

## MEMORANDUM

**DATE:** September 20, 2023

**TO:** Mr. Gregory Rondeau, Chairman  
Franklin Planning Board  
355 E Central Street  
Franklin, MA 02038

**FROM:** Daniel J. Mills, P.E., PTOE – Principal *DJM*  
Daniel A. Dumais, P.E. – Senior Project Manager

**RE:** **Response to Comments - Peer Review of Traffic Memorandum**  
Proposed Warehouse Facilities  
100/200 Financial Park, Franklin, MA

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MDM Transportation Consultants, Inc. (MDM) has prepared the following responses to transportation-related comments as issued in a letter to you by BETA Group, Inc. dated September 14, 2023. To facilitate review, specific comments are paraphrased with corresponding responses.

**BETA Comment T8:** *“Synchro backup traffic data sheets for the Baseline (Existing), No-Build, and Build morning and afternoon peak periods are missing in the Appendix for the Financial Parkway and Washington Street intersection and the Washington Street and Union Avenue intersection. Provide backup data sheets for review and reference.”*

**BETA Supplemental Comment T8:** *“The information has been provided. Please elaborate on the discrepancies between the Synchro/HCM analysis results and the Table 6 and 7 summary tables. For instance, how the Washington Street northbound approach to Union Street was determined to operate at LOS C during the morning peak. The analysis results show differing LOS C and LOS F for that movement during the 2023 morning peak.”*

**Supplemental Response T8:** The Washington Street at Union Street intersection is a four-legged intersection that operates as a three-way stop with the eastbound approach being a free movement. Highway capacity analysis requires either an all-way stop or two-way stop on four-legged intersections to provide analysis. To most accurately provide analysis the intersection was modeled as an all-way stop and as a two-way stop with the all-way stop analysis used for the northbound, southbound and westbound approach and the two-way stop analysis used for the eastbound approach which does not have a STOP sign. No further analysis is required.



**HIGHPOINT ENGINEERING, INC.**  
 LAND PLANNING  
 PERMIT EXPEDITING  
 CIVIL ENGINEERING  
 CONSULTING

DEDHAM EXECUTIVE CENTER  
 980 WASHINGTON ST., SUITE 216  
 DEDHAM, MA 02026  
 www.HighpointEng.com

**WAREHOUSE/INDUSTRIAL DEVELOPMENT**

FRANKLIN, MA  
 100/200 FINANCIAL PARK

OWNER/APPLICANT: BERKELEY PARTNERS

ISSUE DATE:  
 09/20/2023

PROJECT NUMBER:  
 22051

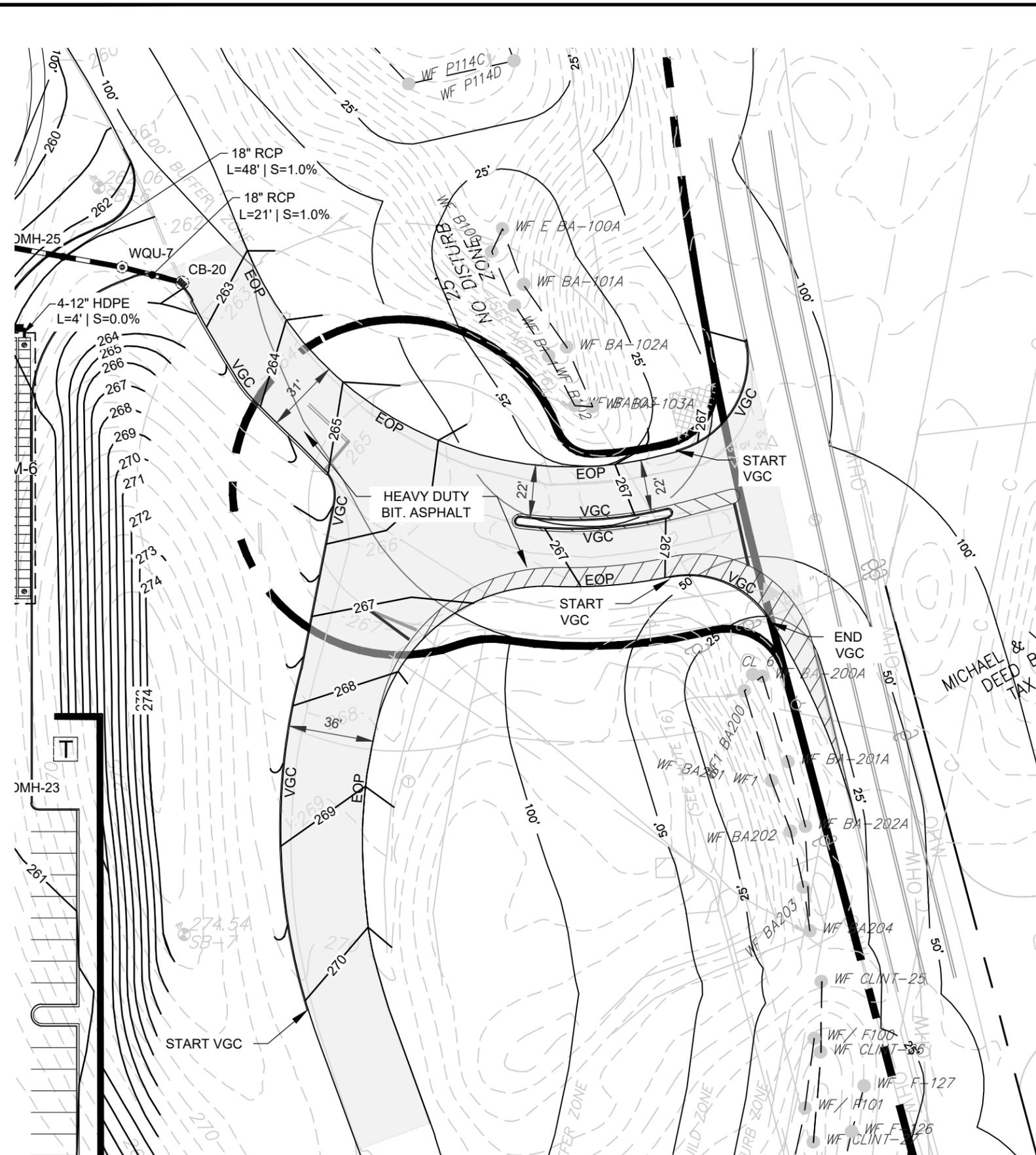
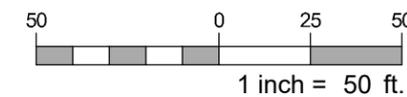
SHEET TITLE:  
**SITE ENTRANCE  
 LAYOUT AND  
 GRADING/  
 DRAINAGE  
 EXHIBIT**

SHEET NUMBER:

**EXH-1**

**SYMBOL LEGEND**

EOP	EDGE OF PAVEMENT
VGC	VERTICAL GRANITE CURB
	PROPOSED PAVEMENT STRIPING
	EXISTING ELEVATION CONTOUR
	PROPOSED ELEVATION CONTOUR
	PROPOSED CATCH BASIN
	PROPOSED DRAIN MANHOLE
	DOUBLE GRATE CATCH BASIN
	PROPOSED STORM DRAIN
	PROPOSED ELECTRICAL TRANSFORMER
	PROPOSED RETAINING WALL



**BETA Initial Comment 15:** *“Tractor Trailers were observed to have a challenging time turning left into and out of Financial Park due to the tight geometry and must slow down entering the driveway which causes traffic to back up as they are trying to take the left.”*

**BETA Supplemental Comment T15:** *“For Exhibit 1, please label the existing and proposed edge of pavement, and clarify if the gored areas are just pavement markings or sloped/raised areas.”*

**Supplemental Response T15:** The existing and proposed edge of pavement and curb lines are labeled on the latest Site Plan set prepared by Highpoint Engineering (see **Exhibit 1** for reference). As shown in **Exhibit 1**, the intention of the design is to provide painted gore areas and not sloped or raised areas. Due to its long, irregular shape, a raised area could impact drainage, impact rideability by trucks and be difficult to maintain by the Town and site maintenance contractors, especially during snow events.

It should be noted that a Stop sign is located in advance of the area in question, as such, no further speed control measures appear to be necessary at the exit driveway.

