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Traffic Impact Study

Proposed Bank

431 Main Street (Route 28)
Reading, MA

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Prepared for
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INTRODUCTION

McMahon, a Bowman company has completed a traffic impact study for the proposed bank to be located at 431 Main Street (Route 28) in Reading, Massachusetts. This traffic impact study is based on the Site Layout Plan prepared by Bohler Engineering, dated November 8, 2022. The purpose of this traffic impact study is to evaluate existing and projected traffic operations and safety conditions associated with the proposed redevelopment within the study area.

The traffic impact study is based on a review of existing traffic volumes, recent crash data, and the anticipated traffic generating characteristics of the proposed project. The study examines existing and projected traffic operations (both with and without the proposed redevelopment) at key intersections in the vicinity of the project site. The study area was selected based on a review of the surrounding roadway network and anticipated trip generating characteristics of the proposed project. This study provides a detailed analysis of traffic operations during the weekday morning and weekday afternoon peak hours, when the combination of adjacent roadway volumes and project trips is expected to be the greatest.

Based on the analysis presented in this study, the proposed redevelopment is not expected to have a significant impact on the safety and operations of the area roadways and intersections. The following report documents these findings.

Project Description

The existing site consists of a one-story 1,407 square foot (sf) brick building that is presently occupied by a gas station and automobile service center. The proposed project would include the demolition of the existing structure and the construction of a new 3,293 sf bank facility. The project site is bounded by a commercial land use to the south, Washington Street to the north, residential land uses to the east and Main Street (Route 28) to the west. Access to the project site would be provided via an unsignalized right-in right-out driveway located on Main Street, approximately 115 feet south of the Washington Street intersection, and via an unsignalized right-in right-out driveway located on Washington Street, approximately 165 feet east of the Main Street intersection. The proposed project would provide a total of 15 parking spaces including one accessible space adjacent to the building for patrons.

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Figure 1
Site Location Map
Proposed Bank
Reading, MA

Study Methodology

This traffic impact study evaluates existing and projected traffic operations within the study area for the weekday morning and weekday afternoon peak hour traffic conditions, when the combination of the adjacent roadway volumes and estimated project trips would be expected to be the greatest.

The study was conducted in three steps. The first step consisted of an inventory of existing traffic conditions within the project study area. As part of this inventory, manual turning movement counts were collected in the vicinity of the project site during the weekday morning and weekday afternoon peak periods. A field visit was also completed to document intersection and roadway geometries. Crash data in the vicinity of the project site driveways was obtained from the Massachusetts Department of Transportation (MassDOT) to determine if the intersection of Main Street (Route 28) at Washington Street or the project site driveways have any existing traffic safety deficiencies.

The second step of the study builds upon the data collected in the first step to establish the basis for evaluating potential transportation impacts associated with the projected future conditions. During this second step, the projected traffic demands associated with any planned future developments that could influence traffic volumes at the study area intersections were assessed. Consistent with MassDOT traffic study guidelines, 2023 Existing traffic volumes were forecasted to the future year 2030 to establish 2030 No Build (without project) conditions and 2030 Build (with project) conditions.

The third step of this study determined if measures were necessary to improve existing or future traffic operations and safety, minimize potential traffic impacts, and provide safe and efficient access to the proposed project site.

Study Area Intersections

Based on a review of the anticipated traffic generating characteristics of the proposed project and a review of the adjacent roadways serving the project site, the following study area intersections were selected for analysis:

- Main Street (Route 28) at Washington Street (signalized);
- Main Street (Route 28) at Southern Project Site Driveway (unsignalized);
- Washington Street at Eastern Project Site Driveway (unsignalized).

The traffic impact study documents existing and future traffic conditions for the study area intersections noted above.

EXISTING CONDITIONS

The existing conditions assessment included in this study consists of an inventory of intersection and roadway geometries, an inventory of traffic control devices, the collection of peak period traffic volumes, and a review of recent crash data. The existing conditions in the vicinity of the project site are summarized below.

Roadway Network

Main Street (Route 28)

Main Street (Route 28) generally extends in a north-south direction through the Town of Reading and is classified as a local roadway within the project area under Town of Reading jurisdiction. In the vicinity of the project site, Main Street (Route 28) provides access to commercial land uses and has two travel lanes in each direction, each measuring approximately 11 feet wide. No bicycle accommodations are provided. Sidewalks measuring five feet wide are provided on both sides of the roadway. Main Street (Route 28) has posted speed limits of 30 miles per hour (mph) in the vicinity of study area. A signalized railroad crossing is present approximately 280 feet south of the project site. The Massachusetts Bay Transportation Authority (MBTA) station on Lincoln Street provides service along this railroad for the Haverhill Line. According to the MBTA website, the Haverhill Line's current fall/winter schedule provides regular inbound service to Boston North Station beginning at 5:18 AM on weekdays and ending at 10:07 PM. Regular weekday outbound service from Boston North Station is provided from 6:28 AM to 11:28 PM. Weekend inbound and outbound schedules are reduced compared to the weekday service.

Washington Street

Washington Street generally extends in an east-west direction from Village Street to Woburn Street and is classified as a local roadway within the project area under Town of Reading jurisdiction. In the vicinity of the project site, Washington Street provides access to residential land uses and has one travel lane in each direction, with lanes in both directions measuring approximately 11 feet wide. Sidewalks measuring five feet wide are provided on both sides of the roadway. Washington Street has a posted speed limit of 25 mph in the eastbound direction and 30 mph in the westbound direction.

Existing Traffic Volumes

To assess peak hour traffic conditions, turning movement counts (TMCs) were conducted at the study area intersections during the weekday morning and weekday afternoon peak periods. A 24-hour automatic traffic recorder (ATR) count was also collected on Main Street (Route 28) south of the railroad crossing, in the vicinity of the project site.

TMCs were conducted on Wednesday, January 4, 2023, from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. The results of the turning movement counts are tabulated by 15-minute periods and are provided in Appendix A of this report. The four highest consecutive 15-minute intervals during each of these count periods constitute the peak hours that are the basis of the traffic analysis provided in this report. Based on a review of the peak period traffic data, the weekday morning peak hour occurs between 7:45 AM and 8:45 AM and the weekday afternoon peak hour occurs between 5:00 PM and 6:00 PM. The existing gas station trips obtained from the TMC's during the weekday morning and weekday afternoon peak hours are summarized below in Table 1.

Table 1: Existing Gas Station Volume Summary

Description	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
Existing Gas Station Trips	14	10	24	16	10	26

The 24-hour ATR count was conducted on Main Street (Route 28) south of the railroad crossing on Wednesday, January 4, 2023. The results of the ATR are provided in Appendix A of this report and are summarized in Table 2.

Table 2: Existing Traffic Volume Summary

Roadway	Direction	ADT[1]	AM Peak Hour[2]	PM Peak Hour[3]	85th Percentile Speed[4]
Main Street (Route 28)	Northbound	5,820	400	520	38
	Southbound	5,410	405	375	39
	Combined	11,230	805	895	--

1 Average Daily Traffic (vehicles per day)
2 Weekday morning peak hour volume, occuring from 7:45 - 8:45 AM
3 Weekday afternoon peak hour volume, occuring from 5:00 - 6:00 PM
4 85th percentile speed (mph)

As shown in Table 2, Main Street (Route 28) carries an average daily traffic (ADT) of approximately 11,230 vehicles per day (vpd), with approximately 5,820 vpd northbound and approximately 5,410 vpd southbound. Based on the results of the ATR, the 85th percentile speed on Main Street in the vicinity of the project site was recorded to be 38 mph in the northbound direction and 39 mph in the southbound direction.

Seasonal Variation

Based on MassDOT's 2019 Weekday Seasonal Factors, January traffic volumes on urban principal arterial roadways are lower than an average month. To provide a conservative analysis, the counted volumes were seasonally adjusted upward by six (6) percent to reflect an average month. The MassDOT seasonal adjustment data is provided in Appendix B of this report**.**

The resulting 2023 Existing weekday morning and weekday afternoon peak hour traffic volumes are presented in the traffic projection model provided in Appendix C and are displayed in Figure 2 and Figure 3.

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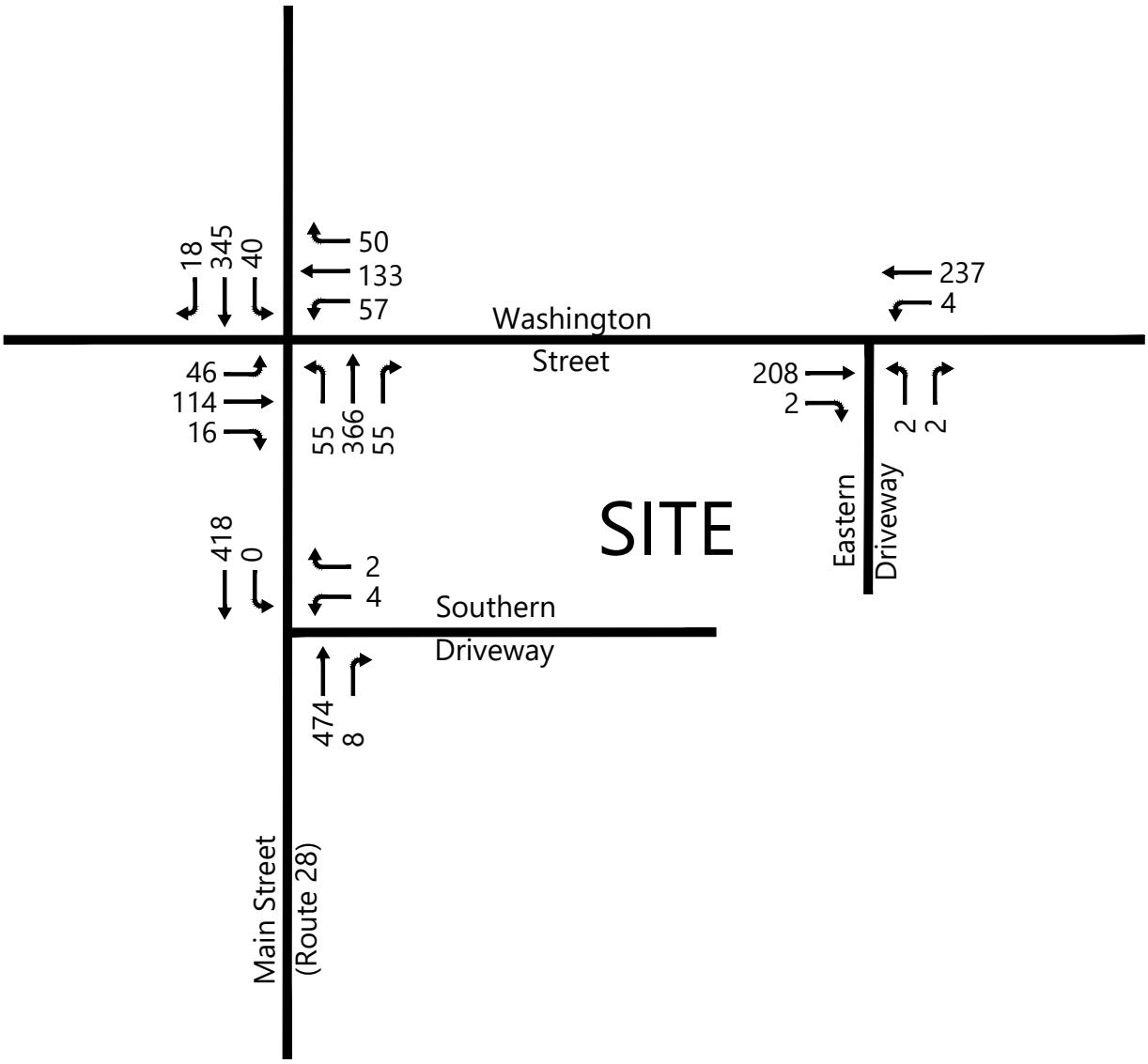

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Figure 2
2023 Existing Weekday Morning
Peak Hour Traffic Volumes
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Reading, Massachusetts

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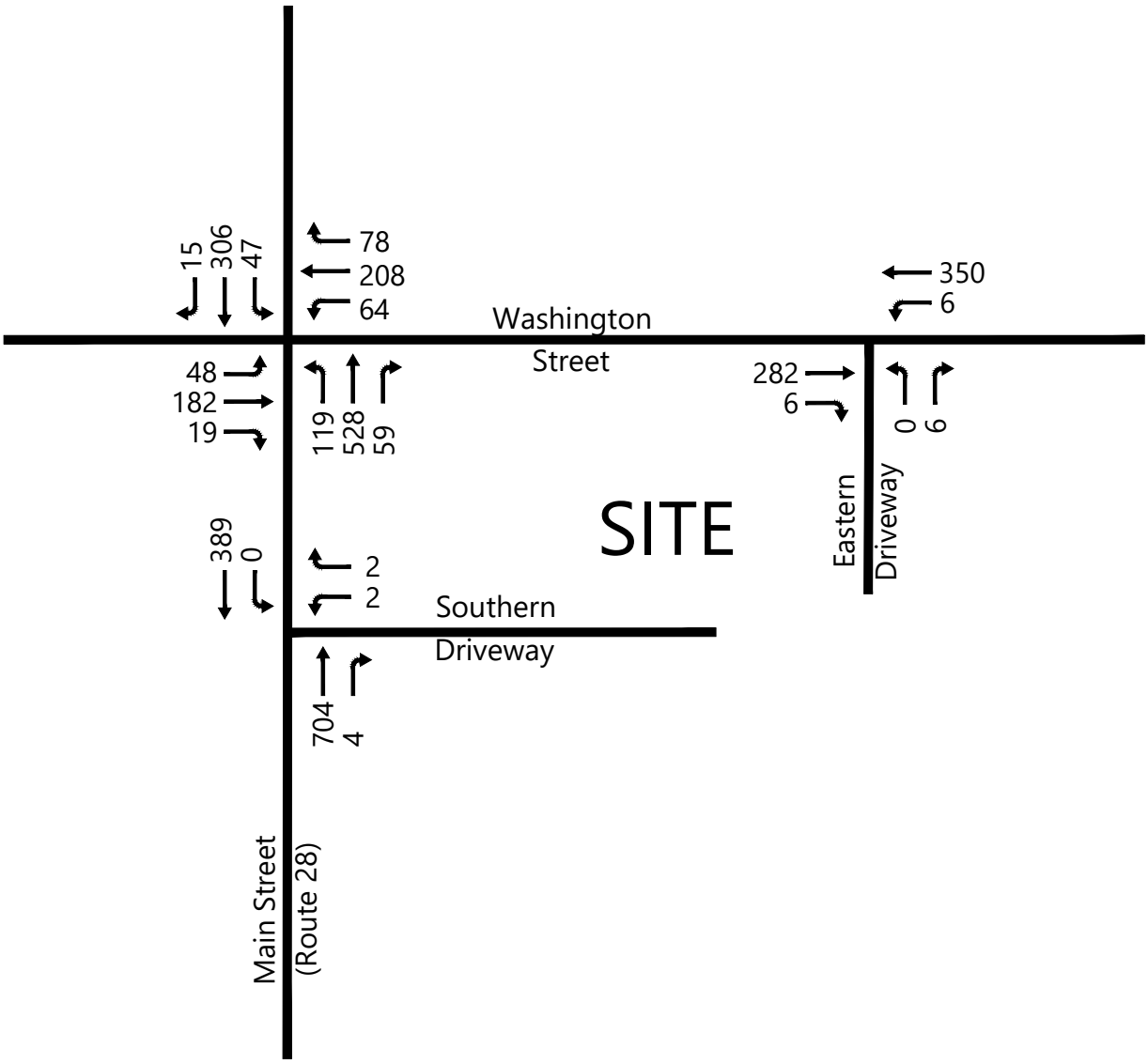

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Figure 3
2023 Existing Weekday Afternoon
Peak Hour Traffic Volumes
Proposed Bank
Reading, Massachusetts

Crash Summary

Crash data in the vicinity of the project site was obtained from MassDOT for the most recent five-year period available. This data includes complete yearly crash summaries for the years 2016 through 2020. A detailed summary of the crash data is provided in Appendix D.

The signalized intersection of Main Street (Route 28) at Washington Street is reported to have experienced 46 crashes during the five-year period analyzed, resulting in a crash rate of 1.36 crashes per million entering vehicles (MEV). This crash rate is higher than the MassDOT statewide and district-wide averages for signalized intersections of 0.78 and 0.89 crashes per MEV, respectively. Of these 46 crashes, 23 were angle collisions, thirteen were rear-end collisions, four were sideswipe crashes, four were single vehicle crashes, and two were head-on collisions. Two crashes resulted in personal injury, 42 crashes resulted in property damage only, and the severity of the remaining two were unknown.

The unsignalized intersection of Main Street (Route 28) at the Southern Project Site Driveway is reported to have experienced one crash during the five-year period analyzed, resulting in a crash rate of 0.03 crashes per MEV. This crash rate is lower than the MassDOT statewide and district-wide averages for unsignalized intersections of 0.57 and 0.61 crashes per MEV, respectively. The crash was a sideswipe collision that resulted in property damage only.

The unsignalized intersection of Washington Street at the Eastern Project Site Driveway is reported to have experienced one crash during the five-year period analyzed, resulting in a crash rate of 0.08 crashes per MEV, which is lower than the statewide and district-wide averages. The crash was a single vehicle collision that resulted in property damage only.

No crashes involving pedestrians or bicyclists were reported at the study area intersections within the time frame analyzed. None of the above intersections have been identified by MassDOT as a Highway Safety Improvement Program (HSIP) high crash location for the study period. The intersection of Main Street (Route 28) at Washington Street was included in a Road Safety Audit (RSA) prepared by Stantec for MassDOT in March 2017 as part of MassDOT project number 604804 which included roadway resurfacing and potential implementation of a road diet. Some improvements were identified for the intersection of Main Street (Roue 28) at Washington Street such as changes to lane usage at the signal, addition of a flashing yellow arrow, addition of retroreflective signal backplates, tree trimming, reconfiguration of site access driveways near the intersection, updating signal clearance timings, updating pedestrian signal accommodations, and providing bicycle lanes. The Town of Reading was identified as the responsible agency for any improvements since Main Street (Route 28) is under local jurisdiction. At the time of the site visit for this project, it did not appear that any of the RSA improvements at the signalized intersection had been implemented.

It should be noted that as part of this proposed redevelopment, the project site driveways serving the site are proposed to be reconfigured to be right-in and right-out only. The reconfiguration of the site driveways helps address the RSA comment regarding reconfiguration of site access driveways near the intersection and should improve the overall safety of the study area.

FUTURE CONDITIONS

To determine future traffic demands on the study area roadways and intersections, the 2023 Existing traffic volumes were projected to the future-year 2030, in accordance with MassDOT guidelines. Traffic volumes on the study area roadways in 2030 are considered to include existing traffic, as well as new traffic resulting from general growth in the study area and from other planned development projects, independent of the proposed project. The potential background traffic growth, unrelated to the proposed project, was considered in the development of the 2030 No Build (without project) peak hour traffic volumes. The estimated traffic increases associated with the proposed project were then added to the 2030 No Build volumes to reflect the 2030 Build (with project) traffic conditions. A more detailed description of the development of the 2030 No Build and 2030 Build traffic volume networks is presented below.

Future Roadway Improvements

Planned roadway improvement projects can impact travel patterns and future traffic operations. The MassDOT project information dashboard and the Town of Reading were consulted to develop an understanding of future area roadway improvement projects.

The MassDOT dashboard does not indicate any other major projects which would be anticipated to impact future traffic conditions at the study area intersections. Based on coordination with the Town of Reading, there are no planned roadway improvement projects in the vicinity of the Project site that would be anticipated to impact future traffic volumes or patterns.

Background Traffic Growth

Traffic growth is generally a function of changes in motor vehicle use and expected land development within the area. To establish the rate at which traffic on the study area roadways can be expected to grow during the seven-year forecast period (2023 to 2030), both planned area developments and historic traffic growth were reviewed.

Historic Traffic Growth

Background traffic growth accounts for changes in traffic volumes associated with general changes in population and other developments that are not known at this time. An annual background traffic growth rate of 0.5% per year, compounded annually, was established for the study area in conjunction with the Town of Reading to grow the 2023 traffic volumes to future year 2030.

Site-Specific Growth

Based on coordination with the Town of Reading Planning Department, three developments were identified in the vicinity of the project site that would be expected to impact traffic volumes within the study area. These include a proposed mixed-use redevelopment located at 459 Main Street (Route 28) approximately 200 feet north of the project site, a proposed mixed-use development at 531 Main Street (Route 28) approximately 0.1 miles north of the project site, and a proposed residential development at 6 Chute Street approximately 0.6 miles northwest from the project site. A description of each development and the methodology applied to account for traffic anticipated to be added to the study area is provided below.

The proposed mixed-use redevelopment located at 459 Main Street (Route 28) includes the demolition of the existing "128 Tire" auto body shop and construction of a four-story mixed-use building with twelve residential units on the upper three floors and up to 2,000 sf of ground-floor retail space. Vehicle trips associated with the proposed mixed-use redevelopment were applied to the study area based on information presented in the Traffic Impact Assessment Study dated March 3, 2022, prepared by TEC. The Traffic Impact Assessment Study includes the distribution of trips associated with the proposed mixed-use redevelopment during the weekday morning and weekday afternoon, peak hours. The trip generation and distribution information presented in the Traffic Impact Assessment Study were applied to the study area to develop the 2030 No Build traffic volumes and are provided in the traffic projection model in Appendix C.

The proposed development at 531 Main Street (Route 28) includes demolition of an existing 3,820 sf one-story building and construction of a new 4-story building with 19 residential units and 1,078 sf of retail space. Vehicle trips associated with the proposed mixed-use development were obtained from the Traffic Assessment Memorandum dated June 1, 2020, prepared by Vanasse & Associates, Inc. The Traffic Assessment Memorandum includes the trip generation associated with the proposed mixed-use development during the weekday morning and weekday afternoon peak hour trips. To be conservative, all the new entering and exiting project trips were considered to pass through the Main Street (Route 28) at Washington Street intersection. Therefore, the project trips presented in the Traffic Assessment Memorandum for the weekday morning and weekday afternoon peak hours were applied to the study area to develop the 2030 No Build traffic volumes, which are provided in the traffic projection model in Appendix C.

The proposed residential development at 6 Chute Street would include the construction of 3,000 sf of retail on the first floor and 33 apartment units on the upper three floors. Vehicle trips associated with the proposed residential development were obtained from the Traffic Impact and Access Study dated June 2021, prepared by Green International Affiliates, Inc. The Traffic Impact and Access Study includes the distribution of trips associated with the proposed residential development during the weekday morning and weekday afternoon peak hour trips. Vehicle trips associated with the 6 Chute Street project were applied to the study area to develop the 2030 No Build traffic volumes and are provided in the traffic projection model in Appendix C.

2030 No Build Traffic Volumes

The 2023 Existing peak hour traffic volumes were grown by 0.5% per year, compounded annually, over the seven-year study horizon to establish the 2030 No Build weekday morning and weekday afternoon peak hour traffic volumes, which are illustrated in Figure 4 and Figure 5, respectively. The 2030 No Build traffic volumes are documented in the traffic projection model presented in Appendix C of this report.

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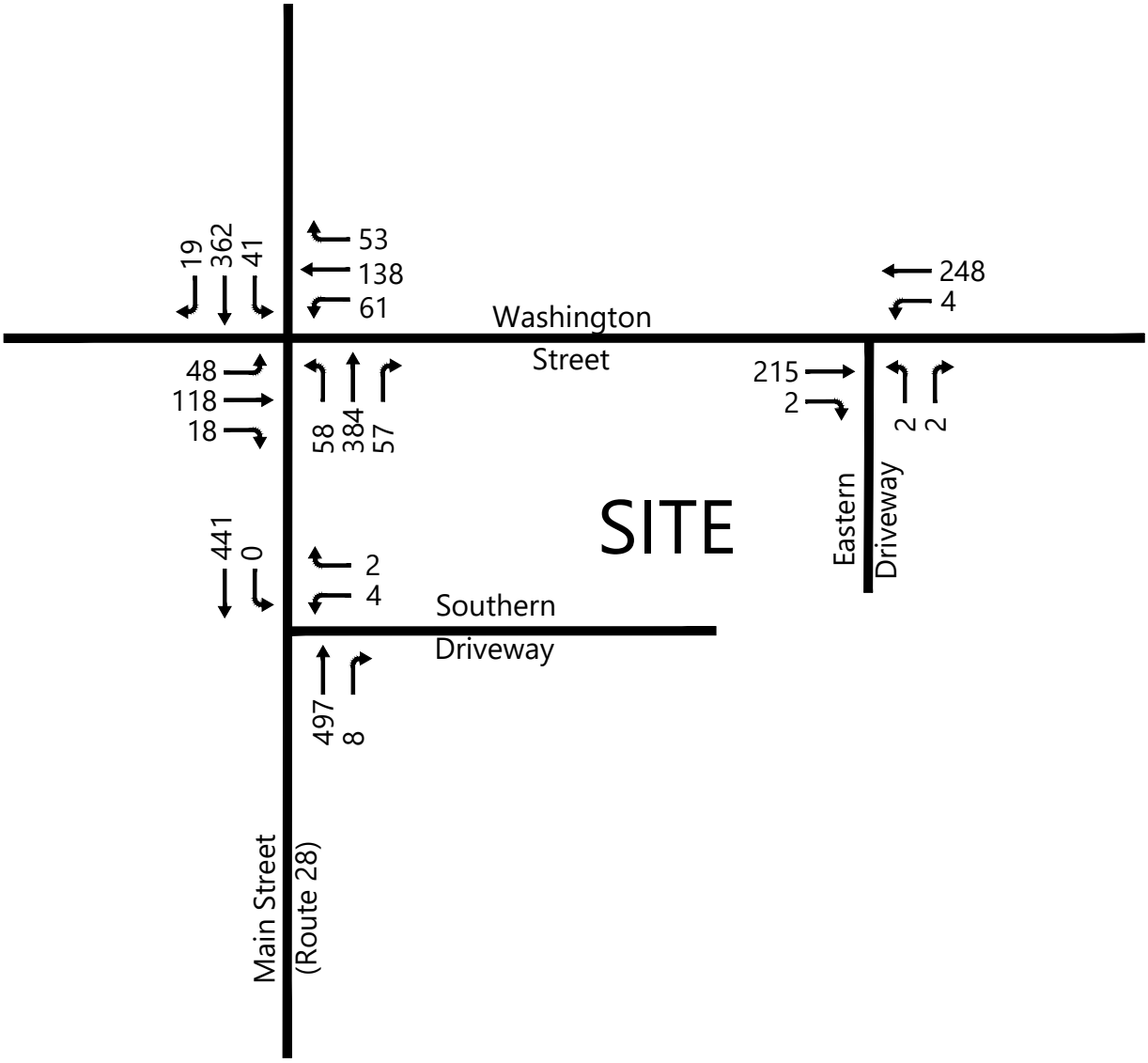

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Figure 4
2030 No Build Weekday Morning
Peak Hour Traffic Volumes
Proposed Bank
Reading, Massachusetts

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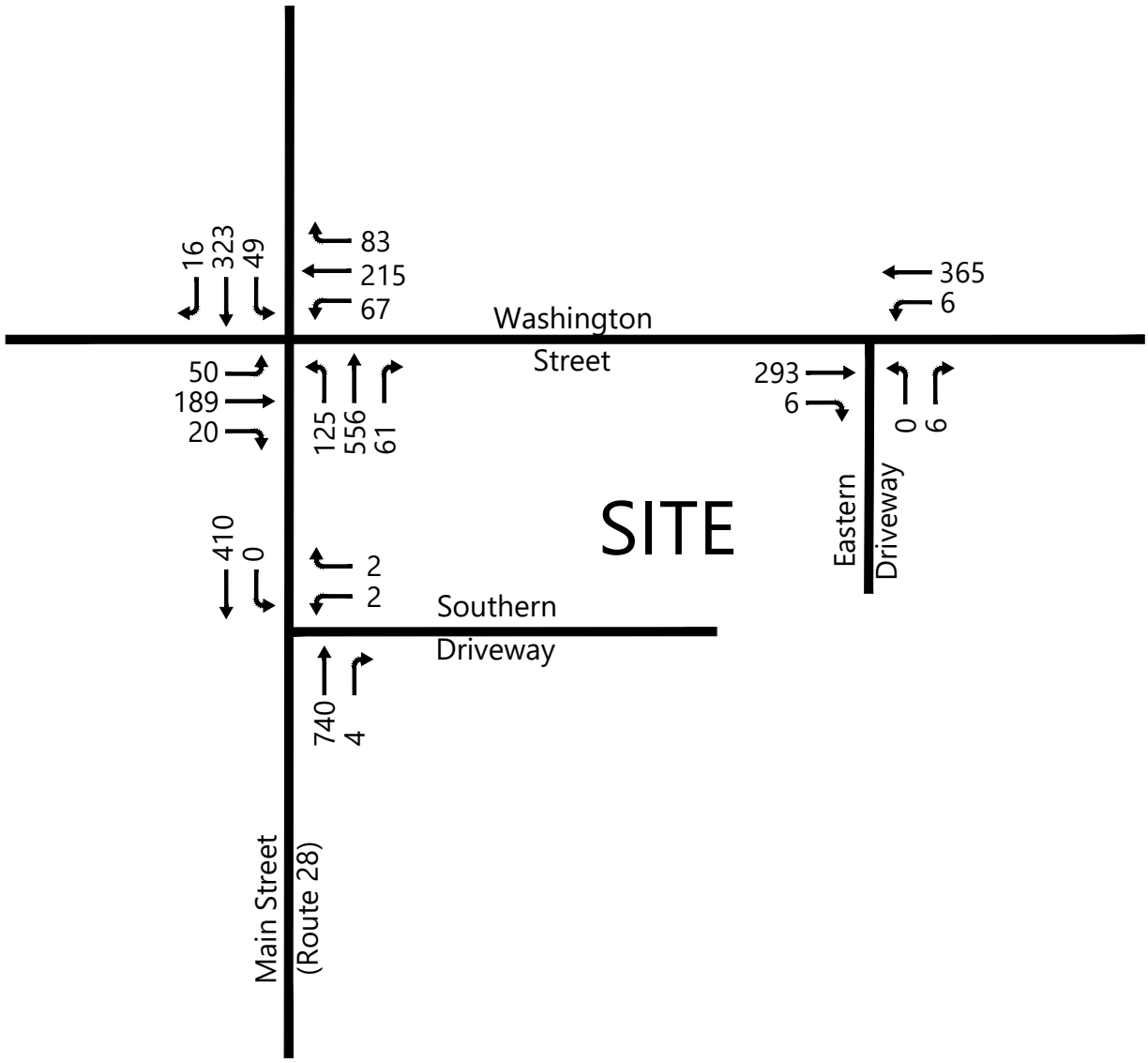

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Figure 5
2030 No Build Weekday Afternoon
Peak Hour Traffic Volumes
Proposed Bank
Reading, Massachusetts

Site-Generated Traffic

To estimate the number of vehicle trips associated with the proposed bank, the Institute of Transportation Engineers' (ITE) publication, *Trip Generation Manual*, *11th Edition*, was referenced. ITE is a national research organization of transportation professionals, and the *Trip Generation Manual*, *11th Edition* provides traffic generation information for various land uses compiled from studies conducted by members nationwide. This reference establishes vehicle trip rates (in this case expressed in trips per square foot) based on actual traffic counts conducted at similar types of existing land uses. Vehicle trip estimates for the proposed bank were developed based on data presented for LUC 911 (Walk-In Bank).

Not all trips to a Walk-in Bank are considered "new" trips. In fact, a significant portion of the total trips attracted to such land uses are "pass-by" trips. Since pass-by traffic is already on the adjacent roadways, this portion of the total development traffic is reflected in the existing, base traffic volumes, and does not represent additional traffic on the roadway network. Therefore, the total traffic volume associated with the project is reduced by the pass-by volume to estimate the "new" traffic generated by the project.

ITE does not provide a pass-by rate for LUC 911, but according to ITE data for the similar LUC 912 (Drive-in Bank), 29 percent of the weekday morning trips and 35 percent of the weekday afternoon peak hour trips can be attributed as pass-by trips. In order to estimate the number of pass-by trips associated with the bank project, the pass-by rates for LUC 912 were applied to the overall trip generation determined using LUC 911 for project site. A summary of the peak hour trip generation estimates for the project are summarized in Table 3 below.

Table 3: Estimated Project Trips

	Weekday Morning Peak Hour[3]			Weekday Afternoon Peak Hour[1]		
Description	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Proposed Walk-In Bank	11	8	19	18	22	40
-Pass By Trips[2]	-3	-3	-6	-7	-7	-14
New Project Trips	**8**	**5**	**13**	**11**	**15**	**26**

(1) ITE Land Use Code 911 (Walk-In Bank), based on 3,293 s.f. gross floor area.

(2) According to ITE, for Land Use Code 912 (Drive-In Bank) approximately 29% of weekday morning and 35% of weekday afternoon peak hour trips are attributed to pass-by trips.

(3) Correlation of weekday morning and weekday afternoon peak hour data established from ITE Land use Code 912 (Drive-In Bank).

As shown in Table 3, the proposed project is projected to result in approximately 13 new trips (8 entering vehicles and 5 exiting vehicles) during the weekday morning peak hour and approximately 26 new trips (11 entering vehicles and 15 exiting vehicles) during the weekday afternoon peak hour.

With consideration given to the existing trips at the gas station and automobile service center driveways on the site (previously summarized in Table 1) the proposed redevelopment is projected to result in an overall net reduction in trips to the site during both the weekday morning and weekday afternoon peak hours. However, to present a conservative analysis of future Build conditions, the existing trips associated with the gas station and automobile service center were not removed from the study area roadways.

Project Trip Distribution and Assignment

The traffic estimated to be generated by the proposed redevelopment was distributed onto the study area roadways and intersections based on the existing and logical travel patterns of the adjacent roadways, taking into consideration the proposed right-in/right-out access at both site driveways. The resulting arrival and departure patterns are presented in Figure 6 and are documented in the traffic projection model located in Appendix C.

The project-related traffic was then assigned to the surrounding roadway network based on the project trip distribution patterns presented in Figure 6. The resulting distributed new project trips are shown in Figure 7 and Figure 8 for the weekday morning and weekday afternoon peak hours, respectively.

2030 Build Traffic Volumes

To establish the 2030 Build peak hour traffic volumes, the distributed new project trips shown in Figure 7 and Figure 8 were then added to the 2030 No Build peak hour traffic volumes to reflect the 2030 Build peak hour traffic volumes. The resulting 2030 Build weekday morning and weekday afternoon, peak hour traffic volumes are presented in Figure 9 and Figure 10, respectively. The 2030 Build traffic volumes are documented in the traffic projection model presented in Appendix C of this report.

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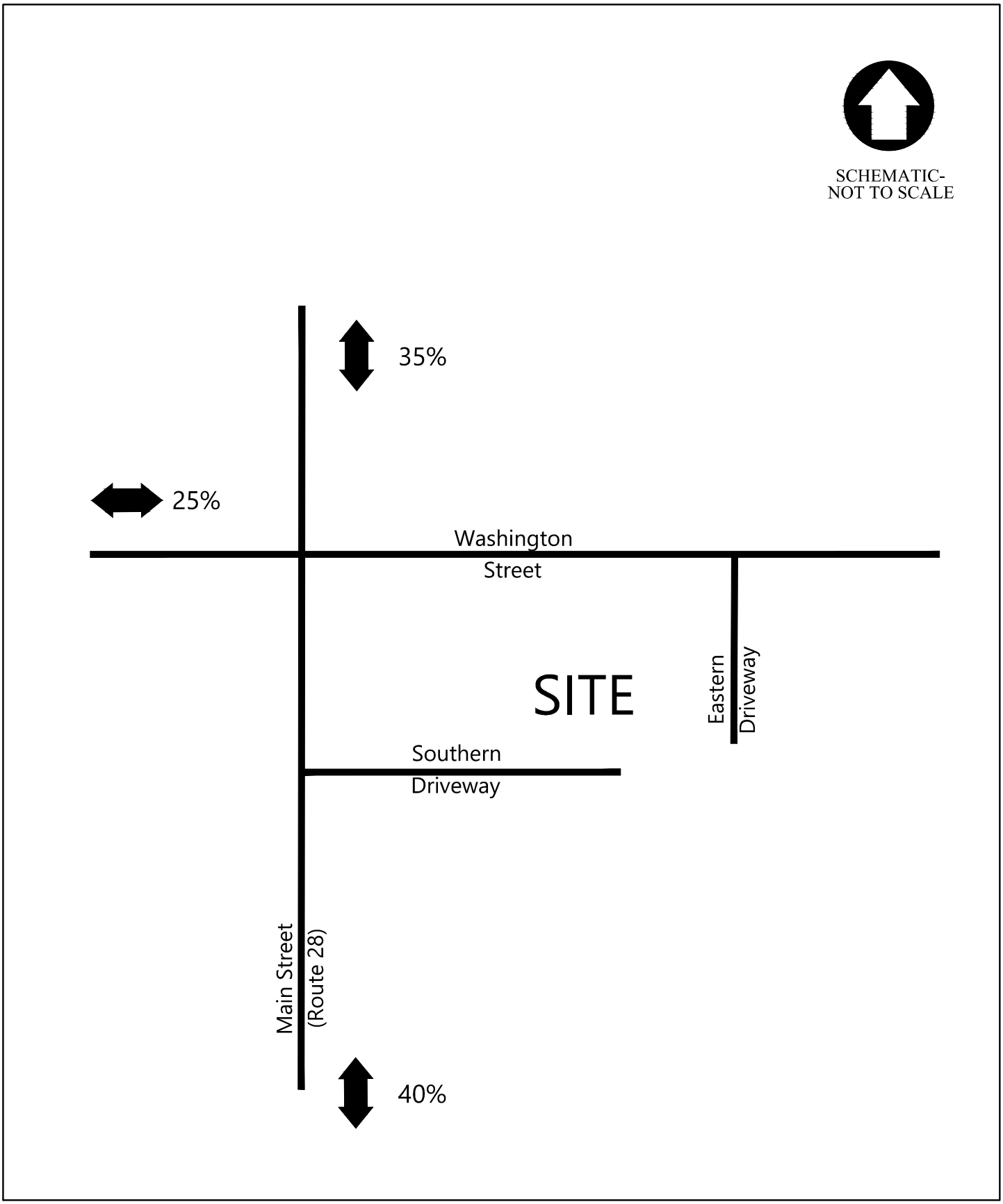

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Figure 6
Direction of Arrivals and Departures
Proposed Bank
Reading, Massachusetts

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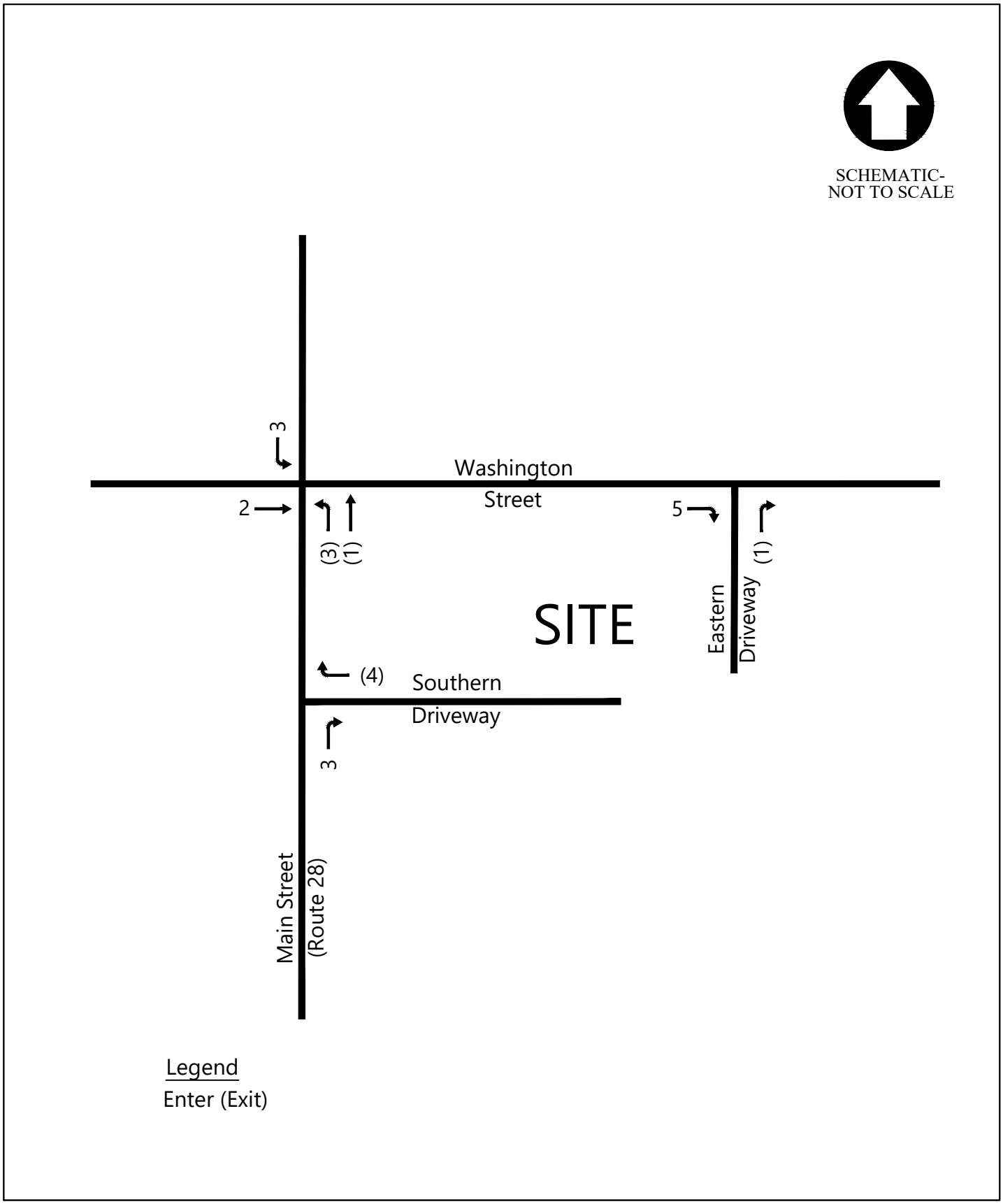

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Figure 7
Weekday Morning Peak Hour
New Project Trips
Proposed Bank
Reading, Massachusetts

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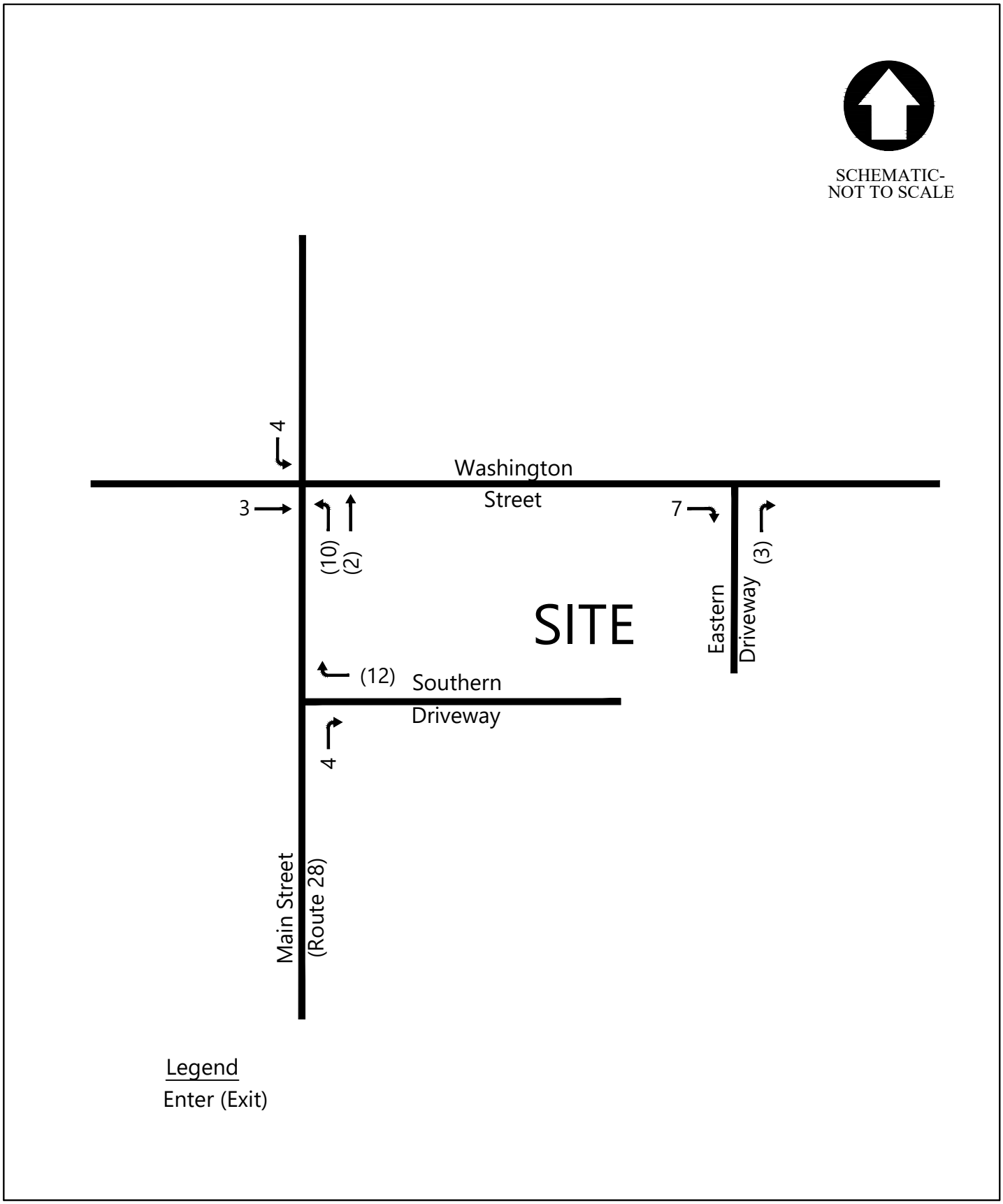

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Figure 8
Weekday Afternoon Peak Hour
New Project Trips
Proposed Bank
Reading, Massachusetts

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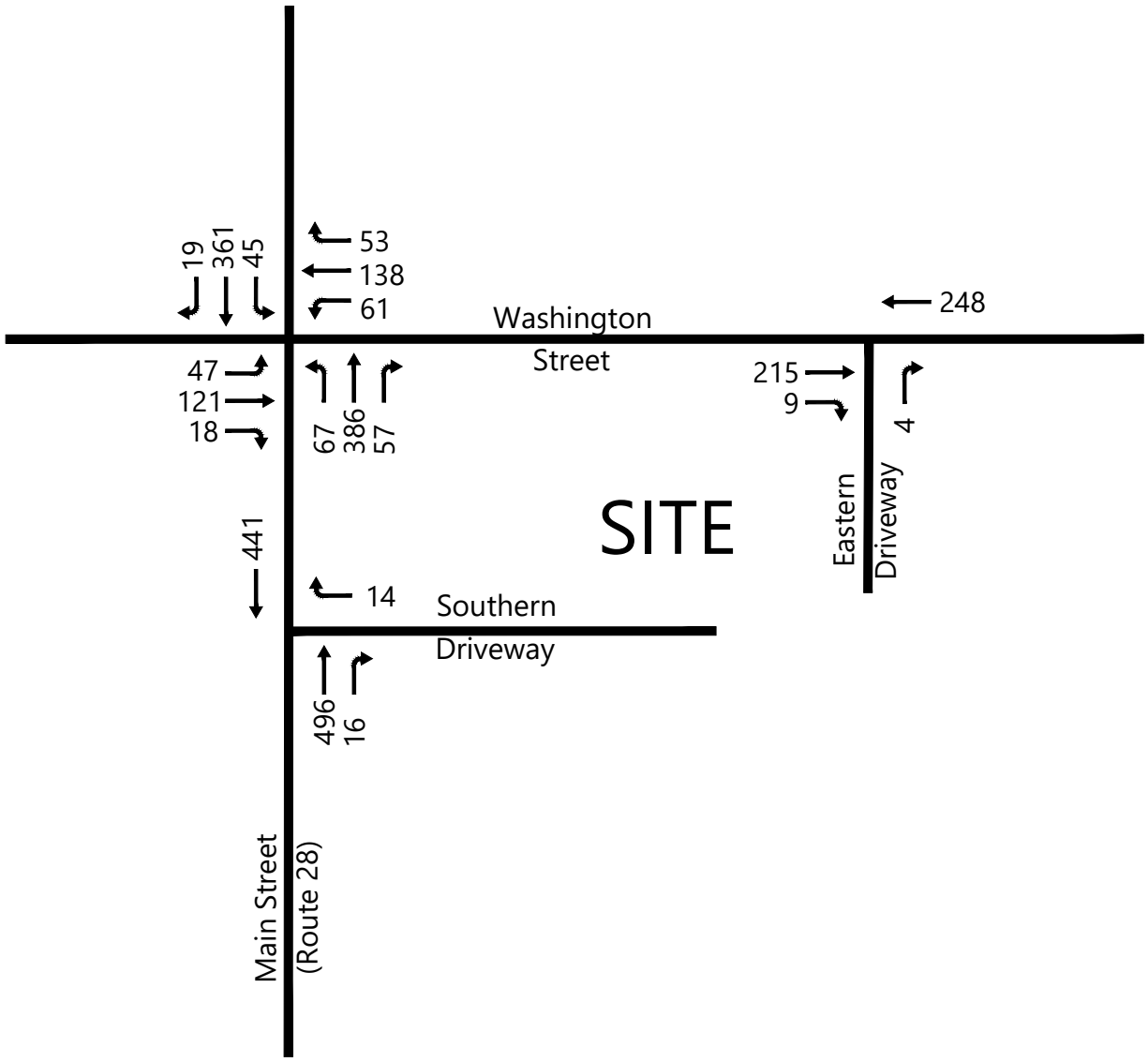

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Figure 9
2030 Build Weekday Morning
Peak Hour Traffic Volumes
Proposed Bank
Reading, Massachusetts

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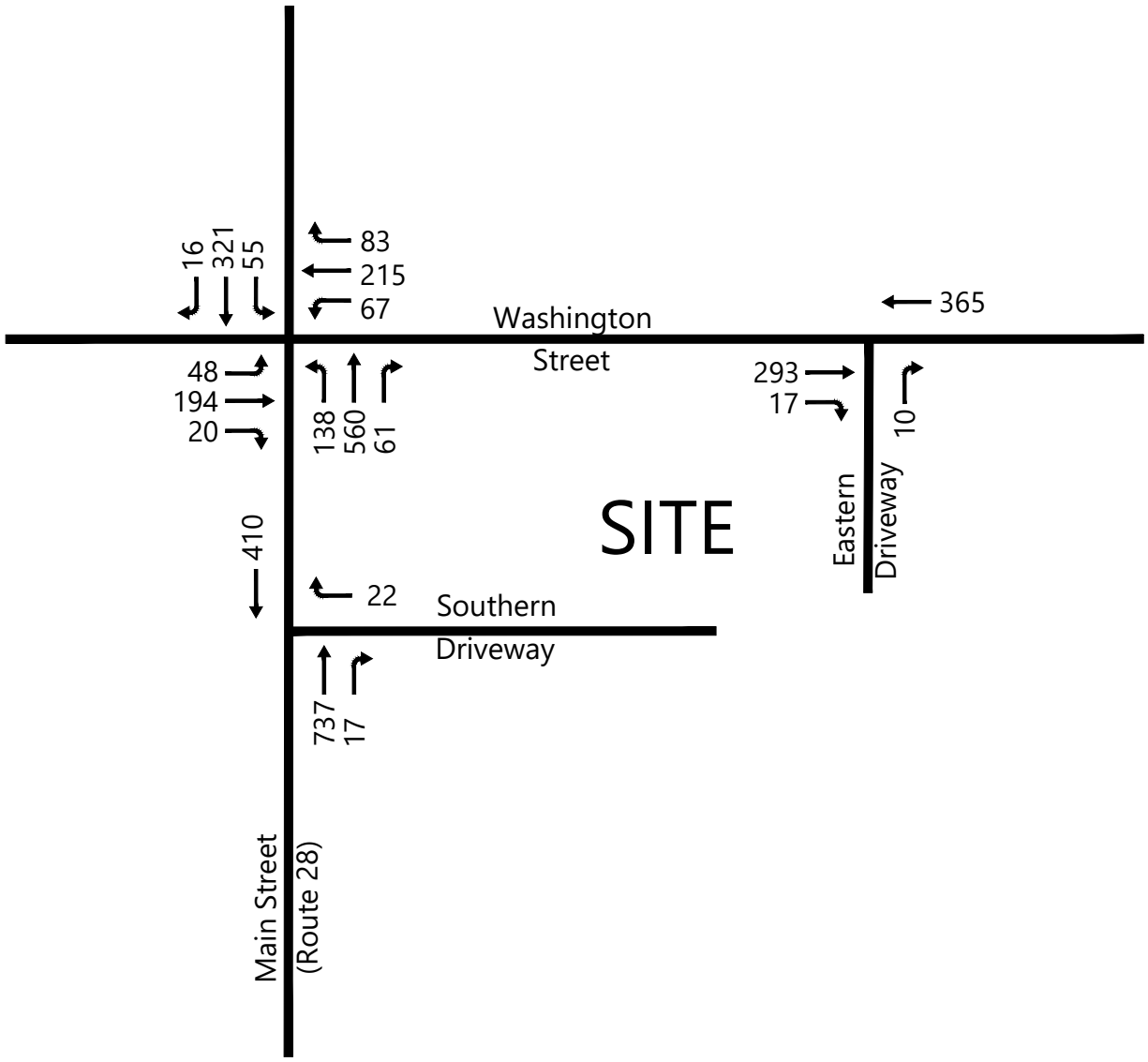

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Figure 10
2030 Build Weekday Afternoon
Peak Hour Traffic Volumes
Proposed Bank
Reading, Massachusetts

TRAFFIC OPERATIONS ANALYSIS

In previous sections of this report, the quantity of traffic at the study area intersections has been discussed. This section describes the overall quality of the traffic flow at the study area intersections during the weekday morning and weekday afternoon peak hours. As a basis for this assessment, intersection capacity analysis was conducted using the Synchro capacity analysis software at the study area intersections under the 2023 Existing, 2030 No Build, and 2030 Build peak hour traffic conditions. The analysis is based on Synchro capacity analysis methodologies and procedures contained in the *Highway Capacity Manual, 6th Edition* (HCM), which are summarized in Appendix E. A discussion of the evaluation criteria and a summary of the results of the capacity analysis are presented below.

Level-of-Service Criteria

Average total vehicle delay is reported as level-of-service (LOS) on a scale of A to F. LOS A represents delays of 10 seconds or less and LOS F represents delays in excess of 50 seconds for unsignalized intersections and greater than 80 seconds for signalized intersections. A more detailed description of the LOS criteria is provided in Appendix E.

Capacity Analysis Results

Intersection capacity analysis was conducted using Synchro capacity analysis software for the study area intersections to evaluate the 2023 Existing, 2030 No Build, and 2030 Build traffic conditions during the weekday morning and weekday afternoon peak hours. The peak hour traffic volumes utilized as part of this analysis are provided in the traffic projection model, attached in Appendix C of this report.

The Synchro capacity analysis results for the 2023 Existing, 2030 No Build and 2030 Build traffic conditions are presented in Appendix F, Appendix G, and Appendix H, respectively. The capacity analysis results for the study area intersections are presented in Table 4 and Table 5 below for the weekday morning and weekday afternoon peak hours, respectively. The results of the specific capacity analysis at the study area intersections are discussed below, with a more detailed summary of the capacity analysis for the study area intersection provided in Appendix I.

Table 4: Weekday Morning Intersection Capacity Analysis

			2023 Existing			2030 No Build			2030 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Main Street (Route 28) at	EB	L	C	28.0	0.18	C	28.9	0.16	C	29.3	0.16
Washington Street		TR	C	28.2	0.24	C	29.1	0.23	C	29.5	0.24
	WB	LTR	E	61.6	0.82	E	63.3	0.80	E	64.0	0.81
	NB	LTR	D	39.4	0.66	D	36.6	0.65	D	37.3	0.67
	SB	LTR	C	33.7	0.50	C	31.3	0.50	C	31.6	0.51
	Overall		*D*	*40.8*	*0.65*	*D*	*38.9*	*0.67*	*D*	*39.4*	*0.68*
Main Street (Route 28) at	WB	LR	B	13.7	0.03	B	14.0	0.02	-	-	-
Southern Site Driveway		R	-	-	-	-	-	-	B	10.1	0.02
Washington Street at	NB	LR	B	11.3	0.01	B	10.7	0.01	-	-	-
Eastern Site Driveway		R	-	-	-	-	-	-	A	9.5	0.01

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio

Table 5: Weekday Afternoon Intersection Capacity Analysis

			2023 Existing			2030 No Build			2030 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Main Street (Route 28) at	EB	L	C	31.9	0.17	C	33.9	0.16	C	34.2	0.16
Washington Street		TR	C	33.5	0.32	D	35.6	0.31	D	36.3	0.32
	WB	LTR	E	75.9	0.90	E	75.1	0.88	E	77.8	0.89
	NB	LTR	D	49.1	0.79	D	50.8	0.83	D	52.0	0.84
	SB	LTR	D	41.0	0.53	D	42.3	0.56	D	42.8	0.58
	Overall		*D*	*50.9*	*0.80*	*D*	*51.7*	*0.83*	*D*	*52.9*	*0.84*
Main Street (Route 28) at	WB	LR	B	14.7	0.02	C	15.9	0.01	-	-	-
Southern Site Driveway		R	-	-	-	-	-	-	B	11.3	0.04
Washington Street at	NB	LR	A	9.9	0.01	B	10	0.01	-	-	-
Eastern Site Driveway		R	-	-	-	-	-	-	B	10.1	0.02

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio

Main Street (Route 28) at Washington Street

As displayed above, the existing signalized intersection of Main Street (Route 28) at Washington Street is shown to currently operate at overall LOS D during both the weekday morning and weekday afternoon peak hours. Under 2030 No Build conditions (without the proposed project), the intersection is shown to continue operating at overall LOS D during both peak hours analyzed. With the proposed project in place, the intersection is shown to experience minor increases in overall average vehicle delay and is projected to operate at overall LOS D during all peak hours analyzed, with all approaches operating under capacity (volume-to-capacity ratio under 1.0). The proposed redevelopment would not be expected to result in a change in LOS on any approach to the intersection during either peak hour studied.

It should be noted that the 2030 No Build conditions are projected to be improved relative to 2023 Existing conditions. As per MassDOT guidance, under future conditions the peak hour factors of all approaches are adjusted to a typical value. This change in peak hour factor results in the modeled vehicle operations improving slightly, as shown in Tables 4 and 5.

Main Street (Route 28) at proposed Southern Project Site Driveway
With the proposed project in place under 2030 Build conditions, the westbound right-turn movement from the project site onto Main Street (Route 28) is shown to operate at LOS B during both the weekday morning and weekday afternoon peak hours, and well under capacity. This movement is projected to operate under capacity which indicates that exiting vehicles can be processed and the minimal delay experienced is a function of the volumes on Main Street (Route 28).

Washington Street at proposed Eastern Project Site Driveway
With the proposed project in place under 2030 Build conditions, the northbound exiting right-turn movement from the proposed Eastern Project Site Driveway onto Washington Street is shown to operate at LOS B under both peak hours analyzed, and well under capacity.

The exiting delay and vehicle queues at the project site driveways resulting from the proposed project are shown to be less than what is currently experienced at the existing gas station on site. The delay experienced at the project site driveways would be incurred by vehicles internal to the site and would not be anticipated to impact operations along Main Street (Route 28) or Washington Street.

Site Access and Circulation
Access to the project site would be reconfigured to provide one right-in/right-out site driveway on Main Street (Route 28) and one right-in/right-out site driveway on Washington Street. The proposed change in access to the project site should result in safer and more efficient maneuvers to and from the project site and at the adjacent intersection of Main Street (Route 28) at Washington Street. The RSA completed at the adjacent signalized intersection of Main Street (Route 28) at Washington Street identified the reconfiguration of these driveways as a safety improvement that would benefit the surrounding roadway and intersection network.

Project site access would be accommodated by a two-way circulatory parking lot. Signage and pavement markings are proposed to inform drivers of the site circulation. Based on a review of the site plan, the existing driveways and proposed parking lot is expected to allow for safe and efficient site access and circulation.

Sight Distance
A field review of the available sight distance was conducted at the proposed Southern Project Site Driveway on Main Street (Route 28) and the proposed Eastern Project Site Driveway on Washington Street. The American Association of State Highway and Transportation Officials (AASHTO) publication, *A Policy on Geometric Design, 2018 Edition*, defines minimum and recommended sight distances at intersections.

The minimum sight distance is based on the required stopping sight distance (SSD) for vehicles traveling along the main road. The recommended sight distance allows vehicles to enter the main street traffic flow without requiring the mainline traffic to slow to less than 70% of their speed and is referred to as intersection sight distance (ISD). According to AASHTO, "If the available sight distance

for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient time to anticipate and avoid collisions." The 85th percentile speed along Main Street (Route 28) was used to establish the stopping sight distance and intersection sight distance criteria at the southern project site driveway on Main Street (Route 28), while the posted 30 mph speed limit on Washington Street was used to establish the stopping sight distance and intersection sight distance criteria at the northern project site driveway, as shown in Table 6 and Table 7, respectively.

Table 6: Stopping Sight Distance Requirements

Site Driveway Location	Travelling	Speed Limit (mph)	85th % Speed (mph)	SSD[1] Required	Sight Distance Measured	Meets SSD?
Eastern Project Site Driveway at Washington Street[2]	Eastbound	30	-	200	>200	Yes
Southern Project Site Driveway at Main Street (Route 28)[3]	Northbound	30	39	290	>500	Yes

1 Minimum required stopping sight distance (see AASHTO equations 3-2 and 3-3).
2 Minimum sight distance requirement is based on the posted speed limit.
3 Minimum sight distance requirement is based on the 85th percentile speed.

As shown in Table 6, the available SSD for vehicles exiting via the project site driveways exceed the minimum SSD requirements for the posted speed limit on Washington Street and 85th percentile speed on Main Street (Route 28).

Table 7: Intersection Sight Distance Requirements

Site Driveway Location	Looking	Speed Limit (mph)	85th % Speed (mph)	ISD[1] Recommended	Sight Distance Measured	Meets ISD?
Eastern Project Site Driveway at Washington Street[2]	Left (West)	30	-	290	200	No
Southern Project Site Driveway at Main Street (Route 28)[3]	Left (South)	30	39	375	>500	Yes

1 Intersection sight distance (see AASHTO equations 9-1 and 9-2).
2 Recommended sight distance is based on the posted speed limit.
3 Recommended sight distance is based on the 85th percentile speed.

As shown above in Table 7, the available ISD for vehicles exiting the site onto Washington Street from the Eastern Project Site Driveway was measured to be approximately 200 feet looking to the west, which is less than the recommended AASHTO distances based on the posted speed limit. Sight distance looking back to the west is limited by the existing horizontal roadway curve and trees on the south side of Washington Street just west of the intersection with Main Street (Route 28). Given the proximity to the traffic signal at the intersection of Main Street (Route 28) at Washington Street vehicles traveling past the site at the Eastern Project Site Driveway are likely going less than the posted speed limit in many instances, and the ISD recommendation provided in Table 7 is considered to be conservative.

The existing available ISD for vehicles exiting the site via the Southern Project Site Driveway onto Main Street (Route 28) exceeds the ISD recommendations for the 85th percentile speed.

CONCLUSION

The proposed project involves the demolition of the existing gas station and automobile service center and the construction of a new 3,293 sf bank facility to be located at 431 Main Street (Route 28) in Reading, Massachusetts. The development would be accessed via one right-in/right-out driveway on Main Street (Route 28) and one right-in/right-out driveway on Washington Street. The unsignalized driveways would be under stop control for exiting site patrons. The right-in/right-out driveway configuration restricts left turning vehicles and reduces the number of potential conflict points at the site driveways. The proposed right-in/right-out driveways on Main Street (Route 28) and on Washington Street should improve traffic operations in the vicinity of the traffic signal at Main Street (Route 28)/Washington Street, and address safety concerns presented in the 2017 RSA.

The proposed project is estimated to generate approximately 13 new trips (8 entering vehicles and 5 exiting vehicles) during the weekday morning peak hour and approximately 26 new trips (11 entering vehicles and 15 exiting vehicles) during the weekday afternoon peak hour. When compared to the existing gas station and automobile center, the proposed redevelopment is projected to reduce the number of vehicle trips associated with the project site.

With the proposed project in place under 2030 Build conditions, operations at the project site driveways during the weekday morning and weekday afternoon peak hours are projected to operate at LOS B and under capacity. The project is not anticipated to have a noticeable impact on operations along Main Street (Route 28) or Washington Street, or at the signalized intersection of Main Street (Route 28) at Washington Street.

Based on a review of the analysis contained within this traffic impact study, the proposed redevelopment is not shown to have a significant impact on the overall traffic operations of the study area intersections and roadways.

