

PRINCIPALS

Robert J. Michaud, P.E.

Ronald D. Desrosiers, P.E., PTOE

Daniel J. Mills, P.E., PTOE

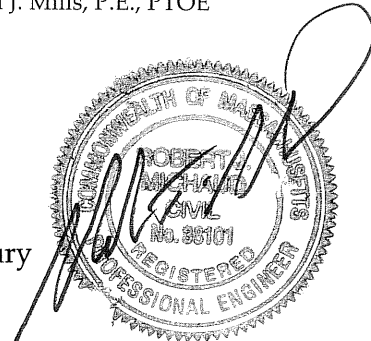
MEMORANDUM

DATE: March 15, 2016

TO: Ms. Jody Kablack
Director of Planning and Community Development Town of Sudbury
278 Old Sudbury Road Sudbury, MA 01776

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Response to Peer Review Comments**
The Village at Sudbury Station – 30 Hudson Road Sudbury, Massachusetts



MDM Transportation Consultants, Inc. (MDM) has prepared the following response to transportation-related peer review comments for the above-referenced project, as issued in a letter by the City's peer review consultant, Vanasse and Associates, Inc. (VAI), dated March 3, 2016. To facilitate review, specific comments are paraphrased with corresponding responses. Where appropriate, responses provided with input from the Applicant's design team are noted and include Sullivan Connors Associates (SCA) and Winn Residential (Winn).

In summary, transportation peer review indicates concurrence on the analysis protocols and findings which indicate (a) safety-related criteria will be met for site access, and (b) project traffic impacts will not result in a material change in traffic operations at study intersections relative to No Build conditions that would otherwise require mitigating actions by the Applicant. Supplemental data and analysis presented in the responses below further validate these findings and confirm certain minor modifications to the Site Plan that address peer review recommendations.

General Comments

Comment T1: *"The Applicant's engineer should clarify the number of residential units that are proposed and the number of parking spaces that are to be provided as there appears to be a discrepancy between the information shown on the Preliminary Site Plan and that referenced in the December 2015 TIAS."*

Response: The December TIAS correctly references a total of 250 units of residential (apartment) housing in 10 buildings plus a clubhouse (building No. 6) and maintenance building (building No. 7). The revised Site Plan prepared by SCA dated March 14, 2015 (included under separate cover) includes 494 parking spaces, a slight change from the 501

spaces cited in the December 2015 TIAS. The revised Site Plans also indicate a wastewater treatment building (building No. 8). There are no material differences between the Site Plans and the TIAS project description that impact the TIAS analysis, findings or recommendations.

Study Area

Comment T2: *"This study area is generally sufficient to evaluate the potential impact of the Project on the transportation infrastructure based on the expected trip-distribution pattern for the Project, and encompasses all major intersections located proximate to the Project site where the Project is expected to result in an increase in peak-hour traffic volumes by: i) five (5) percent or more; or ii) by more than 100 vehicles per hour."*

Response: MDM concurs; no response necessary. Site-generated trips beyond the study locations represent less than a 2 percent change in volume over existing traffic volumes which falls within normal day-to-day traffic fluctuations that would normally occur independent of the project.

Traffic Volumes and Data Collection

Comment T3: *"...we note that the manual turning movement counts at the majority of the study intersections were collected for only a one-hour period in the morning and evening, with some locations appearing to provide 45-minutes of data. New manual turning movement counts should be conducted at all of the study area intersections on an average weekday (Tuesday, Wednesday or Thursday) from 7-9 AM and 4-6 PM, and the existing conditions traffic volumes and the associated analyses should be revised accordingly."*

Response: MDM obtained additional counts for each study intersection in March 2016 for the 7-9 AM and 4-6 PM weekday periods. Review of MassDOT permanent count station data indicates that March is an average-volume month; hence no adjustment to the raw data is necessary for purposes of the traffic analysis. The March 2016 data are highly consistent with (and in fact generally lower than) the TIAS traffic volume networks. Regardless, the March data are used to update the traffic volume networks as requested as described under Response No. T6. For reference, updated baseline data and traffic volume networks based on the March 2016 counts are provided in the **Attachments**.

Pedestrian and Bicycle Facilities

Comment T4: *"An inventory of existing bicycle accommodations within the study area was not included in the December 2015 TIAS and should be provided given that the schedule for advancement of Phase 2D of the Bruce Freeman Rail Trail is not defined at this time. This will allow for an understanding of potential opportunities to integrate the Project into available transportation resources with the goal of reducing the overall traffic and parking demands associated with the Project."*

Response: There are no formal bicycle accommodations on roadways within the study area. However, the Site abuts the future alignment of the Bruce Freeman Rail Trail (BFRT) and could be readily connected to this trail at the intersection of Route 27 where a trail crossing is anticipated. For context, attached **Exhibit 1** shows the alignment of the BFRT from Framingham to Chelmsford with a specific call-out of the Phase 2D segment that abuts the Site on the westerly border of the property based on mapping obtained from the Metropolitan Area Planning Council (MAPC).

Motor Vehicle Crash Summary

Comment T5: *"The motor vehicle crash analysis was completed in accordance with MassDOT standards and following standard Traffic Engineering and Transportation Planning practices, and we are in agreement with the findings of the analysis. A review of the MassDOT statewide High Crash Location List and the Highway Safety Improvement Program (HSIP) listing for the study area did not indicate any listed locations."*

Response: MDM concurs; no response necessary.

No-Build Conditions

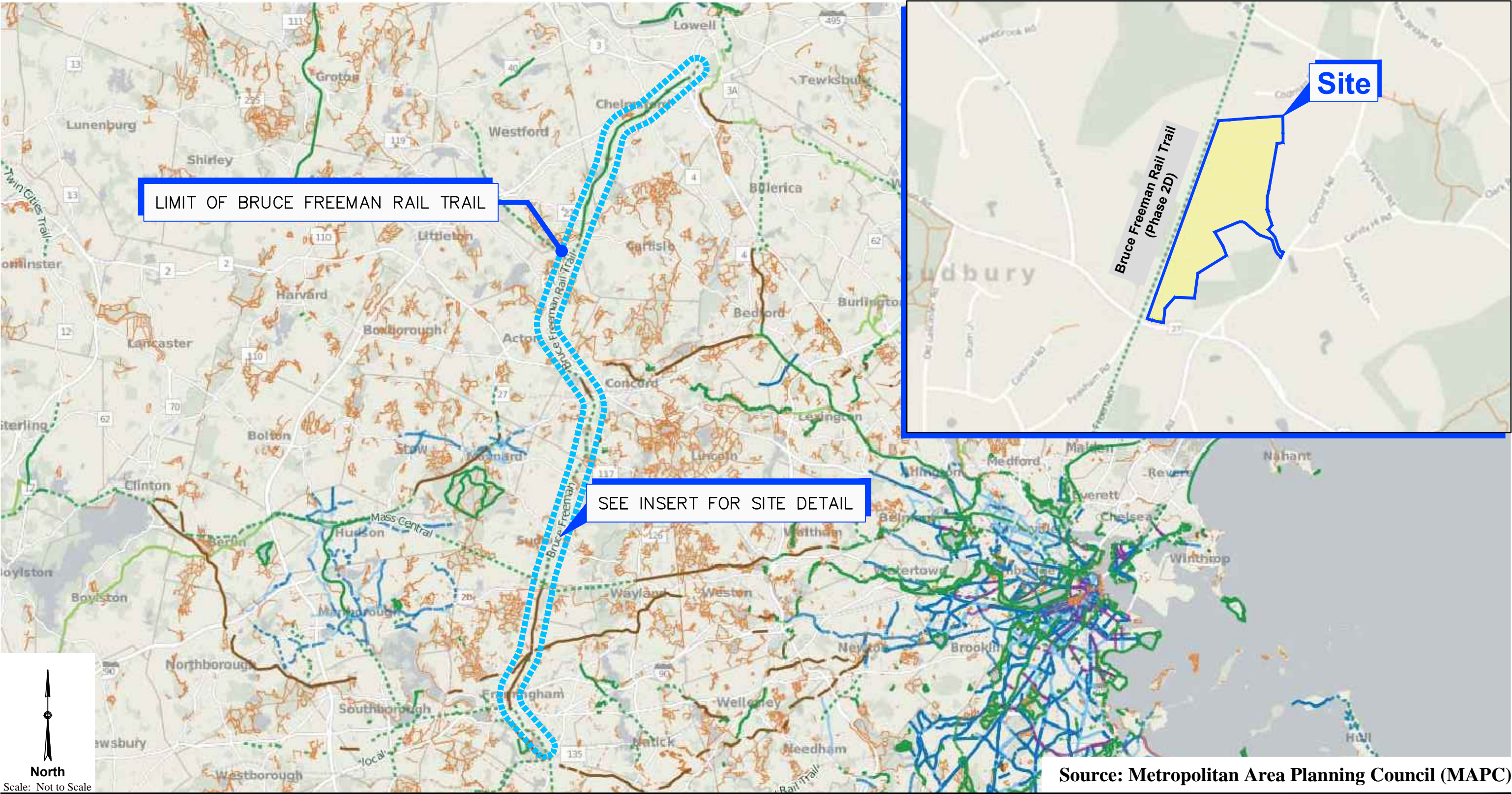
Comment T6: *"The Applicant's engineer should update the No-Build condition traffic volume projections and analyses to reflect the new existing condition traffic count data. In addition, the future conditions baseline should be adjusted to provide a 7-year planning horizon (2023) consistent with current MassDOT guidelines for the preparation of Transportation Impact Assessments."*

Response: March 2016 data are highly consistent with (and in fact generally lower than) the TIAS traffic volume networks. Regardless, the March data are used to update the traffic volume networks as requested. MDM further notes that the project is not subject to MassDOT permitting or its associated requirement to use a 7-year horizon. However, in the interest of providing a conservative analysis a 7-year planning horizon has been applied to develop updated future-year traffic volume networks. The updated traffic volume networks are presented in the **Attachments**; the associated updated capacity and queue analyses are summarized under Response No. T8.

Build Conditions

Comment T7: *"We are in agreement with the methodology that was used to develop the anticipated traffic characteristics of the Project (ITE data) and the trip distribution pattern (U.S. Census data and exiting traffic patterns), and we concur with the resulting traffic volume projections and trip assignments."*

Response: MDM concurs; no response necessary.