**BETA Initial Comment T16:** *“Trucks turning left from Washington Street onto King Street were observed taking up both Washington Street lanes to make the turn which queues up vehicles or getting stuck within the intersection and then backing up in order to renegotiate the movement.”*

**BETA Supplemental Comment T16:**

(a) *“The largest truck anticipated to be accessing the site was stated to be a WB-67 and trucks have been observed either being unable to make the left turn from Washington Street to King Street or significantly encroaching the adjacent lane in the process of turning.”*

(b) *“The AutoTurn provided using a WB-62 shows the truck encroaching the adjacent lane when navigating the left turn from Washington Street, which is the same condition as exists today. Please provide a turning movement graphic, which would show an improvement in today’s conditions, that shows a truck not encroaching the adjacent lane.”*

(c) *“It appears that a land acquisition or easement will be needed to shift the sidewalk along the northeast corner of the intersection. Has consideration been given to widening the roadway to the north and shifting the center median to better accommodate the left turning trucks?”*

(d) *“For Exhibit 2, please clarify if the intention is to provide a scored concrete truck apron as noted on the plans or a stamped concrete apron as shown on the graphic. Please label the existing and proposed edge of pavement, signs, and back of sidewalk for clarity.”*

## Supplemental Response T16:

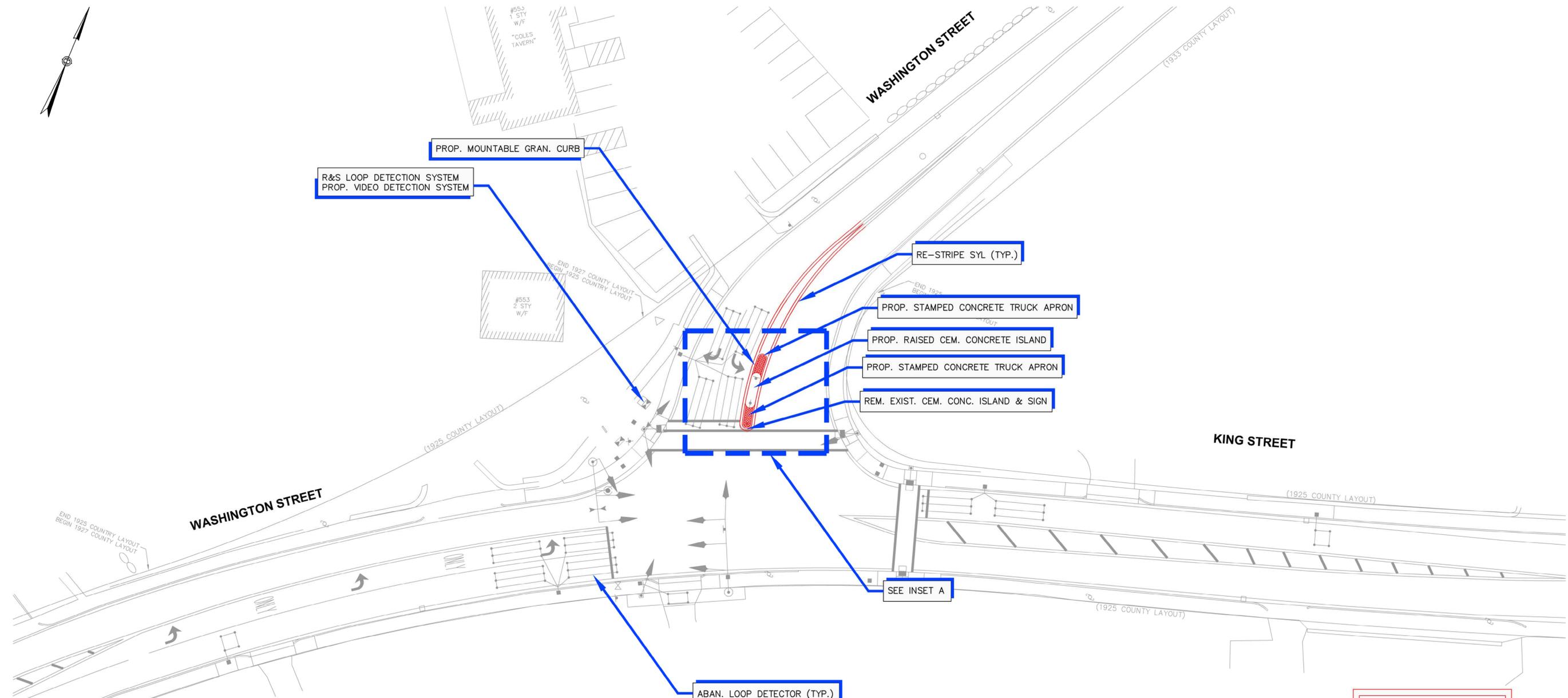
Given the benefits of modifying the existing median island to better accommodate truck turns at the Washington Street/King Street intersection, verse the impacts to private property not under the applicant's control, the Applicant will work with the Town of Franklin to reconstruct the median island as shown in **Exhibit 2**. See an expanded discussion of each comment below:

(a) Preliminary discussions with the Proponent indicate that trucks at Site will primarily utilize 53-foot trailers. Based on a review of AASHTO's design vehicles, MDM indicated that a tractor trailer with a 53-foot trailer is generally consistent with a WB-67 design vehicle; however, field observations indicate the rear-axles of the trailers are pulled forward to maintain a kingpin-to-rear-axle distance of 41 feet, which makes the truck more maneuverable and is required by law in many local jurisdictions. Per AASHTO and field review, the WB-62 is the appropriate design vehicle for the existing uses in the area and proposed Site.

The AutoTurn® graphics for the existing roadway layout and island for the Washington Street left turn onto King Street using the WB-62 design vehicle are included in the **Attachments**. As shown the WB-62 movement onto King Street would require the removal or relocation of the raised median island for it to stay fully within the left turn lane. Based on the review, MDM initially recommended that the raised median island be removed and replaced with a flush scored concrete island. BETA Comment. *"BETA would not recommend the removal of the raised island at the intersection. The removal of the island could contribute to an increase in safety issues including vehicle crossover at the intersection."* Given the length of the WB-62 design vehicle, it is less critical to remain in the left turn lane on Washington Street turning left onto King Street; in most cases the truck is expected to partially encroach into the right turn lane until the maneuver is made. To account for the field observation that a truck turning left onto King Street from Washington Street occasionally tracks over the median island, MDM provided an alternative (**Exhibit 2**) that would retain the raised median island with modification to provide mountable stamped concrete aprons on both ends of the island. **Exhibit 2** can be fully constructed within the available right of way and will provide greater room for truck driver error and address the occasional tracking over the median curbing.

(b) As shown in **Exhibit 3**, in order to eliminate any encroachment into the adjacent right turn lane on Washington Street, a large easement or property taking would be required on the eastern side of Washington Street to shift the median island and widen the roadway. The AutoTurn® graphics for the Washington Street left-turn onto King Street and King Street right-turn onto Washington Street using the WB-62 design vehicle are included in the **Attachments**.

(c) MDM agrees that land acquisition or easement through private property not under the control of the proponent or the Town will be needed for any shift in the sidewalk along either side of the roadway or expansion of the intersection beyond the enhance median proposed in **Exhibit 2**. Consideration has been given to widening the roadway to the north and shifting the center median to better accommodate the left turning trucks. Field observations, available



DRAFT

Exhibit 2

Concept Improvement Plan

WASHINGTON STREET AT KING STREET  
FRANKLIN, MASSACHUSETTS  
PREPARED FOR:  
**HIGHPOINT ENGINEERING, INC.**  
980 WASHINGTON STREET, SUITE 216  
DEDHAM, MASSACHUSETTS 02026

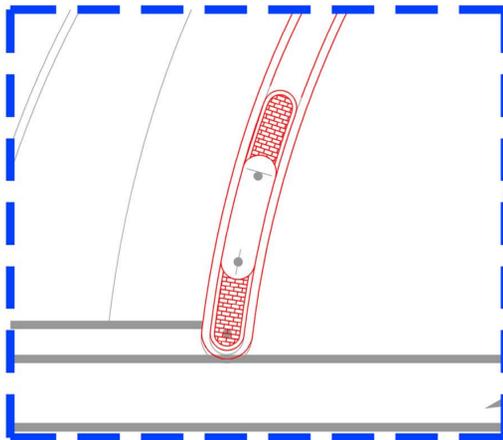
**MDM** TRANSPORTATION CONSULTANTS, INC.  
PLANNERS & ENGINEERS

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

Project No. 1259	Name: 1259 Concept Plan Ex. 2 23-09-20.dwg	
Date: Sept. 20, 2023	Scale: As Noted	Sheet 1 of 1