McMAHON
a Bowman company

Appendix for Traffic Impact Study

Proposed Bank

431 Main Street (Route 28)

Reading, MA

Prepared by
McMahon
350 Myles Standish Boulevard, Suite 103
Taunton, MA 02780
508.823.2245

Prepared for
Bohler Engineering

January 2023

APPENDIX A

Traffic Count Data

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
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N/S: Main Street (Route 28)
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660A
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Cars & Peds

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	2	82	4	0	8	16	15	1	10	48	8	0	1	23	6	0	224
07:15 AM	3	71	5	1	10	37	16	0	7	57	13	0	2	32	6	0	260
07:30 AM	6	72	3	0	10	32	12	0	11	69	15	0	2	27	16	1	276
07:45 AM	3	82	8	0	12	46	16	1	8	79	11	1	2	22	13	0	304
Total	14	307	20	1	40	131	59	2	36	253	47	1	7	104	41	1	1064
08:00 AM	7	68	3	0	12	31	15	1	12	99	13	1	3	18	11	0	294
08:15 AM	5	80	12	0	10	21	10	2	13	78	12	0	5	34	13	0	295
08:30 AM	2	85	12	0	12	24	13	3	18	83	15	0	5	33	5	0	310
08:45 AM	7	63	6	0	6	13	10	0	7	79	15	0	2	17	15	0	240
Total	21	296	33	0	40	89	48	6	50	339	55	1	15	102	44	0	1139
Grand Total	35	603	53	1	80	220	107	8	86	592	102	2	22	206	85	1	2203
Apprch %	5.1	87.1	7.7	0.1	19.3	53	25.8	1.9	11	75.7	13	0.3	7	65.6	27.1	0.3	
Total %	1.6	27.4	2.4	0	3.6	10	4.9	0.4	3.9	26.9	4.6	0.1	1	9.4	3.9	0	

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	3	82	8	0	93	**12**	**46**	**16**	1	**75**	8	79	11	**1**	99	2	22	**13**	0	37	304
08:00 AM	**7**	68	3	0	78	12	31	15	1	59	12	**99**	13	1	**125**	3	18	11	0	32	294
08:15 AM	5	80	**12**	0	97	10	21	10	2	43	13	78	12	0	103	**5**	**34**	13	0	**52**	295
08:30 AM	2	**85**	12	0	**99**	12	24	13	**3**	52	**18**	83	**15**	0	116	5	33	5	0	43	**310**
Total Volume	17	315	35	0	367	46	122	54	7	229	51	339	51	2	443	15	107	42	0	164	1203
% App. Total	4.6	85.8	9.5	0		20.1	53.3	23.6	3.1		11.5	76.5	11.5	0.5		9.1	65.2	25.6	0		
PHF	.607	.926	.729	.000	.927	.958	.663	.844	.583	.763	.708	.856	.850	.500	.886	.750	.787	.808	.000	.788	.970

Transportation Data Corporation

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N/S: Main Street (Route 28)
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660A
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Trucks & Buses

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	5
07:15 AM	0	0	1	0	1	1	0	0	0	1	1	0	0	0	0	0	5
07:30 AM	0	0	1	0	1	1	0	0	0	4	0	0	0	1	1	0	9
07:45 AM	0	3	1	0	1	0	0	0	0	1	0	0	0	1	0	0	7
Total	0	3	4	0	3	3	1	0	0	7	2	0	0	2	1	0	26
08:00 AM	0	6	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7
08:15 AM	0	0	1	0	0	2	0	0	0	1	0	0	0	0	1	0	5
08:30 AM	0	1	1	0	0	1	0	0	1	3	0	0	0	0	0	0	7
08:45 AM	0	2	1	0	0	1	0	0	0	0	0	0	0	1	1	0	6
Total	0	9	3	0	0	4	0	0	1	4	1	0	0	1	2	0	25
Grand Total	0	12	7	0	3	7	1	0	1	11	3	0	0	3	3	0	51
Apprch %	0	63.2	36.8	0	27.3	63.6	9.1	0	6.7	73.3	20	0	0	50	50	0	
Total %	0	23.5	13.7	0	5.9	13.7	2	0	2	21.6	5.9	0	0	5.9	5.9	0	

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	0	**1**	0	1	**1**	**1**	0	0	**2**	0	1	**1**	0	2	0	0	0	0	0	5
07:30 AM	0	0	1	0	1	1	1	0	0	2	0	**4**	0	0	**4**	0	**1**	**1**	0	**2**	**9**
07:45 AM	0	3	1	0	4	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	7
08:00 AM	0	**6**	0	0	**6**	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	7
Total Volume	0	9	3	0	12	3	2	0	0	5	0	6	2	0	8	0	2	1	0	3	28
% App. Total	0	75	25	0		60	40	0	0		0	75	25	0		0	66.7	33.3	0		
PHF	.000	.375	.750	.000	.500	.750	.500	.000	.000	.625	.000	.375	.500	.000	.500	.000	.500	.250	.000	.375	.778

Transportation Data Corporation

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Client: McM/Shana Gare

File Name : 05660A
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Bikes by Direction

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	
Total %	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% App. Total	0	0	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.250

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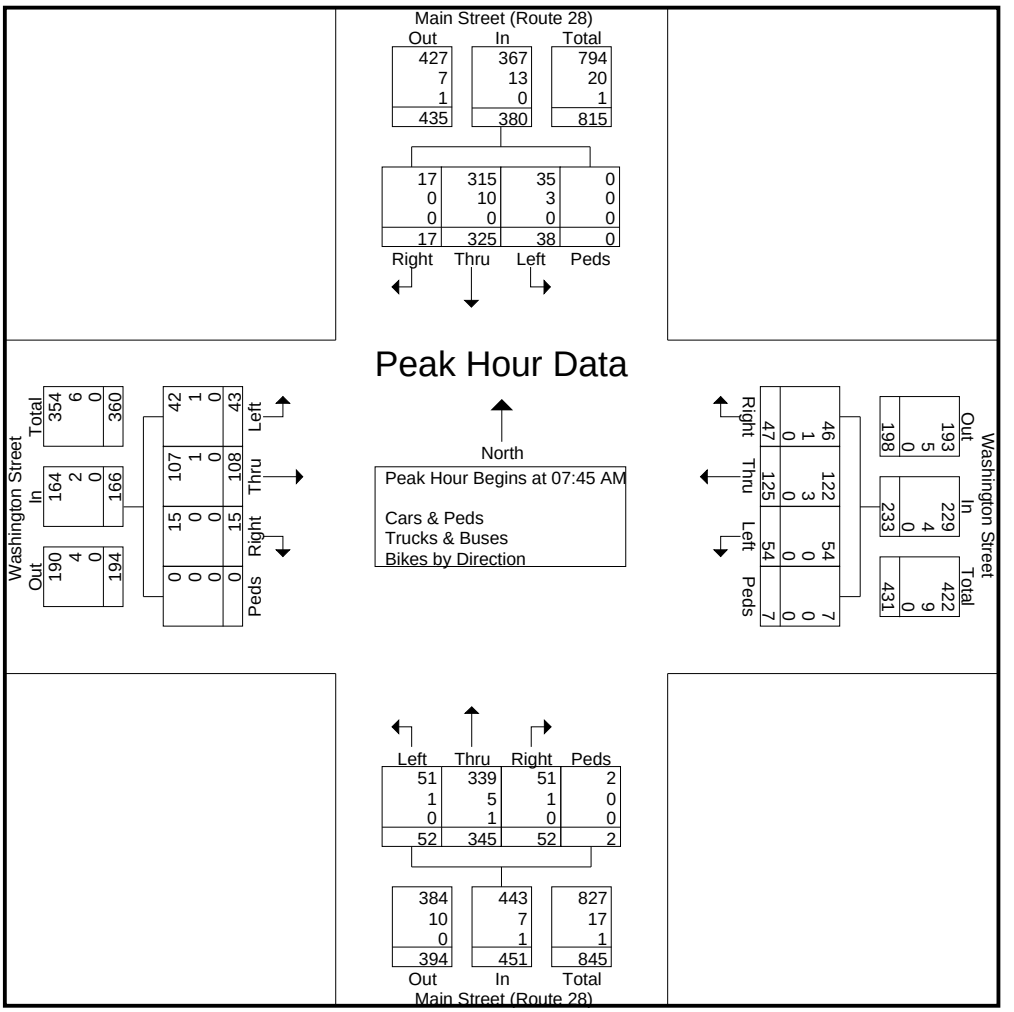
	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	3	85	9	0	97	**13**	**46**	**16**	1	**76**	8	80	11	**1**	100	2	23	13	0	38	311
08:00 AM	**7**	74	3	0	84	12	31	15	1	59	12	**99**	14	1	**126**	3	18	11	0	32	301
08:15 AM	5	80	**13**	0	98	10	23	10	2	45	13	80	12	0	105	**5**	**34**	**14**	0	**53**	301
08:30 AM	2	**86**	13	0	**101**	12	25	13	**3**	53	**19**	86	**15**	0	120	5	33	5	0	43	**317**
Total Volume	17	325	38	0	380	47	125	54	7	233	52	345	52	2	451	15	108	43	0	166	1230
% App. Total	4.5	85.5	10	0		20.2	53.6	23.2	3		11.5	76.5	11.5	0.4		9	65.1	25.9	0		
PHF	.607	.945	.731	.000	.941	.904	.679	.844	.583	.766	.684	.871	.867	.500	.895	.750	.794	.768	.000	.783	.970
Cars & Peds	17	315	35	0	367	46	122	54	7	229	51	339	51	2	443	15	107	42	0	164	1203
% Cars & Peds	100	96.9	92.1	0	96.6	97.9	97.6	100	100	98.3	98.1	98.3	98.1	100	98.2	100	99.1	97.7	0	98.8	97.8
Trucks & Buses	0	10	3	0	13	1	3	0	0	4	1	5	1	0	7	0	1	1	0	2	26
% Trucks & Buses	0	3.1	7.9	0	3.4	2.1	2.4	0	0	1.7	1.9	1.4	1.9	0	1.6	0	0.9	2.3	0	1.2	2.1
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0.1



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Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	2	82	5	0	8	17	16	1	10	49	9	0	1	23	6	0	229
07:15 AM	3	71	6	1	11	38	16	0	7	58	14	0	2	32	6	0	265
07:30 AM	6	72	4	0	11	33	12	0	11	73	15	0	2	28	17	1	285
07:45 AM	3	85	9	0	13	46	16	1	8	80	11	1	2	23	13	0	311
Total	14	310	24	1	43	134	60	2	36	260	49	1	7	106	42	1	1090
08:00 AM	7	74	3	0	12	31	15	1	12	99	14	1	3	18	11	0	301
08:15 AM	5	80	13	0	10	23	10	2	13	80	12	0	5	34	14	0	301
08:30 AM	2	86	13	0	12	25	13	3	19	86	15	0	5	33	5	0	317
08:45 AM	7	65	7	0	6	14	10	0	7	79	15	0	2	18	16	0	246
Total	21	305	36	0	40	93	48	6	51	344	56	1	15	103	46	0	1165
Grand Total	35	615	60	1	83	227	108	8	87	604	105	2	22	209	88	1	2255
Apprch %	4.9	86.5	8.4	0.1	19.5	53.3	25.4	1.9	10.9	75.7	13.2	0.3	6.9	65.3	27.5	0.3	
Total %	1.6	27.3	2.7	0	3.7	10.1	4.8	0.4	3.9	26.8	4.7	0.1	1	9.3	3.9	0	
Cars & Peds	35	603	53	1	80	220	107	8	86	592	102	2	22	206	85	1	2203
% Cars & Peds	100	98	88.3	100	96.4	96.9	99.1	100	98.9	98	97.1	100	100	98.6	96.6	100	97.7
Trucks & Buses	0	12	7	0	3	7	1	0	1	11	3	0	0	3	3	0	51
% Trucks & Buses	0	2	11.7	0	3.6	3.1	0.9	0	1.1	1.8	2.9	0	0	1.4	3.4	0	2.3
Bikes by Direction	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	3	85	9	0	97	**13**	**46**	**16**	1	**76**	8	80	11	**1**	100	2	23	13	0	38	311
08:00 AM	**7**	74	3	0	84	12	31	15	1	59	12	**99**	14	1	**126**	3	18	11	0	32	301
08:15 AM	5	80	**13**	0	98	10	23	10	2	45	13	80	12	0	105	**5**	**34**	**14**	0	**53**	301
08:30 AM	2	**86**	13	0	**101**	12	25	13	**3**	53	**19**	86	**15**	0	120	5	33	5	0	43	**317**
Total Volume	17	325	38	0	380	47	125	54	7	233	52	345	52	2	451	15	108	43	0	166	1230
% App. Total	4.5	85.5	10	0		20.2	53.6	23.2	3		11.5	76.5	11.5	0.4		9	65.1	25.9	0		
PHF	.607	.945	.731	.000	.941	.904	.679	.844	.583	.766	.684	.871	.867	.500	.895	.750	.794	.768	.000	.783	.970
Cars & Peds	17	315	35	0	367	46	122	54	7	229	51	339	51	2	443	15	107	42	0	164	1203
% Cars & Peds	100	96.9	92.1	0	96.6	97.9	97.6	100	100	98.3	98.1	98.3	98.1	100	98.2	100	99.1	97.7	0	98.8	97.8
Trucks & Buses	0	10	3	0	13	1	3	0	0	4	1	5	1	0	7	0	1	1	0	2	26
% Trucks & Buses	0	3.1	7.9	0	3.4	2.1	2.4	0	0	1.7	1.9	1.4	1.9	0	1.6	0	0.9	2.3	0	1.2	2.1
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.2	0	0	0	0	0	0.1

Transportation Data Corporation

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N/S: Main Street (Route 28)
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660AA
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Cars & Peds

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	5	52	17	3	28	41	18	8	8	91	20	5	0	40	5	4	345
04:15 PM	2	53	10	1	13	35	13	1	17	121	41	3	1	44	15	0	370
04:30 PM	10	62	5	1	12	29	9	3	13	114	25	1	4	45	12	0	345
04:45 PM	2	70	7	0	24	36	15	0	15	114	37	2	5	40	11	1	379
Total	19	237	39	5	77	141	55	12	53	440	123	11	10	169	43	5	1439
05:00 PM	4	75	9	0	18	48	14	2	17	117	26	1	5	43	8	0	387
05:15 PM	5	70	6	0	16	43	13	2	11	121	33	4	4	44	4	0	376
05:30 PM	1	67	13	0	21	57	22	0	10	132	27	1	5	49	16	0	421
05:45 PM	4	74	13	0	18	48	11	8	18	128	26	3	4	35	17	0	407
Total	14	286	41	0	73	196	60	12	56	498	112	9	18	171	45	0	1591
Grand Total	33	523	80	5	150	337	115	24	109	938	235	20	28	340	88	5	3030
Apprch %	5.1	81.6	12.5	0.8	24	53.8	18.4	3.8	8.4	72	18	1.5	6.1	73.8	19.1	1.1	
Total %	1.1	17.3	2.6	0.2	5	11.1	3.8	0.8	3.6	31	7.8	0.7	0.9	11.2	2.9	0.2	

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	**75**	9	0	88	18	48	14	2	82	17	117	26	1	161	**5**	43	8	0	56	387
05:15 PM	**5**	70	6	0	81	16	43	13	2	74	11	121	**33**	**4**	169	4	44	4	0	52	376
05:30 PM	1	67	**13**	0	81	**21**	**57**	**22**	0	**100**	10	**132**	27	1	170	5	**49**	16	0	**70**	**421**
05:45 PM	4	74	13	0	**91**	18	48	11	**8**	85	**18**	128	26	3	**175**	4	35	**17**	0	56	407
Total Volume	14	286	41	0	341	73	196	60	12	341	56	498	112	9	675	18	171	45	0	234	1591
% App. Total	4.1	83.9	12	0		21.4	57.5	17.6	3.5		8.3	73.8	16.6	1.3		7.7	73.1	19.2	0		
PHF	.700	.953	.788	.000	.937	.869	.860	.682	.375	.853	.778	.943	.848	.563	.964	.900	.872	.662	.000	.836	.945

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Client: McM/Shana Gare

File Name : 05660AA
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Trucks & Buses

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	2
04:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
04:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	4	0	0	0	0	0	0	0	0	0	1	1	0	0	6
05:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	3
Total	0	3	3	0	1	0	0	0	0	0	0	0	0	1	0	0	8
Grand Total	0	3	7	0	1	0	0	0	0	0	0	0	1	2	0	0	14
Apprch %	0	30	70	0	100	0	0	0	0	0	0	0	33.3	66.7	0	0	
Total %	0	21.4	50	0	7.1	0	0	0	0	0	0	0	7.1	14.3	0	0	

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	**1**	0	1	**1**	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	**1**	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	1	1	0	**2**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	**3**
Total Volume	0	3	3	0	6	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	8
% App. Total	0	50	50	0		100	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.750	.750	.000	.750	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.667

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Client: McM/Shana Gare

File Name : 05660AA
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Bikes by Direction

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	
Total %	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	0	**1**
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0	0		0	100	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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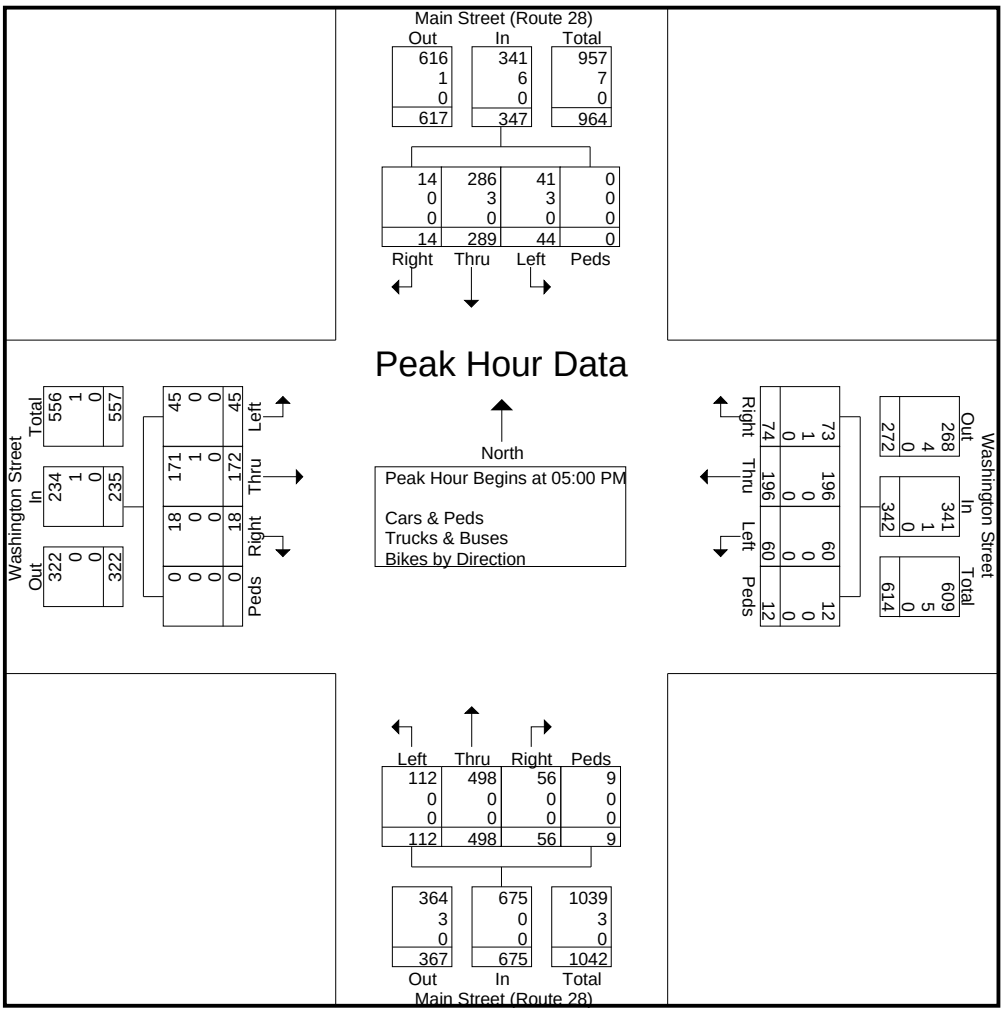
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	**75**	10	0	89	19	48	14	2	83	17	117	26	1	161	**5**	43	8	0	56	389
05:15 PM	**5**	71	6	0	82	16	43	13	2	74	11	121	**33**	**4**	169	4	44	4	0	52	377
05:30 PM	1	68	**14**	0	83	**21**	**57**	**22**	0	**100**	10	**132**	27	1	170	5	**49**	16	0	**70**	**423**
05:45 PM	4	75	14	0	**93**	18	48	11	**8**	85	**18**	128	26	3	**175**	4	36	**17**	0	57	410
Total Volume	14	289	44	0	347	74	196	60	12	342	56	498	112	9	675	18	172	45	0	235	1599
% App. Total	4	83.3	12.7	0		21.6	57.3	17.5	3.5		8.3	73.8	16.6	1.3		7.7	73.2	19.1	0		
PHF	.700	.963	.786	.000	.933	.881	.860	.682	.375	.855	.778	.943	.848	.563	.964	.900	.878	.662	.000	.839	.945
Cars & Peds	14	286	41	0	341	73	196	60	12	341	56	498	112	9	675	18	171	45	0	234	1591
% Cars & Peds	100	99.0	93.2	0	98.3	98.6	100	100	100	99.7	100	100	100	100	100	100	99.4	100	0	99.6	99.5
Trucks & Buses	0	3	3	0	6	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	8
% Trucks & Buses	0	1.0	6.8	0	1.7	1.4	0	0	0	0.3	0	0	0	0	0	0	0.6	0	0	0.4	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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File Name : 05660AA
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Main Street (Route 28) From North				Washington Street From East				Main Street (Route 28) From South				Washington Street From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	5	52	18	3	28	41	18	8	8	91	20	5	0	41	5	4	347
04:15 PM	2	53	11	1	13	35	13	1	17	121	41	3	2	44	15	0	372
04:30 PM	10	62	6	1	12	30	9	3	13	114	25	1	4	45	12	0	347
04:45 PM	2	70	8	0	24	36	15	0	15	114	37	2	5	40	11	1	380
Total	19	237	43	5	77	142	55	12	53	440	123	11	11	170	43	5	1446
05:00 PM	4	75	10	0	19	48	14	2	17	117	26	1	5	43	8	0	389
05:15 PM	5	71	6	0	16	43	13	2	11	121	33	4	4	44	4	0	377
05:30 PM	1	68	14	0	21	57	22	0	10	132	27	1	5	49	16	0	423
05:45 PM	4	75	14	0	18	48	11	8	18	128	26	3	4	36	17	0	410
Total	14	289	44	0	74	196	60	12	56	498	112	9	18	172	45	0	1599
Grand Total	33	526	87	5	151	338	115	24	109	938	235	20	29	342	88	5	3045
Apprch %	5.1	80.8	13.4	0.8	24	53.8	18.3	3.8	8.4	72	18	1.5	6.2	73.7	19	1.1	
Total %	1.1	17.3	2.9	0.2	5	11.1	3.8	0.8	3.6	30.8	7.7	0.7	1	11.2	2.9	0.2	
Cars & Peds	33	523	80	5	150	337	115	24	109	938	235	20	28	340	88	5	3030
% Cars & Peds	100	99.4	92	100	99.3	99.7	100	100	100	100	100	100	96.6	99.4	100	100	99.5
Trucks & Buses	0	3	7	0	1	0	0	0	0	0	0	0	1	2	0	0	14
% Trucks & Buses	0	0.6	8	0	0.7	0	0	0	0	0	0	0	3.4	0.6	0	0	0.5
Bikes by Direction	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Bikes by Direction	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0

	Main Street (Route 28) From North					Washington Street From East					Main Street (Route 28) From South					Washington Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	**75**	10	0	89	19	48	14	2	83	17	117	26	1	161	**5**	43	8	0	56	389
05:15 PM	**5**	71	6	0	82	16	43	13	2	74	11	121	**33**	**4**	169	4	44	4	0	52	377
05:30 PM	1	68	**14**	0	83	**21**	**57**	**22**	0	**100**	10	**132**	27	1	170	5	**49**	16	0	**70**	**423**
05:45 PM	4	75	14	0	**93**	18	48	11	**8**	85	**18**	128	26	3	**175**	4	36	**17**	0	57	410
Total Volume	14	289	44	0	347	74	196	60	12	342	56	498	112	9	675	18	172	45	0	235	1599
% App. Total	4	83.3	12.7	0		21.6	57.3	17.5	3.5		8.3	73.8	16.6	1.3		7.7	73.2	19.1	0		
PHF	.700	.963	.786	.000	.933	.881	.860	.682	.375	.855	.778	.943	.848	.563	.964	.900	.878	.662	.000	.839	.945
Cars & Peds	14	286	41	0	341	73	196	60	12	341	56	498	112	9	675	18	171	45	0	234	1591
% Cars & Peds	100	99.0	93.2	0	98.3	98.6	100	100	100	99.7	100	100	100	100	100	100	99.4	100	0	99.6	99.5
Trucks & Buses	0	3	3	0	6	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	8
% Trucks & Buses	0	1.0	6.8	0	1.7	1.4	0	0	0	0.3	0	0	0	0	0	0	0.6	0	0	0.4	0.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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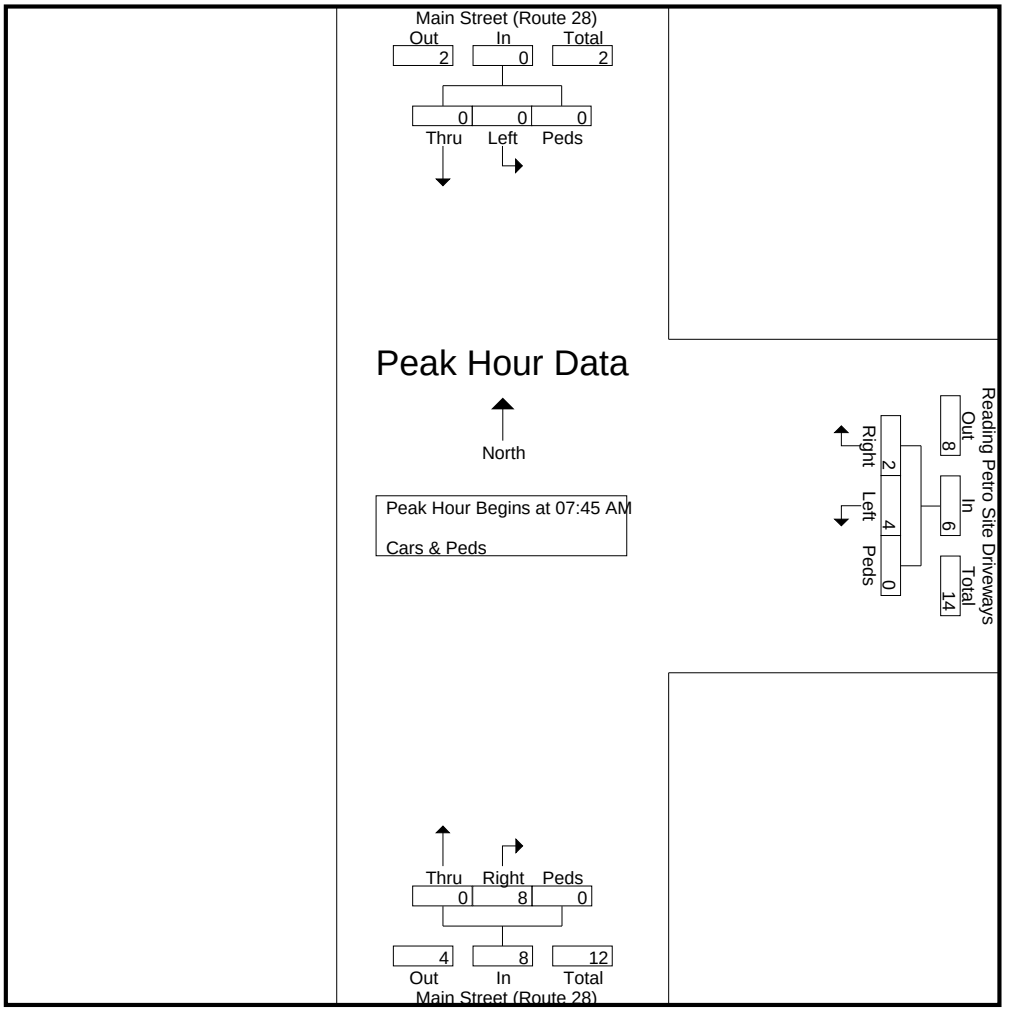
N/S: Main Street (Route 28)
E: Reading Petroleum Site Drives
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660B
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

	Main Street (Route 28) From North				Reading Petro Site Driveways From East				Main Street (Route 28) From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	**3**	0	**3**	2	0	0	2	**5**
08:00 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
08:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
08:30 AM	0	0	0	0	**2**	0	0	2	**3**	0	0	**3**	5
Total Volume	0	0	0	0	2	4	0	6	8	0	0	8	14
% App. Total	0	0	0		33.3	66.7	0		100	0	0		
PHF	.000	.000	.000	.000	.250	.333	.000	.500	.667	.000	.000	.667	.700



Transportation Data Corporation
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N/S: Main Street (Route 28)
E: Reading Petroleum Site Drives
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660B
Site Code : Y22C2011
Start Date : 1/4/2023

Groups Printed- Cars & Peds

	Main Street (Route 28) From North			Reading Petro Site Driveways From East			Main Street (Route 28) From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	0	1	0	0	0	0	1	0	0	2
07:15 AM	0	0	0	1	0	0	2	0	0	3
07:30 AM	0	0	0	0	0	0	1	0	0	1
07:45 AM	0	0	0	0	3	0	2	0	0	5
Total	0	1	0	1	3	0	6	0	0	11
08:00 AM	0	0	0	0	0	0	2	0	0	2
08:15 AM	0	0	0	0	1	0	1	0	0	2
08:30 AM	0	0	0	2	0	0	3	0	0	5
08:45 AM	0	0	0	0	2	0	2	0	0	4
Total	0	0	0	2	3	0	8	0	0	13
Grand Total	0	1	0	3	6	0	14	0	0	24
Apprch %	0	100	0	33.3	66.7	0	100	0	0	
Total %	0	4.2	0	12.5	25	0	58.3	0	0	

	Main Street (Route 28) From North				Reading Petro Site Driveways From East				Main Street (Route 28) From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	**3**	0	**3**	2	0	0	2	**5**
08:00 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
08:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	2
08:30 AM	0	0	0	0	**2**	0	0	2	**3**	0	0	**3**	5
Total Volume	0	0	0	0	2	4	0	6	8	0	0	8	14
% App. Total	0	0	0		33.3	66.7	0		100	0	0		
PHF	.000	.000	.000	.000	.250	.333	.000	.500	.667	.000	.000	.667	.700

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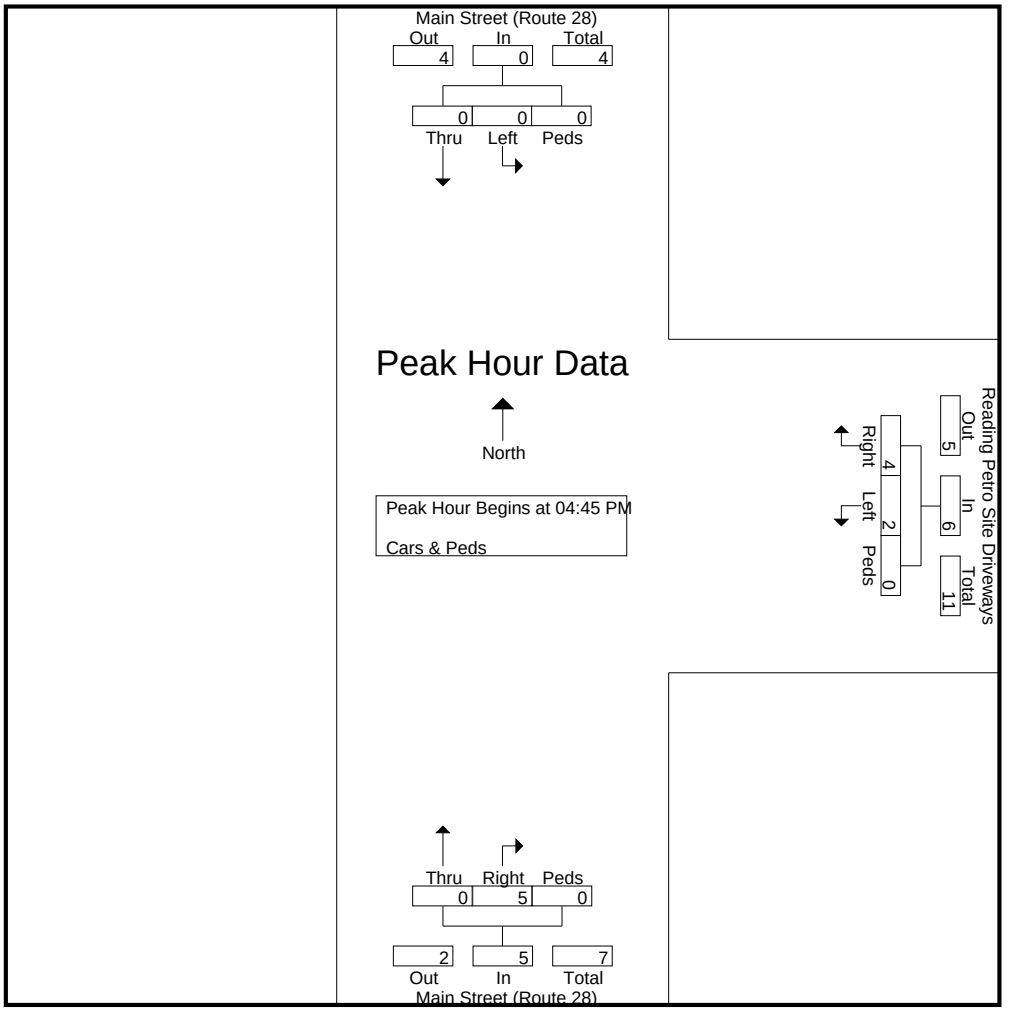
N/S: Main Street (Route 28)
E: Reading Petroleum Site Drives
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660BB
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

	Main Street (Route 28) From North				Reading Petro Site Driveways From East				Main Street (Route 28) From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	0	0	0	0	**2**	0	0	**2**	1	0	0	1	**3**
05:00 PM	0	0	0	0	1	**1**	0	2	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	0	1	**2**	0	0	**2**	3
05:30 PM	0	0	0	0	1	0	0	1	2	0	0	2	3
Total Volume	0	0	0	0	4	2	0	6	5	0	0	5	11
% App. Total	0	0	0		66.7	33.3	0		100	0	0		
PHF	.000	.000	.000	.000	.500	.500	.000	.750	.625	.000	.000	.625	.917



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N/S: Main Street (Route 28)
E: Reading Petroleum Site Drives
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660BB
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Cars & Peds

	Main Street (Route 28) From North			Reading Petro Site Driveways From East			Main Street (Route 28) From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
04:00 PM	0	0	0	0	1	0	2	0	0	3
04:15 PM	0	0	0	0	1	0	1	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	2	0	0	1	0	0	3
Total	0	0	0	2	2	0	4	0	0	8
05:00 PM	0	0	0	1	1	0	0	0	0	2
05:15 PM	0	0	0	0	1	0	2	0	0	3
05:30 PM	0	0	0	1	0	0	2	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	2	0	4	0	0	8
Grand Total	0	0	0	4	4	0	8	0	0	16
Apprch %	0	0	0	50	50	0	100	0	0	
Total %	0	0	0	25	25	0	50	0	0	

	Main Street (Route 28) From North				Reading Petro Site Driveways From East				Main Street (Route 28) From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	0	0	0	0	**2**	0	0	**2**	1	0	0	1	**3**
05:00 PM	0	0	0	0	1	**1**	0	2	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	0	1	**2**	0	0	**2**	3
05:30 PM	0	0	0	0	1	0	0	1	2	0	0	2	3
Total Volume	0	0	0	0	4	2	0	6	5	0	0	5	11
% App. Total	0	0	0		66.7	33.3	0		100	0	0		
PHF	.000	.000	.000	.000	.500	.500	.000	.750	.625	.000	.000	.625	.917

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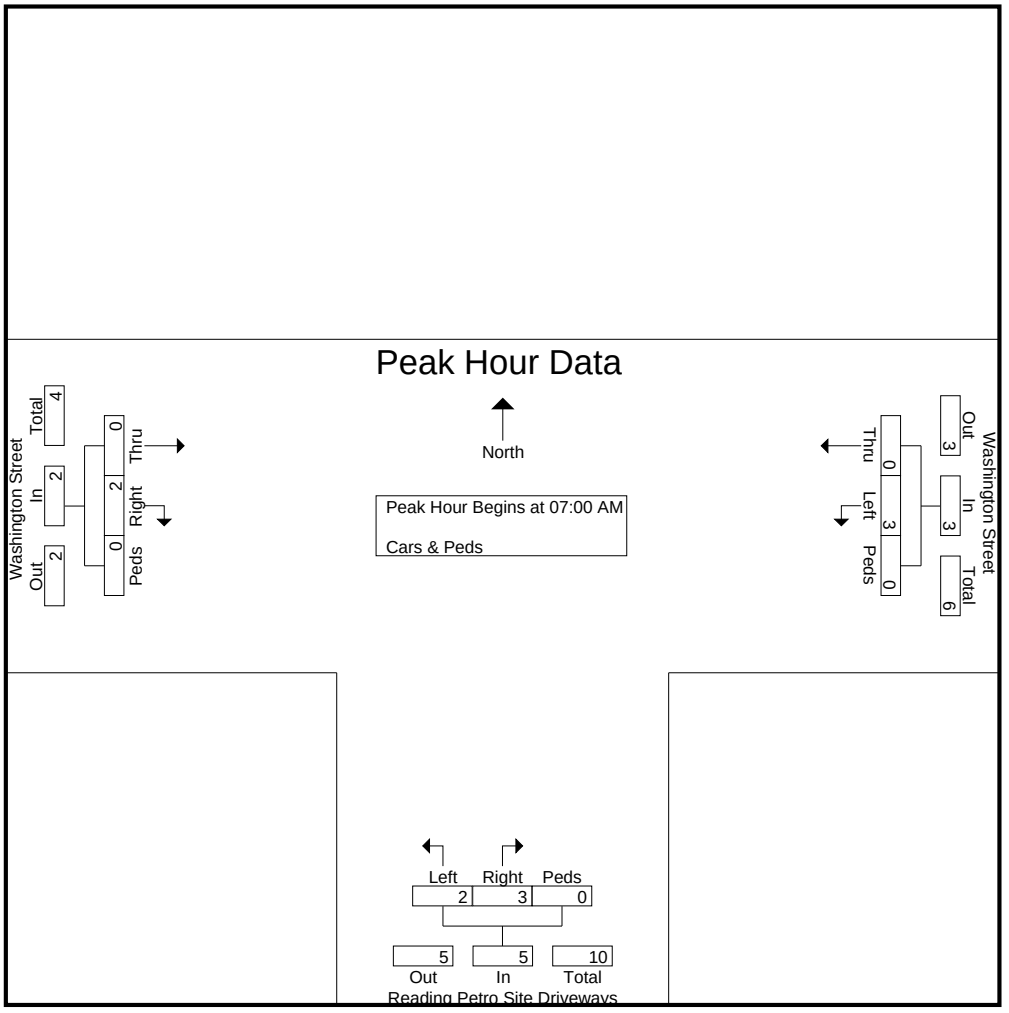
S: Reading Petroleum Site Drives
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660C
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

	Washington Street From East				Reading Petro Site Driveways From South				Washington Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	**1**	0	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	1	0	0	1	**1**	0	0	**1**	2
07:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
07:45 AM	0	**2**	0	**2**	0	**2**	0	**2**	1	0	0	1	**5**
Total Volume	0	3	0	3	3	2	0	5	2	0	0	2	10
% App. Total	0	100	0		60	40	0		100	0	0		
PHF	.000	.375	.000	.375	.750	.250	.000	.625	.500	.000	.000	.500	.500



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S: Reading Petroleum Site Drives
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660C
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Cars & Peds

	Washington Street From East			Reading Petro Site Driveways From South			Washington Street From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	0	0	0	1	0	0	0	0	0	1
07:15 AM	0	0	0	1	0	0	1	0	0	2
07:30 AM	0	1	0	1	0	0	0	0	0	2
07:45 AM	0	2	0	0	2	0	1	0	0	5
Total	0	3	0	3	2	0	2	0	0	10
08:00 AM	0	0	0	1	0	0	0	0	0	1
08:15 AM	0	0	0	1	0	0	1	0	0	2
08:30 AM	0	2	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	2	1	0	1	0	0	4
Total	0	2	0	4	1	0	2	0	0	9
Grand Total	0	5	0	7	3	0	4	0	0	19
Apprch %	0	100	0	70	30	0	100	0	0	
Total %	0	26.3	0	36.8	15.8	0	21.1	0	0	

	Washington Street From East				Reading Petro Site Driveways From South				Washington Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	**1**	0	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	1	0	0	1	**1**	0	0	**1**	2
07:30 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
07:45 AM	0	**2**	0	**2**	0	**2**	0	**2**	1	0	0	1	**5**
Total Volume	0	3	0	3	3	2	0	5	2	0	0	2	10
% App. Total	0	100	0		60	40	0		100	0	0		
PHF	.000	.375	.000	.375	.750	.250	.000	.625	.500	.000	.000	.500	.500

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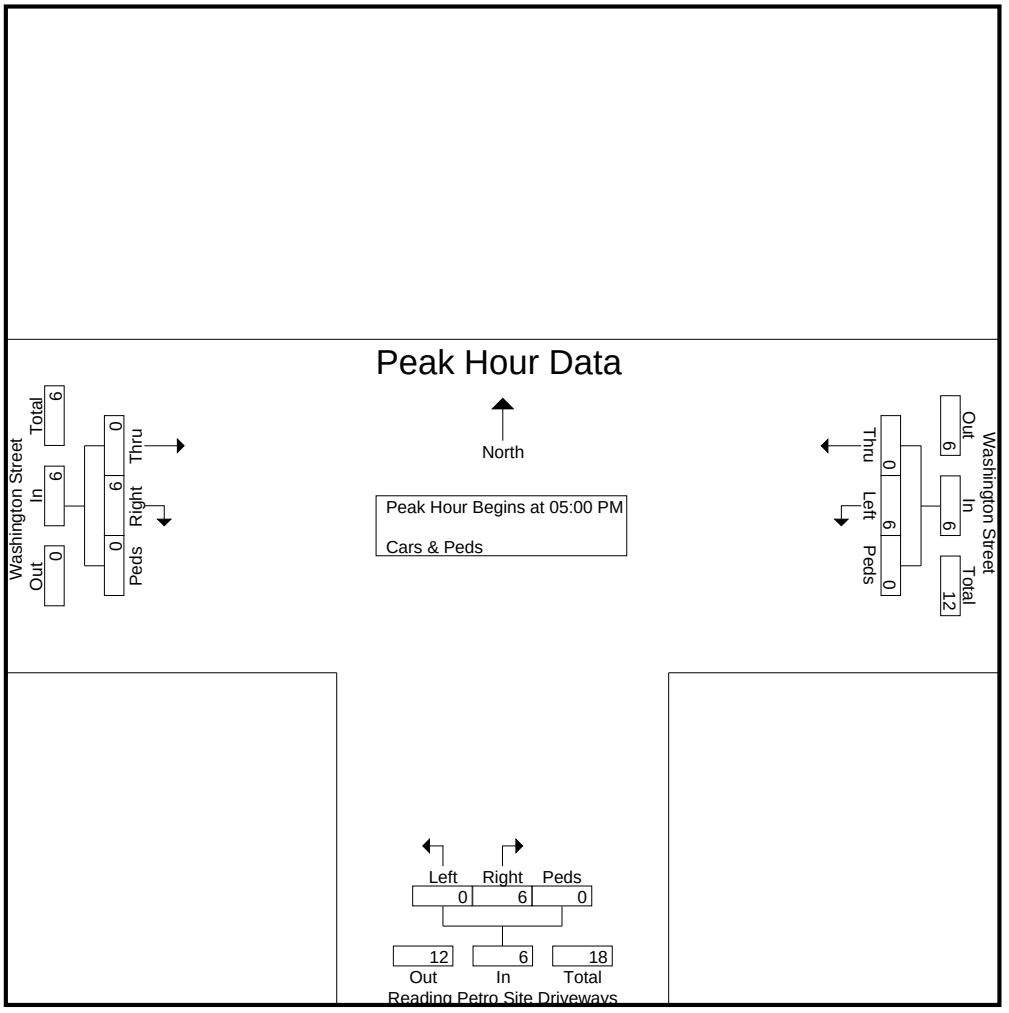
S: Reading Petroleum Site Drives
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660CC
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

	Washington Street From East				Reading Petro Site Driveways From South				Washington Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	2	0	2	**2**	0	0	**2**	**2**	0	0	**2**	**6**
05:15 PM	0	**3**	0	**3**	1	0	0	1	1	0	0	1	5
05:30 PM	0	1	0	1	2	0	0	2	1	0	0	1	4
05:45 PM	0	0	0	0	1	0	0	1	2	0	0	2	3
Total Volume	0	6	0	6	6	0	0	6	6	0	0	6	18
% App. Total	0	100	0		100	0	0		100	0	0		
PHF	.000	.500	.000	.500	.750	.000	.000	.750	.750	.000	.000	.750	.750



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S: Reading Petroleum Site Drives
E/W: Washington Street
City, State: Reading, MA
Client: McM/Shana Gare

File Name : 05660CC
Site Code : Y22C2011
Start Date : 1/4/2023
Page No : 1

Groups Printed- Cars & Peds

	Washington Street From East			Reading Petro Site Driveways From South			Washington Street From West			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
04:00 PM	0	1	0	2	0	0	0	0	0	3
04:15 PM	0	0	0	3	0	0	3	0	0	6
04:30 PM	0	0	0	1	0	0	0	0	0	1
04:45 PM	0	0	0	1	0	0	0	0	0	1
Total	0	1	0	7	0	0	3	0	0	11
05:00 PM	0	2	0	2	0	0	2	0	0	6
05:15 PM	0	3	0	1	0	0	1	0	0	5
05:30 PM	0	1	0	2	0	0	1	0	0	4
05:45 PM	0	0	0	1	0	0	2	0	0	3
Total	0	6	0	6	0	0	6	0	0	18
Grand Total	0	7	0	13	0	0	9	0	0	29
Apprch %	0	100	0	100	0	0	100	0	0	
Total %	0	24.1	0	44.8	0	0	31	0	0	

	Washington Street From East				Reading Petro Site Driveways From South				Washington Street From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	2	0	2	**2**	0	0	**2**	**2**	0	0	**2**	**6**
05:15 PM	0	**3**	0	**3**	1	0	0	1	1	0	0	1	5
05:30 PM	0	1	0	1	2	0	0	2	1	0	0	1	4
05:45 PM	0	0	0	0	1	0	0	1	2	0	0	2	3
Total Volume	0	6	0	6	6	0	0	6	6	0	0	6	18
% App. Total	0	100	0		100	0	0		100	0	0		
PHF	.000	.500	.000	.500	.750	.000	.000	.750	.750	.000	.000	.750	.750

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Main Street (Route 28)
south of Burger King Driveway
City, State: Reading, MA
Client: McM/Shana Gare

05660Aclass
Site Code: Y-22C20.11

Northbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
01/04/23	0	7	4	0	1	0	0	0	**1**	0	0	0	0	13
01:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
02:00	0	2	6	0	0	0	0	0	0	0	0	0	0	8
03:00	0	3	1	0	2	1	0	0	0	0	0	0	0	7
04:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
05:00	0	26	8	0	9	0	0	0	0	0	0	0	0	43
06:00	1	83	20	3	9	1	0	0	0	0	0	0	0	117
07:00	3	227	47	**7**	18	**2**	0	0	1	0	0	0	0	305
08:00	2	291	**77**	1	**27**	2	0	0	0	0	0	0	0	400
09:00	**7**	260	57	4	20	0	0	**1**	0	0	0	0	0	349
10:00	4	300	57	0	24	0	0	0	0	0	0	0	0	385
11:00	7	**321**	65	1	17	2	0	0	0	0	0	0	0	**413**
12 PM	7	375	55	1	26	0	0	**1**	0	0	0	0	0	465
13:00	8	367	68	1	23	1	**1**	1	0	0	0	0	0	470
14:00	9	335	79	**3**	32	**2**	0	0	**1**	0	0	0	0	461
15:00	**10**	**390**	73	3	21	2	0	1	0	0	0	0	0	500
16:00	6	370	**88**	0	25	2	0	0	0	0	0	0	0	491
17:00	8	388	83	0	**41**	2	0	0	0	0	0	0	0	**522**
18:00	3	289	36	1	17	0	0	1	1	0	0	0	0	348
19:00	3	191	35	0	8	0	0	0	1	0	0	0	0	238
20:00	1	94	18	0	8	0	0	0	0	0	0	0	0	121
21:00	0	67	15	0	0	0	0	0	0	0	0	0	0	82
22:00	0	25	16	0	2	0	0	0	0	0	0	0	0	43
23:00	0	17	5	0	0	0	0	0	0	0	0	0	0	22
Day Total	79	4438	915	25	331	17	1	5	5	0	0	0	0	5816
Percent	1.4%	76.3%	15.7%	0.4%	5.7%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	11:00	08:00	07:00	08:00	07:00		09:00	00:00					11:00
Vol.	7	321	77	7	27	2		1	1					413
PM Peak	15:00	15:00	16:00	14:00	17:00	14:00	13:00	12:00	14:00					17:00
Vol.	10	390	88	3	41	2	1	1	1					522
Grand Total	79	4438	915	25	331	17	1	5	5	0	0	0	0	5816
Percent	1.4%	76.3%	15.7%	0.4%	5.7%	0.3%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	

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Main Street (Route 28)
south of Burger King Driveway
City, State: Reading, MA
Client: McM/Shana Gare

05660Aclass
Site Code: Y-22C20.11

Southbound

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
01/04/23	0	17	2	0	0	0	0	0	0	0	0	0	0	19
01:00	0	4	1	0	0	0	0	1	0	0	0	0	0	6
02:00	0	2	1	0	0	0	0	0	1	0	0	0	0	4
03:00	0	4	2	0	1	0	0	0	0	0	0	0	0	7
04:00	0	13	2	0	1	0	0	0	0	0	0	0	0	16
05:00	0	43	11	0	14	1	0	0	0	0	0	0	0	69
06:00	0	205	43	0	8	1	0	1	0	0	0	0	0	258
07:00	3	297	**74**	1	**24**	2	0	**2**	0	0	0	0	0	403
08:00	4	304	64	2	13	0	0	0	**3**	0	0	0	0	390
09:00	**5**	250	53	**3**	19	**4**	0	0	0	0	0	0	0	334
10:00	5	269	54	0	13	0	0	0	0	0	0	0	0	341
11:00	3	**341**	53	3	20	2	0	0	1	0	0	0	0	**423**
12 PM	5	313	50	1	15	**2**	0	**4**	0	0	0	0	0	390
13:00	3	**324**	**64**	1	12	1	0	3	**1**	0	0	0	0	**409**
14:00	**7**	285	52	2	**26**	1	0	2	1	0	0	0	0	376
15:00	7	315	63	**5**	15	1	0	1	0	0	0	0	0	407
16:00	4	291	53	0	10	0	0	0	0	0	0	0	0	358
17:00	5	311	47	2	8	0	0	1	0	0	0	0	0	374
18:00	2	236	39	0	9	0	0	0	0	0	0	0	0	286
19:00	3	180	25	0	6	0	0	0	1	0	0	0	0	215
20:00	0	121	29	0	3	0	0	0	1	0	0	0	0	154
21:00	1	94	16	0	2	0	0	0	0	0	0	0	0	113
22:00	0	29	12	0	0	0	0	0	0	0	0	0	0	41
23:00	0	16	2	0	1	0	0	0	0	0	0	0	0	19
Day Total	57	4264	812	20	220	15	0	15	9	0	0	0	0	5412
Percent	1.1%	78.8%	15.0%	0.4%	4.1%	0.3%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	11:00	07:00	09:00	07:00	09:00		07:00	08:00					11:00
Vol.	5	341	74	3	24	4		2	3					423
PM Peak	14:00	13:00	13:00	15:00	14:00	12:00		12:00	13:00					13:00
Vol.	7	324	64	5	26	2		4	1					409
Grand Total	57	4264	812	20	220	15	0	15	9	0	0	0	0	5412
Percent	1.1%	78.8%	15.0%	0.4%	4.1%	0.3%	0.0%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	

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Main Street (Route 28)
south of Burger King Driveway
City, State: Reading, MA
Client: McM/Shana Gare

05660Aspeed
Site Code: Y-22C20.11

Northbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	Total	85th Percent	95th Percent
01/04/23	0	0	0	1	4	3	3	1	1	0	0	0	0	13	45	51
01:00	0	0	0	0	1	1	2	0	0	0	0	0	0	4	43	44
02:00	0	0	1	0	1	3	1	1	1	0	0	0	0	8	49	53
03:00	0	0	1	0	1	1	0	3	1	0	0	0	0	7	49	53
04:00	0	0	0	0	1	3	2	3	0	0	0	0	0	9	47	49
05:00	0	0	1	5	5	15	11	4	**2**	0	0	0	0	43	44	49
06:00	2	1	3	23	44	30	11	1	2	0	0	0	0	117	39	43
07:00	13	4	**29**	46	96	89	22	**6**	0	0	0	0	0	305	39	42
08:00	14	7	11	**79**	123	**130**	**29**	5	2	0	0	0	0	400	39	42
09:00	17	9	18	45	125	102	28	2	2	0	**1**	0	0	349	39	42
10:00	13	12	18	71	128	116	24	2	0	0	1	0	0	385	38	41
11:00	**19**	**13**	28	58	**152**	112	25	6	0	0	0	0	0	**413**	38	42
12 PM	31	19	**49**	**119**	130	85	26	4	1	**1**	0	0	0	465	37	41
13:00	26	18	44	100	166	97	18	1	0	0	0	0	0	470	37	39
14:00	18	3	31	101	175	109	21	3	0	0	0	0	0	461	37	40
15:00	**65**	**30**	44	90	166	93	10	2	0	0	0	0	0	500	36	39
16:00	28	16	38	99	187	97	24	2	0	0	0	0	0	491	37	40
17:00	13	12	46	118	**209**	**110**	13	1	0	0	0	0	0	**522**	37	39
18:00	24	3	11	54	122	101	30	3	0	0	0	0	0	348	39	42
19:00	6	3	10	28	66	86	**32**	**5**	1	0	0	**1**	0	238	40	44
20:00	0	1	1	12	31	49	25	2	0	0	0	0	0	121	41	44
21:00	0	0	0	4	21	38	15	1	**2**	1	0	0	0	82	42	44
22:00	0	1	2	1	8	19	11	1	0	0	0	0	0	43	42	44
23:00	1	0	1	1	6	7	6	0	0	0	0	0	0	22	42	44
Total	290	152	387	1055	1968	1496	389	59	15	2	2	1	0	5816		
Percent	5.0%	2.6%	6.7%	18.1%	33.8%	25.7%	6.7%	1.0%	0.3%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	11:00	07:00	08:00	11:00	08:00	08:00	07:00	05:00		09:00			11:00		
Vol.	19	13	29	79	152	130	29	6	2		1			413		
PM Peak	15:00	15:00	12:00	12:00	17:00	17:00	19:00	19:00	21:00	12:00		19:00		17:00		
Vol.	65	30	49	119	209	110	32	5	2	1		1		522		
Grand Total	290	152	387	1055	1968	1496	389	59	15	2	2	1	0	5816		
Percent	5.0%	2.6%	6.7%	18.1%	33.8%	25.7%	6.7%	1.0%	0.3%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 25 MPH
50th Percentile : 32 MPH
85th Percentile : 38 MPH
95th Percentile : 42 MPH

Stats

10 MPH Pace Speed : 31-40 MPH

Number of Vehicles > 35 MPH : 1964
Percent of Vehicles > 35 MPH : 33.8%
Mean Speed(Average) : 32 MPH

Transportation Data Corporation
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Main Street (Route 28)
south of Burger King Driveway
City, State: Reading, MA
Client: McM/Shana Gare

05660Aspeed
Site Code: Y-22C20.11

Southbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	Total	85th Percent	95th Percent
01/04/23	0	0	1	1	7	5	3	2	0	0	0	0	0	19	43	47
01:00	0	0	0	0	2	2	1	1	0	0	0	0	0	6	45	48
02:00	0	0	0	0	1	1	0	2	0	0	0	0	0	4	48	49
03:00	0	0	0	0	1	2	2	2	0	0	0	0	0	7	47	49
04:00	0	0	0	2	4	5	5	0	0	0	0	0	0	16	42	44
05:00	0	2	2	1	11	30	16	6	1	0	0	0	0	69	43	47
06:00	3	1	0	15	81	118	28	**9**	**2**	**1**	0	0	0	258	40	44
07:00	7	4	23	73	132	**136**	25	3	0	0	0	0	0	403	38	41
08:00	13	1	8	59	140	135	**31**	1	1	1	0	0	0	390	39	42
09:00	15	**9**	14	43	125	102	21	5	0	0	0	0	0	334	38	42
10:00	12	0	10	39	125	124	25	4	2	0	0	0	0	341	39	42
11:00	**18**	7	**25**	**78**	**143**	119	28	5	0	0	0	0	0	**423**	38	42
12 PM	14	5	**29**	55	146	103	31	6	**1**	0	0	0	0	390	39	42
13:00	20	**6**	22	62	**161**	113	25	0	0	0	0	0	0	**409**	38	40
14:00	12	5	21	58	113	**132**	26	**7**	1	**1**	0	0	0	376	39	43
15:00	15	6	17	**78**	157	111	20	2	1	0	0	0	0	407	38	40
16:00	**23**	2	15	44	115	122	**33**	4	0	0	0	0	0	358	39	42
17:00	11	1	18	62	147	107	22	6	0	0	0	0	0	374	38	42
18:00	10	0	14	30	110	105	14	3	0	0	0	0	0	286	38	40
19:00	3	2	6	28	85	68	15	7	1	0	0	0	0	215	39	44
20:00	1	2	7	23	50	48	19	4	0	0	0	0	0	154	39	44
21:00	1	1	4	7	33	53	13	1	0	0	0	0	0	113	39	43
22:00	0	2	1	1	9	16	10	1	1	0	0	0	0	41	42	44
23:00	0	0	0	0	7	11	1	0	0	0	0	0	0	19	39	40
Total	178	56	237	759	1905	1768	414	81	11	3	0	0	0	5412		
Percent	3.3%	1.0%	4.4%	14.0%	35.2%	32.7%	7.6%	1.5%	0.2%	0.1%	0.0%	0.0%	0.0%			
AM Peak	11:00	09:00	11:00	11:00	11:00	07:00	08:00	06:00	06:00	06:00				11:00		
Vol.	18	9	25	78	143	136	31	9	2	1				423		
PM Peak	16:00	13:00	12:00	15:00	13:00	14:00	16:00	14:00	12:00	14:00				13:00		
Vol.	23	6	29	78	161	132	33	7	1	1				409		
Grand Total	178	56	237	759	1905	1768	414	81	11	3	0	0	0	5412		
Percent	3.3%	1.0%	4.4%	14.0%	35.2%	32.7%	7.6%	1.5%	0.2%	0.1%	0.0%	0.0%	0.0%			

	15th Percentile :	27 MPH
	50th Percentile :	33 MPH
	85th Percentile :	39 MPH
	95th Percentile :	42 MPH
Stats	10 MPH Pace Speed :	31-40 MPH
	Number of Vehicles > 35 MPH :	2277
	Percent of Vehicles > 35 MPH :	42.1%
	Mean Speed(Average) :	34 MPH

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
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Main Street (Route 28)
south of Burger King Driveway
City, State: Reading, MA
Client: McM/Shana Gare

05660Avolume
Site Code: Y-22C20.11

Start Time	04-Jan-23 Wed	NB A.M.	NB P.M.	SB A.M.	SB P.M.	Combined A.M.	Combined P.M.	05-Jan Thu	NB A.M.	NB P.M.	SB A.M.	SB P.M.	Combined A.M.	Combined P.M.
12:00		6	129	9	82	15	211		*	*	*	*	*	*
12:15		4	119	5	***96***	9	215		*	*	*	*	*	*
12:30		2	110	2	***102***	4	212		*	*	*	*	*	*
12:45		1	107	3	***110***	4	217		*	*	*	*	*	*
01:00		3	114	3	***120***	6	234		*	*	*	*	*	*
01:15		1	123	0	95	1	218		*	*	*	*	*	*
01:30		0	119	1	92	1	211		*	*	*	*	*	*
01:45		0	114	2	102	2	216		*	*	*	*	*	*
02:00		4	117	1	86	5	203		*	*	*	*	*	*
02:15		2	112	1	99	3	211		*	*	*	*	*	*
02:30		1	114	1	96	2	210		*	*	*	*	*	*
02:45		1	118	1	95	2	213		*	*	*	*	*	*
03:00		1	117	1	93	2	***210***		*	*	*	*	*	*
03:15		0	145	1	98	1	***243***		*	*	*	*	*	*
03:30		4	109	1	116	5	***225***		*	*	*	*	*	*
03:45		2	129	4	100	6	***229***		*	*	*	*	*	*
04:00		0	101	2	96	2	197		*	*	*	*	*	*
04:15		3	137	1	83	4	220		*	*	*	*	*	*
04:30		1	125	6	86	7	211		*	*	*	*	*	*
04:45		5	128	7	93	12	221		*	*	*	*	*	*
05:00		8	***120***	7	100	15	220		*	*	*	*	*	*
05:15		13	***133***	23	101	36	234		*	*	*	*	*	*
05:30		9	***132***	16	88	25	220		*	*	*	*	*	*
05:45		13	***137***	23	85	36	222		*	*	*	*	*	*
06:00		16	99	41	84	57	183		*	*	*	*	*	*
06:15		24	101	61	70	85	171		*	*	*	*	*	*
06:30		31	73	65	69	96	142		*	*	*	*	*	*
06:45		46	75	91	63	137	138		*	*	*	*	*	*
07:00		64	74	88	78	152	152		*	*	*	*	*	*
07:15		68	57	104	52	172	109		*	*	*	*	*	*
07:30		75	54	99	41	174	95		*	*	*	*	*	*
07:45		98	53	112	44	210	97		*	*	*	*	*	*
08:00		114	39	102	51	216	90		*	*	*	*	*	*
08:15		91	38	92	38	183	76		*	*	*	*	*	*
08:30		95	27	101	36	196	63		*	*	*	*	*	*
08:45		100	17	95	29	195	46		*	*	*	*	*	*
09:00		77	22	94	37	171	59		*	*	*	*	*	*
09:15		77	20	76	26	153	46		*	*	*	*	*	*
09:30		83	17	85	23	168	40		*	*	*	*	*	*
09:45		112	23	79	27	191	50		*	*	*	*	*	*
10:00		82	9	72	10	154	19		*	*	*	*	*	*
10:15		103	14	95	15	198	29		*	*	*	*	*	*
10:30		94	11	82	12	176	23		*	*	*	*	*	*
10:45		106	9	92	4	198	13		*	*	*	*	*	*
11:00		***95***	4	***108***	5	***203***	9		*	*	*	*	*	*
11:15		***97***	8	***102***	6	***199***	14		*	*	*	*	*	*
11:30		***109***	5	***102***	4	***211***	9		*	*	*	*	*	*
11:45		***112***	5	***111***	4	***223***	9		*	*	*	*	*	*
Total		2053	3763	2270	3142	4323	6905		0	0	0	0	0	0
Day Total		5816		5412		11228			0		0		0	
% Total		18.3%	33.5%	20.2%	28.0%				0.0%	0.0%	0.0%	0.0%		
Peak	-	11:00	05:00	11:00	00:15	11:00	03:00	-	-	-	-	-	-	-
Vol.	-	413	522	423	428	836	907	-	-	-	-	-	-	-
P.H.F.		0.922	0.953	0.944	0.892	0.937	0.933							

ADT	ADT 11,228	AADT 11,228

Transportation Data Corporation

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Main Street (Route 28)
south of Burger King Driveway
City, State: Reading, MA
Client: McM/Shana Gare

05660Avolume
Site Code: Y-22C20.11

Start	04-Jan-23	NB		Hour Totals		SB		Hour Totals		Combined Totals	
Time	Wed	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	129			9	82				
12:15		4	119			5	96				
12:30		2	110			2	102				
12:45		1	107	13	465	3	110	19	390	32	855
01:00		3	114			3	120				
01:15		1	123			0	95				
01:30		0	119			1	92				
01:45		0	114	4	470	2	102	6	409	10	879
02:00		4	117			1	86				
02:15		2	112			1	99				
02:30		1	114			1	96				
02:45		1	118	8	461	1	95	4	376	12	837
03:00		1	117			1	93				
03:15		0	145			1	98				
03:30		4	109			1	116				
03:45		2	129	7	500	4	100	7	407	14	907
04:00		0	101			2	96				
04:15		3	137			1	83				
04:30		1	125			6	86				
04:45		5	128	9	491	7	93	16	358	25	849
05:00		8	120			7	100				
05:15		13	133			23	101				
05:30		9	132			16	88				
05:45		13	137	43	522	23	85	69	374	112	896
06:00		16	99			41	84				
06:15		24	101			61	70				
06:30		31	73			65	69				
06:45		46	75	117	348	91	63	258	286	375	634
07:00		64	74			88	78				
07:15		68	57			104	52				
07:30		75	54			99	41				
07:45		98	53	305	238	112	44	403	215	708	453
08:00		114	39			102	51				
08:15		91	38			92	38				
08:30		95	27			101	36				
08:45		100	17	400	121	95	29	390	154	790	275
09:00		77	22			94	37				
09:15		77	20			76	26				
09:30		83	17			85	23				
09:45		112	23	349	82	79	27	334	113	683	195
10:00		82	9			72	10				
10:15		103	14			95	15				
10:30		94	11			82	12				
10:45		106	9	385	43	92	4	341	41	726	84
11:00		95	4			108	5				
11:15		97	8			102	6				
11:30		109	5			102	4				
11:45		112	5	413	22	111	4	423	19	836	41
Total		2053	3763			2270	3142			4323	6905
Combined Total		5816				5412				11228	
Percentage	0.0%										
Total		2053	3763			2270	3142			4323	6905
Percent		35.3%	64.7%			41.9%	58.1%			38.5%	61.5%
ADT		ADT 11,228		AADT 11,228							

APPENDIX B

MassDOT Seasonal Adjustment Data

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.98

Round off:
0-999 = 10
>1000 = 100

U = Urban
R = Rural

1 - Interstate
2 - Freeway and Expressway
3 - Other Principal Arterial
4 - Minor Arterial
5 - Major Collector
6 - Minor Collector
7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113, 1114,1116,2196,2197 and 2198.

APPENDIX C

Traffic Projection Model

TRAFFIC PROJECTION MODEL

Weekday Morning Peak Hour
Proposed Bank
Reading, MA

Intersection	Dir.	Turn	2023 Counted Volumes	Seasonal Adjustments Jan = 1.06	Volume Balances	2023 Existing Volumes	Background Growth 7 yrs (at 0.5% per year)	459 Main Street Trips	531 Main Street Trips	6 Chute St Trips	2030 No Build Volumes	New Passenger Vehicle Trips PERCENT ENTER	New Passenger Vehicle Trips Trips ENTER	New Passenger Vehicle Trips PERCENT EXIT	New Passenger Vehicle Trips Trips EXIT	Project New Trips TOTAL	Passby Trips	Existing Gas Station Trips Rerouting	2030 Build Volumes
Main Street (Route 28) at	EB	L	43	3		46	2	0			48		0		0	0	-1		47
Washington Street		T	108	6		114	4	0			118	25%	2		0	2	1		121
		R	15	1		16	1	0		1	18		0		0	0			18
	WB	L	54	3		57	2	2			61		0		0	0			61
		T	125	8		133	5	0			138		0		0	0			138
		R	47	3		50	2	1			53		0		0	0			53
	NB	L	52	3		55	2	1			58		0	65%	3	3	0	6	67
		T	345	21		366	13	2	3		384		0	15%	1	1	1		386
		R	52	3		55	2	0			57		0		0	0			57
	SB	L	38	2		40	1	0			41	35%	3		0	3	1		45
		T	325	20		345	12	1	4		362		0		0	0	-1		361
		R	17	1		18	1	0			19		0		0	0			19
Southern Site Driveway at	WB	L	4	0		4	0				4		0		0	0		-4	0
Main Street (Route 28)		R	2	0		2	0				2		0	80%	4	4	2	6	14
	NB	T	447	27		474	17	3	3		497		0		0	0	-1		496
		R	8	0		8	0				8	40%	3		0	3	1	4	16
	SB	L	0	0		0	0				0		0		0	0			0
		T	394	24		418	15	3	4	1	441		0		0	0			441
Eastern Site Driveway at	EB	T	196	12		208	7	0			215		0		0	0			215
Washington Street		R	2	0		2	0				2	60%	5		0	5	2		9
	WB	L	4	0		4	0				4		0		0	0		-4	0
		T	224	13		237	8	3			248		0		0	0			248
	NB	L	2	0		2	0				2		0		0	0		-2	0
		R	2	0		2	0				2		0	20%	1	1	1		4

Peak Hour: 7:45 AM-8:45 AM

TRAFFIC PROJECTION MODEL

Weekday Afternoon Peak Hour
Proposed Bank
Reading, MA

Intersection	Dir.	Turn	2023 Counted Volumes	Seasonal Adjustments Jan = 1.06	Volume Balances	2023 Existing Volumes	Background Growth 7 yrs (at 0.5% per year)	459 Main Street Trips	531 Main Street Trips	6 Chute Street Trips	2030 No Build Volumes	New Passenger Vehicle Trips PERCENT ENTER	New Passenger Vehicle Trips Trips ENTER	New Passenger Vehicle Trips PERCENT EXIT	New Passenger Vehicle Trips Trips EXIT	Project New Trips TOTAL	Passby Trips	Existing Gas Station Trips Rerouting	2030 Build Volumes
Main Street (Route 28) at	EB	L	45	3		48	2	0			50		0		0	0	-2		48
Washington Street		T	172	10		182	6	1			189	25%	3		0	3	2		194
		R	18	1		19	1	0			20		0		0	0			20
	WB	L	60	4		64	2	1			67		0		0	0			67
		T	196	12		208	7	0			215		0		0	0			215
		R	74	4		78	3	2			83		0		0	0			83
	NB	L	112	7		119	4	1		1	125		0	65%	10	10	1	2	138
		T	498	30		528	19	3	6		556		0	15%	2	2	2		560
		R	56	3		59	2	0			61		0		0	0			61
	SB	L	44	3		47	2	0			49	35%	4		0	4	2		55
		T	289	17		306	11	1	5		323		0		0	0	-2		321
		R	14	1		15	1	0			16		0		0	0			16
Southern Site Driveway at	WB	L	2	0		2	0				2		0		0	0		-2	0
Main Street (Route 28)		R	2	0		2	0				2		0	80%	12	12	6	2	22
	NB	T	664	40		704	25	4	6	1	740		0		0	0	-3		737
		R	4	0		4	0				4	40%	4		0	4	3	6	17
	SB	L	0	0		0	0				0		0		0	0			0
		T	367	22		389	14	2	5		410		0		0	0			410
Eastern Site Driveway at	EB	T	266	16		282	10	1			293		0		0	0			293
Washington Street		R	6	0		6	0				6	60%	7		0	7	4		17
	WB	L	6	0		6	0				6		0		0	0		-6	0
		T	330	20		350	12	3			365		0		0	0			365
	NB	L	0	0		0	0				0		0		0	0		0	0
		R	6	0		6	0				6		0	20%	3	3	1		10

Peak Hour: 5:00 PM-6:00 PM

APPENDIX D

Crash Summary

CRASH ANALYSIS

Proposed Bank
Reading, MA

	Washington Street (Route 9) at South Street	Main Street (Route 28) at Southern Driveway	Washington Street at Eastern Driveway
Year			
2016	9	0	0
2017	19	0	0
2018	4	0	0
2019	11	1	0
2020	3	0	1
Type			
Angle	23	0	0
Rear-end	13	0	0
Sideswipe	4	1	0
Head-on	2	0	0
Single Vehicle	4	0	1
Severity			
Property Damage	42	1	1
Personal Injury	2	0	0
Fatality	0	0	0
Unknown	2	0	0
Weather			
Clear	31	1	1
Cloudy	7	0	0
Rain	6	0	0
Snow	1	0	0
Sleet	1	0	0
Road Surface			
Dry	36	1	1
Wet	9	0	0
Ice	0	0	0
Snow	0	0	0
Slush	1	0	0
Time			
7:00 AM to 9:00 AM	7	0	0
9:00 AM to 4:00 PM	24	1	1
4:00 PM to 6:00 PM	5	0	0
6:00 PM to 7:00 AM	10	0	0
Total	**46**	**1**	**1**
Crash Rate	1.36	0.03	0.08
State Average	0.78	0.57	0.57
District 3 Average	0.89	0.61	0.61

Source: MassDOT

APPENDIX E

Highway Capacity Manual Methodologies

CAPACITY/LEVEL-OF-SERVICE ANALYSES METHODOLOGY

The detailed capacity/level-of-service analysis contained in this traffic impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual*.(1) By definition, capacity represents "the maximum rate of flow that can reasonably be expected to pass a point on a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions." The level of functioning of an intersection or a uniform section of a lane or roadway can be expressed in terms of levels of service. Level of service (LOS) is defined as "a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers". Such measures include "speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety."