Traffic Operations Analysis

Comment T8: "The Applicant's engineer should revise the traffic operations analysis to reflect the updated traffic volumes resulting from the new turning movement counts. The updated analysis results should be summarized in a tabular format consistent with that presented in the December 2015 TIAS. In addition, the Applicant's engineer should confirm the timing of the traffic signal system at the Route 27/Concord Road intersection and verify that a different cycle length is used for the weekday morning and evening peak hours."

Response: Updated capacity and queue analysis tables are presented below that supercede those presented in the December TIAS. In summary, the updated analysis is consistent with the originally submitted TIAS, indicating that traffic operations at study intersections are at LOS D or better and that the proposed Village at Sudbury Station will not materially change operations at any study location (average delay increases ranging from 2 to 5 seconds and vehicle queue increases ranging from 1 to 2 vehicles or less during peak hours).

TIAS TABLE 9 (UPDATED)
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MORNING PEAK HOUR

Intersection	Approach	Baseline			2023 No-Build			2023 Build		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS
Route 27 at Concord Road	Eastbound	0.86	31	C	0.89	32	C	0.92	33	C
	Westbound	0.57	47	D	0.59	40	D	0.62	41	D
	Northbound	0.71	32	C	0.85	34	C	0.89	37	D
	Southbound	<u>0.77</u>	<u>45</u>	<u>D</u>	<u>0.87</u>	<u>50</u>	<u>D</u>	<u>0.89</u>	<u>52</u>	<u>D</u>
	OVERALL	0.86	35	C	0.89	36	D	0.92	38	D
Route 27 at Peakham Road/Ti- Sales ⁵	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.18	<5	A	0.19	<5	A	0.20	<5	A
	Northbound	>1.0	>50 (<20)	F (C)	>1.0	>50 (<25)	F (C)	>1.0	>50 (<25)	F (C)
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
Route 27 at Connector Road	Eastbound L/T	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound L/R	0.15	20	C	0.17	21	C	0.23	24	C
Concord Road at Connector Road	NB L/T/R	0.00	<5	A	0.00	<5	A	0.00	<5	A
	SB L/T/R	0.05	<5	A	0.05	<5	A	0.06	<5	A
	EB LTR	0.00	10	B	0.00	11	B	0.00	11	B
	WB LTR	0.08	14	B	0.08	15	B	0.09	15	B
Route 27 at Site Driveway ⁵	Eastbound L/T	n/a ⁴	n/a	n/a	n/a ⁴	n/a	n/a	0.01	<5	A
	SB Egress L	n/a	n/a	n/a	n/a	n/a	n/a	0.70	>50 (<35)	F (D)
	SB Egress R	n/a	n/a	n/a	n/a	n/a	n/a	0.04	12	B
Concord Road at Site Driveway	Northbound L/T	n/a ⁴	n/a	n/a	n/a ⁴	n/a	n/a	0.00	<5	A
	EB Egress L/R	n/a	n/a	n/a	n/a	n/a	n/a	0.11	19	C

NB=Northbound; SB=Southbound; EB=Eastbound; WB=Westbound; L=left; R=right; T=through

¹ Volume-to-capacity ratio

² Average control delay per vehicle (in seconds)

³ Level of service

⁴ n/a = not applicable

⁵ Values in parenthesis () represent actual measured delay/operations based on field observation as described under the December 2015 TIAS Section 4.2.3 and better reflect actual/projected values. Refer to December TIAS Section 4.2.3 for detailed discussion.

TIAS TABLE 10 (UPDATED)
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY EVENING PEAK HOUR

Intersection	Approach	Baseline			2023 No-Build			2023 Build		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS
Route 27 at Concord Road	Eastbound	0.49	17	B	0.57	18	B	0.60	19	B
	Westbound	0.84	41	D	0.88	48	D	0.91	51	D
	Northbound	>1.0	76	E	0.89	37	D	0.96	44	D
	<u>Southbound</u>	<u>0.91</u>	<u>56</u>	<u>E</u>	<u>>1.0</u>	<u>>80</u>	<u>F</u>	<u>>1.0</u>	<u>>80</u>	<u>F</u>
	OVERALL	>1.0	46	D	>1.0	47	D	>1.0	52	D
Route 27 at Peakham Road/Ti-Sales	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.19	<5	A	0.21	<5	A	0.21	<5	A
	Northbound	0.45	27 (<20)	D (C)	0.52	30 (<25)	D (C)	0.54	31 (<25)	D (C)
	Southbound	0.05	28 (<30)	D (D)	0.05	33 (<35)	D (D)	0.06	36 (<35)	E (D)
Route 27 at Connector Road	Eastbound L/T	0.01	<5	A	0.01	<5	A	0.01	<5	A
	Southbound L/R	0.07	15	C	0.07	16	C	0.10	18	C
Concord Road at Connector Road	NB L/T/R	0.00	<5	A	0.00	<5	A	0.00	<5	A
	SB L/T/R	0.01	<5	A	0.01	<5	A	0.02	<5	A
	EB LTR	0.00	11	B	0.00	11	B	0.00	11	B
	WB LTR	0.02	12	B	0.04	12	B	0.06	12	B
Route 27 at Site Driveway	Eastbound L/T	n/a ⁴	n/a	n/a	n/a ⁴	n/a	n/a	0.04	<5	A
	SB Egress L	n/a	n/a	n/a	n/a	n/a	n/a	0.48	>50 (<35)	F (D)
	SB Egress R	n/a	n/a	n/a	n/a	n/a	n/a	0.05	20	C
Concord Road at Site Driveway	Northbound L/T	n/a ⁴	n/a	n/a	n/a ⁴	n/a	n/a	0.02	<5	A
	EB Egress L/R	n/a	n/a	n/a	n/a	n/a	n/a	0.05	16	C

NB=Northbound; SB=Southbound; EB=Eastbound; WB=Westbound; L=left; R=right; T=through

¹ Volume-to-capacity ratio

² Average control delay per vehicle (in seconds)

³ Level of service

⁴ n/a = not applicable

⁵ Values in parenthesis () represent actual measured delay/operations based on field observation as described under the December 2015 TIAS Section 4.2.3 and better reflect actual/projected values. Refer to December TIAS Section 4.2.3 for detailed discussion.

TIAS TABLE 11 (UPDATED)
VEHICLE QUEUE ANALYSIS SUMMARY
ROUTE 27 AT CONCORD ROAD

Approach	Storage Length (feet)	2023 No-Build		2023 Build	
		Average Queue Length ¹	95 th Percentile Queue Length ¹	Average Queue Length	95 th Percentile Queue Length
Weekday Morning Peak Hour					
Eastbound L	400±	156	387	156	389
Eastbound T	>1500	298	644	324	694
Eastbound R	80±	Negl	Negl	Negl	Negl
Westbound L	200±	8	31	8	31
Westbound T	>1500	85	161	89	167
Northbound L	400±	61	198	62	204
Northbound T	>1500	140	284	141	285
Southbound L/T/R	>1500	171	396	174	402
Weekday Evening Peak Hour					
Eastbound L	400±	61	107	61	107
Eastbound T	>1500	173	257	185	273
Eastbound R	80±	Negl	Negl	Negl	Negl
Westbound L	200±	29	75	30	75
Westbound T	>1500	303	493	338	548
Northbound L	400±	127	311	147	336
Northbound T	>1500	162	270	177	275
Southbound L/T/R	>1500	307	543	334	547

¹Average and 95th percentile queue lengths are reported in feet per lane.

Negl=Negligible

The above capacity and vehicle queue analyses reflect the current signal controller settings which were verified by field inspection of recently updated equipment conducted by MDM in March 2016 (refer to **Attachments** for associated signal phasing/timing charts). Since the intersection improvements are not yet finalized and are subject to fine-tuning once completed by the Town, future year traffic signal settings assume optimization of the signal timing as is customary before project close-out. The Applicant further commits to fine-tuning the signal timing within 6 months of substantial (80%) occupancy of the Village at Sudbury Station to ensure that signal operations are optimized for the peak weekday commuter periods.

Sight Distance

Comment T9: *"We are in agreement that sight lines at the Project site roadway intersections can be made to meet or exceed the required distances for safe operation with the vegetation trimming/removal and regrading of shoulder areas noted by the Applicant's engineer."*

The Applicant's engineer should provide a sight distance plan illustrating the required sight lines to and from the Project site roadway intersections in both plan and profile view that illustrate the existing and proposed surface elevations and any obstructions that need to be removed within the sight triangle areas.

These plans will allow for an understanding of the location(s) and extent of any regrading of land that may be necessary to attain the required sight lines.

We recommend that any approvals that may be granted for the Project include a condition that that all signs and landscape features that are to be installed as a part of the Project within the sight triangle areas of the Project site roadways be designed and located so as not to impede lines of sight. Such features should not exceed 2-feet in height as measured from the surface elevation of the Project site roadways. In addition, the Applicant should be required to selectively trim/remove vegetation along the Project site frontage where necessary in order to enhance sight lines to and from the Project site roadways."