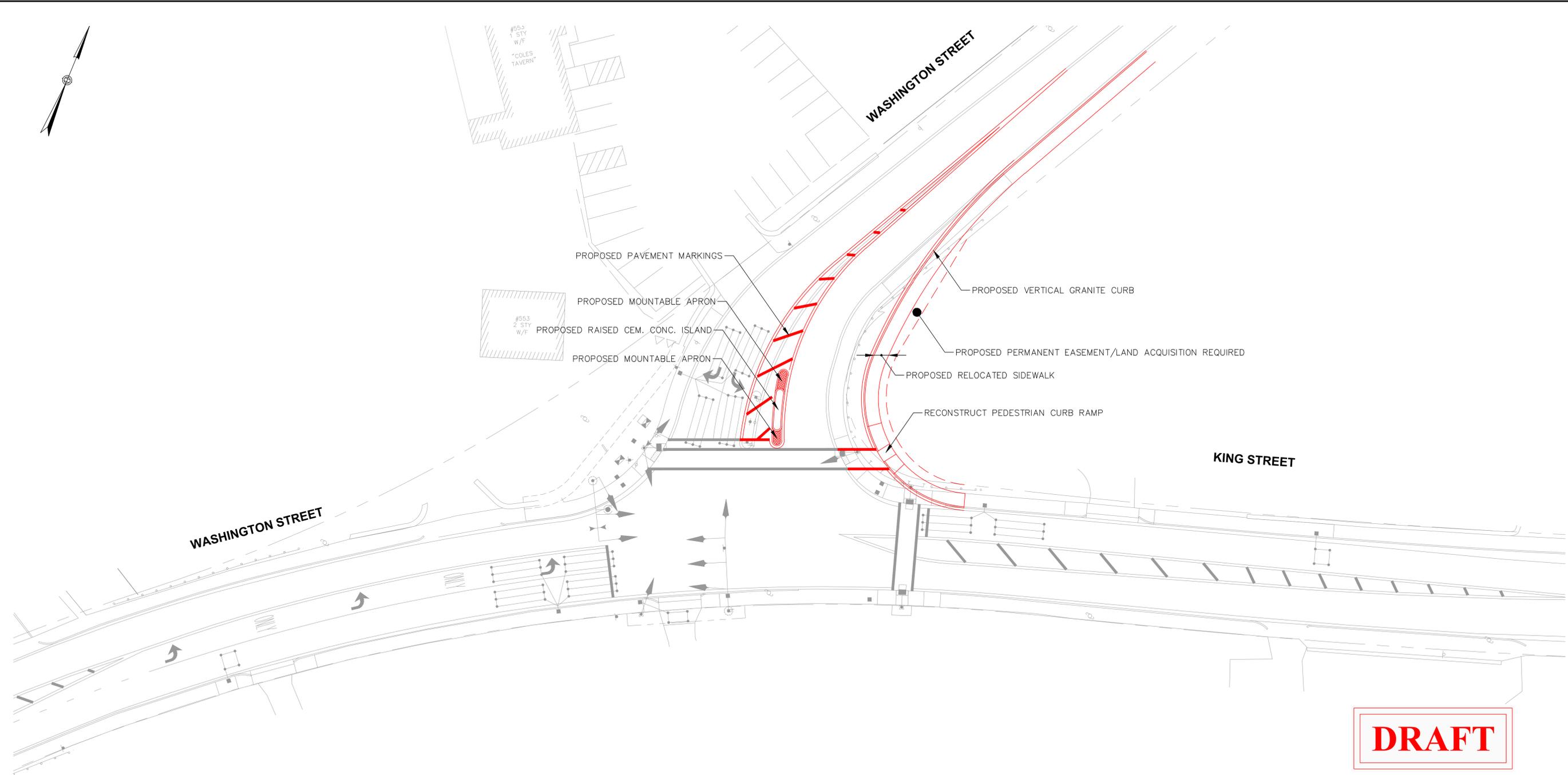
**NOTES**

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: MDM TRANSPORTATION CONSULTANTS, INC.



INSET A





DRAFT

Exhibit 3

Concept Improvement Plan

WASHINGTON STREET AT KING STREET  
 FRANKLIN, MASSACHUSETTS  
 PREPARED FOR:  
**HIGHPOINT ENGINEERING, INC.**  
 980 WASHINGTON STREET, SUITE 216  
 DEDHAM, MASSACHUSETTS 02026

**MDM** TRANSPORTATION CONSULTANTS, INC.  
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28 Lord Road, Suite 280  
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Project No. 1259	File Name: 1259 Autoturn 2023-09-20.dwg	
Date: Sept. 20, 2023	Scale: As Noted	Sheet 1 of 1

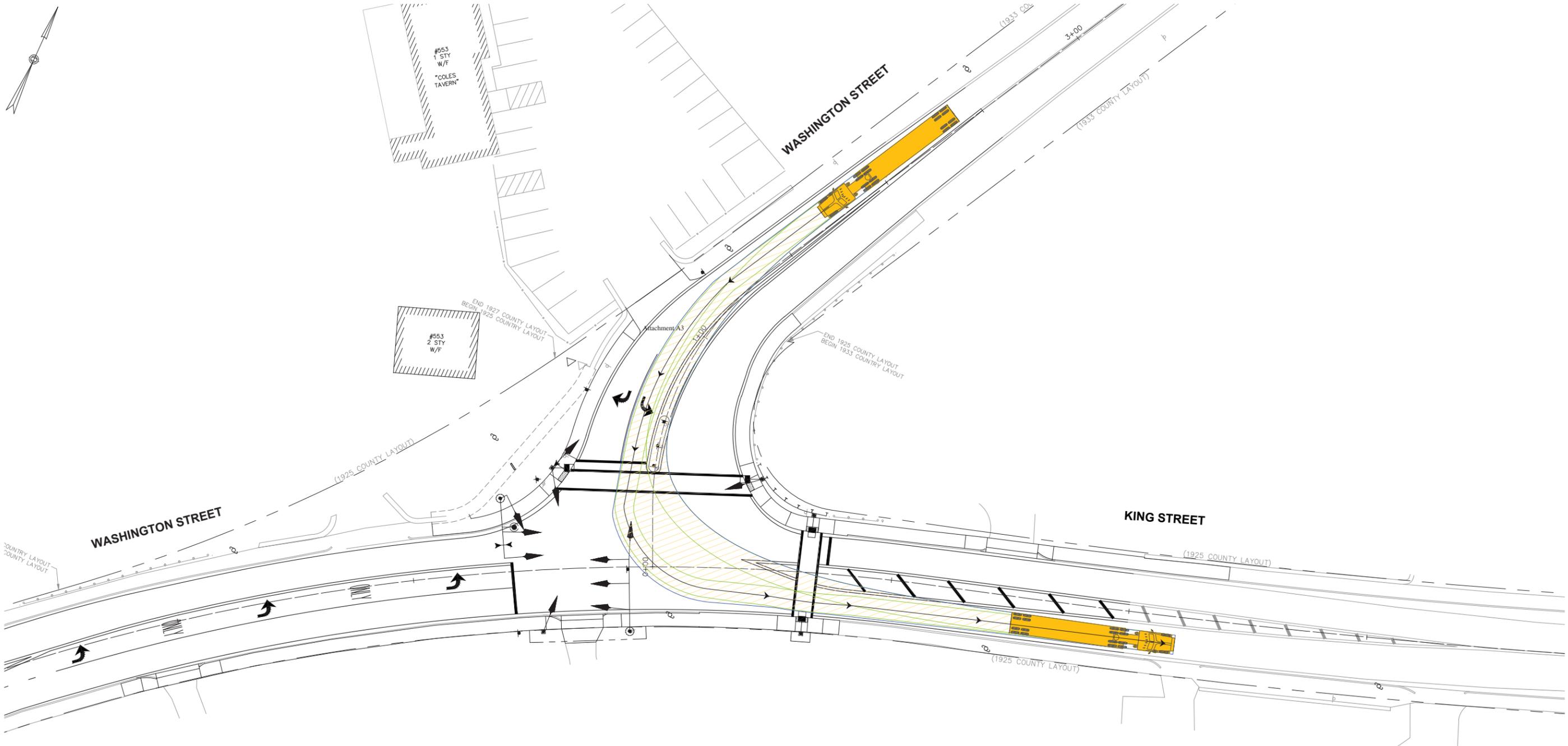
survey, and previous design work at the intersection indicates that widening on the Washington Street approach to the intersection on the western side is not feasible based on grading issues, retaining walls, existing utility structures, and limited available right-of-way. Again, these more extensive alternatives would require land acquisition or easement through private property not under the control of the proponent or the Town.

(d) For the previously provided **Exhibit 2**, the intention is to provide mountable end treatments with stamped concrete surface as shown in the graphic. That said, the island surface treatment is flexible based on the desires of the Town's Engineering Department. The proposed pavement markings, mountable and raised island features are labeled on **Exhibit 2**. The existing edge of pavement and back of sidewalk are proposed to be retained.

# ATTACHMENTS

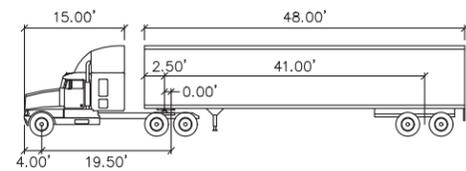
- AutoTURN® Analysis

## **Existing Conditions Plan**



**NOTES**

1. THIS PLAN INTENDED FOR DISCUSSION PURPOSES ONLY; IT IS NOT INTENDED FOR CONSTRUCTION.
2. BASE PLANS PROVIDED BY MDM TRANSPORTATION CONSULTANTS, INC. & MASSACHUSETTS ORTHOPHOTOGRAPHY.



WB-62

Tractor Width	: 8.0 FT.
Trailer Width	: 8.5 FT.
Tractor Track	: 8.0 FT.
Trailer Track	: 8.5 FT.
Lock to Lock Time	: 6.0 SEC.
Steering Angle	: 28.4°
Articulating Angle	: 70.0°

Site Plan Source: MDM Transportation Consultants, Inc.

