Weston & Sampson℠

westonandsampson.com

55 Walkers Brook Drive, Suite 100
Reading, MA 01867
tel: 978.532.1900

REPORT

April 2025

TOWN OF
Needham
MASSACHUSETTS

DPW Complex Phase I
Fleet Maintenance Facility
Application for
Site Plan Review Special Permit

APPLICATION CONTENTS

Weston & Sampson℠

55 Walkers Brook Drive, Suite 100, Reading, MA 01867
Tel: 978.532.1900

April 15, 2025

Needham Planning Board
Public Services Administration Building
500 Dedham Avenue
Needham, MA 02492

Re: **DPW Complex Phase I Fleet Maintenance Facility: 1407 Central Avenue (Jack Cogswell Building)**
Application for Site Plan Review

Dear Members of the Needham Planning Board:

Weston & Sampson, on behalf of the Town of Needham's (Town) Department of Public Works (the Applicant), is pleased to present an application for Design Review for a new building addition to the Jack Cogswell Building (JCB) located at 1407 Central Avenue. This project stems from the 2023 DPW Master Plan, which identified deficiencies in the existing maintenance facilities at 470 Dedham Avenue, including space limitations, outdated infrastructure, and operational inefficiencies. The Town is proposing a new fleet maintenance facility adjoining the JCB, to meet its current needs.

We have attached the following materials in support of this application:

- 3 copies of the Application for Site Plan Review
- 3 copies of the Sound Study
- 3 copies of the Traffic Study
- 3 full size (30" x 42") copies of the Site Development and Planting Plans
- 3 full size (30" x 42") copies of the Architectural Plans
- 5 reduced size (11" x 17") copies of the Site Development, Planting, and Architectural Plans
- Electronic copy of the entire filing package (e-mailed to aclee@needhamma.gov)

Project Overview

The Needham Department of Public Works (DPW) has initiated a phased modernization of its facilities to improve operational efficiency, address aging infrastructure, and support the Town's long-term needs. Phase I of this initiative focuses on the design and construction of a new Fleet Maintenance Facility. The proposed project includes a new building addition of approximately 12,400 square feet, as well as the renovation of roughly 1,800 square feet within the existing storage garage to create a dedicated tire maintenance bay. The facility is designed to provide a modern, fully functional workspace for maintaining the Town's fleet of vehicles—including heavy-duty trucks and emergency response equipment—and will include maintenance bays, parts storage, administrative offices, and employee support areas. The site is anticipated to accommodate six full-time employees, with provisions for a potential seventh staff member in the future. Consistent with the Town's sustainability goals, the facility will be an all-electric building supported by geothermal heating and cooling systems and rooftop solar infrastructure.

The proposed work for the project is at the southeasterly corner of property identified as Map 308, Block 2 (the site). The site is on a parcel owned by the Town of Needham, containing approximately 76-acres of land and holds the Town's Recycling and Transfer Station (RTS), which is approximately 500-feet to the west of the JCB facility. This lot is in the Single Residence A (SRA) zoning district. Municipal uses are allowed by-right in the SRA district per the Schedule of Use Regulations in the Zoning By-Laws. The parcel abuts the northerly frontage of Central Avenue and is in the western end of the Town. Under existing conditions, the site consists of the previous JCB development and adjoining wooded areas. The westerly, northerly, and easterly extents of the project site contain bordering vegetated wetlands.

As part of the permitting process, a Notice of Intent (NOI) has been submitted for the proposed work within the 100-Foot Buffer Zone and to address stormwater management considerations associated with the development. The project site, located at the existing DPW complex, will undergo site improvements, including stormwater controls to mitigate runoff impacts while ensuring compliance with local and state environmental regulations. Additionally, best management practices (BMPs) will be implemented to protect nearby resource areas, ensuring the facility meets environmental and operational goals.