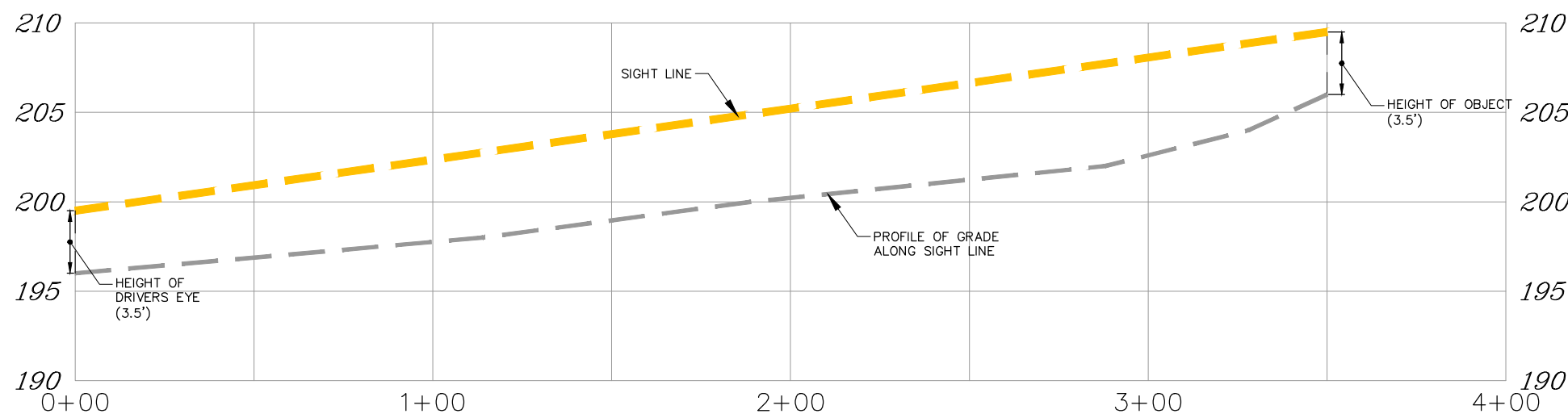
Response: Site Plans prepared by SCA as updated through March 14, 2016 include sight line triangle areas at each of the driveways serving the property with an associated note that reads *"Signs, landscaping and other features located within the sight triangle areas shall be designed, installed and maintained so as not to exceed 2-feet in height. Snow windrows located within the sight triangle areas that exceed 2-feet in height or that would otherwise inhibit sight lines shall be promptly removed."* Additionally, MDM has prepared sight line diagrams in plan and profile that confirm applicable sight line criteria will be met at both driveway locations as follows:

- **Exhibit 2:** *Intersection Sight Distance, Hudson Road.* This diagram depicts the sight line looking east from the Site driveway (vehicles approaching from the east) and confirms that once removal of trees and other vegetation is conducted by the Applicant along this sight line, no grading is necessary to achieve the necessary sight lines at the proposed driveway. MDM notes that grades looking right from the Site driveway (vehicles approaching from the west) are at or below the elevation of a vehicle stopped in the driveway, hence also does not require any regrading to achieve necessary sight lines as reported in the December 2015 TIAS.
- **Exhibit 3:** *Intersection Sight Distance, Concord Road.* This diagram depicts the sight line looking south from Peter's Way (vehicles approaching from the south) and confirms that no grading is necessary to achieve the necessary sight lines at the proposed driveway. MDM notes that grades looking left from Peter's Way (vehicles approaching from the north) follow the existing sloped (southbound downgrade) of Concord Road, hence also does not require any regrading to achieve necessary sight lines as reported in the December 2015 TIAS.



- NOTES**
1. THIS PLAN INTENDED FOR DISCUSSION PURPOSES ONLY; IT IS NOT FOR CONSTRUCTION.
 2. FINAL DESIGN IS SUBJECT TO FIELD SURVEY BY OTHERS.
 3. PROPERTY LINES AND ACCESS LINE LOCATIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO DEED AND TITLE RECORDS.
 4. BASE PLAN SOURCE: SULLIVAN, CONNORS & ASSOCIATES AND USGS COLOR ORTHO IMAGERY.

Plan View



Profile View

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA 01752

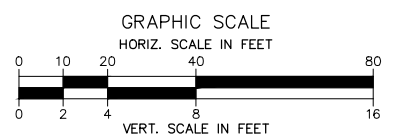
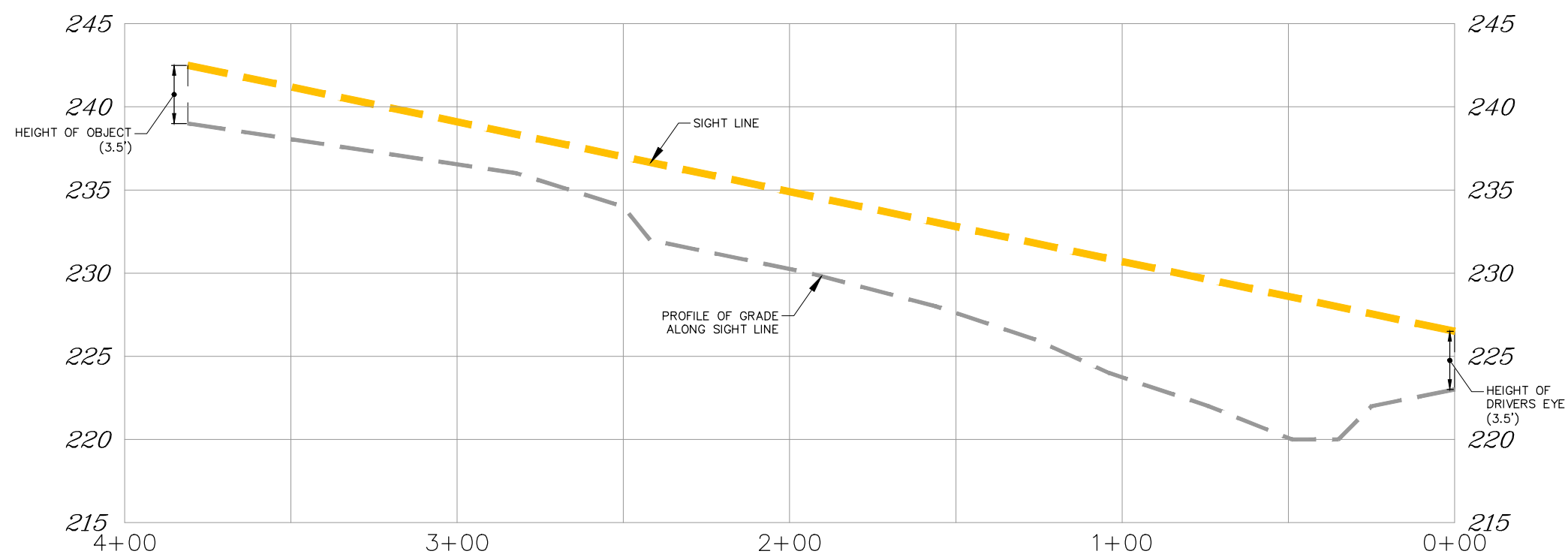


Exhibit 2
Intersection Sight Distance
Hudson Road



Recommendations

Comment T10: *"We are in general agreement with the recommendations that have been provided by the Applicant's engineer and offer the following additional recommendations for consideration by the Applicant:*

1. *Internal to the Project site, roadways and circulating aisles should be a minimum of 24-feet in width for two-way travel and a minimum of 16-feet in width for one-way travel or where two-way traffic is separated by a raised island (16-foot travel lanes on either side of a raised median or island).*
2. *Where perpendicular parking is proposed, the travel isle adjacent to the parking shall be a minimum of 23-feet in width in order to accommodate parking maneuvers.*
3. *Fire lanes and/or emergency vehicle access roads should be a minimum of 20-feet in width.*
4. *All Signs and pavement markings to be installed within the Project site shall conform to the applicable specifications of the Manual on Uniform Traffic Control Devices (MUTCD).*
5. *Snow windrows along the Project site frontage within the sight triangle areas of the Project site roadways shall be promptly removed where such accumulations would exceed 2-feet in height."*

Responses (With input from SCA):

T10 (1): All roadways and circulation aisles within the Site are 24 feet wide; there are no one-way segments and raised islands separating traffic flow are not proposed.

T10 (2): Travel aisles adjacent to parking are 24 feet wide and provide adequate maneuvering area for parking and traffic flow.

T10 (3): Circulation aisles providing fire access to buildings are all 24 feet wide and provide accessibility to at least 2 sides of each building. In addition, following consultation with the Fire Department the Applicant has added 20'-wide reinforced travel ways (Grasspave or equivalent) at select areas of the Site to provide access to a third side of each of the residential buildings on the property. Refer to Site Plans as updated through March 14, 2015 provided under separate cover.

T10(4): Applicant commits to providing final Site Plans to the Town that include signs and pavement markings that conform to applicable specifications of the MUTCD. The Site Plans as updated through March 14, 2016 include appropriate MUTCD sign types and pavement markings at Site driveways and the proposed roundabout feature that shall conform to these requirements. In the case of raised pedestrian crossings, the Applicant is consulting with the Fire Department to solicit their input on the suitability and placement of these design features and will implement appropriate MUTCD compliant signs once specific crossing locations are identified. Refer to Response No. T17 for further discussion of raised pedestrian crossings.

T10(5): Applicant commits to removing snow accumulations within the sight triangle areas as identified on the updated Site Plans dated March 14, 2016 which now include a specific note to this effect.

Site Plans

Comment T11: *"A truck turning analysis should be completed for the Project using the following design parameters as guidance: i) the analysis should be completed using the AutoTurn® or similar analysis software for the following design vehicles: an SU-30/40 (small delivery/moving vehicle and trash/recycling vehicle) and the Town of Sudbury Fire Department design vehicle; ii) the analysis should include the swept path for the front and rear tires of the design vehicles and any overhangs that may extend past the front and rear bumper of the vehicle (i.e., basket of the aerial ladder of the fire truck if so equipped); iii) the analysis should depict all maneuvers required to enter and exit the Project site by way of Route 27 and Concord Road (both left and right-turn movements entering and exiting), and all turning and maneuvering required within the Project site; iv) Back-up maneuvers, where required, should be clearly identified."*