**MDM** TRANSPORTATION CONSULTANTS, INC.  
Planners & Engineers

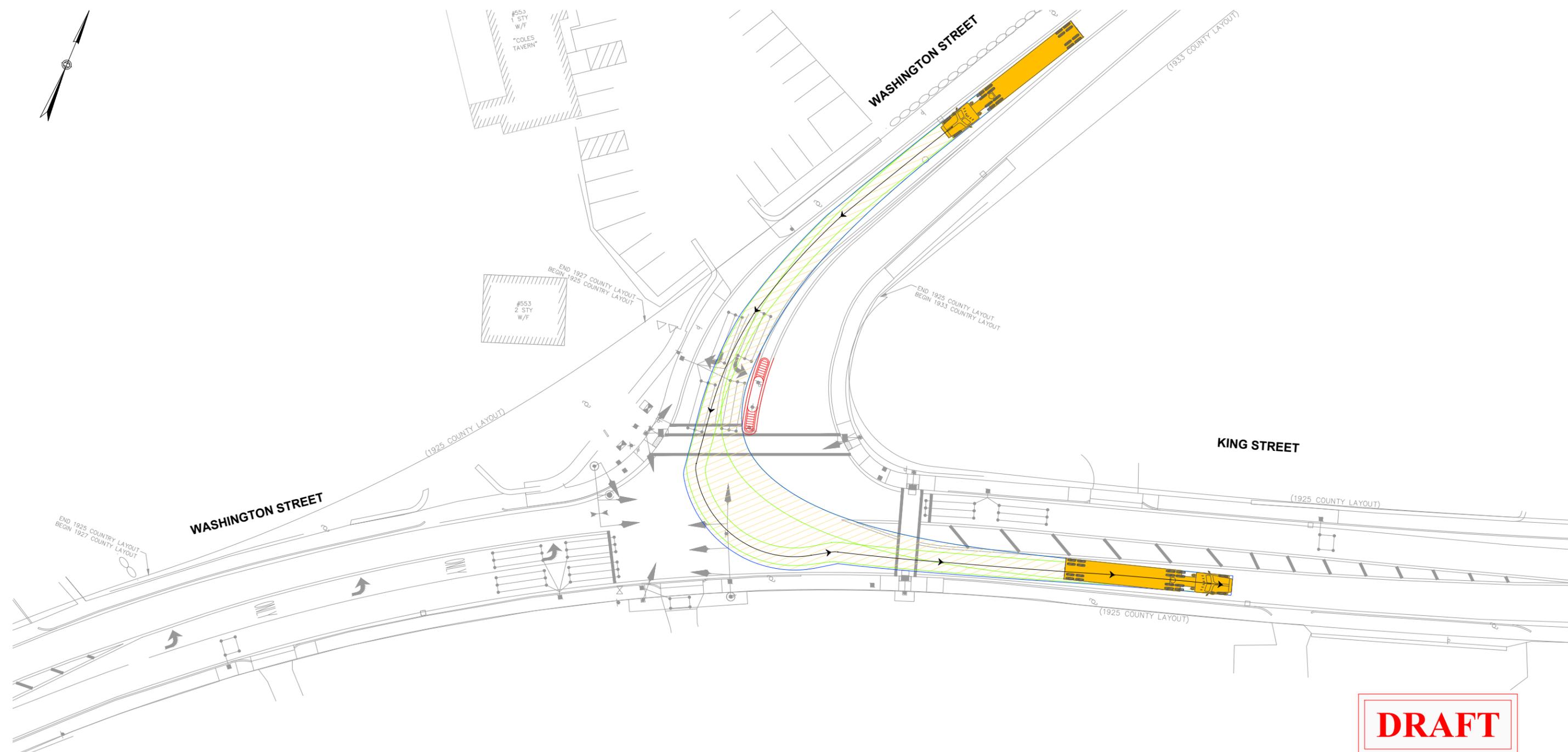
28 Lord Road, Suite 280  
Marlborough, MA 01752

*Proposed Development*  
Franklin, Massachusetts



**Attachment A1**  
*Autoturn Analysis*  
*WB-62 Truck*

## **Modified Median Concept**



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Attachment A2

**WB-62 AutoTURN Out Concept**

WASHINGTON STREET AT KING STREET  
 FRANKLIN, MASSACHUSETTS  
 PREPARED FOR:  
**HIGHPOINT ENGINEERING, INC.**  
 980 WASHINGTON STREET, SUITE 216  
 DEDHAM, MASSACHUSETTS 02026

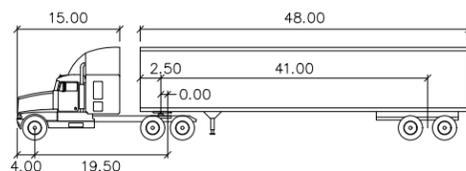
**MDM** TRANSPORTATION CONSULTANTS, INC.  
 PLANNERS & ENGINEERS

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

DATE: August 31, 2023	SCALE: As Noted
PROJECT No. 1259   File: 1259 Concept Plan 2023-08-31.dwg   Sheet 1 of 1	

**NOTES**

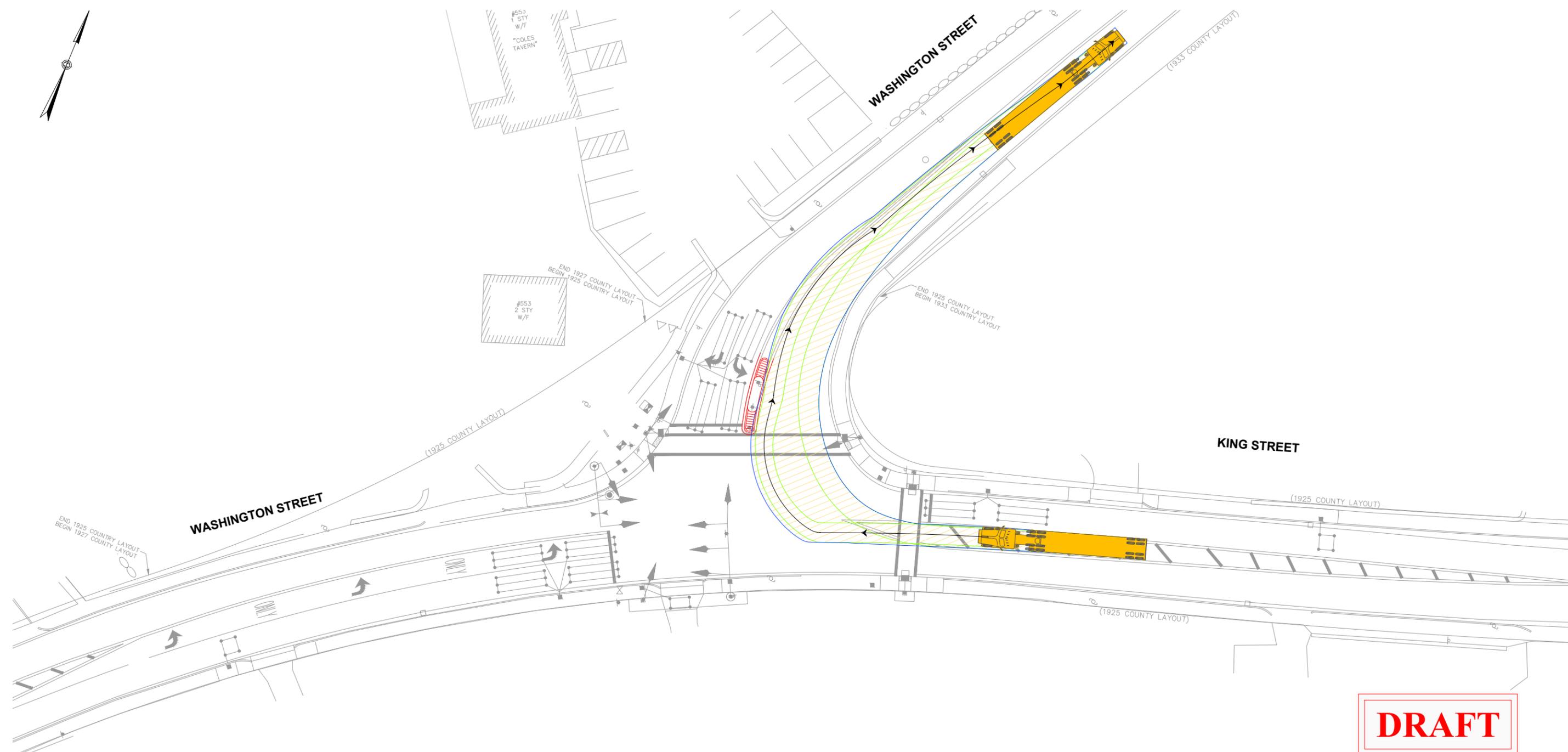
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4. BASE PLAN SOURCE: MDM TRANSPORTATION CONSULTANTS, INC.