On behalf of the Applicant, Weston & Sampson respectfully requests the following relief items for the proposed site design:

- A waiver from the Planning Board is requested from Section 5.1.3(a) pertaining to the requirement of a minimum parking lot illumination level. The proposed site design does not include exterior light poles to reduce the visual impact of the project. Exterior lighting is only proposed to be provided over doorways on the new building addition. The Planning Board granted a waiver request from Section 5.1.3(a) for the JCB facility on November 20, 2018.
- A waiver from the Planning Board is requested from Section 5.1.3(k) pertaining to the requirement for landscaped areas to include trees, shrubs, flowers, and grass. The landscaped area adjacent to the proposed parking lot was originally constructed for the JCB facility as a stormwater detention basin. It is proposed to be modified in-kind and in accordance with the Massachusetts Stormwater Management Standards. However, this basin requires occasional mowing to remain accessible for regular inspections and maintenance. Additional permanent plantings such as trees, shrubs, and flowers would hinder maintenance operations. Furthermore, a significant amount portion of the proposed basin should be built directly over ledge and only hearty, shallow-rooted plantings suitable for saturated soil and partially-sunny areas (such as grasses) are compatible for planting in this basin.
- A waiver from the Planning Board is requested from Section 5.1.3(l) pertaining to the requirement of a minimum tree planting for the parking lot. The parking spaces are proposed to be screened by the existing ledge wall face and woods in front of the parking lot. The ledge faced wall is approximately fourteen-feet in grade above the proposed parking spaces and is approximately six-to-ten-feet above Central Avenue. There is approximately seventy-feet of undisturbed woods between the proposed site and the Central Avenue right-of-way. As a condition of approval from the Planning Board for the JCB facility, trees were planted adjacent to the curb cuts of the entrance driveway which provide additional screening to the facility. It is the opinion of the Applicant and Weston & Sampson that the existing site features provide sufficient screening of the proposed parking spaces to meet the intent of the By Law.
- A waiver from the Planning Board is requested from Section 5.1.3(n) pertaining to the requirement of bicycle racks. The proposed facility operates independently of the RTS facility on the parcel and is not intended to be accessed by the general public; therefore, a bicycle rack is not warranted. The Planning Board granted a waiver request from Section 5.1.3(n) for the JCB facility on November 20, 2018.

Zoning Compliance

The proposed project has been designed to be consistent with the required Review Criteria outlined in Section 7.4.6 of the Zoning By-Laws, as summarized here:

(a) The proposed facility has been carefully designed to avoid detrimental impacts to adjoining properties, specifically addressing stormwater management, visual screening, lighting, and noise control.

The project includes a comprehensive stormwater management system designed in accordance with the ten Massachusetts Stormwater Management Standards outlined in the MassDEP Stormwater Handbook. A detailed stormwater report documenting compliance with these standards has been submitted to the Conservation Commission as part of the Notice of Intent application.

To address visual impacts, the facility incorporates substantial excavation of ledge, resulting in a significant ledge-faced wall extending to approximately the height of the proposed building. This ledge-faced wall, together with existing vegetation, will effectively screen the facility from Central Avenue and adjacent residential properties.

Site lighting will be minimal, with no new pole-mounted or freestanding lighting fixtures proposed. Exterior lighting will be limited to wall-mounted fixtures above overhead doors and personnel entrances, designed to match the lighting currently in use at the existing JCB facility. All fixtures will be shielded, downward-directed, and compliant with dark-sky standards, minimizing glare and light spill onto adjoining properties.

Regarding noise impacts, the project proposes a natural gas generator located behind the building. The generator will be housed within a level 2 sound-rated enclosure and further shielded by a 10-foot-high, 20-foot-long sound barrier wall. These measures ensure that operational noise from the generator will not exceed ambient sound levels by more than 10 decibels (dB) in accordance with MassDEP noise regulation (310 CMR 7.10). Additional technical details and analyses are included in the sound study provided with this application.

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(b) The proposed fleet maintenance facility has been designed to support safe and efficient vehicular movement within the site and along adjacent streets. The facility will utilize the existing driveway curb cuts on Central Avenue and share the internal circulation patterns of the adjacent JCB facility. These driveways were originally designed and constructed to accommodate traffic associated with the Town's Recycling and Transfer Station (RTS), including regular use by large municipal vehicles. The proposed project does not modify the configuration or directional flow of any of the existing driveways. Based on current conditions and their established use by heavy vehicles, these access points appear to operate safely and effectively.