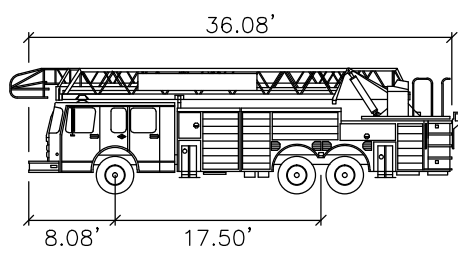
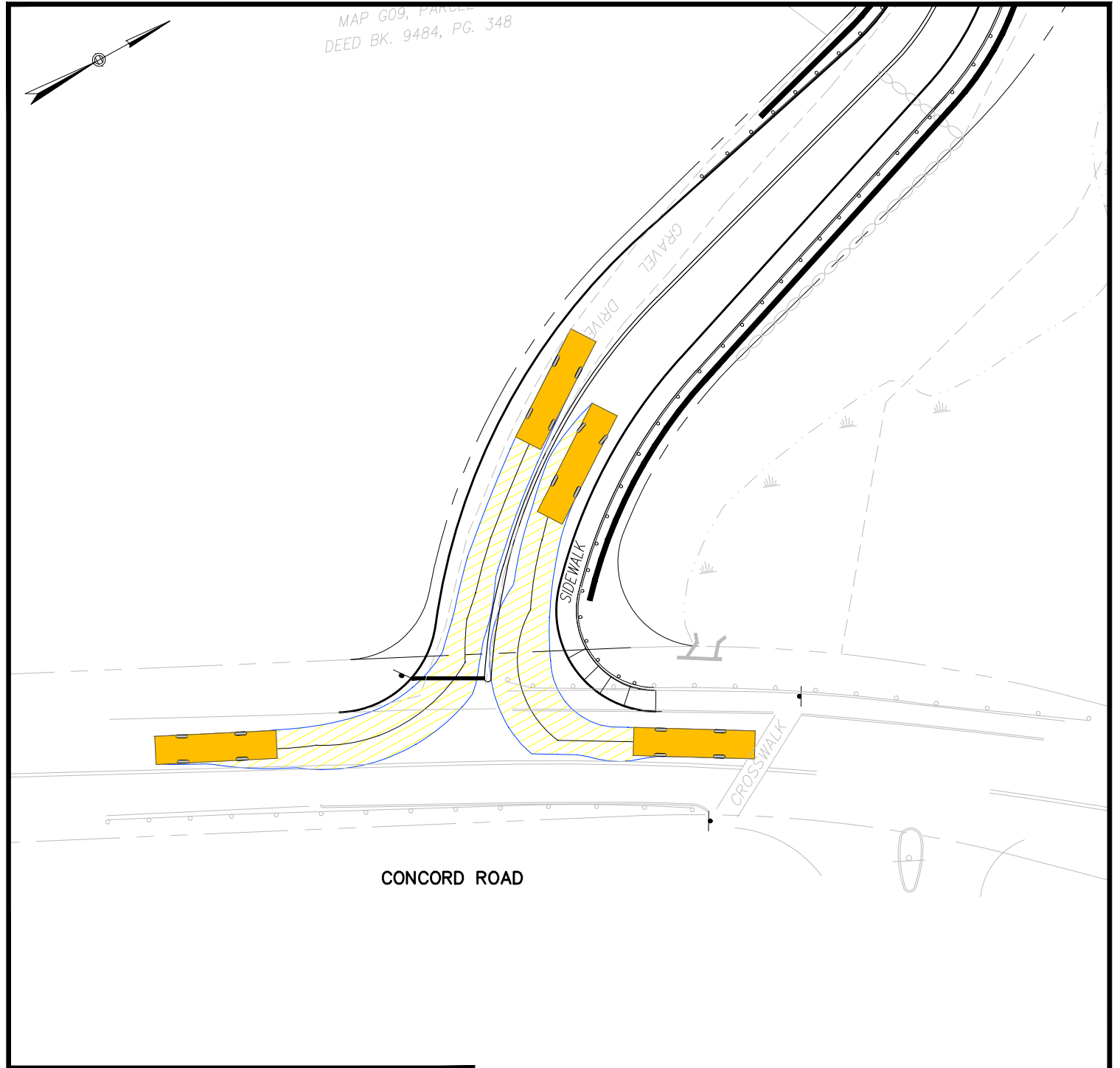
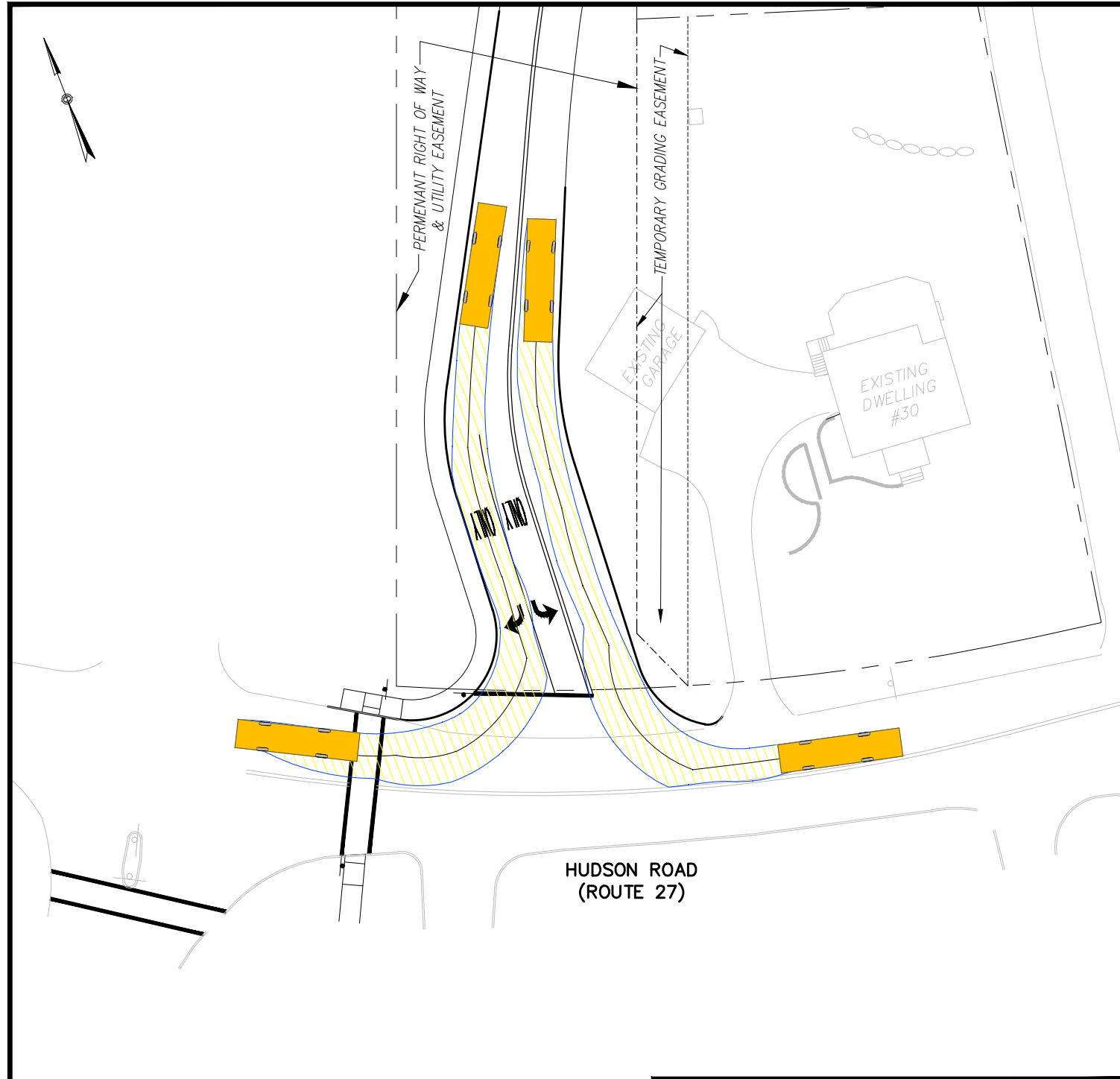
Response: Requested AutoTurn® vehicle turn analysis has been conducted for the updated Site Plan of March 14, 2016 for a box truck (SU-40 design vehicle) and the Town's fire ladder truck. Resulting swept paths are depicted on **Exhibit 4** (Sudbury Ladder Truck at Site Driveways), **Exhibit 5** (Sudbury Ladder Truck within the Site), **Exhibit 6** (SU-40 Truck at Site Driveways) and **Exhibit 7** (SU-40 Truck within the Site). These exhibits show that ample roadway with and intersection geometry is provided to accommodate the swept path of these vehicle types.

Comment T12: *"If the existing single-family home at 30 Hudson Road is to be retained as a part of the Project, the access to the home should be relocated to the Project site roadway and the existing driveway on Route 27 should be closed."*

Response: The existing residence at 30 Hudson Road is not part of the Project and will be retained in its current location including separate driveway access along Hudson Road. The Applicant maintains a permanent access and utility easement through the subject property and will also clear trees along and within this adjoining property subject to provisions of the landowners granted consent to improve sight lines.

Comment T13: *"The grade of the Project site roadways should not exceed 2 percent within 50-feet (two (2) car lengths) of Route 27 and Concord Road in order to provide a leveling area for vehicles exiting the Project site."*

Response: Updated Site Plans of March 14, 2016 include centerline profiles of Site roadways that confirm that grades shall not exceed 2 percent within 50-feet of Route 27 and Concord Road.



Sudbury Ladder

Width : 8.33 FT.

Track : 8.33 FT.

Lock to Lock Time : 6.0 SEC.