At unsignalized intersections, a methodology for evaluating the relative functioning of intersections controlled by stop or yield signs has been developed, and is based on several assumptions, including:

- Major street flows are not affected by the minor (stop-sign controlled) street movements.
- Left turns from the major street to the minor street are influenced only by opposing major street through flow.
- Minor street left turns are impeded by all major street traffic plus opposing minor street traffic.
- Minor street through traffic is impeded by all major street traffic.
- Minor street right turns are impeded only by the major street traffic coming from the left.

The concept of stop-controlled or yield-controlled intersection analysis is based on the estimate of average total delay on minor streets. The methodology of analysis relies on three elements: the size and distribution of gaps in the major traffic stream, the usefulness of these gaps to the minor stream drivers, and the relative priority of the various traffic streams at the intersection. The results of the analysis provide an estimate of average total delay for the various critical movements at the unsignalized intersections. Correlation between average total delay and the respective levels of service are provided for unsignalized intersections as follows:

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(1) *Transportation Research Board, Highway Capacity Manual 2010, published by the Transportation Research Board, Washington, DC, 2010.*

Unsignalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	> 50

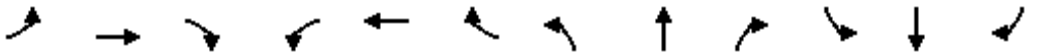
At signalized intersections, an additional element must be considered: time allocation. Level of service is based on the average control delay per vehicle for various movements within the intersection. Volume/capacity relationships also affect the operations of signalized intersections. Thus, both volume/capacity and delay must be considered to evaluate the overall operation of a signalized intersection. Correlation between average delay per vehicle and the respective levels of service are provided for signalized intersections as follows:

Signalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	$\leq$ 10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	> 80

APPENDIX F

2023 Existing Capacity/Level-of-Service Analysis



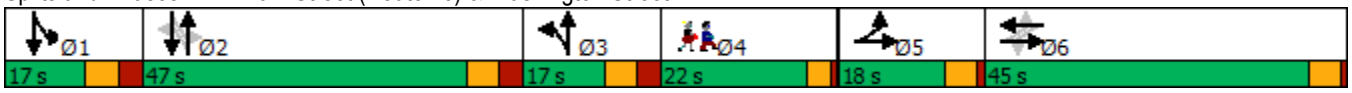
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	114	16	57	133	50	55	366	55	40	345	18
Future Volume (vph)	46	114	16	57	133	50	55	366	55	40	345	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	95		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1711	1783	0	0	1737	0	0	3356	0	0	3336	0
Flt Permitted	0.394				0.874			0.826			0.775	
Satd. Flow (perm)	709	1783	0	0	1536	0	0	2789	0	0	2597	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		226			149			151			242	
Travel Time (s)		6.2			3.4			3.4			5.5	
Confl. Peds. (#/hr)			2	2					7	7		
Peak Hour Factor	0.78	0.78	0.78	0.75	0.75	0.75	0.90	0.90	0.90	0.94	0.94	0.94
Heavy Vehicles (%)	2%	1%	0%	0%	2%	2%	2%	1%	2%	8%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	59	167	0	0	320	0	0	529	0	0	429	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	5 6			6		3	2 3		1	1 2	
Permitted Phases	5 6			6			2			2		
Detector Phase	5	5 6		6	6		3	2 3		1	1 2	
Switch Phase												
Minimum Initial (s)	6.0			10.0	10.0		6.0			6.0		
Minimum Split (s)	11.0			15.0	15.0		13.0			13.0		
Total Split (s)	18.0			45.0	45.0		17.0			17.0		
Total Split (%)	10.8%			27.1%	27.1%		10.2%			10.2%		
Yellow Time (s)	4.0			4.0	4.0		4.0			4.0		
All-Red Time (s)	1.0			1.0	1.0		3.0			3.0		
Lost Time Adjust (s)	0.0				0.0							
Total Lost Time (s)	5.0				5.0							
Lead/Lag	Lead			Lag	Lag		Lead			Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes		
Recall Mode	None			None	None		None			None		
Act Effct Green (s)	42.1	47.3			31.0			33.6			37.4	
Actuated g/C Ratio	0.35	0.39			0.26			0.28			0.31	
v/c Ratio	0.18	0.24			0.82			0.66			0.50	
Control Delay	28.0	28.2			61.6			39.4			33.7	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	28.0	28.2			61.6			39.4			33.7	
LOS	C	C			E			D			C	
Approach Delay		28.2			61.6			39.4			33.7	
Approach LOS		C			E			D			C	
Queue Length 50th (ft)	27	80			223			163			121	
Queue Length 95th (ft)	67	162			361			295			231	
Internal Link Dist (ft)		146			69			71			162	

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	8.0	6.0
Minimum Split (s)	17.0	22.0
Total Split (s)	47.0	22.0
Total Split (%)	28%	13%
Yellow Time (s)	4.0	3.0
All-Red Time (s)	3.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	95											
Base Capacity (vph)	370	830			525			1087			1172	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.16	0.20			0.61			0.49			0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 121.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 40.8		Intersection LOS: D	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Main Street (Route 28) & Washington Street



Lane Group	Ø2	Ø4
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	2	474	8	0	418
Future Vol, veh/h	4	2	474	8	0	418
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	90	90	95	95
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	8	4	527	9	0	440

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	752	268	0	0	536	0
Stage 1	532	-	-	-	-	-
Stage 2	220	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	350	736	-	-	1042	-
Stage 1	559	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	350	736	-	-	1042	-
Mov Cap-2 Maneuver	350	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	424	1042	-
HCM Lane V/C Ratio	-	-	0.028	-	-
HCM Control Delay (s)	-	-	13.7	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	208	2	4	237	2	2
Future Vol, veh/h	208	2	4	237	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	76	76	50	50
Heavy Vehicles, %	3	0	0	2	0	0
Mvmt Flow	274	3	5	312	4	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	277	0	598	276
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	322	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1298	-	468	768
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1298	-	466	768
Mov Cap-2 Maneuver	-	-	-	-	466	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	735	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	580	-	-	1298	-
HCM Lane V/C Ratio	0.014	-	-	0.004	-
HCM Control Delay (s)	11.3	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	182	19	64	208	78	119	528	59	47	306	15
Future Volume (vph)	48	182	19	64	208	78	119	528	59	47	306	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	95		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1745	1791	0	0	1762	0	0	3406	0	0	3389	0
Flt Permitted	0.332				0.883			0.785			0.616	
Satd. Flow (perm)	610	1791	0	0	1567	0	0	2696	0	0	2099	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		226			149			151			242	
Travel Time (s)		6.2			3.4			3.4			5.5	
Confl. Peds. (#/hr)			9	9					12	12		
Peak Hour Factor	0.84	0.84	0.84	0.83	0.83	0.83	0.97	0.97	0.97	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	7%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	240	0	0	422	0	0	728	0	0	396	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	5 6			6		3	2 3		1	1 2	
Permitted Phases	5 6			6			2			2		
Detector Phase	5	5 6		6	6		3	2 3		1	1 2	
Switch Phase												
Minimum Initial (s)	6.0			10.0	10.0		6.0			6.0		
Minimum Split (s)	11.0			15.0	15.0		13.0			13.0		
Total Split (s)	20.0			50.0	50.0		25.0			15.0		
Total Split (%)	10.6%			26.5%	26.5%		13.2%			7.9%		
Yellow Time (s)	4.0			4.0	4.0		4.0			4.0		
All-Red Time (s)	1.0			1.0	1.0		3.0			3.0		
Lost Time Adjust (s)	0.0				0.0							
Total Lost Time (s)	5.0				5.0							
Lead/Lag	Lead			Lag	Lag		Lead			Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes		
Recall Mode	None			None	None		None			None		
Act Effct Green (s)	59.8	64.8			45.5			49.8			49.5	
Actuated g/C Ratio	0.39	0.42			0.30			0.33			0.32	
v/c Ratio	0.17	0.32			0.90			0.79			0.53	
Control Delay	31.9	33.5			75.9			49.1			41.0	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	31.9	33.5			75.9			49.1			41.0	
LOS	C	C			E			D			D	
Approach Delay		33.2			75.9			49.1			41.0	
Approach LOS		C			E			D			D	
Queue Length 50th (ft)	32	150			393			291			140	
Queue Length 95th (ft)	79	281			#711			434			236	
Internal Link Dist (ft)		146			69			71			162	

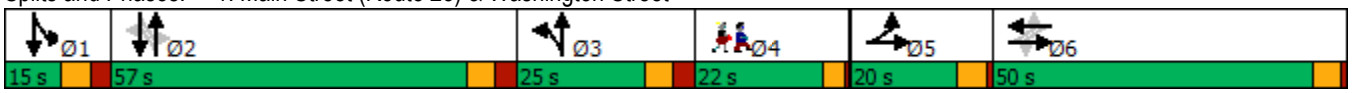
Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	6.0
Minimum Split (s)	17.0	22.0
Total Split (s)	57.0	22.0
Total Split (%)	30%	12%
Yellow Time (s)	4.0	3.0
All-Red Time (s)	3.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	95											
Base Capacity (vph)	355	745			467			1229			875	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.16	0.32			0.90			0.59			0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 189			
Actuated Cycle Length: 152.7			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 50.9		Intersection LOS: D	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street (Route 28) & Washington Street



Lane Group	Ø2	Ø4
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	704	4	0	389
Future Vol, veh/h	2	2	704	4	0	389
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	4	4	726	4	0	401

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	929	365	0	0	730	0
Stage 1	728	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	270	638	-	-	883	-
Stage 1	444	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	270	638	-	-	883	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	819	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	379	883	-
HCM Lane V/C Ratio	-	-	0.021	-	-
HCM Control Delay (s)	-	-	14.7	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	282	6	6	350	0	6
Future Vol, veh/h	282	6	6	350	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	83	83	75	75
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	303	6	7	422	0	8

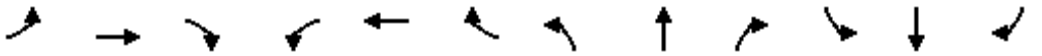
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	309	0	742	306
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1263	-	386	739
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	656	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1263	-	383	739
Mov Cap-2 Maneuver	-	-	-	-	383	-
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	739	-	-	1263	-
HCM Lane V/C Ratio	0.011	-	-	0.006	-
HCM Control Delay (s)	9.9	-	-	7.9	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX G

2030 No Build Capacity/Level-of-Service Analysis



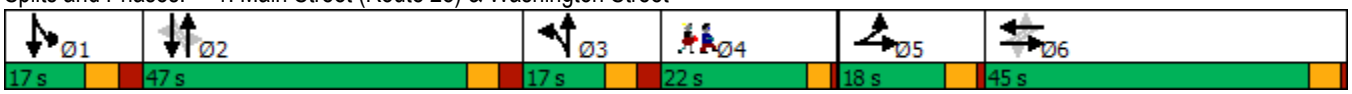
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	118	18	61	138	53	58	384	57	41	362	19
Future Volume (vph)	48	118	18	61	138	53	58	384	57	41	362	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	95		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.980			0.971			0.983			0.993	
Flt Protected	0.950				0.988			0.994			0.995	
Satd. Flow (prot)	1711	1781	0	0	1736	0	0	3356	0	0	3336	0
Flt Permitted	0.403				0.879			0.819			0.784	
Satd. Flow (perm)	726	1781	0	0	1543	0	0	2765	0	0	2627	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		226			149			151			242	
Travel Time (s)		6.2			3.4			3.4			5.5	
Confl. Peds. (#/hr)			2	2					7	7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	1%	0%	0%	2%	2%	2%	1%	2%	8%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	148	0	0	274	0	0	542	0	0	459	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	5 6			6		3	2 3		1	1 2	
Permitted Phases	5 6			6			2			2		
Detector Phase	5	5 6		6	6		3	2 3		1	1 2	
Switch Phase												
Minimum Initial (s)	6.0			10.0	10.0		6.0			6.0		
Minimum Split (s)	11.0			15.0	15.0		13.0			13.0		
Total Split (s)	18.0			45.0	45.0		17.0			17.0		
Total Split (%)	10.8%			27.1%	27.1%		10.2%			10.2%		
Yellow Time (s)	4.0			4.0	4.0		4.0			4.0		
All-Red Time (s)	1.0			1.0	1.0		3.0			3.0		
Lost Time Adjust (s)	0.0				0.0							
Total Lost Time (s)	5.0				5.0							
Lead/Lag	Lead			Lag	Lag		Lead			Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes		
Recall Mode	None			None	None		None			None		
Act Effct Green (s)	36.1	41.3			25.6			33.4			37.2	
Actuated g/C Ratio	0.31	0.36			0.22			0.29			0.32	
v/c Ratio	0.16	0.23			0.80			0.65			0.50	
Control Delay	28.9	29.1			63.3			36.6			31.3	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	28.9	29.1			63.3			36.6			31.3	
LOS	C	C			E			D			C	
Approach Delay		29.0			63.3			36.6			31.3	

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	8.0	6.0
Minimum Split (s)	17.0	22.0
Total Split (s)	47.0	22.0
Total Split (%)	28%	13%
Yellow Time (s)	4.0	3.0
All-Red Time (s)	3.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			E			D			C	
Queue Length 50th (ft)	23	70			181			151			116	
Queue Length 95th (ft)	71	171			385			303			247	
Internal Link Dist (ft)		146			69			71			162	
Turn Bay Length (ft)	95											
Base Capacity (vph)	360	863			560			1146			1256	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.14	0.17			0.49			0.47			0.37	

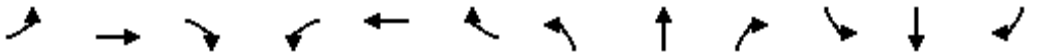
Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 115.6			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 38.9		Intersection LOS: D	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Main Street (Route 28) & Washington Street



Lane Group	Ø2	Ø4
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	189	20	67	215	83	125	556	61	49	323	16
Future Volume (vph)	50	189	20	67	215	83	125	556	61	49	323	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	95		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.985			0.969			0.988			0.994	
Flt Protected	0.950				0.991			0.992			0.994	
Satd. Flow (prot)	1745	1790	0	0	1760	0	0	3410	0	0	3390	0
Flt Permitted	0.339				0.886			0.776			0.591	
Satd. Flow (perm)	623	1790	0	0	1571	0	0	2668	0	0	2014	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		226			149			151			242	
Travel Time (s)		6.2			3.4			3.4			5.5	
Confl. Peds. (#/hr)			9	9					12	12		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	7%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	227	0	0	397	0	0	806	0	0	421	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	5 6			6		3	2 3		1	1 2	
Permitted Phases	5 6			6			2			2		
Detector Phase	5	5 6		6	6		3	2 3		1	1 2	
Switch Phase												
Minimum Initial (s)	6.0			10.0	10.0		6.0			6.0		
Minimum Split (s)	11.0			15.0	15.0		13.0			13.0		
Total Split (s)	20.0			50.0	50.0		25.0			15.0		
Total Split (%)	10.6%			26.5%	26.5%		13.2%			7.9%		
Yellow Time (s)	4.0			4.0	4.0		4.0			4.0		
All-Red Time (s)	1.0			1.0	1.0		3.0			3.0		
Lost Time Adjust (s)	0.0				0.0							
Total Lost Time (s)	5.0				5.0							
Lead/Lag	Lead			Lag	Lag		Lead			Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes		
Recall Mode	None			None	None		None			None		
Act Effct Green (s)	59.7	64.7			45.5			55.0			53.4	
Actuated g/C Ratio	0.38	0.41			0.29			0.35			0.34	
v/c Ratio	0.16	0.31			0.88			0.83			0.56	
Control Delay	33.9	35.6			75.1			50.8			42.3	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	33.9	35.6			75.1			50.8			42.3	
LOS	C	D			E			D			D	
Approach Delay		35.3			75.1			50.8			42.3	

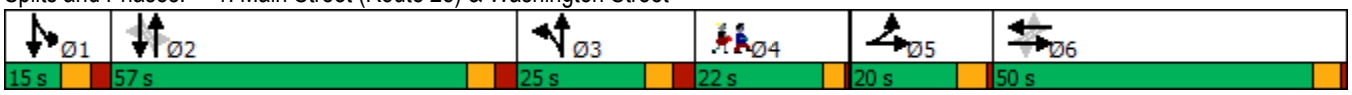
Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	6.0
Minimum Split (s)	17.0	22.0
Total Split (s)	57.0	22.0
Total Split (%)	30%	12%
Yellow Time (s)	4.0	3.0
All-Red Time (s)	3.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	33	153			388			332			152	
Queue Length 95th (ft)	83	298			#768			489			259	
Internal Link Dist (ft)		146			69			71			162	
Turn Bay Length (ft)	95											
Base Capacity (vph)	347	720			453			1216			819	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.16	0.32			0.88			0.66			0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 189			
Actuated Cycle Length: 157.8			
Natural Cycle: 135			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 51.7		Intersection LOS: D	
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street (Route 28) & Washington Street



Lane Group	Ø2	Ø4
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	740	4	0	410
Future Vol, veh/h	2	2	740	4	0	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	2	2	804	4	0	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1029	404	0	0	808	0
Stage 1	806	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	233	602	-	-	826	-
Stage 1	405	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	233	602	-	-	826	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	405	-	-	-	-	-
Stage 2	799	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	826	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	-	-	15.9	0	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	293	6	6	365	0	6
Future Vol, veh/h	293	6	6	365	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	318	7	7	397	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	325	0	733	322
Stage 1	-	-	-	-	322	-
Stage 2	-	-	-	-	411	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1246	-	391	724
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	674	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1246	-	388	724
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	724	-	-	1246	-
HCM Lane V/C Ratio	0.009	-	-	0.005	-
HCM Control Delay (s)	10	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX H

2030 Build Capacity/Level-of-Service Analysis

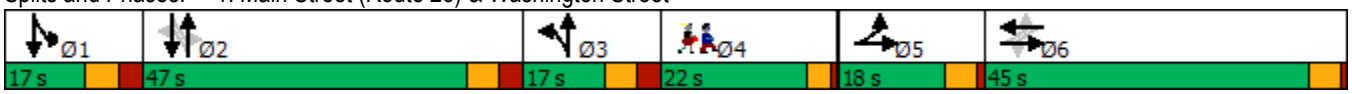
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	121	18	61	138	53	67	386	57	45	361	19
Future Volume (vph)	47	121	18	61	138	53	67	386	57	45	361	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	95		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.980			0.971			0.983			0.993	
Flt Protected	0.950				0.988			0.993			0.995	
Satd. Flow (prot)	1711	1781	0	0	1736	0	0	3353	0	0	3335	0
Flt Permitted	0.401				0.878			0.800			0.756	
Satd. Flow (perm)	722	1781	0	0	1542	0	0	2701	0	0	2533	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		226			149			151			242	
Travel Time (s)		6.2			3.4			3.4			5.5	
Confl. Peds. (#/hr)			2	2					7	7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	1%	0%	0%	2%	2%	2%	1%	2%	8%	3%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	152	0	0	274	0	0	555	0	0	462	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	5 6			6		3	2 3		1	1 2	
Permitted Phases	5 6			6			2			2		
Detector Phase	5	5 6		6	6		3	2 3		1	1 2	
Switch Phase												
Minimum Initial (s)	6.0			10.0	10.0		6.0			6.0		
Minimum Split (s)	11.0			15.0	15.0		13.0			13.0		
Total Split (s)	18.0			45.0	45.0		17.0			17.0		
Total Split (%)	10.8%			27.1%	27.1%		10.2%			10.2%		
Yellow Time (s)	4.0			4.0	4.0		4.0			4.0		
All-Red Time (s)	1.0			1.0	1.0		3.0			3.0		
Lost Time Adjust (s)	0.0				0.0							
Total Lost Time (s)	5.0				5.0							
Lead/Lag	Lead			Lag	Lag		Lead			Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes		
Recall Mode	None			None	None		None			None		
Act Effct Green (s)	36.6	41.8			25.8			34.4			38.2	
Actuated g/C Ratio	0.31	0.36			0.22			0.29			0.33	
v/c Ratio	0.16	0.24			0.81			0.67			0.51	
Control Delay	29.3	29.5			64.0			37.3			31.6	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	29.3	29.5			64.0			37.3			31.6	
LOS	C	C			E			D			C	
Approach Delay		29.5			64.0			37.3			31.6	

Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	8.0	6.0
Minimum Split (s)	17.0	22.0
Total Split (s)	47.0	22.0
Total Split (%)	28%	13%
Yellow Time (s)	4.0	3.0
All-Red Time (s)	3.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		C			E			D			C	
Queue Length 50th (ft)	23	74			185			156			118	
Queue Length 95th (ft)	69	175			386			311			249	
Internal Link Dist (ft)		146			69			71			162	
Turn Bay Length (ft)	95											
Base Capacity (vph)	357	866			552			1124			1205	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.14	0.18			0.50			0.49			0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 166			
Actuated Cycle Length: 117.1			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 39.4		Intersection LOS: D	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Main Street (Route 28) & Washington Street



Lane Group	Ø2	Ø4
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	496	16	0	441
Future Vol, veh/h	0	14	496	16	0	441
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	3
Mvmt Flow	0	15	539	17	0	479

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	278	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	725	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	725	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	725	-
HCM Lane V/C Ratio	-	-	0.021	-
HCM Control Delay (s)	-	-	10.1	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

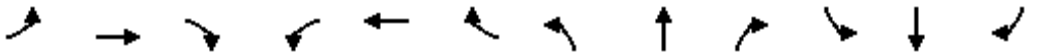
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	215	9	0	248	0	4
Future Vol, veh/h	215	9	0	248	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	0	0	2	0	0
Mvmt Flow	234	10	0	270	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	239
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	805
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	805
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	805	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	194	20	67	215	83	138	560	61	55	321	16
Future Volume (vph)	48	194	20	67	215	83	138	560	61	55	321	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	11	11	11	11	11	11
Storage Length (ft)	95		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.986			0.969			0.988			0.994	
Flt Protected	0.950				0.991			0.991			0.993	
Satd. Flow (prot)	1745	1791	0	0	1760	0	0	3407	0	0	3383	0
Flt Permitted	0.335				0.884			0.766			0.562	
Satd. Flow (perm)	615	1791	0	0	1567	0	0	2633	0	0	1914	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		226			149			151			242	
Travel Time (s)		6.2			3.4			3.4			5.5	
Confl. Peds. (#/hr)			9	9					12	12		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	1%	0%	0%	0%	7%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	233	0	0	397	0	0	825	0	0	426	0
Turn Type	pm+pt	NA		Perm	NA		custom	NA		custom	NA	
Protected Phases	5	5 6			6		3	2 3		1	1 2	
Permitted Phases	5 6			6			2			2		
Detector Phase	5	5 6		6	6		3	2 3		1	1 2	
Switch Phase												
Minimum Initial (s)	6.0			10.0	10.0		6.0			6.0		
Minimum Split (s)	11.0			15.0	15.0		13.0			13.0		
Total Split (s)	20.0			50.0	50.0		25.0			15.0		
Total Split (%)	10.6%			26.5%	26.5%		13.2%			7.9%		
Yellow Time (s)	4.0			4.0	4.0		4.0			4.0		
All-Red Time (s)	1.0			1.0	1.0		3.0			3.0		
Lost Time Adjust (s)	0.0				0.0							
Total Lost Time (s)	5.0				5.0							
Lead/Lag	Lead			Lag	Lag		Lead			Lead		
Lead-Lag Optimize?	Yes			Yes	Yes		Yes			Yes		
Recall Mode	None			None	None		None			None		
Act Effct Green (s)	59.8	64.8			45.4			56.5			54.8	
Actuated g/C Ratio	0.38	0.41			0.28			0.35			0.34	
v/c Ratio	0.16	0.32			0.89			0.84			0.58	
Control Delay	34.2	36.3			77.8			52.0			42.8	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	34.2	36.3			77.8			52.0			42.8	
LOS	C	D			E			D			D	
Approach Delay		35.9			77.8			52.0			42.8	

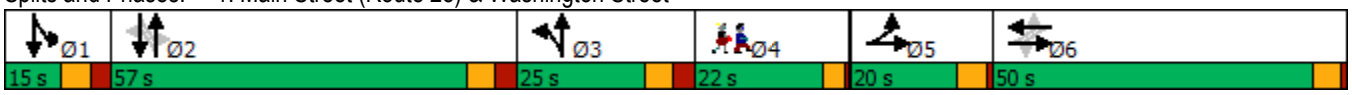
Lane Group	Ø2	Ø4
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	4
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	6.0
Minimum Split (s)	17.0	22.0
Total Split (s)	57.0	22.0
Total Split (%)	30%	12%
Yellow Time (s)	4.0	3.0
All-Red Time (s)	3.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		D			E			D			D	
Queue Length 50th (ft)	32	161			394			342			154	
Queue Length 95th (ft)	81	306			#770			503			263	
Internal Link Dist (ft)		146			69			71			162	
Turn Bay Length (ft)	95											
Base Capacity (vph)	341	724			446			1202			777	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.15	0.32			0.89			0.69			0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 189			
Actuated Cycle Length: 159.4			
Natural Cycle: 135			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 52.9		Intersection LOS: D	
Intersection Capacity Utilization 84.1%		ICU Level of Service E	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Main Street (Route 28) & Washington Street



Lane Group	Ø2	Ø4
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	22	737	17	0	410
Future Vol, veh/h	0	22	737	17	0	410
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	0	24	801	18	0	446

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	410	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	596	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	596	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT
Capacity (veh/h)	-	-	596	-
HCM Lane V/C Ratio	-	-	0.04	-
HCM Control Delay (s)	-	-	11.3	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	293	17	0	365	0	10
Future Vol, veh/h	293	17	0	365	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	318	18	0	397	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	327
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.3
Pot Cap-1 Maneuver	-	-	0	-	0	719
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	719
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	719	-	-	-
HCM Lane V/C Ratio	0.015	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

APPENDIX I

Capacity/Level-of-Service Analysis Summary

CAPACITY ANALYSIS SUMMARY

Weekday Morning Peak Hour
Proposed Bank
Reading, MA

			2023 Existing			2030 No Build			2030 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Main Street (Route 28) at	EB	L	C	28.0	0.18	C	28.9	0.16	C	29.3	0.16
Washington Street		TR	C	28.2	0.24	C	29.1	0.23	C	29.5	0.24
	WB	LTR	E	61.6	0.82	E	63.3	0.80	E	64.0	0.81
	NB	LTR	D	39.4	0.66	D	36.6	0.65	D	37.3	0.67
	SB	LTR	C	33.7	0.50	C	31.3	0.50	C	31.6	0.51
	Overall		*D*	*40.8*	*0.65*	*D*	*38.9*	*0.67*	*D*	*39.4*	*0.68*
Main Street (Route 28) at	WB	LR	B	13.7	0.03	B	14.0	0.02	-	-	-
Southern Site Driveway		R	-	-	-	-	-	-	B	10.1	0.02
	NB	TR	A	0.0	0.00	A	0.00	0.00	A	0.0	0.00
	SB	LT	A	0.0	0.00	A	0.00	0.00	-	-	-
		T	-	-	-	-	-	-	A	0.0	0.00
Washington Street at	EB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Eastern Site Driveway	WB	LT	A	0.1	0.00	A	0.1	0.00	A	0.0	0.00
	NB	LR	B	11.3	0.01	B	10.7	0.01	-	-	-
		R	-	-	-	-	-	-	A	9.5	0.01

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
- Not Applicable

QUEUE SUMMARY

Weekday Morning Peak Hour
Proposed Bank
Reading, MA

			2023 Existing		2030 No Build		2030 Build	
Intersection	**Movement**		**50th Queue[1]**	**95th Queue[2]**	**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
Main Street (Route 28) at	EB	L	27	67	23	71	23	69
Washington Street		TR	80	162	70	171	74	175
	WB	LTR	223	361	181	385	185	386
	NB	LTR	163	295	151	303	156	311
	SB	LTR	121	231	116	247	118	249
Main Street (Route 28) at	WB	LR	-	3	-	0	-	-
Southern Site Driveway		R	-	-	-	-	-	3
	NB	TR	-	0	-	0	-	0
	SB	LT	-	0	-	0	-	-
		T	-	-	-	-	-	0
Washington Street at	EB	TR	-	0	-	0	-	0
Eastern Site Driveway	WB	LT	-	0	-	0	-	0
	NB	LR	-	0	-	0	-	-
		R	-	-	-	-	-	0

1 50th Percentile Queue Length (ft)
2 95th Percentile Queue Length (ft)
- Not Applicable

CAPACITY ANALYSIS SUMMARY

Weekday Afternoon Peak Hour
Proposed Bank
Reading, MA

			2023 Existing			2030 No Build			2030 Build		
Intersection	**Movemer**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Main Street (Route 28) at	EB	L	C	31.9	0.17	C	33.9	0.16	C	34.2	0.16
Washington Street		TR	C	33.5	0.32	D	35.6	0.31	D	36.3	0.32
	WB	LTR	E	75.9	0.90	E	75.1	0.88	E	77.8	0.89
	NB	LTR	D	49.1	0.79	D	50.8	0.83	D	52.0	0.84
	SB	LTR	D	41.0	0.53	D	42.3	0.56	D	42.8	0.58
	Overall		*D*	*50.9*	*0.80*	*D*	*51.7*	*0.83*	*D*	*52.9*	*0.84*
Main Street (Route 28) at	WB	LR	B	14.7	0.02	C	15.9	0.01	-	-	-
Southern Site Driveway		R	-	-	-	-	-	-	B	11.3	0.04
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	LT	A	0.0	0.00	A	0.0	0.00	-	-	-
		T	-	-	-	-	-	-	A	0.0	0.00
Washington Street at	EB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Eastern Site Driveway	WB	LT	A	0.1	0.01	A	0.1	0.01	A	0.0	0.00
	NB	LR	A	9.9	0.01	B	10.0	0.01	-	-	-
		R	-	-	-	-	-	-	B	10.1	0.02

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
- Not Applicable

QUEUE SUMMARY

Weekday Afternoon Peak Hour
Proposed Bank
Reading, MA

			2023 Existing		2030 No Build		2030 Build	
Intersection	**Movement**		**50th Queue[1]**	**95th Queue[2]**	**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
Main Street (Route 28) at	EB	L	32	79	33	83	32	81
Washington Street		TR	150	281	153	298	161	306
	WB	LTR	393	711	388	768	394	770
	NB	LTR	291	434	332	489	342	503
	SB	LTR	140	236	152	259	154	263
Main Street (Route 28) at	WB	LR	-	3	-	0	-	-
Southern Site Driveway		R	-	-	-	-	-	3
	NB	TR	-	0	-	0	-	0
	SB	LT	-	0	-	0	-	-
		T	-	-	-	-	-	0
Washington Street at	EB	TR	-	0	-	0	-	0
Eastern Site Driveway	WB	LT	-	0	-	0	-	0
	NB	LR	-	0	-	0	-	-
		R	-	-	-	-	-	0

1 50th Percentile Queue Length (ft)
2 95th Percentile Queue Length (ft)
- Not Applicable

DRAINAGE MEMORANDUM

For

Chase Bank

431 Main Street
Town of Reading, Massachusetts
Middlesex County

Prepared by:

BOHLER
352 Turnpike Road
Southborough, MA 01772
(508) 480-9900 TEL.

Joshua G. Swerling, P.E.
Massachusetts P.E. Lic. # 41697

BOHLER

February 3, 2023

#MAA220275

TABLE OF CONTENTS

APPENDICIES

I. SUMMARY

This report examines the changes in drainage that can be expected as the result of the redevelopment consisting of a bank 431 Main Street in the Town of Reading, Massachusetts. The site, which contains approximately 0.37 acres of land, contains an existing building, paved parking lot, and gas pumps. The existing adjacent lot located at 167 Washington Street will be included in the development of the bank, but no portion of site work proposed for the bank will be located on this lot. This lot is approximately 0.22 acres and is a mix of asphalt pavement and grass.

The proposed project includes the construction of a new bank building with parking areas, landscaping, utilities, and stormwater management components. The project also includes construction of new landscaped areas. This report addresses a comparative analysis of the pre- and post-development site runoff conditions using the Rational Method. The project will also provide erosion and sedimentation controls during the demolition and construction periods, as well as long term stabilization of the site.

The entirety of the proposed project area flows to three (3) proposed catch basins within the site that will convey stormwater to an existing catch basin located on the sideline of Main Street. The existing drainage ties into this catch-basin and the proposed project will connect to the same location. As a result of this redevelopment, a decrease in peak flows is expected to this discharge point as a result of the decrease of approximately 3,445 SF of impervious surfaces. The adjacent parcel located within the Residential Zone District does not contain any stormwater management. The parcel is comprised of debris piles, parked vehicles and broken asphalt areas. Under the proposed condition, all debris, vehicles and paved areas will be removed. Existing trees will remain the lot will be loamed and seeded. With the removal of the existing asphalt on the property as well as the new landscaping that there will be a decrease in stormwater runoff associated with this parcel.

The proposed site conditions will improve water quality through the decrease in impervious area. Implementation of stormwater Best Management Practices will comply with Massachusetts DEP standards. Stormwater management will meet all redevelopment requirements of the current Massachusetts Department of Environmental Protection Stormwater Policy Handbook and the Town of Reading's requirements for stormwater drainage. The proposed drainage condition will maintain the existing drainage patterns.

II. RATIONAL DRAINAGE CALCULATIONS

Rational Method Drainage Calculations

EXISTING CONDITIONS

Coverage type	acres	pct.	"C"	frac.	
Impervious	0.37	1.00	0.95	0.95	
Landscape / Grass	0	0.00	0.30	0	
Total	0.37			0.95	(Composite "C")

PROPOSED CONDITIONS

Coverage type	acres	pct.	"C"	frac.	
Impervious	0.29	0.78	0.95	0.74	
Landscape / Grass	0.08	0.22	0.30	0.06	
Total	0.37			0.81	(Composite "C")

Time of Concentration 5 MIN

IDF Chart	"I"
2-yr storm	3.3
10-yr storm	5.2
50-yr storm	7.2
100-yr storm	8.2

RUNOFF CALCULATIONS "Q" = C x I x A

Existing Conditions	C	I	A	Q	
2-yr storm	0.95	3.3	0.37	1.16	cfs
10-yr storm	0.95	5.2	0.37	1.83	cfs
50-yr storm	0.95	7.2	0.37	2.53	cfs
100-yr storm	0.95	8.2	0.37	2.90	cfs

Proposed Conditions	C	I	A	Q	
2-yr storm	0.81	3.3	0.37	0.99	cfs
10-yr storm	0.81	5.2	0.37	1.56	cfs
50-yr storm	0.81	7.2	0.37	2.16	cfs
100-yr storm	0.81	8.2	0.37	2.47	cfs

Difference (Existing vs. Proposed)			
2-yr storm	-0.17	cfs	-15%
10-yr storm	-0.27	cfs	-15%
50-yr storm	-0.37	cfs	-15%
100-yr storm	-0.43	cfs	-15%

III. STORMWATER MANAGEMENT STANDARDS

Standard #1: No New Untreated Discharges

The project has been designed to maintain the existing drainage patterns and will decrease peak rates as a result of a decrease in impervious area.

Standard #2: Peak Rate Attenuation

As outlined in **Section II**, the development of the site has been designed so that post-development peak rates of runoff as well as volume are below pre-development conditions for the 2-, 10-, 50-, and 100-year storm events.

Standard #3: Recharge

The project is a redevelopment and results in a significant decrease of impervious area. Thus, no recharge is required. However, on-site recharge will be increased due to the increase in pervious landscaped area.

Standard #4: Water Quality

The project is a redevelopment and results in a decrease of impervious area. Thus, no water quality is required. However, water quality will be increased due to the increase in pervious landscaped areas along with the additional deep-sump hooded catch-basins.

Standard #5: Land Use with Higher Potential Pollutant Loads

Not Applicable for this project.

Standard #6: Critical Areas

Not Applicable for this project.

Standard #7: Redevelopment

The site is considered a redevelopment and results in a decrease of approximately 3,445 SF of impervious area.

Standard #8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

The proposed project will provide construction period erosion and sedimentation controls as indicated within the site plan set provided for this project. This includes a proposed construction exit, protection for stormwater inlets, protection around temporary material stock piles and various other techniques as outlined on the erosion and sediment control sheets.

Standard #9: Operation and Maintenance Plan (O&M Plan)

An Operation and Maintenance (O&M) Plan for this site has been prepared and is included in **Appendix E** of this report. The O&M Plan outlines procedures and time tables for the long term operation and maintenance of the proposed site stormwater management system, including initial inspections upon completion of construction and periodic monitoring of the system components, in accordance with established practices and the manufacturer's recommendations. The O&M Plan includes a list of responsible parties.

Standard #10: Prohibition of Illicit Discharges

The proposed stormwater system will only convey allowable non-stormwater discharges (firefighting waters, irrigation, air conditioning condensation, etc.) and will not contain any illicit discharges from prohibited sources.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

---

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

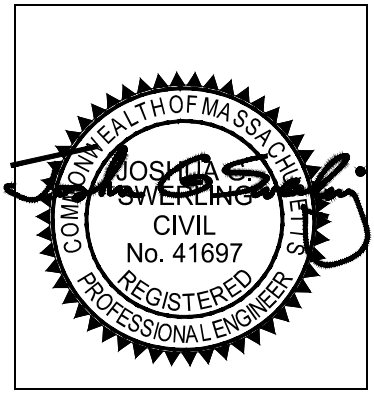
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



February 3, 2023

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☒ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☒ Reduced Impervious Area (Redevelopment Only)

☐ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☐ Other (describe): _____

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☐ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☐ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☒ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

---

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☐ The BMP is sized (and calculations provided) based on:

- ☐ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☐ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX B: PROJECT LOCATION MAPS

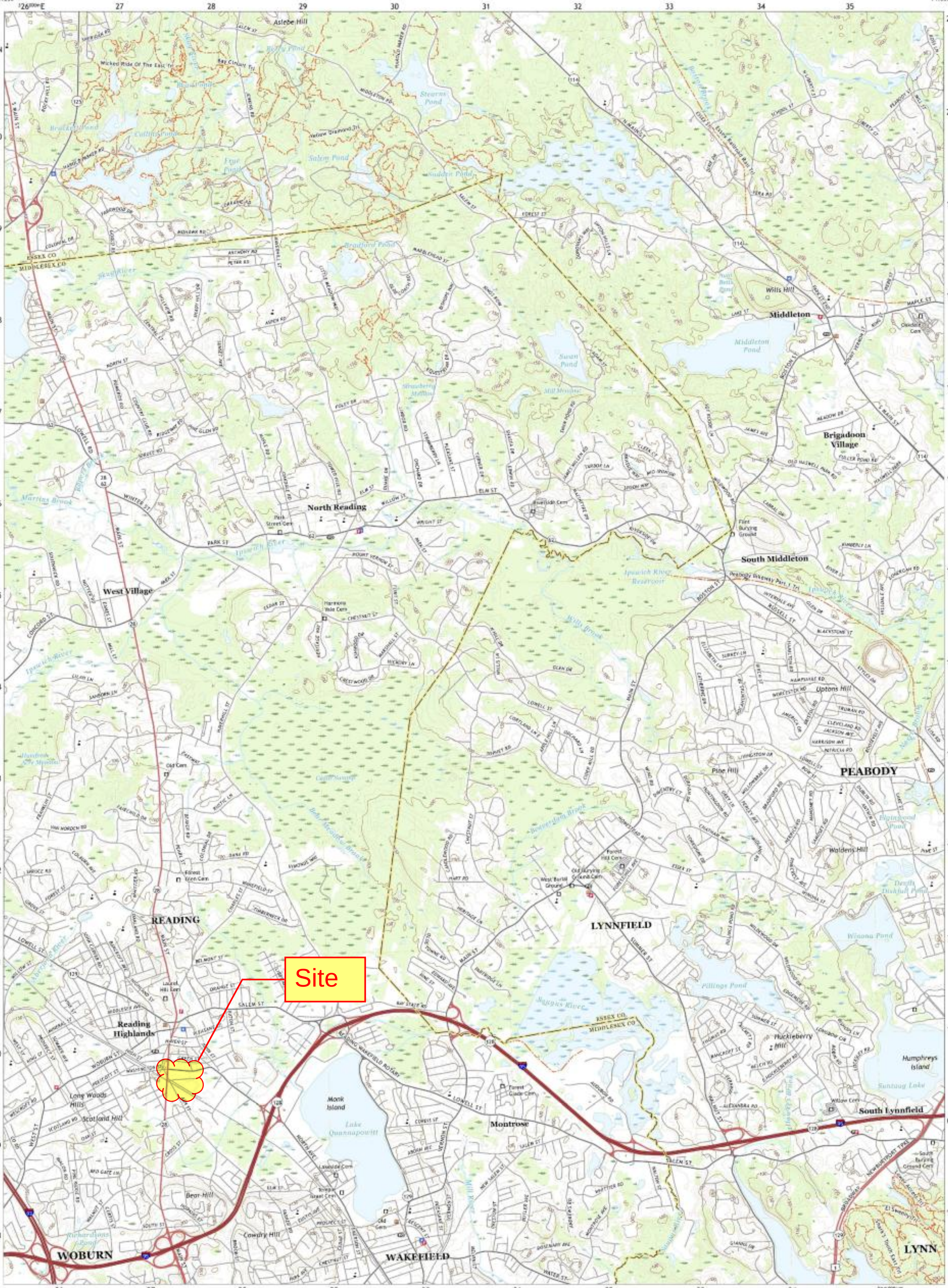
- *USGS MAP*
- *FEMA FIRMETTE*

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

READING QUADRANGLE
MASSACHUSETTS
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid:Universal Transverse Mercator, Zone 19T
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

UTM GRID AND 2018 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard.

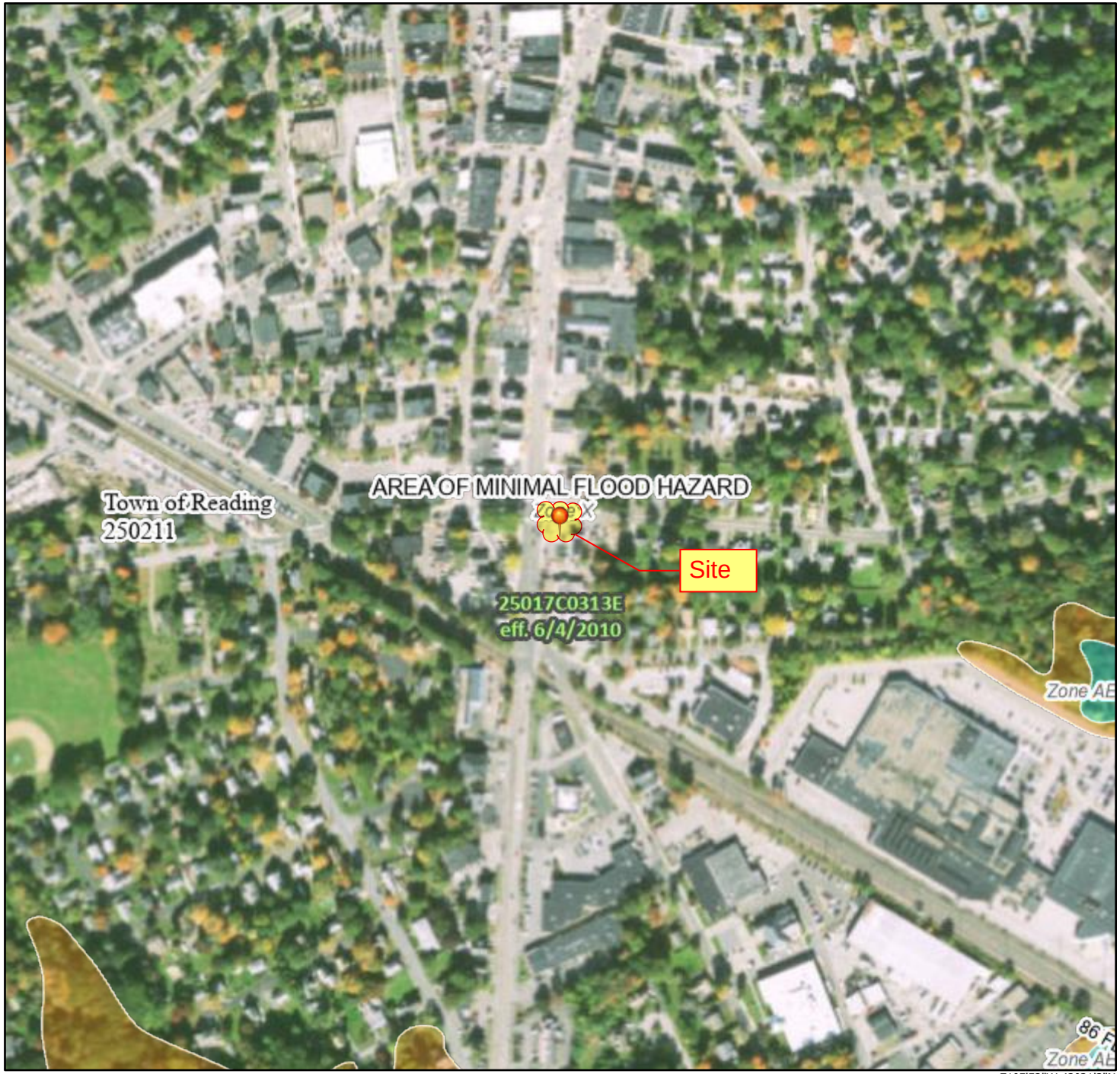
ROAD CLASSIFICATION

READING, MA
2021

National Flood Hazard Layer FIRMette

FEMA

71°6'29"W 42°31'29"N



71°5'52"W 42°31'2"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/5/2023 at 11:44 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

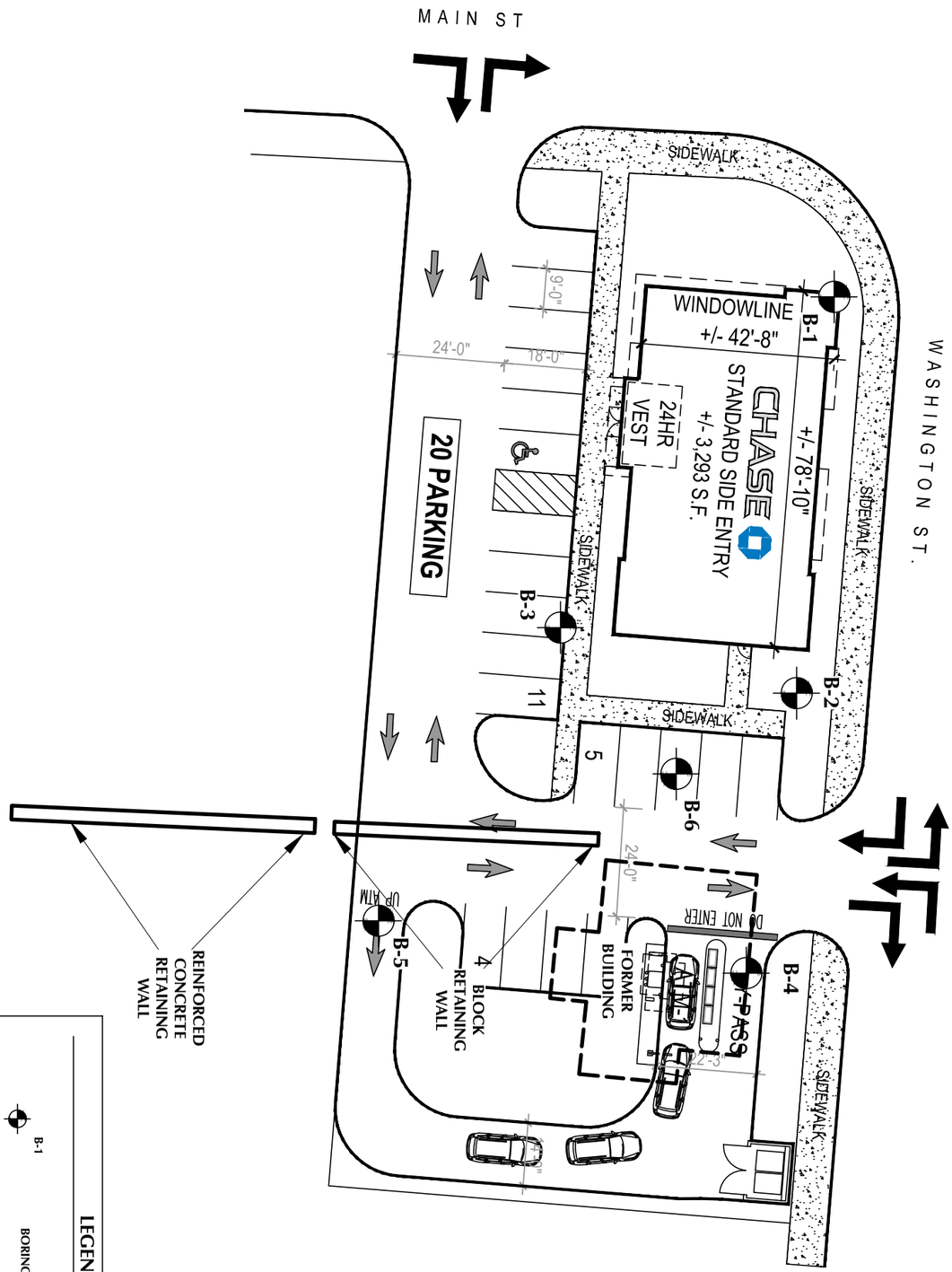
APPENDIX C: SOIL INFORMATION

- *SOIL TESTING RESULTS*

WHITESTONE

FIGURE 1
Boring Location Plan

N:\JOB FOLDERS\2022\2219395GM\DRAWINGS AND PLANS\CAD\GM2219395.000.DWG



0 30
1 inch = 30 ft.

LEGEND

B-1 BORING LOCATION

NOTE: ALL LOCATIONS ARE APPROXIMATE.

REFERENCE

THIS PLAN IS BASED ON A 7/25/22 PROPOSED SITE PLAN PROVIDED BY CHASE.

PROJECT #:	GM2219395.000
DESIGNED BY:	MR
DATE:	8/31/22
SCALE:	1" = 30'
PROJ. MGR.:	RR
FIGURE:	1

DRAWING TITLE:
BORING LOCATION PLAN

CLIENT:
BOHLER ENGINEERING MA, LLC

PROJECT:
PROPOSED CHASE BANK BRANCH
431 MAIN STREET
MAP 17, LOT 63
READING, MIDDLESEX COUNTY, MASSACHUSETTS

WHITESTONE
An Employee-Owned Company
352 TURNPIKE ROAD, SUITE 320, SOUTHBOROUGH, MA 01772
508.485.0755 WHITESTONEASSOC.COM

WHITESTONE

APPENDIX A
Records of Subsurface Exploration

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Page 1 of 1

Project:	Proposed Chase Bank Branch	**WAI Project No.:**	GM2219395.000
Location:	431 Main Street, Reading, Middlesex County, Massachusetts	**Client:**	Bohler Engineering MA, LLC
Surface Elevation:	± NS feet above NAVD88	**Date Started:**	8/17/2022
Termination Depth:	5.0 feet bgs	**Date Completed:**	8/17/2022
Proposed Location:	Building	**Logged By:**	RK
Drill / Test Method:	HSA / SPT	**Contractor:**	GS
		Equipment:	CME 85

Water Depth | Elevation (feet bgs) | (ft NAVD88)		Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)	
During:	-- | --		
At Completion:	-- | --	**At Completion:**	-- | --
24 Hours:	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							PAVEMENT		3" Asphalt	
							GRAVEL		10" Granular Subbase	
1 - 3	S-1	X	2 - 3 - 4 - 2	6	7		EXISTING FILL		Brown, Loose, Pea Gravel and Sand (FILL)	
3 - 5	S-2	X	2 - 1 - 1 - 2	8	2	5.0			As Above, Very Loose (FILL)	
									Boring Log B-1 Terminated at Depth of 5 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Page 1 of 1

Project:	Proposed Chase Bank Branch	**WAI Project No.:**	GM2219395.000
Location:	431 Main Street, Reading, Middlesex County, Massachusetts	**Client:**	Bohler Engineering MA, LLC
Surface Elevation:	± NS feet above NAVD88	**Date Started:**	8/17/2022
Termination Depth:	22.0 feet bgs	**Date Completed:**	8/17/2022
Proposed Location:	Building	**Logged By:**	RK
Drill / Test Method:	HSA / SPT	**Contractor:**	GS
		Equipment:	CME 85

	Water Depth (feet bgs)	Elevation (ft NAVD88)	Cave-In Depth (feet bgs)	Elevation (ft NAVD88)
During:	10.0	--		
At Completion:	--	--	**At Completion:**	-- / --
24 Hours:	--	--	**24 Hours:**	-- / --

Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
						0.0			
							PAVEMENT	4" Asphalt	
							GRAVEL	8" Granular Subbase	
1 - 3	S-1	X	6 - 3 - 2 - 1	14	5		EXISTING FILL	Dark Brown, Loose, Silty Sand with Gravel, Trace Organics (FILL)	
3 - 5	S-2	X	2 - 2 - 5 - 6	12	7	5.0		As Above (FILL)	
5 - 7	S-3	X	16 - 22 - 19 - 24	12	41			Gray, Dense, Poorly Graded Sand with Silt and Gravel (SP-SM)	
7 - 9	S-4	X	12 - 19 - 26 - 48	14	45			As Above (SP-SM)	
						10.0 ▽			
10 - 12	S-5	X	14 - 23 - 25 - 25	14	48		GLACIAL OUTWASH	As Above, Gray-Brown (SP-SM)	
						15.0			
15 - 17	S-6	X	2 - 7 - 9 - 14	16	16			As Above, Medium Dense (SP-SM)	
17 - 19	S-7	X	5 - 5 - 5 - 13	14	10			As Above, Loose to Medium Dense (SP-SM)	
						20.0			
20 - 22	S-8	X	5 - 7 - 8 - 6	6	15			As Above, Brown, Medium Dense (SP-SM)	
						25.0		Boring Log B-2 Terminated at Depth of 22 feet below ground surface.	

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3

Page 1 of 1

Project:	Proposed Chase Bank Branch	**WAI Project No.:**	GM2219395.000
Location:	431 Main Street, Reading, Middlesex County, Massachusetts	**Client:**	Bohler Engineering MA, LLC
Surface Elevation:	± NS feet above NAVD88	**Date Started:**	8/17/2022
Termination Depth:	19.0 feet bgs	**Date Completed:**	8/17/2022
Proposed Location:	Building	**Logged By:**	RK
Drill / Test Method:	HSA / SPT	**Contractor:**	GS
		Equipment:	CME 85

Water Depth | Elevation (feet bgs) | (ft NAVD88)		Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)	
During:	11.5 | --		
At Completion:	-- | --	**At Completion:**	-- | --
24 Hours:	-- | --	**24 Hours:**	-- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TS		2" Topsoil	
0 - 2	S-1		6 - 9 - 12 - 12	18	21				Brown, Medium Dense, Poorly Graded Sand with Silt and Gravel (FILL)	
2 - 4	S-2		15 - 6 - 8 - 9	14	14				As Above (FILL)	
									Dark Brown, Medium Dense, Silty Sand with Gravel, Trace Organics (FILL)	
						5.0	EXISTING FILL			
5 - 7	S-3		7 - 5 - 37 - 42	18	42				Brown, Dense, Processed Sand and Gravel (FILL)	
7 - 7.3	S-4		50/4"	3	-				As Above (FILL) Fill Includes Trash (ceramics, mortar, plastic wrapping)	Cobbles
										Auger Grinding on Cobbles @ 9 fbgs
						10.0				
10 - 12	S-5		23 - 33 - 29 - 24	16	62				Brown, Very Dense, Poorly Graded Sand with Silt and Gravel (SP-SM)	
							GLACIAL OUTWASH			
						15.0				
15 - 17	S-6		5 - 10 - 22 - 27	12	32				As Above, Dense (SP-SM)	
17 - 19	S-7		17 - 13 - 8 - 10	10	21				As Above, Medium Dense (SP-SM)	
						20.0			Boring Log B-3 Terminated at Depth of 19 feet below ground surface.	
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Project:	Proposed Chase Bank Branch	**WAI Project No.:**	GM2219395.000
Location:	431 Main Street, Reading, Middlesex County, Massachusetts	**Client:**	Bohler Engineering MA, LLC
Surface Elevation:	± NS feet above NAVD88	**Date Started:**	8/17/2022
Termination Depth:	7.7 feet bgs	**Date Completed:**	8/17/2022
Proposed Location:	Remote ATM	**Logged By:**	RK
Drill / Test Method:	HSA / SPT	**Contractor:**	GS
		Equipment:	CME 85

	Water Depth (feet bgs)	Elevation (ft NAVD88)	Cave-In Depth (feet bgs)	Elevation (ft NAVD88)
During:	--	--		
At Completion:	--	--	**At Completion:**	-- / --
24 Hours:	--	--	**24 Hours:**	-- / --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1		26 - 29 - 12 - 7	16	41		EXISTING FILL		Brown, Dense, Poorly Graded Sand with Gravel, Concrete Pieces (FILL)	Crushed Reclaim Fill
2 - 4	S-2		6 - 7 - 8 - 11	4	15	2.0			Brown, Medium Dense, Well-Graded Sand with Silt and Gravel (SW-SM)	
						5.0	GLACIAL OUTWASH			
5 - 7	S-3		7 - 30 - 32 - 34	18	62				As Above, Very Dense (SW-SM)	
7 - 7.7	S-4		45 - 50/2"	6	-				As Above (SW-SM)	Cobbles
						10.0			Boring Log B-4 Terminated at Depth of 7.7 feet below ground surface.	
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-5

Page 1 of 1

Project:	Proposed Chase Bank Branch	**WAI Project No.:**	GM2219395.000
Location:	431 Main Street, Reading, Middlesex County, Massachusetts	**Client:**	Bohler Engineering MA, LLC
Surface Elevation:	± NS feet above NAVD88	**Date Started:**	8/17/2022
Termination Depth:	6.7 feet bgs	**Date Completed:**	8/17/2022
Proposed Location:	ATM Access	**Logged By:**	RK
Drill / Test Method:	HSA / SPT	**Contractor:**	GS
		Equipment:	CME 85

	Water Depth (feet bgs)	Elevation (ft NAVD88)	Cave-In Depth (feet bgs)	Elevation (ft NAVD88)
During:	--	--		
At Completion:	--	--	**At Completion:**	-- / --
24 Hours:	--	--	**24 Hours:**	-- / --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0 - 2	S-1		10 - 9 - 8 - 10	18	17		EXISTING FILL		Dark Brown, Medium Dense, Poorly Graded Sand with Gravel mixed with Topsoil, Asphalt, Brick, Concrete Pieces (FILL)	
2 - 4	S-2		10 - 25 - 34 - 43	18	59	2.5			Gray-Brown, Very Dense, Well-Graded Sand with Silt and Gravel (SW-SM)	
							GLACIAL OUTWASH			
						5.0				
5 - 6.7	S-3		13 - 41 - 61 - 50/2"	10	>100				As Above (SW-SM)	Cobbles
									Boring Log B-5 Terminated at Depth of 6.7 feet below ground surface.	
						10.0				
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-6

Page 1 of 1

Project:	Proposed Chase Bank Branch	**WAI Project No.:**	GM2219395.000
Location:	431 Main Street, Reading, Middlesex County, Massachusetts	**Client:**	Bohler Engineering MA, LLC

				Water Depth | Elevation (feet bgs) | (ft NAVD88)	Cave-In Depth | Elevation (feet bgs) | (ft NAVD88)
Surface Elevation:	± NS feet above NAVD88	**Date Started:**	8/17/2022		
Termination Depth:	7.8 feet bgs	**Date Completed:**	8/17/2022		
Proposed Location:	Parking	**Logged By:**	RK	**During:** -- | --	
Drill / Test Method:	HSA / SPT	**Contractor:**	GS	**At Completion:** -- | --	**At Completion:** -- | --
		Equipment:	CME 85	**24 Hours:** -- | --	**24 Hours:** -- | --

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0	PAVEMENT		2" Asphalt	
							GRAVEL		12" Granular Subbase	
1 - 3	S-1	X	5 - 22 - 16 - 7	12	38	1.7	EXISTING FILL		Brown, Dense, Silty Sand with Gravel (FILL)	
						1.8	PAVEMENT		2" Asphalt	
						2.8	GRAVEL		12" Granular Subbase	
3 - 5	S-2	X	2 - 2 - 2 - 2	14	4		ORGANIC LAYER		Black, Very Loose to Loose, Organic Silt and Sand (OL)	
5 - 7	S-3	X	8 - 16 - 19 - 33	18	35	5.0	GLACIAL OUTWASH		Brown, Dense, Poorly Graded Sand with Silt and Gravel (SP-SM)	
7 - 7.8	S-4	X	48 - 50/4"	8	-				As Above (SP-SM)	Cobbles
						10.0			Boring Log B-6 Terminated at Depth of 7.8 feet below ground surface.	
						15.0				
						20.0				
						25.0				

NOTES: bgs = below ground surface, msl = mean sea level, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

APPENDIX D: RAINFALL DATA

- *INTENSITY-DURATION-FREQUENCY CURVE*

NOAA Atlas 14, Volume 10, Version 3 READING
Station ID: 19-6783
Location name: Reading, Massachusetts, USA*
Latitude: 42.5242°, Longitude: -71.1264°
Elevation:
Elevation (station metadata): 83 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.310 (0.239-0.390)	0.374 (0.288-0.471)	0.479 (0.368-0.605)	0.565 (0.432-0.718)	0.685 (0.509-0.913)	0.775 (0.565-1.06)	0.870 (0.618-1.23)	0.981 (0.659-1.42)	1.14 (0.740-1.71)	1.28 (0.809-1.96)
10-min	0.439 (0.339-0.552)	0.530 (0.409-0.667)	0.679 (0.521-0.856)	0.802 (0.612-1.02)	0.971 (0.721-1.29)	1.10 (0.800-1.50)	1.23 (0.875-1.75)	1.39 (0.932-2.01)	1.62 (1.05-2.43)	1.81 (1.15-2.77)
15-min	0.517 (0.399-0.650)	0.624 (0.481-0.785)	0.798 (0.613-1.01)	0.943 (0.720-1.20)	1.14 (0.848-1.52)	1.29 (0.941-1.76)	1.45 (1.03-2.06)	1.63 (1.10-2.36)	1.91 (1.23-2.86)	2.13 (1.35-3.26)
30-min	0.710 (0.548-0.893)	0.857 (0.661-1.08)	1.10 (0.844-1.39)	1.30 (0.992-1.65)	1.57 (1.17-2.10)	1.78 (1.30-2.42)	2.00 (1.42-2.83)	2.25 (1.51-3.26)	2.63 (1.70-3.94)	2.94 (1.86-4.50)
60-min	0.904 (0.697-1.14)	1.09 (0.841-1.37)	1.40 (1.07-1.76)	1.65 (1.26-2.10)	2.00 (1.49-2.67)	2.27 (1.65-3.09)	2.54 (1.81-3.61)	2.87 (1.93-4.15)	3.35 (2.17-5.02)	3.75 (2.38-5.74)
2-hr	1.17 (0.911-1.46)	1.42 (1.10-1.78)	1.83 (1.42-2.30)	2.17 (1.67-2.74)	2.64 (1.98-3.51)	2.99 (2.20-4.07)	3.36 (2.42-4.78)	3.83 (2.58-5.50)	4.54 (2.94-6.75)	5.15 (3.27-7.82)
3-hr	1.36 (1.06-1.70)	1.66 (1.29-2.07)	2.14 (1.66-2.68)	2.54 (1.96-3.20)	3.09 (2.33-4.10)	3.50 (2.59-4.75)	3.94 (2.85-5.60)	4.50 (3.04-6.44)	5.36 (3.49-7.95)	6.12 (3.89-9.24)
6-hr	1.76 (1.38-2.17)	2.14 (1.68-2.65)	2.77 (2.17-3.44)	3.30 (2.56-4.11)	4.01 (3.04-5.28)	4.54 (3.38-6.12)	5.12 (3.72-7.22)	5.85 (3.96-8.30)	6.98 (4.55-10.3)	7.97 (5.09-12.0)
12-hr	2.23 (1.76-2.74)	2.73 (2.15-3.35)	3.53 (2.78-4.36)	4.20 (3.29-5.21)	5.13 (3.90-6.69)	5.81 (4.34-7.77)	6.55 (4.78-9.15)	7.47 (5.08-10.5)	8.89 (5.82-13.0)	10.1 (6.48-15.1)
24-hr	2.67 (2.13-3.25)	3.31 (2.63-4.04)	4.35 (3.45-5.32)	5.21 (4.10-6.42)	6.40 (4.90-8.31)	7.28 (5.47-9.68)	8.24 (6.05-11.5)	9.44 (6.45-13.2)	11.3 (7.44-16.4)	13.0 (8.33-19.2)
2-day	3.03 (2.43-3.67)	3.83 (3.06-4.64)	5.14 (4.10-6.25)	6.22 (4.93-7.61)	7.72 (5.95-9.98)	8.81 (6.68-11.7)	10.0 (7.44-14.0)	11.6 (7.95-16.1)	14.2 (9.32-20.4)	16.4 (10.6-24.0)
3-day	3.31 (2.67-4.00)	4.18 (3.36-5.04)	5.59 (4.47-6.76)	6.76 (5.38-8.23)	8.37 (6.48-10.8)	9.54 (7.26-12.6)	10.8 (8.09-15.1)	12.6 (8.63-17.4)	15.4 (10.1-22.0)	17.9 (11.5-26.0)
4-day	3.59 (2.90-4.31)	4.48 (3.61-5.39)	5.93 (4.76-7.16)	7.14 (5.70-8.67)	8.80 (6.83-11.3)	10.0 (7.64-13.2)	11.4 (8.49-15.7)	13.1 (9.04-18.1)	16.0 (10.6-22.9)	18.6 (12.0-27.0)
7-day	4.36 (3.54-5.21)	5.28 (4.28-6.32)	6.79 (5.48-8.15)	8.04 (6.45-9.71)	9.76 (7.61-12.4)	11.0 (8.44-14.4)	12.4 (9.30-17.0)	14.2 (9.84-19.5)	17.2 (11.4-24.4)	19.8 (12.8-28.7)
10-day	5.06 (4.12-6.03)	6.01 (4.89-7.17)	7.56 (6.12-9.04)	8.84 (7.12-10.6)	10.6 (8.29-13.4)	11.9 (9.13-15.5)	13.3 (9.97-18.1)	15.2 (10.5-20.7)	18.1 (12.0-25.5)	20.7 (13.4-29.7)
20-day	7.04 (5.78-8.33)	8.08 (6.62-9.57)	9.79 (7.99-11.6)	11.2 (9.09-13.4)	13.2 (10.3-16.4)	14.6 (11.2-18.6)	16.2 (12.0-21.4)	17.9 (12.5-24.2)	20.6 (13.7-28.8)	22.8 (14.8-32.5)
30-day	8.69 (7.16-10.2)	9.81 (8.07-11.6)	11.6 (9.53-13.8)	13.2 (10.7-15.6)	15.2 (12.0-18.8)	16.8 (12.9-21.2)	18.5 (13.6-24.1)	20.2 (14.1-27.1)	22.6 (15.2-31.4)	24.5 (16.0-34.8)
45-day	10.8 (8.92-12.7)	12.0 (9.90-14.1)	13.9 (11.5-16.4)	15.6 (12.7-18.4)	17.8 (14.0-21.8)	19.5 (15.0-24.4)	21.2 (15.6-27.3)	22.9 (16.1-30.6)	25.1 (16.9-34.7)	26.7 (17.5-37.8)
60-day	12.6 (10.4-14.7)	13.8 (11.5-16.2)	15.9 (13.1-18.7)	17.6 (14.4-20.8)	19.9 (15.7-24.3)	21.7 (16.7-27.0)	23.5 (17.3-30.0)	25.2 (17.7-33.5)	27.2 (18.3-37.5)	28.7 (18.7-40.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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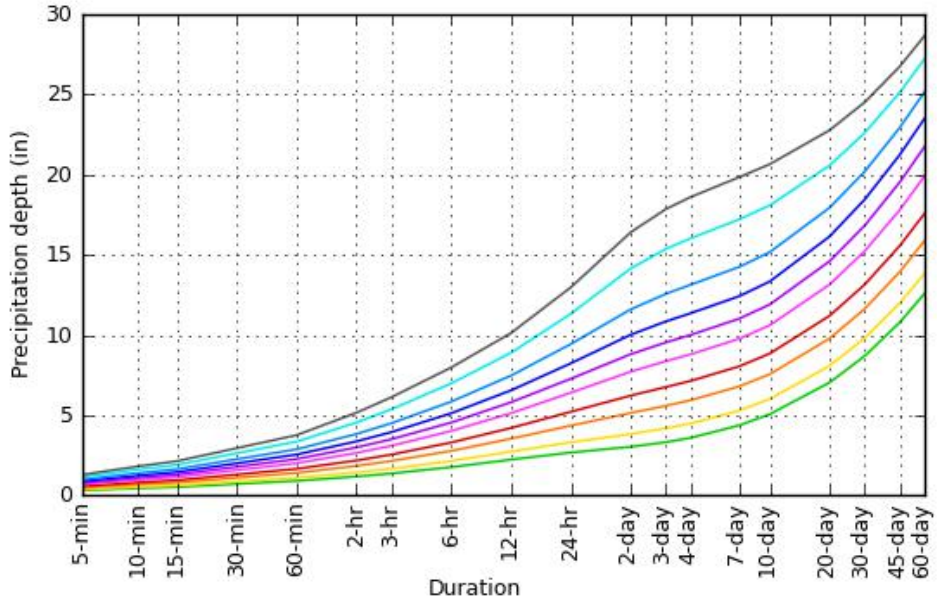
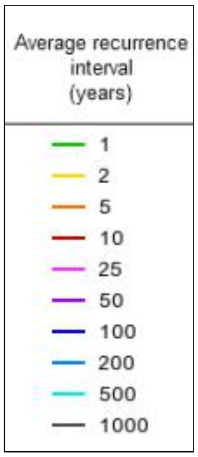
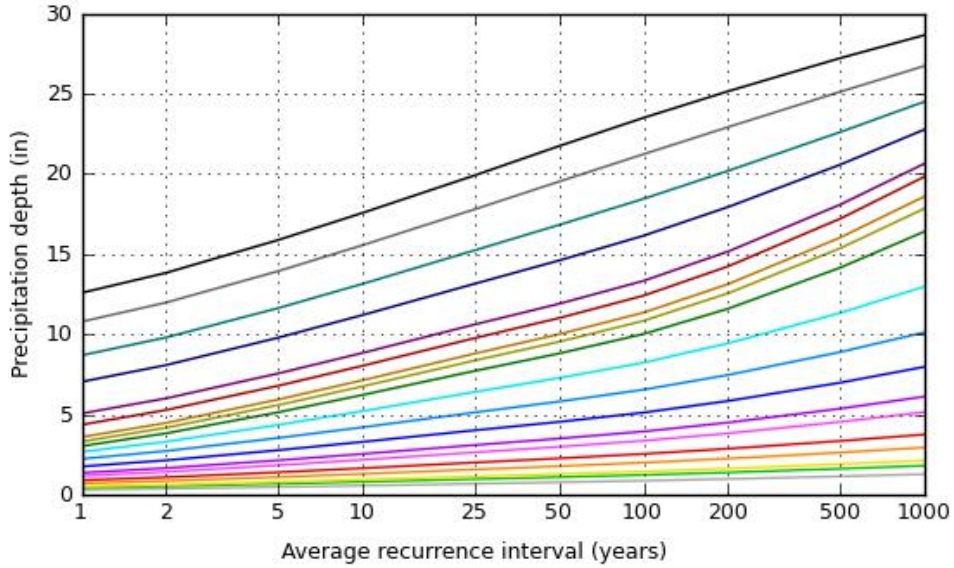
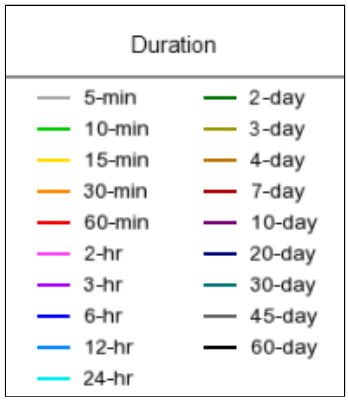
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 42.5242°, Longitude: -71.1264°









NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Thu Jan 5 16:16:16 2023

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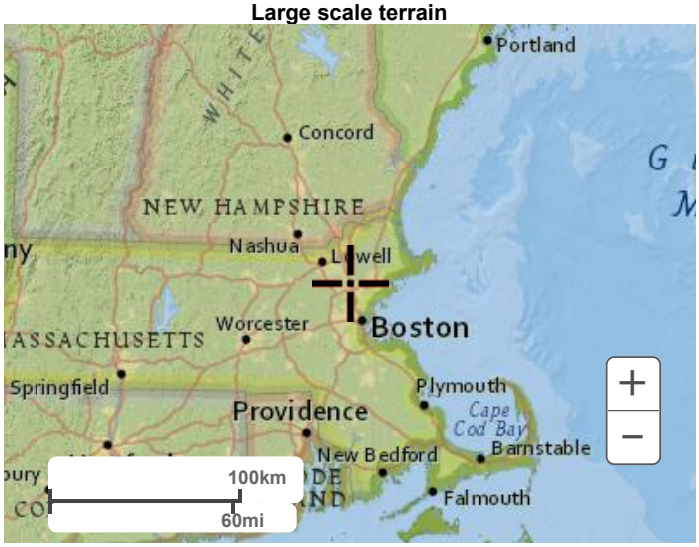
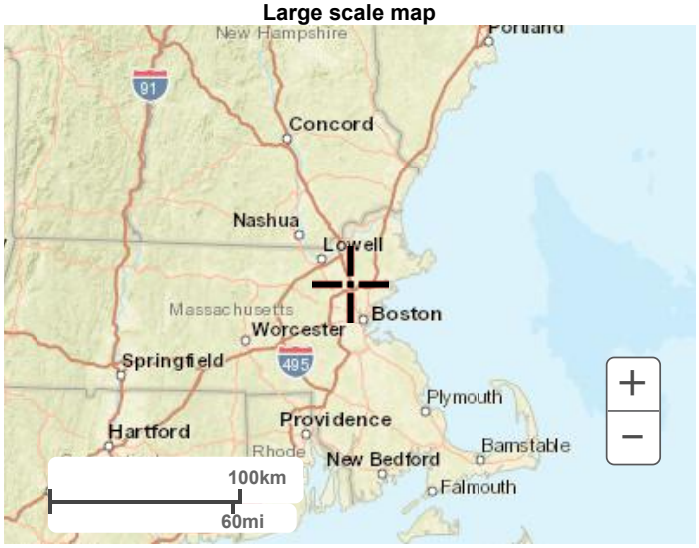
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map



Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX E: OPERATION AND MAINTENANCE

- *STORMWATER OPERATION AND MAINTENANCE PLAN*
- *INSPECTION REPORT*
- *INSPECTION AND MAINTENANCE LOG FORM*
- *LONG-TERM POLLUTION PREVENTION PLAN*
- *ILLICIT DISCHARGE STATEMENT*
- *SPILL PREVENTION*

STORMWATER OPERATION AND MAINTENANCE PLAN

Chase Bank
431 Main Street
Reading, MA

RESPONSIBLE PARTY DURING CONSTRUCTION:

T.B.D.