The facility will be used exclusively by Town personnel and will not be accessed by the public. As described in the attached Traffic Study Report, vehicle trips associated with the facility are expected to be minimal, and the project is anticipated to have a negligible impact on traffic volumes along Central Avenue.

While pedestrian access will be limited to Town staff, the facility has been designed to comply with all applicable accessibility requirements. Designated accessible parking and building entries will be provided to ensure safe access for employees, including those with mobility challenges.

(c) The Zoning By-Law does not identify a specific parking requirement for the proposed Central Avenue storage and fleet maintenance use. While "automotive repair" is the closest comparable use listed, that category generally applies to facilities serving the public. In contrast, the proposed facility is solely intended to maintain and store municipal fleet vehicles, with no public access. As such, the parking demand associated with an automotive repair use would significantly overstate the actual needs of the facility.

In accordance with Section 5.1.2(20) of the Zoning By-Law, when a proposed use is not specifically listed, the required number of parking spaces is to be based on the "closest similar use as shall be determined by the Building Inspector." If no similar use can be reasonably identified, the Planning Board may recommend a reasonable number of parking spaces based on the anticipated needs of occupants, employees, and visitors, supported by an alternative technical source.

To that end, the Applicant has evaluated the parking needs based on the facility's expected operations. The parking program accounts for six full-time employees, three municipal vehicles, one future employee, two visitor spaces, and up to six service appointments occurring at peak times. Based on this operational breakdown, the Applicant proposes a total of 18 parking spaces to support the storage and fleet maintenance facility. This includes general use spaces, one accessible space, and two electric vehicle charging spaces.

(d) The existing JCB facility was constructed without exterior refuse or recycling storage areas, because it would be infrequently occupied. The proposed fleet maintenance facility addition should be regularly staffed. As such, refuse and recycling containers are proposed to be provided adjacent to the facility addition. Town solid waste collection vehicles will be scheduled to collect container contents and dispose of accordingly at the neighboring RTS facility.

(e) The relationship of the proposed structure to the natural landscape, existing buildings, and surrounding community assets has been carefully considered in the site design. The proposed fleet maintenance facility is located 186.1 feet from Central Avenue at its closest point, exceeding the required 35-foot front setback, and 92.7 feet from the nearest side lot line, where a 25-foot setback is required. The facility is constrained on the north, west, and east by wetlands, which limit the ability to shift the building further in any direction. As a result, the facility has been sited as far as possible from both Central Avenue and the eastern property line. The design meets all other dimensional requirements of the SRA zoning district.

The site is surrounded by vegetation, which will be largely preserved. Tree removal will be limited to what is necessary for construction and grading. A total of 11 trees are planned to be removed within the wetland buffer zone. To mitigate this impact, the project proposes planting 22 new trees within the buffer, resulting in a 2:1 replacement ratio.

(f) This project will have no adverse impacts on the Town's resources. The proposed facility will be adjoining the JCB facility which neighbors the RTS facility on the same parcel. This site is currently developed and in active use. This project will add a new structure to the site, but use of this structure will be designated to the Town's fleet maintenance staff and will not generate any adverse impacts on the Town's resources. The Town has adequate water and sewer system capacity to serve the demands of this proposed facility.

The attached application was prepared in accordance with the standards and recommendations provided in the *Zoning By-Laws* (By-laws). If you have any questions or would like to discuss this further, please do not hesitate to contact me at (603) 263-9498.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

Tyler Cofelice

Tyler J. Cofelice, P.E.
Project Manager II

Appendix A

Needham Forms

TOWN OF NEEDHAM
MASSACHUSETTS

500 Dedham Avenue
Needham, MA 02492
781-455-7550

PLANNING BOARD

APPLICATION FOR SITE PLAN REVIEW

Project Determination: (circle one) [✓ Major Project] Minor Project

This application must be completed, signed, and submitted with the filing fee by the applicant or his representative in accordance with the Planning Board's Rules as adopted under its jurisdiction as a Special Permit Granting Authority. Section 7.4 of the By-Laws.