WB-62

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		





**DRAFT**

Attachment A3

WB-62 AutoTURN In Concept

WASHINGTON STREET AT KING STREET  
FRANKLIN, MASSACHUSETTS  
PREPARED FOR:  
HIGHPOINT ENGINEERING, INC.  
980 WASHINGTON STREET, SUITE 216  
DEDHAM, MASSACHUSETTS 02026

**MDM** TRANSPORTATION CONSULTANTS, INC.  
PLANNERS & ENGINEERS

28 Lord Road, Suite 280  
Marlborough, MA 01752  
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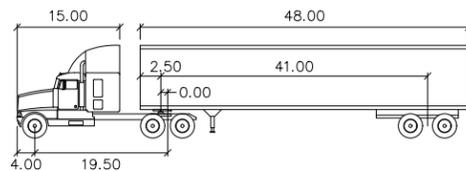
DATE: August 31, 2023

SCALE: As Noted

PROJECT No. 1259 | File: 1259 Concept Plan 2023-08-31.dwg | Sheet 1 of 1

**NOTES**

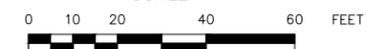
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4. BASE PLAN SOURCE: MDM TRANSPORTATION CONSULTANTS, INC.



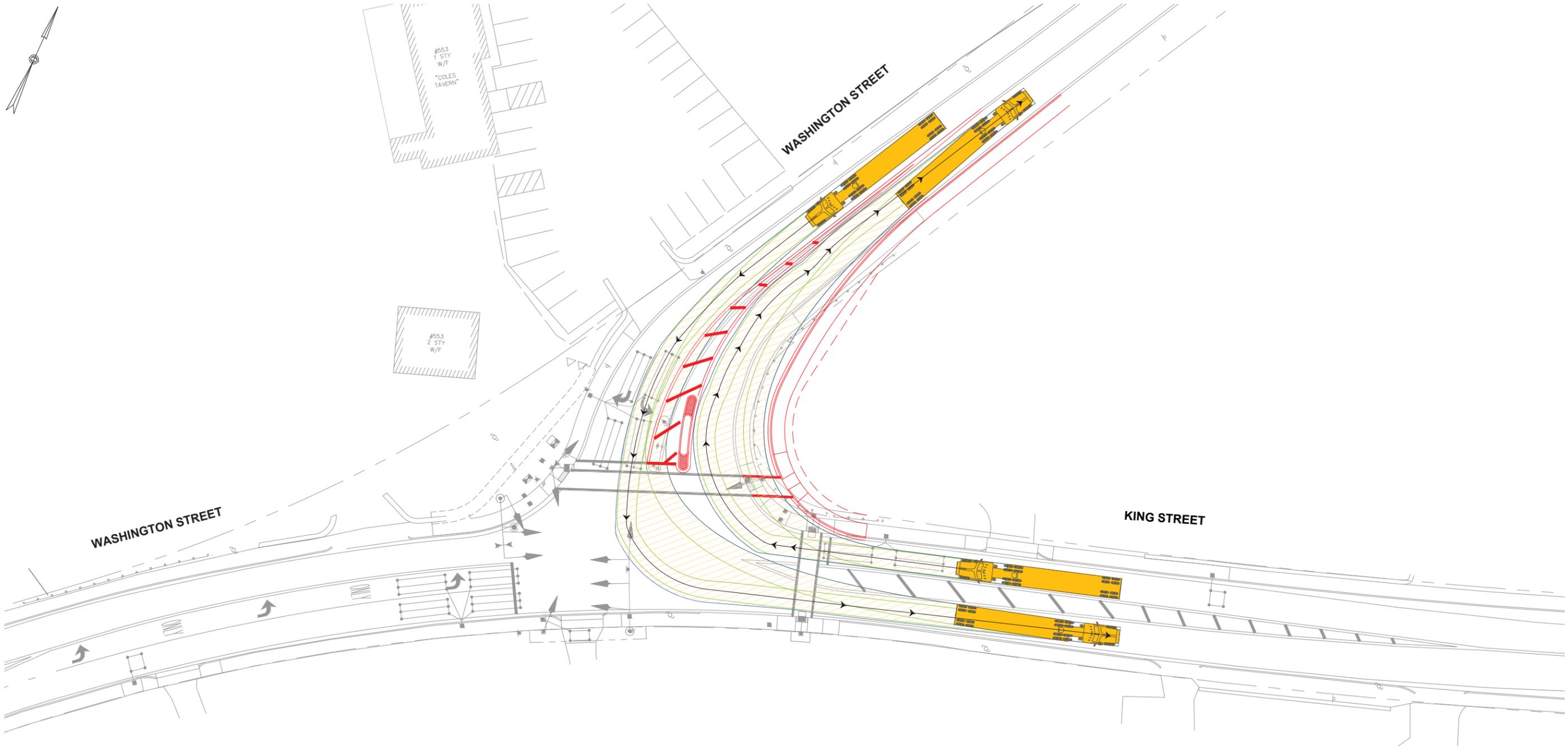
WB-62

feet			
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

SCALE

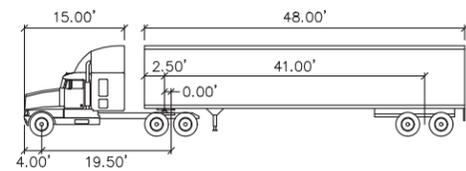


## **Land Acquisition/Easement Concept**



**NOTES**

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WB-62  
 Tractor Width : 8.0 FT.  
 Trailer Width : 8.5 FT.  
 Tractor Track : 8.0 FT.  
 Trailer Track : 8.5 FT.  
 Lock to Lock Time : 6.0 SEC.  
 Steering Angle : 28.4°  
 Articulating Angle : 70.0°

Site Plan Source: MDM Transportation Consultants, Inc.

**MDM** TRANSPORTATION CONSULTANTS, INC.  
 Planners & Engineers

28 Lord Road, Suite 280  
 Marlborough, MA 01752

*Proposed Development*  
 Franklin, Massachusetts



*Attachment A4*  
*Autoturn Analysis*  
*WB-62 Truck*



September 14, 2023

Mr. Gregory Rondeau, Chairman  
Franklin Planning Board  
355 East Central Street  
Franklin, MA 02038

Re: Warehouse/Industrial Development  
100 Financial Park  
Site Plan Application – Traffic Peer Review

Dear Mr. Rondeau:

BETA Group, Inc. (BETA) has received the Response to Comments letter dated September 8, 2023 for traffic-related items for the proposed project entitled “Warehouse / Industrial Development” located at 100 Financial Park in response to BETA’s review comments dated June 1, 2023, June 22, 2023, and August 8, 2023. This letter provides BETA’s comprehensive findings, comments and recommendations.

## BASIS OF REVIEW

The following documents were received by BETA and formed the basis of the review:

- Plans (45 sheets) entitled: Warehouse Industrial Development Site Development Plans 100/200 Financial Park Franklin Massachusetts, dated May 11, 2023, prepared by Highpoint.
- Traffic Impact and Access Study (TIA), dated April 2023, prepared by MDM Transportation Consultants, Inc. (MDM).
- Response to Comments – Peer Review of Traffic Memorandum, 100/200 Financial Park, dated June 7, 2023, prepared by MDM Transportation Consultants, Inc.
- Response to Comments – Peer Review of Traffic Memorandum, 100/200 Financial Park, dated July 17, 2023, prepared by MDM Transportation Consultants, Inc.
- Response to Comments – Peer Review of Traffic Memorandum, 100/200 Financial Park, dated September 8, 2023, prepared by MDM Transportation Consultants, Inc.

## INTRODUCTION

The project site includes two parcels, located at 100 Financial Park in the Town of Franklin (the “Site”). The Site and all the surrounding lots are located within the Industrial zoning district.

The existing Site is the location of a 1-story office building with a footprint area of 180,000± sq. ft. and a 2-story warehouse building with a footprint area of 57,570± sq. ft. Paved parking areas are located to the north and south of the buildings. Access to the Site is provided within Financial Park, a private roadway which connects to Washington Street from the west.

The project proposes to construct two new warehouse buildings with 300,000± sq. ft of warehouse space. The existing 180,500± sq. ft office building will be demolished, and the existing warehouse building will be retained. The existing parking layout will be replaced with new areas of paved parking proposed and existing areas either retained, removed, or reconfigured. A new loading area with heavy duty pavement is proposed in the central area of the Site between the two new buildings.

## COMPILED REVIEW LETTER KEY

BETA preliminarily reviewed this project previously and provided review comments in a letter to the Board dated June 1, 2023 and a comprehensive review dated June 22, 2023 (original comments in standard text), MDM Transportation Consultants, Inc. (MDM) provided responses (responses in italic text), and BETA has provided response comments (status in standard bold text). All other comments shown in standard text are original comments for this more comprehensive review.

## FINDINGS, COMMENTS, AND RECOMMENDATIONS

The study area includes the following intersections in the vicinity of the site:

- Washington Street at King Street (signalized)
- Washington Street at Union Street and Arlington Street (unsignalized)
- Washington Street at Financial Park Drive (unsignalized)

The study area was found to be adequate, and the study methodology follows MassDOT Transportation Impact Assessment (TIA) guidelines.

Manual turning movement counts (TMCs) were collected on Thursday, January 26, 2023, from 7:00 AM to 9:30 AM and 2:00 PM to 6:00 PM. These time periods were chosen because they are representative of the combination of peak generator times of Franklin Park Campus and adjacent roadways. BETA concurs with the traffic data collection time periods.

Traffic volume data were also collected via a 24-hour automatic traffic recorder (ATR) count on Thursday, January 26, 2023 on Washington Street, just south of Financial Park Drive.