RESPONSIBLE PARTY POST CONSTRUCTION:

Chase Bank
431 Main Street
Reading, MA

Construction Phase

During the construction phase, all erosion control devices and measures shall be maintained in accordance with the final record plans, local/state approvals and conditions, the EPA Construction General Permit and the Stormwater Pollution Prevention Plan (SWPPP). Additionally, the maintenance of all erosion / siltation control measures during construction shall be the responsibility of the general contractor. Upon proper notice to the property owner, the Town/City or its authorized designee shall be allowed to enter the property at a reasonable time and in a reasonable manner for the purposes of inspection.

Post Development Controls

Once construction is completed, the post development stormwater controls are to be operated and maintained in compliance with the following permanent procedures (note that the continued implementation of these procedures shall be the responsibility of the Owner or its assignee):

1. Parking lots and on-site driveways: Sweep at least four (4) times per year and on a more frequent basis depending on sanding operations. All resulting sweepings shall be collected and properly disposed of offsite in accordance with MADEP and other applicable requirements.

2. Catch basins, manholes and piping: Inspect four (4) times per year and at the end of foliage and snow-removal seasons. These features shall be cleaned four (4) times per year. or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the catch basin or underground system. Accumulated sediment and hydrocarbons present must be removed and properly disposed of off-site in accordance with MADEP and other applicable requirements.

STORMWATER MANAGEMENT SYSTEM

POST-CONSTRUCTION INSPECTION REPORT

LOCATION:

Chase Bank
431 Main Street
Reading, MA

RESPONSIBLE PARTY:

Chase Bank
431 Main Street
Reading, MA

NAME OF INSPECTOR:	INSPECTION DATE:
Note Condition of the Following (sediment depth, debris, standing water, damage, etc.):	
Other:	
Note Recommended Actions to be taken on the Following (sediment and/or debris removal, repairs, etc.):	
Other:	
Other:	
Comments:	

STORMWATER INSPECTION AND MAINTENANCE LOG FORM			
Chase Bank ***431 Main Street – Reading, MA***			
Stormwater Management Practice	Responsible Party	Date	Maintenance Activity Performed

LONG-TERM POLLUTION PREVENTION PLAN

Chase Bank
431 Main Street
Reading, MA

RESPONSIBLE PARTY DURING CONSTRUCTION:

T.B.D.

RESPONSIBLE PARTY POST CONSTRUCTION:

Chase Bank
431 Main Street
Reading, MA

For this site, the Long-Term Pollution Prevention Plan will consist of the following:

- No outdoor maintenance or washing of vehicles allowed.
- The property owner shall be responsible for "good housekeeping" including proper periodic maintenance of building and pavement areas, curbing, landscaping, etc.
- Proper storage and removal of solid waste (dumpsters).
- Sweeping of driveways a minimum of twice per year with a commercial cleaning unit. Any sediment removed shall be disposed of in accordance with applicable local and state requirements.
- Regular inspections and maintenance of Stormwater Management System as noted in the "O&M Plan".
- Snow removal shall be the responsibility of the property owner. Snow shall not be plowed, dumped and/or placed in forebays, infiltration basins or similar stormwater controls. Salting and/or sanding of pavement / walkway areas during winter conditions shall only be done in accordance with all state/local requirements and approvals.

OPERATON AND MAINTENANCE TRAINING PROGRAM

The Owner will coordinate an annual in-house training session to discuss the Operations and Maintenance Plan, the Long-Term Pollution Prevention Plan, and the Spill Prevention Plan and response procedures. Annual training will include the following:

Discuss the Operations and Maintenance Plan

- Explain the general operations of the stormwater management system and its BMPs
- Identify potential sources of stormwater pollution and measures / methods of reducing or eliminating that pollution
- Emphasize good housekeeping measures

Discuss the Spill Prevention and Response Procedures

- Explain the process in the event of a spill
- Identify potential sources of spills and procedures for cleanup and /or reporting and notification
- Complete a yearly inventory or Materials Safety Data sheets of all tenants and confirm that no potentially harmful chemicals are in use.
- Trash and other debris shall be removed from all areas of the site at least twice yearly.
- In no case shall snow be disposed of or stored in resource areas (wetlands, floodplain, streams or other water bodies).
- If necessary, stockpiled snow will be removed from the Site and disposed of at an off-site location in accordance with all local, state and federal regulations.

ILLICIT DISCHARGE STATEMENT

Certain types of non-stormwater discharges are allowed under the U.S. Environmental Protection Agency Construction General Permit. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures which have been outlined previously in this LTPPP will be strictly followed to ensure that no contamination of these non-storm water discharges takes place. Any existing illicit discharges, if discovered during the course of the work, will be reported to MassDEP and the local DPW, as applicable, to be addressed in accordance with their respective policies. No illicit discharges will be allowed in conjunction with the proposed improvements.

Duly Acknowledged:

_____

Name & Title

SPILL PREVENTION AND RESPONSE PROCEDURES (POST CONSTRUCTION)

In order to prevent or minimize the potential for a spill of Hazardous Substances or Oil or come into contact with stormwater, the following steps will be implemented:

1. All Hazardous Substances or Oil (such as pesticides, petroleum products, fertilizers, detergents, acids, paints, paint solvents, cleaning solvents, etc.) will be stored in a secure location, with their lids on, preferably under cover, when not in use.

2. The minimum practical quantity of all such materials will be kept on site.

3. A spill control and containment kit (containing, for example, absorbent materials, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided on site.

4. Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

5. It is the OWNER's responsibility to ensure that all Hazardous Waste on site is disposed of properly by a licensed hazardous material disposal company. The OWNER is responsible for not exceeding Hazardous Waste storage requirements mandated by the EPA or state and local authorities.

In the event of a spill of Hazardous Substances or Oil, the following procedures should be followed:

1. All measures should be taken to contain and abate the spill and to prevent the discharge of the Hazardous Substance or Oil to stormwater or off-site. (The spill area should be kept well ventilated and personnel should wear appropriate protective clothing to prevent injury from contact with the Hazardous Substances.)

2. For spills of less than five (5) gallons of material, proceed with source control and containment, clean-up with absorbent materials or other applicable means unless an imminent hazard or other circumstances dictate that the spill should be treated by a professional emergency response contractor.

3. For spills greater than five (5) gallons of material immediately contact the MADEP at the toll-free 24-hour statewide emergency number: **1-888-304-1133**, the local fire department (**9-1-1**) and an approved emergency response contractor. Provide information on the type of material spilled, the location of the spill, the quantity spilled, and the time of the spill to the emergency response contractor or coordinator, and proceed with prevention, containment and/or clean-up if so desired. (Use the form provided, or similar).

4. If there is a Reportable Quantity (RQ) release, then the National Response Center should be notified immediately at (800) 424-8802; within 14 days a report should be submitted to the EPA regional office describing the release, the date and circumstances of the release and the steps taken to prevent another release. This Pollution Prevention Plan should be updated to reflect any such steps or actions taken and measures to prevent the same from reoccurring.

SPILL PREVENTION CONTROL AND COUNTERMEASURE FORM

Chase Bank
431 Main Street
Reading, MA

Where a release containing a hazardous substance occurs, the following steps shall be taken by the facility manager and/or supervisor:

1. Immediately notify The Reading Fire Department (at **9-1-1**)

2. All measures must be taken to contain and abate the spill and to prevent the discharge of the pollutant(s) to off-site locations, receiving waters, wetlands and/or resource areas.

3. Notify the Reading Board of Health at (781) 942-6653 and the Conservation Commission at (781) 942-9016.

4. Provide documentation from licensed contractor showing disposal and cleanup procedures were completed as well as details on chemicals that were spilled to the Town of Reading Board of Health and Conservation Commission.

Date of spill:_____ Time:_____ Reported By:_____

Weather Conditions:_____

Material Spilled	**Location of Spill**	**Approximate Quantity of Spill (in gallons)**	**Agency(s) Notified**	**Date of Notification**

Cause of Spill:_____

_____

Measures Taken to Clean up Spill:_____

_____

Type of equipment: _____ Make: _____ Size:_____

License or S/N: _____

Location and Method of Disposal_____

_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring:_____

_____

Additional Contact Numbers:

- DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) EMERGENCY PHONE: 1-888-304-1133
- NATIONAL RESPONSE CENTER PHONE: (800) 424-8802
- U.S. ENVIRONMENTAL PROTECTION AGENCYPHONE: (888) 372-7341

CHS.NB.1160

READING

431 Main Street
Reading, MA 01867

REVISION NOTES:

10.17.22	JM	Updated Site Plans, Creating Day 2 Installations.

B102357

PHILADELPHIASIGN
BRINGING THE WORLD'S BRANDS TO LIFE

Aerial Plan

DRC Page 3

CHASE

CHS.NB.1160 - Reading

431 Main Street
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

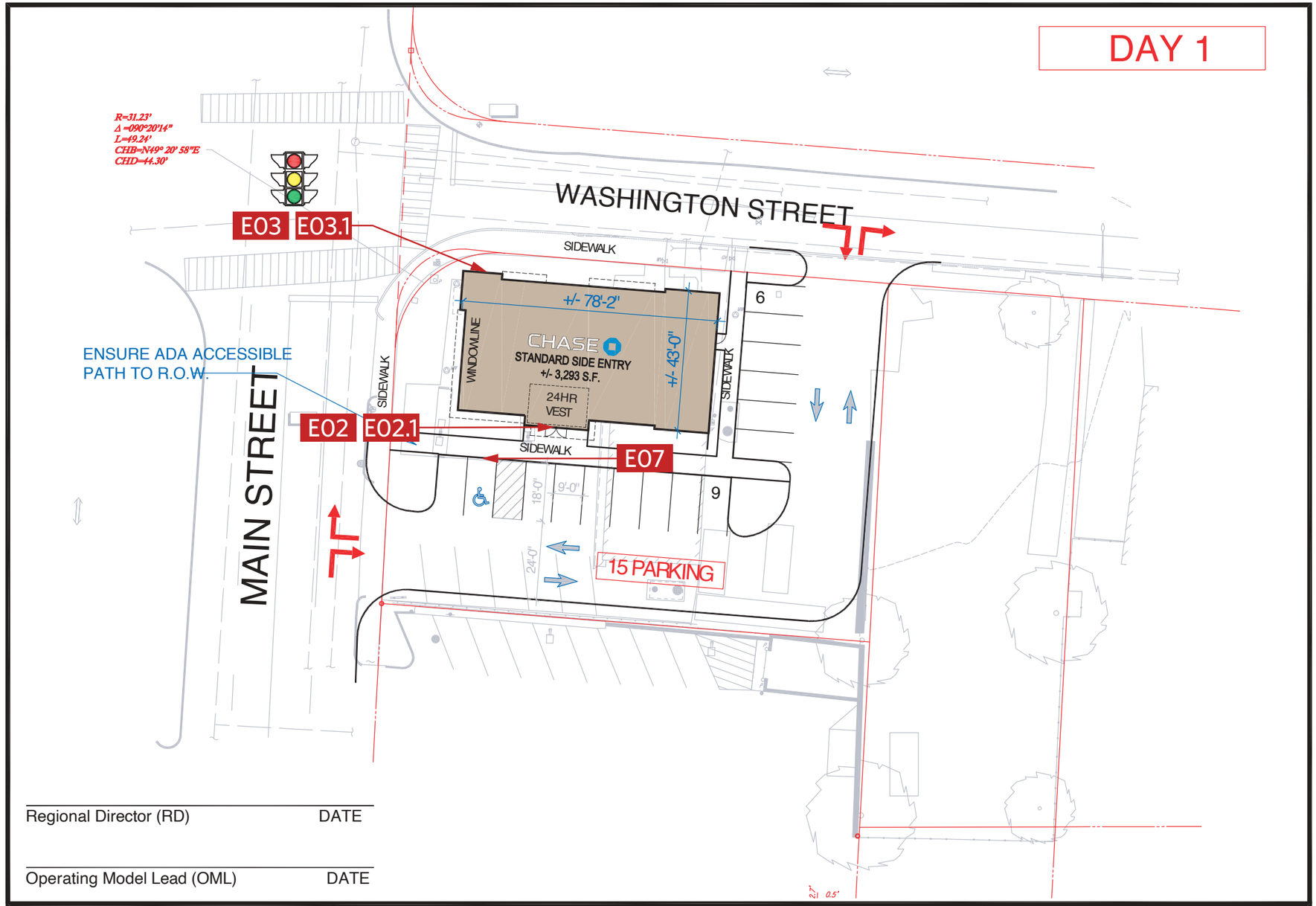
DRAWING - B102357

PHILADELPHIASIGN
BRINGING THE WORLD'S BRANDS TO LIFE
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065
P: 856-829-1460 • F: 856-829-8549 • WEB: http://www.philadelphiasign.com

Site Plan

Exterior Scope of Work - DAY 1

E02	LIH-WBO-24-LED	White w/ Blue Octagon Halo-Lit Channel Letters	36.9sf
E02.1	CHS.PP_RE_24LTR	Raceway for 24" Letterset to be Installed Behind the Parapet	TBD
E03	LIH-WBO-24-LED	White w/ Blue Octagon Halo-Lit Channel Letters	36.9sf
E03.1	CHS.PP_RE_24LTR	Raceway for 24" Letterset to be Installed Behind the Parapet	TBD
E07	TC-P-ADA-V-RE-MA	Pole Mounted ADA Parking Regulatory Sign w/ Van Access	2sf
E11	CSS-FS	"Coming Soon" Fence Mounted Sign	60sf



Regional Director (RD) DATE

Operating Model Lead (OML) DATE

N

Exterior Signs

Interior Signs

CHASE

PROPOSED SITE PLAN

READING

431Main St, Reading, MA 01867

DATE	DESIGNER	AREA	SCALE
11 OCT 22	KMS	-	NONE

DRC Page 6

CHASE

CHS.NB.1160 - Reading

431 Main Street
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

DRAWING - B102357

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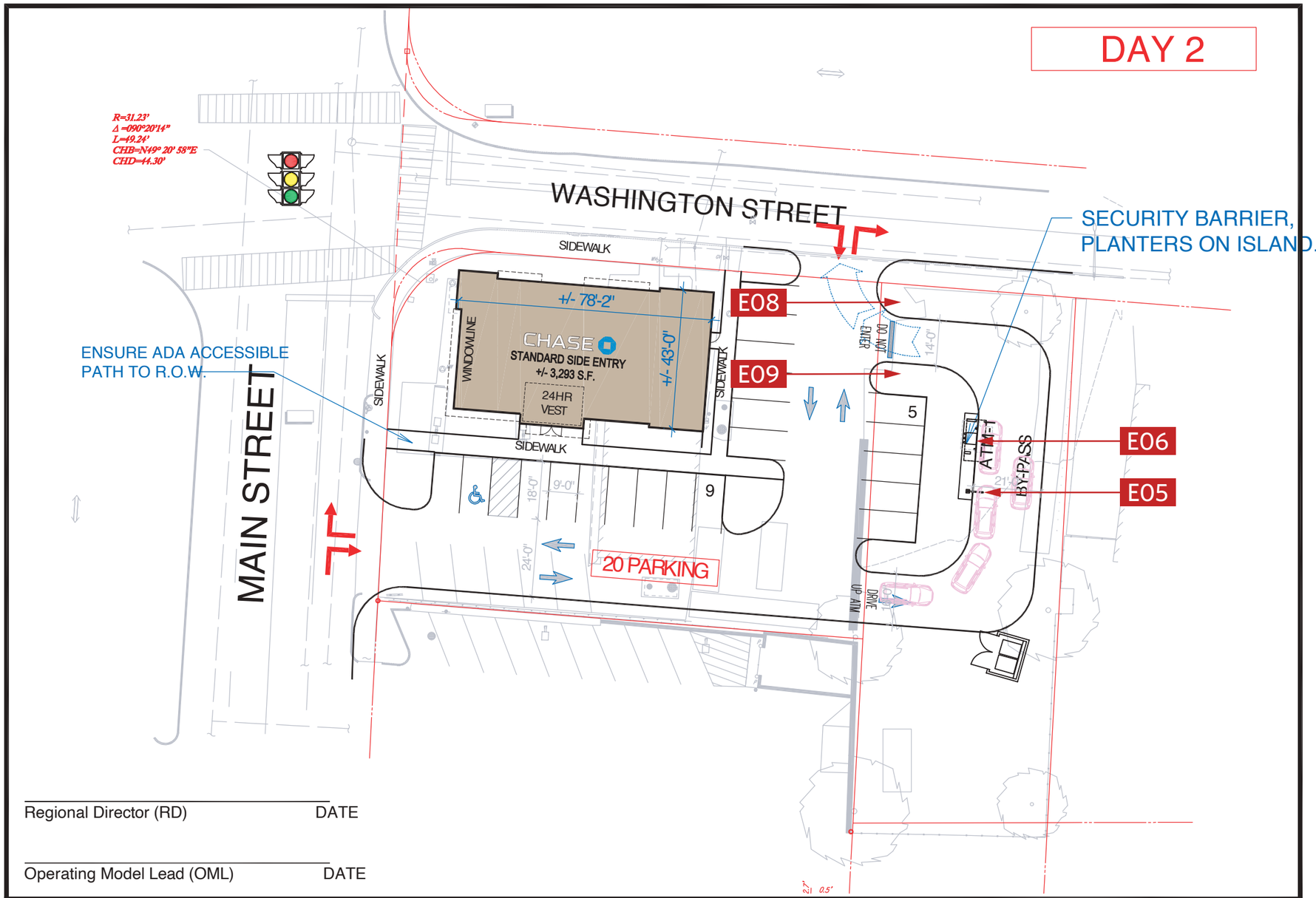
Site Plan

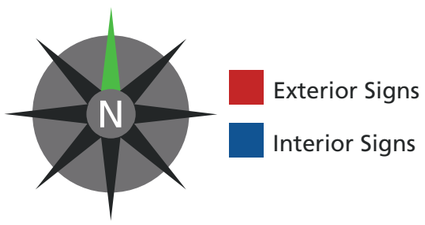
Exterior Scope of Work - DAY 2

E05	HB-U	Headache Bar	
E06	CAN-ATM-SIG-CUST	Signature Drive Up Canopy - No Chase/Octagon Branding	
E08	DOT SIGN	Double-Faced Do Not Enter / Stop DOT Sign - Pole Mntd	6.3sf
E09	DOT SIGN	Double-Faced Do Not Enter / Stop DOT Sign - Pole Mntd	6.3sf



Regional Director (RD) DATE

Operating Model Lead (OML) DATE



CHASE

PROPOSED SITE PLAN

READING

431Main St, Reading, MA 01867

DATE	DESIGNER	AREA	SCALE
11 OCT 22	KMS	-	NONE

DRC Page 7

CHASE

CHS.NB.1160 - Reading

431 Main Street
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

DRAWING - B102357

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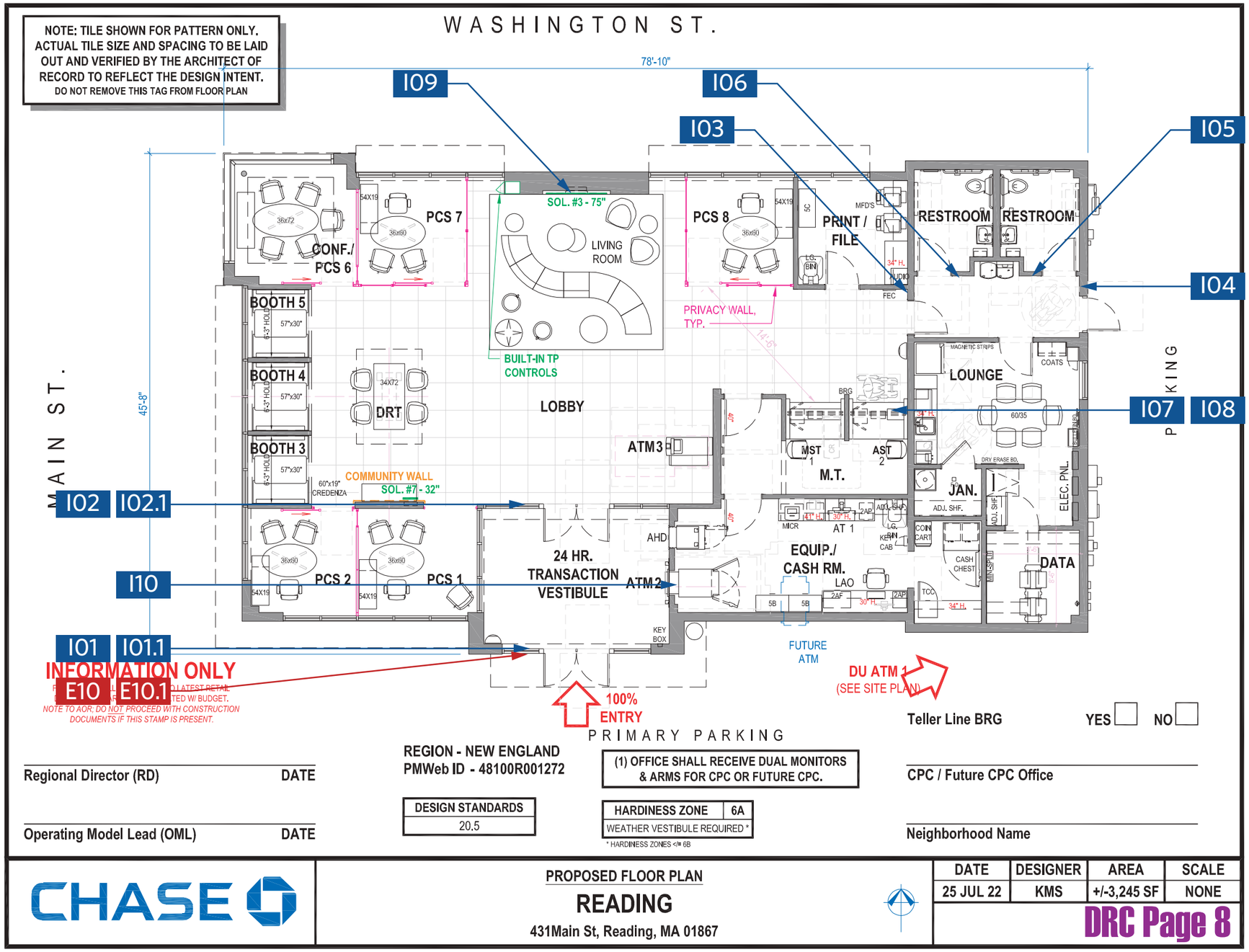
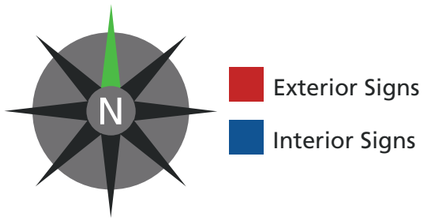
Floor Plan

Interior Scope of Work

I01	ADA-EX	ADA Handicapped Exit Plaque	.25SF
I01.1	CUST-VIN	Matching Bronze Vinyl Backer	
I02	ADA-EX	ADA Handicapped Exit Plaque	.25SF
I02.1	CUST-VIN	Matching Bronze Vinyl Backer	
I03	ADA-RI-X	ADA Emergency Exit Plaque	.22SF
I04	ADA-RI-X	ADA Emergency Exit Plaque	.22SF
I05	ADA-RRAG-A-G	ADA All Gender Restroom Sign - Accessible	1.4SF
I06	ADA-RRAG-A-G	ADA All Gender Restroom Sign - Accessible	1.4SF
I07	ADA-TW	ADA Teller Wall Sign	.1SF
I08	ADA-TW-ALS	ADA Teller Window - Assistive Listening System	.1SF
I09	TPL-BTR-B-24	24" Thin Profile Illuminated Interior Blue Octagon	4SF
I10	SUR-TTW-U-4-TP	Illuminated Thin Profile ATM Surround	33SF
E10	ADA-EP	ADA Handicapped Entrance Plaque	.25SF
E10.1	CUST-VIN	Matching Blue Vinyl Backer	





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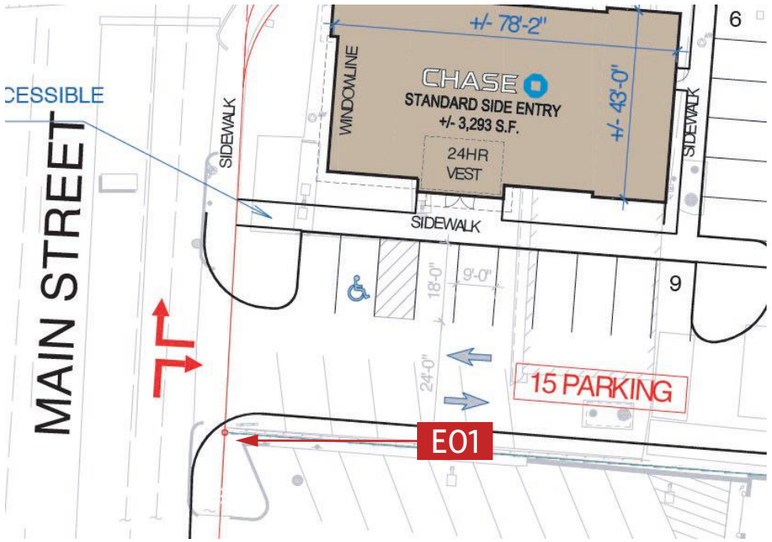
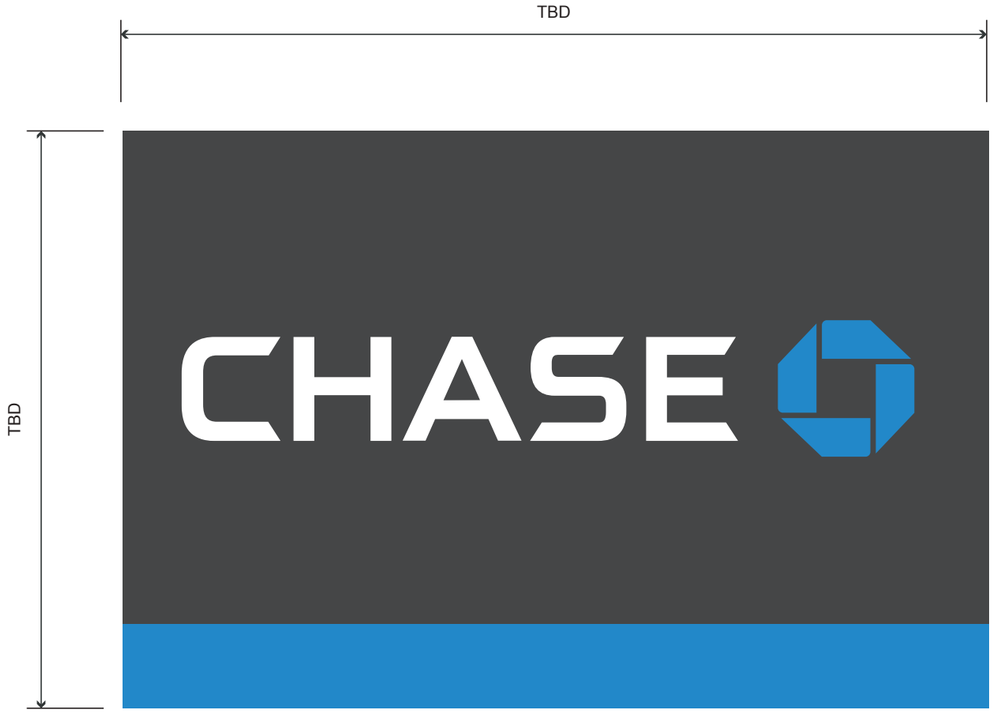
E01 - HP-CUST-PYLON-HD

ADDITIONAL APPROVAL REQUIRED



Close-Up View

Rendering



HP-CUST-PYLON-HEAD
CUSTOM DOUBLE-FACED ILLUM PYLON HEAD W/ ROUTED ALUM FACE & PUSH THRU COPY
SCALE: NTS

CHASE

CHS.NB.1160 - Reading
431 Main Street
Reading, MA 01867

DESIGNER - JM
CREATED - 09.24.22
DRAWING - B102357

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E02 - LIH-WBO-24-LED

E02.1 - CHS.PP_RW_24LTR

South Elevation

STOREFRONT
APPLICATION: EXTERIOR
COLOR: CLEAR ANODIZED

STOREFRONT/CANOPY/ROOFING/COPING
APPLICATION: EXTERIOR
COLOR: BLACK ANODIZED

PAINT
APPLICATION: EXTERIOR
COLOR: TO MATCH SHERWIN WILLIAMS SW-7045 INTELLECTUAL GRAY

PAINT
APPLICATION: EXTERIOR
COLOR: TO MATCH SHERWIN WILLIAMS SW-7036 ACCESSIBLE BEIGE

CORONADO STONE
APPLICATION: EXTERIOR
COLOR: CHISELED LIMESTONE - CREAM

ALUMINUM COMPOSITE MATERIAL (AMC)
APPLICATION: CANOPY
COLOR: "CHASE SILVER"

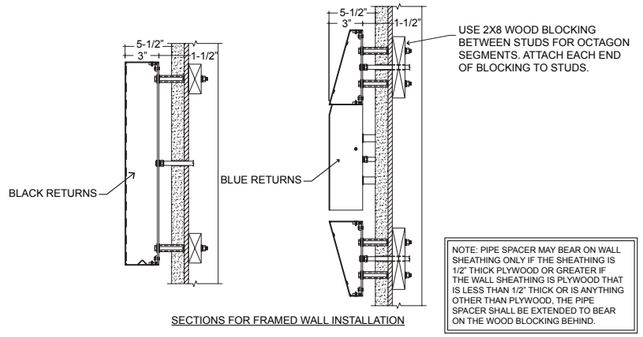
NICHIHA
APPLICATION: EXTERIOR
COLOR: VINTAGEWOOD - BARK

ENDICOTT THIN BRICK
APPLICATION: EXTERIOR
COLOR: LIGHT GREY BLEND

LIH-WBO-24-LED

WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS - 36.9SF

SCALE: NTS



SECTIONS FOR FRAMED WALL INSTALLATION

For Reference Only

CHS.PP_RW_24LTR

RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET

SCALE: NTS

CHASE

CHS.NB.1160 - Reading

431 Main Street
Reading, MA 01867

DESIGNER - JM

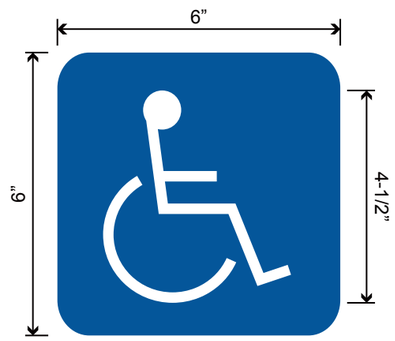
CREATED - 09.24.22

DRAWING - B102357

PHILADELPHIASIGN
BRINGING THE WORLD'S BRANDS TO LIFE
707 WEST SPRING GARDEN ST • PALMYRA, NJ • 08065
P: 856-829-1460 • F: 856-829-8549 • WEB: http://www.philadelphiasign.com

E10.1 - CUST-VIN

South Elevation



ADA-EP
HANDICAPPED ENTRANCE PLAQUE
SCALE: NTS

CUST-VIN
MATCHING BLUE VINYL BACKER
SCALE: NTS

SIGN E10 MOUNTS BACK-TO-BACK WITH SIGN I01.

CHASE

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Reading, MA 01867

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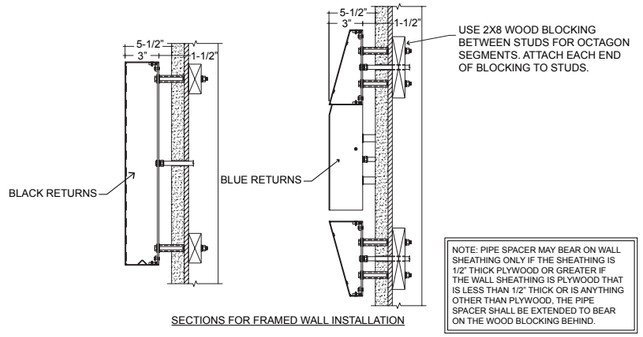
North Elevation

LIH-WBO-24-LED

WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS - 36.9SF

SCALE: NTS



SECTIONS FOR FRAMED WALL INSTALLATION

For Reference Only

CHS.PP_RW_24LTR

RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET

SCALE: NTS

CHASE

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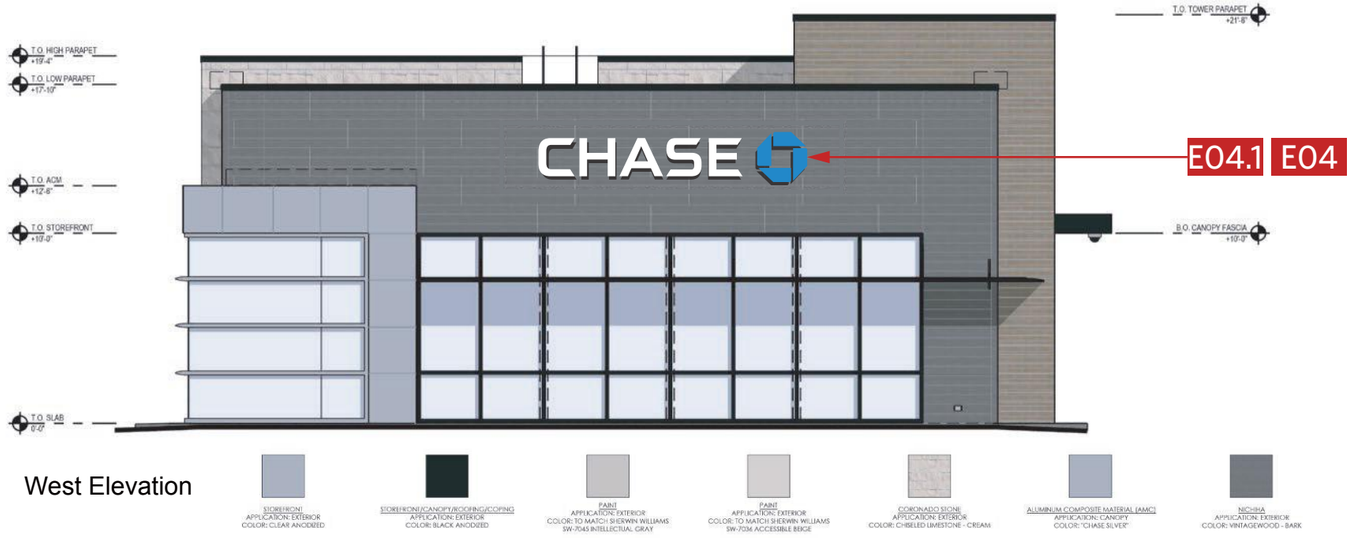
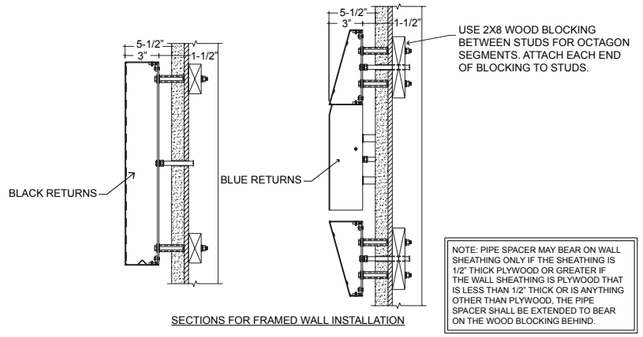
ADDITIONAL APPROVAL REQUIRED



West Elevation

LIH-WBO-24-LED
WHITE W/ BLUE OCTAGON HALO-LIT CHANNEL LETTERS - 36.9SF
SCALE: NTS



SECTIONS FOR FRAMED WALL INSTALLATION

For Reference Only

CHS.PP_RW_24LTR
RACEWAY FOR 24" LETTERSET INSTALLED BEHIND THE PARAPET
SCALE: NTS

CHASE

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431 Main Street
Reading, MA 01867

DESIGNER - JM
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DRAWING - B102357

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East Elevation

STOREFRONT
APPLICATION: EXTERIOR
COLOR: CLEAR ANODIZED

STOREFRONT/CANOPY/ROOFING/COPING
APPLICATION: EXTERIOR
COLOR: BLACK ANODIZED

PAINT
APPLICATION: EXTERIOR
COLOR: TO MATCH SHERWIN WILLIAMS SW-7045 INTELLECTUAL GRAY

PAINT
APPLICATION: EXTERIOR
COLOR: TO MATCH SHERWIN WILLIAMS SW-7036 ACCESSIBLE BEIGE

CORONADO STONE
APPLICATION: EXTERIOR
COLOR: CHISELED LIMESTONE - CREAM

ALUMINUM COMPOSITE MATERIAL (AMC)
APPLICATION: CANOPY
COLOR: "CHASE SILVER"

NICHIHA
APPLICATION: EXTERIOR
COLOR: VINTAGEWOOD - BARK

ENDICOTT THIN BRICK
APPLICATION: EXTERIOR
COLOR: LIGHT GREY BLEND

NO SIGNAGE

CHASE

CHS.NB.1160 - Reading

431 Main Street
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

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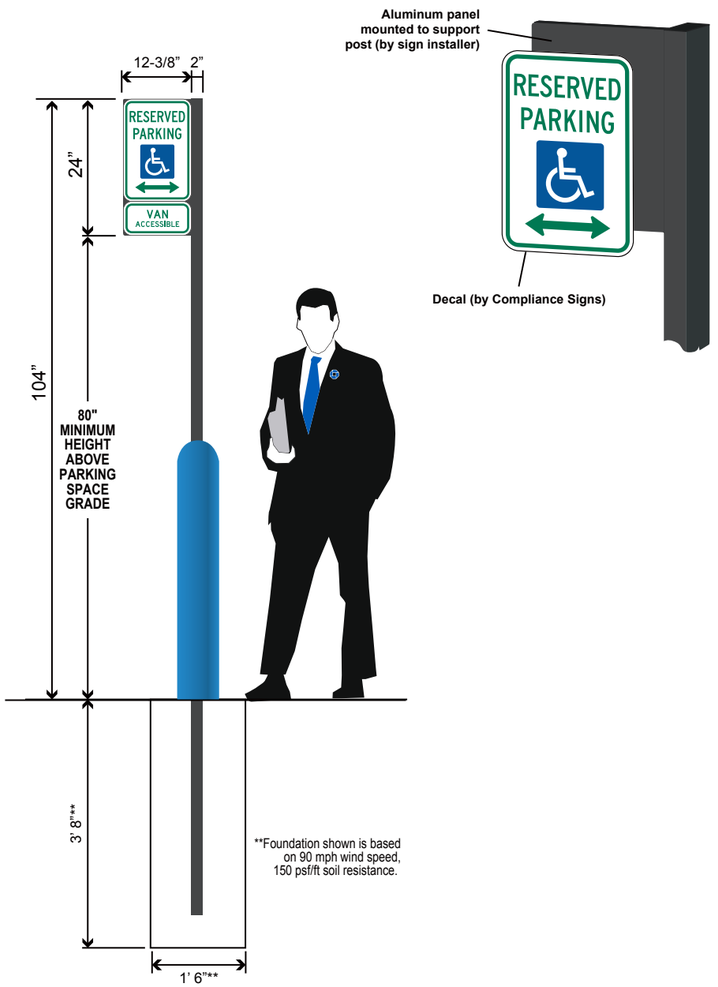

TC-P-ADA-V-RE-MA
POLE MOUNTED ADA PARKING REGULATORY SIGN W/ VAN ACCESS (RE-ENGINEERED)
SCALE: NTS
NOTE: BOLLARD BY G.C.

PHILADELPHIASIGN
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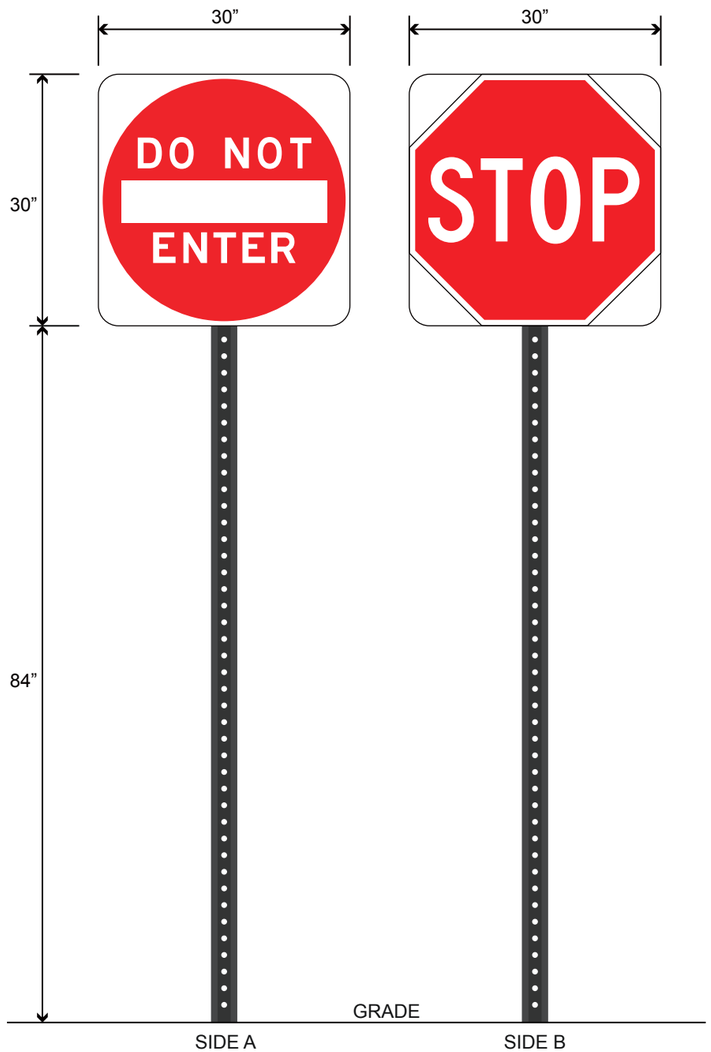
E08, E09 - DOT SIGN

DAY 2



DOT SIGN

DOUBLE-FACED DO NOT ENTER / STOP DOT SIGN - POLE MOUNTED

SCALE: NTS

CHASE

CHS.NB.1160 - Reading

431 Main Street
Reading, MA 01867

DESIGNER - JM

CREATED - 09.24.22

DRAWING - B102357

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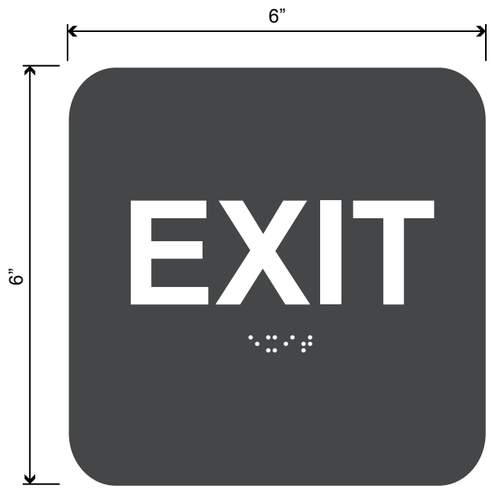


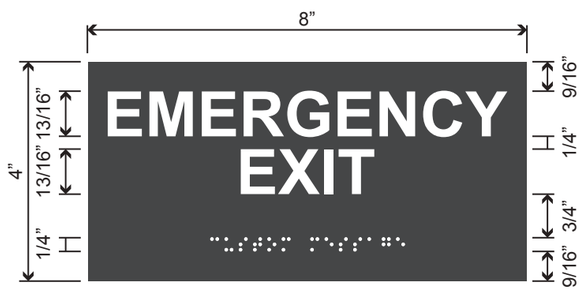
ADA-EX
HANDICAPPED EXIT PLAQUE
SCALE: NTS

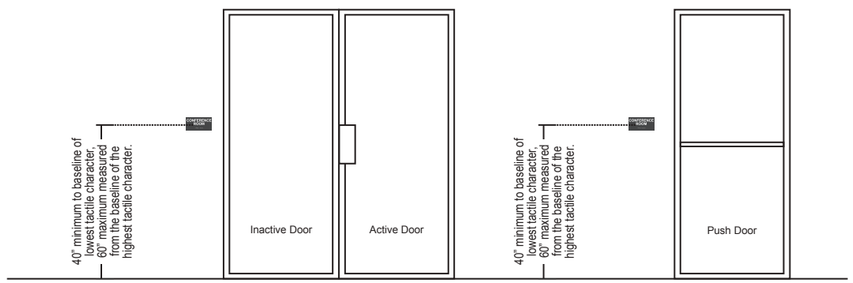
SIGN I01 MOUNTS BACK-TO-BACK WITH SIGN E10.

CUST-VIN
MATCHING BRONZE VINYL BACKER
SCALE: NTS

ADA-RI-X Permanent Room ID Signage

- Signs identifying a permanent room or space must be mounted on the wall, next to the door, on the latch side of the door.
- Acrylic tactile signs designed to meet Federal ADA 2010 ADAAG standards.





CHASE

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431 Main Street
Reading, MA 01867

DESIGNER - JM
CREATED - 09.24.22
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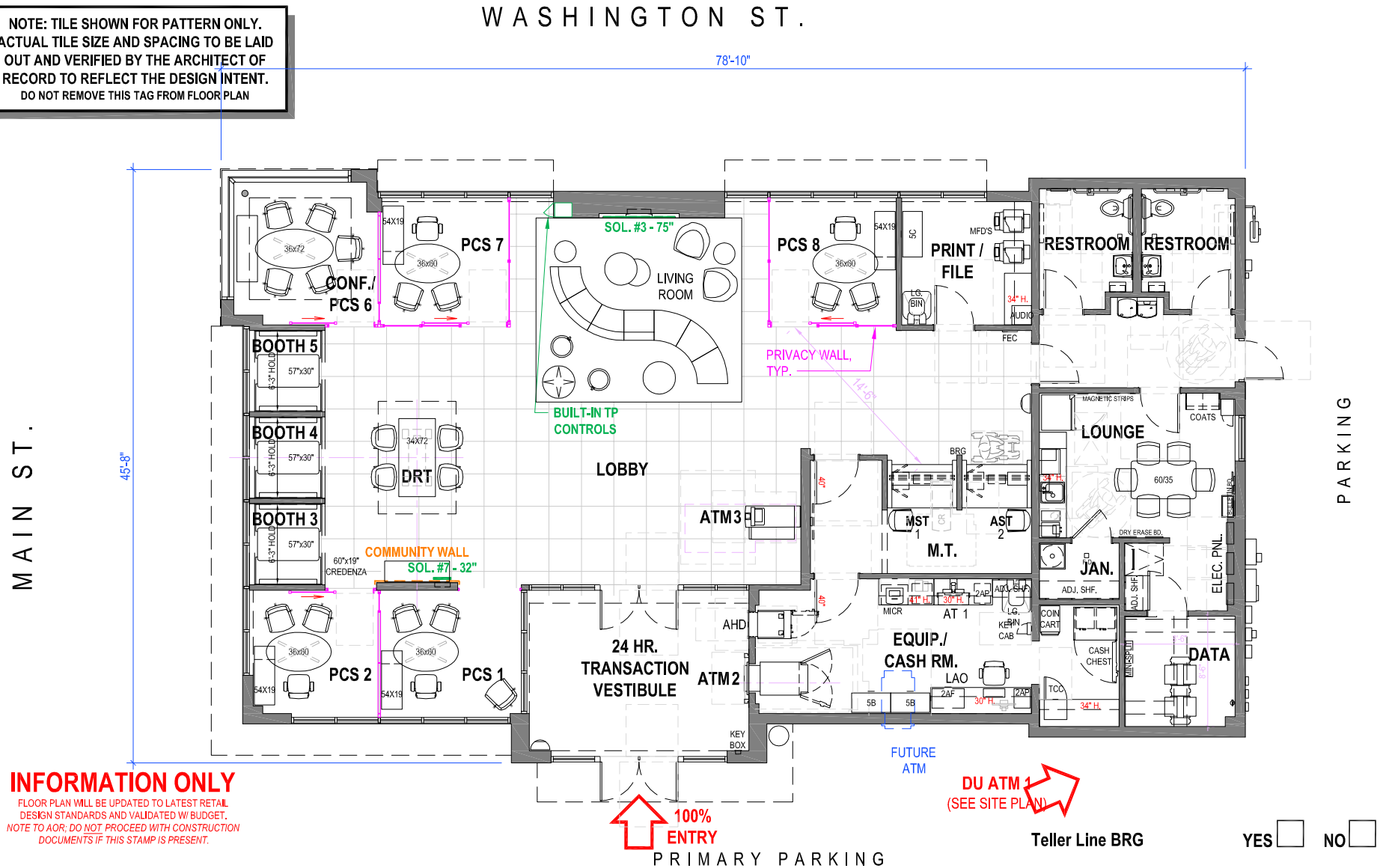
NOTE: TILE SHOWN FOR PATTERN ONLY. ACTUAL TILE SIZE AND SPACING TO BE LAID OUT AND VERIFIED BY THE ARCHITECT OF RECORD TO REFLECT THE DESIGN INTENT.
DO NOT REMOVE THIS TAG FROM FLOOR PLAN



INFORMATION ONLY
FLOOR PLAN WILL BE UPDATED TO LATEST RETAIL DESIGN STANDARDS AND VALIDATED W/ BUDGET.
NOTE TO AOR: DO NOT PROCEED WITH CONSTRUCTION DOCUMENTS IF THIS STAMP IS PRESENT.

Teller Line BRG YES ☐ NO ☐

Regional Director (RD) DATE

Operating Model Lead (OML) DATE

REGION - NEW ENGLAND
PMWeb ID - 48100R001272

(1) OFFICE SHALL RECEIVE DUAL MONITORS & ARMS FOR CPC OR FUTURE CPC.

CPC / Future CPC Office

DESIGN STANDARDS
20.5

HARDINESS ZONE	6A
WEATHER VESTIBULE REQUIRED *	

* HARDINESS ZONES </= 6B

Neighborhood Name

CHASE

PROPOSED FLOOR PLAN

READING

431Main St, Reading, MA 01867

DATE	DESIGNER	AREA	SCALE
25 JUL 22	KMS	+/-3,245 SF	NONE

PROPOSED SITE PLAN DOCUMENTS

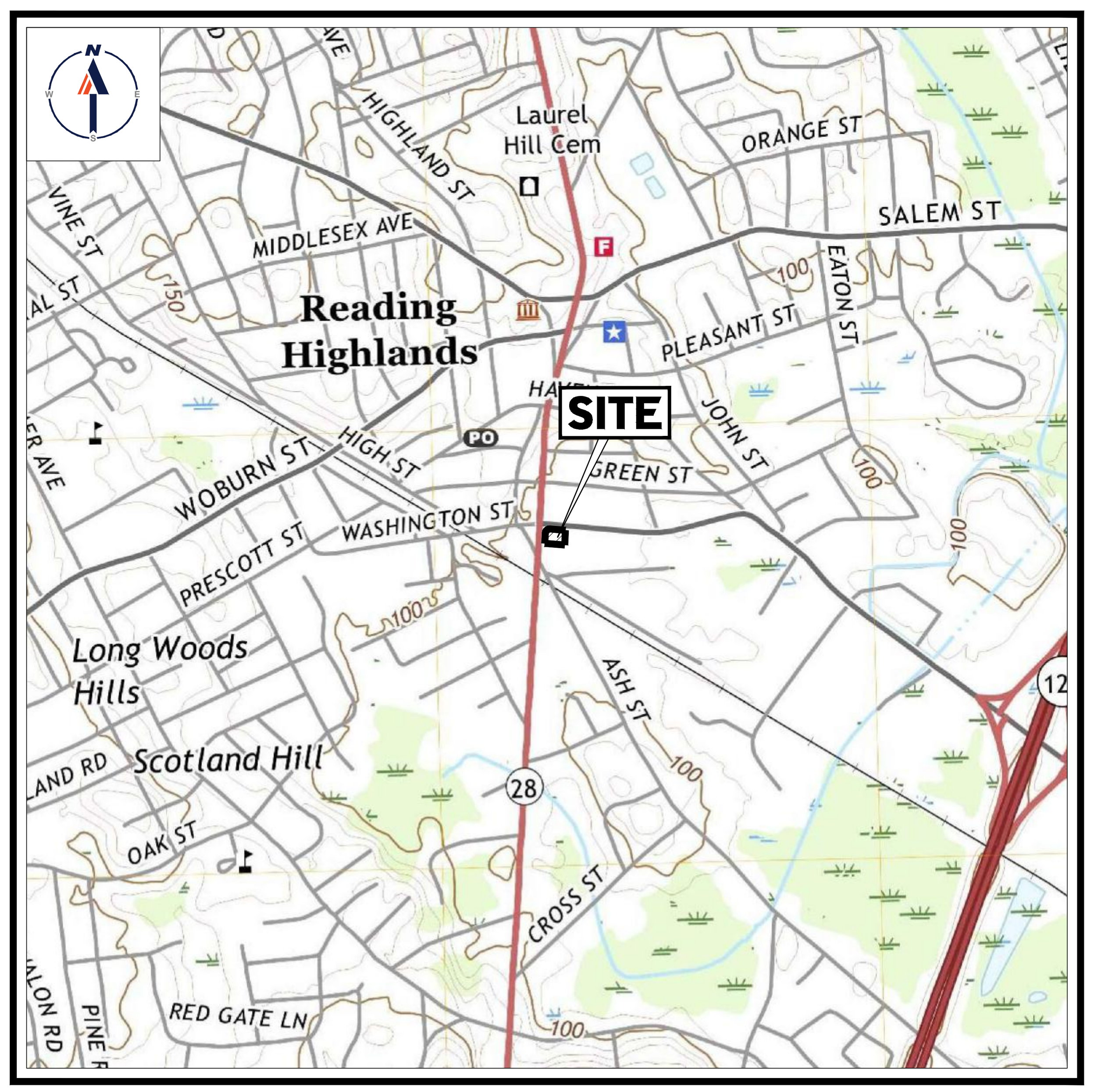
FOR

CHASE

PROPOSED

BANK DEVELOPMENT

LOCATION OF SITE:
431 MAIN STREET, TOWN OF READING
MIDDLESEX COUNTY, MASSACHUSETTS
MAP #17, LOT #63



USGS MAP

SCALE: 1" = 1,000'
SOURCE: READING MASSACHUSETTS USGS QUADRANGLE

SITE MAP

SCALE: 1" = 60'

DRAWING SHEET INDEX

SHEET INDEX	
SHEET TITLE	NUMBER
COVER SHEET	C-101
GENERAL NOTES SHEET	C-102
DEMOLITION PLAN	C-201
SITE LAYOUT PLAN	C-301
GRADING & DRAINAGE PLAN	C-401
UTILITY PLAN	C-501
SOIL EROSION & SEDIMENT CONTROL PLAN	C-601
SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS	C-602
LANDSCAPE PLAN	C-701
LANDSCAPE NOTES & DETAILS	C-702
LIGHTING PLAN	C-703
DETAIL SHEET	C-901
DETAIL SHEET	C-902
REFERENCE PLANS	
BOUNDARY, TOPOGRAPHIC & UTILITY SURVEY (BY OTHERS)	1 SHEET

PREPARED BY

BOHLER //

BOHLER //™
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

811
Know what's below. Call before you dig.
ALWAYS CALL 811
It's fast. It's free. It's the law.

PERMIT SET

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MAA220275.00
DRAWN BY:	CFD/JRJ
CHECKED BY:	JF/RMM
DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

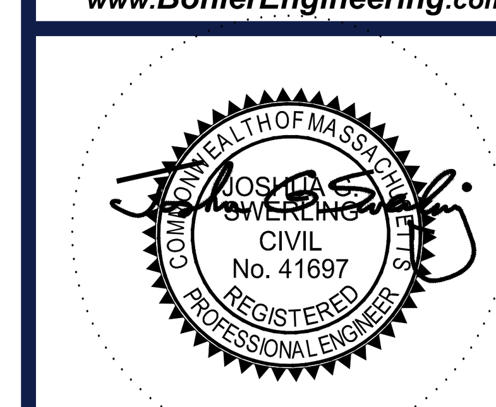
FOR

CHASE

PROPOSED
BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASACHUSETTS

BOHLER //
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com



SHEET TITLE:

COVER SHEET

SHEET NUMBER:

C-101

ORG. DATE - 02/03/2023

GENERAL NOTES

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING, (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE ENGINEER OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER , IN WRITING, IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.

2. THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS, THESE NOTES, AND THE REQUIREMENTS ARTICULATED IN THE NOTES CONTAINED IN ALL THE OTHER DRAWINGS THAT COMPRISE THE PLAN SET OF DRAWINGS. ADDITIONAL NOTES AND SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE, PRIOR TO THE INITIATION AND COMMENCEMENT OF CONSTRUCTION.

3. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE ENGINEER OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTOR'S SOLE AND COMPLETE RESPONSIBILITY.

4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION IS TO BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE CONDITIONS OF APPROVAL TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND HAS ALSO CONFIRMED THAT ALL NECESSARY AND REQUIRED PERMITS HAVE BEEN OBTAINED. THE CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND APPROVALS ON SITE AT ALL TIMES.

5. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL, AND ALL APPLICABLE REQUIREMENTS, RULES, REGULATIONS, STATUTORY REQUIREMENTS, CODES, LAWS AND STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT, AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS, ATTACHMENTS AND ADDENDA TO SAME.

6. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFULLY REVIEWING THE MOST CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS, WHERE APPLICABLE). THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS.

7. CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE APPROVED ARCHITECTURAL/BUILDING PLANS OF RECORD FOR EXACT LOCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS.

8. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY ENGINEER OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE RE-DONE OR REPAIRED DUE TO DIMENSIONS, MEASUREMENTS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING ENGINEER OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) ENGINEER OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.

9. THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS DUE TO POTENTIAL PRINTING INACCURACIES. ALL DIMENSIONS AND MEASUREMENTS ARE TO BE CHECKED AND CONFIRMED BY THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS, FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE NOT INTENDED AS SURVEY DOCUMENTS. DIMENSIONS SUPERSEDE GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR'S OWN MEASUREMENTS FOR LAYOUT OF IMPROVEMENTS.

10. THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

11. WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS, THE GEOTECHNICAL REPORT, SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND, IN CASE OF CONFLICT, DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN: (A) THE PLANS; AND (B) THE GEOTECHNICAL REPORT AND RECOMMENDATIONS, MUST TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORT AND PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH ANY FURTHER WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.

12. ENGINEER OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY.

13. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. ALL OF THIS WORK IS TO BE PERFORMED AT CONTRACTOR'S SOLE COST AND EXPENSE.

14. THE CONTRACTOR MUST EXERCISE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA FOR THIRD PARTIES, PEDESTRIANS AND ANYONE INVOLVED WITH THE PROJECT.

15. DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS SOIL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR.

16. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES, TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST.

17. THE CONTRACTOR MUST REPAIR, AT CONTRACTOR'S SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE, BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST, PROMPTLY, DOCUMENT ALL EXISTING DAMAGE AND NOTIFY, IN WRITING, THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.

18. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR AND HAVE NO CONTRACTUAL, LEGAL OR OTHER RESPONSIBILITIES FOR JOB SITE SAFETY JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME. THE ENGINEER OF RECORD AND BOHLER HAVE NOT BEEN RETAINED TO PERFORM OR TO BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF ENGINEER OF RECORD'S AND BOHLER SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME.

19. THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING, TO THE ENGINEER OF RECORD AND BOHLER , ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF THE CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER WRITTEN NOTIFICATION AS DESCRIBED ABOVE, IT WILL BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, THE CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM OR ARE IN ANY WAY RELATED TO SAME INCLUDING, BUT NOT LIMITED TO, ANY THIRD PARTY AND FIRST PARTY CLAIMS.

20. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, RULES, STATUTES, CODES AND THE LIKE, THE CONTRACTOR AND/OR OWNER AGREE TO AND MUST JOINTLY, INDEPENDENTLY, SEPARATELY, AND SEVERALLY INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES, CLAIMS AND DAMAGES THAT ENGINEER AND BOHLER SUFFER AND ANY AND ALL COSTS THAT ENGINEER AND BOHLER INCUR AS RELATED TO SAME.

21. ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALLY REASONABLE STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND COMMERCIAL GENERAL LIABILITY INSURANCE (CGL) INCLUDING ALSO ALL UMBRELLA COVERAGES. ALL CONTRACTORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER , AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSUREDS AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE (DEFEND, IF APPLICABLE) AND HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED AND AGREED TO BY THE CONTRACTOR HEREIN. ALL CONTRACTORS MUST FURNISH BOHLER WITH CERTIFICATIONS OF INSURANCE OR CERTIFICATES OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE COVERAGES PRIOR TO COMMENCING ANY WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR TWO YEARS AFTER THE COMPLETION OF CONSTRUCTION AND AFTER ALL PERMITS ARE ISSUED, WHICHEVER DATE IS LATER. IN ADDITION, ALL CONTRACTORS AGREE THAT THEY WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTOR(S), ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION, SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER.

22. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

23. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER, NOR THE PRESENCE OF BOHLER AND/OR ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER PARTIES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER (OR ANY RESPONSIBILITY FOR) ANY CONSTRUCTION, THE CONTRACTOR OR ITS EMPLOYEES RELATING TO THEIR WORK AND ANY AND ALL HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY, DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FOR AND FROM ANY LIABILITY TO BOHLER PARTIES RESULTING FROM THE CONTRACTOR'S WORK, SERVICES AND/OR VIOLATIONS OF THIS NOTE, THESE NOTES OR ANY NOTES IN THE PLAN SET AND, FURTHER, THE CONTRACTOR MUST NAME BOHLER AS AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE AS DESCRIBED ABOVE.

24. WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLER'S SCOPE OF SERVICES CONTRACT WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA, WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS SHOP DRAWING REVIEW WITH REASONABLE PROMPTNESS, AS CONDITIONS PERMIT. ANY DOCUMENT, DOCUMENTING BOHLER'S REVIEW OF A SPECIFIC ITEM OR LIMITED SCOPE, MUST NOT INDICATE THAT BOHLER HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT. BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY BRING ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS TO BOHLER'S ATTENTION. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED.

25. IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD AND BOHLER FOR ALL DEVIATIONS WITHIN ENGINEER'S SCOPE, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK PERFORMED WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING THEREFROM AND, FURTHER, MUST DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, CLAIMS, INJURIES, PENALTIES AND THE LIKE RELATED TO SAME.

26. THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND ELEMENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE RIGHT OF WAY OR ON SITE. THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE AND IS THE CONTRACTOR'S SOLE RESPONSIBILITY.

27. OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN; AND, FURTHER, THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS, OWNER AGREES TO INDEMNIFY AND HOLD THE ENGINEER OF RECORD AND BOHLER PARTIES, HARMLESS FOR ALL INJURIES, DAMAGES AND COSTS THAT ENGINEER OF RECORD AND BOHLER INCUR AS A RESULT OF SAID FAILURE OR FAILURE TO PRESERVE.

28. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES AND MATERIALS COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL RULES AND REGULATIONS, LAWS, ORDINANCES, AND CODES, AND ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 ET SEQ.) AS AMENDED, AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME.

29. THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS, AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. ENGINEER OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES AND WORK.

30. THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF THE CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD ENGINEER OF RECORD AND BOHLER PARTIES HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER INCURS AS A RESULT OF SAID FAILURE.

31. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES (UNLESS THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD). THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE AND FURTHER, THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO.

32. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE ENGINEER OF RECORD AND BOHLER, THE USE OF THE WORDS 'CERTIFY' OR 'CERTIFICATION' CONSTITUTE(S) AN EXPRESSION ONLY OF PROFESSIONAL OPINION REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE ENGINEER OF RECORD'S AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES.

GENERAL DEMOLITION NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

2. THE CONTRACTOR MUST CONDUCT DEMOLITION/REMOVALS ACTIVITIES IN SUCH A MANNER AS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND ALL OTHER ADJACENT FACILITIES. THE CONTRACTOR MUST OBTAIN ALL APPLICABLE PERMITS FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY(IES) PRIOR TO THE COMMENCEMENT OF ANY ROAD OPENING OR DEMOLITION ACTIVITIES IN OR ADJACENT TO THE RIGHT-OF-WAY.

3. WHEN DEMOLITION-RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY, THE CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH THE CURRENT FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS.

4. THE DEMOLITION (AND/OR REMOVALS) PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION AND TO IDENTIFY ONLY CONDITIONS REGARDING ITEMS TO BE DEMOLISHED, REMOVED, AND/OR TO REMAIN.
   - 4.1. THE CONTRACTOR MUST ALSO REVIEW ALL CONSTRUCTION DOCUMENTS AND INCLUDE WITHIN THE DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY FOR THE CONSTRUCTION OF THE NEW SITE IMPROVEMENTS.
   - 4.2. THIS PLAN IS NOT INTENDED TO AND DOES NOT PROVIDE DIRECTION REGARDING THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK. ALL MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE USED MUST BE IN STRICT ACCORDANCE AND CONFORMANCE WITH ALL STATE, FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE FOR THE CONTRACTOR AND THE PUBLIC.

5. THE CONTRACTOR MUST PROVIDE ALL "METHODS AND MEANS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR, AT THE CONTRACTOR'S SOLE COST, MUST REPAIR ALL DAMAGE TO ALL ITEMS AND FEATURES THAT ARE TO REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS. CONTRACTOR'S REPAIRS MUST INCLUDE THE RESTORATION OF ALL ITEMS AND FEATURES REPAIRED TO THEIR PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR MUST PERFORM ALL REPAIRS AT THE CONTRACTOR'S SOLE EXPENSE.

6. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. THE CONTRACTOR MUST PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, COMPLYING WITH ALL OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY AND SAFETY TO ALL PROPERTY ON THE SITE OR ADJACENT OR NEAR TO THE SAME.

7. THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY, WHICH MUST INCLUDE, BUT IS NOT LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING, OTHER APPROPRIATE AND/OR NECESSARY SAFETY FEATURES AND ITEMS NECESSARY TO PROTECT THE PUBLIC FROM AREAS OF CONSTRUCTION AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR MUST SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF ALL UNAUTHORIZED PERSONS AT ANY TIME, TO OR NEAR THE DEMOLITION AREA.

8. PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY, THE CONTRACTOR MUST, IN WRITING, RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS AND/OR SPECIFICATIONS, ALL CONCERNS OR QUESTIONS REGARDING THE APPLICABLE SAFETY STANDARDS, AND/OR THE SAFETY OF THE CONTRACTOR AND/OR THIRD PARTIES IN PERFORMING THE WORK ON THIS PROJECT. ANY SUCH CONCERNS MUST BE CONVEYED TO THE ENGINEER OF RECORD AND BOHLER , IN WRITING AND MUST ADDRESS ALL ISSUES AND ITEMS RESPONDED TO, BY THE ENGINEER OF RECORD AND BY BOHLER, IN WRITING. ALL DEMOLITION ACTIVITIES MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS, STATUTES, ORDINANCES AND CODES.

9. THE CONTRACTOR MUST BECOME FAMILIAR WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AND/OR DISCONNECTION AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED, REMOVED AND/OR ABANDONED IN ACCORDANCE WITH THE JURISDICTION AND UTILITY COMPANY REQUIREMENTS AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.

10. PRIOR TO COMMENCING ANY DEMOLITION, THE CONTRACTOR MUST:
    - 10.1. OBTAIN ALL REQUIRED PERMITS AND MAINTAIN THE SAME ON SITE FOR REVIEW BY THE ENGINEER AND ALL PUBLIC AGENCIES WITH JURISDICTION THROUGHOUT THE DURATION OF THE PROJECT, SITE WORK, AND DEMOLITION WORK.
    - 10.2. NOTIFY, AT A MINIMUM, THE MUNICIPAL ENGINEER, DESIGN ENGINEER, AND LOCAL SOIL CONSERVATION JURISDICTION, AT LEAST 72 BUSINESS HOURS PRIOR TO THE COMMENCEMENT OF WORK.
    - 10.3. INSTALL THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO SITE DISTURBANCE, AND MAINTAIN SAID CONTROLS UNTIL SITE IS STABILIZED
    - 10.4. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR MUST CALL THE STATE ONE-CALL DAMAGE PROTECTION SYSTEM FOR UTILITY MARK OUT, IN ADVANCE OF ANY EXCAVATION.
    - 10.5. LOCATE AND PROTECT ALL UTILITIES AND SERVICES, INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN AND ADJACENT TO THE LIMITS OF PROJECT ACTIVITIES. THE CONTRACTOR MUST USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL UNDERGROUND UTILITIES.
    - 10.6. PROTECT AND MAINTAIN IN OPERATION, ALL ACTIVE UTILITIES AND SYSTEMS THAT ARE NOT BEING REMOVED DURING ANY DEMOLITION ACTIVITIES.
    - 10.7. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) FOR THE TEMPORARY OR PERMANENT TERMINATION OF SERVICE REQUIRED BY THE PROJECT PLANS AND SPECIFICATIONS REGARDING THE METHODS AND MEANS TO CONSTRUCT SAME. THESE ARE NOT THE ENGINEER OF RECORD'S RESPONSIBILITY. IN THE EVENT OF ABANDONMENT, THE CONTRACTOR MUST PROVIDE THE UTILITY ENGINEER AND OWNER WITH IMMEDIATE WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTIONAL AND UTILITY COMPANY REQUIREMENTS.
    - 10.8. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS NECESSARY OR AS REQUIRED TO MINIMIZE THE IMPACT ON, OF, AND TO THE AFFECTED PARTIES. WORK REQUIRED TO BE PERFORMED "OFF-PEAK" IS TO BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER.
    - 10.9. IN THE EVENT THE CONTRACTOR DISCOVERS ANY HAZARDOUS MATERIAL, THE REMOVAL OF WHICH IS NOT ADDRESSED IN THE PROJECT PLANS AND SPECIFICATIONS OR THE CONTRACT WITH THE OWNER/DEVELOPER, THE CONTRACTOR MUST IMMEDIATELY CEASE ALL WORK IN THE AREA OF DISCOVERY, AND IMMEDIATELY NOTIFY, IN WRITING AND VERBALLY, THE OWNER AND ENGINEER OF RECORD AND BOHLER, THE DISCOVERY OF SUCH MATERIALS TO PURSUE PROPER AND COMPLIANT REMOVAL OF SAME.

11. THE CONTRACTOR MUST NOT PERFORM ANY EARTH MOVEMENT ACTIVITIES, DEMOLITION OR REMOVAL OF FOUNDATION WALLS, FOOTINGS, OR OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE, UNLESS SAME IS IN STRICT ACCORDANCE AND CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, OR PURSUANT TO THE WRITTEN DIRECTION OF THE OWNER'S STRUCTURAL OR GEOTECHNICAL ENGINEER.

12. DEMOLITION ACTIVITIES AND EQUIPMENT MUST NOT USE OR INCLUDE AREAS OUTSIDE THE DEFINED PROJECT LIMIT LINE, WITHOUT SPECIFIC WRITTEN PERMISSION AND AUTHORITY OF AND FROM THE OWNER AND ALL GOVERNMENTAL AGENCIES WITH JURISDICTION.

13. THE CONTRACTOR MUST BACKFILL ALL EXCAVATION RESULTING FROM, OR INCIDENTAL TO, DEMOLITION ACTIVITIES. BACKFILL MUST BE ACCOMPLISHED WITH APPROVED BACKFILL MATERIALS AND MUST BE SUFFICIENTLY COMPACTED TO SUPPORT ALL NEW IMPROVEMENTS AND MUST BE PERFORMED IN COMPLIANCE WITH THE RECOMMENDATIONS AND GUIDANCE ARTICULATED IN THE GEOTECHNICAL REPORT. BACKFILLING MUST OCCUR IMMEDIATELY AFTER DEMOLITION ACTIVITIES AND MUST BE PERFORMED SO AS TO PREVENT WATER ENTERING THE EXCAVATION. FINISHED SURFACES MUST BE GRADED TO PROMOTE POSITIVE DRAINAGE. THE CONTRACTOR IS RESPONSIBLE FOR COMPACTION TESTING AND MUST SUBMIT SUCH REPORTS AND RESULTS TO THE ENGINEER OF RECORD AND THE OWNER.

14. EXPLOSIVES MUST NOT BE USED WITHOUT PRIOR WRITTEN CONSENT FROM BOTH THE OWNER AND ALL APPLICABLE, NECESSARY AND REQUIRED GOVERNMENTAL AUTHORITIES. PRIOR TO COMMENCING ANY EXPLOSIVE PROGRAM AND/OR ANY DEMOLITION ACTIVITIES, THE CONTRACTOR MUST ENSURE AND OVERSEE THE INSTALLATION OF ALL OF THE REQUIRED PERMIT AND EXPLOSIVE CONTROL MEASURES THAT THE FEDERAL, STATE, AND LOCAL GOVERNMENTS REQUIRE. THE CONTRACTOR IS ALSO RESPONSIBLE TO CONDUCT AND PERFORM ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES AND THE LIKE.

15. IN ACCORDANCE WITH FEDERAL, STATE, AND/OR LOCAL STANDARDS, THE CONTRACTOR MUST USE DUST CONTROL MEASURES TO LIMIT AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR. AFTER THE DEMOLITION IS COMPLETE, THE CONTRACTOR MUST CLEAN ALL ADJACENT STRUCTURES AND IMPROVEMENTS TO REMOVE ALL DUST AND DEBRIS WHICH THE DEMOLITION OPERATIONS CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR "PRE-DEMOLITION" CONDITION AT CONTRACTOR'S SOLE COST.

16. PAVEMENT MUST BE SAW CUT IN STRAIGHT LINES. ALL DEBRIS FROM REMOVAL OPERATIONS MUST BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS OUTSIDE OF APPROVED AREAS WILL NOT BE PERMITTED, INCLUDING BUT NOT LIMITED TO, THE PUBLIC RIGHT-OF-WAY.

17. THE CONTRACTOR MUST MAINTAIN A RECORD SET OF PLANS WHICH INDICATES THE LOCATION OF EXISTING UTILITIES THAT ARE CAPPED, ABANDONED IN PLACE, OR RELOCATED DUE TO DEMOLITION ACTIVITIES. THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK, ALL OF WHICH IS AT THE CONTRACTOR'S SOLE COST.

18. THE CONTRACTOR MUST EMPTY, CLEAN AND REMOVE FROM THE SITE ALL UNDERGROUND STORAGE TANKS, IF ENCOUNTERED, IN ACCORDANCE WITH FEDERAL, STATE, COUNTY AND LOCAL REQUIREMENTS, PRIOR TO CONTINUING CONSTRUCTION IN THE AREA AROUND THE TANK WHICH EMPTYING, CLEANING AND REMOVAL ARE AT THE CONTRACTOR'S SOLE COST.

19. THE CONTRACTOR MUST LOCATE AND CLEARLY DEFINE VERTICALLY AND HORIZONTALLY ALL ACTIVE AND INACTIVE UTILITY AND/OR SERVICE SYSTEMS THAT ARE TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED/RELOCATED DURING SITE ACTIVITY.

20. CONTRACTOR SHALL FIELD LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION AND IF REQUIRED, DIG EXPLORATORY TEST PITS TO CONFIRM EXACT LOCATION AND DEPTH OF UTILITIES. CONTRACTOR SHALL NOTIFY DESIGN ENGINEER WITH ANY CONFLICTS AS NEEDED TO COORDINATE FINAL LOCATION OF ALL PROPOSED IMPROVEMENTS.

21. CONTRACTOR SHALL INSPECT ALL EXISTING UTILITY STRUCTURES THAT ARE TO REMAIN FOR THE PROJECTS RE-USE TO VERIFY SUITABILITY FOR SAME. IF STRUCTURES CAN NOT BE REUSED THEN THE CONTRACTOR SHALL PROVIDE A NEW STRUCTURE. THE CONTRACTOR SHALL COORDINATE SUCH WORK WITH THE APPLICABLE UTILITY PROVIDER.

22. CONTRACTOR TO REMOVE ANY BUILDING FOUNDATION REMAINS OR ASSOCIATED IMPROVEMENTS, DELETERIOUS MATERIALS, AND/OR DEBRIS THAT IMPEDE THE WORK SHOWN ON THESE PLANS.

23. THE CONTRACTOR SHALL REVIEW THE PLANS VERSUS THE LOCATION OF EXISTING STRUCTURES, UTILITIES AND APPURTENANCES IN THE FIELD TO CONFIRM ACCURACY OF SAME AND VERIFY ITEMS TO BE REMOVED. THE CONTRACTOR SHALL CARRY COSTS FOR REMOVAL OF ANY EXISTING STRUCTURES, APPURTENANCES, AND UNDERGROUND UTILITIES, INCLUDING BUT NOT LIMITED TO, DRAIN, WATER, SEWER, STEAM, IRRIGATION, GAS, TELECOM AND ELECTRIC.

24. THE CONTRACTOR SHALL MAINTAIN, ADJUST OR ABANDON EXISTING MONITORING WELLS IN ACCORDANCE WITH THE DIRECTION OF THE ENVIRONMENTAL CONSULTANT (TYP.)

25. WHERE THE LIMIT OF WORK COINCIDES WITH PROPERTY LINE, TREE LINE, PROPOSED SAWCUT OR COMBINATION THEREOF IT IS SHOWN ADJACENT TO THESE FEATURES FOR GRAPHICAL CLARITY.

26. EXISTING TREES TO REMAIN ARE TO BE PROTECTED DURING CONSTRUCTION UNLESS CLEARLY INDICATED OTHERWISE. REASONABLE CARE AND CAUTION SHALL BE TAKEN DURING CONSTRUCTION TO PREVENT DAMAGE AND SELECTIVE PRUNING MAY BE REQUIRED TO ENSURE THAT TREES DO NOT CONFLICT WITH THE DEVELOPMENT.

27. CONTRACTOR SHALL REPAIR/REPLACE ANY TRAFFIC LOOP DETECTORS THAT ARE DAMAGED DURING CONSTRUCTION WITHIN EXISTING OR PROPOSED RIGHTS OF WAYS. ANY SUCH WORK SHALL BE PERFORMED BY A LICENSED / DOT APPROVED SIGNAL CONTRACTOR. ANY DAMAGED LOOPS OR OTHER SIGNAL EQUIPMENT SHALL BE REPAIRED IMMEDIATELY AFTER THE WORK IS COMPLETE. THE SIGNAL CONTRACTOR SHALL BE AVAILABLE TO MAKE ANY TEMPORARY SIGNAL CHANGES IF REQUESTED BY DOT AND/OR THE MUNICIPALITY.

28. THE CONTRACTOR MUST FIELD VERIFY THE LOCATIONS WHERE PROPOSED UTILITIES CROSS EXISTING UNDERGROUND UTILITIES BY USING A TEST PIT TO DETERMINE THE EXACT SIZE, DEPTH AND LOCATION, PRIOR TO COMMENCEMENT OF CONSTRUCTION.

29. CONTRACTOR SHALL LOCATE ANY EXISTING UTILITY SERVICES THAT ARE TO BE TERMINATED AT THE EXISTING MAIN AND/OR PROPERTY LINE. THESE SERVICES ARE TO BE TERMINATED IN ACCORDANCE WITH MUNICIPAL / STATE TRANSPORTATION DEPARTMENT REQUIREMENTS.

GENERAL SITE NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

2. PRIOR TO THE COMMENCEMENT OF GENERAL CONSTRUCTION, THE CONTRACTOR MUST INSTALL SOIL EROSION CONTROL AND ANY STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MEASURES NECESSARY, AS INDICATED ON THE APPROVED SOIL EROSION AND SEDIMENT CONTROL PLAN AND IN ACCORDANCE WITH APPLICABLE AND/OR APPROPRIATE AGENCIES' GUIDELINES TO PREVENT SEDIMENT AND/OR LOOSE DEBRIS FROM WASHING ONTO ADJACENT PROPERTIES OR THE RIGHT OF WAY.

3. ALL DIRECTIONAL/TRAFFIC SIGNING AND PAVEMENT STRIPING MUST CONFORM TO THE LATEST STANDARDS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ANY APPLICABLE STATE OR LOCALLY APPROVED SUPPLEMENTS, GUIDELINES, RULES, REGULATIONS, STANDARDS AND THE LIKE.

4. THE LOCATIONS OF PROPOSED UTILITY POLES AND TRAFFIC SIGNS SHOWN ON THE PLANS ARE SCHEMATIC AND PRELIMINARY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR FIELD-VERIFYING THEIR LOCATION. THE CONTRACTOR MUST COORDINATE THE RELOCATION OF TRAFFIC SIGNS WITH THE ENTITY WITH JURISDICTION OVER THE PROJECT.

5. ALL DIMENSIONS SHOWN ARE TO BOTTOM FACE OF CURB, EDGE OF PAVEMENT, OR EDGE OF BUILDING, EXCEPT WHEN DIMENSION IS TO A PROPERTY LINE, STAKE OUT OF LOCATIONS OF INLETS, LIGHT POLES, ETC. MUST BE PERFORMED IN STRICT ACCORDANCE WITH THE DETAILS, UNLESS NOTED CLEARLY OTHERWISE.

6. WHEN APPLICABLE, OWNER/ OPERATOR MUST FILE THE NOI FOR NPDES PERMITS AT APPROPRIATE AND/OR REQUIRED TIMEFRAMES BASED UPON THE DESIRED START OF CONSTRUCTION. LAND DISTURBING ACTIVITIES MUST NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED FROM GOVERNING AUTHORITIES (INCLUDING STORMWATER POLLUTION PREVENTION PLAN). THE CONTRACTOR MUST STRICTLY ADHERE TO THE APPROVED SWPPP PLAN DURING CONSTRUCTION OPERATIONS (IF PROVIDED).

7. ALL CONCRETE MUST BE AIR ENTRAINED AND INCLUDE THE MINIMUM COMPRESSIVE STRENGTH OF JURISDICTIONAL STANDARD PSI AT 28 DAYS (OR 4,000 PSI) UNLESS OTHERWISE NOTED ON THE PLANS, DETAILS AND/OR GEOTECHNICAL REPORT.

8. THE CONTRACTOR MUST FILE SITE SIGNAGE APPLICATION OR PERMIT UNDER SEPARATE APPLICATION UNLESS DONE SO AS PART OF JURISDICTIONAL PERMITTING PROCEDURES.

9. THE CONTRACTOR MUST REPAIR OR REPLACE, AT THE CONTRACTOR'S SOLE COST AND EXPENSE, ALL SIDEWALKS, CURBS, PAVEMENT MARKINGS, AND PAVEMENT DAMAGED BY CONSTRUCTION ACTIVITIES WHETHER SPECIFIED ON THIS PLAN OR NOT.

10. WORK WITHIN THE RIGHT-OF-WAY MUST BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REQUIREMENTS AND STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DEPARTMENT, HIGHWAY DIVISION, AND/OR STATE DOT HIGHWAY DEPARTMENT.

11. WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL WIDTHS DO NOT REPRESENT THE ACTUAL WIDTH OF THE PROPOSED WALL, RATHER THEY ARE AN ASSUMPTION BASED ON WALL TYPE AND WALL HEIGHT. WALL FOOTINGS AND /OR FOUNDATIONS ARE NOT IDENTIFIED HEREIN AND ARE TO BE SET/DETERMINED BY THE CONTRACTOR OR WALL DESIGNER, AND MUST BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT AN APPROPRIATELY LICENSED PROFESSIONAL DESIGNS ALL WALLS SHOWN HEREON AND PRIOR TO CONSTRUCTION. REFER TO GRADING NOTES REGARDING RETAINING WALL DESIGN.

12. CONTRACTOR IS CAUTIONED OF EXISTING UTILITY SERVICES TO REMAIN IN PROXIMITY TO PROPOSED BOLLARDS AND SIGNS. CONTRACTOR SHALL PROVIDE FIELD MODIFICATION LOCATIONS OF BOLLARDS AND BOLLARDS WITH SIGNAGE AS NEEDED TO AVOID CONFLICTS WITH EXISTING UTILITY SERVICES TO REMAIN.

GENERAL GRADING NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

2. SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AS REFERENCED IN THIS PLAN SET. IF NO GEOTECHNICAL REPORT HAS BEEN REFERENCED, THE CONTRACTOR MUST HAVE A GEOTECHNICAL ENGINEER PROVIDE WRITTEN SPECIFICATIONS AND RECOMMENDATIONS PRIOR TO THE CONTRACTOR COMMENCING THE GRADING WORK. THE CONTRACTOR MUST FOLLOW THE REQUIREMENTS OF ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS, WHICH HAVE JURISDICTION OVER THIS PROJECT.

3. THE CONTRACTOR IS REQUIRED TO SECURE ALL NECESSARY AND/OR REQUIRED PERMITS AND APPROVALS FOR ALL OFF-SITE MATERIAL SOURCES AND DISPOSAL FACILITIES. THE CONTRACTOR MUST SUPPLY A COPY OF APPROVALS TO THE ENGINEER OF RECORD AND THE OWNER PRIOR TO THE CONTRACTOR COMMENCING ANY WORK.
4. THE CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCING ANY CONSTRUCTION. SHOULD DISCREPANCIES BETWEEN THE PLANS AND INFORMATION OBTAINED THROUGH FIELD VERIFICATIONS BE IDENTIFIED OR EXIST, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING.

5. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ALL UNSUITABLE MATERIALS WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. THE CONTRACTOR MUST COMPACT ALL EXCAVATED OR FILLED AREAS IN STRICT ACCORDANCE WITH THE GEOTECHNICAL REPORT'S GUIDANCE. MOISTURE CONTENT AT TIME OF PLACEMENT MUST BE SUBMITTED IN A COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED. THIS REPORT MUST VERIFY THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES WHICH ARE IN EFFECT AND WHICH ARE APPLICABLE TO THE PROJECT. SUBBASE MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT MUST BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER/DEVELOPER, OR OWNER/DEVELOPER'S REPRESENTATIVE, SUBBASE MUST BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL, COMPACTED AS THE GEOTECHNICAL REPORT DIRECTS. EARTHWORK ACTIVITIES INCLUDING, BUT NOT LIMITED TO, EXCAVATION, BACKFILL, AND COMPACTING MUST COMPLY WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. EARTHWORK ACTIVITIES MUST COMPLY WITH THE STANDARD STATE DOT SPECIFICATIONS FOR ROADWAY CONSTRUCTION (LATEST EDITION) AND ANY AMENDMENTS OR REVISIONS THERETO.

6. IN THE EVENT OF A DISCREPANCY(IES) AND/OR A CONFLICT(S) BETWEEN PLANS, OR RELATIVE TO OTHER PLANS, THE GRADING PLAN TAKES PRECEDENCE AND CONTROLS. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCY(IES) AND/OR CONFLICT(S).

7. THE CONTRACTOR IS RESPONSIBLE TO IMPORT FILL OR EXPORT EXCESS MATERIAL AS NECESSARY TO CONFORM TO THE PROPOSED GRADING, AND TO BACKFILL EXCAVATIONS FOR THE INSTALLATION OF UNDERGROUND IMPROVEMENTS.

8. PROPOSED TOP OF CURB ELEVATIONS ARE GENERALLY 6" ABOVE PAVEMENT GRADE UNLESS OTHERWISE NOTED.

9. THE CONTRACTOR MUST CONFIRM AND ENSURE THAT AS CONSTRUCTED IMPROVEMENTS CREATE THE FOLLOWING MINIMUM SLOPES (EXCEPT WHERE ADA REQUIREMENTS LIMIT THEM): 1.0% ON ALL CONCRETE SURFACES, 1.5% ON ASPHALT SURFACES, 1.5% IN LANDSCAPED AREAS AND 0.75% SLOPE AGAINST ALL ISLANDS, GUTTERS, AND CURBS TO PROVIDE POSITIVE DRAINAGE.

10. WHERE RETAINING WALLS ARE IDENTIFIED ON THE PLANS, TOP AND BOTTOM OF WALL ELEVATIONS (TW & BW) REPRESENT THE PROPOSED FINISHED GRADE AT THE FACE OF THE TOP AND BOTTOM OF THE WALL AND DO NOT REPRESENT THE ELEVATION OF THE PROPOSED WALL (INCLUDING THE CAP UNIT OR FOOTING). WALL FOOTINGS/FOUNDATION ELEVATIONS ARE NOT IDENTIFIED HEREIN AND ARE TO BE SET/DETERMINED BY THE CONTRACTOR OR WALL DESIGNER, AND MUST BE SET BASED UPON FINAL STRUCTURAL DESIGN SHOP DRAWINGS PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED IN THE STATE WHERE THE CONSTRUCTION OCCURS. THE CONTRACTOR MUST ENSURE THAT THERE ARE NO UTILITIES ON THE PASSIVE SIDE OF THE RETAINING WALL. NO EXCAVATION MAY BE PERFORMED ON THE PASSIVE SIDE OF THE RETAINING WALL WITHOUT APPROPRIATELY AND SAFELY SUPPORTING THE WALL IN ACCORDANCE WITH THE STANDARD OF CARE AND ALL APPLICABLE RULES, REGULATIONS, CODES, ORDINANCES, LAWS AND STATUTES.

11. MSE OR GRAVITY BLOCK WALLS SHALL BE CONSTRUCTED SUCH THAT UPON COMPLETION OF CONSTRUCTION THERE IS NO UNFINISHED SURFACE OR LIFTING RINGS VISIBLE (E.G. USE OF FINISHED TOP BLOCK OR CAP STONES)

12. STORMWATER RUNOFF WITHIN PROPERTY MUST BE COLLECTED ON-SITE WITH NO OVERLAND RUNOFF ONTO THE RIGHT-OF-WAY OR ADJACENT PROPERTIES TO THE MAXIMUM EXTENT POSSIBLE OR IN THE MANNER SHOWN ON THE CONSTRUCTION DRAWINGS. STORMWATER RUNOFF ONTO ADJACENT PROPERTIES SHALL BE CONTROLLED AS TO NOT ADVERSLY IMPACT SAID PROPERTIES.

13. BEFORE COMMENCING GRADING WORK, CONTRACTOR SHALL SUBMIT SAMPLES OF ALL NATIVE AND IMPORTED MATERIALS WITH THEIR INTENDED FOR STRUCTURAL USES TO THE GEOTECHNICAL ENGINEER OF RECORD.

14. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL ADA GUIDELINES AND REQUIREMENTS.

15. FOR ALL RETAINING WALLS (CT USE 3, ALL OTHER OFFICES USE 4) FEET OR GREATER IN HEIGHT:
    - 15.1. THE OWNER OR THE OWNER'S CONTRACTOR IS TO PROVIDE A SITE-SPECIFIC RETAINING WALL DESIGN PREPARED BY THE APPROPRIATE PROFESSIONAL LICENSED (E.G. STRUCTURAL ENGINEER) IN THE STATE WHERE THE CONSTRUCTION OCCURS. SOIL TYPES, WATER TABLE ELEVATION, EXISTING & PROPOSED SURROUNDING IMPROVEMENTS/CONDITIONS (INCLUDING BUT NOT LIMITED TO SLOPES, DRIVE AISLES, ROADS, FENCING, GUIDERAILS, UTILITIES, DRAINAGE FACILITIES, STRUCTURES, FOUNDATIONS), LIVE LOADS AND OTHER SITE AMENITIES THAT COULD HAVE AN INFLUENCE OR IMPACT ON THE RETAINING WALL(S) CONSTRUCTABILITY AND/OR LONGEVITY SHALL BE CONSIDERED AND INCORPORATED INTO THE RETAINING WALL DESIGN AS WELL AS THE GLOBAL STABILITY ANALYSIS.
    - 15.2. PEER REVIEW AND GLOBAL STABILITY ANALYSIS OF THE RETAINING WALL DESIGN MUST BE COMPLETED BY THE OWNER'S GEOTECHNICAL ENGINEER TO CERTIFY THE DESIGN MEETS INDUSTRY STANDARDS FOR FACTOR OF SAFETY. SOIL TYPES, WATER TABLE ELEVATION AND DESIGN PROPERTIES AS NOTED ABOVE SHALL BE FIELD CONFIRMED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO WALL CONSTRUCTION.

16. CONTRACTOR SHALL INSTALL CONCRETE CURB ALONG FACE OF BUILDING / WALL AS SHOWN TO PROVIDE CONSISTENT WIDTH ALONG LENGTH OF PROPOSED ACCESSIBLE RAMP AND RAMP LANDING TO MEET ADA/AAB REQUIREMENTS.

17. CONTRACTOR SHALL REVIEW RETAINING WALL LOCATIONS VERSUS APPLICABLE STATE AND LOCAL CODES AND PROVIDE FALL PROTECTION (E.G. FENCING OR RAILING) IN ACCORDANCE WITH SAID CODE.

18. CONTRACTOR SHALL COORDINATE WITH OWNER/OPERATOR TO REVIEW EXISTING DEPRESSIONS WITHIN EXISTING PAVEMENT AREAS TO REMAIN AND SHALL CONFIRM THAT THE SCOPE OF WORK SHALL PROVIDE POSITIVE DRAINAGE BY FIXING ANY EXISTING AREAS OF PONDING.

19. BEFORE COMMENCING GRADING WORK, CONTRACTOR SHALL SUBMIT SAMPLES OF ALL NATIVE AND IMPORTED MATERIALS WITH THEIR INTENDED FOR STRUCTURAL USES TO THE GEOTECHNICAL ENGINEER OF RECORD.

GENERAL DRAINAGE & UTILITY NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

2. LOCATIONS OF ALL EXISTING AND PROPOSED SERVICES ARE APPROXIMATE, AND THE CONTRACTOR MUST INDEPENDENTLY VERIFY AND CONFIRM THOSE LOCATIONS AND SERVICES WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCING ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR MUST INDEPENDENTLY VERIFY AND CONFIRM ALL SANITARY CONNECTION POINTS AND ALL OTHER UTILITY SERVICE CONNECTION POINTS IN THE FIELD, PRIOR TO COMMENCING ANY CONSTRUCTION. THE CONTRACTOR MUST REPORT ALL DISCREPANCIES, ERRORS AND OMISSIONS IN WRITING, TO THE ENGINEER OF RECORD.

3. THE CONTRACTOR MUST VERTICALLY AND HORIZONTALLY LOCATE ALL UTILITIES AND SERVICES INCLUDING, BUT NOT LIMITED TO, GAS, WATER, ELECTRIC, SANITARY AND STORM, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE OR WORK SPACE, WHICHEVER IS GREATER. THE CONTRACTOR MUST USE, REFER TO, AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL OF THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO ANY EXISTING UTILITIES WHICH OCCUR DURING CONSTRUCTION, AT NO COST TO THE OWNER AND AT CONTRACTOR'S SOLE COST AND EXPENSE. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES WHICH OCCURS DURING CONSTRUCTION.

4. THE CONTRACTOR MUST FIELD VERIFY THE PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES BY USING A TEST PIT TO CONFIRM EXACT DEPTH, PRIOR TO COMMENCEMENT OF CONSTRUCTION.

5. STORMWATER ROOF DRAIN LOCATIONS ARE BASED ON ARCHITECTURAL PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF SAME BASED UPON FINAL ARCHITECTURAL PLANS.

6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING SITE PLAN DOCUMENTS AND ARCHITECTURAL PLANS FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS; GREASE TRAP REQUIREMENTS; AND DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE ARCHITECT WILL DETERMINE THE UTILITY SERVICE SIZES. THE CONTRACTOR MUST COORDINATE INSTALLATION OF UTILITY SERVICES WITH THE INDIVIDUAL COMPANIES TO AVOID CONFLICTS AND TO ENSURE THAT PROPER DEPTHS ARE ACHIEVED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT INSTALLATION OF ALL IMPROVEMENTS COMPLIES WITH ALL UTILITY REQUIREMENTS OF THE APPLICABLE JURISDICTION AND REGULATORY AGENCIES AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES AND, FURTHER, IS RESPONSIBLE FOR COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE A CONFLICT(S) EXISTS BETWEEN THESE DOCUMENTS AND THE ARCHITECTURAL PLANS, OR WHERE ARCHITECTURAL PLAN UTILITY CONNECTION POINTS DIFFER, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, AND PRIOR TO CONSTRUCTION, MUST RESOLVE SAME.

7. ALL FILL, COMPACTION, AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION MUST BE EXACTLY AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND THE CONTRACTOR MUST COORDINATE SAME WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS. WHEN THE PROJECT DOES NOT HAVE GEOTECHNICAL RECOMMENDATIONS, FILL AND COMPACTION MUST COMPLY WITH APPLICABLE REQUIREMENTS AND SPECIFICATIONS. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR DESIGN OF TRENCH BACKFILL OR FOR COMPACTION REQUIREMENTS

8. DURING THE INSTALLATION OF SANITARY, STORM, AND ALL UTILITIES, THE CONTRACTOR MUST MAINTAIN A CONTEMPORANEOUS AND THOROUGH RECORD OF CONSTRUCTION TO IDENTIFY THE AS-INSTALLED LOCATIONS OF ALL UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR MUST CAREFULLY NOTE ANY INSTALLATIONS THAT DEVIATE, IN ANY RESPECT, FROM THE INFORMATION CONTAINED IN THESE PLANS. THIS RECORD MUST BE KEPT ON A CLEAN COPY OF THE APPROPRIATE PLAN(S), WHICH THE CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER IMMEDIATELY UPON THE COMPLETION OF WORK.

9. THE CONTRACTOR MUST ENSURE THAT ALL UTILITY TRENCHES LOCATED IN EXISTING PAVED ROADWAYS INCLUDING SANITARY, WATER AND STORM SYSTEMS, ARE REPAIRED IN ACCORDANCE WITH REFERENCED MUNICIPAL, COUNTY AND OR STATE DOT DETAILS AS APPLICABLE. THE CONTRACTOR MUST COORDINATE INSPECTION AND APPROVAL OF COMPLETED WORK WITH THE AGENCY WITH JURISDICTION OVER SAME.

10. FINAL LOCATIONS OF PROPOSED UTILITY POLES, AND/ OR POLES TO BE RELOCATED ARE AT THE SOLE DISCRETION OF THE RESPECTIVE UTILITY COMPANY, REGARDLESS OF WHAT THIS PLAN DEPICTS.

11. WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS MUST BE SPECIFIED BY THE LOCAL UTILITY COMPANY. THE CONTRACTOR MUST CONTACT THE APPLICABLE MUNICIPALITY TO CONFIRM THE PROPER WATER METER AND VAULT, PRIOR TO COMMENCING CONSTRUCTION.

12. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED FINISHED GRADES WITH NO TRIPPING OR SAFETY HAZARD IN ACCORDANCE WITH ALL APPLICABLE STANDARDS, REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.

13. THE CONTRACTOR'S PRICE FOR WATER AND SEWER SERVICE INSTALLATIONS MUST INCLUDE ALL FEES, COSTS, AND APPURTENANCES REQUIRED BY THE UTILITY PROVIDER (AND OTHER AGENCIES HAVING JURISDICTION OVER THE WORK) TO PROVIDE FULL AND COMPLETE WORKING SERVICE, INCLUDING (BUT NOT LIMITED TO) NECESSARY FEES, TESTING, DISINFECTING, INSPECTIONS, ROAD OPENING & BACKFILL REQUIREMENTS, TRAFFIC CONTROL AND SURETY BONDS AS DEFINED BY THE PROVIDER (AND OTHER AGENCIES HAVING JURISDICTION OVER THE WORK).

14. ALL WORK ASSOCIATED WITH UTILITY POLES, OVERHEAD WIRES AND ANY/ALL APPURTENANCES SHALL BE COORDINATED BY THE GC WITH THE LOCAL UTILITY COMPANIES PRIOR TO THE ORDERING OF ANY MATERIALS. THIS MAY INCLUDE BUT IS NOT LIMITED TO THE REMOVAL, INSTALLATION, RELOCATION OR PROTECTION OF ANY BRACING, GUY WIRES, OVERHEAD WIRES, ETC. AS MAY BE REQUIRED TO ACCOMMODATE THE PROJECT.

15. SEWERS CONVEYING SANITARY FLOW, OR INDUSTRIAL FLOW MUST BE SEPARATED FROM WATER MAINS BY A DISTANCE OF AT LEAST 10 FEET HORIZONTALLY. IF SUCH LATERAL SEPARATION IS NOT POSSIBLE, THE PIPES MUST, AT A MINIMUM, BE IN SEPARATE TRENCHES WITH THE AT LEAST 18 INCHES OF VERTICAL SEPARATION FROM THE BOTTOM OF THE WATER MAIN TO THE TOP OF THE SEWER LINE. WHERE APPROPRIATE SEPARATION FROM A WATER MAIN IS NOT POSSIBLE, THE SEWER MUST BE ENCASED IN CONCRETE, OR CONSTRUCTED OF DUCTILE IRON PIPE USING MECHANICAL OR SLIP-ON JOINTS FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE CROSSING. IN ADDITION, ONE FULL LENGTH OF SEWER PIPE SHOULD BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE WATER LINE AS POSSIBLE. WHERE A WATER MAIN CROSSES UNDER A SANITARY SEWER, ADEQUATE STRUCTURAL SUPPORT FOR THE SANITARY SEWER MUST BE PROVIDED. ALL CROSSINGS SHALL BE IN ACCORDANCE WITH JURISDICTIONAL PERMITTING/UTILITY AUTHORITIES REGULATIONS.

16. WHEN THESE PLANS INVOLVE MULTIPLE BUILDINGS, SOME OF WHICH MAY BE BUILT AT A LATER DATE, THE CONTRACTOR MUST EXTEND ALL UTILITY SERVICES, INCLUDING BUT NOT LIMITED TO STORM, SANITARY, UTILITIES, AND IRRIGATION LINES, TO A POINT AT LEAST FIVE (5) FEET BEYOND THE PAVED AREAS FOR WHICH THE CONTRACTOR IS RESPONSIBLE. THE CONTRACTOR MUST CAP ENDS OF INSTALLED UTILITIES AS APPROPRIATE, MARK UTILITY ENDS WITH MAGENTIC TRACER TAPE, MARK TERMINOUS LOCATIONS WITH A 2X4 STAKE, AND MUST NOTE THE LOCATION OF ALL UTILITY STUBS ON A CLEAN COPY OF THE PLAN. THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK, ALL OF WHICH IS AT THE CONTRACTOR'S SOLE COST.

17. STORM AND SANITARY PIPE LENGTHS INDICATED ARE NOMINAL AND ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS INDICATED ON THE PLANS OTHERWISE.

18. UNLESS INDICATED OTHERWISE, ALL NEW UTILITIES/SERVICES, INCLUDING ELECTRIC, TELEPHONE, CABLE TV, ETC., MUST BE INSTALLED UNDERGROUND. ALL NEW UTILITY SERVICES MUST BE INSTALLED IN ACCORDANCE WITH THE UTILITY SERVICE PROVIDER INSTALLATION SPECIFICATIONS AND STANDARDS.
19. SANITARY PIPE MUST BE POLYVINYL CHLORIDE (PVC) SDR 35 EXCEPT WHERE CLEARLY INDICATED OTHERWISE. SANITARY LATERAL(S) MUST BE PVC SDR 26 UNLESS CLEARLY INDICATED OTHERWISE.

20. UNLESS CLEARLY INDICATED OTHERWISE, ALL STORM PIPE MUST BE REINFORCED CONCRETE PIPE (RCP) CLASS III WITH SILT/SOIL TIGHT JOINTS. WHEN HIGH-DENSITY POLYETHYLENE PIPE (HDPE) IS CALLED FOR ON THE PLANS, IT MUST CONFORM TO AASHTO M252 FOR PIPES 4" TO 10" AND TO AASHTO M294 FOR PIPES 12" TO 60" AND TYPE S (SMOOTH INTERIOR WITH ANGULAR CORRUGATIONS) WITH GASKET FOR SILT/SOIL TIGHT JOINT. PIPE FOR ROOF DRAIN CONNECTION MUST BE SDR 26 PVC OR SCHEDULE 40 UNLESS INDICATED OTHERWISE. HDPE PIPE JOINT GASKETS MUST BE PROVIDED AND CONFORM TO ASTM F477. DRAIN PIPE INSTALLED WITH OVER TEN (10) FEET OVER COVER AND/OR IN HIGH GROUNDWATER CONDITIONS SHALL BE SANITITE HP POLYPROPOPYLENE PIPE (PP), OR APPROVED EQUIVALENT.

21. UNLESS CLEARLY INDICATED OTHERWISE ALL SANITARY PIPE MUST BE:
    - 21.1. FOR PIPES LESS THAN 12 FEET DEEP: POLYVINYL CHLORIDE (PVC) SDR 35 PER ASTM D3034.
    - 21.2. FOR PIPES GREATER THAN 12 FEET DEEP: POLYVINYL CHLORIDE (PVC) SDR 26 PER ASTM D3034.
    - 21.3. UNLESS LOCAL OR STATE BUILDING / PLUMBING CODE CLEARLY SPECIFIES DIFFERENTLY, SANITARY LATERALS MUST BE PVC SDR 26.
    - 21.4. FOR ALL UTILITY PIPING (INCLUDING DRAIN) WITHIN 10 FT OF A BUILDING, PIPE MATERIAL SHALL COMPLY WITH APPLICABLE LOCAL OR STATE BUILDING AND PLUMBING CODES. CONTRACTOR SHALL REFER TO PLUMBING ENGINEERING PLANS AND VERIFY PIPE MATERIAL WITH LOCAL OFFICIAL PRIOR TO ORDERING OF MATERIALS.
    - 21.5. CONTRACTOR SHALL VERIFY THE CONNECTION OF EXTERIOR PIPING TO ANY FIXTURES (SUCH AS AN EXTERIOR GREASE INTERCEPTOR) OR OTHER DRAINAGE SYSTEMS WITH LOCAL OFFICIALS FOR COMPLIANCE WITH APPLICABLE LOCAL OR STATE BUILDING AND PLUMBING CODES PRIOR TO ORDERING OF MATERIALS.

22. WATER MAIN PIPING MUST BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL WATER COMPANY. IN THE ABSENCE OF SUCH REQUIREMENTS, WATER MAIN PIPING MUST BE CEMENT-LINED DUCTILE IRON (DIP) MINIMUM CLASS 52 THICKNESS. ALL PIPE AND APPURTENANCES MUST COMPLY WITH THE APPLICABLE AWWA STANDARDS IN EFFECT AT THE TIME OF APPLICATION.

23. GAS METERS MUST BE PROTECTED AS REQUIRED BY THE JURISDICTIONAL GAS PROVIDER.

ADA INSTRUCTIONS TO CONTRACTOR:

1. ALL ACCESSIBLE (A.K.A. ADA) COMPONENTS AND ACCESSIBLE ROUTES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF: (A) THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 ET SEQ. AND 42 U.S.C. § 4151 ET SEQ.); AND (B) ANY APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AND ALL AMENDMENTS TO BOTH, WHICH ARE IN EFFECT WHEN THESE PLANS WERE COMPLETED.
2. THE CONTRACTOR MUST REVIEW ALL DOCUMENTS REFERENCED IN THESE NOTES FOR ACCURACY, COMPLIANCE AND CONSISTENCY WITH INDUSTRY GUIDELINES.
3. THE CONTRACTOR MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ACCESSIBLE (ADA) COMPONENTS AND ACCESSIBLE ROUTES FOR THE SITE. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACES, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, AND INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT, MUST COMPLY WITH THE ACCESSIBLE GUIDELINES AND REQUIREMENTS WHICH INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   - 3.1. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SLOPES MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
   - 3.2. PATH OF TRAVEL ALONG ACCESSIBLE ROUTE MUST PROVIDE A 36-INCHES MINIMUM WIDTH (48-INCHES PREFERRED), OR AS SPECIFIED BY THE GOVERNING AGENCY. UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS) MUST NOT REDUCE THIS MINIMUM WIDTH. THE SLOPE MUST NOT EXCEED 1:20 (5.0%) IN THE DIRECTION OF TRAVEL AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE ACCESSIBLE PATH OF TRAVEL IS GREATER THAN 1:20 (5.0%), AN ACCESSIBLE RAMP MUST BE PROVIDED. ALONG THE ACCESSIBLE PATH OF TRAVEL, OPENINGS MUST NOT EXCEED 1/2-INCH IN WIDTH. VERTICAL CHANGES OF UP TO 1/2-INCH ARE PERMITTED ONLY IF THEY INCLUDES A 1/4-INCH BEVEL AT A SLOPE NOT STEEPER THAN 1:2. NO VERTICAL CHANGES OVER 1/4-INCH ARE PERMITTED.
   - 3.3. ACCESSIBLE RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%) AND A RISE OF 30-INCHES. LEVEL LANDINGS MUST BE PROVIDED AT EACH END OF ACCESSIBLE RAMPS. LANDING MUST PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES, AND MUST NOT EXCEED 1:50 (2.0%) SLOPE IN ANY DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS MUST HAVE A CLEAR LANDING OF A MINIMUM OF 60-INCHES BY 60-INCHES. HAND RAILS ON BOTH SIDES OF THE RAMP MUST BE PROVIDED ON AN ACCESSIBLE RAMP WITH A RISE GREATER THAN 6-INCHES.
   - 3.4. ACCESSIBLE CURB RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%). WHERE FLARED SIDES ARE PROVIDED, THEY MUST NOT EXCEED 1:10 (10%) SLOPE. LEVEL LANDING MUST BE PROVIDED AT RAMPS TOP AT A MINIMUM OF 36-INCHES LONG (48-INCHES PREFERRED). IN ALTERATIONS, WHEN THERE IS NO LANDING AT THE TOP, FLARE SIDES SLOPES MUST NOT EXCEED A SLOPE OF 1:12 (8.3%).
   - 3.5. DOORWAY LANDINGS AREAS MUST BE PROVIDED ON THE EXTERIOR SIDE OF ANY DOOR LEADING TO AN ACCESSIBLE PATH OF TRAVEL. THIS LANDING MUST BE SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA MUST BE NO FEWER THAN 60-INCHES (5 FEET) LONG, EXCEPT WHERE OTHERWISE CLEARLY PERMITTED BY ACCESSIBLE STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2009 AND OTHER REFERENCES INCORPORATED BY CODE).
   - 3.6. WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO ACCESSIBLE COMPONENTS FROM EXISTING DOORWAYS OR SURFACES, THE CONTRACTOR MUST VERIFY ALL EXISTING ELEVATIONS SHOWN ON THE PLAN. NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES, IN RARE CIRCUMSTANCES. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR IN ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS BEFORE COMMENCING ANY WORK. CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ACCESSIBLE GUIDELINES.
   - 3.7. THE CONTRACTOR MUST VERIFY ALL OF THE SLOPES OF THE CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE EXISTS OR IS OBSERVED OR DISCOVERED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, PRIOR TO POURING CONCRETE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL COSTS TO REMOVE, REPAIR AND/OR REPLACE NON-CONFORMING CONCRETE AND/OR PAVEMENT SURFACES.
4. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION TO ENSURE SAME IS CONSISTENT WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCING CONSTRUCTION.

5. IN ADDITION TO THE ABOVE, THE CONTRACTOR MUST ALSO ENSURE THAT ALL ACCESSIBLE COMPONENTS AND ACCESSIBLE ROUTES ARE CONSTRUCTED IN STRICT ACCORDANCE WITH THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS 521 CMR. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCIES BETWEEN THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE AND STATE BUILDING CODE AS IT RELATES TO ANY ACCESSIBLE IMPROVEMENTS BEING CONSTRUCTED PRIOR TO COMMENCING THE WORK.

ABBREVIATIONS

KEY	DESCRIPTION
AG / ABVG	ABOVE GROUND
ARCH	ARCHITECT
BC	BACK OF CURB
BCC	BITUMINOUS CONCRETE CURB
BM	BENCHMARK
BOC	BOTTOM OF CURB
BW	BOTTOM OF WALL
BLDG	BUILDING
CC	CONCRETE CURB
CCB	CAPE COD BERM
CONC.	CONCRETE
DEC	DECORATIVE
°	DEGREE
DEP	DEPRESSED
Ø / DIA	DIAMETER
DMH	DRAIN MANHOLE
DIP	DUCTILE IRON PIPE
ECC	EXTRUDED CONCRETE CURB
EOP	EDGE OF PAVEMENT
ELEV	ELEVATION
EXIST.	EXISTING
FF	FINISH FLOOR
FFE	FINISH FLOOR ELEVATION
GC	GENERAL CONTRACTOR
GRT	GRATE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HP	HIGH POINT
INT	INTERSECTION
INV	INVERT
L.S.A.	LANDSCAPE AREA
LOD	LIMIT OF DISTURBANCE
LOW	LIMIT OF WORK
LF	LINEAR FOOT / FEET
LP	LOW POINT
MAX	MAXIMUM
MEP	MECHANICAL, ELECTRICAL, PLUMBING
ME	MEET OR MATCH EXISTING
MIN	MINIMUM
No. / #	NUMBER
±	PLUS OR MINUS
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
PVI	POINT OF VERTICAL INTERSECTION
PVC	POLYVINYL CHLORIDE PIPE
PROP.	PROPOSED
R	RADIUS OR RADII
RCP	REINFORCED CONCRETE PIPE
R.O.W.	RIGHT-OF-WAY
SAN	SANITARY
SMH	SEWER MANHOLE
S	SLOPE
SF	SQUARE FOOT
SGC	SLOPED GRANITE CURB
STA	STATION
STM	STORM
TBR	TO BE REMOVED
TBR/R	TO BE REMOVED AND REPLACED
TC	TOP OF CURB
TW	TOP OF WALL
TPF	TREE PROTECTION FENCE
TRANS	TRANSITION
TYP.	TYPICAL
UG / UNDG	UNDERGROUND
V.I.F.	VERIFY IN FIELD
VGC	VERTICAL GRANITE CURB
W	WIDTH

TYPICAL LINE TYPE LEGEND

PROPERTY LINE	EXISTING	
	PROPOSED	
ADJACENT PROPERTY LINE	EXISTING	
	PROPOSED	
RIGHT-OF-WAY LINE	EXISTING	
	PROPOSED	
SETBACK OR BUFFER	EXISTING	
	PROPOSED	
EASEMENT LINE	EXISTING	
	PROPOSED	
WETLAND BOUNDARY	EXISTING	
	PROPOSED	
WETLAND BUFFER	EXISTING	
	PROPOSED	
WATER WAY BOUNDARY	EXISTING	
	PROPOSED	
WATERWAY BUFFER	EXISTING	
	PROPOSED	
WETLAND OR WATERWAY FLAG	EXISTING	
RIGHT-OF-WAY CENTER OR BASE LINE	EXISTING	
	PROPOSED	
APPROX. LIMIT OF WORK OR DISTURBANCE	EXISTING	
	PROPOSED	
APPROX. SAWCUT LINE	EXISTING	
	PROPOSED	
TREE LINE	EXISTING	
	PROPOSED	
SURFACE OR SUBSURFACE BASIN	EXISTING	
	PROPOSED	
OVERHEAD WIRES	EXISTING	OH OH OH OH
	PROPOSED	OH OH OH
CURBING	EXISTING	
	PROPOSED	CC/BCC MONOLITHIC VGC SGC TRANS/FLUSH CCB
FENCE OR RAILING	EXISTING	
	PROPOSED	CHAIN LINK STOCKADE RAILING
RETAINING WALL	EXISTING	
	PROPOSED	
CONTOURS	EXISTING	
	PROPOSED	49 50
SWALE	EXISTING	
	PROPOSED	
BERM	EXISTING	
	PROPOSED	
RIDGE	EXISTING	
	PROPOSED	
DRAIN PIPE	EXISTING	D-Qa
	PROPOSED	
SEWER PIPE	EXISTING	S S S-Qa
	PROPOSED	S SL
SEWER FORCE MAIN	EXISTING	FM FM FM-Qa
	PROPOSED	FM FM FM
ELECTRIC	EXISTING	E E E-Qa
	PROPOSED	E E E
TELECOMMUNICATIONS	EXISTING	T T T-Qa
	PROPOSED	T T T
CABLE TV	EXISTING	C C C-Qa
	PROPOSED	C C C
GAS	EXISTING	G G G-Qa
	PROPOSED	G G G
WATER	EXISTING	W W W-Qa
	PROPOSED	W W W

REFER TO SITE LAYOUT PLAN FOR ZONING ANALYSIS TABLE AND LAND USE | ZONING INFORMATION & NOTES

REFER TO EROSION AND SEDIMENT CONTROL NOTES & DETAILS SHEET FOR TYPICAL EROSION NOTES AND DETAILS

REFER TO LANDSCAPE NOTES & DETAILS SHEET FOR TYPICAL LANDSCAPE NOTES AND DETAILS

REFER TO LIGHTING PLAN FOR TYPICAL LIGHTING NOTES AND TABLES

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PROJECT No.:	MAA220275.00
DRAWN BY:	CFD/JRJ
CHECKED BY:	JF/RMM
DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED
BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASACHUSETTS

BOHLER

352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900

www.BohlerEngineering.com

JOSHUA S.
SWERLING
CIVIL
No. 41697

SHEET TITLE:

GENERAL NOTES SHEET

SHEET NUMBER:

C-102

ORG. DATE - 02/03/2023

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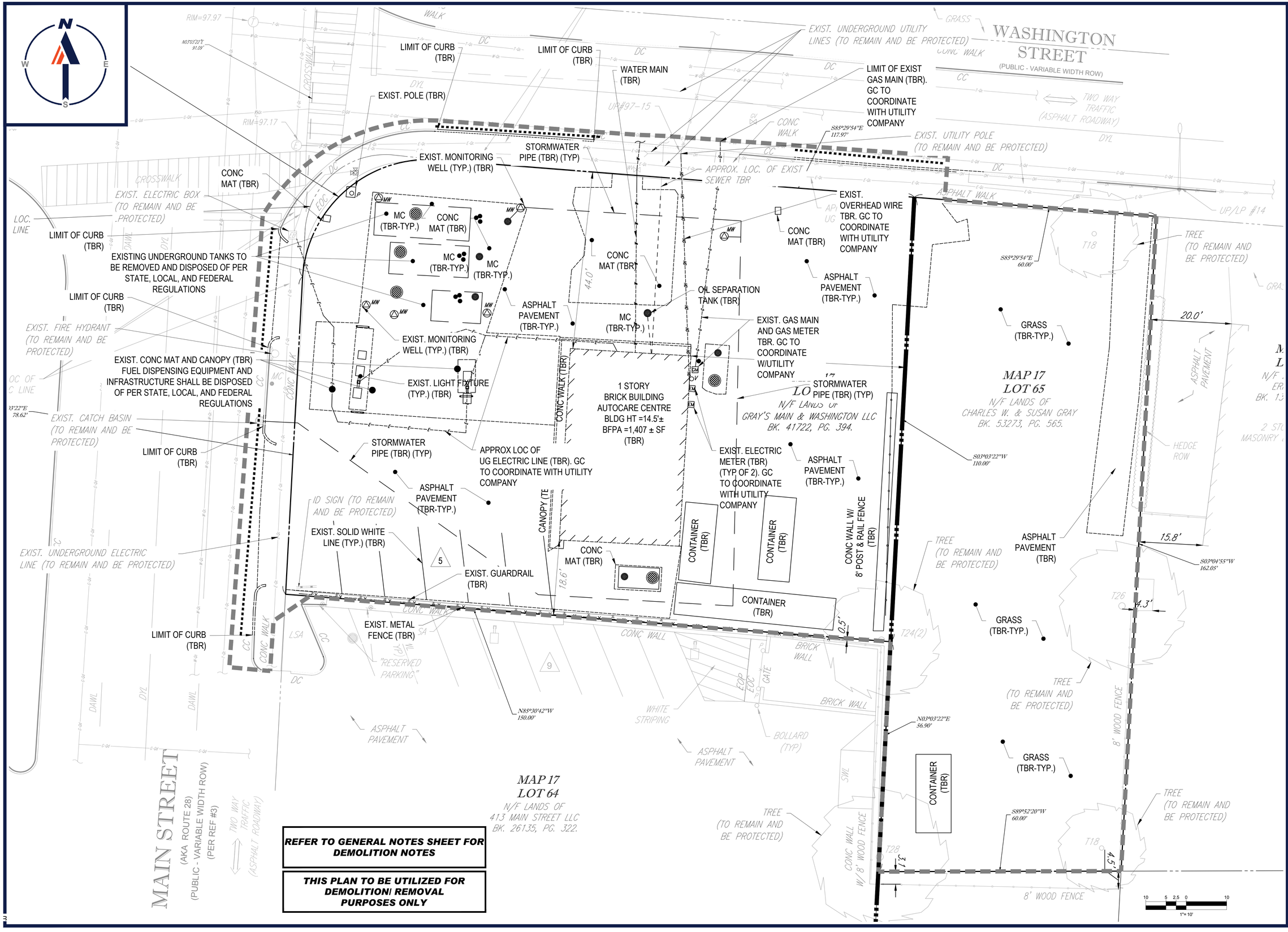
JJ



REFER TO GENERAL NOTES SHEET FOR DEMOLITION NOTES

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DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED BANK DEVELOPMENT

MAP: 17 LOT: 63
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Phone: (508) 480-9900

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JOSHUA M. SWEENEY — COMMONWEALTH OF MASSACHUSETTS — CIVIL No. 41697 — REGISTERED PROFESSIONAL ENGINEER

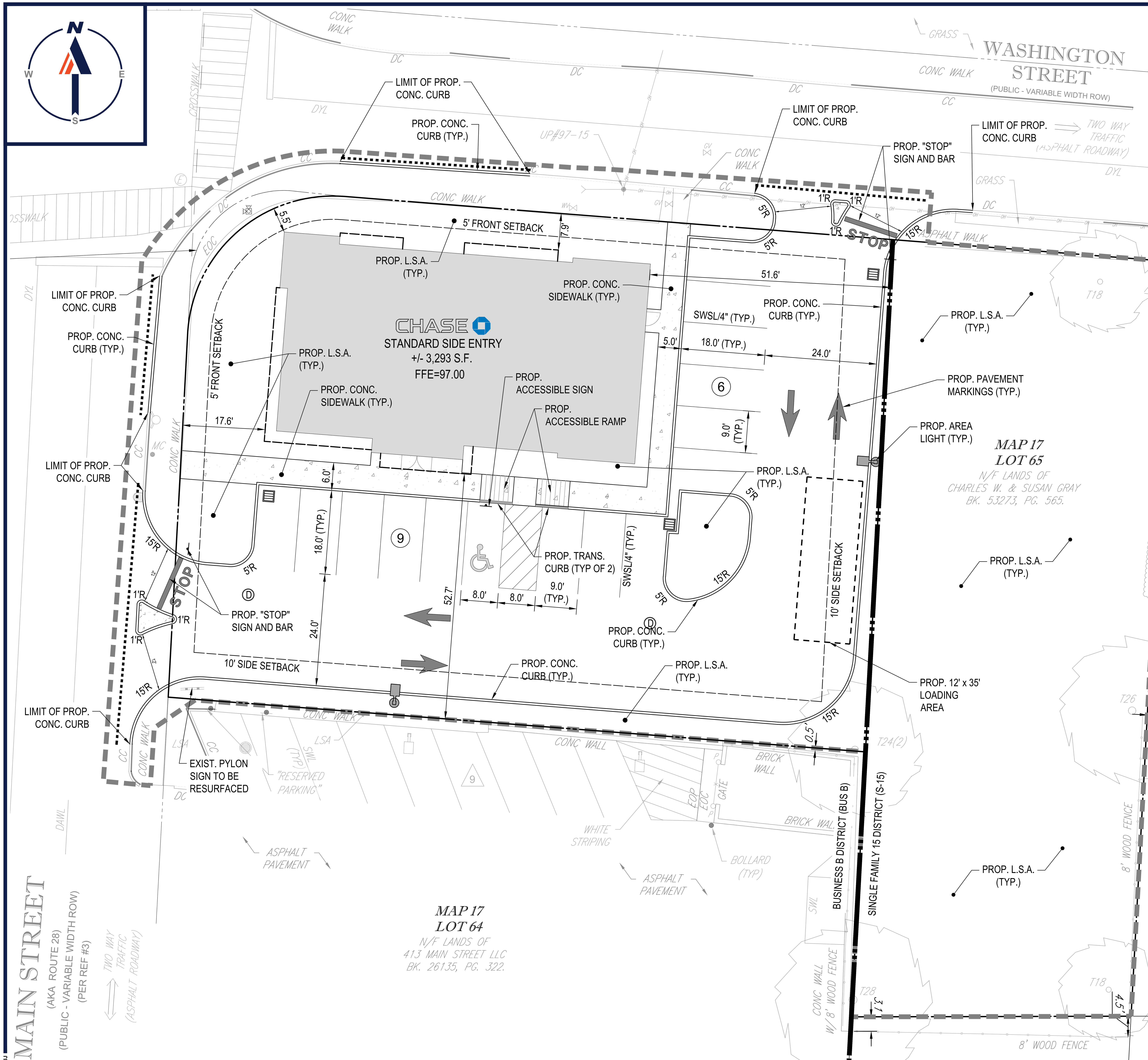
SHEET TITLE:

DEMOLITION PLAN

SHEET NUMBER:

C-201

ORG. DATE - 02/03/2023



ZONING ANALYSIS TABLE

N/A - NOT APPLICABLE
N/S - NOT SPECIFIED
(V) - VARIANCE REQUESTED
(W) - WAIVER REQUESTED
(E) - EXIST. NON-CONFORMANCE

ZONING DISTRICT	BUSINESS B DISTRICT (BUS B)		
OVERLAY DISTRICT	YES		
REQUIRED PERMIT	PERMIT FROM DEPT.		
ZONE CRITERIA	**REQUIRED**	**EXISTING**	**PROPOSED**
MIN. LOT AREA	N/A	16,275 SF	NO CHANGE
MIN. LOT WIDTH	N/A	100 FT	NO CHANGE
MAX. BLDG COVERAGE	85%	8.6%	20.2%
MIN. FRONT SETBACK	5 FT	44 FT	5 FT
MIN. SIDE SETBACK	10 FT	53 FT	51.6 FT
MIN. REAR SETBACK	20 FT	N/A	N/A
MAX. BUILDING HEIGHT	45 FT	<45 FT	<45 FT
PARKING SPACES	11	5	15
ACCESS. PARKING SPACES	1	0	1
PARKING STALL CRITERIA STANDARD: 9 FT x 18 FT COMPACT: 8 FT x 16 FT	USE/CATEGORY: OFFICE AND PROFESSIONAL BUILDING REQUIRED PARKING: 1 SPACE PER 300 SF CALCULATION: 3,293 / 300 =10.9 SPACES		
ACCESSIBLE PARKING CRITERIA STANDARD: 8 FT x 18 FT STALL (MIN.) 5 FT x 18 FT AISLE (MIN.) VAN: 8 FT x 18 FT STALL (MIN.) 8 FT x 18 FT AISLE (MIN.)	1-25 SPACES = 1 MIN. ACCESSIBLE SPACE 26-50 SPACES = 2 MIN. ACCESSIBLE SPACES 51-75 SPACES = 3 MIN. ACCESSIBLE SPACES 76-100 SPACES = 4 MIN. ACCESSIBLE SPACES 101-150 SPACES = 5 MIN. ACCESSIBLE SPACES 151-200 SPACES = 6 MIN. ACCESSIBLE SPACES 201-300 SPACES = 7 MIN. ACCESSIBLE SPACES 301-400 SPACES = 8 MIN. ACCESSIBLE SPACES	401-500 SPACES = 9 MIN. ACCESSIBLE SPACES 501-1,000 SPACES = MIN. 2% OF TOTAL 1001+ SPACES = MIN. 20 + 1 FOR EACH 100 SPACES OVER 1,000 1 ACCESSIBLE VAN SPACE PER 6 STANDARD ACCESSIBLE SPACES (MIN.)	