Location of Property 1407 Central Avenue
Name of Applicant Hank Haff - Director, Building Design and Construction Dept.
Applicant's Address 500 Dedham Avenue, Needham, MA 02492
Phone Number 781-455-7550 x72347

Applicant is: Owner X Tenant ____
Agent/Attorney ____ Purchaser ____

Property Owner's Name Town of Needham
Property Owner's Address 1471 Highland Avenue, Needham, MA 02492
Telephone Number 781-455-7550

Characteristics of Property: Lot Area 75.9 Present Use Jack Cogswell Building
Map # 308 Parcel # 2 Zoning District Single Residence A (SRA)

Description of Project for Site Plan Review under Section 7.4 of the Zoning By-Law:

Project involves construction of a new Fleet Maintenance Facility to support DPW operations. Facility is designed to provide a modern, fully functional workspace for maintaining and servicing the Town's fleet vehicles.

Please see attached cover letter and narrative for additional details.

Signature of Applicant (or representative) Hank Haff
Director of Building Design & Construction
Address if not applicant N/A
Telephone # N/A
Owner's permission if other than applicant N/A

SUMMARY OF PLANNING BOARD ACTION

Received by Planning Board ____________ Date ____________
Hearing Date ____________ Parties of Interest Notified of Public Hearing ____________
Decision Required by ____________ Decision/Notices of Decision sent ____________
Granted ____________
Denied ____________ Fee Paid ________ Fee Waived ________
Withdrawn ____________

NOTE: Reports on Minor Projects must be issues within 35 days of filing date.

Appendix B

Sound Study

CAVANAUGHTOCCI
CONSULTANTS IN ACOUSTICS, AUDIOVISUAL AND THEATER

April 11, 2025

Tyler Cofelice, PE
Weston & Sampson
150 Do Street Tower 4, Suite 350
Manchester, NH 03101

SUBJECT: Needham Fleet Maintenance Garage – Emergency Generator Environmental Sound Study

e-mail: cofelicet@wseinc.com

Dear Tyler,

We have completed a review of a proposed emergency generator sound associated with the Fleet Maintenance Garage project located on Central Avenue in Needham, MA. In order to ensure that exercising and operation of the generator will be in compliance with applicable regulations (MassDEP), ambient sound measurements of the site are required. Cavanaugh Tocci measured ambient sound levels at this site for the Recycling & Transfer Station Emergency Generator sound study in 2019. We understand the Town of Needham has approved the use of the 2019 ambient data for this project. This report discusses applicable noise regulations and presents our sound impact assessment. Appendix A presents a glossary of acoustical terminology used in this report.

Noise Regulations

The Town of Needham noise ordinance applies only to construction noise and is not applicable to sound created by this project from operation of the emergency generator.

The Commonwealth of Massachusetts Department of Environmental Protection (MassDEP) noise regulation (310 CMR 7.10) is applicable.

Commonwealth of Massachusetts Department of Environmental Protection

Commonwealth of Massachusetts requirements under 310 CMR Section 7.10 qualitatively prohibit noise under some circumstances. Interpretation is provided in the Massachusetts Department of Environmental Quality Engineering's Policy 90-001 dated February 1, 1990; and in the Department of Environmental Protection (DEP) Form BWP AQ Sound. The Massachusetts policy limits new noise intrusions to 10 dBA over the existing ambient (L_{90}) sound level. Tonal sound, defined as any octave band level which exceeds the levels in adjacent octave bands by 3 dB or more, is also not allowed. These MassDEP noise guidelines are applicable both at the property lines and at the nearest inhabited buildings.

Existing Ambient Sound Levels (2019 Sound Study)

We installed an environmental sound level meter on site for approximately one week to document existing ambient levels for the Recycling & Transfer Station project in 2019. The meter was installed along the east property line near residential receptors on Central Avenue, as shown on Image 1. Monitoring began the afternoon of Thursday September 5th and concluded the afternoon of Thursday September 12th in 2019. Detailed measurement results are shown in the attached Figures.