Steering Angle : 40.6°

Site Plan Source: Sullivan, Connors & Associates

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA 01752

Scale: As Noted
DWG No. 814 Autoturn(3-10-2016).dwg

Date: March 2016
Project No. 814

Proposed Residential Developoment Sudbury, Massachusetts

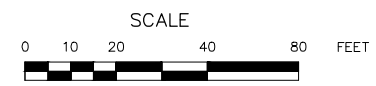
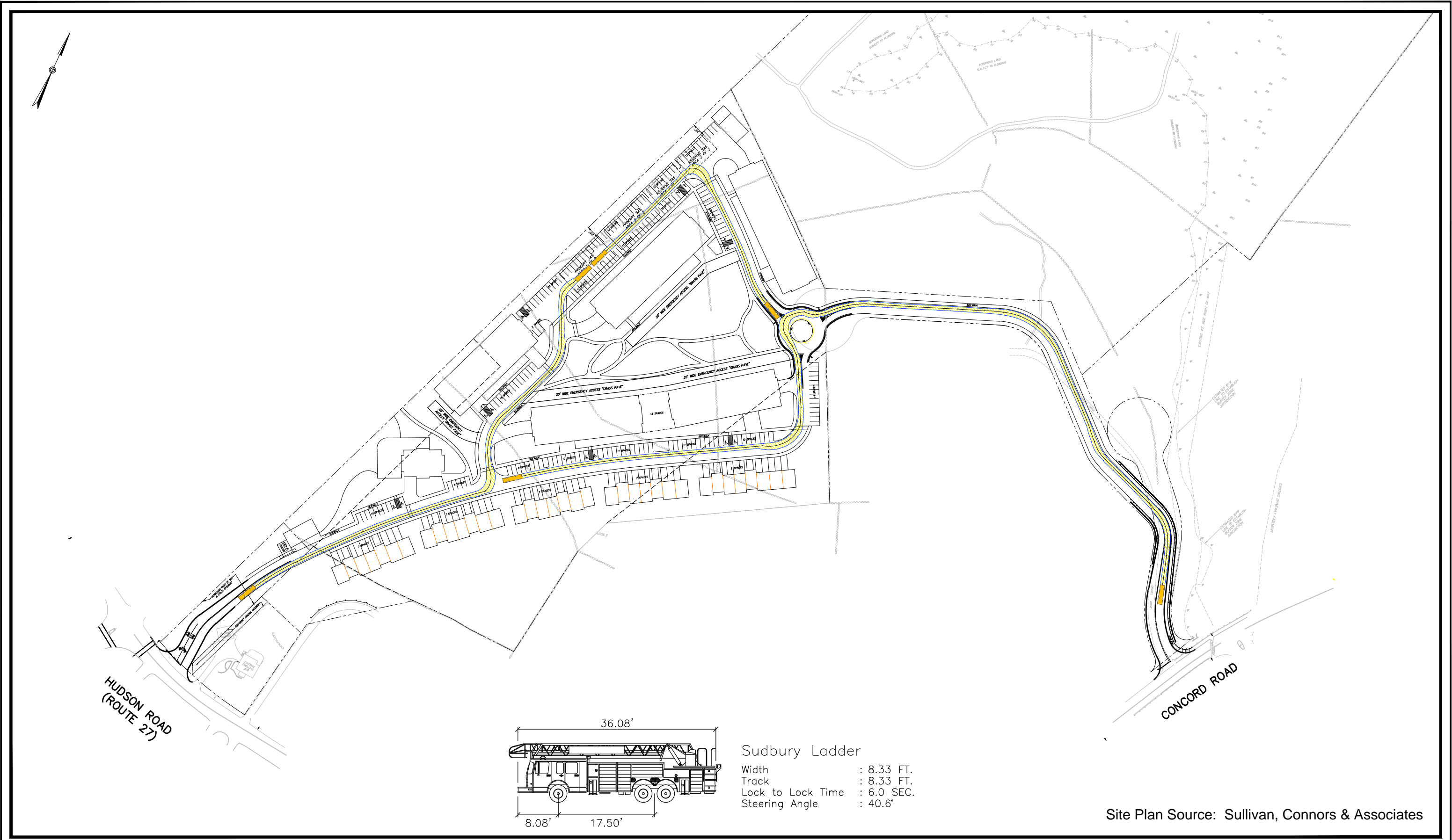


Exhibit 4 *AutoTurn Analysis* *Sudbury Ladder Truck*



Site Plan Source: Sullivan, Connors & Associates

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA 01752

Proposed Residential Development
Sudbury, Massachusetts

Scale: As Noted
DWG No. 814 Autoturn(3-10-2016).dwg

Date: March 2016
Project No. 814

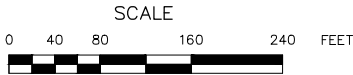
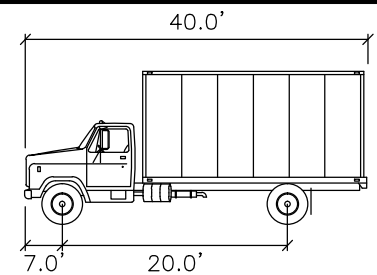
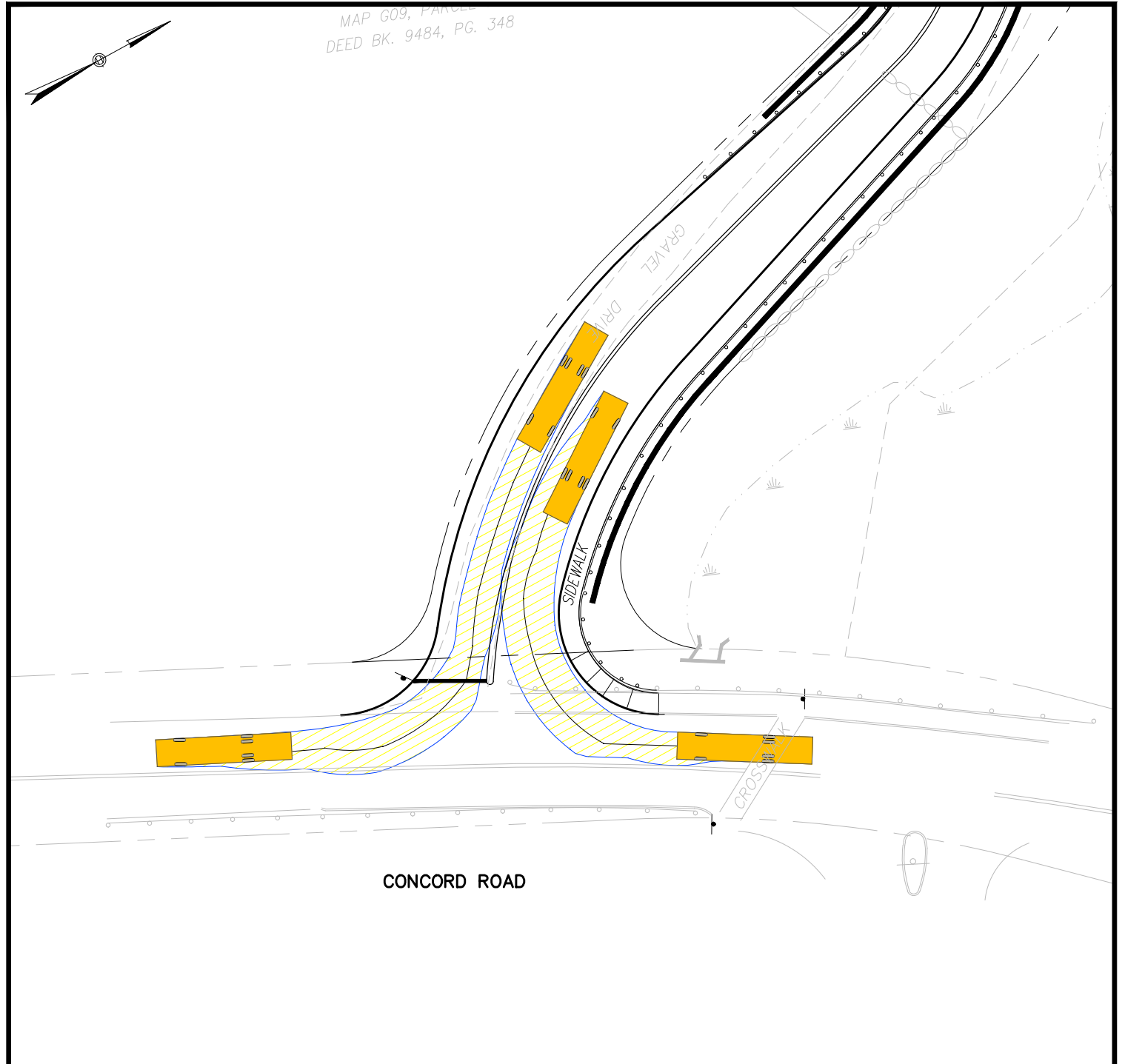
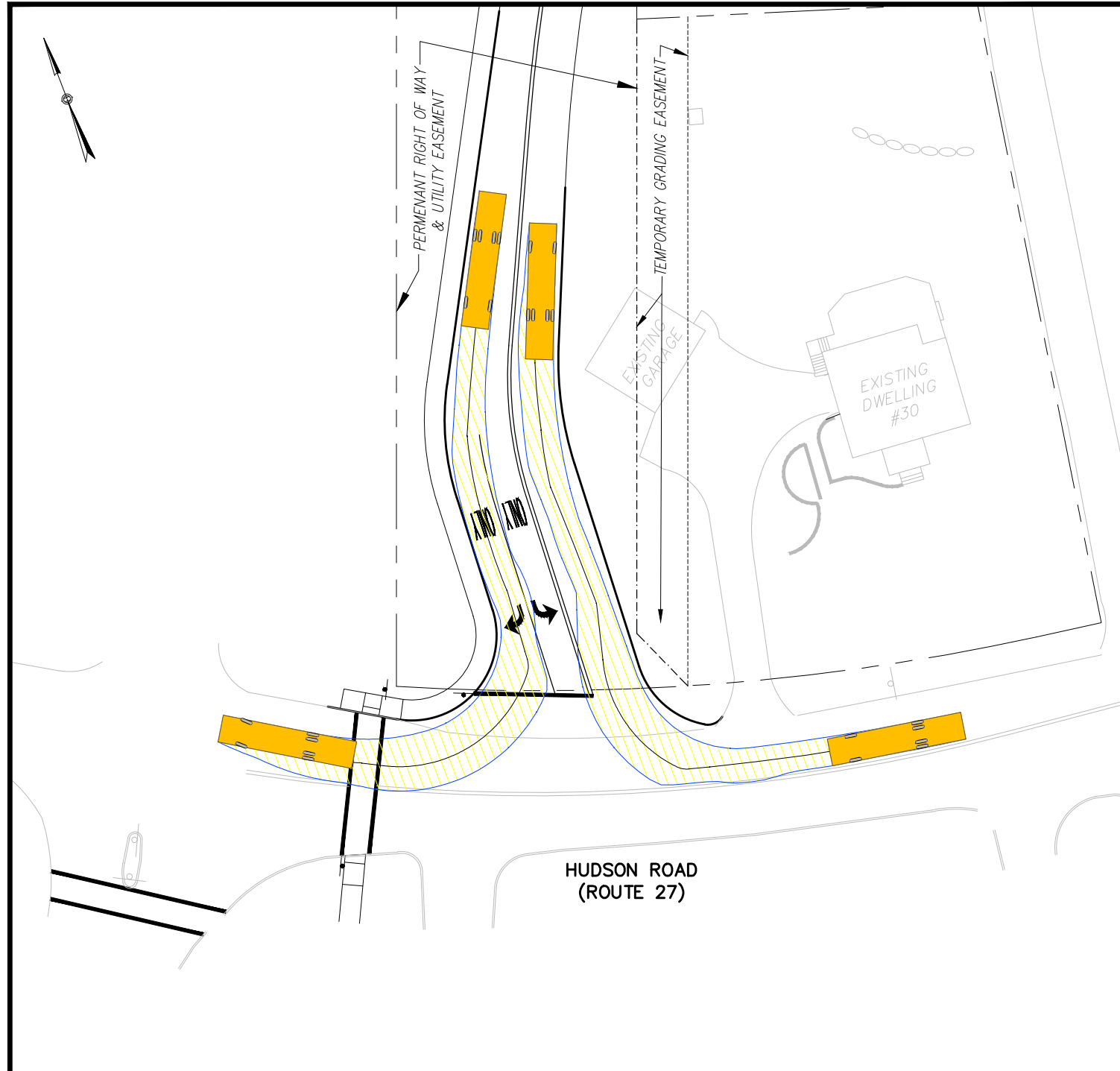