MAINTENANCE OF A CLEAR SIGHT LINE IS THE RESPONSIBILITY OF THE PROPERTY OWNER

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10 5 2.5 0 10
1"= 10'

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PROJECT No.:	MAA220275.00
DRAWN BY:	CFD/JRJ
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DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASACHUSETTS

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JOSHUA SWERLING
CIVIL
No. 41697
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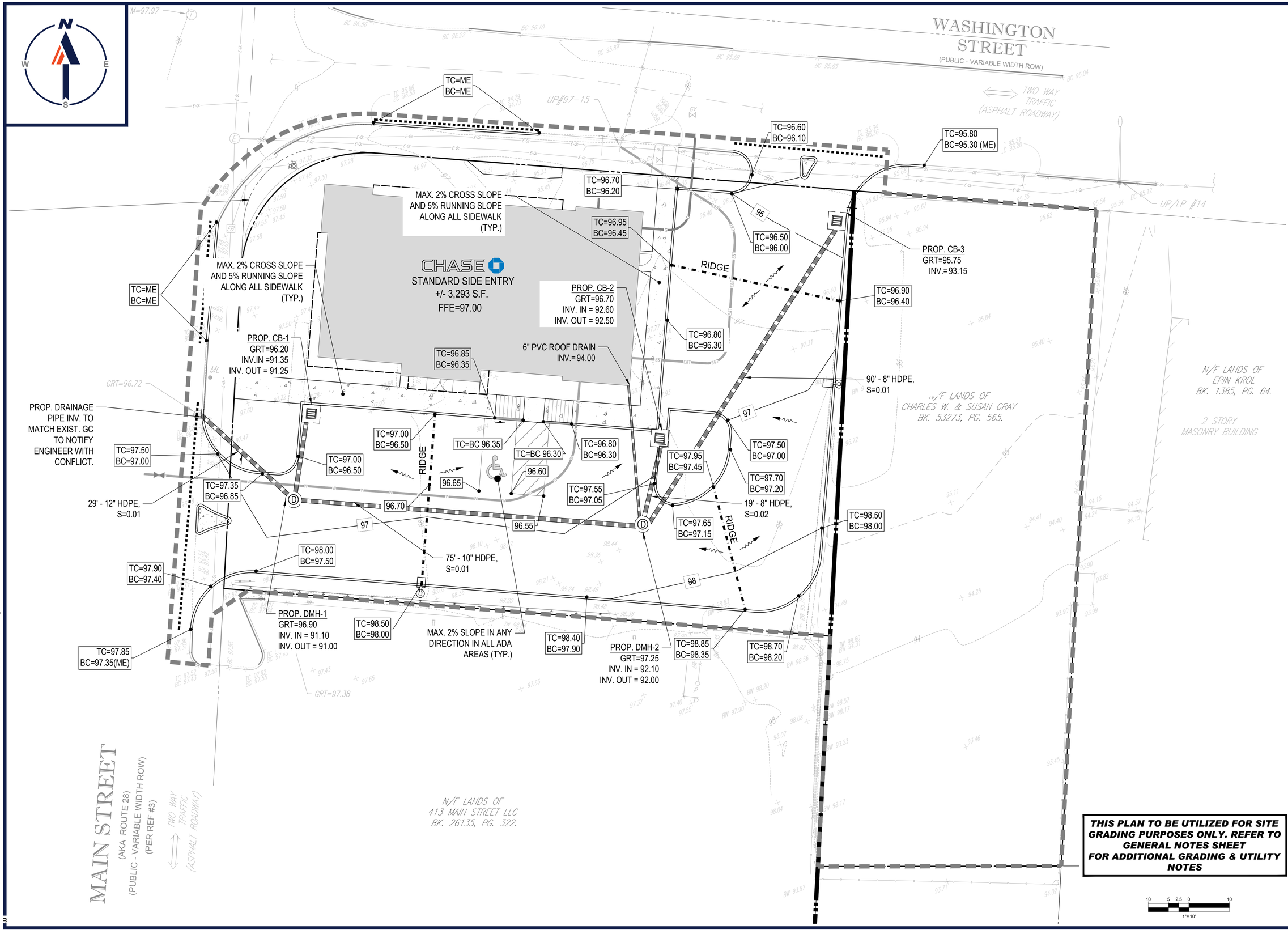
SHEET TITLE:

SITE LAYOUT PLAN

SHEET NUMBER:

C-301

ORG. DATE - 02/03/2023



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CHECKED BY:	JF/RMM
DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

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PROPOSED
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MAP: 17 LOT: 63
431 MAIN STREET,
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MASACHUSETTS

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JOSHUA M. SWERLING
CIVIL
No. 41697
REGISTERED PROFESSIONAL ENGINEER

SHEET TITLE:

GRADING & DRAINAGE PLAN

SHEET NUMBER:

C-401

ORG. DATE - 02/03/2023

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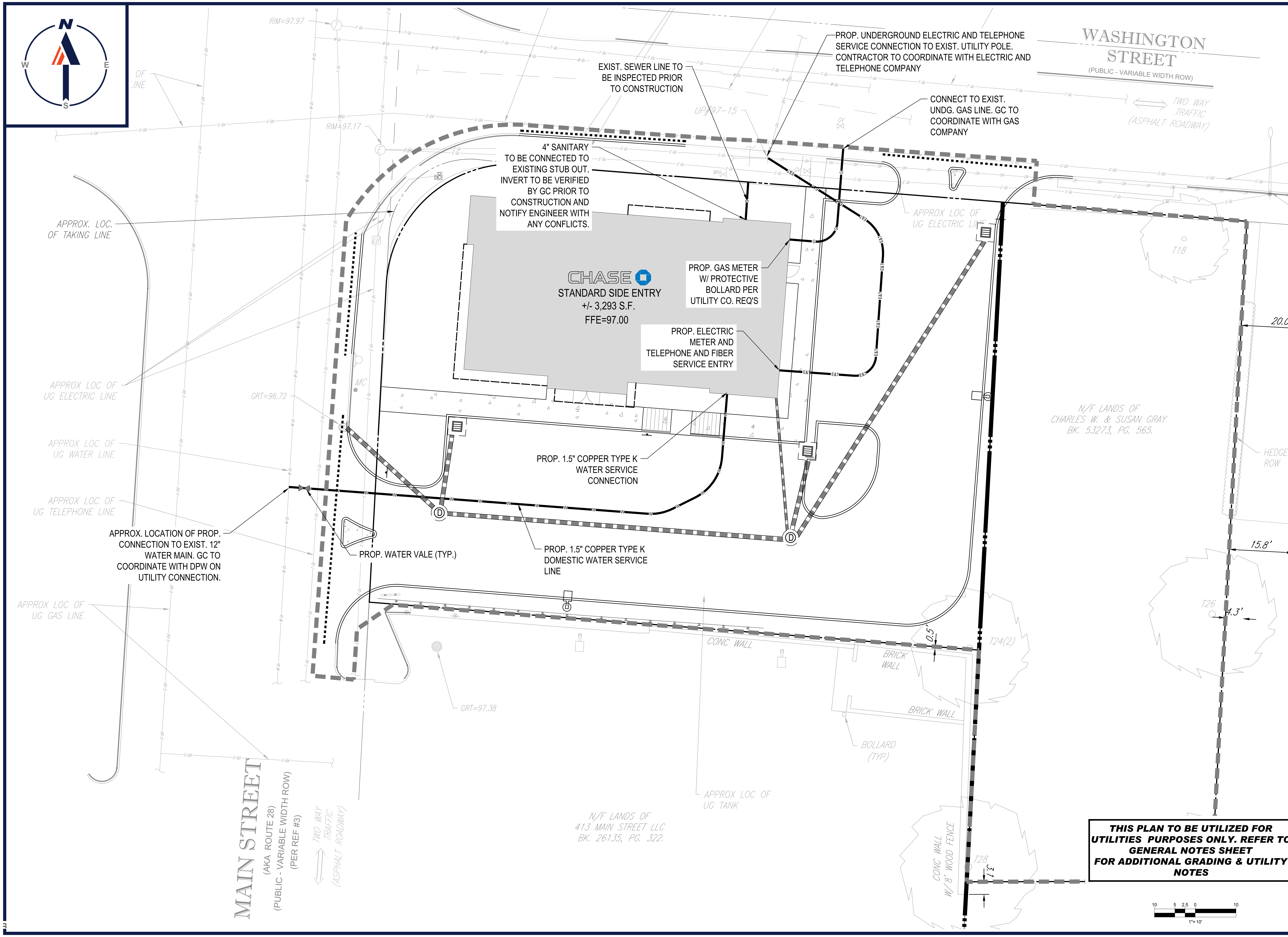
N
E
S
W
WASHINGTON STREET
(PUBLIC - VARIABLE WIDTH ROW)
TWO WAY TRAFFIC (ASPHALT ROADWAY)
MAIN STREET
(AKA ROUTE 28)
(PUBLIC - VARIABLE WIDTH ROW)
(PER REF #3)
TWO WAY TRAFFIC (ASPHALT ROADWAY)
PROP. UNDERGROUND ELECTRIC AND TELEPHONE SERVICE CONNECTION TO EXIST. UTILITY POLE. CONTRACTOR TO COORDINATE WITH ELECTRIC AND TELEPHONE COMPANY
EXIST. SEWER LINE TO BE INSPECTED PRIOR TO CONSTRUCTION
CONNECT TO EXIST. UNDG. GAS LINE. GC TO COORDINATE WITH GAS COMPANY
4" SANITARY TO BE CONNECTED TO EXISTING STUB OUT. INVERT TO BE VERIFIED BY GC PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER WITH ANY CONFLICTS.
RIM=97.97
RIM=97.17
UP#97-15
APPROX. LOC. OF TAKING LINE
CHASE
STANDARD SIDE ENTRY
+/- 3,293 S.F.
FFE=97.00
PROP. GAS METER W/ PROTECTIVE BOLLARD PER UTILITY CO. REQ'S
PROP. ELECTRIC METER AND TELEPHONE AND FIBER SERVICE ENTRY
APPROX. LOC. OF UG ELECTRIC LINE
APPROX LOC OF UG ELECTRIC LINE
APPROX LOC OF UG WATER LINE
APPROX LOC OF UG TELEPHONE LINE
APPROX LOC OF UG GAS LINE
GRT=96.72
GRT=97.38
PROP. 1.5" COPPER TYPE K WATER SERVICE CONNECTION
APPROX. LOCATION OF PROP. CONNECTION TO EXIST. 12" WATER MAIN. GC TO COORDINATE WITH DPW ON UTILITY CONNECTION.
PROP. WATER VALE (TYP.)
PROP. 1.5" COPPER TYPE K DOMESTIC WATER SERVICE LINE
T18
20.0'
15.8'
4.3'
0.5'
3.1'
T26
T24(2)
T28
N/F LANDS OF CHARLES W. & SUSAN GRAY BK. 53273, PG. 565.
HEDGE ROW
CONC WALL
BRICK WALL
BRICK WALL
BOLLARD (TYP)
APPROX LOC OF UG TANK
N/F LANDS OF 413 MAIN STREET LLC BK. 26135, PG. 322.
CONC WALL W/ 8' WOOD FENCE
THIS PLAN TO BE UTILIZED FOR UTILITIES PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES
10 5 2.5 0 10
1"= 10'

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DRAWN BY:	CFD/JRJ
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DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASSACHUSETTS

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JOSHUA SWERLING
CIVIL
No. 41697
REGISTERED PROFESSIONAL ENGINEER

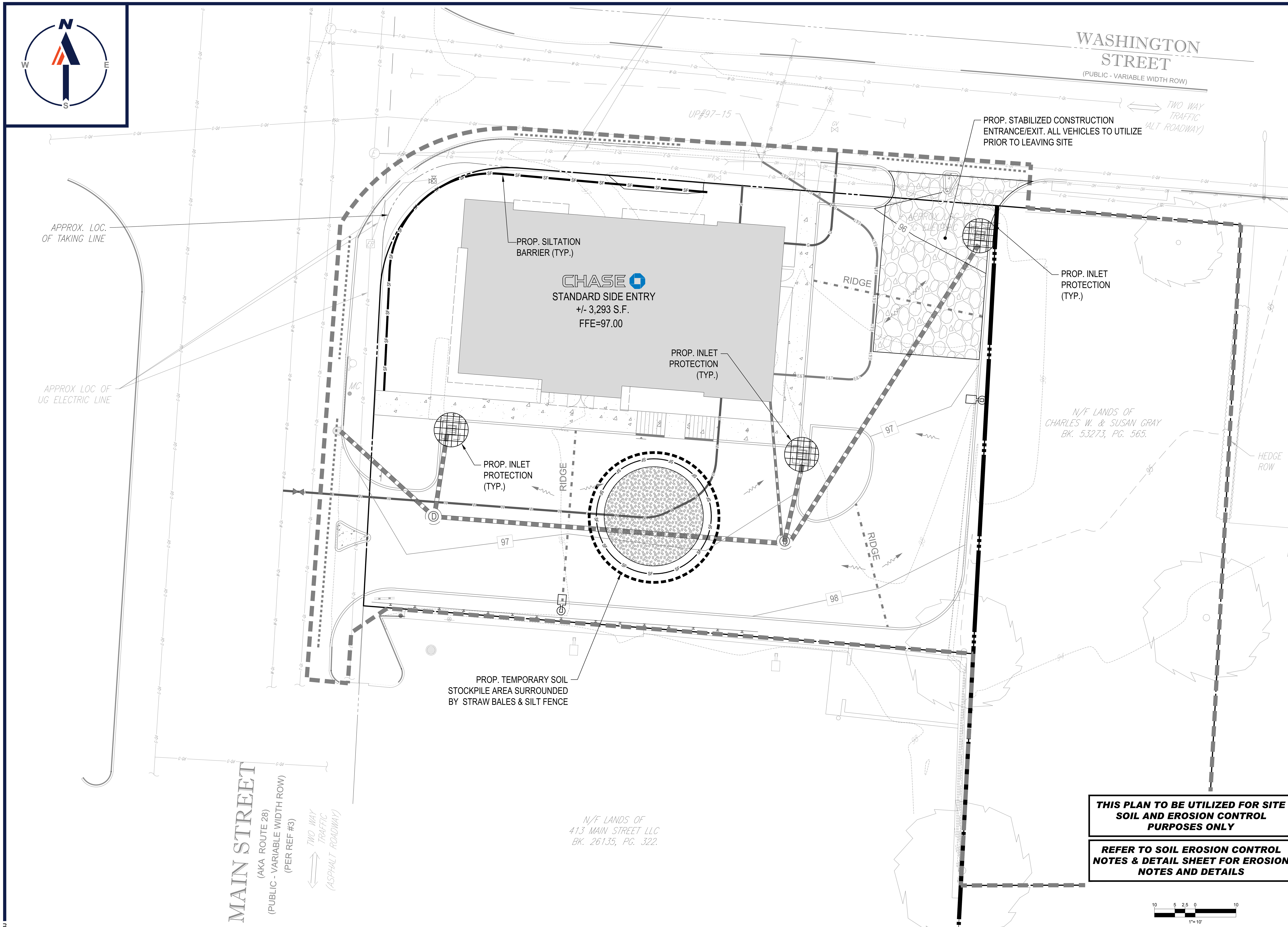
SHEET TITLE:

UTILITY PLAN

SHEET NUMBER:

C-501

ORG. DATE - 02/03/2023



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REFER TO SOIL EROSION CONTROL NOTES & DETAIL SHEET FOR EROSION NOTES AND DETAILS

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COMMONWEALTH OF MASSACHUSETTS
JOSHUA C. SWERLING
CIVIL
No. 41697
REGISTERED PROFESSIONAL ENGINEER

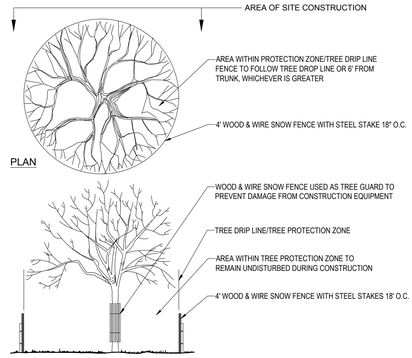
SHEET TITLE:

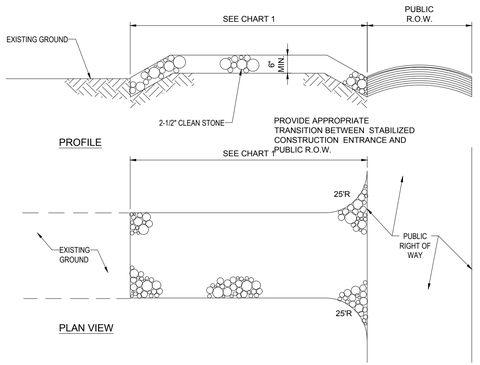
SOIL EROSION & SEDIMENT CONTROL PLAN

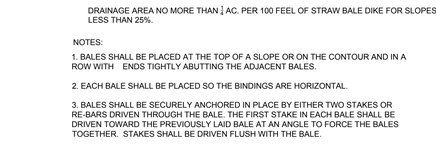
SHEET NUMBER:

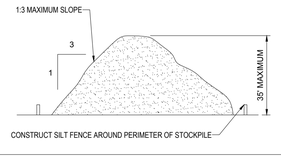
C-601

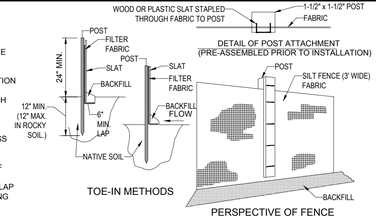
ORG. DATE - 02/03/2023

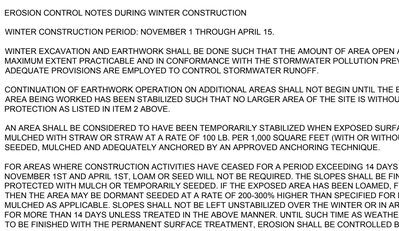


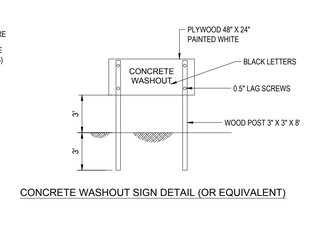


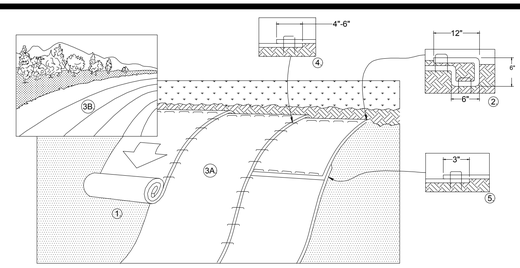












EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE AS SET FORTH IN THE MOST CURRENT STATE SEDIMENT AND EROSION CONTROL MANUAL.

2. THOSE AREAS UNDERGOING ACTUAL CONSTRUCTION WILL BE LEFT IN AN UNTREATED OR UNVEGETATED CONDITION FOR A MINIMUM TIME. AREAS SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS. AT A MINIMUM, AREAS SHALL BE PERMANENTLY STABILIZED ACCORDING TO THE CURRENT EDITION OF THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP), OR IN THE ABSENCE OF A SWPPP, THEY SHALL BE PERMANENTLY STABILIZED WITHIN 14 DAYS OF FINAL GRADING AND TEMPORARILY STABILIZED WITHIN 30 DAYS OF INITIAL DISTURBANCE OF THE SOIL. IF THE DISTURBANCE IS WITHIN 100 FEET OF A STREAM OR POND, THE AREA SHALL BE STABILIZED WITHIN 7 DAYS OR PRIOR TO ANY STORM EVENT (THIS WOULD INCLUDE WETLANDS).

3. SEDIMENT BARRIERS (SILT FENCE, STRAW BARRIERS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 8%.

4. INSTALL SILTATION BARRIER AT TOE OF SLOPE TO FILTER SILT FROM RUNOFF. SEE SILTATION BARRIER DETAILS FOR PROPER INSTALLATION. SILTATION BARRIER WILL REMAIN IN PLACE PER NOTE #5.

5. ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSITION. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED. FOR SEDIMENT CONTROL DEVICES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE DEVICES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.

6. NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2:1) UNLESS OTHERWISE INDICATED ON THE PLANS. SLOPE PROTECTION FOR SLOPES GREATER THAN 2:1 SHALL BE DESIGNED BY A GEOTECHNICAL ENGINEER.

7. IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCH (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

8. TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST TO PROTECT FROM SPRING RUNOFF PROBLEMS.

9. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL STANDARDS.

10. REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
    - 10.1. SIX INCHES, OR DEPTH SPECIFIED ON THE LANDSCAPE PLAN, OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
    - 10.2. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 LB PER ACRE OR 18.4 LB PER 1,000 SF USING 10-20-20 OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER1,000 SF).
    - 10.3. FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUE-GRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS 1.03 LBS PER 1,000 SF LAWN. QUALITY SOD MAY BE SUBSTITUTED FOR SEED WHERE SLOPES DO NOT EXCEED 2:1, SOD ON SLOPES STEEPER THAN 3:1 SHOULD BE PEGGED.
    - 10.4. STRAW MULCH AT THE RATE OF 70-90 LBS PER 1,000 SF. A HYDRO-APPLICATION OF WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER WILL BE USED ON STRAW MULCH FOR WIND CONTROL.

11. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE IS 70% STABILIZED. FOR EROSION CONTROL MEASURES THAT ARE WITHIN AREAS SUBJECT TO CONSERVATION COMMISSION JURISDICTION, THE MEASURES SHALL REMAIN IN PLACE AND BE REMOVED IN ACCORDANCE WITH THE ORDER OF CONDITIONS.

12. WETLANDS WILL BE PROTECTED WITH BARRIERS CONSISTING OF STRAW BALES, COMPOST TUBES, SILT FENCE OR A COMBINATION THEREOF.

13. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL HAVE AN EXPOSURE WINDOW OF NOT MORE THAN 7 DAYS.

14. ALL AREAS WITHIN 100 FEET OF A FLAGGED WETLAND OR STREAM SHALL FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IF NOT BEING ACTIVELY WORKED:

LOCATION	MULCH	MULCH RATE (1000 SF)
PROTECTED AREA	STRAW	100 POUNDS
WINDY AREA	SHREDDED OR CHOPPED CORNSTALKS STRAW (ANCHORED)*	185-275 POUNDS 100 POUNDS
MODERATE TO HIGH VELOCITY AREAS OR STEEP SLOPES GREATER THAN 3:1	JUTE MESH OR EXCELSIOR MAT	AS REQUIRED
GREATER THAN 3:1	(REFER TO GEOTECHNICAL REPORT FOR FINAL DESIGN REQUIREMENT)	

* A HYDRO-APPLICATION OF WOOD OR PAPER FIBER MAY BE APPLIED FOLLOWING SEEDING. A SUITABLE NON-TOXIC BINDER SHALL BE USED TO ADDITIONAL WIND CONTROL.

* MULCH ANCHORING: ANCHOR MULCH WITH PEG AND TWINE (1 SQ. YD/BLOCK); MULCH NETTING (AS PER MANUFACTURER); WOOD CELLULOSE FIBER (750 LBS/ACRE); CHEMICAL TACK (AS PER MANUFACTURER'S SPECIFICATIONS); USE OF A SERRATED STRAIGHT DISK. WETTING FOR SMALL AREAS AND ROAD DITCHES MAY BE PERMITTED.

15. PROPOSED LOCATIONS OF SURFACE STORMWATER MANAGEMENT BASINS CAN BE UTILIZED AS A TEMPORARY SEDIMENT TRAP DURING CONSTRUCTION.SEDIMENT TRAPS SHALL BE SIZED AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
    - 15.1. TEMPORARY SEDIMENT TRAPS SHALL BE SIZED PER THE CURRENT EDITION OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" AND PROVIDE A MINIMUM OF 1,800 CF PER ACRE OF TRIBUTARY AREA WITH A MAXIMUM TRIBUTARY AREA OF 5 ACRES, MAINTAIN A 2:1 LENGTH TO WIDTH RATIO, AND NOT EXCEED 5 FT IN HEIGHT. UPON SITE STABILIZATION, ACCUMULATED SEDIMENT SHALL BE REMOVED AND THE TEMPORARY SEDIMENT TRAP EXCAVATED TO 1 FOOT BELOW THE TRAP. THE AREA SHALL THEN BE SCARIFIED TO PREVENT COMPACTION AND PROMOTE INFILTRATION, AND GRADED AND STABILIZED IN ACCORDANCE WITH THE GRADING AND LANDSCAPE PLANS.

16. STOCKPILING OF MATERIALS (DIRT, WOOD, CONSTRUCTION MATERIALS, ETC.) MUST REMAIN COVERED AT ALL TIMES TO MINIMIZE ANY DUST PROBLEMS THAT MAY OCCUR WITH ADJACENT PROPERTIES AND TO PROVIDE MAXIMUM PROTECTION AGAINST EROSION RUNOFF.

17. EXISTING CATCH BASIN STRUCTURES SHALL BE PROTECTED UNTIL SUCH TIME AS THEY ARE REMOVED.

18. THE CONTRACTOR MUST PERFORM DEWATERING (IF REQUIRED), IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN AND PAY FOR THE COSTS ASSOCIATED WITH ANY AND ALL NECESSARY DISCHARGE PERMITS ASSOCIATED WITH SAME.

19. THE CONTRACTOR MUST LOCATE CONSTRUCTION WASTE MATERIAL STORAGE AREAS TO MINIMIZE EXPOSURE TO STORMWATER. THE CONTRACTOR MUST IMMEDIATELY PLACE CONSTRUCTION WASTE IN ON-SITE STORAGE CONTAINERS UNTIL THAT CONSTRUCTION WASTE IS READY FOR OFF-SITE DISPOSAL. THE CONTRACTOR MUST MAINTAIN SPILL PREVENTION AND RESPONSE EQUIPMENT AND MAKE SAME CONTINUOUSLY AVAILABLE ON-SITE FOR USE BY THE CONTRACTOR'S EMPLOYEES WHO MUST BE PROPERLY TRAINED IN THE APPLICATION OF SPILL PREVENTION AND RESPONSE PROCEDURES.

20. EROSION CONTROL NOTES DURING WINTER CONSTRUCTION

21. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.

22. WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT THE AMOUNT OF AREA OPEN AT ONE TIME IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE AND IN CONFORMANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN SUCH THAT ADEQUATE PROVISIONS ARE EMPLOYED TO CONTROL STORMWATER RUNOFF.

23. CONTINUATION OF EARTHWORK OPERATION ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.

24. AN AREA SHALL BE CONSIDERED TO HAVE BEEN TEMPORARILY STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR STRAW AT A RATE OF 100 LB. PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE.

25. FOR AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR A PERIOD EXCEEDING 14 DAYS BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 1ST, LOAM OR SEED WILL NOT BE REQUIRED. THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED. IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 200-300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED AS APPLICABLE. SLOPES SHALL NOT BE LEFT UNSTABILIZED OVER THE WINTER OR IN AREAS WHERE WORK HAS CEASED FOR MORE THAN 14 DAYS UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF SEDIMENT BARRIERS OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.

26. MULCHING REQUIREMENTS:
    - 26.1. BETWEEN THE DATES OF NOVEMBER 1ST AND APRIL 15TH ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING OR WOOD CELLULOSE FIBER.
    - 26.2. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPE EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
    - 26.3. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1ST THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.

27. ALL DISTURBED AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE STORMWATER PREVENTION PLAN.

28. DURING THE WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
2. EROSION CONTROL MEASURES MUST CONFORM TO THE STATE, LOCAL, AND FEDERAL GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL UNLESS OTHERWISE NOTED, OR UNLESS ENGINEER CLEARLY AND SPECIFICALLY, IN WRITING, DIRECTS OTHERWISE. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES.
3. THE DISTURBED LAND AREA OF THIS SITE IS APPROXIMATELY XX.XXX ACRES.
4. THE FOLLOWING EROSION CONTROL MEASURES ARE PROPOSED FOR THIS SITE:
    - 4.1. STABILIZED CONSTRUCTION ENTRANCE/ EXIT - A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT IS TO BE INSTALLED AT THE DESIGNATED LOCATION SHOWN ON THE PLAN. THIS AREA MUST BE GRADED SO THAT RUNOFF WATER WILL BE RETAINED ON-SITE.
    - 4.2. SEDIMENT FENCE - INSTALL SILT FENCE(S) AND/OR SILT SOCK AROUND ALL OF THE DOWNSLOPE PERIMETERS OF THE SITE, TEMPORARY FILL AND SOIL STOCKPILES.
    - 4.3. INSTALL FILTER FABRIC DROP INLET PROTECTION AROUND EACH DRAINAGE INLET AS DRAINAGE STRUCTURES ARE INSTALLED TO REDUCE THE QUANTITY OF SEDIMENT. INSTALL TEMPORARY INLET PROTECTION ON INLETS DOWNSLOPE FROM DISTURBANCE, WHICH MAY BE BEYOND THE LIMITS OF DISTURBED AREA.
5. INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY. THE CONTRACTOR MUST REMOVE ANY SILT DEPOSITS GREATER THAN 6" OR HALF THE OF THE EROSION CONTROL BARRIER'S HEIGHT COLLECTED ON THE FILTER FABRIC AND/OR SILT SOCK BARRIERS AND EXCAVATE AND REMOVE ANY SILT FROM DROP INLET PROTECTION.
7. THE CONTRACTOR MUST APPLY TEMPORARY SEED AND MULCH TO ALL DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINISHED GRADE AND VEGETATED WITHIN 7 DAYS. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON, THE CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
8. THE CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF ENGINEER SO REQUIRES, TO PREVENT ANY, INCLUDING THE INCIDENTAL, DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
9. THE CONTRACTOR MUST BE RESPONSIBLE FOR INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURF/LANDSCAPING IS ESTABLISHED. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS RESPONSIBLE FOR ALL SUCH COSTS.
10. THE CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION.
11. THE CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT VEGETATION COVER OR OTHER INSTALLING A DIFFERENT, SPECIFIED METHOD OF STABILIZATION.
12. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES, MEASURES AND STRUCTURES. ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE.
13. THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION, FENCE LOCATIONS AND DETAILS.
14. THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION.
15. THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF PROJECT.
16. SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.
17. THE CONTRACTOR MUST IDENTIFY, ON THE PLAN, THE LOCATION OF WASTE CONTAINERS, FUEL STORAGE TANKS, CONCRETE WASHOUT AREAS AND ANY OTHER LOCATIONS WHERE HAZARDOUS MATERIALS ARE STORED.

THE FOLLOWING CONSTRUCTION SEQUENCE IS RECOMMENDED:

-INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE/EXIT (AS SHOWN)

-INSTALLATION OF EROSION CONTROL BARRIER (STRAW BALES AND SILT FENCE) (AS SHOWN)

-INSTALLATION OF INLET PROTECTION IN STREET (AS SHOWN)

-DEMOLITION OF EXISTING SITE STRUCTURES (SEE DEMOLITION PLAN)

-DEMOLITION OF EXISTING SITE PAVEMENT AND AMENITIES (SEE DEMOLITION PLAN)

-CLEARING AND GRUBBING

-INSTALLATION OF TEMPORARY SWALES AND SEDIMENT BASINS

-EARTHWORK AND EXCAVATION/FILLING AS NECESSARY

-CONSTRUCTION OF UTILITIES

-STABILIZE PERMANENT LAWN AREAS AND SLOPES WITH TEMPORARY SEEDING

-INSTALLATION OF INLET PROTECTION OF ON-SITE UTILITIES (AS SHOWN)

-CONSTRUCTION OF BUILDINGS

-CONSTRUCTION OF ALL CURBING AND LANDSCAPE ISLANDS AS INDICATED ON THE PLANS

-SPREAD TOPSOIL ON SLOPED AREAS AND SEED AND MULCH

-FINAL GRADING OF ALL SLOPED AREAS

-PLACE 6" TOPSOIL ON SLOPES AFTER FINAL GRADING COMPLETED. FERTILIZE, SEED, AND MULCH SEED MIXTURE TO BE INSTALLED AS REQUIRED.

-REMOVAL OF THE TEMPORARY SEDIMENT BASINS

-PAVE PARKING LOT

-LANDSCAPING PER LANDSCAPING PLAN

-REMOVE EROSION CONTROLS AS DISTURBED AREAS BECOME STABILIZED TO 70% STABILIZATION OR GREATER

RECOMMENDED CONSTRUCTION SEQUENCE

TREE PROTECTION DURING SITE CONSTRUCTION

TEMPORARY STOCKPILE

N.T.S.

NOTES:
1. EXCAVATE A 6"x6" TRENCH ALONG THE LINE OF EROSION CONTROL OF THE SITE.
2. UNROLL SILTATION FENCE AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM FLOW DIRECTION).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS LAYING ACROSS THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF THE FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL ALSO BE ACCOMPLISHED BY LAYING FABRIC FLAP ON UNDISTURBED GROUND AND PILING & TAMPING FILL AT THE BASE.

TYP. SILTATION FENCE

N.T.S.

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT	100 FT
2% TO 5%	100 FT	200FT
>5%	ENTIRE ENTRANCE STABILIZED WITH FABC BASE COURSE (1)	

(1) AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY.

CHART 1

STABILIZED CONSTRUCTION ENTRANCE

N.T.S.

DRAINAGE AREA NO MORE THAN $\frac{1}{4}$ AC. PER 100 FEEL OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%.

NOTES:

1. BALES SHALL BE PLACED AT THE TOP OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.

2. EACH BALE SHALL BE PLACED SO THE BINDINGS ARE HORIZONTAL.

3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.

4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE PROMPTLY AS NEEDED.

5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STRAW BALE

SECTION A-A

STAPLE DETAIL

CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)

PLAN

NOTES:
1. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE LOCATED A MINIMUM OF 50 FT. FROM STORM DRAIN INLETS.
2. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF OFF-SITE. CONTRACTOR TO DISPOSE OF HARDENED CONCRETE ON A REGULAR BASIS.
3. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
4. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
5. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.
6. STRAW BALE AND STAPLES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCK.

CONCRETE WASTE MANAGEMENT AREA

N.T.S.

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH AS SHOWN IN DETAIL 2. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS PER MANUFACTURES RECOMMENDATION.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH MINIMUM 6" OVERLAP. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
6. PLACE STAPLES/STAKES PER MANUFACTURER'S RECOMMENDATION FOR THE APPROPRIATE SLOPE BEING APPLIED.

NOTES:
1. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
2. FOLLOW EROSION CONTROL TECHNOLOGY COUNCIL SPECIFICATION FOR PRODUCT SELECTION.

EROSION CONTROL BLANKET 2:1 SLOPES (SLOPE INSTALLATION)

N.T.S.

SECTION VIEW
~~PROFILE~~ VIEW OF INSTALLED FILTER SACK

ISOMETRIC VIEW

LOW TO MODERATE FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80%
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC^{-1}

MODERATE TO HIGH FLOW GEOTEXTILE FABRIC SPECIFICATION TABLE		
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	90%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC^{-1}

NOTE:
DO NOT USE IN PAVED AREAS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

1. REMOVE TRAPPED SEDIMENT WHEN BRIGHTLY COLORED EXPANSION RESTRAINT CAN NO LONGER BE SEEN.
2. GEOTEXTILE SHALL BE A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS REQUIREMENTS IN THE SPECIFICATIONS TABLE.
3. PLACE AN OIL ADSORBENT PAD OR PILLOW OVER INLET GRATE WHEN OIL SPILLS ARE A CONCERN.
4. INSPECT PER REGULATORY REQUIREMENTS.
5. THE WIDTH, "W", OF THE FILTER SACK SHALL MATCH THE INSIDE WIDTH OF THE GRATED INLET BOX.
6. THE DEPTH, "D", OF THE FILTER SACK SHALL BE BETWEEN 18 INCHES AND 36 INCHES.
7. THE LENGTH, "L", OF THE FILTER SACK SHALL MATCH THE INSIDE LENGTH OF THE GRATED INLET BOX.

FILTER SACS (GRATED INLETS)

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PROJECT No.:	MAA220275.00
DRAWN BY:	CFD/JRJ
CHECKED BY:	JF/RMM
DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED
BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASACHUSETTS

BOHLER//

352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900

www.BohlerEngineering.com

JOSHUA S. SWERLING
CIVIL
No. 41697

SHEET TITLE:

SOIL EROSION & SEDIMENT CONTROL NOTES & DETAILS

SHEET NUMBER:

C-602

ORG. DATE - 02/03/2023

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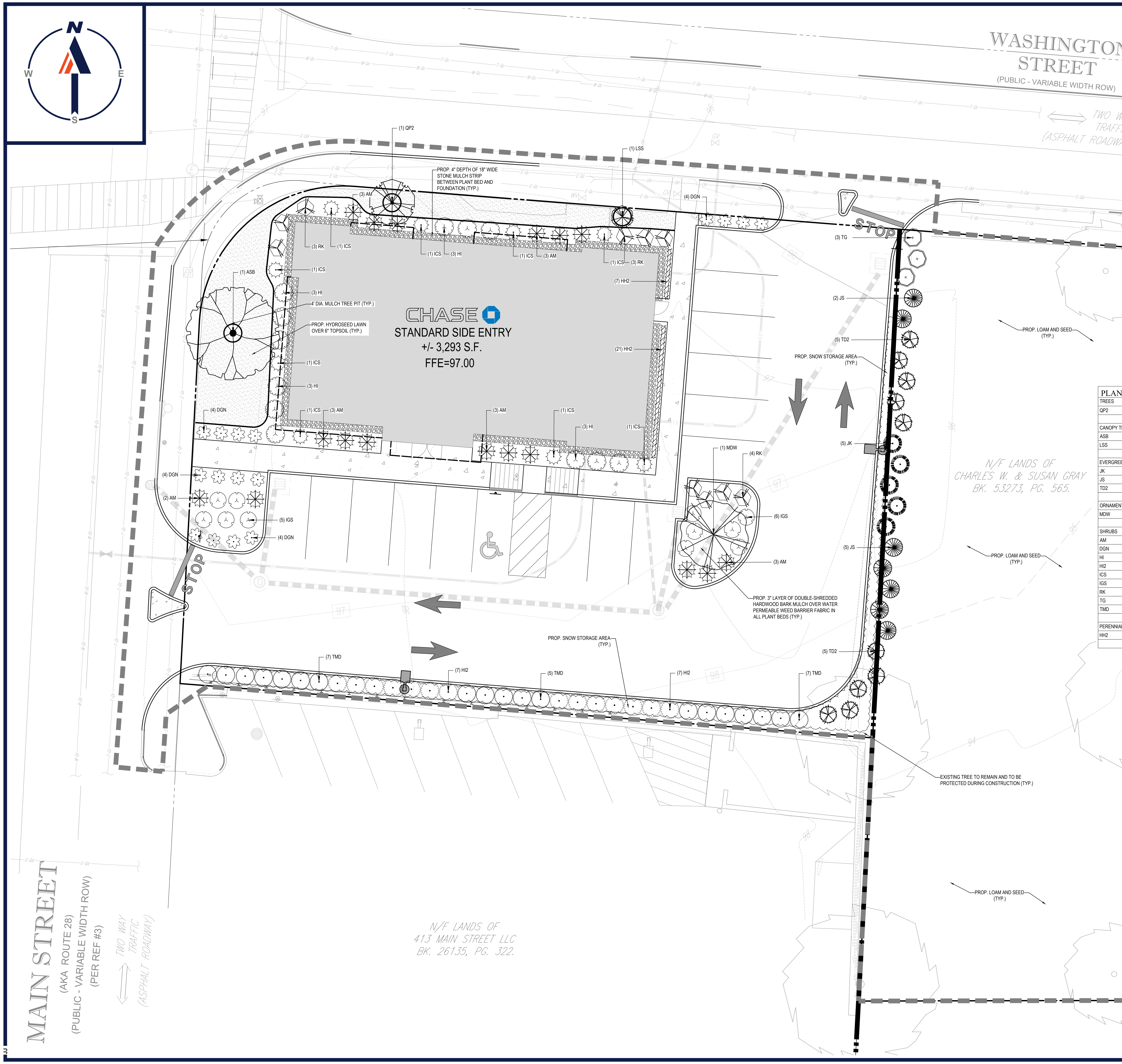

TOWN OF READING, MASSACHUSETTS LANDSCAPE REQUIREMENTS

SECTION	REQUIREMENTS	CALCULATIONS/PROPOSED
6.5: LANDSCAPE STANDARDS	A.) NO MORE THAN 50 PERCENT (50%) OF THE TREES, APPROVED TO BE PLANTED, SHALL BE OF ANY ONE SPECIES AND NO LESS THAN 25 PERCENT (25%) OF THE TOTAL TREES PLANTED SHALL BE OF ANY ONE SPECIES. TREES SHALL BE CHOSEN FROM A LIST PROVIDED BY THE TREE WARDEN, UNLESS AN ALTERNATIVE IS SPECIFICALLY APPROVED BY THE CPDC.	PROVIDED
	B.) TREES ALONG A PUBLIC WAY SHALL BE SPACED AT INTERVALS OF FIFTY (50) FEET; PROVIDED, HOWEVER, THAT NO TREES SHALL BE PLANTED WITHIN FIFTY (50) FEET OF AN INTERSECTION OR FUTURE INTERSECTION. TREES ON ONE (1) SIDE OF A STREET MAY BE SET EITHER OPPOSITE OR DIAGONALLY TO TREES ON THE OPPOSITE SIDE. TREES SHALL BE PLANTED TWO AND A HALF (2½) FEET BEHIND THE SIDEWALK OR SIX (6) FEET BEHIND THE GUTTER LINE AND ALWAYS WITHIN THE RIGHT-OF-WAY. THE LOCATION OF ALL THE PROPOSED TREES MUST BE REVIEWED BY THE TREE WARDEN ON SITE AND APPROVED PRIOR TO INSTALLATION.	PROVIDED
	C.) THE MINIMUM ACCEPTABLE SIZE OF TREE TO BE PLANTED ALONG A PUBLIC WAY SHALL BE THREE (3) INCH TRUNK CALIPER AT FOUR (4) FEET ABOVE THE GRADE. AT THE TIME OF DELIVERY, THE TREE WARDEN MUST APPROVE THE PROPOSED TREES. EVERGREEN TREES SHALL BE AT LEAST EIGHT (8) FEET TALL AT THE TIME OF PLANTING.	PROVIDED
11.1.5.5.6: PARKING LOTS	A.) WHERE PARKING AREAS ARE ADJACENT TO RESIDENTIAL USES OR ZONING DISTRICTS, OR ROADWAYS WITH AT LEAST A COLLECTOR STATUS AS DESIGNATED ON THE COUNTY COMPREHENSIVE PLAN: PLANTINGS OF PREDOMINANTLY EVERGREEN SHRUBS OR TREES SPACED AT INTERVALS WHICH MAY BE EXPECTED TO FORM EFFECTIVE BUFFERING AND SCREENING AT LEAST 30 INCHES HIGH AT THE TIME OF PLANTING.	PROVIDED

SEED MIX KEY

- PROPOSED HYDROSEED
- PROPOSED CRUSHED STONE

PLANT_SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
QP2	1	QUERCUS PALUSTRIS 'PRINGREEN'	GREEN PILLAR® PIN OAK	3" CAL. MIN.	B&B
CANOPY TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
ASB	1	ACER SACCHARUM `BONFIRE`	BONFIRE SUGAR MAPLE	3" CAL. MIN.	B&B
LSS	1	LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUETTE'	SLENDER SILHOUETTE SWEET GUM	3" CAL. MIN.	B&B
EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
JK	5	JUNIPERUS CHINENSIS 'KETELEERI'	KETELEERI CHINESE JUNIPER	5-6` HT.	B&B
JS	7	JUNIPERUS CHINENSIS 'SPARTAN'	SPARTAN JUNIPER	5-6` HT.	B&B
TD2	10	THUJA OCCIDENTALIS 'DARK GREEN'	DARK AMERICAN ARBORVITAE	5-6` HT.	B&B
ORNAMENTAL TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
MDW	1	MALUS X `DONALD WYMAN`	DONALD WYMAN CRAB APPLE	2.5" CAL.	B&B
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
AM	17	AZALEA X 'MOTHER'S DAY'	MOTHER'S DAY AZALEA	2-3` HT.	B&B
DGN	16	DEUTZIA GRACILIS `NIKKO`	SLENDER DEUTZIA	18-24" HT.	CONTAINER
HI	12	HYDRANGEA ARBORESCENS 'NCHA5'	INVINCIBELLE® WEE WHITE HYDRANGEA	2` HT.	B&B
HI2	14	HYDRANGEA PANICULATA 'PEE WEE'	PEE WEE PANICLE HYDRANGEA	18-24" HT.	B&B
ICS	9	ILEX CRENATA `STEEDS`	STEEDS JAPANESE HOLLY	30-36" HT.	CONTAINER
IGS	11	ILEX GLABRA `SHAMROCK`	SHAMROCK INKBERRY	24-30" HT.	CONTAINER
RK	10	ROSA X 'RADSUNNY'	SUNNY KNOCK OUT® YELLOW ROSE	24-30" HT.	B&B
TG	3	TAXUS X MEDIA 'GREEN WAVE'	GREEN WAVE ANGLO-JAPANESE YEW	18-24" HT.	B&B
TMD	19	TAXUS X MEDIA `DENSIFORMIS`	DENSE YEW	24-30" HT.	B&B
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
HH2	28	HEMEROCALLIS X 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	1 GAL.	CONTAINER

OWNER MAINTENANCE RESPONSIBILITIES

UPON OWNER'S (OR OWNER CONTRACTOR'S) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREE, BUSHES, SHRUBS, GRASSES, GRASS, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

- TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PEDESTRIAN SURFACES) OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
- TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVELED SURFACES), OR AS OTHERWISE INDICATED ON THE PLANS.
- VEGETATIVE GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVEL SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS-EGRESS WAYS.
- FALLEN PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.

THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEES THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

REFER LANDSCAPE NOTES & DETAILS SHEET FOR LANDSCAPE NOTES AND DETAILS

10 5 2.5 0 10
1"= 10'

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PROPOSED SITE PLAN DOCUMENTS

— FOR —

CHASE

PROPOSED BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASACHUSETTS

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352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
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COMMONWEALTH OF MASSACHUSETTS MATTHEW J. MRVA NO. 1217 REGISTERED LANDSCAPE ARCHITECT

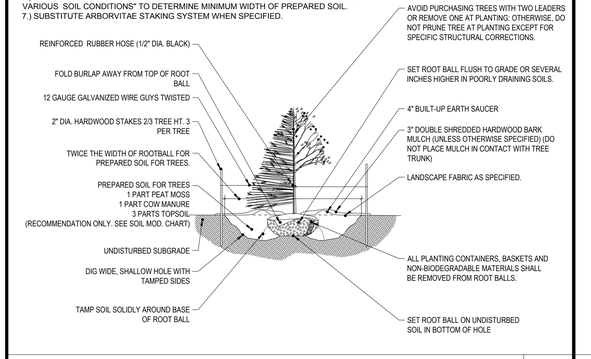
SHEET TITLE:

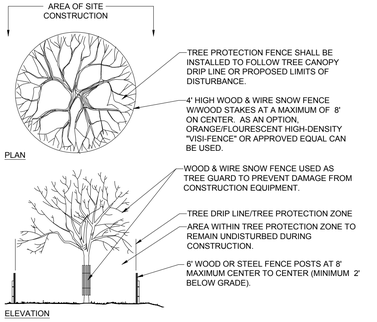
LANDSCAPE PLAN

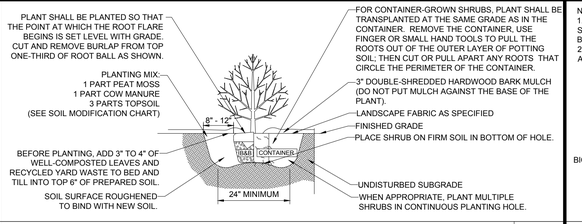
SHEET NUMBER:

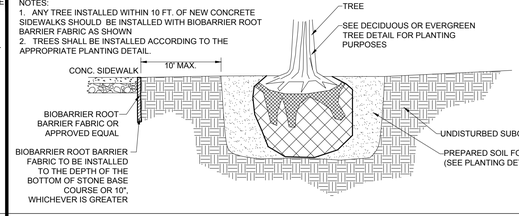
C-701

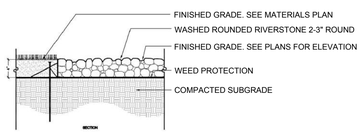
ORG. DATE - 02/03/2023

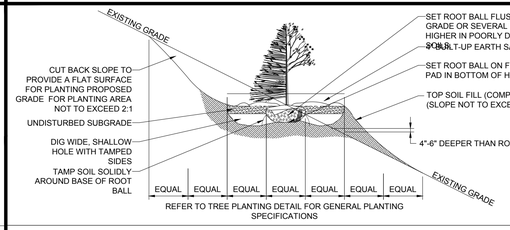












LANDSCAPE SPECIFICATIONS

1. SCOPE OF WORK:
   - 1.1. THE LANDSCAPE CONTRACTOR SHALL BE REQUIRED TO PERFORM ALL CLEARING, FINISHED GRADING, SOIL PREPARATION, PERMANENT SEEDING OR SODDING, PLANTING AND MULCHING INCLUDING ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT NECESSARY FOR THE COMPLETION OF THIS PROJECT, UNLESS OTHERWISE CONTRACTED BY THE GENERAL CONTRACTOR.
2. MATERIALS
   - 2.1. GENERAL - ALL HARDSCAPE MATERIALS SHALL MEET OR EXCEED SPECIFICATIONS AS OUTLINED IN THE STATE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.
   - 2.2. TOPSOIL - NATURAL, FRIABLE, LOAMY SILT SOIL HAVING AN ORGANIC CONTENT NOT LESS THAN 5%, A PH RANGE BETWEEN 4.5-7.0. IT SHALL BE FREE OF DEBRIS, ROCKS LARGER THAN ONE INCH (1"), WOOD, ROOTS, VEGETABLE MATTER AND CLAY CLODS.
   - 2.3. LAWN - ALL DISTURBED AREAS ARE TO BE TREATED WITH A MINIMUM 6" THICK LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, AND SEEDED OR SODDED IN ACCORDANCE WITH THE PERMANENT STABILIZATION METHODS INDICATED ON THE LANDSCAPE PLAN
     - 2.3.1. LAWN SEED MIXTURE SHALL BE FRESH, CLEAN NEW CROP SEED.
     - 2.3.2. SOD SHALL BE STRONGLY ROOTED, WEED AND DISEASE/PEST FREE WITH A UNIFORM THICKNESS. SOD INSTALLED ON SLOPES GREATER THAN 4:1 SHALL BE PEGGED TO HOLD SOD IN PLACE.
   - 2.4. MULCH - ALL PLANTING BEDS SHALL BE MULCHED WITH A 3" THICK LAYER OF DOUBLE SHREDDED HARDWOOD BARK MULCH, UNLESS OTHERWISE STATED ON THE LANDSCAPE PLAN AND/OR LANDSCAPE PLAN NOTES /DETAILS.
   - 2.5. FERTILIZER
     - 2.5.1. FERTILIZER SHALL BE DELIVERED TO THE SITE MIXED AS SPECIFIED IN THE ORIGINAL UNOPENED STANDARD BAGS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. FERTILIZER SHALL BE STORED IN A WEATHERPROOF PLACE SO THAT IT CAN BE KEPT DRY PRIOR TO USE.
     - 2.5.2. FOR THE PURPOSE OF BIDDING, ASSUME THAT FERTILIZER SHALL BE 10% NITROGEN, 6% PHOSPHORUS AND 4% POTASSIUM BY WEIGHT. A FERTILIZER SHOULD NOT BE SELECTED WITHOUT A SOIL TEST PERFORMED BY A CERTIFIED SOIL LABORATORY.
   - 2.6. PLANT MATERIAL
     - 2.6.1. ALL PLANTS SHALL IN ALL CASES CONFORM TO THE REQUIREMENTS OF THE "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z60.1), LATEST EDITION, AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION (FORMERLY THE AMERICAN ASSOCIATION OF NURSERYMEN).
     - 2.6.2. IN ALL CASES, BOTANICAL NAMES SHALL TAKE PRECEDENCE OVER COMMON NAMES FOR ANY AND ALL PLANT MATERIAL.
     - 2.6.3. PLANTS SHALL BE LEGIBLY TAGGED WITH THE PROPER NAME AND SIZE. TAGS ARE TO REMAIN ON AT LEAST ONE PLANT OF EACH SPECIES FOR VERIFICATION PURPOSES DURING THE FINAL INSPECTION.
     - 2.6.4. TREES WITH ABRASION OF THE BARK, SUN SCALDS, DISFIGURATION OR FRESH CUTS OF LIMBS OVER 1¼", WHICH HAVE NOT BEEN COMPLETELY CALLUSED, SHALL BE REJECTED. PLANTS SHALL NOT BE BOUND WITH WIRE OR ROPE AT ANY TIME SO AS TO DAMAGE THE BARK OR BREAK BRANCHES.
     - 2.6.5. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH: WELL DEVELOPED BRANCHES, DENSELY FOLIATED, VIGOROUS ROOT SYSTEMS AND BE FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE.
     - 2.6.6. CALIPER MEASUREMENTS OF NURSERY GROWN TREES SHALL BE TAKEN AT A POINT ON THE TRUNK SIX INCHES (6") ABOVE THE NATURAL GRADE FOR TREES UP TO AND INCLUDING A FOUR INCH (4") CALIPER SIZE. IF THE CALIPER AT SIX INCHES (6") ABOVE THE GROUND EXCEEDS FOUR INCHES (4") IN CALIPER, THE CALIPER SHOULD BE MEASURED AT A POINT 12" ABOVE THE NATURAL GRADE.
     - 2.6.7. SHRUBS SHALL BE MEASURED TO THE AVERAGE HEIGHT OR SPREAD OF THE SHRUB, AND NOT TO THE LONGEST BRANCH.
     - 2.6.8. TREES AND SHRUBS SHALL BE HANDLED WITH CARE BY THE ROOT BALL.
3. GENERAL WORK PROCEDURES
   - 3.1. CONTRACTOR TO UTILIZE WORKMANLIKE INDUSTRY STANDARDS IN PERFORMING ALL LANDSCAPE CONSTRUCTION. THE SITE IS TO BE LEFT IN A CLEAN STATE AT THE END OF EACH WORKDAY. ALL DEBRIS, MATERIALS AND TOOLS SHALL BE PROPERLY STORED, STOCKPILED OR DISPOSED OF.
   - 3.2. WASTE MATERIALS AND DEBRIS SHALL BE COMPLETELY DISPOSED OF AT THE CONTRACTOR'S EXPENSE. DEBRIS SHALL NOT BE BURIED, INCLUDING ORGANIC MATERIALS, BUT SHALL BE REMOVED COMPLETELY FROM THE SITE.
4. SITE PREPARATIONS
   - 4.1. BEFORE AND DURING PRELIMINARY GRADING AND FINISHED GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES OUTLINED HEREIN.
   - 4.2. ALL EXISTING TREES TO REMAIN SHALL BE PRUNED TO REMOVE ANY DAMAGED BRANCHES. THE ENTIRE LIMB OF ANY DAMAGED BRANCH SHALL BE CUT OFF AT THE BRANCH COLLAR. CONTRACTOR SHALL ENSURE THAT CUTS ARE SMOOTH AND STRAIGHT. ANY EXPOSED ROOTS SHALL BE CUT BACK WITH CLEAN, SHARP TOOLS AND TOPSOIL SHALL BE PLACED AROUND THE REMAINDER OF THE ROOTS. EXISTING TREES SHALL BE MONITORED ON A REGULAR BASIS FOR ADDITIONAL ROOT OR BRANCH DAMAGE AS A RESULT OF CONSTRUCTION. ROOTS SHALL NOT BE LEFT EXPOSED FOR MORE THAN ONE (1) DAY. CONTRACTOR SHALL WATER EXISTING TREES AS NEEDED TO PREVENT SHOCK OR DECLINE.
   - 4.3. CONTRACTOR SHALL ARRANGE TO HAVE A UTILITY STAKE-OUT TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY LANDSCAPE MATERIAL. UTILITY COMPANIES SHALL BE CONTACTED THREE (3) DAYS PRIOR TO THE BEGINNING OF WORK.
5. TREE PROTECTION
   - 5.1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING TREES TO REMAIN. A TREE PROTECTION ZONE SHALL BE ESTABLISHED AT THE DRIP LINE OR AT THE LIMIT OF CONSTRUCTION DISTURBANCE, WHICHEVER IS GREATER. LOCAL STANDARDS THAT MAY REQUIRE A MORE STRICT TREE PROTECTION ZONE SHALL BE HONORED.
   - 5.2. A FORTY-EIGHT INCH (48") HIGH WOODEN SNOW FENCE OR ORANGE COLORED HIGH-DENSITY 'VISI-FENCE', OR APPROVED EQUAL, MOUNTED ON STEEL POSTS SHALL BE PLACED ALONG THE BOUNDARY OF THE TREE PROTECTION ZONE. POSTS SHALL BE LOCATED AT A MAXIMUM OF EIGHT FEET (8') ON CENTER OR AS INDICATED WITHIN THE TREE PROTECTION DETAIL.
   - 5.3. WHEN THE TREE PROTECTION FENCING HAS BEEN INSTALLED, IT SHALL BE INSPECTED BY THE APPROVING AGENCY PRIOR TO DEMOLITION, GRADING, TREE CLEARING OR ANY OTHER CONSTRUCTION. THE FENCING ALONG THE TREE PROTECTION ZONE SHALL BE REGULARLY INSPECTED BY THE LANDSCAPE CONTRACTOR AND MAINTAINED UNTIL ALL CONSTRUCTION ACTIVITY HAS BEEN COMPLETED.
   - 5.4. AT NO TIME SHALL MACHINERY, DEBRIS, FALLEN TREES OR OTHER MATERIALS BE PLACED, STOCKPILED OR LEFT STANDING IN THE TREE PROTECTION ZONE.
6. SOIL MODIFICATIONS
   - 6.1. CONTRACTOR SHALL ATTAIN A SOIL TEST FOR ALL AREAS OF THE SITE PRIOR TO CONDUCTING ANY PLANTING. SOIL TESTS SHALL BE PERFORMED BY A CERTIFIED SOIL LABORATORY.
   - 6.2. LANDSCAPE CONTRACTOR SHALL REPORT ANY SOIL OR DRAINAGE CONDITIONS CONSIDERED DETRIMENTAL TO THE GROWTH OF PLANT MATERIAL. SOIL MODIFICATIONS, AS SPECIFIED HEREIN, MAY NEED TO BE CONDUCTED BY THE LANDSCAPE CONTRACTOR DEPENDING ON SITE CONDITIONS.
   - 6.3. THE FOLLOWING AMENDMENTS AND QUANTITIES ARE APPROXIMATE AND ARE FOR BIDDING PURPOSES ONLY. COMPOSITION OF AMENDMENTS SHOULD BE REVISED DEPENDING ON THE OUTCOME OF A TOPSOIL ANALYSIS PERFORMED BY A CERTIFIED SOIL LABORATORY.
     - 6.3.1. TO INCREASE A SANDY SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS, THOROUGHLY TILL ORGANIC MATTER INTO THE TOP 6-12". USE COMPOSTED BARK, COMPOSTED LEAF MULCH OR PEAT MOSS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A PH HIGHER THAN 7.5.
     - 6.3.2. TO INCREASE DRAINAGE, MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR AGRICULTURAL GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. SUBSURFACE DRAINAGE LINES MAY NEED TO BE ADDED TO INCREASE DRAINAGE.
     - 6.3.3. MODIFY EXTREMELY SANDY SOILS (MORE THAN 85%) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.
7. FINISHED GRADING
   - 7.1. UNLESS OTHERWISE CONTRACTED, THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF TOPSOIL AND THE ESTABLISHMENT OF FINE-GRADING WITHIN THE DISTURBANCE AREA OF THE SITE.
   - 7.2. LANDSCAPE CONTRACTOR SHALL VERIFY THAT SUBGRADE FOR INSTALLATION OF TOPSOIL HAS BEEN ESTABLISHED. THE SUBGRADE OF THE SITE MUST MEET THE FINISHED GRADE LESS THE REQUIRED TOPSOIL THICKNESS (1"±).
   - 7.3. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN AND UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE AS DEPICTED WITHIN THIS SET OF CONSTRUCTION PLANS, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER OR LANDSCAPE ARCHITECT.
   - 7.4. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER IN AND AROUND THE PLANTING BEDS. STANDING WATER SHALL NOT BE PERMITTED IN PLANTING BEDS.
8. TOPSOILING
   - 8.1. CONTRACTOR SHALL PROVIDE A 6" THICK MINIMUM LAYER OF TOPSOIL, OR AS DIRECTED BY THE LOCAL ORDINANCE OR CLIENT, IN ALL PLANTING AREAS. TOPSOIL SHOULD BE SPREAD OVER A PREPARED SURFACE IN A UNIFORM LAYER TO ACHIEVE THE DESIRED COMPACTED THICKNESS.
   - 8.2. ON-SITE TOPSOIL MAY BE USED TO SUPPLEMENT THE TOTAL AMOUNT REQUIRED. TOPSOIL FROM THE SITE MAY BE REJECTED IF IT HAS NOT BEEN PROPERLY REMOVED, STORED AND PROTECTED PRIOR TO CONSTRUCTION.
   - 8.3. CONTRACTOR SHALL FURNISH TO THE APPROVING AGENCY AN ANALYSIS OF BOTH IMPORTED AND ON-SITE TOPSOIL TO BE UTILIZED IN ALL PLANTING AREAS. THE PH AND NUTRIENT LEVELS MAY NEED TO BE ADJUSTED THROUGH SOIL MODIFICATIONS AS NEEDED TO ACHIEVE THE REQUIRED LEVELS AS SPECIFIED IN THE MATERIALS SECTION ABOVE.
   - 8.4. ALL LAWN AREAS ARE TO BE CULTIVATED TO A DEPTH OF SIX INCHES (6"). ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF IN ACCORDANCE WITH GENERAL WORK PROCEDURES SECTION ABOVE. THE FOLLOWING SHALL BE TILLED INTO THE TOP FOUR INCHES (4") IN TWO DIRECTIONS (QUANTITIES BASED ON A 1,000 SQUARE FOOT AREA - FOR BID PURPOSES ONLY [SEE SPECIFICATION 6.A.]):
     - 8.4.1. 20 POUNDS 'GRO-POWER' OR APPROVED SOIL CONDITIONER/FERTILIZER
     - 8.4.2. 20 POUNDS NITRO-FORM (COURSE) 38-0-0 BLUE CHIP OR APPROVED NITROGEN FERTILIZER
   - 8.5. THE SPREADING OF TOPSOIL SHALL NOT BE CONDUCTED UNDER MUDDY OR FROZEN CONDITIONS.
9. PLANTING
   - 9.1. INSOFAR THAT IT IS FEASIBLE, PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY. IN THE EVENT THAT THIS IS NOT POSSIBLE, LANDSCAPE CONTRACTOR SHALL PROTECT UNINSTALLED PLANT MATERIAL. PLANTS SHALL NOT REMAIN UNPLANTED FOR LONGER THAN A THREE DAY PERIOD AFTER DELIVERY. PLANTS THAT WILL NOT BE PLANTED FOR A PERIOD OF TIME GREATER THAN THREE DAYS SHALL BE HEALED IN WITH TOPSOIL OR MULCH TO HELP PRESERVE ROOT MOISTURE.
   - 9.2. PLANTING OPERATIONS SHALL BE PERFORMED DURING PERIODS WITHIN THE PLANTING SEASON WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE AND IN ACCORDANCE WITH ACCEPTED LOCAL PRACTICE. PLANTS SHALL NOT BE INSTALLED IN TOPSOIL THAT IS IN A MUDDY OR FROZEN CONDITION.
   - 9.3. ANY INJURED ROOTS OR BRANCHES SHALL BE PRUNED TO MAKE CLEAN-CUT ENDS PRIOR TO PLANTING UTILIZING CLEAN, SHARP TOOLS. ONLY INJURED OR DISEASED BRANCHING SHALL BE REMOVED.
   - 9.4. ALL PLANTING CONTAINERS, BASKETS AND NON-BIODEGRADABLE MATERIALS SHALL BE REMOVED FROM ROOT BALLS DURING PLANTING. NATURAL FIBER BURLAP MUST BE CUT FROM AROUND THE TRUNK OF THE TREE AND FOLDED DOWN AGAINST THE ROOT BALL PRIOR TO BACKFILLING.
   - 9.5. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
   - 9.6. PRIOR TO THE ISSUANCE OF ANY CERTIFICATE OF OCCUPANCY, THE PROPOSED LANDSCAPE, AS SHOWN ON THE APPROVED LANDSCAPE PLAN, MUST BE INSTALLED, INSPECTED AND APPROVED BY THE APPROVING AGENCY. THE APPROVING AGENCY SHALL TAKE INTO ACCOUNT SEASONAL CONSIDERATIONS IN THIS REGARD AS FOLLOWS. THE PLANTING OF TREES, SHRUBS, VINES OR GROUND COVER SHALL OCCUR ONLY DURING THE FOLLOWING PLANTING SEASONS:
     - 9.6.1. PLANTS: MARCH 15 TO DECEMBER 15
     - 9.6.2. LAWN: MARCH 15 TO JUNE 15 OR SEPT. 1 TO DECEMBER 1
     - 9.6.3. PLANTINGS REQUIRED FOR A CERTIFICATE OF OCCUPANCY SHALL BE PROVIDED DURING THE NEXT APPROPRIATE SEASON AT THE MUNICIPALITY'S DISCRETION. CONTRACTOR SHOULD CONTACT APPROVING AGENCY FOR POTENTIAL SUBSTITUTIONS.
   - 9.7. FURTHERMORE, THE FOLLOWING TREE VARIETIES ARE UNUSUALLY SUSCEPTIBLE TO WINTER DAMAGE. WITH TRANSPLANT SHOCK AND THE SEASONAL LACK OF NITROGEN AVAILABILITY, THE RISK OF PLANT DEATH IS GREATLY INCREASED. IT IS NOT RECOMMENDED THAT THESE SPECIES BE PLANTED DURING THE FALL PLANTING SEASON:

ACER RUBRUM	PLATANUS X ACERIFOLIA
BETULA VARIETIES	POPULUS VARIETIES
CARPINUS VARIETIES	PRUNUS VARIETIES
CRATAEGUS VARIETIES	PYRUS VARIETIES
KOELREUTERIA	QUERCUS VARIETIES
LIQUIDAMBAR STYRACIFLUA	TILIA TOMENTOSA
LIRIODENDRON TULIPIFERA	ZELKOVA VARIETIES

   - 9.8. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, WITH THE WIDTH TWICE THE DIAMETER OF ROOT BALL. THE ROOT BALL SHALL REST ON UNDISTURBED GRADE. EACH PLANT PIT SHALL BE BACKFILLED IN LAYERS WITH THE FOLLOWING PREPARED SOIL MIXED THOROUGHLY:
     - 9.8.1. 1 PART PEAT MOSS
     - 9.8.2. 1 PART COMPOSTED COW MANURE BY VOLUME
     - 9.8.3. 3 PARTS TOPSOIL BY VOLUME
     - 9.8.4. 21 GRAMS 'AGRIFORM' PLANTING TABLETS (OR APPROVED EQUAL) AS FOLLOWS:
       - 9.8.4.1. 2 TABLETS PER 1 GALLON PLANT
       - 9.8.4.2. 3 TABLETS PER 5 GALLON PLANT
       - 9.8.4.3. 4 TABLETS PER 15 GALLON PLANT
       - 9.8.4.4. LARGER PLANTS: 2 TABLETS PER ½" CALIPER OF TRUNK
   - 9.9. FILL PREPARED SOIL AROUND BALL OF PLANT HALF-WAY AND INSERT PLANT TABLETS. COMPLETE BACKFILL AND WATER THOROUGHLY.
   - 9.10. ALL PLANTS SHALL BE PLANTED SO THAT THE TOP OF THE ROOT BALL, THE POINT AT WHICH THE ROOT FLARE BEGINS, IS SET AT GROUND LEVEL AND IN THE CENTER OF THE PIT. NO SOIL IS TO BE PLACED DIRECTLY ON TOP OF THE ROOT BALL.
   - 9.11. ALL PROPOSED TREES DIRECTLY ADJACENT TO WALKWAYS OR DRIVEWAYS SHALL BE PRUNED AND MAINTAINED TO A MINIMUM BRANCHING HEIGHT OF 7' FROM GRADE.
   - 9.12. GROUND COVER AREAS SHALL RECEIVE A ¼" LAYER OF HUMUS RAKED INTO THE TOP 1" OF PREPARED SOIL PRIOR TO PLANTING. ALL GROUND COVER AREAS SHALL BE WEEDED AND TREATED WITH A PRE-EMERGENT CHEMICAL AS PER MANUFACTURER'S RECOMMENDATION.
   - 9.13. NO PLANT, EXCEPT GROUND COVERS, GRASSES OR VINES, SHALL BE PLANTED LESS THAN TWO FEET (2') FROM EXISTING STRUCTURES AND SIDEWALKS.
   - 9.14. ALL PLANTING AREAS AND PLANTING PITS SHALL BE MULCHED AS SPECIFIED HEREIN TO FILL THE ENTIRE BED AREA OR SAUCER. NO MULCH IS TO TOUCH THE TRUNK OF THE TREE OR SHRUB.
   - 9.15. ALL PLANTING AREAS SHALL BE WATERED IMMEDIATELY UPON INSTALLATION IN ACCORDANCE WITH THE WATERING SPECIFICATIONS AS LISTED HEREIN.
10. TRANSPLANTING (WHEN REQUIRED)
    - 10.1. ALL TRANSPLANTS SHALL BE DUG WITH INTACT ROOT BALLS CAPABLE OF SUSTAINING THE PLANT.
    - 10.2. IF PLANTS ARE TO BE STOCKPILED BEFORE REPLANTING, THEY SHALL BE HEALED IN WITH MULCH OR SOIL, ADEQUATELY WATERED AND PROTECTED FROM EXTREME HEAT, SUN AND WIND.
    - 10.3. PLANTS SHALL NOT BE DUG FOR TRANSPLANTING BETWEEN APRIL 10 AND JUNE 30.
    - 10.4. UPON REPLANTING, BACKFILL SOIL SHALL BE AMENDED WITH FERTILIZER AND ROOT GROWTH HORMONE.
    - 10.5. TRANSPLANTS SHALL BE GUARANTEED FOR THE LENGTH OF THE GUARANTEE PERIOD SPECIFIED HEREIN.
    - 10.6. F TRANSPLANTS DIE, SHRUBS AND TREES LESS THAN SIX INCHES (6") DBH SHALL BE REPLACED IN KIND. TREES GREATER THAN SIX INCHES (6") DBH MAY BE REQUIRED TO BE REPLACED IN ACCORDANCE WITH THE MUNICIPALITY'S TREE REPLACEMENT GUIDELINES.
11. WATERING
    - 11.1. NEW PLANTINGS OR LAWN AREAS SHALL BE ADEQUATELY IRRIGATED BEGINNING IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED. WATERING SHALL CONTINUE AT LEAST UNTIL PLANTS ARE ESTABLISHED.
    - 11.2. SITE OWNER SHALL PROVIDE WATER IF AVAILABLE ON SITE AT TIME OF PLANTING. IF WATER IS NOT AVAILABLE ON SITE, CONTRACTOR SHALL SUPPLY ALL NECESSARY WATER. THE USE OF WATERING BAGS IS RECOMMENDED FOR ALL NEWLY PLANTED TREES.
    - 11.3. IF AN IRRIGATION SYSTEM HAS BEEN INSTALLED ON THE SITE, IT SHALL BE USED TO WATER PROPOSED PLANT MATERIAL, BUT ANY FAILURE OF THE SYSTEM DOES NOT ELIMINATE THE CONTRACTOR'S RESPONSIBILITY OF MAINTAINING THE DESIRED MOISTURE LEVEL FOR VIGOROUS, HEALTHY GROWTH.
12. GUARANTEE
    - 12.1. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF 1 YEAR FROM APPROVAL OF LANDSCAPE INSTALLATION BY THE APPROVING AGENCY. CONTRACTOR SHALL SUPPLY THE OWNER WITH A MAINTENANCE BOND FOR TEN PERCENT (10%) OF THE VALUE OF THE LANDSCAPE INSTALLATION WHICH WILL BE RELEASED AT THE CONCLUSION OF THE GUARANTEE PERIOD AND WHEN A FINAL INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.
    - 12.2. ANY DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED FOR THE LENGTH OF THE GUARANTEE PERIOD. REPLACEMENT OF PLANT MATERIAL SHALL BE CONDUCTED AT THE FIRST SUCCEEDING PLANTING SEASON. ANY DEBRIS SHALL BE DISPOSED OF OFF-SITE, WITHOUT EXCEPTION.
    - 12.3. TREES AND SHRUBS SHALL BE MAINTAINED BY THE CONTRACTOR DURING CONSTRUCTION AND THROUGHOUT THE 90 DAY MAINTENANCE PERIOD AS SPECIFIED HEREIN. CULTIVATION, WEEDING, WATERING AND THE PREVENTATIVE TREATMENTS SHALL BE PERFORMED AS NECESSARY TO KEEP PLANT MATERIAL IN GOOD CONDITION AND FREE OF INSECTS AND DISEASE.
    - 12.4. LAWNS SHALL BE MAINTAINED THROUGH WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING AND OTHER OPERATIONS SUCH AS ROLLING, REGARDING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.
13. CLEANUP
    - 13.1. UPON THE COMPLETION OF ALL LANDSCAPE INSTALLATION AND BEFORE THE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL UNUSED MATERIALS, EQUIPMENT AND DEBRIS FROM THE SITE. ALL PAVED AREAS ARE TO BE CLEANED.
    - 13.2. THE SITE SHALL BE CLEANED AND LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER OR AUTHORIZED REPRESENTATIVE.
14. MAINTENANCE (ALTERNATIVE BID):
    - 14.1. A 90 DAY MAINTENANCE PERIOD SHALL COMMENCE AT THE END OF ALL LANDSCAPE INSTALLATION OPERATIONS. THE 90 DAY MAINTENANCE PERIOD ENSURES TO THE OWNER/OPERATOR THAT THE NEWLY INSTALLED LANDSCAPING HAS BEEN MAINTAINED AS SPECIFIED ON THE APPROVED LANDSCAPE PLAN. ONCE THE INITIAL 90 DAY MAINTENANCE PERIOD HAS EXPIRED, THE OWNER/OPERATOR MAY REQUEST THAT BIDDERS SUBMIT AN ALTERNATE MAINTENANCE BID FOR A MONTHLY MAINTENANCE CONTRACT. THE ALTERNATE MAINTENANCE CONTRACT WILL ENCOMPASS ANY WORK THAT IS CONSIDERED APPROPRIATE TO ENSURE THAT PLANT AND LAWN AREAS ARE HEALTHY AND MANICURED TO THE APPROVAL OF THE OWNER/OPERATOR.