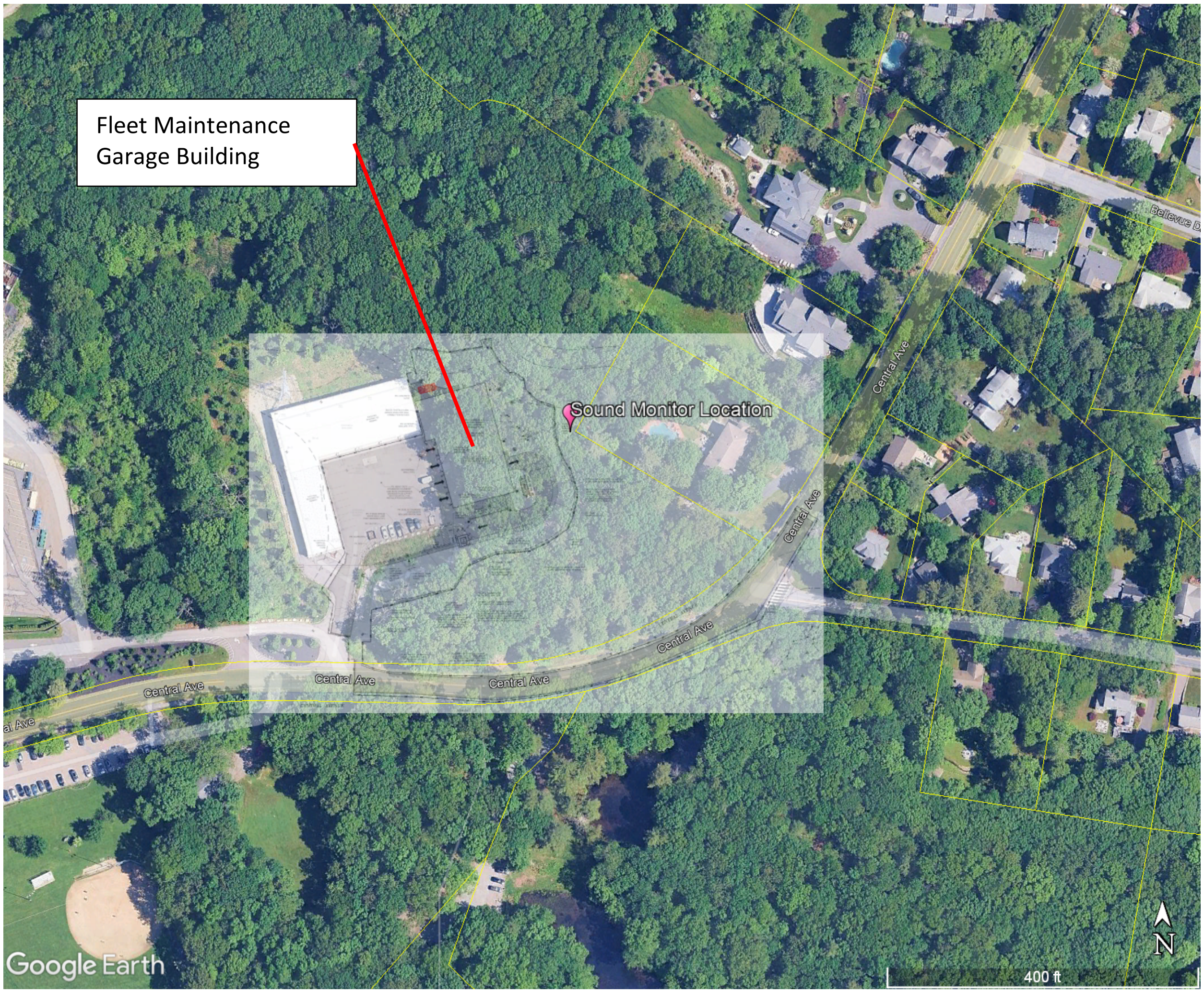


Image 1 – Sound Monitor Location

MassDEP noise policy documents state that the ambient sound level is the background A-weighted sound level that is exceeded 90% of the time, measured during equipment operating hours. The 90th percentile exceedance level is also known as the L90.