Data indicates the weekday AM peak period occurs from 7:30 – 8:30 AM and the PM peak period occurs from 2:45 – 3:45 PM which coincides with the Benjamin Franklin Classical Charter peak periods.

The TIA states that the existing campus is fully leased. The TIA states that baseline trip generation data was collected via ATR in January 2023 and was provided graphically and in table form (Table 2) for each existing site. The backup data is broken down by hour in the Appendix.

The peak hour and total daily volumes provided in the TIA differ from the backup data provided in the Appendix.

- T1. The peak hour and total daily volumes provided in the TIA differ slightly from the backup data provided in the Appendix. Please clarify the difference in volumes in addition to the difference in truck trips between the existing site and the proposed site.

MDM: The peak hour and daily trip generation volumes shown in Table 2 of the TIA include trips using the gated Grove Street driveway. Buses associated with the Benjamin Franklin School and a limited number of Marsh & McLennan employees are permitted to use the gated driveway. The backup trip calculations provided included only trips associated with the main driveway. Under future conditions buses will still be permitted to use the gated Grove Street driveway, however, the proposed warehouse trips will be required to use the Washington Street driveway. The backup calculation sheets for the gated Grove Street driveway are provided in the Attachments.

The truck trips associated with the existing Site uses are based on traffic count data collected in January 2023 while the truck trips associated with the proposed Site are based on the more conservative average ITE truck trip rates for a Warehouse use (LUC 150).

BETA2: The information has been provided. No further comment.

Historical permanent count station data from I-495 and Route 1 were reviewed to determine the need for seasonal adjustment. Traffic volumes in January were found to be below average-month conditions, therefore, the volumes were increased by the average of the two stations which is 10 percent to provide baseline existing volume data.

Crash data were obtained from the MassDOT database for the most recent three-year period from 2020 to 2022. The highest crash rate, quantified as crashes per million entering vehicles, was found to be 0.25 Million Entering Vehicles (MEV) which is lower than both the statewide and District 3 average crash rates for unsignalized and signalized intersections.

- T2. Crash data for the years 2020-2022 from the MassDOT database were summarized in the TIA for the three study area intersections. At this time, our understanding is that MassDOT has not “accepted” their crash data later than the year 2020 and crash data may be lower than normal due to the COVID-19 impacts on travel during 2020. Consideration should be given to providing crash data for the study area intersections for the years 2018-2019.

MDM: The safety analysis has been expanded to include crash data for the years 2018-2022. The updated crash data from 2018 and 2019 is consistent with the 2020-2022 data, indicating no significant crash history at the study locations. No further review of crash analysis is required based on the crash history at the study locations. The expanded crash data for the study intersections is provided in the Attachments.

BETA2: The information has been provided. No further comment.

- T3. Provide updated crash data worksheets with the correct intersection streets.

MDM: Revised crash data worksheets are provided in the Attachments.

BETA2: The information has been provided. No further comment.

Background development-related traffic growth that may increase traffic within the study area was identified. The 160 Grove Street, 200 Grove Street, 585 King Street, 00-712 Union Street and 275 Washington Street development projects were identified as new developments. The projected trips for these projects were directly applied to the future volumes. It is our understanding that the 200 (206) Grove Street FedEx facility was operational during the data collection period, however, the trips added to the study area were minimal. BETA finds this overall approach acceptable.

MassDOT permanent count station data indicated an overall average traffic growth rate of 0.4 percent. No-Build traffic volumes were determined by applying a 1 percent per year growth rate over a seven-year period to 2030 to account for traffic growth. This growth rate is consistent with studies prepared for recent developments in Franklin.

The project-generated traffic volumes were determined by utilizing trip-generation statistics published by the Institute of Transportation Engineers (ITE) for Land Use Code (LUC) 150 Warehousing. The land use is appropriate. The project site is estimated to generate a total of 514 new trips on an average weekday with 51 (39 entering, 12 exiting) during the weekday morning peak hour, and 69 (19 entering, 50 exiting) during the weekday afternoon peak hour. Of these trips, the estimated number of trucks generated during the morning peak are six (11% of trips) and 18 (26% of trips) during the afternoon peak. Approximately 180 truck trips are anticipated daily.

T4. Provide the trip generation backup data for reference.

MDM: For reference, the backup ITE trip generation data is provided in the Attachments.

BETA2: It appears that only the proposed truck trip generation ITE data was provided. Please provide the backup data for the vehicle trips as summarized in your report.

MDM2: Backup ITE trip generation data sheets for both trucks and vehicle trips as summarized in the traffic study are provided in the Attachments.

BETA3: The information has been provided. No further comment.

T5. Clarify the size of trucks the site will be generating.

MDM: The majority of the trucks are expected to be 53-foot trailers consistent with the existing trucks used by Imperial Dade and Champagne Logistics. The largest anticipated trucks generated by the Site will be equivalent to an articulated WB-67 truck (Sleeper cab tractor with 53-foot trailer).

BETA2: Comment addressed. As observed and previously noted, at both the intersection of Washington Street and Financial Parkway and the intersection of Washington Street and King Street, larger trucks have difficulty turning right out of Financial Parkway and left from Washington Street onto King Street. Any increase in large truck traffic may impact traffic safety.

MDM2: As summarized under Response 15 and Response 16, Proponent sponsored improvements at the Financial Park Drive intersection with Washington Street and the Washington Street intersection with King Street will facilitate truck operations for truck traffic at both locations compared to existing conditions.

BETA3: See responses to comments 15 and 16.

T6. Although the TIA states that access to and from the site will not be permitted via the gated Grove Street driveway on the western side of the site based on preliminary discussions, we recommend that the existing number of vehicles accessing and egressing the Grove Street driveway be provided for reference. MDM: Detailed traffic count data by vehicle type for the Financial Park Drive near Grove Street is provided in the Attachments. The data indicates that approximately 20 daily passenger vehicle trips (10 entering and 10 exiting) through the gate, 45 daily school buses trips (22 entering and 23 exiting), and no articulated trucks used the gated driveway. BETA: Information has been provided. Verify that additional vehicles from the proposed warehouse will not utilize the gated driveway.

MDM: Under future conditions buses will still be permitted to use the gated driveway; however, all other vehicles including the proposed warehouse trips will be required to use the Washington Street driveway.

BETA2: The information has been provided. No further comment.

A trip generation comparison was provided between the ITE-based site trips for the proposed developments and the existing 300,000 sf warehouse (Imperial Dade). The empirical data revealed that the weekday morning (4:00 AM) and afternoon peaks (1:00 PM) are earlier than the peak hours used for the analysis which coincides with the peak periods for Financial Park and Washington Street. The TIA also included a comparison between the proposed warehouse use and the "by-right" office use which would generate approximately 200 additional trips during the morning peak hour, 95 during the afternoon peak hour, and 1,442 more on a daily basis. This information is noted.

- T7. Journey to Work data and existing travel patterns were used to determine the distribution of trips. Please provide the Journey to Work backup data for reference.

MDM: The trip distribution for the proposed warehouse was based on existing travel patterns only, the use of Journey to Work data was a typographical error. Trip distribution calculations were provided in the TIA and are provided in the Attachments for reference.

BETA2: Comment addressed. No further comment.

Traffic operations analysis was performed with Synchro software based on the Highway Capacity Manual 6<sup>th</sup> Edition methodologies.

- T8. Synchro backup traffic data sheets for the Baseline (Existing), No-Build, and Build morning and afternoon peak periods are missing in the Appendix for the Financial Parkway and Washington Street intersection and the Washington Street and Union Avenue intersection. Provide backup data sheets for review and reference.

MDM: The Synchro backup traffic data sheets for the Baseline, No-Build, and Build weekday morning and weekday evening peak periods are provided in the Attachments.

BETA2: Backup Synchro data for the Baseline Existing and No-Build conditions are still missing for the Financial Parkway and Washington Street intersection and the Washington Street and Union Avenue intersection.

MDM2: Backup Synchro data for the for the Baseline, No-Build and Build for the study intersections are provided in the Attachments.

BETA3: The information has been provided. Please elaborate on the discrepancies between the Synchro/HCM analysis results and the Table 6 and 7 summary tables. For instance, how the Washington Street northbound approach to Union Street was determined to operate at LOS C during the morning peak. The analysis results show differing LOS C and LOS F for that movement during the 2023 morning peak.

Capacity analysis results show that all intersections currently operate and would operate during the Build condition at acceptable Level of Service (LOS), with most movements operating at LOS C or better during the weekday morning and afternoon peak hours. The Washington Street southbound left turn movement onto King Street operates at a LOS D under existing conditions but would operate at a LOS C during the morning peak and maintain LOS D during the afternoon peak during the 2030 Build condition.

- T9. Journey to Work data and existing travel patterns were used to determine the distribution of trips. Please provide the Journey to Work backup data for reference.

MDM: See Response to Comment 7.

BETA2: Comment addressed. No further comment.

- T10. The truck percentage was not increased for the Build condition analysis. Please clarify if reflecting the increase in truck trips would degrade the traffic operations at the King Street at Washington Street intersection.