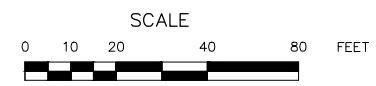
Exhibit 5
AutoTurn Analysis
Sudbury Ladder Truck

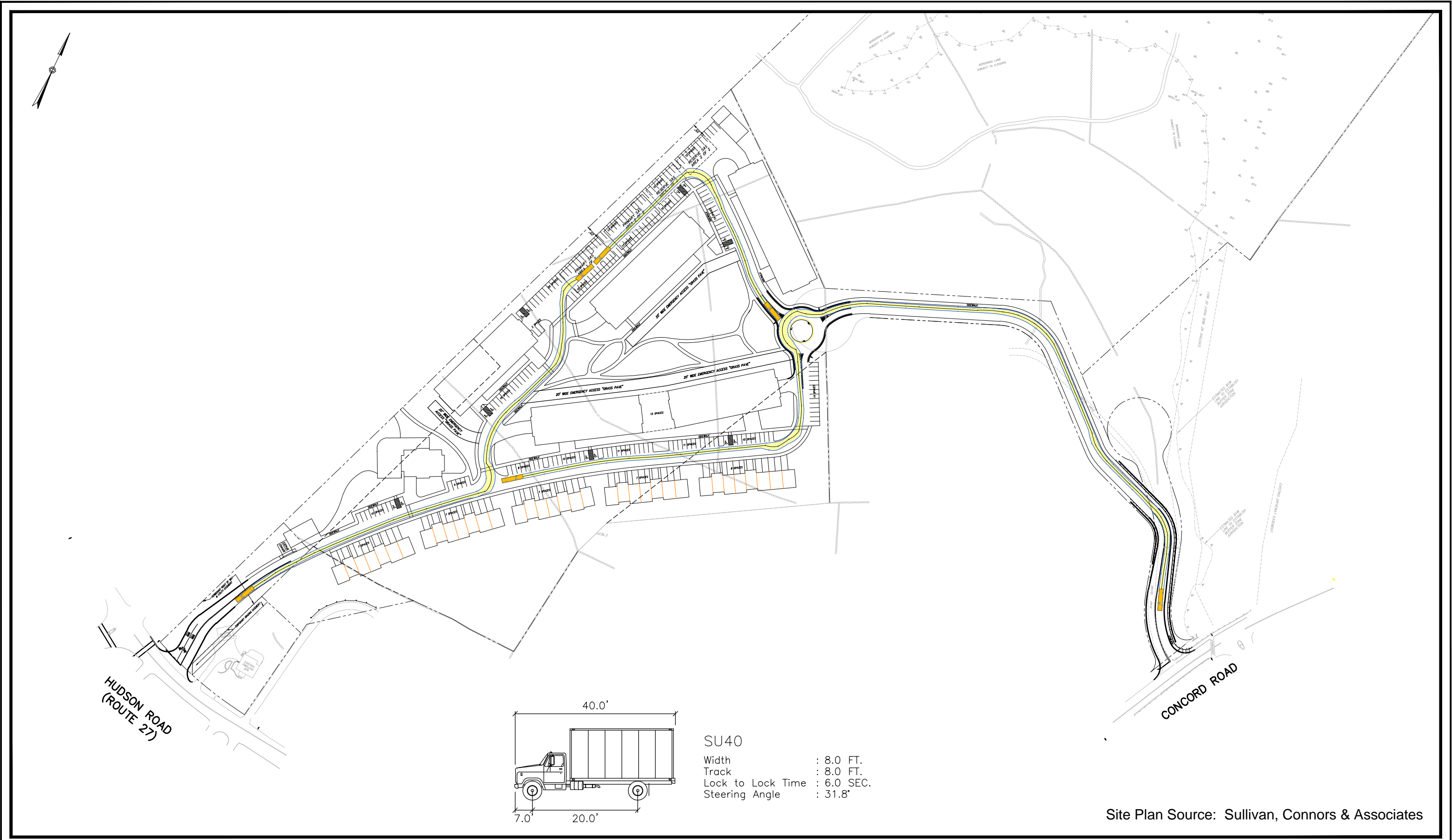


SU40

Width	: 8.0 FT.
Track	: 8.0 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 31.8°

Site Plan Source: Sullivan, Connors & Associates





Comment T14: *"A centerline profile should be provided for the Project site roadway in order to verify roadway grades within the Project site and on the approaches to Route 27 and Concord Road."*

Response: Updated Site Plans of March 14, 2016 include centerline profiles of Site roadways; roadway grades range from approximately 1 percent to 6 percent throughout the Project and are well within acceptable ranges for residential developments.

Comment T15: *"An area for service/maintenance vehicle parking for the wastewater treatment plant should be provided."*

Response: The updated Site Plans of March 14, 2016 provide 2 parking spaces at the wastewater treatment plant for service/maintenance vehicles.

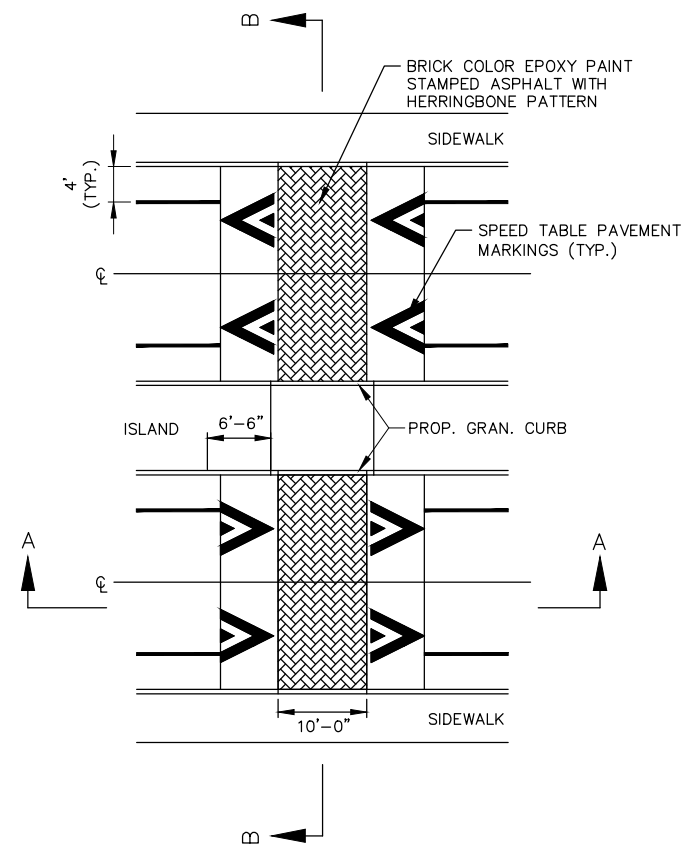
Comment T16: *"Sidewalks and wheelchair ramps compliant with the Americans with Disabilities Act (ADA) should be provided where pedestrian crossings are proposed within the Project site and at the Project site driveways."*

Response: Applicant acknowledges that all sidewalks and access ramps will be compliant with ADA at Site driveways and within the property; specific access ramp details and specifications shall be included on Final Site Plans to be issued by the Applicant.

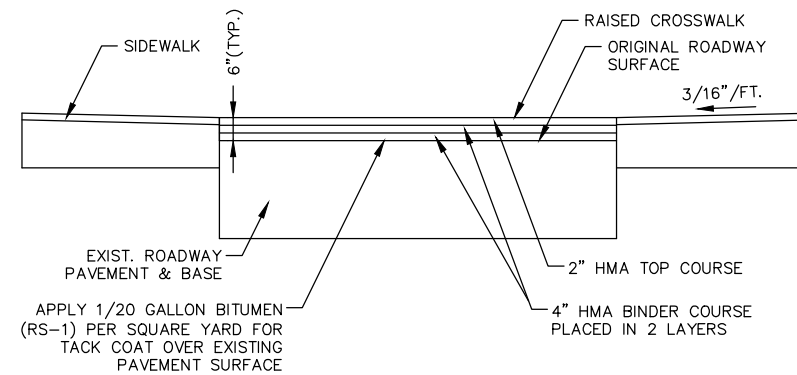
Comment T17: *"Given the length of the access roadway and the potential for increased travel speeds, raised crosswalks with accompanying warning signs should be used within the Project where crossings are proposed, excepting those located at an intersection."*

Response: The Applicant is consulting with the Fire Department to solicit their input on the suitability and placement of raised pedestrian crossings; these design features will be implemented by the Applicant with appropriate MUTCD-compliant signs once specific crossing locations are identified. **Exhibit 8** provides a typical detail for a raised crosswalk that will be incorporated into the Site Plans once concurrence is obtained from appropriate Town departments; associated MUTCD-compliant warning signs will also be added once these design features are deemed appropriate and acceptable.

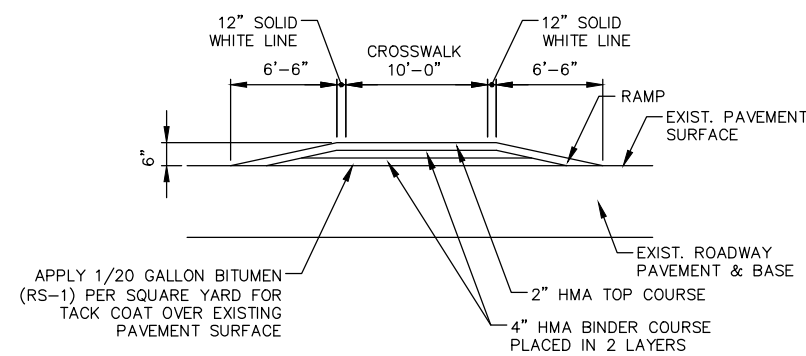
Comment T18: *"The approaches to the modern roundabouts should include raised splitter islands in order to channelize entering and exiting traffic and reinforce the one-way circulation pattern."*



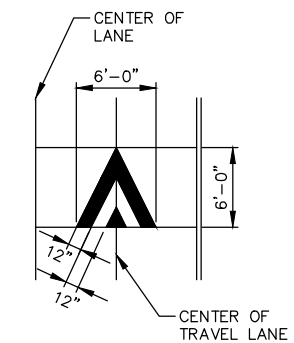
DETAIL FOR RAISED CROSSWALK
PAVEMENT MARKINGS
NOT TO SCALE



SECTION "B-B"
NOT TO SCALE



SECTION "A-A"
NOT TO SCALE



DETAIL FOR PAVEMENT MARKINGS FOR
RAISED CROSSWALKS/SPEED TABLES
NOT TO SCALE

Response: A conceptual roundabout design feature and associated signs and markings is presented in **Exhibit 9**. This design feature is incorporated into the latest Site Plans of March 14, 2016 and includes requested “splitter islands”, markings and signs that reinforce the one-way travel path. AutoTurn® analysis discussed under Response No. T11 verifies that this layout provides sufficient maneuvering area for SU-40 trucks and Sudbury’s largest emergency response vehicle (aerial ladder truck). Note that the splitter islands are proposed as flush “stamped” features that allow larger design vehicles to track over them if necessary.