NOTES:
1.) NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
2.) REMOVE ALL NON-BIODEGRADABLE MATERIAL AND ROPE FROM TRUNK & TOP OF ROOT BALL. FOLD BURLAP BACK 1/3 FROM ROOT BALL.
3.) PLANTING DEPTH SHALL BE THE SAME AS GROWN IN NURSERY.
4.) THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.
5.) THE BOTTOM OF PLANTING PIT EXCAVATIONS SHOULD BE ROUGH TO AVOID MATTING OF SOIL LAYERS AS NEW SOIL IS ADDED. IT IS PREFERABLE TO TILL THE FIRST LIFT (2 TO 3 IN.) OF PLANTING SOIL INTO THE SUBSOIL.
6.) REFER TO THE CHART "GENERAL RANGE OF SOIL MODIFICATIONS & VOLUMES FOR VARIOUS SOIL CONDITIONS" TO DETERMINE MINIMUM WIDTH OF PREPARED SOIL.
7.) SUBSTITUTE ARBORVITAE STAKING SYSTEM WHEN SPECIFIED.

TREE PLANTING DETAIL

N.T.S.

TREE PROTECTION DURING SITE CONSTRUCTION

N.T.S.

SHRUB PLANTING DETAIL

N.T.S.

NOTES:
1. ANY TREE INSTALLED WITHIN 10 FT. OF NEW CONCRETE SIDEWALKS SHOULD BE INSTALLED WITH BIOBARRIER ROOT BARRIER FABRIC AS SHOWN
2. TREES SHALL BE INSTALLED ACCORDING TO THE APPROPRIATE PLANTING DETAIL.

BIOBARRIER ROOT BARRIER DETAIL

N.T.S.

SPECIFICATIONS
NAME; HUDSON VALLEY 2" – 3" RIVER BED STONE COLOR; COLORS WILL BE BROWNS, GREYS, AND TANS WITH LITTLE LILACS OR BURGUNDY TONES. SHAPE; PRIMARILY ROUND OR OVAL SCREENED STONE WITH NO SHARP ANGULAR SIDES OR FACES SIZE; STONE SIZES WILL RANGE FROM 2" – 3" IN AT LEAST ONE DIMENSION. STONE SIZING SHOULD BE UNIFORM WITH LITTLE VARIATION FROM THIS RANGE. SILT CONTENT; STONE NEEDS TO BE CLEAN OF DEBRIS AND SILT AT TIME OF DELIVERY.

NOTE: IRRIGATION TO BE PROVIDED IN ALL ROCK MULCH BEDS

STONE MULCH

N.T.S.

REFER TO TREE PLANTING DETAIL FOR GENERAL PLANTING SPECIFICATIONS

TREE PLANTING DETAIL - ON SLOPE

N.T.S.

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING, CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:

• PERENNIAL RYEGRASS	1/2 LB/1000 SQ FT
• KENTUCKY BLUEGRASS	1 LB/1000 SQ FT
• RED FESCUE	1/2 LB/1000 SQ FT
• SPREADING FESCUE	1/2 LB/1000 SQ FT
• FERTILIZER (16.32.16)	2 LB/1000 SQ FT
• LIQUID LIME	1 GAL/800 GAL.
• TANK TACKIFIER	35 LB/800 GAL.
• TANK FIBER MULCH	30 LB/1000 SQ FT

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.

HYDROSEED SPECIFICATIONS

BLACK ALUMINUM EDGING

N.T.S.

GROUNDCOVER PLANTING

N.T.S.

NOTES:
SPECIFIED ARBORTIE GREEN (OR WHITE) STAKING AND GUYING MATERIAL IS TO BE FLAT WOVEN POLYPROPYLENE MATERIAL. ¾" WIDE, 900 LB. BREAK STRENGTH. ARBORTIE SHALL BE FASTENED TO STAKES IN A MANNER WHICH PERMITS TREE MOVEMENT AND SUPPORTS THE TREE.

STEP 1:
TIE A SIMPLE KNOT 18-24" FROM EITHER END OF THE ARBORTIE. (DEPENDING ON THE DIAMETER OF THE TREE)

STEP 2:
WRAP THIS END AROUND TREE. BEGIN A NEW KNOT BELOW THE KNOT THAT WAS TIED IN STEP 1.

STEP 3:
FOLLOW MOTION OF ARBORTIE AS SHOWN, FINISHING THE KNOT BY PULLING TIGHTLY ON POINTS A AND B AT THE SAME TIME.

STEP 4:
SLIDE KNOT JUST COMPLETED UP TO THE KNOT TIED IN STEP 1. FASTEN FREE END TO STAKE OR ANCHOR.

STEP 5:
THE ARBORKNOT PROVIDES SECURE, GIRDLE FREE ATTACHMENT OF THE ARBORTIE TO TREE.

ARBORTIE STAKING DETAIL

N.T.S.

BOHLER™

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY CHECKED BY

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PERMIT SET

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.: MAA220275.00
DRAWN BY: CFD/JRJ
CHECKED BY: JF/RMM
DATE: 02/03/2023
CAD I.D.: MAA220275.00-LSCP-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED
BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET,
TOWN OF READING,
MIDDLESEX COUNTY,
MASACHUSETTS

BOHLER
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

MATTHEW J. MRVA
NO. 1217
Matthew J. Mrva

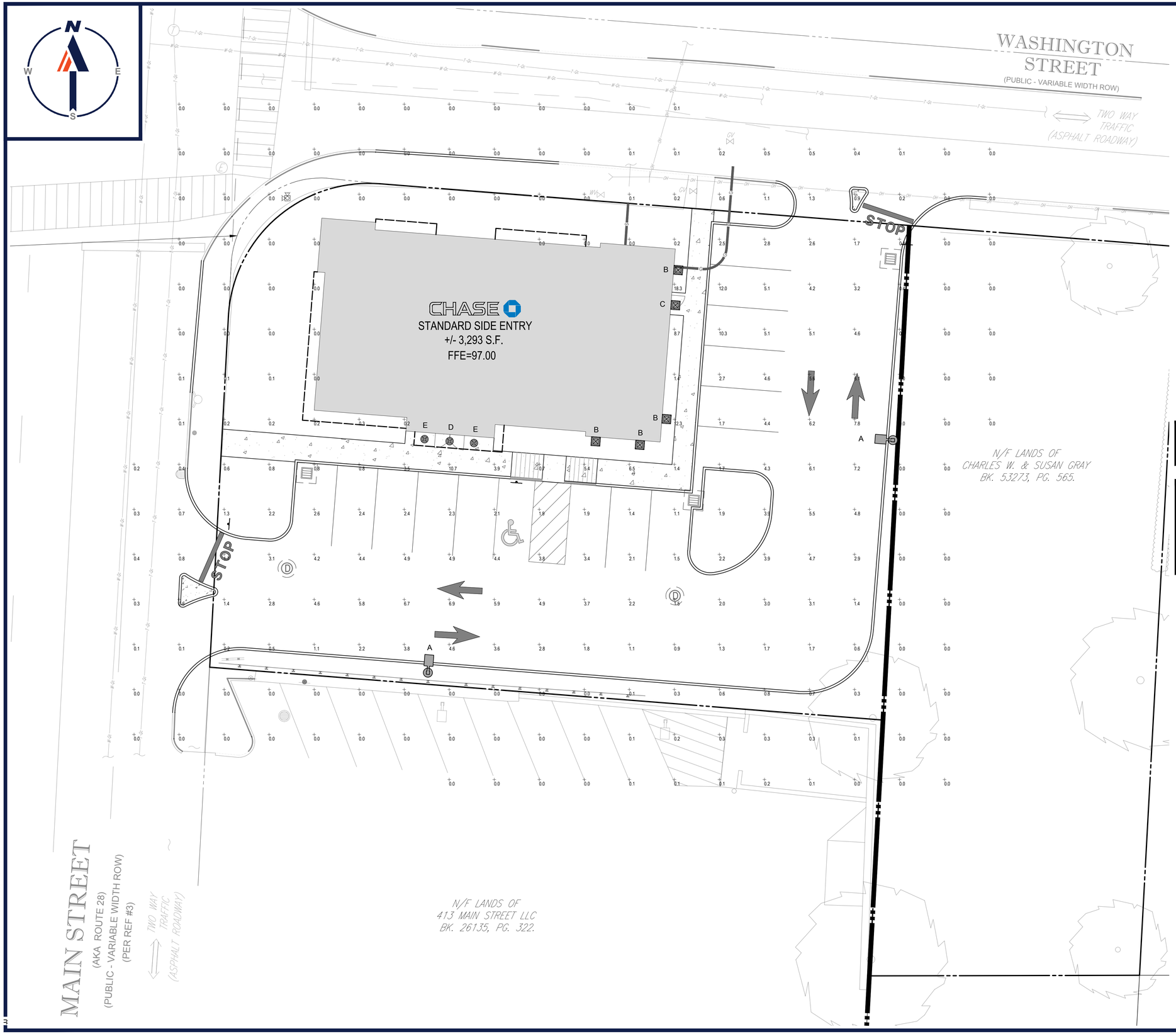
SHEET TITLE:

LANDSCAPE NOTES & DETAILS

SHEET NUMBER:

C-702

ORG. DATE - 02/03/2023



LIGHTING NOTES

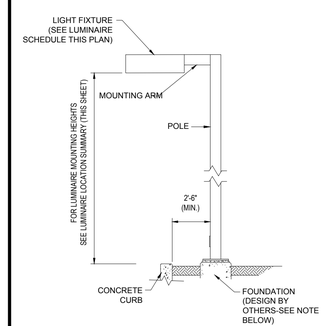
1. THIS LIGHTING PLAN DEPICTS PROPOSED SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER(S). ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
2. THE LIGHT LOSS FACTORS USED IN THESE LIGHTING CALCULATIONS ARE 0.90 FOR ALL LED LUMINAIRES, 0.80 FOR ALL HIGH PRESSURE SODIUM LUMINAIRES OR 0.72 FOR ALL METAL HALIDE LUMINAIRES UNLESS OTHERWISE SPECIFIED. THESE FACTORS ARE INDICATIVE OF TYPICAL LIGHTING INDUSTRY MODELING STANDARDS.
3. THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ALL ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT ELEVATION ZERO (GROUND LEVEL) UNLESS OTHERWISE NOTED. THE VALUES DEPICTED ON THIS PLAN ARE IN FOOTCANDLES.
4. THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT NOT BE LIMITED TO, FREQUENT VISUAL INSPECTIONS, CLEANING OF LENSES, AND RELAMPING (IF NECESSARY) AT LEAST ONCE EVERY SIX (6) MONTHS. FAILURE TO FOLLOW THE ABOVE STEPS COULD CAUSE THE LUMINAIRES, LAMPS AND LENSES TO FAIL PROPERLY TO FUNCTION.
5. WHERE APPLICABLE, THE EXISTING CONDITION LIGHT LEVELS ILLUSTRATED ARE REPRESENTATIVE OF AN APPROXIMATION UTILIZING LABORATORY DATA FOR SIMILAR FIXTURES, UNLESS ACTUAL FIELD MEASUREMENTS ARE TAKEN WITH A LIGHT METER AND ARE, CONSEQUENTLY, APPROXIMATIONS ONLY, DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC; ACTUAL LIGHT LEVELS MAY DIFFER. EXISTING LIGHT LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
6. THIS LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES, ONLY. POWER SYSTEM, CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS ARE THE RESPONSIBILITY OF THE ARCHITECT, MEP AND/OR LIGHTING CONTRACTOR, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. LIGHT POLE BASES ARE THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES AND ALL OTHER APPLICABLE RULES, REGULATIONS, LAWS AND STATUTES.
7. CONTRACTOR MUST BRING TO DESIGNER'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURES.
8. IT IS THE LIGHTING CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROJECT ARCHITECT OR OWNER REGARDING THE POWER SOURCE(S) FROM WITHIN THE BUILDING, AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT.
9. THE LIGHTING CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE SITE PLAN, INCLUDING BUT NOT LIMITED TO, GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL GOVERNMENTAL RULES, LAWS, ORDINANCES, REGULATIONS AND THE LIKE.
10. THE CONTRACTOR MUST VERIFY THAT INSTALLATION OF LIGHTING FIXTURES COMPLIES WITH THE REQUIREMENTS FOR SEPARATION FROM OVERHEAD ELECTRICAL WIRES PER STATE REGULATIONS.
11. WHEN A BANK ATM IS INCLUDED IN THE PLAN, THE LIGHTING DESIGN REPRESENTS BOHLER'S UNDERSTANDING AND INTERPRETATION OF THE REGULATORY LIGHTING LEVELS INTENDED BY PUBLISHED STANDARDS.
12. UPON OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT, THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE, SERVICING, REPAIR AND INSPECTION OF THE LIGHTING SYSTEM AND ALL OF ITS COMPONENTS AND RELATED SYSTEMS, TO ENSURE ADEQUATE LIGHTING LEVELS ARE PRESENT AND FUNCTIONING AT ALL TIMES.

NUMERIC SUMMARY

LABEL	CALCTYPE	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
AREA SUMMARY	ILLUMINANCE	FC	3.52	12.0	0.5	7.04	24.00
ENTRANCE - 50 FT	ILLUMINANCE	FC	3.68	10.7	0.7	5.26	15.29

LUMINAIRE SCHEDULE

SYMBOL	QTY	ARRANGEMENT	LUMENS	LLF	DESCRIPTION
A	2	SINGLE	21737	0.90	LITHONIA LIGHTING RSX2 LED TYPE 3 AREA LIGHT WITH SHIELD MOUNTED @ 20'; RSX2-LED-P4-40K-R3-HS
B	4	BUILDING	1035	0.90	LUMIERE LED WALL PACK MOUNTED @ 10'; 9004-W2-RW-LED-4080-W-W-CS-L-1-UNV-WIS
C	1	BUILDING	6038	0.90	LUMARK MAXX LED WALL PACK MOUNTED @ 10'; XTOR6B-W-BZ-MS/DIM-L20-CBP
D	1	CANOPY	1670	0.90	ILLUMINATION BULLET RECESSED DOWNLIGHT LIGHT MOUNTED @ 14'; 5811-1SA-T-20L-8040-W-DM-1-BB
E	2	CANOPY	1670	0.90	ILLUMINATION BULLET RECESSED DOWNLIGHT LIGHT MOUNTED @ 14'; 5811-1SA-T-20L-8040-W-DM-1-BB-EM



AREA LIGHT DETAIL — N.T.S.

NOTE: THIS DETAIL IS FOR BID AND BUDGETARY PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A FOUNDATION DESIGN PREPARED BY A QUALIFIED STRUCTURAL ENGINEER CONSIDERING LIGHTING MANUFACTURER REQUIREMENTS, LOCAL WIND LOADS AND SITE SPECIFIC SOIL PARAMETERS.

- SOME SITE CONDITIONS AND/OR LOCATIONS MAY REQUIRE VIBRATION DAMPENING MEASURES AS DETERMINED BY A STRUCTURAL ENGINEER.
- THE STRUCTURAL ENGINEER SHALL BE NOTIFIED OF THE INTENT TO MOUNT ANYTHING TO THE POLE, ASIDE FROM THE LIGHT FIXTURES, INCLUDING BUT NOT LIMITED TO CAMERAS, BANNERS, FLAGS, SIGNAGE, ETC. AS IT WILL IMPACT THE POLE AND FOUNDATION DESIGN.

THIS PLAN TO BE UTILIZED FOR LIGHTING PURPOSES ONLY

10 5 2.5 0 10
1"= 10'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
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PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ENVIRONMENTAL SERVICES
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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PERMIT SET

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PROJECT No.:	MAA220275.00
DRAWN BY:	CFD/JRJ
CHECKED BY:	JF/RMM
DATE:	02/03/2023
CAD I.D.:	MAA220275.00-SPPD-0A

PROJECT:

PROPOSED SITE PLAN DOCUMENTS

FOR

CHASE

PROPOSED BANK DEVELOPMENT

MAP: 17 LOT: 63
431 MAIN STREET, TOWN OF READING, MIDDLESEX COUNTY, MASACHUSETTS

BOHLER
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900
www.BohlerEngineering.com

COMMONWEALTH OF MASSACHUSETTS — JOSHUA S. FARWELL — CIVIL — No. 41697 — REGISTERED PROFESSIONAL ENGINEER

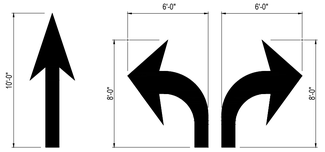
SHEET TITLE:

LIGHTING PLAN

SHEET NUMBER:

C-703

ORG. DATE - 02/03/2023



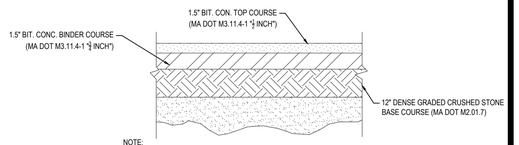
SOLID ARROW MARKINGS
USED AT EXITS FROM THE PARKING LOT TO PUBLIC STREETS

NOTES:

1. WORDS AND ARROWS SHALL BE APPLIED IN ACCORDANCE WITH SECTION 3B.20 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
2. THESE WORDS AND ARROWS ARE TO BE PAINTED RETROREFLECTIVE WHITE.

PAINTED TRAFFIC ARROWS

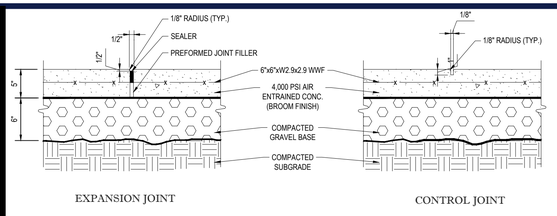
N.T.S.

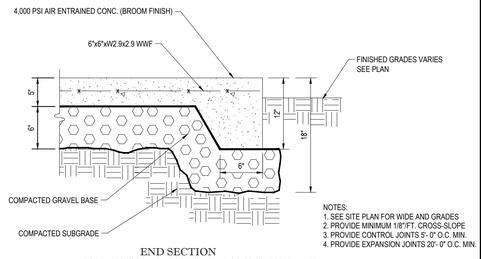


NOTE:
PAVEMENT BASE AND SUBBASE COURSES TO CONFORM TO ALL STATE DOT HIGHWAY DIVISION SPECIFICATIONS.

TYPICAL PAVEMENT SECTION

N.T.S.



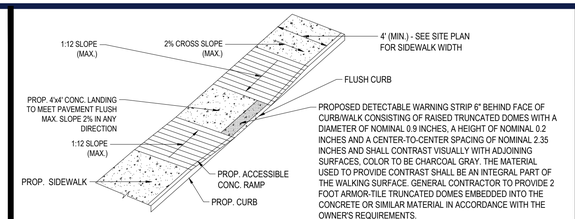


END SECTION
TO BE USED FOR BUILDING SURROUND AND OTHER CONCRETE WALKS.
USE CHAIRS TO SUPPORT REINFORCING STEEL DURING POUR.

NOTES:
1. SEE SITE PLAN FOR WIDE AND GRADES
2. PROVIDE MINIMUM 1/8"FT. CROSS-SLOPE.
3. PROVIDE CONTROL JOINTS 5'-0" O.C. MIN.
4. PROVIDE EXPANSION JOINTS 20'- 0" O.C. MIN.

MONOLITHIC CONC. SIDEWALK DETAILS

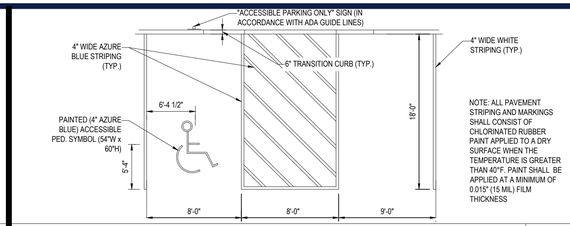
N.T.S.



PROPOSED DETECTABLE WARNING STRIP 6" BEHIND FACE OF CURB/WALK CONSISTING OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 INCHES, A HEIGHT OF NOMINAL 0.2 INCHES AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, COLOR TO BE CHARCOAL GRAY. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. GENERAL CONTRACTOR TO PROVIDE 2 FOOT ARMOR-TILE TRUNCATED DOMES EMBEDDED INTO THE CONCRETE OR SIMILAR MATERIAL IN ACCORDANCE WITH THE OWNER'S REQUIREMENTS.

ACCESSIBLE RAMP

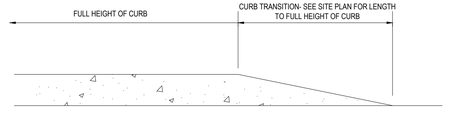
N.T.S.



NOTE: ALL PAVEMENT STRIPING AND MARKINGS SHALL CONSIST OF CHLORINATED RUBBER PAINT APPLIED TO A DRY SURFACE WHEN THE TEMPERATURE IS GREATER THAN 40°F. PAINT SHALL BE APPLIED AT A MINIMUM OF 0.015" (15 MIL) FILM THICKNESS

ACCESSIBLE STALL MARKINGS & PARKING LOT STRIPING DETAIL

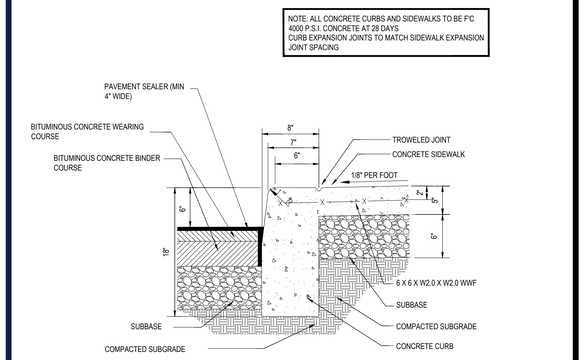
N.T.S.



TRANSITION CURB DETAIL

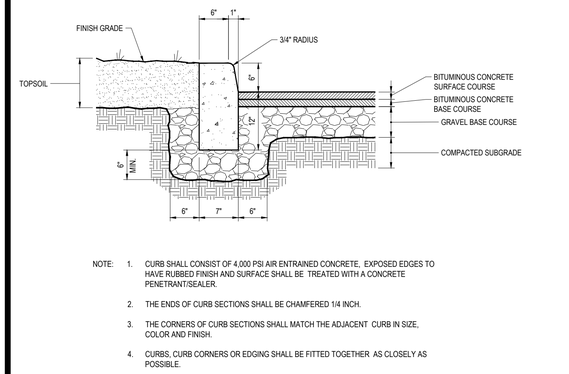
N.T.S.

N.T.S.



CURB DETAIL W/ MONOLITHIC SIDEWALK ON-SITE

N.T.S.

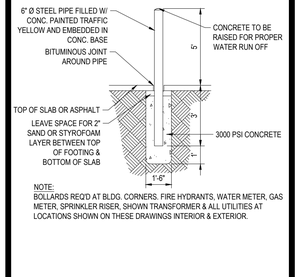


NOTE:
1. CURB SHALL CONSIST OF 4,000 PSI AIR ENTRAINED CONCRETE. EXPOSED EDGES TO HAVE RUBBED FINISH AND SURFACE SHALL BE TREATED WITH A CONCRETE PENETRANT/SEALER.
2. THE ENDS OF CURB SECTIONS SHALL BE CHAMFERED 1/4 INCH.
3. THE CORNERS OF CURB SECTIONS SHALL MATCH THE ADJACENT CURB IN SIZE, COLOR AND FINISH.
4. CURBS, CURB CORNERS OR EDGING SHALL BE FITTED TOGETHER AS CLOSELY AS POSSIBLE.
5. EXPANSION JOINTS SHALL BE INSTALLED AT A MAXIMUM OF TWENTY FEET (20') ON CENTER USING PREFORMED EXPANSION JOINT FILLER HAVING A THICKNESS OF 1/2 INCH.

PRECAST CONCRETE CURB DETAIL

N.T.S.

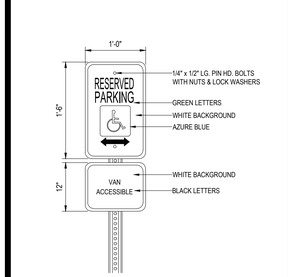
N.T.S.



NOTE:
BOLLARDS REQ'D AT BLDG. CORNERS. FIRE HYDRANTS, WATER METER, GAS METER, SPRINKLER RISER, SHOWN TRANSFORMER & ALL UTILITIES AT LOCATIONS SHOWN ON THESE DRAWINGS INTERIOR & EXTERIOR.

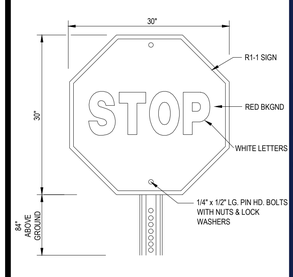
BOLLARD

N.T.S.



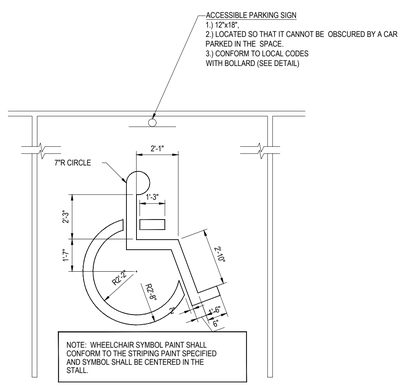
ACCESSIBLE PARKING SIGN

N.T.S.



'STOP' SIGN DETAIL

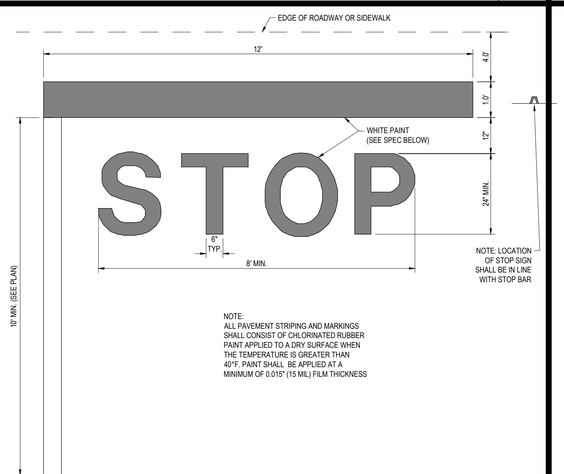
N.T.S.



NOTE: WHEELCHAIR SYMBOL PAINT SHALL CONFORM TO THE STRIPING PAINT SPECIFIED AND SYMBOL SHALL BE CENTERED IN THE STALL.

ACCESSIBLE PARKING STALL PAINTING DETAIL

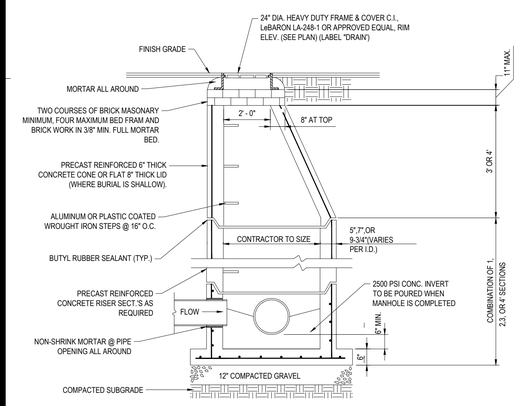
N.T.S.



NOTE:
ALL PAVEMENT STRIPING AND MARKINGS SHALL CONSIST OF CHLORINATED RUBBER PAINT APPLIED TO A DRY SURFACE WHEN THE TEMPERATURE IS GREATER THAN 40°F. PAINT SHALL BE APPLIED AT A MINIMUM OF 0.015" (15 MIL) FILM THICKNESS

'STOP' BAR DETAIL

N.T.S.



NOTE: ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.

PRECAST CONCRETE STORM DRAIN MANHOLE

N.T.S.

NOTES:
1. ACCESSIBLE AND VAN PARKING SIGNS SHALL CONFORM WITH CURRENT FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.

SIGN BOLLARD

N.T.S.

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LAND SURVEYING
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FOR

CHASE

PROPOSED
BANK DEVELOPMENT

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COMMONWEALTH OF MASSACHUSETTS
JOSEPH R. FARRELL
CIVIL
No. 41697
REGISTERED PROFESSIONAL ENGINEER

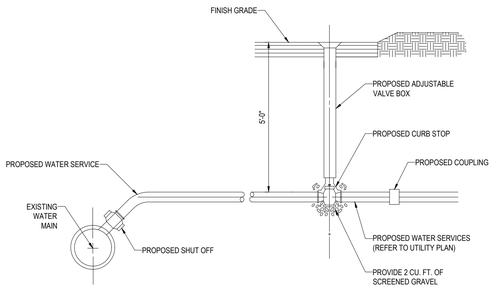
SHEET TITLE:

DETAIL SHEET

SHEET NUMBER:

C-901

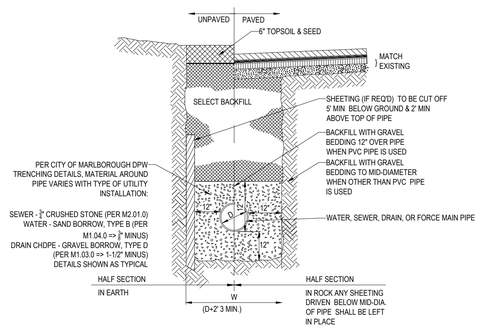
ORG. DATE - 02/03/2023



NOTE: PROVIDE CONNECTION IN ACCORDANCE WITH THE CITY REQUIREMENTS.

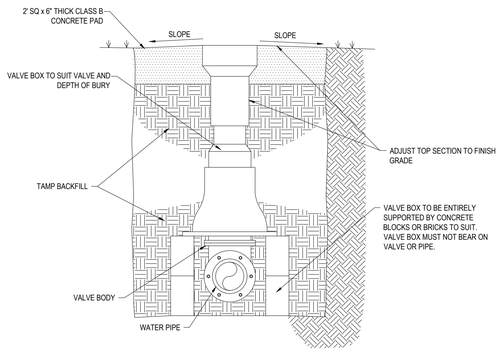
SERVICE CONNECTION DETAIL

N.T.S.



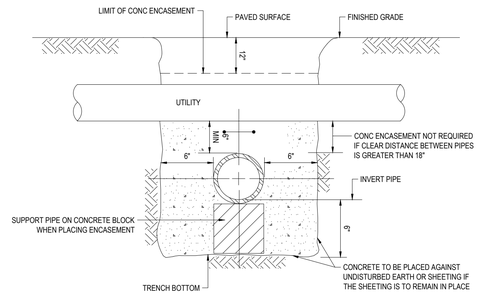
TYPICAL UTILITY TRENCH

N.T.S.



GATE VALVE DETAIL

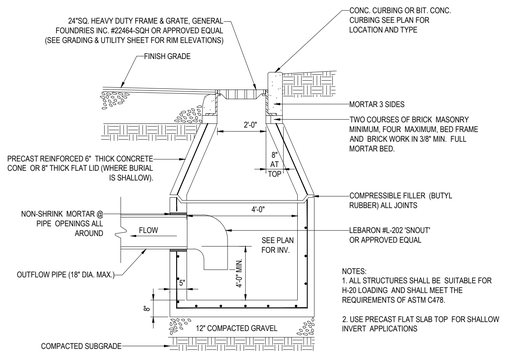
N.T.S.



NOTES:
1. PIPE MUST BE BRACED VERTICALLY & HORIZONTALLY TO PREVENT FLOATATION DURING PLACEMENT OF CONCRETE
2. ALL CONCRETE ENCASEMENT SHALL BE KEPT 12" BELOW THE BOTTOM OF ASPHALT PAVEMENT
3. PAVEMENT SECTION TAKEN FROM PLAN ENTITLED "SITE DETAILS" THE BOTTOM OF ASPHALT PAVEMENT

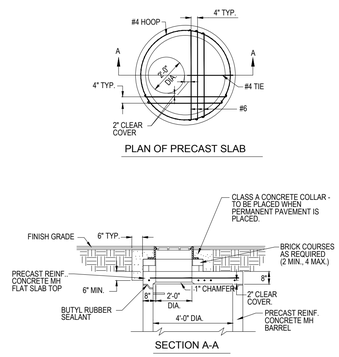
CONCRETE ENCASEMENT AT UTILITY CROSSING

N.T.S.



NOTES:
1. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.

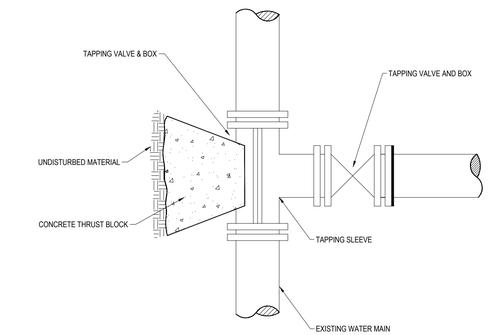
2. USE PRECAST FLAT SLAB TOP FOR SHALLOW INVERT APPLICATIONS



ALTERNATIVE FLAT SLAB TOP FOR SHALLOW MANHOLE

PRECAST CONCRETE DEEP SUMP CATCH BASIN DETAIL

N.T.S.



(DETAIL FOR GENERAL PURPOSES. GC TO COORDINATE CONNECTION WITH LOCAL WATER DEPARTMENT AND/OR DPW)

TAPPING SLEEVE AND GATE VALVE

N.T.S.

N.T.S.

N.T.S.

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COMMONWEALTH OF MASSACHUSETTS
JOSHUA M. SWERENG
CIVIL
No. 41697
REGISTERED PROFESSIONAL ENGINEER

SHEET TITLE:

DETAIL SHEET

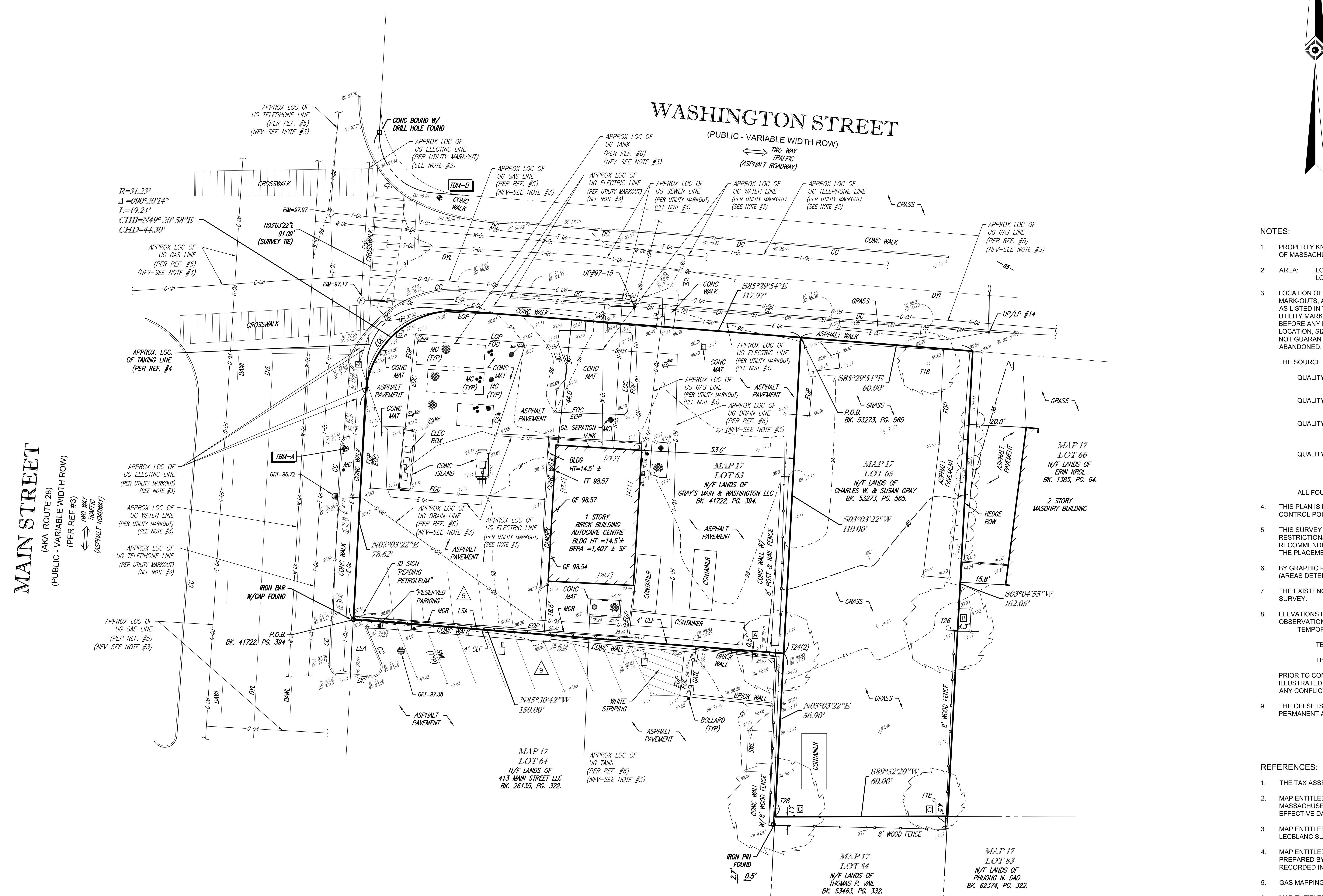
SHEET NUMBER:

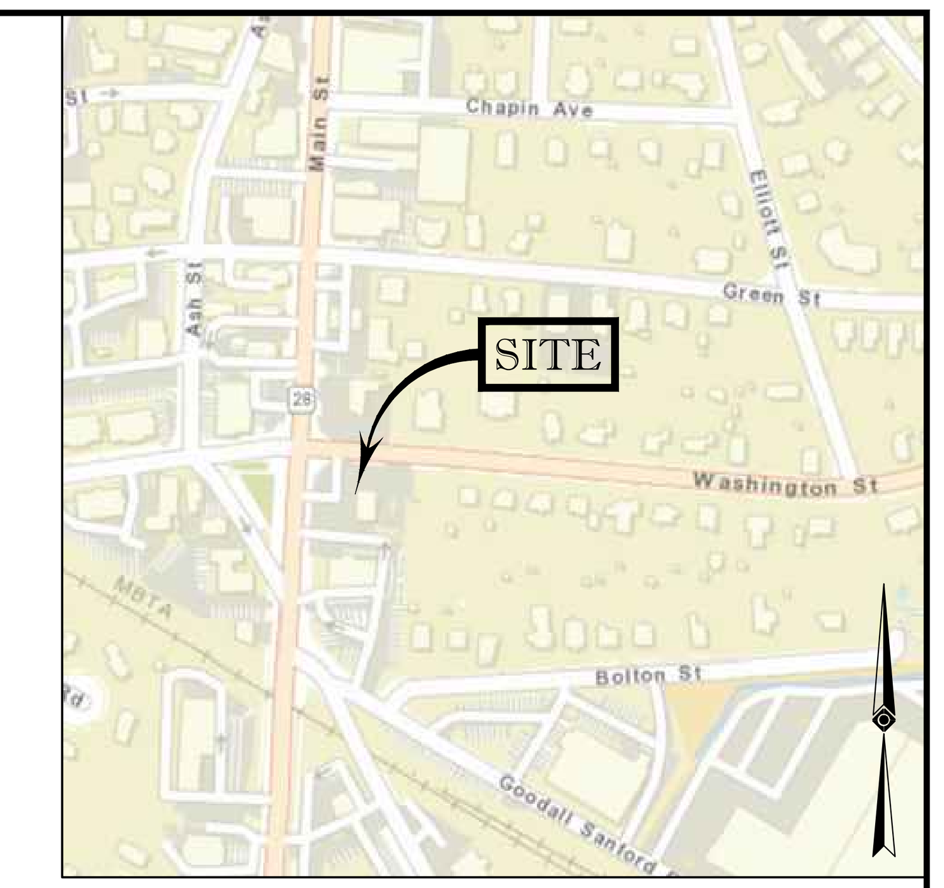
C-902

ORG. DATE - 02/03/2023

LEGEND

- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- EXISTING TOP OF CURB ELEVATION
- EXISTING BOTTOM OF CURB ELEVATION
- EXISTING TOP OF WALL ELEVATION
- EXISTING BOTTOM OF WALL ELEVATION
- EXISTING FINISHED FLOOR ELEVATION
- OVERHEAD WIRES
- APPROX. LOC. UNDERGROUND GAS LINE
- APPROX. LOC. UNDERGROUND ELECTRIC LINE
- APPROX. LOC. UNDERGROUND DRAINAGE LINE
- APPROX. LOC. UNDERGROUND SANITARY / SEWER LINE
- APPROX. LOC. UNDERGROUND TELEPHONE LINE
- APPROX. LOC. UNDERGROUND WATER LINE
- GAS VALVE
- GAS METER
- ELECTRIC METER
- HYDRANT
- UTILITY POLE
- GUY WIRE
- STREET LIGHT
- TRAFFIC SIGNAL
- MONITORING WELL
- AREA LIGHT
- SIGN
- BOLLARD
- U-BOLLARD
- METAL GUIDE RAIL
- POST
- TMH TELEPHONE MANHOLE
- EMH ELECTRIC MANHOLE
- PARKING SPACE COUNT
- TREE & TRUNK SIZE
- EVIDENCE FOUND
- UNKNOWN TERMINUS
- DYL DOUBLE YELLOW LINE
- HT HEIGHT
- DAWL DASHED WHITE LINE
- BLDG BUILDING
- BFPA BUILDING FOOTPRINT AREA
- UG UNDER GROUND
- CLF CHAIN LINK FENCE
- DC DEPRESSED CURB
- EOC EDGE OF CONCRETE
- EOP EDGE OF PAVEMENT
- LSA LANDSCAPED AREA
- MC METAL COVER
- (TYP) TYPICAL
- GRT GRATE ELEVATION
- BOT BOTTOM ELEVATION
- 1.0' OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
- EL ELEVATION
- SWL SOLID WHITE LINE
- TBM TEMPORARY BENCH MARK
- CC CONCRETE CURB
- SUBSURFACE UTILITY QUALITY LEVEL C
- SUBSURFACE UTILITY QUALITY LEVEL D





LOCUS MAP
©2013 ESRI WORLD STREET MAPS
NOT TO SCALE

NOTES:

1. PROPERTY KNOWN AS LOT 63 AS SHOWN ON THE TOWN OF READING, MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS, MAP NO. 17.
2. AREA: LOT 63 = 16,276 SQUARE FEET OR 0.374 ACRES
   LOT 65 = 9,860 SQUARE FEET OR 0.226 ACRES
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE. LOCATIONS AND SIZES ARE BASED ON UTILITY MARK-OUTS, ABOVE GROUND STRUCTURES THAT WERE VISIBLE & ACCESSIBLE IN THE FIELD, AND THE MAPS AS LISTED IN THE REFERENCES AVAILABLE AT THE TIME OF THE SURVEY. AVAILABLE ASBUILT PLANS AND UTILITY MARKOUT DOES NOT ENSURE MAPPING OF ALL UNDERGROUND UTILITIES AND STRUCTURES. BEFORE ANY EXCAVATION IS TO BEGIN, ALL UNDERGROUND UTILITIES SHOULD BE VERIFIED AS TO THEIR LOCATION, SIZE AND TYPE BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.

   THE SOURCE OF UNDERGROUND UTILITIES ARE SHOWN UTILIZING A QUALITY LEVEL SYSTEM:

   QUALITY LEVEL D - UTILITIES SHOWN BASED UPON REFERENCE MAPPING OR ORAL HISTORY. NOT FIELD VERIFIED.

   QUALITY LEVEL C - LOCATION OF UTILITY SURFACE FEATURES SUPPLEMENTS REFERENCE MAPPING. INCLUDES MARKOUT BY OTHERS.

   QUALITY LEVEL B - UTILITY LOCATION DATA IS COLLECTED THROUGH GEOPHYSICAL SENSING TECHNOLOGY TO SUPPLEMENT SURFACE FEATURES AND OR REFERENCE MAPPING. INCLUDES MARKOUT BY CONTROL POINT ASSOCIATES, INC.

   QUALITY LEVEL A - HORIZONTAL AND VERTICAL LOCATION OF UTILITIES ARE OBTAINED USING VACUUM EQUIPMENT EXCAVATION OR OTHER METHODS TO EXPOSE THE UTILITY. LOCATION SHOWN AT SINGLE POINT WHERE EXCAVATION OCCURRED UNLESS UTILITY WAS LOCATED PRIOR TO FILLING.

   ALL FOUR TYPES MAY NOT BE PRESENT ON THIS SURVEY.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED BY CLIENT, A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC., AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO THE RESTRICTIONS, COVENANTS AND/OR EASEMENTS THAT MAY BE CONTAINED THEREIN. IT IS STRONGLY RECOMMENDED THAT A COMPLETE TITLE SEARCH BE PROVIDED TO THE SURVEYOR FOR REVIEW PRIOR TO THE PLACEMENT OF OR ALTERATION TO IMPROVEMENTS ON THE PROPERTY.
6. BY GRAPHIC PLOTTING ONLY PROPERTY IS PARTIALLY LOCATED IN FLOOD HAZARD ZONE X-UNSHADED (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) PER REF. # 2.
7. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
8. ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON GPS OBSERVATIONS UTILIZING THE KEYSTONE VRS NETWORK (KEYNETGPS).
   TEMPORARY BENCH MARKS SET:

   TBM-A: X-CUT IN BOLT OVER MAIN OUTLET OF FIRE HYDRANT. ELEVATION = 99.59'

   TBM-B: MAG NAIL SET IN CONCRETE SIDEWALK. ELEVATION = 97.41'

   PRIOR TO CONSTRUCTION IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THE BENCHMARKS ILLUSTRATED ON THIS SKETCH HAVE NOT BEEN DISTURBED AND THEIR ELEVATIONS HAVE BEEN CONFIRMED. ANY CONFLICTS MUST BE REPORTED PRIOR TO CONSTRUCTION.
9. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.

REFERENCES:

1. THE TAX ASSESSOR'S MAP OF TOWN OF READING, MIDDLESEX COUNTY, MAP 17.
2. MAP ENTITLED "NATIONAL FLOOD INSURANCE PROGRAM, FIRM, FLOOD INSURANCE RATE MAP, MASSACHUSETTS (ALL JURISDICTIONS), MIDDLESEX COUNTY, PANEL 313 OF 656," MAP NUMBER 25017C0313E, EFFECTIVE DATE: JUNE 4, 2010.
3. MAP ENTITLED "PROPOSED PLOT PLAN 431 MAIN STREET READING, MASSACHUSETTS," PREPARED BY LECBLANC SURVEY ASSOCIATES, INC., DATED MAY 14, 2013.
4. MAP ENTITLED "PLAN OF LAND IN READING, MASSACHUSETTS LAND TAKING FOR ROADWAY CONSTRUCTION," PREPARED BY READING DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, DATED DECEMBER 1, 1993. RECORDED IN MIDDLESEX COUNTY REGISTRY OF DEEDS AS PLAN No. 333 OF 1994.
5. GAS MAPPING PROVIDED BY NATIONAL GRID.
6. MAP ENTITLED "MOBIL OIL CORPORATION READING, MASSACHUSETTS, SITE PLAN SHOWING LAYOUT OF PROPOSED REMEDIAL SYSTEM," PREPARED BY HYDRO-ENVIRONMENTAL TECHNOLOGIES, INC., DATED OCTOBER 31, 1990.

TABLE OF APPARENT ENCROACHMENTS

- A 4' CHAIN LINK FENCE FROM LOT 63 OVER PROP LINE ONTO LOT 64 BY 0.5'
- B 8' WOODEN FENCE FROM LOT 65 OVER PROP LINE ONTO 66 BY 4.3'
- C 8' WOODEN FENCE FROM LOT 65 OVER PROP LINE ONTO LOT 84 BY 3.1' - 4.5'

NOTE: THESE ARE THE POSSIBLE ENCROACHMENTS OBSERVED DURING THE FIELD SURVEY. THERE MAY BE OTHERS NOT RECOGNIZED BY THE SURVEYOR.

STOP - CALL BEFORE YOU DIG! (1-888-344-7233)

THE COMMONWEALTH OF MASSACHUSETTS REQUIRES NOTIFICATION BY EXCAVATORS, DESIGNERS, OR ANY PERSON PREPARING TO DISTURB THE EARTH'S SURFACE ANYWHERE IN THE COMMONWEALTH.

GRAPHIC SCALE
20' 0 10' 20' 40' 80'
(IN FEET)
1 inch = 20' ft.

THIS SURVEY HAS BEEN PERFORMED IN THE FIELD UNDER MY SUPERVISION, AND TO THE BEST OF MY KNOWLEDGE, BELIEF, AND INFORMATION, THIS SURVEY HAS BEEN PERFORMED IN ACCORDANCE WITH CURRENTLY ACCEPTED ACCURACY STANDARDS.

NOT A VALID ORIGINAL DOCUMENT UNLESS EMBOSSED WITH RAISED IMPRESSION OR STAMPED WITH A BLUE INK SEAL

COMMONWEALTH OF MASSACHUSETTS GERRY L. HOLDRIGHT NO. 49211 REGISTERED PROFESSIONAL LAND SURVEYOR

9-15-2022
DATE

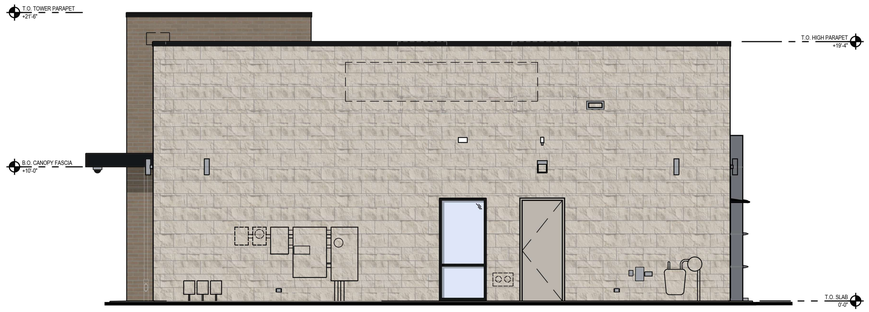
GERRY L. HOLDRIGHT, PLS
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #49211

FIELD DATE	8-16-2022
FIELD BOOK NO.	22-09 MA
FIELD BOOK PG.	105
FIELD CREW	B.S.B.
DRAWN:	R.A.

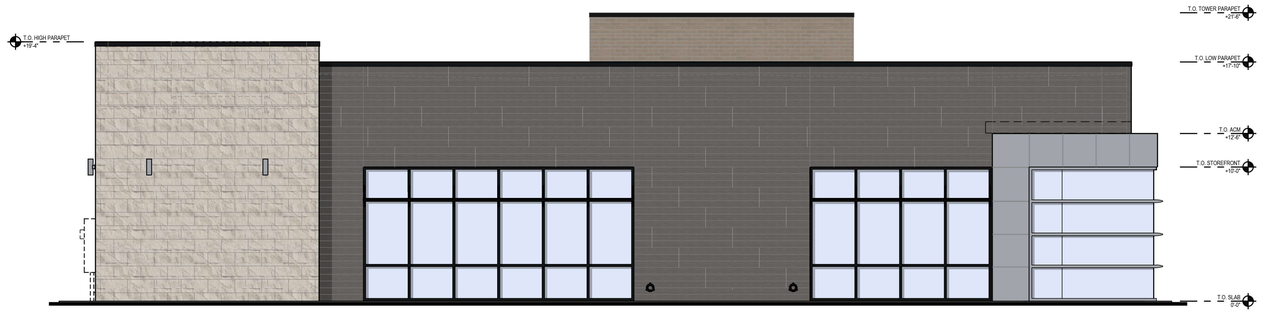
BOUNDARY, TOPOGRAPHIC & UTILITY SURVEY
431 MAIN STREET
MAP 17, LOTS 63 & 65
TOWN OF READING
MIDDLESEX COUNTY
COMMONWEALTH OF MASSACHUSETTS

CONTROL POINT ASSOCIATES, INC.
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
508.948.3000 - 508.948.3003 FAX
ALBANY, NY 518-217-5010
CHALFONT, PA 215-712-9800
HAUPPAUGE, NY 631-580-2645
MANHATTAN, NY 646-780-0411
MT LAUREL, NJ 609-857-2099
WARREN, NJ 908-668-0099

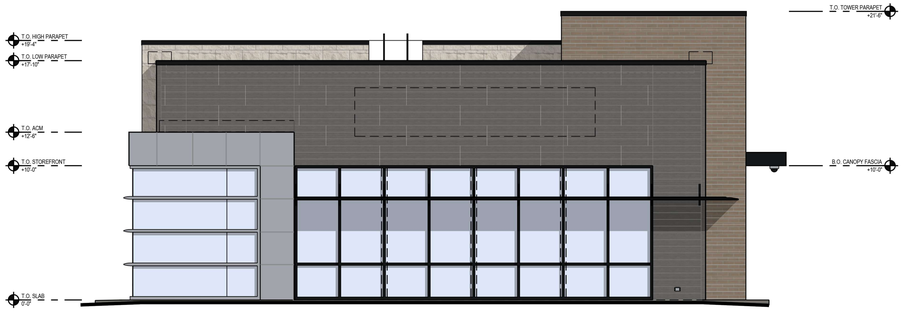
REVIEWED:	APPROVED:	DATE	SCALE	FILE NO.	DWG. NO.
R.J.K.	G.L.H.	9-15-2022	1"=20'	03-220325-00	1 OF 1



EAST ELEVATION



NORTH ELEVATION



WEST ELEVATION

SOUTH ELEVATION

STOREFRONT
APPLICATION: EXTERIOR
COLOR: CLEAR ANODIZED

STOREFRONT/CANOPY/ROOFING/COPING
APPLICATION: EXTERIOR
COLOR: BLACK ANODIZED

PAINT
APPLICATION: EXTERIOR
COLOR: TO MATCH SHERWIN WILLIAMS
SW-7045 INTELLECTUAL GRAY

PAINT
APPLICATION: EXTERIOR
COLOR: TO MATCH SHERWIN WILLIAMS
SW-7036 ACCESSIBLE BEIGE

CORONADO STONE
APPLICATION: EXTERIOR
COLOR: CHISELED LIMESTONE - CREAM

ALUMINUM COMPOSITE MATERIAL (AMC)
APPLICATION: CANOPY
COLOR: "CHASE SILVER"

NICHIHA
APPLICATION: EXTERIOR
COLOR: VINTAGEWOOD - BARK

ENDICOTT THIN BRICK
APPLICATION: EXTERIOR
COLOR: LIGHT GREY BLEND

CHASE

READING MAIN STREET
431 MAIN STREET
READING, MA 01867

PROPOSED EXTERIOR ELEVATIONS

SEPTEMBER 9, 2022
SCALE: 3/16" = 1'-0"

9 GALEN STREET
SUITE 117
WATERTOWN, MA 02472
CONTACT: JAMES MANNING
JMANNING@CORE-STATES.COM

CORE STATES GROUP

352 Turnpike Road
Southborough, MA 01772
508.480.9900

February 6, 2023

Town of Reading
Community Planning and Development Commission
16 Lowell Street
Reading, MA 01867

Attention: Andrew MacNichol, Staff Planner

RE: Proposed Chase Bank
Site Plan Review
431 Main Street, Reading, MA 01867

Dear Mr. MacNichol:

Please find the following enclosed documents for the Site Plan Review Application for the proposed Chase Bank at 431 Main Street:

- Twelve (12) copies of the Site Plan Review Application Packet including:
  - Site Plan Review Application & Checklist;
  - Project Narrative
  - Abutters Lists
  - Copy of Payment
- Six (6) full size (24"x36") sets of the Proposed Site Plan Documents prepared by Bohler and dated January 3, 2023;
- Six (6) full size (24"x36") sets of the Proposed Floor Plan prepared by Core States Group dated July 25, 2022;
- Six (6) full size (24"x36") sets of the Proposed Exterior Elevations prepared by Core States Group dated September 9, 2022;
- Eight (8) half size (11"x17") copies of the above Site Plans, Floor Plan and Building Elevation Plans;
- Four (4) copies of the Sign Package prepared by Philadelphia Sign and dated October 17, 2022;
- Four (4) copies of the Drainage Memo prepared by Bohler and dated February 3, 2023;
- Four (4) copies of the Traffic Impact Study prepared by McMahon dated January, 2023;
- A USB drive containing all of the aforementioned documents;
- Site Plan Review Application Fee Check # 38166 in the amount of $8,500.00

We look forward to discussing this project further with you at your earliest convenience. do not hesitate to contact us at (508) 480-9900 should you have any questions or wish to discuss further.

Sincerely,
BOHLER

Joey Fonseca

Randy Miron

Cc: Jose Sanchez, Core States Group

SITE PLAN REVIEW APPLICATION

Application:

Property Address 431 Main Street, Reading MA, 01867

Assessors Map 17 **Lot** 63 & 65

Name of Applicant Chase Bank c/o Bohler

Address 352 Turnpike Road, Southborough, MA 01772

Email jfonseca@bohlereng.com

Phone / Fax 508-480-9900

Name of Owner (if not applicant) Gray's Main & Washington LLC (431 Main St), Charles Gray (167 Washington St)

Address 15 Heritage Lane, Lynnfield, MA 01940

Email

Phone / Fax

Name of Engineer Joey Fonseca

Firm Bohler

Address 352 Turnpike Road, Southborough MA, 01772

Email jfonseca@bohlereng.com

Phone / Fax

Name of Attorney n/a

Firm

Address

Email

Phone / Fax

Name of Architect James Lalli

Firm Core States Group

Address 46 East Main Street Suite 201, Somerville, NJ 08876

Email jlalli@core-states.com

Phone / Fax 908-462-9949

Current Use of the Property Gas Station & Vehicle Storage

Proposed Use of the Property Bank

Brief Description of the Project

Proposed Bank with parking and two way circulation around the building. Driveway connections to both Washington Street and Main Street. Enhancements for adjacent lot (167 Washington St) include demolition of existing paved areas, removal of debris and all disturbed areas will be loamed and seeded.

Estimated Construction Cost of the Project $ $3,000,000.00

Proposed Building Size (SF) 3,293 **Lot Size** 16,276 SF (.374 AC)

Number Parking Spaces Provided 15

List other Permit Requirements (list date of application thereof):

Conservation Commission n/a

Zoning Relief n/a

Public Works Water & Sewer Connections

Board of Selectmen n/a

Board of Health n/a

Historical Commission n/a

Historic Districts Commission n/a

State Permits:

DEP n/a

MHD n/a

Other

21E filing TBD

List all easements, liens, mortgages, restrictions, or other encumbrances:

Certifications:

The undersigned hereby certifies:

1 That the aforementioned requisite number of copies of the application, including the Checklist for Site Plan Review, plans and all attachments have been delivered to the Public Services Department.

2 That a Certified List of Abutters within 300 feet of the subject property – and all other interested parties – together with a stamped, plain (NO RETURN ADDRESS) envelope addressed to each abutter and interested party has been delivered to the Public Services Department.

3 That a Certified Check for the required Application Fee in the amount of $___$8,500.00_____ has been delivered to the Public Services Department.

4 That he/she understands and hereby agrees that, in addition to the Application Fee identified in Item 3 above, if the Community Planning and Development Commission, in the course of its review of this application, determines at its sole and absolute discretion that review of all or any part of this proposed project by (an) outside, independent consultant(s) of the Commission's sole choosing is necessary for proper evaluation of this project or its possible effects on any matter of public interest, that he/she shall

promptly provide a certified check(s) payable to the consultant(s) in an amount equal to the estimated cost of the consultant services to the Public Services Department. In addition, that he/she further understands and hereby agrees that the Town of Reading shall **not** issue any Certificate of Occupancy for this project until any and all such consultant fees which have been duly imposed subject to Site Plan Review Rules and Regulations have been paid in full;

5 That he/she understands and hereby agrees that no Building Permit shall be issued by the Town of Reading until this Application is approved or approved with modifications and/or conditions; that no Certificate of Occupancy shall be issued until the project has been duly certified as completed in full accordance with approved plans, or that the remainder of the work has been bonded to the Town by the Applicant to guarantee such completion; and that the subject property shall not be occupied or used until said Certificate of Occupancy is issued, or such bonding provided;

6 That he/she understands and hereby agrees that pursuant to law, notification of this Application and required public hearing(s) must be placed in a local newspaper at the Applicant's expense.

Applicant's Signature _____ Date 1/30/23

Date of Receipt of Application _____

This application is Complete in accordance with Section 4.6.4.1b of the Reading Zoning Bylaw and authorized for filing with the Town Clerk.

Community Development Director, as Clerk to CPDC _____

Date _____

Estimated Cost of Construction: For the purposes of this application the Building Inspector shall determine the Site Plan Review application fee based upon the following fee schedule:

Estimated Cost of Construction (ECC):	**Filing fee:**
Less than $500,000>>>>>>>>>>>>>>>>>>	**$10 per $1,000 of ECC**
$500,000 to $999,999>>>>>>>>>>>>>>>>>	**$5,000, plus $3 per $1,000 of ECC in excess of $500,000**
$1,000,000 to $7,499,999>>>>>>>>>>>>>	**$6,500, plus $1 per $1,000 of ECC in excess of $1,000,000**
$7,500,000 or more>>>>>>>>>>>>>>>>>	**$13,000, plus $4 per $10,000 of ECC in excess of $7,500,000**

CHECKLIST

Checklist for Site Plan Review		
	Provided	**Waived**
A Site Plan Review Application & Checklist	X	
B Fee (Certified Check)	X	
C Certified Abutters List	X	
D Project Narrative and Impact Statement	X	
1 Municipal Services	X	
2 Hours of Operation	X	
3 Landscaping & Lighting	X	
4 Traffic & Parking	X	
5 Trash Removal & Hazardous Materials Storage	X	
6 Resource Areas - Wetlands/Rivers/Floodplains/Habitats	X	
7 Construction Impacts & Anticipated Schedule	X	
E Plain White Envelopes Labeled with Abutters' Addresses (no return address)	X	
F Locus Plan (at 1"=400', or larger if necessary to show clarity, showing relation of property to surrounding area & zoning)	X	
G Existing Conditions Plan (Stamped by PLS or PE)	X	
1 Grading at 2' Contour Intervals	X	
2 Drainage	X	
3 Utilities	X	
4 Landscaping & Vegetation	X	
5 Impervious Surfaces	X	
6 Structures	X	
7 Resource Areas - Wetlands/Rivers/Floodplains/Habitats	N/A	
8 Ownership of Direct Abutters	X	
H Proposed Site Layout Plan (Stamped by PLS or PE)	X	
1 Lot Boundary (metes & bounds)	X	
2 Resource Area(s) & Buffer Delineations	X	
3 Structures & Setbacks (including Zoning Compliance Table)	X	
4 Access Drives/Driveway Aprons/Connections to Streets	X	
5 Parking/Loading (including Parking Compliance Calc.)	X	
6 Fencing (including detail)	N/A	
7 Walls (including detail)	N/A	
8 Walkways (including detail)	X	
9 Outdoor Lighting (including specification)	X	
10 Trash Receptacle (including enclosure or screening)	N/A	
11 Signage (including dimensioned details)	X	
I Grading and Drainage Plan (Stamped by PLS or PE)	X	
1 2' Contour Intervals with Spot Grades as Necessary	X	
2 Stormwater Management Structures & Features	X	
3 Resource Area(s) & Buffer Delineations	N/A	
4 Limit of Work Delineation	X	
5 Erosion Control(s)	X	
J Utility Plan (Stamped by PLS or PE)	X	
1 Sewer	X	
2 Water	X	
3 Hydrants/Fire Alarm	X	
4 Electric, Telephone, Cable	X	

Checklist for Site Plan Review		
	Provided	**Waived**
K Architectural Plans (Stamped by Registered Architect)	X	
1 Floor Plans (with dimensions)	X	
2 Elevations (with dimensions)	X	
3 Color Rendering	X	
L Landscape Plan (Stamped by PLS or PE)	X	
1 Limit of Work Delineation	X	
2 Existing Vegetation Proposed to be Saved and/or Removed	X	
3 Plant List with Key to Plan	X	
4 Screening & Street Trees	X	
5 Impervious Surfaces & Parking Areas	X	
6 Resource Area(s) & Buffer Delineations	X	
7 Snow Storage Areas	X	
8 Open Space and/or Recreation Areas	X	
9 Stormwater Features – Detention/Retention Areas, LID	X	
M Photometric Plan	X	
1 Location(s) and Specification(s) for Outdoor Lighting 2 (free-standing and building-mounted)	X	
3 Predicted Lighting Levels Based on Proposed Fixtures	X	
4 Detail Sheet	X	
N Construction Details (Stamped by PLS or PE)	X	
1 Roadway/Driveway Apron Profiles/Cross Sections	X	
O Drainage Calculations (per MassDEP Stormwater Regulations)	X	
P Stormwater Pollution Prevention Plan (SWPPP) (for site disturbance > 1 acre, in compliance with NPDES)	N/A	
Q Traffic Study	X	

PROJECT NARRATIVE

Project Narrative & Impact Statement:

The subject site is comprised of two (2) parcels. 431 Main Street (Assessors Map 17 Lot 63) is located within the Business B District with an area of approximately 0.37 acres. This lot is currently an active fueling station and auto care center. 167 Washington Street (Assessors Map 17 Lot 65) is located within the Single Family 15 District and has an area of approximately 0.23 acres. This is currently a vacant lot with that is being used for miscellaneous storage. A quick serve restaurant exists to the south of this site, auto repair to the north, office/retail to the west and residential to the east.