MDM: Site trailer trucks traffic leaving Financial Park Drive will continue to be directed to King Street. Therefore, all of the tractor trailer truck activity associated with the proposed warehouse use will utilize the Washington Street at King Street intersection. For analysis purposes it was assumed that the proposed trucks would follow existing truck patterns at the intersection.

Table R1 provides a comparison between existing and proposed heavy vehicles percentages for each movement at the intersection. Supplemental capacity analysis was conducted for 2030 Build conditions with the revised heavy vehicle percentages for the Washington Street at King Street intersection. The results of the intersection capacity analyses are compared to the 2030 Build condition presented in the TIA and summarized in Table R2.

**TABLE R1  
HEAVY VEHICLE SUMMARY – WASHINGTON STREET AT KING STREET**

Intersection Movement	Existing Heavy Vehicle Percentage <sup>1</sup>		Build Condition Heavy Vehicle Percentage <sup>2</sup>	
	Weekday Morning	Weekday Evening	Weekday Morning	Weekday Evening
	Peak Hour	Peak Hour	Peak Hour	Peak Hour
<i>Washington Street at King Street</i>				
Eastbound Left	1.3%	4.0%	1.0%	4.4%
Eastbound Through	3.5%	3.1%	2.9%	2.5%
Westbound Through	3.8%	3.6%	2.9%	3.0%
Westbound Right	5.3%	17.9%	6.2%	28.9%
Southbound Left	11.3%	6.4%	14.8%	10.4%
Southbound Right	1.8%	1.1%	1.5%	1.2%

**TABLE R2  
INTERSECTION CAPACITY ANALYSIS RESULTS  
WASHINGTON STREET AT KING STREET**

Time Period	Approach	2030 Build (From TIA)				2030 Build (Revised Truck %)			
		v/c <sup>1</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	95 <sup>th</sup> Q	v/c	Delay	LOS	95 <sup>th</sup> Q
<i>Weekday Morning Peak Hour</i>	EB Washington St Left	0.52	9	A	109	0.52	9	A	111
	EB Washington St Through	0.52	6	A	224	0.53	6	A	234
	WB King St Through/Right	0.80	27	C	364	0.79	27	C	366
	SB Washington Street Left	0.25	35	C	68	0.27	35	C	68
	<u>SB Washington Street Right</u>	<u>0.20</u>	<u>≤5</u>	<u>A</u>	<u>34</u>	<u>0.20</u>	<u>4</u>	<u>A</u>	<u>34</u>
	<b>OVERALL</b>	<b>0.80</b>	<b>14</b>	<b>B</b>	<b>n/a<sup>4</sup></b>	<b>0.79</b>	<b>14</b>	<b>B</b>	<b>n/a</b>
<i>Weekday Evening Peak Hour</i>	EB Washington St Left	0.44	10	A	68	0.45	10	A	72
	EB Washington St Through	0.41	6	A	156	0.41	6	A	155
	WB King St Through/Right	0.89	33	C	552	0.89	34	C	552
	SB Washington Street Left	0.55	45	D	146	0.58	47	D	148
	<u>SB Washington Street Right</u>	<u>0.37</u>	<u>8</u>	<u>A</u>	<u>91</u>	<u>0.37</u>	<u>8</u>	<u>A</u>	<u>91</u>
	<b>OVERALL</b>	<b>0.89</b>	<b>21</b>	<b>C</b>	<b>n/a</b>	<b>0.89</b>	<b>21</b>	<b>C</b>	<b>n/a</b>

<sup>1</sup>Volume-to-capacity ratio

<sup>2</sup>Average control delay per vehicle (in seconds)

<sup>3</sup>Level of service

<sup>4</sup>n/a = not applicable

As summarized in Table R1 and R2, re-calculation of the heavy vehicles increases at the signalized intersection of Washington Street at King Street under Build conditions results in no material changes in intersection operations compared to Build conditions as summarized in the April 2023 TIAs. Therefore, the findings and conclusions of the TIAs remain valid.

**BETA2:** Comment addressed. No further comment.

Queue analysis indicates that the 95<sup>th</sup> percentile queue during the afternoon peak hour for the Washington Street southbound left turn lane extends beyond the 100-foot storage length by up to 50 feet.

The off-site mitigation consisted of the developer working with the Town of Franklin to “diagnose and repair” the vehicle detection system issues at the King Street and Washington Street intersection. BETA agrees with this mitigation.

#### FIELD VISIT & OBSERVATIONS

BETA conducted field site visits on Thursday, June 8, 2023, during the morning and afternoon peak periods to review existing traffic operations.

Tractor Trailers were observed to have a challenging time turning left into and out of Financial Park due to the tight geometry and must slow down entering the driveway which causes traffic to back up as they are trying to take the left.



Figure 1: Truck turning right out of Financial Park

Trucks turning left from Washington Street onto King Street were observed taking up both Washington Street lanes to make the turn which queues up vehicles or getting stuck within the intersection and then backing up in order to renegotiate the movement (shown Figure 2 photo).

BETA's understanding is that residents on Ivy Lane experience trucks on their street related to the Financial Park Drive development. Although BETA did not observe this type of activity during the field observations, we kept this feedback in mind during observations. During our field observations we noticed that the Financial Park Drive development is not clearly defined with signs on Washington Street approaching the driveway in both the northbound and southbound directions. It is possible trucks miss the entrance to Financial Park due to not being able to see the sign, so they turn around on Ivy Lane. In addition, exiting Financial Park Drive there is a "Trucks Right Turn Only" sign (shown in the Figure photo). This could also impact Ivy Lane such that trucks may turn right from the driveway and then turn around on Ivy Lane to travel northbound.



Figure 2: Truck stuck in the intersection while taking a left turn from Washington Street onto King Street.

T11. Consideration should be given to installing signage for Franklin Park approaching the driveway on Washington Street in both directions.

MDM: To enhance driver awareness and visibility of the Financial Park Drive intersection with Washington Street, the Proponent will install an enhanced monument sign at the Financial Park Drive intersection with Washington Street. The Proponent will also install advanced signage on the Washington Street approaches to Financial Park Drive if desirable by the Town.

BETA2: Information has been provided. Signage will be provided if the Board decides to install additional signing.

MDM2: The proponent will continue to work with the Town relative to additional signage. No further response required.

BETA3: BETA defers to the preference of the Board.

T12. Consideration should be given to providing a sign near Ivy Lane to deter truck traffic.

MDM: A review of the turning movement count data for the Financial Park Drive intersection with Washington Street indicated zero (0) articulated trucks entering the Site from the north (right-in) and zero (0) articulated trucks exiting the Site to the north (left-out) on Washington Street.

MDM collected supplemental video based automatic traffic recorder (ATR) counts along Ivy Lane and Washington Street between Financial Park Drive and Ivy Lane over two weekdays

(Wednesday, June 28, 2023, and Thursday, June 29, 2023) between the core truck traffic hours (4:00 AM to 6:00 PM) for the existing warehouse uses Imperial Dade and Champagne Logistics. The supplemental data identified zero (0) articulated trucks using Ivy Lane. Likewise, the video data identified zero (0) trucks pulling over along the shoulder of Washington Street near Ivy Lane during this period. That said, the Proponent has been proactive and has spoken to the existing warehouse user’s management and operations staff regarding the feedback received from the Town and that no trucks should be parking and/or idling along Washington Street. MDM notes that the facilities do not have gatehouses and there are ample staging opportunities on-site if required. If desired by the Town, the Proponent will install no parking signage along Washington Street between Financial Park Drive and Ivy Lane.

**BETA2:** Information has been provided. Signage will be provided if the Board decides to install signing.

**MDM2:** The proponent will continue to work with the Town. No further response required.

**BETA3:** BETA defers to the preference of the Board.

**ADDITIONAL COMMENTS**

T13. Recommend providing recent speed data for Washington Street near Financial Park Drive.

**MDM:** Vehicle speeds were obtained for Washington Street using radar recorder devices. The regulatory travel speed along Washington Street is 40 mph. Speed data for the northbound travel direction was obtained along Washington Street just south of Ivy Lane and speed data for the southbound travel direction was obtained along Washington Street to the north of Financial Park Drive. Table R3 presents a summary of the travel speed data collected for Washington Street adjacent to Financial Park Drive. Detailed speed data is provided in the Attachments.



Figure 3: Financial Park Drive approach to Washington Street

**TABLE R3  
SPEED STUDY RESULTS – Washington Street**

Travel Direction	Posted Speed Limit <sup>1</sup>	Travel Speed	
		Mean <sup>2</sup>	85 <sup>th</sup> Percentile <sup>3</sup>
Northbound	40	35	39
Southbound	40	37	42

<sup>1</sup>Regulatory speed limit in mph

<sup>2</sup>Arithmetic mean in mph

<sup>3</sup>The speed at or below which 85 percent of the vehicles are traveling in mph

As summarized in Table 2, the mean (average) travel speed on Washington Street was observed to be 35 mph for the northbound direction and 37 mph in the southbound direction; the 85th percentile travel speed was observed to be 39 mph in the northbound direction and 42 mph in the southbound direction consistent with the posted speed limit. The speed data are appropriate for use in the sight line evaluations provided under Response 14.