Comment T19: “A school bus waiting area should be provided within the Project site or at an appropriate location defined in consultation with the Town of Sudbury School Department.”

Response: The Site layout will not preclude school buses from accessing and circulating within the property if deemed appropriate by the Town of Sudbury School Department. The Applicant will consult further with the School Department to determine the most desirable location for a bus stop and is prepared to identify an appropriate school bus waiting area within the property following this consultation. A likely location for this waiting area is at the intersection of the Site Driveway at Hudson Road which is served by a sidewalk that connects Route 27 to buildings within the property. The Hudson Road driveway may also be modified within the property to provide a vehicle waiting area if deemed appropriate.

Comment T20: “Bicycle parking should be provided within the Project site and reflected on the Preliminary Site Plan, including exterior bicycle racks proximate to the clubhouse building and weather protected bicycle parking in a secure area within each of the three and four story apartment buildings.”

Response: Each of the residential buildings will include a secure enclosed bicycle storage area for residents. In addition, exterior bicycle racks will be provided in proximity of the clubhouse; the exact location of bicycle racks will be determined as the Site Plans are refined during the local review process and the Applicant commits to this feature as a condition of the Project.

Comment T21: “A sign and pavement marking plan should be provided as a part of the Preliminary Site Plan in order to verify that the proposed traffic control devices are appropriately designed and located within the Project site. This plan should be developed by or in consultation with the Applicant’s Traffic Engineer given the unique signing requirements for the modern roundabouts that are proposed within the Project site.”

Response: Signs and pavement markings for site driveways and the roundabout feature are shown conceptually in **Exhibit 9** (Conceptual Roundabout Plan), **Exhibit 10** (Conceptual Access/Egress Plan, Hudson Road) and **Exhibit 11** (Conceptual Access/Egress Plan, Concord Road) and have been incorporated into the Site Plans as updated through March 14, 2016. All signs and markings shall be MUTCD compliant as requested. Additional MUTCD-compliant warning signs will be placed for raised crossings if these features are deemed appropriate and acceptable by Town departments.

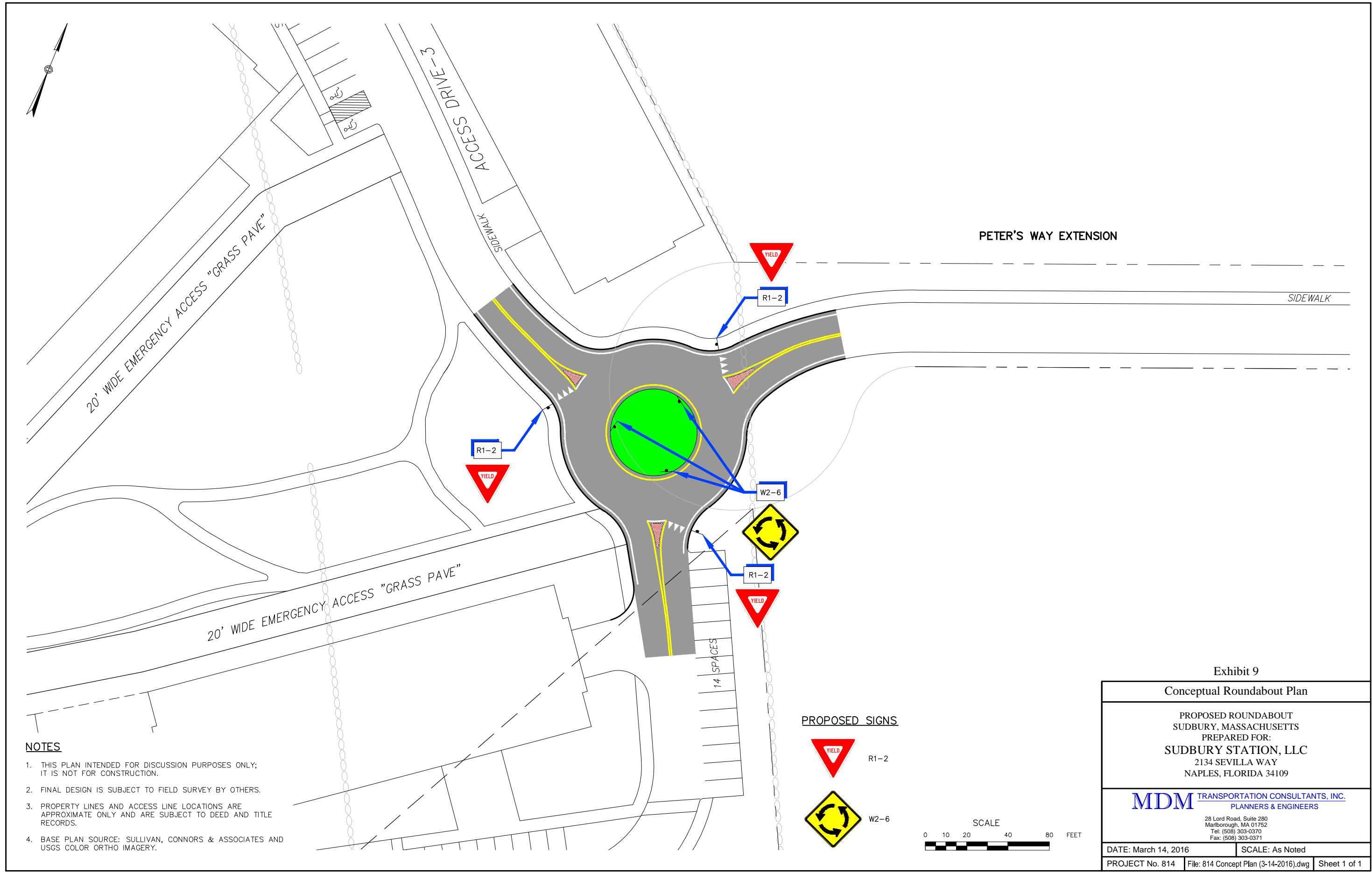


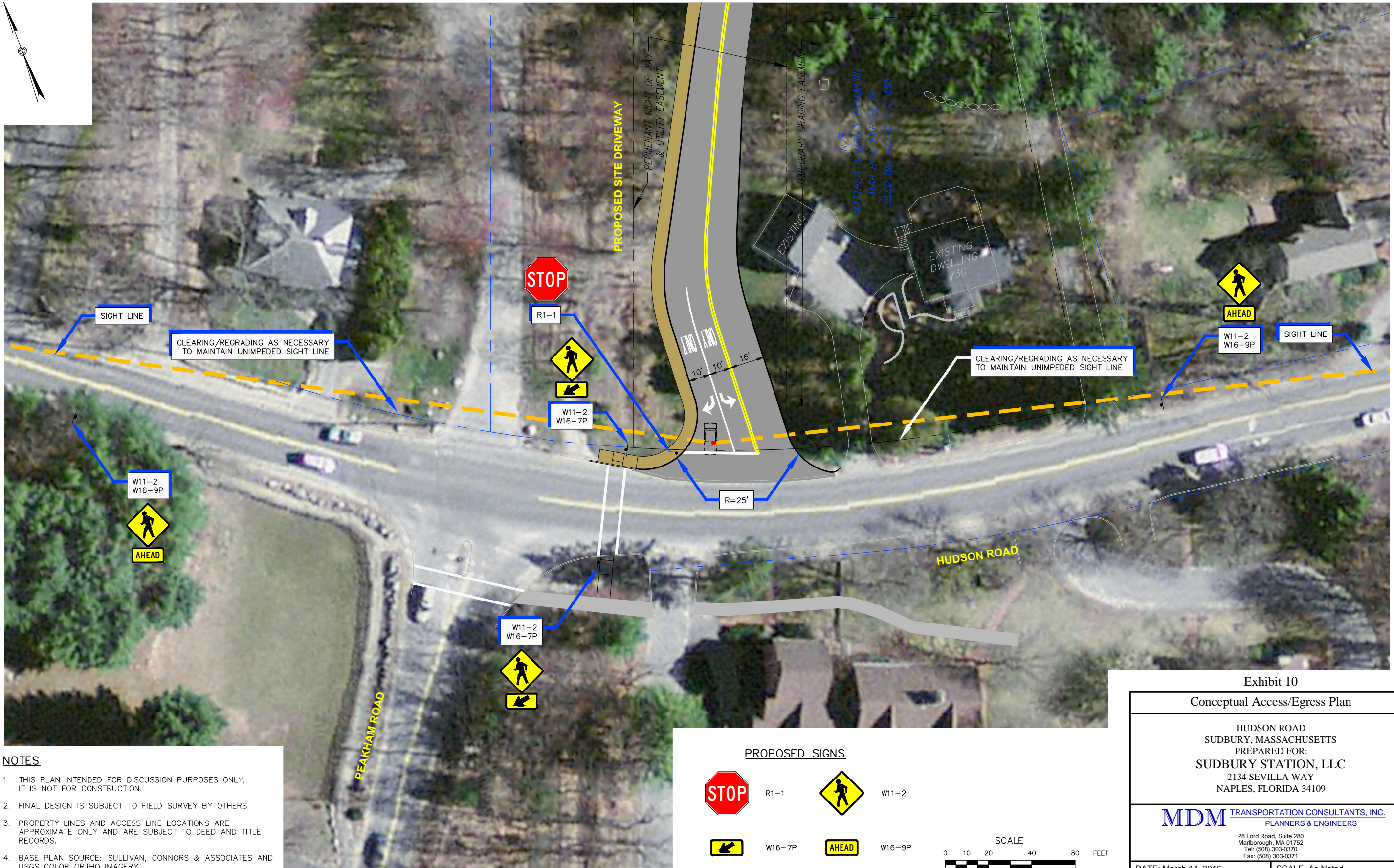
Exhibit 9

Conceptual Roundabout Plan

PROPOSED ROUNDABOUT
SUDBURY, MASSACHUSETTS
PREPARED FOR:
SUDBURY STATION, LLC
2134 SEVILLA WAY
NAPLES, FLORIDA 34109

MDM TRANSPORTATION CONSULTANTS, INC.
PLANNERS & ENGINEERS
28 Lord Road, Suite 280
Marlborough, MA 01752
Tel: (508) 303-0370
Fax: (508) 303-0371

DATE: March 14, 2016	SCALE: As Noted
PROJECT No. 814	File: 814 Concept Plan (3-14-2016).dwg
Sheet 1 of 1	



NOTES

1. THIS PLAN INTENDED FOR DISCUSSION PURPOSES ONLY; IT IS NOT FOR CONSTRUCTION.
2. FINAL DESIGN IS SUBJECT TO FIELD SURVEY BY OTHERS.
3. PROPERTY LINES AND ACCESS LINE LOCATIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO DEED AND TITLE RECORDS.
4. BASE PLAN SOURCE: SULLIVAN, CONNORS & ASSOCIATES AND USGS COLOR ORTHO IMAGERY.