The applicant proposes to construct a ±3,300 square feet Chase Bank on the lot of 431 Main Street along with associated parking, walkways, landscaping, and utility connections. All the proposed bank improvements will be located within the 431 Main Street parcel. The work being proposed on the adjacent residential parcel involves removing the existing cracked asphalt and debris. This area will be loamed and seeded.

Municipal Utility Impacts:

The demand on water & sewer for the proposed bank use will be less that the demand of the current fueling station and auto care center. The existing sewer demand is approximately 400 GPD based on Title V sewage flow criteria for a two (2) island gas station with two (2) service bays. The proposed use, based on Office Building, is approximately 248 GPD.

Stormwater runoff generated from the proposed project will also be reduced over the existing condition. Under the existing condition, stormwater generated from 431 Main Street sheet flows toward Main Street and Washington Street. The stormwater generated under the proposed condition will be collected using deep-sump catch basins for water quality improvements prior to conveying stormwater to the existing drainage system within Main Street via an existing stormwater connection from the site. Along with the water quality improvements, the total impervious coverage will be decreased by approximately 3,500 square feet which results in less stormwater being generated in all design storms. This site as proposed is considered a redevelopment and the stormwater management has been designed to the maximum extent practicable. See the included Drainage Memo for additional information.

Hours of Operation:

The hours of operation are expected to be the following:

- Monday-Friday: 9:00am – 5:00pm
- Saturday: 9:100am – 1:00pm
- Sunday: Closed

Landscaping and Lighting:

As part of this project, the landscaping will be significantly improved over the existing condition. There is very little to no vegetation for the 421 Main Street Parcel and the project proposes a total of approximately 26 deciduous and evergreen trees and approximately 149 shrubs and ornamentals ground cover. Within 167 Washington Street, there are currently a few mature trees that will remain. The existing paved areas will be removed. This parcel will be loamed and seeded in the post development condition.

Lighting will also be improved through the use of dark sky compliant, LED lighting. The project proposes two (2) pole mounted lights at a height of 20-ft along with building mounted lights along door locations and walkways. The existing roof mounted flood lights and pole lights will be removed.

Traffic & Parking:

The site currently contains two (2) full movement curb cuts along Main Street and three (3) full movement curb cuts along Washington Street. The bank project will modify two (2) of the existing curb cuts and remove the other two (2) curb cuts. The curb cuts being removed are located closest to the intersection of Main Street and Washington Street. The curb cut along Washington Street for the abutting residential parcel will remain. The two proposed curb cuts will both allow for right-in right-out turning movements.

There are a total of 15 parking spaces being proposed as part of this development, four (4) more than the minimum required by the Town of Reading Zoning Code. The site plans also indicate a proposed 12'x35' loading area within the drive-aisle. It is unlikely that a large truck will be delivering supplies to this branch location. Any deliveries, including armored transportation for cash pickups, will likely utilize an onsite parking stall.

Please also refer to the Traffic Impact Study prepared by McMahon included in the submittal package.

Trash Removal:

This location will not contain a trash enclosure. All trash removal will be handled via a private trash removal company for security reasons.

Resource Areas:

There are no resource areas located within the parcel limits.

Construction Impacts & Schedule:

All construction activities will be limited to within the parcel limits with the exception of any utility connections and street improvements.

Construction is proposed to begin early 2024 with a potential opening of Fall 2024.

ABUTTERS LISTS

TOWN OF READING

REQUEST FOR CERTIFIED ABUTTERS LIST

SUBJECT PROPERTY:

ADDRESS: 431 Main Street

Assessors' Map Number: 17 Lot Number: 63 & 65

APPLICANT/AGENT:

Name: Bohler - Tina Castelli

Address: 352 Turnpike Road, Southborough, MA 01772

Telephone: 508-480-9900 Email: tcastelli@bohlereng.com

Board or Commission for which this request is made (check all that are applicable):

Community Planning and Development Commission:

- ☑ Site Plan Review
- ☐ Special Permit
- ☐ Subdivision

Conservation Commission:

- ☐ Request for Determination
- ☐ Abbreviated Notice of Resource Area Delineation
- ☐ Notice of Intent

Zoning Board of Appeals:

- ☐ Appeal
- ☐ Special Permit
- ☐ Variance

- ☐ **Health Department**
- ☐ **Historic District Commission**
- ☐ **Historical Commission**
- ☐ **Other:** _____

Brief description of request: Abutters list request for Planning Board - Site Plan Review

Applicant/Agent Signature: _____ Date: _____

The Assessors' Office may require up to three weeks in order to process and approve this request.

Authorized Signature: _____ **Date:** 12/5/23

Must be signed by the Public Services Department

TOWN OF READING

REQUEST FOR CERTIFIED ABUTTERS LIST

SUBJECT PROPERTY:

ADDRESS: 167 Washington Street

Assessors' Map Number: 17 Lot Number: 65

APPLICANT/AGENT:

Name: Bohler - Tina Castelli

Address: 352 Turnpike Road, Southborough, MA 01772

Telephone: 508-480-9900 Email: tcastelli@bohlereng.com

Board or Commission for which this request is made (check all that are applicable):

Community Planning and Development Commission:

- ☑ Site Plan Review
- ☐ Special Permit
- ☐ Subdivision

Conservation Commission:

- ☐ Request for Determination
- ☐ Abbreviated Notice of Resource Area Delineation
- ☐ Notice of Intent

Zoning Board of Appeals:

- ☐ Appeal
- ☐ Special Permit
- ☐ Variance

- ☐ **Health Department**
- ☐ **Historic District Commission**
- ☐ **Historical Commission**
- ☐ **Other:** _____

Brief description of request: Abutters list request for Planning Board - Site Plan Review

Applicant/Agent Signature: _____ Date: _____

The Assessors' Office may require up to three weeks in order to process and approve this request.

Authorized Signature: _____ **Date:** 1/5/23

Must be signed by the Public Services Department

TOWN OF READING
16 LOWELL STREET
READING, MA 01867-2693

BOARD OF ASSESSORS
781-942-9027
FAX: 781-942-9037

ABUTTERS LIST

CERTIFICATION

FOR BOARD OF ASSESSORS

VICTOR P. SANTANIELLO, CHIEF APPRAISER **DATE**

PHILIP CANNIFF, ASSISTANT APPRAISER 1/5/2023 **DATE**

TOWN OF READING
16 LOWELL STREET
READING, MA 01867-2693

BOARD OF ASSESSORS
TEL.: 781-942-9027
FAX: 781-942-9037

July 27, 2021

To whom it may concern;

In an effort to streamline our business practices and desire to decrease turnaround time for taxpayers and other municipal departments, please be advised that effective this date, we the Board of Assessors for the Town of Reading Hereby delegate to the Town Appraiser of the Assessing Department signatory authority of all certified abutter's lists as compiled by the department.

Sincerely,

Reading Board of Assessors

Cheryl Moschella — **Cheryl Moschella**

Michael E. Golden — **Michael E. Golden**

Brendan Zarechian

BOISVERT MARCEL P ETAL TRS THE 161 ASH STREET REALTY TRUST
161 ASH STREET
READING, MA 01867

GRAY CHARLES W SUSAN GRAY
15 HERITAGE LN
LYNNFIELD, MA 01940

KROL ERIN
171 WASHINGTON ST
READING, MA 01867

413 MAIN STREET LLC
10 JEAN AVE #2
CHELMSFORD , MA 01824

CATALFAMO GARY
459 MAIN ST
READING, MA 01867

CARPENELLA MICHAEL A
46 TAMARACK RD
READING, MA 01867

MANNING GARY R DENISE E MANNING
71 GREEN ST
READING, MA 01867

JOHNSON BRUCE D ETAL GREGORY D JOHNSON ETAL
166 WASHINGTON ST
READING, MA 01867

FAULKNER BURTON F JR C/O MCDONALDS CORP 20-0015
10 JEAN AVE #2
CHELMSFORD, MA 01824

MCGILVRAY JOSEPH III DANIELA MCGILVRAY
182 WASHINGTON ST
READING, MA 01867

TOWN OF READING PARK
16 LOWELL ST
READING, MA 01867

TOWER KEITH M SUSAN M AHERN
175 WASHINGTON ST
READING, MA 01867

S & S FAB LLC
159 ASH STREET
READING, MA 01867

DAO PHUONG N NGUYEN HAI T
8 BOLTON ST
READING, MA 01867

RPB PROPERTIES INC
600 SHIRLEY ST
WINTHROP, MA 02152

BACCI CARLO TRUSTEE ASB REALTY TRUST
494 MAIN ST
READING, MA 01867

S AND S FAB LLC
159 ASH ST
READING, MA 01867

MOORE CHRISTINA S
75 GREEN ST UNIT 2
READING, MA 01867

AJM REALTY LLC
143 WASHINGTON ST
READING, MA 01867

SINGH HARMINDER KAUR RAJWINDER
174 WASHINGTON ST UNIT 1
READING, MA 01867

VAIL THOMAS R
4 BOLTON ST
READING , MA 01867

PATEL AMI K
75 GREEN ST UNIT 1
READING, MA 01867

484 MAIN STREET LLC
21 BALDWIN LANE
READING, MA 01867

SUMNER NEIL J ETAL TRUSTEES SUMNER FAMILY REV TRUST
12 BOLTON ST
READING, MA 01867

454 MAIN STREET REALTY LLC
452-454 MAIN ST
READING, MA 01867

HIRST JONATHAN D HIRST HOLLY A TE
183 WASHINGTON ST
READING, MA 01867

TORRES AXEL J VIGO OTERO CARLA D
75 GREEN ST UNIT 4
READING, MA 01867

GOODRIDGE BARBARA B ETAL LE GOODRIDGE IRREVOCABLE TRUST
20 BOLTON STREET
READING, MA 01867

RICHARDS MICHAEL F RICHARDS JUDITH A TE
50 FOREST ST
READING, MA 01867

TRAINO JENNIFER
400 MAIN ST
READING , MA 01867

AKM CORP C/O WALGREENS
P O BOX 1159
DEERFIELD, IL 60015

TD BANK ATTN: LEASE & TAX ADMIN DEPT
380 WELLINGTON ST-TOWER B-10TH FL
LONDON ONTARIO, N6A 4S4 CANADA

VOZZELLA MARIO
179 WASHINGTON ST
READING, MA 01867

BM VENTURES LLC C/O CHARLESGATE PRTY MGMT LLC
867 BOYLSTON ST 3RD FL
BOSTON, MA 02116

VINCIARELLI ANTHONY NELSON VINCIARELLI CANNATA ANDREA E
114 ASH ST
READING, MA 01867

FODERA MARIA A TRUSTEE WASHINGTONCIMA REALTY TRUST
147 SANBORN LANE
READING, MA 01867

SVENSSON ROBERT LOMBARDO PORTIA TE
176 WASHINGTON ST UNIT 2
READING, MA 01867

WASH DEPOT 1, INC C/O WASH DEPOT HOLDINGS
2400 EAST COMMERCIAL BLVD SUITE 901
FORT LAUDERDALE, FL 33308

DEPOT APARTMENTS LLC
2 IRIS COURT STE 8
ACTON, MA 01720

DEPOT APARTMENTS LLC
2 IRIS COURT STE 8
ACTON, MA 01720

DEPOT APARTMENTS LLC
2 IRIS COURT STE 8
ACTON, MA 01720

DEPOT APARTMENTS LLC
2 IRIS COURT STE 8
ACTON, MA 01720

PELEDGE JUSTIN PATRICK PELEDGE KRISTIN MARY TE
16 BOLTON ST
READING, MA 01867

DUBREUIL MATTHEW SYE KAYLEE JTROS
75 GREEN ST UNIT 3
READING, MA 01867

BOISVERT MARCEL P ETAL TRS THE 161 ASH STREET REALTY TRUST
161 ASH STREET
READING, MA 01867

GRAY`S MAIN & WASHINGTON LLC
15 HERITAGE LN
LYNNFIELD, MA 01940

KROL ERIN
171 WASHINGTON ST
READING, MA 01867

413 MAIN STREET LLC
10 JEAN AVE #2
CHELMSFORD , MA 01824

CATALFAMO GARY
459 MAIN ST
READING, MA 01867

CARPENELLA MICHAEL A
46 TAMARACK RD
READING, MA 01867

MANNING GARY R DENISE E MANNING
71 GREEN ST
READING, MA 01867

JOHNSON BRUCE D ETAL GREGORY D JOHNSON ETAL
166 WASHINGTON ST
READING, MA 01867

FAULKNER BURTON F JR C/O MCDONALDS CORP 20-0015
10 JEAN AVE #2
CHELMSFORD, MA 01824

NAPOLI ILLEANA
22 BOLTON ST
READING, MA 01867

MCGILVRAY JOSEPH III DANIELA MCGILVRAY
182 WASHINGTON ST
READING, MA 01867

TOWN OF READING PARK
16 LOWELL ST
READING, MA 01867

TOWER KEITH M SUSAN M AHERN
175 WASHINGTON ST
READING, MA 01867

S & S FAB LLC
159 ASH STREET
READING, MA 01867

DAO PHUONG N NGUYEN HAI T
8 BOLTON ST
READING, MA 01867

RPB PROPERTIES INC
600 SHIRLEY ST
WINTHROP, MA 02152

S AND S FAB LLC
159 ASH ST
READING, MA 01867

MOORE CHRISTINA S
75 GREEN ST UNIT 2
READING, MA 01867

WROBEL JACEK K
188 WASHINGTON ST
READING, MA 01867

SINGH HARMINDER KAUR RAJWINDER
174 WASHINGTON ST UNIT 1
READING, MA 01867

VAIL THOMAS R
4 BOLTON ST
READING , MA 01867

PATEL AMI K
75 GREEN ST UNIT 1
READING, MA 01867

484 MAIN STREET LLC
21 BALDWIN LANE
READING, MA 01867

SUMNER NEIL J ETAL TRUSTEES SUMNER FAMILY REV TRUST
12 BOLTON ST
READING, MA 01867

454 MAIN STREET REALTY LLC
452-454 MAIN ST
READING, MA 01867

HIRST JONATHAN D HIRST HOLLY A TE
183 WASHINGTON ST
READING, MA 01867

TORRES AXEL J VIGO OTERO CARLA D
75 GREEN ST UNIT 4
READING, MA 01867

GOODRIDGE BARBARA B ETAL LE GOODRIDGE IRREVOCABLE TRUST
20 BOLTON STREET
READING, MA 01867

KANTHARAJ KRITHICA HARIKA GURSHER
24 BOLTON ST
READING, MA 01867

RICHARDS MICHAEL F RICHARDS JUDITH A TE
50 FOREST ST
READING, MA 01867

TRAINO JENNIFER
400 MAIN ST
READING , MA 01867

AKM CORP C/O WALGREENS
P O BOX 1159
DEERFIELD, IL 60015

AKM CORP C/O WALGREENS CO
P O BOX 1159
DEERFIELD, IL 60015

TD BANK ATTN: LEASE & TAX ADMIN DEPT
380 WELLINGTON ST-TOWER B-10TH FL
LONDON ONTARIO, N6A 4S4 CANADA

VOZZELLA MARIO
179 WASHINGTON ST
READING, MA 01867

BM VENTURES LLC C/O CHARLESGATE PRTY MGMT LLC
867 BOYLSTON ST 3RD FL
BOSTON, MA 02116

FODERA MARIA A TRUSTEE WASHINGTONCIMA REALTY TRUST
147 SANBORN LANE
READING, MA 01867

SVENSSON ROBERT LOMBARDO PORTIA TE
176 WASHINGTON ST UNIT 2
READING, MA 01867

GARDINER NORMA E ETAL TRUSTEES NORMA E GARDINER REV TRUST
185 WASHINGTON ST
READING, MA 01867

PELEDGE JUSTIN PATRICK PELEDGE KRISTIN MARY TE
16 BOLTON ST
READING, MA 01867

DUBREUIL MATTHEW SYE KAYLEE JTROS
75 GREEN ST UNIT 3
READING, MA 01867

Waiver Requests for Plan Entitled

Proposed Plan of Lots
45 Beacon Street
Prepared by
GA Consultants
March 17, 2022

Mr. Angelo Salamone is asking that certain portions of the Subdivision and the Stormwater Management Regulations be waived so that the proposed two unit project can be approved without excessive costs and time delays. Specifically, Mr. Salamone is asking the following subsections of **Section 7.0 Design Standards** of the Subdivision Regulations be waived

7.1.1 Width and Grade of Ways

7.1.3 Street Cross Section

7.1.5 Dead End Streets/Cul-de-sacs

7.1.7 Curbing

7.2 Sidewalks

Additionally, Mr. Salamone is requesting that the fees required by **Section3.6 Fees** of the Subdivision Regulations be waived, as well as Subsections **3.6.3.1** and **3.6.4**

Also included here is a request for waiver of fees required by the Stormwater Management and Erosion Control Regulations section **3 PERMIT FEES,** particularly subsection **3.1 Permit Application Fee** and subsection **3.2 Consultant Fee**

Waiver Requests from Sections Subdivision Regulations Design Standards Listed Below

Because the project as proposed consists of only two units of housing and for practical purposes the extension of Beacon Street to provide access is comparable to a driveway and a turnaround for emergency vehicles has been provided and the right of way width of Beacon Street is already laid out we ask that the following sections of the Design Standards be waived.

7.1.1 Width and Grade of Ways

a The width of street rights-of-way shall be sixty (60) feet. Cul-de-sac terminations of street rights-of-way shall consist of a right-of-way circle with a radius of sixty (60) feet, the center of which radius shall coincide with the centerline of the roadway. Where appropriate for the needs of vehicular access and public safety, the CPDC may require a greater right-of-way width or radius.

The current right of way of Beacon Street is only 40 feet and it is not possible to widen it to 60 feet and request that the right of way width be waiver to 40 feet

b Grades of all streets shall be the reasonable minimum, but not less than one percent (1%) nor more than six percent (6%) for principal streets, nor more than ten percent (10%) for minor streets. General slope of grades at all intersections shall be a maximum of two (2) % percent for a distance of at least

sixty-four (64) feet from beginning of intersection. Proposed roads shall have a slight negative grade when intersecting with existing roads at or within 50 feet of the beginning of the intersection.

Because of the steepness of the land and the existing street the 2% requirement cannot be met and the negative slope requirement cannot be met.

7.1.3 Street Cross Section

The following shall be the minimum provided for streets. The Commission may require additional lanes, widths, and other dimensions where the use requires such increases. Cross sections shall conform to Figure 1, “Typical Cross Section for a Sixty-Foot Street”, in the Appendix.

a At least a 30 foot travel way completely paved and uniformly graded from the crown of the roadway to the granite curbing at three-eighths of an inch (3/8") per foot;

b The dimensions of the roadway, curbing, tree lawns, and sidewalks shall conform to the cross section shown in Figure 1;

It is requested that the roadway width be limited to 20 feet and curbing and sidewalks be eliminated

7.1.5 Dead End Streets/Cul-de-sacs

c Those dead end ways which shall eventually carry traffic to another way shall have a temporary turning circle having an outside pavement radius of not less than forty-five (45) feet.

It is requested that the turning circle in the cul-de-sac be waived

e An island within the cul-de-sac shall be required; it shall have a maximum outside radius of twenty (20) feet.

7.1.7 Curbing

a Vertical granite curb shall be used throughout the subdivision. It shall be Type

VA-4 as defined in the 1988 Commonwealth of Massachusetts Department of

Public Works "Standard Specifications for Highways and Bridges."

b Granite curb inlets shall be provided at all catch basins.

c Granite curb corners (Type B) shall be provided at all driveways.

d Granite transition curb shall be provided at all wheelchair ramps

It is requested that curbing be waived

7.2 Sidewalks

a Sidewalks shall be constructed on both sides of the street. Bituminous concrete shall be used in all areas of Town except for the area generally bounded by Lowell, Salem, John, Washington, Willow, Summer and Prescott Streets (see figure 2, “Area Requiring Cement Concrete Sidewalks”) where cement concrete sidewalks shall be used.

It is requested that sidewalks be waived

Waiver Request of Fees listed below as Required by the Subdivision Regulations and the Stormwater Management and Erosion Control Regulations.

The waiver of fees is being requested because this project is a plan developed as a compromise with the Town to reduce a project from a previously approved ten unit project to a two unit project. The review of this two unit project can easily be done by the Engineering Department of the Town and outside consultants are not needed. While the project will incorporate appropriate Stormwater Management Practices and Erosion Control, review of such a small project by an outside consultant would place undo expenses on the proponent. This is especially true when considering that the MassDEP only requires Stormwater Best Management Practices to be applied to projects of four units or greater and only when a project is within or discharges 100 feet of a wetland resource area.

Sections of the Subdivision Regulations

3.6 Fees

Application and Inspection Fees as described below shall be payable to the Town of Reading, by certified check only, at the time of filing of a subdivision plan pursuant to these Regulations. Any application not accompanied by the appropriate fee payment at the time of application shall be considered improper and incomplete in accordance with Section 3.7. hereof. No fees are refundable in whole or in part under any circumstances**.**

3.6.3.1 In cases where no Preliminary Subdivision Plan had been filed $500.00 plus $30.00 per lot shown on the plan

3.6.4 Review Costs

In addition to all other fees and charges specified herein, if the Commission in the course of review of an application, determines in its sole and absolute discretion that review of all or any part of a proposed project by (an) outside independent consultant(s) of the Commission's sole choosing is necessary for proper evaluation of the proposed project or its possible effects on any matter of public interest under the jurisdiction of the Subdivision Control Law, then the applicant shall provide immediately to the Town, by way of the Town Planner, (a) certified check(s) payable to such consultant(s) in an amount equal to the estimated cost of the relevant services of such consultant(s). No Building Permit or Certificate of Occupancy shall be issued for said project until all such review fees that may be so imposed have been paid in full.

Sections of the Stormwater Management and Erosion Control Regulations

3 PERMIT FEES

3.1 Permit Application Fee

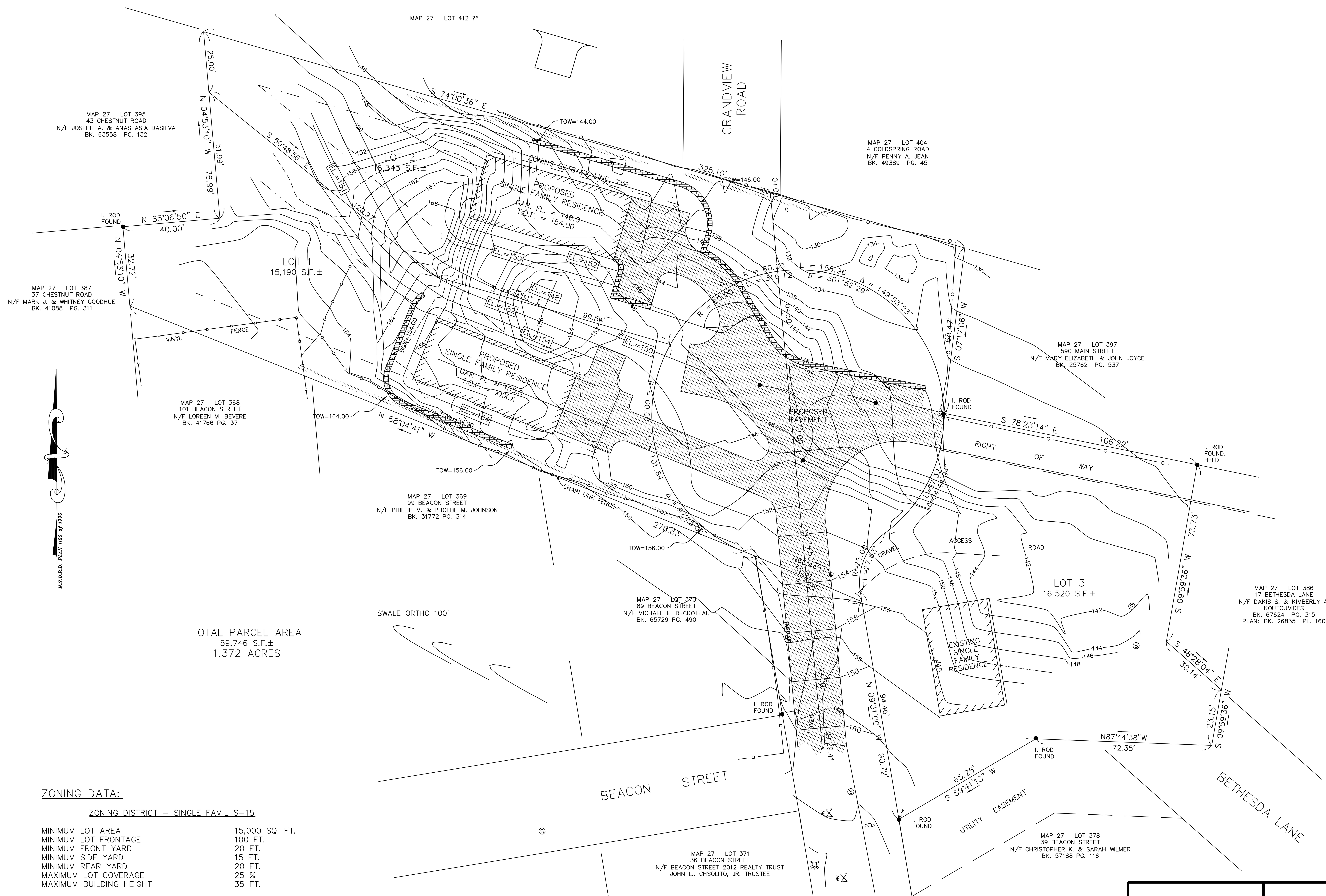
3.1.1 Each Application shall be accompanied by the appropriate Permit Application Fee as set forth in the Stormwater Permit Fee Schedule promulgated by the CPDC. The Permit Application Fee is non-refundable.

3.2 Consultant Fee

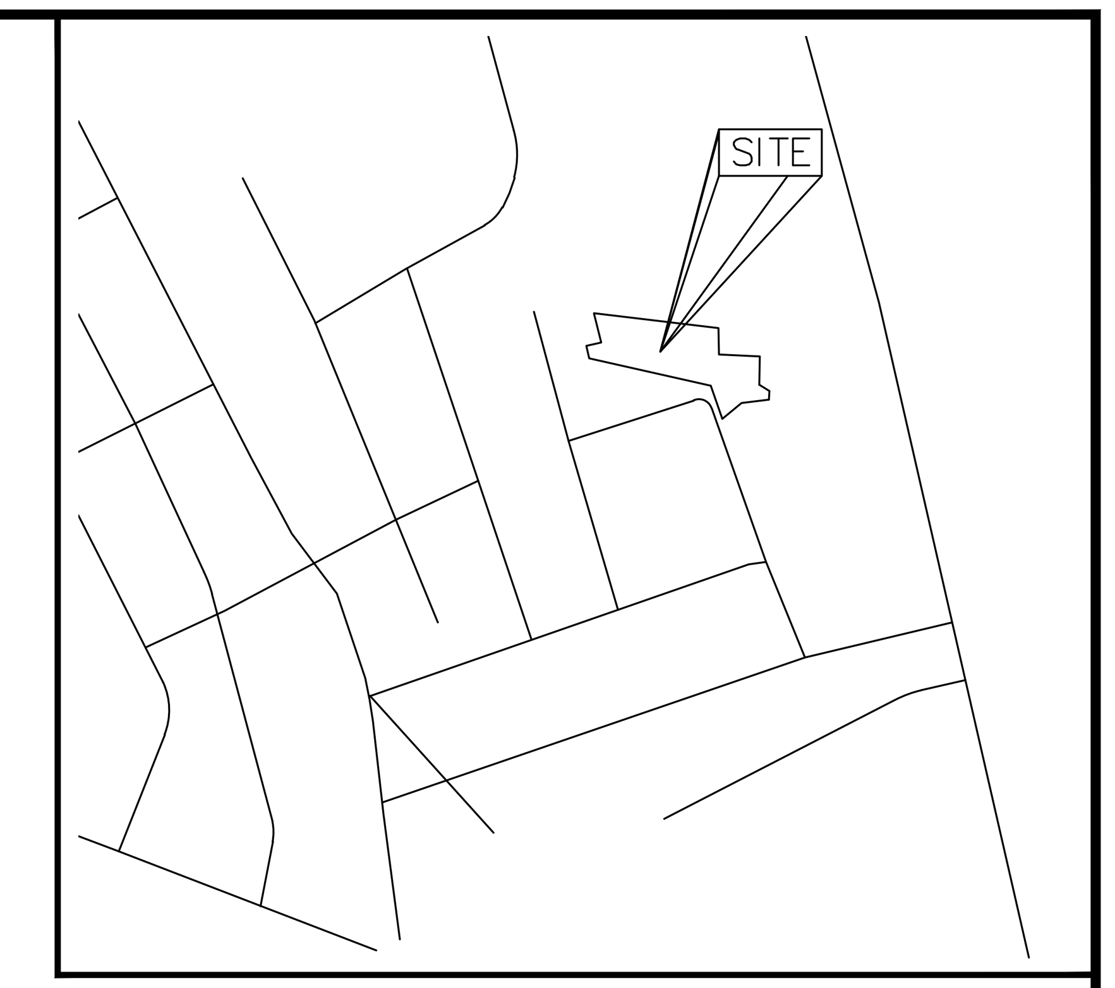
3.2.1 Pursuant to Section 7.9.5.6 of the Bylaw and Chapter 44, Section 53G of the Massachusetts General Laws, each Stormwater Permit Application may also be subject to a Consultant Fee, which will be determined after an administratively complete Application is received by the Planning Division.

3.2.2 Determination of Need for Consultant Review, Selection of Consultant and Determination of Initial Consultant Fee

It is requested that as part of the settlement all fees and the requirement of an outside consultant be waived



MAP 27 LOT 412 ??
MAP 27 LOT 395
43 CHESTNUT ROAD
N/F JOSEPH A. & ANASTASIA DASILVA
BK. 63558 PG. 132
MAP 27 LOT 387
37 CHESTNUT ROAD
N/F MARK J. & WHITNEY GOODHUE
BK. 41088 PG. 311
MAP 27 LOT 368
101 BEACON STREET
N/F LOREEN M. BEVERE
BK. 41766 PG. 37
MAP 27 LOT 369
99 BEACON STREET
N/F PHILLIP M. & PHOEBE M. JOHNSON
BK. 31772 PG. 314
MAP 27 LOT 370
89 BEACON STREET
N/F MICHAEL E. DECROTEAU
BK. 65729 PG. 490
MAP 27 LOT 371
36 BEACON STREET
N/F BEACON STREET 2012 REALTY TRUST
JOHN L. CHSOLITO, JR. TRUSTEE
MAP 27 LOT 404
4 COLDSPRING ROAD
N/F PENNY A. JEAN
BK. 49389 PG. 45
MAP 27 LOT 397
590 MAIN STREET
N/F MARY ELIZABETH & JOHN JOYCE
BK. 25762 PG. 537
MAP 27 LOT 386
17 BETHESDA LANE
N/F DAKIS S. & KIMBERLY A. KOUTOUVIDES
BK. 67624 PG. 315
PLAN: BK. 26835 PL. 160
MAP 27 LOT 378
39 BEACON STREET
N/F CHRISTOPHER K. & SARAH WILMER
BK. 57188 PG. 116
GRANDVIEW ROAD
BEACON STREET
BETHESDA LANE
LOT 1
15,190 S.F.±
LOT 2
16,343 S.F.±
LOT 3
16,520 S.F.±
PROPOSED SINGLE FAMILY RESIDENCE
GAR. FL. = 146.0
T.O.F. = 154.00
PROPOSED SINGLE FAMILY RESIDENCE
GAR. FL. = 155.0
T.O.F. = XXX.X
EXISTING SINGLE FAMILY RESIDENCE
#45
PROPOSED PAVEMENT
ZONING SETBACK LINE, TYP.
RIGHT OF WAY
ACCESS ROAD
GRAVEL
UTILITY EASEMENT
CHAIN LINK FENCE
VINYL FENCE
SWALE ORTHO 100'
TOTAL PARCEL AREA
59,746 S.F.±
1.372 ACRES
I. ROD FOUND
I. ROD FOUND, HELD
TOW=144.00
TOW=146.00
TOW=164.00
TOW=156.00
S 74°00'36" E
325.10'
N 04°53'10" W
76.99'
25.00'
51.99'
N 85°06'50" E
40.00'
N 04°53'10" W
32.72'
S 50°48'56" E
120.97'
N 68°04'41" W
276.83'
S 78°23'14" E
106.22'
S 07°17'06" W
68.47'
S 09°59'36" W
73.73'
S 48°28'04" E
30.14'
S 09°59'36" W
23.15'
N87°44'38"W
72.35'
S 59°41'13" W
65.25'
N 09°31'00" W
94.46'
90.72'
R = 60.00
L = 316.12
Δ = 301°52'29"
L = 156.96
Δ = 149°53'23"
L = 101.84
R = 25.00'
M.S.D.R.D. PLAN 1180 of 1996



VICINITY PLAN

SCALE: 1" = 500'

ZONING DATA:

ZONING DISTRICT – SINGLE FAMIL S-15

MINIMUM LOT AREA	15,000 SQ. FT.
MINIMUM LOT FRONTAGE	100 FT.
MINIMUM FRONT YARD	20 FT.
MINIMUM SIDE YARD	15 FT.
MINIMUM REAR YARD	20 FT.
MAXIMUM LOT COVERAGE	25 %
MAXIMUM BUILDING HEIGHT	35 FT.

SITE PLAN

SCALE: 1" = 20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DATE: 10/13/22

PROPOSED PLAN OF LOTS

ASSESSOR'S MAP 27, LOT 411
45 BEACON STREET
READING, MASSACHUSETTS

OWNER & APPLICANT:
ANGELO SALAMONE
45 BEACON STREET, READING MA MA 01867

GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS
10 STATE STREET, NEWBURYPORT, MA 01950 TEL. 978-502-5197

TOWN OF READING MASSACHUSETTS
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION
APPLICATION FOR SUBDIVISION APPROVAL
Form B

Pursuant to the Rules and Regulations Governing the Subdivision of Land in Reading Massachusetts:

__X__ Preliminary Subdivision Plan (Section 5.0)
_____ Resubmission of Preliminary Subdivision Plan
_____ Definitive Subdivision Plan (Section 6.0)
_____ Resubmission of Definitive Subdivision Plan
_____ Modification to a Previously Approved Definitive Subdivision Plan

==========

Location of Subject Property:

Address: Annette Lane

Assessors' plat and lot number: 38-139

Deed of property is recorded in the Middlesex South Registry

in Book 30698 on page 582

List of Names, Addresses, and telephone numbers of the following:

Applicant:
Peter Seibold
437 Summer Avenue
Reading, MA

__X__ Owner of the Subject Property
_____ Written evidence is attached whereby the owner has given the applicant authority to make this application

Applicant's Attorney:

Applicant's Surveyor:
James J. Abely
17 Salem Street
Medford, MA 02155
781-933-3330

Applicant's Architect:

Applicant's Engineer:
James J. Abely
17 Salem Street
Medford, MA 02155
781-933-3330

List of local permits and approvals required for this project; indicate which have been applied for and if so which have been already received:

Permit:	Date Applied for:	Date Received:

Waiver Requests:
The applicant hereby requests CPDC to consider the following waivers from the Rules and Regulations Governing the Subdivision of Land in Reading:

Section:	Nature of Requested Waiver:
6.1.1(d)(3)	Traffic Study
6.1.1(d)(5)	Test Borings
6.1.1(c)(3)	Road Profile
6.1.1.4	Environmental Impact Report
7.1.7	Curbing
7.1.8	Monuments
7.1.11	Street Lighting
7.1.1(a)	Roadway Width
7.2	Sidewalks
7.6.1	Street Trees
8.0	Construction of Ways

Note: Attach additional letter-size pages as necessary to complete any above item

Previous Preliminary Plan:
A Preliminary Plan similar to that shown herewith was _____ or was not X submitted; if so an approval _____ or disapproval _____ was granted on (date) _____

Certification of Conservation Applicability:
The Subject Property does not _____ or, does x contain wetlands
A Wetlands Resource Delineation has not been issued _____ or has been issued X by the Conservation Commission on (date) 11/13/2019
Conservation Administrator: _____ Date: _____
Signature

Application Fee:

$ 170 Preliminary Application Fee
$ _____ Definitive Application Fee, where no Preliminary Application was filed or Resubmission Fee
$ _____ Definitive Application Fee, where a Preliminary Application was filed or Resubmission Fee
$ _____ Inspection Fee

$ 170 Total

Certifications:

1 The undersigned hereby certifies:

a That the applicant has submitted sixteen complete copies of this application and all attachments have been enclosed each in one envelope, have been delivered to the Community Development Department, and have been marked, all as stipulated in Section 3.5.1.2 paragraphs a through f of the Rules and Regulations Governing the Subdivision of Land in Reading.

b That the applicant has complied with the stipulations contained in Sections 3.5.2 3.5.3 and 3.5.4 of the Rules and Regulations Governing the Subdivision of Land in Reading.

2 That the applicant understands and agrees:

a That in addition to all other fees and charges specified herein, if the Commission in the course of review of an application, determines at its sole and absolute discretion that review of all or any part of a proposed project by (an) outside independent consultant(s) of the Commission's sole choosing is necessary for proper evaluation of the proposed project or its possible effects on any matter of public interest, then the applicant shall provide immediately to the Town, by way of the Town Planner, (a) certified check(s) payable to such consultant(s) in an amount equal to the estimated cost of the relevant services of such consultant(s), and that no Building Permit or Certificate of Occupancy shall be issued for said project until all such fees that may be so imposed have been paid in full.

b That before CPDC may act on an application filed pursuant to these Regulations, CPDC or the Town Planner shall first determine whether the application is complete and properly submitted; that in order for an application to be considered by CPDC to be complete and properly submitted, the provisions of the submission requirements and the plan form and contents requirements contained herein shall be fully complied with; and that if an application is determined not to be complete or not to be a proper submittal, it shall be denied without need of a public hearing;

c That if additional material as required herein or a request for a waiver is submitted after the original date of filing of the application, it shall not be considered by CPDC as part of the application nor shall it be considered as material perfecting the completeness of the application, unless it is accompanied by Form D, filed with CPDC and the Town Clerk, signed by the applicant agreeing and acknowledging that the date of submission of such additional material shall supersede the original date of filing for purposes of determining the date by which CPDC must take action and make notification thereof with respect to the application.

Applicant's Signature: _____ Date: 1/5/2023

==========

This Application is authorized for filing with the Town Clerk:

CPDC: _____ Date: _____
Director of Community Development

TOWN OF READING MASSACHUSETTS
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION
REQUEST FOR CERTIFIED ABUTTERS LIST
Form C

Subject Property:
Address: 0 Annette Lane
Assessors' Map: 38 Lot(s): 139

Applicant:
Name: Peter Seibold
Address: 437 Summer Avenue, Reading, MA

Telephone: 978-375-7326

Board or Commission for which this request is made (check all that are applicable):

_____ Zoning Board of Appeals:
_____ Variance
_____ Special Permit
_____ Appeal

X Community Planning and Development Commission:
_____ Site Plan Review
_____ Special Permit
X Subdivision

_____ Conservation Commission:
_____ Request for Determination
_____ Notice of Intent

Applicant's Signature: [signature]
Date: 1/5/2023

NOTE: The Assessors' Office will need three weeks in order to process and approve this request

==========

Request Authorized:

Signature: _____ Date: _____
Director of Community Development

Vineyard Engineering & Environmental Services, Inc.
Land Survey, Civil Engineering and Environmental Services
Offices in Medford and Vineyard Haven, Massachusetts
www.vineyardeng.com

January 5, 2023

Julie Mercier, Community Development Director
Planning Division
Town of Reading, MA 01867

RE: Requested Waivers – Preliminary Subdivision
Proposed Development of 0 Annette Lane, Reading, MA
Tax Map 38 Parcel 139

Dear Ms. Mercier,

On behalf of Mr. Peter Seibold (the Applicant), Vineyard Engineering & Environmental Services, Inc. (Vineyard) of Medford, Massachusetts is submitting the following list of Waivers for development of the property at 0 Annette Lane in Reading, Massachusetts (Tax Map 38 Parcel 139). The property is identified as Parcel 139 on The Town of Reading Assessor's Map 38. As shown on plans prepared by Vineyard, the property is a vacant lot located at the western end of Annette Lane. Proposed development includes subdivision of the existing parcel to create a lot for construction of a single-family home and a second lot for the extension of the layout of Annette Lane to create the required amount of lot frontage. As part of the development, the Applicant is requesting waivers from the Town of Reading Subdivision Rules and Regulations.

REQUESTED WAIVERS

From the Town of Reading Subdivision Rules & Regulation:

1. Section 5.1.1 (b)(8) Requires topography be shown with 100 feet of locus. The applicant requests that the topography be limited to the site locus and Annette Lane at the roadway as the topography on the properties will not significantly change.

2. Section 6.1.1.(c)(3) Requires existing and proposed profile of the roadway. The applicant is proposing to extend the paved roadway of Annette Lane by 30 feet. Due to the limited scope of the project and because the remainder of the road will remain a paper road, the Applicant requests a Waiver of the requirement.

3. Section 6.1.1.d.3 Requires a full traffic report/study. Due to the limited scope of the project and the increase in traffic to the area from one additional home, the Applicant requests relief from the requirement to provide a traffic study.

17 Salem Street
Medford, MA 02155
Phone: 781.933.3330
Fax: 781.933.3334

Martha's Vineyard
P.O. Box 458
Tisbury, MA 02568
508.687.9437

4. Section 6.1.1.4 Requires an environmental impact report. Due to the limited scope of the project and the minimal impact from one additional home on Town resources, the Applicant requests relief from the requirement to provide an environmental impact report.

5. Section 6.1.1.d.5 Requires test borings be completed to determine that materials are suitable for roadway construction. The development proposes extending the paved roadway of Annette Lane by 30 feet. Accordingly, the Applicant requests relief from the requirement for soils determination for the roadway.

6. Section 7.1.7 Requires granite curbing be installed. Due to the limited scope of the project and the absence of existing curbing on Annette Lane, the Applicant requests a Waiver of the requirement.

7. Section 7.1.8 Requires the installation of granite monuments. granite curbing be installed. Due to the limited scope of the project and because the remainder of the road will remain a paper road, the Applicant requests a Waiver of the requirement.

8. Section 7.1.1 Requires installation of bituminous concrete. Due to the limited scope of the project and the paved right of way will only be extended approximately 30 feet, the Applicant requests a Waiver of the requirement.

9. Section 7.1.1(a) Requires a right of way of width of 60 feet. The existing layout of Annette Lane is 50 feet wide. As such, the applicant is requesting relief from this requirement to extend the layout of Annette Lane at the existing 50-foot width.

10. Section 7.1.11 Requires Street lighting. Due to the limited scope of the project and the paved right of way will only be extended approximately 30 feet, the Applicant requests a Waiver of the requirement.

11. Section 7.6.1 Requires installation of bituminous concrete. The existing layout of Annette Lane is 50 feet wide. As such, the applicant is requesting relief from this requirement to extend the layout of Annette Lane at the existing 50-foot width.

12. Section 8.0 Requires construction of a way. Due to the limited scope of the project and the presence of wetlands in the area in which a way would be constructed, the Applicant requests a Waiver of the requirement.

If you have any questions, please feel free to contact this office.

Sincerely.

Andrew C. Pandolph
President
Vineyard Engineering and Environmental Services Inc

17 Salem Street
Medford, MA 02155
Phone: 781.933.3330
Fax: 781.933.3334

Martha's Vineyard
P.O. Box 458
Tisbury, MA 02568
508.687.9437

TOWN OF READING MASSACHUSETTS
COMMUNITY PLANNING AND DEVELOPMENT COMMISSION
DESIGNER'S CERTIFICATE
Form G

Date: 1/5/2023

To the Community Planning and Development Commission:

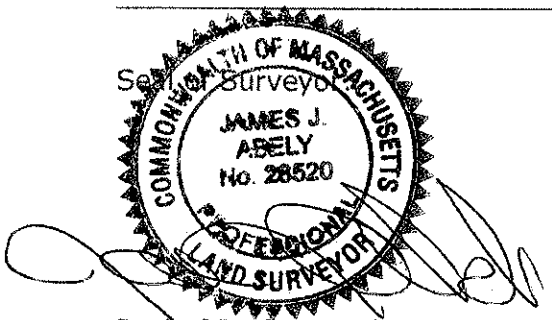
In preparing the plan entitled Preliminary Subdivision Plan
and dated January 3, 2023, I hereby certify that the above named plan and accompanying data is true and correct, to the accuracy required by the current Rules and Regulations Governing the Subdivision of Land in Reading, Massachusetts, and required by the Rules of the Massachusetts Registry of Deeds and my source of information about the location of boundaries shown on said plan were one or more of the following:

1 Deed from James Pacy Jr. to Peter Seibold
dated 9/27/1999 and recorded in the Middlesex South Registry of Deeds Book 30698, Page 582

2 Actual measures on the ground from a starting point established by
Stone bound drill hole at the intersection of Annette Lane and Martin Road.

3 Other deeds, plans and / or sources as follows:
Plan No. 1478 of 1985
Plan No. 640 of 1967

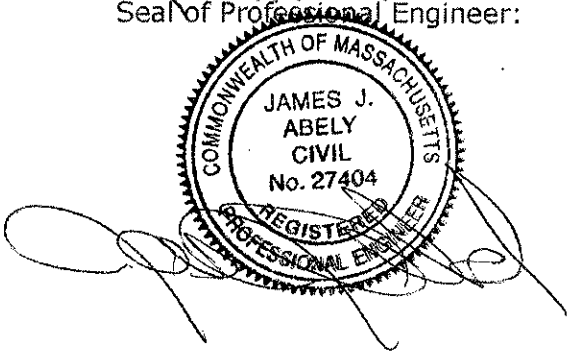
Seal of Surveyor:



Signed:
Name and Address:

James J. Abely
17 Salem Street
Medford, MA 02155
Phone: 781-933-3330

Seal of Professional Engineer:



Signed:
Name and Address:

James J. Abely
17 Salem Street
Medford, MA 02155
Phone: 781-933-3330

PRELIMINARY SUBDIVISION

ANNETTE LANE

READING, MASSACHUSETTS

PREPARED FOR:

PETER SEIBOLD

PREPARED BY:

Vineyard Engineering & Environmental Services Inc.

Land Survey, Civil Engineering & Environmental Services
17 SALEM STREET, MEDFORD MA 02155
Tel. 781.933.3330 Fax: 781.933.3334

Vineyardeng.com

GENERAL NOTES:

CONTRACTOR SHALL COORDINATE WITH THE READING PLANNING BOARD ON ALL REQUIREMENTS FOR SITE INSPECTIONS, AS-BUILT DRAWINGS, AND FEE PAYMENT PRIOR TO CONSTRUCTION.

CONTRACTOR SHALL MAINTAIN EROSION CONTROLS THROUGHOUT CONSTRUCTION AND REPAIR OR REPLACE EROSION CONTROLS AS MAY BE REQUIRED BY THE INSPECTION ENGINEER, READING PLANNING BOARD, OR READING D.P.W.

CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY PROVIDERS REGARDING INSTALLATION REQUIREMENTS FOR GAS, WATER, ELECTRIC, AND TELEPHONE.

REFERENCES

OWNER OF RECORD

PETER SEIBOLD
437 SUMMER AVENUE, READING, MA
DEED BOOK 30698 PAGE 582 M.S.R.D.

ZONING DISTRICT

TAX MAP 38 PARCEL 139
S-20 DISTRICT

PLAN REFERENCES

PLAN NO. 1478 OF 1985
PLAN NO. 640 OF 1967

NOTES:

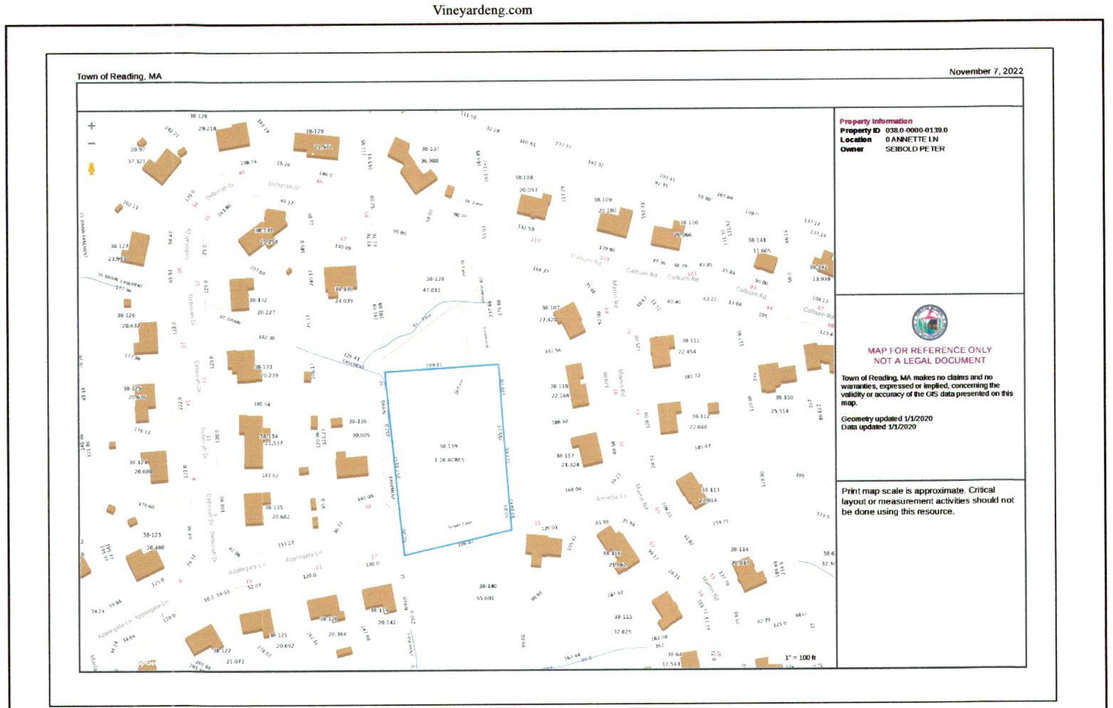
1. THE SUBJECT PROPERTY IS LOCATED IN ZONING DISTRICT S20.
2. THIS PLAN DOES NOT SHOW ANY UNWRITTEN OR UNRECORDED EASEMENTS WHICH MAY EXIST. A REASONABLE AND DILIGENT ATTEMPT HAS BEEN MADE TO OBSERVE ANY APPARENT, VISIBLE USES OF THE LAND; HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
3. ABUTTERS REFERENCES WERE COMPILED FROM AVAILABLE TOWN RECORDS AND DO NOT INDICATE AN OPINION OF TITLE OR OWNERSHIP.

ABBREVIATED SCHEDULE OF ZONING REQUIREMENTS

ASSESSOR'S MAP 38 PARCEL 139

- ZONING DISTRICT: S20
- REQUIRED LOT FRONTAGE = 120'
- REQUIRED SETBACKS
  FRONT= 20' SIDE= 15' REAR= 20'

INDEX OF SHEETS



LOCATION PLAN

SCALE: 1"=100'

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.

JAMES J. ABELY

COMMONWEALTH OF MASSACHUSETTS
JAMES J. ABELY
P.L.S.
No. 28520
PROFESSIONAL
LAND SURVEYOR

02/22/23
DATE

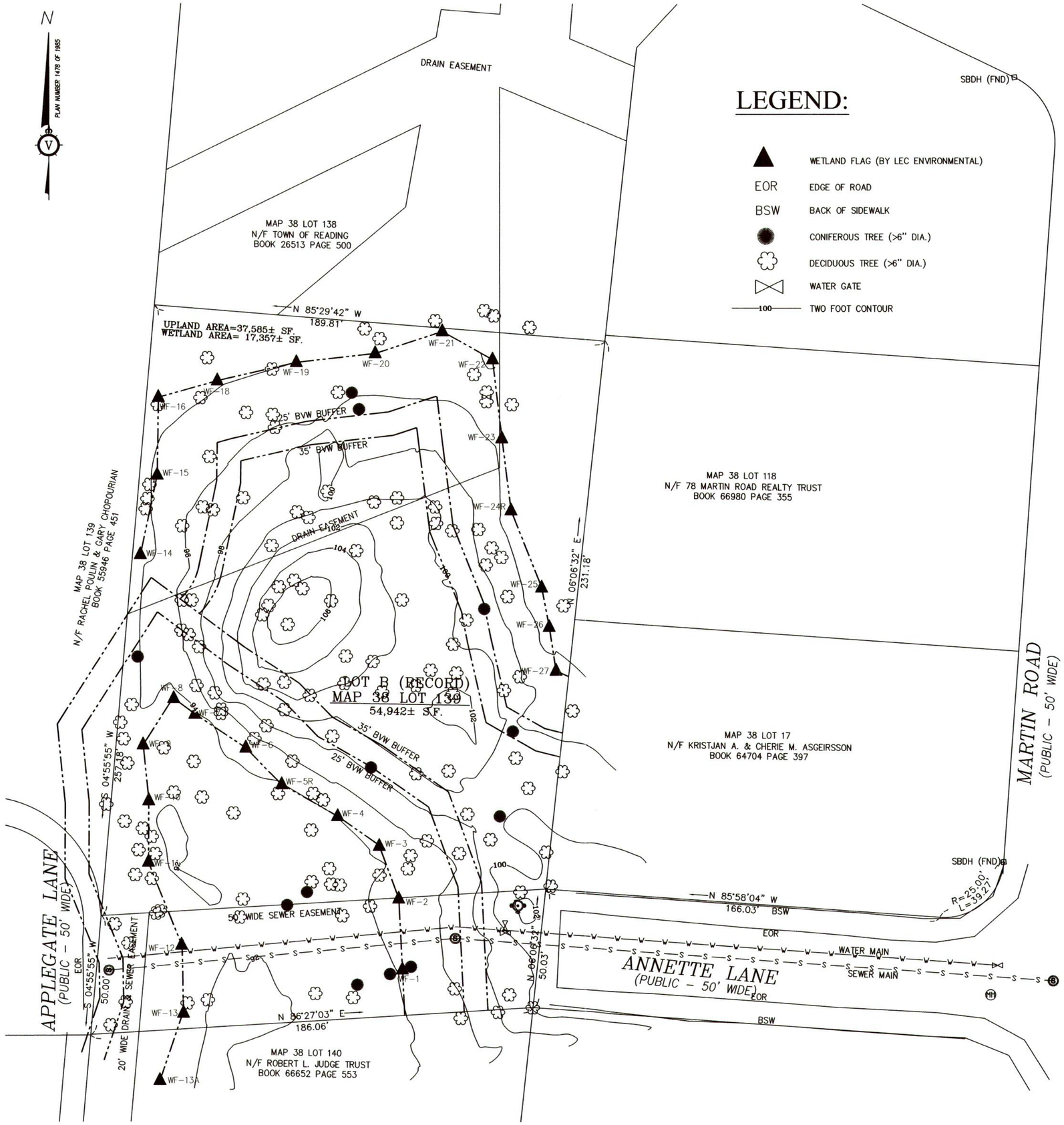
NOTE

EXISTING UTILITIES SHOWN ON THESE PLANS ARE COMPILED FROM RECORD INFORMATION AND APPROXIMATE FIELD LOCATION AND THEREFORE, ARE NOT CERTIFIED FOR CONSTRUCTION. PRIOR TO EXCAVATION OR CONSTRUCTION, THE CONTRACTOR MUST NOTIFY "DIGSAFE" (1-888-344-7233) SEVENTY-TWO HOURS BEFORE COMMENCING WORK.

DATE: 2/20/2023

SHEET 1 OF 4

PROJECT No. 3097 SURV



LEGEND:

- ▲ WETLAND FLAG (BY LEC ENVIRONMENTAL)
- EOR EDGE OF ROAD
- BSW BACK OF SIDEWALK
- CONIFEROUS TREE (>6" DIA.)
- DECIDUOUS TREE (>6" DIA.)
- WATER GATE
- 100 TWO FOOT CONTOUR

ZONING TABLE		
S-20 DISTRICT	REQUIRED	EXISTING
LOT SIZE	20,000 SQ. FT.	54,942± SQ. FT.
FRONTAGE	120.00'	50.03'
MINIMUM LOT WIDTH	80.00'	186.06'
MINIMUM FRONT SETBACK	20.0'	---
MINIMUM SIDE SETBACK	15.0'	---
MINIMUM REAR SETBACK	20.0'	---
MAX. LOT COVERAGE	25%	---
HEIGHT	35'	---
WETLAND AREA		17,357 SQ. FT.
UPLAND AREA		37,585 SQ. FT.

OWNER OF RECORD

PETER SEIBOLD
437 SUMMER AVENUE, READING, MA
DEED BOOK 30698 PAGE 582 M.S.R.D.

ZONING DISTRICT

TAX MAP 38 PARCEL 139
S-20 DISTRICT

PLAN REFERENCES

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PLAN NO. 640 OF 1967

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JAMES J. ABELY P.L.S. DATE 2/22/23

COMMONWEALTH OF MASSACHUSETTS
JAMES J. ABELY
NO. 28520
REGISTERED
LAND SURVEYOR

PLAN OF LAND
EXISTING CONDITIONS
ANNETTE LANE
READING, MA

SCALE 1" = 30' FEBRUARY 20, 2023
PREPARED BY

VINEYARD ENGINEERING
& ENVIRONMENTAL SERVICES INC.
LAND SURVEY, CIVIL ENGINEERING
& ENVIRONMENTAL SERVICES
17 SALEM STREET
MEDFORD MA 02155
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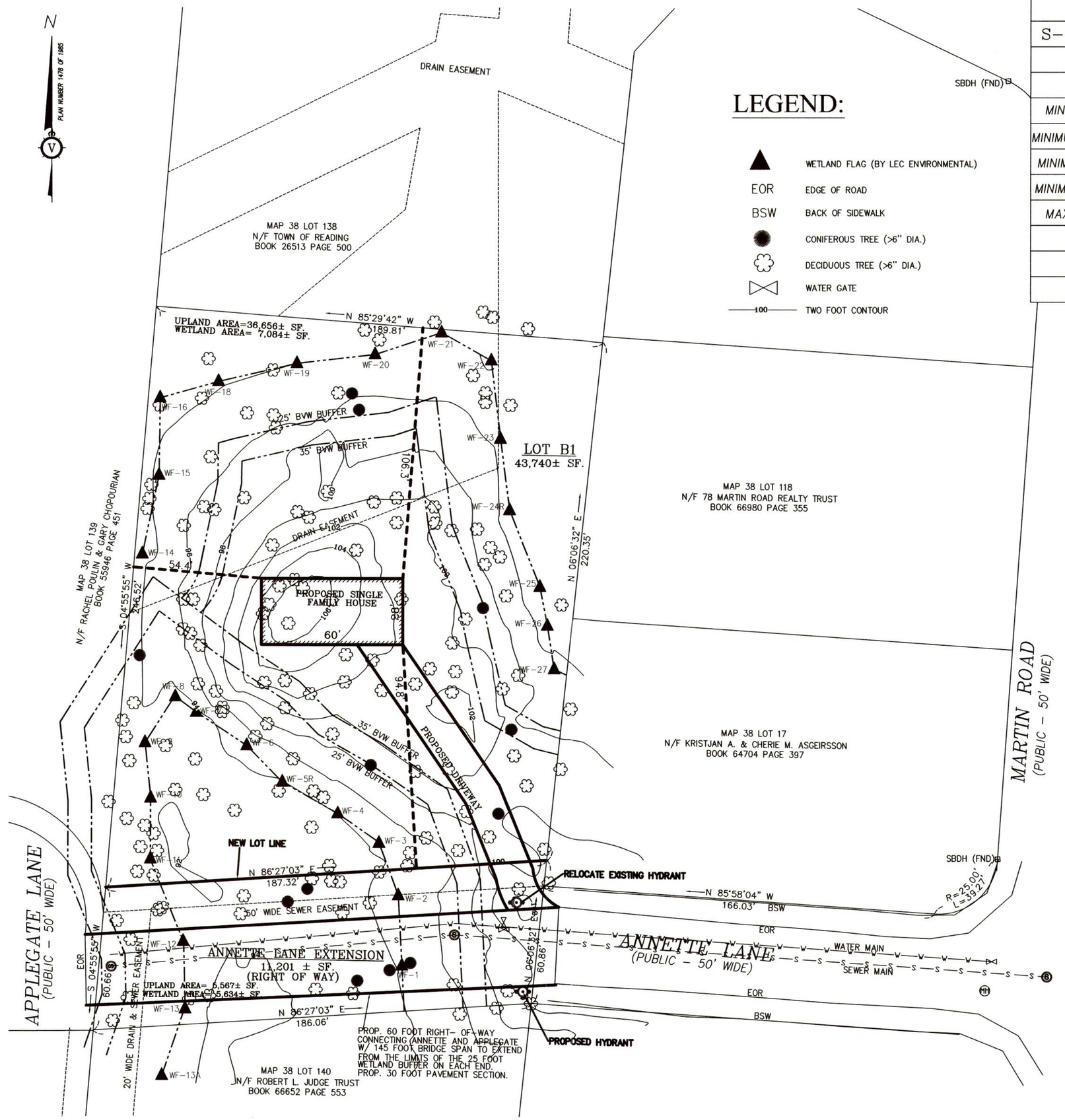
PLAN NUMBER 1478 OF 1985



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- 100 — TWO FOOT CONTOUR

ZONING TABLE

S-20 DISTRICT	REQUIRED	EXISTING	PROPOSED LOT B-1	PROPOSED ROW EXTENSION
LOT SIZE	20,000 SQ. FT.	54,942 ±SQ. FT.	43,740± SQ. FT.	11,201± SQ. FT.
FRONTAGE	120.00'	50.03'	186.06'	186.06'
MINIMUM LOT WIDTH	80.00'	186.06'	186.06'	186.06'
MINIMUM FRONT SETBACK	20.0'	---	94.8'	---
MINIMUM SIDE SETBACK	15.0'	---	54.4'	---
MINIMUM REAR SETBACK	20.0'	---	106.3	---
MAX. LOT COVERAGE	25%	---	3.8%	---
HEIGHT	35'	---	LESS THAN 35'	---
WETLAND AREA		17,357± SQ. FT.	7,084± SQ. FT.	5,634± SQ. FT.
UPLAND AREA		37,585± SQ. FT.	36,656± SQ. FT.	5,567± SQ. FT.

OWNER OF RECORD

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ZONING DISTRICT

TAX MAP 38 PARCEL 139
S-20 DISTRICT

PLAN REFERENCES

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PLAN NO. 640 OF 1967

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JAMES J. ABELY P.L.S. — DATE 2/22/23

COMMONWEALTH OF MASSACHUSETTS — JAMES J. ABELY — NO. 28520 — REGISTERED PROFESSIONAL LAND SURVEYOR

PROOF OF CONCEPT PLAN

ANNETTE LANE
READING, MA

SCALE 1" = 30' FEBRUARY 20, 2023

PREPARED BY

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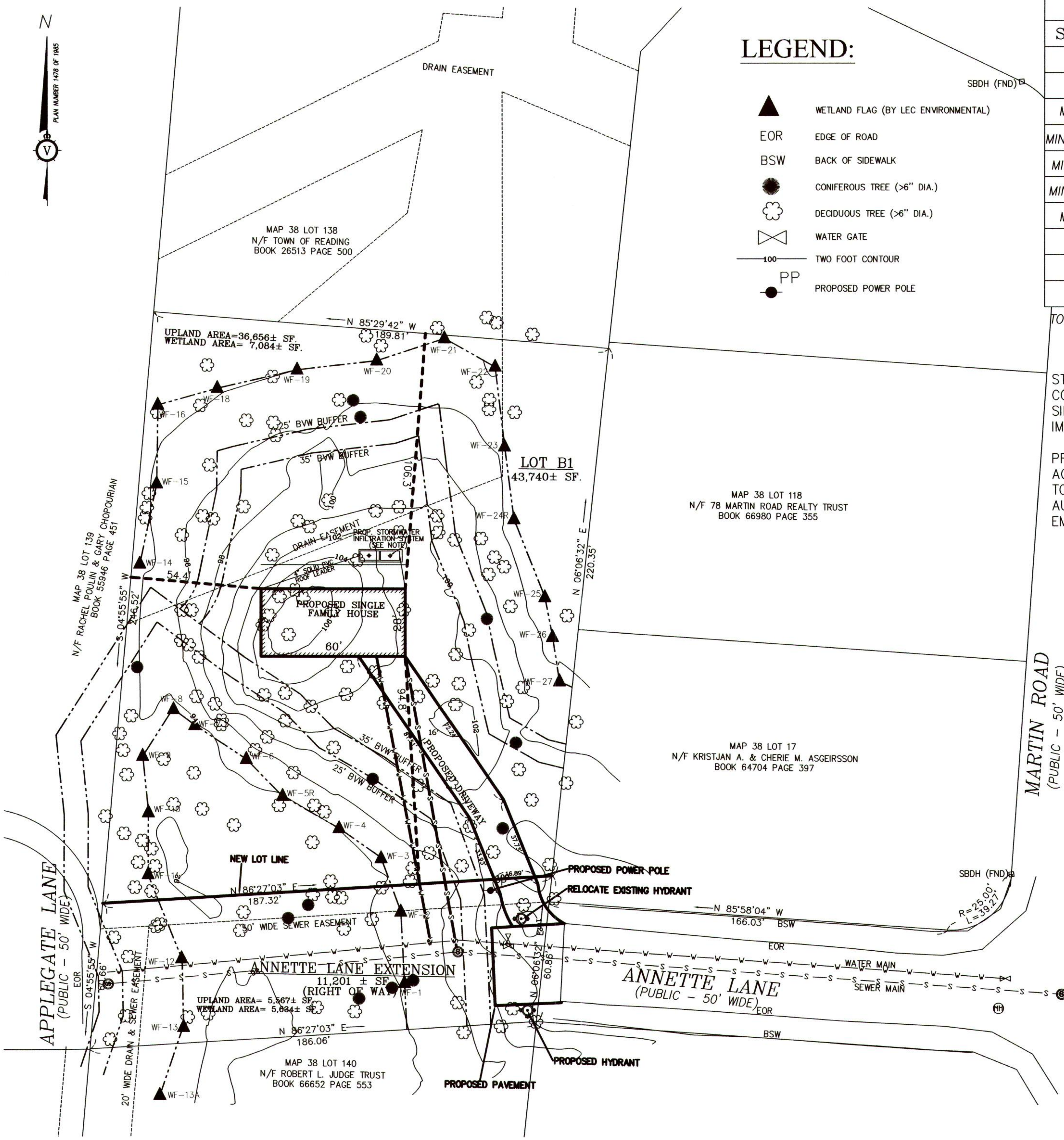

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MINIMUM SIDE SETBACK	15.0'	---	54.4'	---
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UPLAND AREA		37,585± SQ. FT.	36,656± SQ. FT.	5,567± SQ. FT.

TOTAL IMPERVIOUS AREA LOT B-1
3,407 SF/7.8%

NOTES

STORMWATER INFILTRATION SYSTEM TO CONSIST OF CULTEC 280HD CHAMBERS, OR SIMILAR, DESIGNED TO CAPTURE 100% OF IMPERVIOUS AREAS.

PROPOSED DRIVEWAY CONSTRUCTION TO MEET ACCEPTED STANDARDS IN JUDGEMENT OF THE TOWN ENGINEER TO ACCOMODATE PRIVATE AUTOMOBILES, SERVICE VEHICLES, AND EMERGENCY VEHICLES.

OWNER OF RECORD

PETER SEIBOLD
437 SUMMER AVE., READING, MA
DEED BOOK 30698 PAGE 582

ZONING DISTRICT

TAX MAP 38 PARCEL 139
S-20 DISTRICT

PLAN REFERENCES

PLAN NO. 1478 OF 1985
PLAN NO. 640 OF 1967

I HEREBY CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY.

JAMES J. ABELY P.L.S. DATE

COMMONWEALTH OF MASSACHUSETTS JAMES ABELY No. 28520 PROFESSIONAL LAND SURVEYOR

PRELIMINARY SUBDIVISION PLAN

ANNETTE LANE
READING, MA

SCALE 1" = 30' FEBRUARY 20, 2023

PREPARED BY

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& ENVIRONMENTAL SERVICES INC.
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PROJ NO. 3097 SURV SHEET 4 OF 4