facilities, routes and schedules. No immediately accessible public transportation services exist in the project vicinity.

Comment 5: No Public transportation options exist at or near the site. No further evaluation necessary.

Future Conditions

6. *Traffic Growth:* Future traffic volumes are projected to a 7-year horizon using a 2 percent annualized growth. Review of area projects indicates there will be no material increase/impact to study locations from approved development projects.

Comment 6: MDM concurs with the general background growth factor based on review of area count station data and historical growth trends for the region.

7. *Trip Generation:* Trip estimates for the Project are based on characteristics published by the Institute of Transportation Engineers (ITE) in Trip Generation 10th Edition for land use code (LUC) 210 (Single Family Detached Housing). The calculated trips assume 31 residential units to include the existing residence on the property plus the 30 additional/new units to be built. Resulting peak hourly traffic is estimated at between 23 and 31 trips and 294 daily trips total.

Comment 7: ITE has updated Trip Generation rates in Trip Generation 11th Edition, September 2021. Application of these updated trip rates indicates a slight increase in estimated peak hour trips (26 vehicle-trips AM peak hours and 33 vehicle-trips PM peak hours). Daily trip estimates are estimated at 344 daily trips per ITE 11th Edition rates (equation rate). While these trips are higher, there is not likely to be a material difference in Project impact as a result and MDM does not anticipate the need to update analysis as presented. However, Applicant should present a revised trip generation table to memorialize the current trip estimates for the Planning Board record.

8. *Trip Distribution:* The trip distribution patterns for Site traffic presented in the TIAS are based on existing travel patterns in the study area as well as review of US Census Journey to Work Data and likely route assignment.

Comment 8: MDM finds the resulting trip distribution patterns to be a reasonable for analysis purposes.

9. *Operations Analysis:* Operational analyses are presented in the TIAS follow generally accepted traffic engineering practices and protocols, indicating little change as a result of Project-

generated traffic. Operating levels are projected at LOS A (minor delays and queuing) during peak hours.

Comment 9: Analysis was conducted to industry standards and indicates no undue traffic impact from Project-related trips; only minor delays are anticipated at study area intersections with nominal vehicle queuing. No further comment.

Proposed Mitigation

10: Proposed Mitigation. Applicant proposes advance intersection warning signs along Duval Road in accordance with MUTCD guidance to enhance driver awareness of the Project driveway.

Comment 10: MDM advises the Applicant to consider alternative or supplemental MUTCD-compliant traffic signs/controls along Duval Road to optimize safety including for instance Driver Speed Feedback Signs and Speed Advisory Signs (W13-1P, 25 MPH) in combination with appropriate warning signs such as W2-2 advance intersection warning sign or W7-6 "Hill Blocks View".

Roadside regrading along Duval Road should also be provided and shown on plans to ensure intersection sight distance (ISD) is maximized to the extent feasible looking west from the Subdivision Roadway.

Applicant should consult with Town DPW on benefits of and potential participation in implementing centerline pavement markings along Duval Road as such markings provide enhanced driver guidance and would potentially reinforce lower travel speeds along the roadway.

Comment 11: Offsite Intersection Controls (Sutton). Intersection markings and traffic signs at offsite locations including Duval Road at Mumford Street at Duval Road at Torrey Road within Sutton should be reviewed by Applicant for compliance with MUTCD requirements and refreshed/updated accordingly in coordination with the DPW.

Comment 12: Offsite Intersection Sight Lines (Sutton). Roadside vegetative clearing/maintenance should be evaluated for offsite locations within Sutton including Duval Road at Mumford Street at Duval Road at Torrey Road to maximize sight lines. Field review indicates that intersection sight lines looking left from a STOP position at Duval Road at both of these locations can be improved if roadside vegetative clearing/maintenance is done within public way in coordination with DPW.

Comment 13: Offsite Intersection Controls (Douglas). Intersection markings and traffic signs at offsite locations within Douglas including Birch Street at Belvoir Avenue and at Fairfax Way should be reviewed by Applicant for compliance with MUTCD requirements and refreshed/updated accordingly in coordination with the DPW.

Comment 14: Offsite Intersection Sight Lines (Douglas). Roadside vegetative clearing/maintenance should be evaluated for offsite locations within Douglas including Birch Street at Belvoir Avenue and at Fairfax Way to maximize sight lines. Field review indicates that intersection sight lines from a STOP position at both of these locations can be improved if roadside vegetative clearing/maintenance is done within public way in coordination with DPW.

Site Access and Circulation Comments

Comment 15. Subdivision Roadway Grading – Road A at Duval Road: Proposed roadway grading for Road A approach to Duval Road does not provide for a “level landing area”, typically represented as a roadway grade of less than 3 percent for a distance of 100 feet or more from the intersecting way. Current plans show a 4.75 percent grade that transitions to a 8 percent grade. Given the New England weather and wintertime icing conditions, such level landing areas would promote safer stopping conditions.

Comment 16. Subdivision Roadway Traffic Controls: Applicant should commit to implementing MUTCD-compliant pavement markings and signs (R1-1 STOP) for subdivision roadway layout and intersections.

Site Circulation

Comment 17: Emergency Vehicle Maneuverability. Applicant should confirm that the subdivision roadways provide sufficient maneuvering area to accommodate the Town’s largest responding fire apparatus (ladder truck) vehicles by conducting AutoTurn® vehicle turn analysis/exhibits.

Jennifer Hager, Planning Director - Sutton
Matthew Benoit, Dir. Community Development - Douglas
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MDM appreciates the opportunity to provide Transportation Planning & Engineering Services to the Town of Sutton and Town of Douglas and look forward to discussing our findings at the upcoming Planning Board hearings. If you have any questions or concerns, please feel free to contact this office.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Michaud', with a large, loopy flourish extending from the end of the signature.

Robert J. Michaud, P.E.
Managing Principal

MDM