PROPOSED SIGNS



R1-1



W11-2



W16-7P



W16-9P

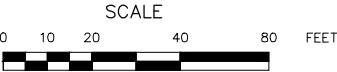


Exhibit 10

Conceptual Access/Egress Plan

HUDSON ROAD
SUDBURY, MASSACHUSETTS
PREPARED FOR:
SUDBURY STATION, LLC
2134 SEVILLA WAY
NAPLES, FLORIDA 34109

MDM TRANSPORTATION CONSULTANTS, INC.
PLANNERS & ENGINEERS

28 Lord Road, Suite 280
Marlborough, MA 01752
Tel: (508) 303-0370
Fax: (508) 303-0371

DATE: March 14, 2016	SCALE: As Noted
PROJECT No. 814	File: 814 Concept Plan (3-14-2016).dwg
Sheet 1 of 1	



NOTES

1. THIS PLAN INTENDED FOR DISCUSSION PURPOSES ONLY; IT IS NOT FOR CONSTRUCTION.
2. FINAL DESIGN IS SUBJECT TO FIELD SURVEY BY OTHERS.
3. PROPERTY LINES AND ACCESS LINE LOCATIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO DEED AND TITLE RECORDS.
4. BASE PLAN SOURCE: SULLIVAN, CONNORS & ASSOCIATES AND USGS COLOR ORTHO IMAGERY.

PROPOSED SIGNS

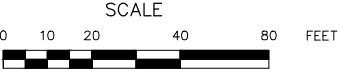
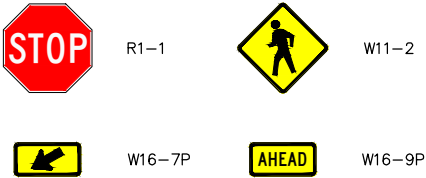


Exhibit 11

Conceptual Access/Egress Plan

CONCORD ROAD
SUDBURY, MASSACHUSETTS
PREPARED FOR:
SUDBURY STATION, LLC
2134 SEVILLA WAY
NAPLES, FLORIDA 34109

MDM TRANSPORTATION CONSULTANTS, INC.
PLANNERS & ENGINEERS

28 Lord Road, Suite 280
Marlborough, MA 01752
Tel: (508) 303-0370
Fax: (508) 303-0371

DATE: March 14, 2016	SCALE: As Noted
PROJECT No. 814	File: 814 Concept Plan (3-14-2016).dwg
Sheet 1 of 1	

Comment T22: *"The sight triangle areas for the Project site roadway intersections with Route 27 and Concord Road should be added to the Preliminary Site Plan along with a note to indicate: "Signs, landscaping and other features located within the sight triangle areas shall be designed, installed and maintained so as not to exceed 2-feet in height. Snow windrows located within the sight triangle areas that exceed 2-feet in height or that would otherwise inhibit sight lines shall be promptly removed."*

Response: The updated Site Plans of March 14, 2016 include the requested sight triangle areas and associated note.

Comment T23: *"A tenant move in/out management plan (narrative) should be provided and reflected in the truck turning analysis for the Project."*

Response (by Winn): The Residences at Sudbury Station management team will practice the following methods to ensure a well-coordinated moving schedule occur for new move-ins and current resident move-outs:

- a) Communication for Moving Process – Resident Education & Awareness
- b) Calendar Schedule – Allotted timeframes for each apartment on moving day
- c) Traffic Way Finders – Temporary way finder cones and signage to assist with truck access/restriction

a. Communication for Moving Process:

Upon lease execution each new resident will receive a community handbook that will identify the rules and parameters for move in and move out coordination. The handbook will clearly identify general access, points of entry, acceptable moving times and restrictions. The handbook will address the following topics:

- Policy for scheduling any moving activity
- Schedule for elevator reservations
- Acceptable move in and move out times
- Moving truck access and truck size restrictions
- Designated and/or restricted zones for access and parking of moving vehicle

b. Calendar Schedule:

The Residences at Sudbury Station on site management team will be responsible for maintaining a moving day schedule for each calendar month. The schedule will note specific moving times for each resident by building address. Residents will schedule the

moving times with the management office at least 1 week ahead of moving day. Each resident will receive a special window of time blocked off for moving activity.

c. Traffic Way Finders:

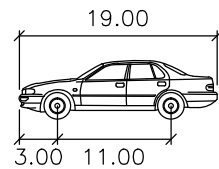
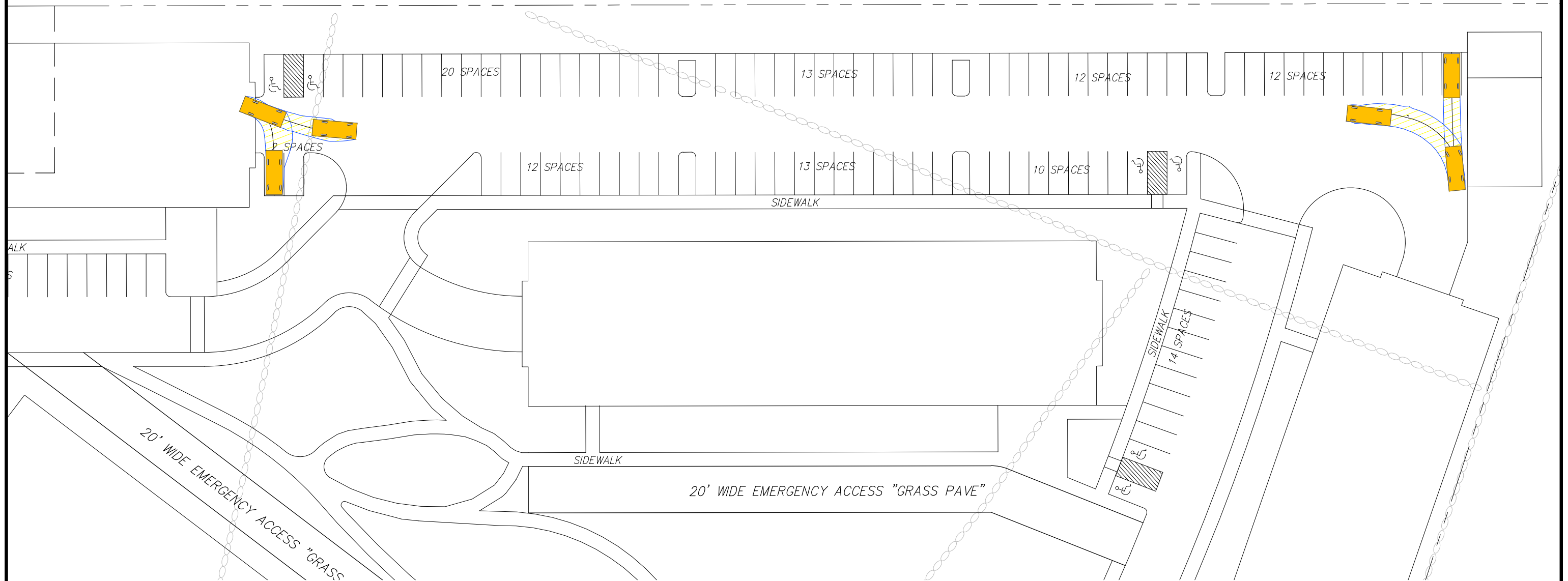
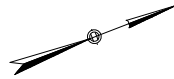
The on site management team will be responsible for setting up on site way-finders and temporary cones designating access points and assisting with traffic flow. It will also identify truck access restrictions from specific entry points on the community perimeter.

Comment T24: "The Applicant should consider incorporating electric vehicle charging stations into the Project and coordinating with ZipCar to locate vehicles at the Project site."

Response: The Applicant will provide up to four (4) electric vehicle charging stations within the property; specific charging locations are to be determined as the Site Plan is formalized. Likewise, the Applicant will reserve several parking spaces within the property for use by a car sharing service (ZipCar, Hertz or equivalent) should such provider express interest in providing vehicles at this location. The Applicant will consult with car sharing service providers to determine interest.

Comment T25: "The Applicant's engineer should review the parking spaces proximate to the trash/maintenance building and Building #1 as the end spaces at both locations do not appear to provide sufficient maneuvering area for vehicles to exit these spaces."

Response: AutoTurn® vehicle turn analysis presented in **Exhibit 12** demonstrates that ample maneuvering area is available at both Building 1 and Building 7 to accommodate vehicle turns into/exiting parking spaces. In the case of Building 1, backing area is available at the garage opening for surface spaces that are closest to the building, essentially serving as a "hammerhead" for maneuvering purposes.



Passenger Car
Width : 7.0 FT.
Track : 6.0 FT.
Lock to Lock Time : 6.0 SEC.
Steering Angle : 31.6°

Site Plan Source: Sullivan, Connors & Associates

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA 01752

Proposed Residential Development

Sudbury, Massachusetts

Scale: As Noted
DWG No. 814 Autoturn(3-10-2016).dwg

Date: March 2016
Project No. 814

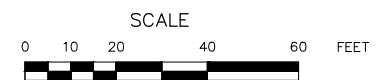


Exhibit 12

AutoTurn Analysis

Building 1 & Building 7