**BETA2:** Information provided. No further comment.

T14. Recommend providing sight distance analysis for Financial Park Drive at Washington Street.

**MDM:** An evaluation of sight lines was conducted at the Financial Park Drive intersection with Washington Street to ensure that minimum recommended sight lines are available to safely exit

onto Washington Street. The evaluation documents existing sight lines for vehicles as they relate to Washington Street with comparison to recommended guidelines for the regulatory speed limit.

SSD was estimated in the field using AASHTO standards for driver's eye (3.5 feet) and object height equivalent to the taillight height of a passenger car (2.0 feet) for the northbound and southbound Washington Street approaches to financial Park Drive. Table R4 presents a summary of the available SSD as they relate to Financial Park Drive and AASHTO's recommended SSD.

**TABLE R4  
STOPPING SIGHT DISTANCE SUMMARY  
WASHINGTON STREET APPROACHES TO FINANCIAL PARK DRIVE**

Approach/ Travel Direction	Available SSD	AASHTO Recommended <sup>1</sup>	
		Regulatory Speed Limit <sup>2</sup>	Observed 85 <sup>th</sup> Percentile Speed <sup>3</sup>
<i>Northbound</i>	>400 Feet	305 Feet	290 Feet
<i>Southbound</i>	>400 Feet	305 Feet	340 Feet

<sup>1</sup>Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet and adjustments for roadway grade.

<sup>2</sup>Regulatory Speed Limit is 40 mph NB and SB.

<sup>3</sup>85<sup>th</sup> Percentile travel speed is 39 mph NB and 42 mph SB.

As summarized in Table R4, analysis results indicate that the available sight lines exceed AASHTO's recommended SSD criteria for the northbound and southbound travel directions along Washington Street based on the regulatory (posted) and observed travel speeds.

Available ISD was estimated in the field using AASHTO standards for driver's eye (3.5 feet), object height (3.5 feet) and decision point (between 8 feet and 14.5 feet from the edge of the travel way) for the northbound and southbound directions along Washington Street. Additionally, ISD calculations using the time gap adjustment for trucks were estimated for the northbound and southbound directions along Washington Street. Table R5 presents a summary of the available ISD for the departure from the Financial Park Drive and AASHTO's minimum recommended ISD.

**TABLE R5  
INTERSECTION SIGHT DISTANCE SUMMARY  
FINANCIAL PARK DRIVE DEPARTURES TO WASHINGTON STREET**

Approach/ Travel Direction	Available ISD	AASHTO Minimum <sup>1</sup>	AASHTO Ideal <sup>1</sup>
		Observed 85 <sup>th</sup> Percentile Speed <sup>3</sup>	Regulatory Speed Limit <sup>2</sup>
<i>Passenger Vehicle</i>			
<i>Looking North</i>	>700 Feet	340 Feet	385 Feet
<i>Looking South</i>	>700 Feet	290 Feet	445 Feet
<i>Articulated Truck<sup>4</sup></i>			
<i>Looking North</i>	>700 Feet	340 Feet	680 Feet <sup>5</sup>
<i>Looking South</i>	>700 Feet	290 Feet	680 Feet

<sup>1</sup>Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet. Minimum value as noted represents SSD per AASHTO guidance.

<sup>2</sup>Regulatory Speed Limit is 40 mph NB and SB.

<sup>3</sup>85<sup>th</sup> Percentile travel speed is 39 mph NB and 42 mph SB.

<sup>4</sup>Heavy Vehicle ISD per AASHTO guidance is based on a driver height of eye at 7.6 instead of 3.5 feet for passenger vehicles.

<sup>5</sup>680 feet is the calculated ideal ISD when looking South, however it is recommended to be used for both directions since heavy vehicles often must utilize both lanes of the roadway in order to complete a right-turn movement from Financial Park.

The results of the ISD analysis presented in Table R5 indicate that the available sight lines looking from Financial Park Drive onto Washington Street will exceed the recommended sight line requirements from AASHTO for both passenger vehicles and heavy vehicles. The resulting ISD plan and profile for the passenger vehicles is shown in Exhibit 1 and the ISD plan and profile for articulated trucks is shown in Exhibit 2.

BETA2: Information provided. No further comment.

- T15. Tractor Trailers were observed to have a challenging time turning left into and out of Financial Park due to the tight geometry and must slow down entering the driveway which causes traffic to back up as they are trying to take the left.

MDM: The Applicant is developing proposed modifications to the Financial Park Drive approach to Washington Street. These modifications will be submitted under separate cover and are expected to include driveway widening and realignment to facilitate truck entrance and exit movements.

BETA2: BETA has not been provided with the above-mentioned concept plan and turning movement plan for review.

MDM2: The concept plan for the proposed improvements at the Financial Park Drive approach to Washington Street is shown in Exhibit 1. The proposed improvements include driveway widening and realignment in addition to the reconstruction of the driveway to better accommodate existing and future truck usage. AutoTurn for the proposed concept plan is provided in the Attachments for delivery/loading design vehicles (WB-62).

BETA3: For Exhibit 1, please label the existing and proposed edge of pavement, and clarify if the gored areas are just pavement markings or sloped/raised areas.

- T16. Trucks turning left from Washington Street onto King Street were observed taking up both Washington Street lanes to make the turn which queues up vehicles or getting stuck within the intersection and then backing up in order to renegotiate the movement."

MDM: Subject to all necessary permits and approvals, the Proponent is committed to continuing to work with the Town of Franklin to provide improvements at the signalized Washington Street intersection with King Street. The existing right-of-way at the intersection limits additional widening without encroachment onto private land which is not under the control of the Proponent. To enhance operations for large articulated trucks, proposed improvements by the Proponent include replacing the existing median island on the southbound approach with a scored concrete island and pavement markings. A conceptual improvement plan for the King Street at Washington Street intersection is shown in Exhibit 3 and associated AutoTurn® movement is provided in the Attachments. These modifications are expected to facilitate truck movements from Washington Street to King Street.

BETA2: Please provide truck movements for all turning movements at the intersection of Washington Street and King Street. BETA would not recommend the removal of the raised island at the intersection. The removal of the island could contribute to an increase in safety issues including vehicle crossover at the intersection. Consider taking another look at other geometric improvements that do not require the removal of the median.

MDM2: AutoTurn movements for a WB-62 design vehicle are provided in the Attachments for the Washington Street at King Street intersection with existing geometry and traffic controls. Note that as summarized in AASHTO under design vehicles, "...In many cases, operators of WB-67 and

larger vehicles pull the rear axles of the vehicle forward to maintain a kingpin-to-rear-axle distance of 41 feet, which makes the truck more maneuverable and is required by law in many jurisdictions. Were this practice is prevalent, the WB-62 may be used as the design for turning maneuvers... ". Field observations at the intersection over multiple days indicate that a WB-62 is the appropriate design vehicle for the intersection given the observed turning maneuvers and forward wheel positions on 53-foot trailers at the intersection. AutoTurn movements for a WB-62 design vehicle are provided in the Attachments for the Washington Street at King Street intersection with existing geometry and traffic controls.

BETA3: The largest truck anticipated to be accessing the site was stated to be a WB-67 and trucks have been observed either being unable to make the left turn from Washington Street to King Street or significantly encroaching the adjacent lane in the process of turning. The AutoTurn provided using a WB-62 shows the truck encroaching the adjacent lane when navigating the left turn from Washington Street, which is the same condition as exists today. Please provide a turning movement graphic, which would show an improvement in today's conditions, that shows a truck not encroaching the adjacent lane.

It appears that a land acquisition or easement will be needed to shift the sidewalk along the northeast corner of the intersection. Has consideration been given to widening the roadway to the north and shifting the center median to better accommodate the left turning trucks?

For Exhibit 2, please clarify if the intention is to provide a scored concrete truck apron as noted on the plans or a stamped concrete apron as shown on the graphic. Please label the existing and proposed edge of pavement, signs, and back of sidewalk for clarity.

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,  
BETA Group, Inc.



Jaklyn Centracchio, PE, PTOE  
Project Manager/Senior Traffic Engineer

cc: Amy Love, Town Planner  
Job No: 10519.05

# Town of Franklin

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## DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

**DATE:** September 20, 2023  
**TO:** Franklin Planning Board  
**FROM:** Department of Planning and Community Development  
**RE:** 100-200 Financial Way  
Site Plan Modification

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The DPCD has reviewed the above referenced Site Plan Modification application for the Monday, September 25, 2023 Planning Board meeting and offers the following commentary:

### **General:**

1. The site is located at 100-200 Financial Way, and located in the Industrial Zoning District.
2. The proposed project includes the construction of a 220,000 sq/ft warehouse and a 65,000 sq/ft warehouse.
3. Letters include BETA and MDM response for traffic.

### **Comments:**

1. The Planning Board expressed concern for trucks turning at the Washington and King St intersection.
2. Trucks pulling out of the site are currently crossing two lanes of traffic.
3. DPCD, BETA and MDM (applicant consultant) met and discussed options for the intersection and egress onto Washington Street. The applicant has come up with proposed changes.