The average of the lowest daily daytime and nighttime background sound levels measured over the weeklong period were 36 dBA and 30 dBA, respectively. The MassDEP limit for the generator sound will be set at 46 dBA during daytime hours (during times of periodic exercise of the generator) and 40 dBA during nighttime hours (emergency operation).

The reported sound monitoring data has been processed to remove significant contributions of insect sound. This has been done by filtering-out sound energy at frequencies of 2,000 Hz and higher (using octave bands) typically produced by insects. Removing insect sound reduced the average of lowest measured background sound levels by 6-10 dBA. These reduced levels are those reported on the attached figure. The primary reason for insect-correcting data is to determine the character of the background sound during quieter times of the year when insect sound is not present. The insect-corrected L90 sound levels are lower than the uncorrected L90 and have led to lower design goals for sound, which are more protective of the community.

Project Noise Analysis

Estimates of sound levels produced by the proposed Project have been calculated using CadnaA environmental sound modeling software (Version 2025 DataKustic GmbH). The acoustic modeling requires information on equipment noise emission levels, the location of the sources, the location of the receptors, and information on how the noise may propagate from the source to the receiver. The CadnaA sound modeling software uses algorithms and procedures described in International Standard ISO 9613-2:1996 "Acoustics- Attenuation of sound during propagation outdoors – Part 2: General method of calculation."

The following mechanical equipment was included in the computer model:

- One (1) Emergency Generator, Kohler 400REZXD with a Level 2 Sound Enclosure. Generator package sound emissions are 72 dBA at a distance of 23 feet. Sound data attached to this report. The generator is located behind the northwest corner of the proposed building as shown in Figure 1.

As currently designed, estimated sound levels at the nearest residential property line and residences exceed the MassDEP Noise Policy limit by up to 4 dBA. In order to reduce sound from the generator, we recommend installing a barrier along the east side of the generator as shown in Figure 1. The barrier is 10 feet high and 20 feet in length. Weston & Sampson is planning to build a CMU block wall, which exceeds our minimum STC 25 (Sound Transmission Class) barrier requirement.

Figure 1 presents the results of the acoustic modeling at four property line locations and three residential locations with the recommended barrier in place. The analysis indicates that generator sound is expected to range between 34 and 40 dBA at the nearest property line and between 33 and 39 dBA at the nearest residential locations. At residential locations a height of 7 feet was used for 1st story windows and 17 feet was used for 2nd story windows, where applicable.

Table 1 presents the results of acoustic modeling with project related sound alone, as well as added to the existing average nighttime background sound level of 30 dBA. Estimated sound levels at property line and residential locations comply with the MassDEP limit of 10 dB over existing background. Full octave band data tables are presented in Appendix B.

**Table 1 –Estimated Project Sound Levels at Receptor Locations (dBA)
Including Recommended Barrier**

Location	Project Sound Level	Project Sound Level plus Existing Background (30 dBA)	MassDEP Nighttime Limit
R1	33	35	**40**
R2	39	39	
R3	37	38	
PL1	34	36	
PL2	40	40	
PL3	37	38	
PL4	39	39	

Tonal Analysis

A tonal analysis was conducted on the estimated project sound levels plus background and no tonal nature of sound from equipment was found according to the MassDEP tonal definition.

Conclusion

Based on our review, it is our opinion that the emergency generator associated with the Needham Fleet Maintenance Garage project will comply with all applicable regulations (MassDEP criteria) with the recommended sound barrier wall. The emergency generator for this project is expected to be exercised during daytime hours and will not operate at night unless there is an emergency.

Please feel free to contact us if you have any questions.

Sincerely,
CAVANAUGH TOCCI

Aaron M Farbo

Aaron M. Farbo, *Principal Consultant*
afarbo@cavtocci.com
25046/Needham Fleet Maintenance Garage Emergency Generator Sound Study Report.docx

FIGURES

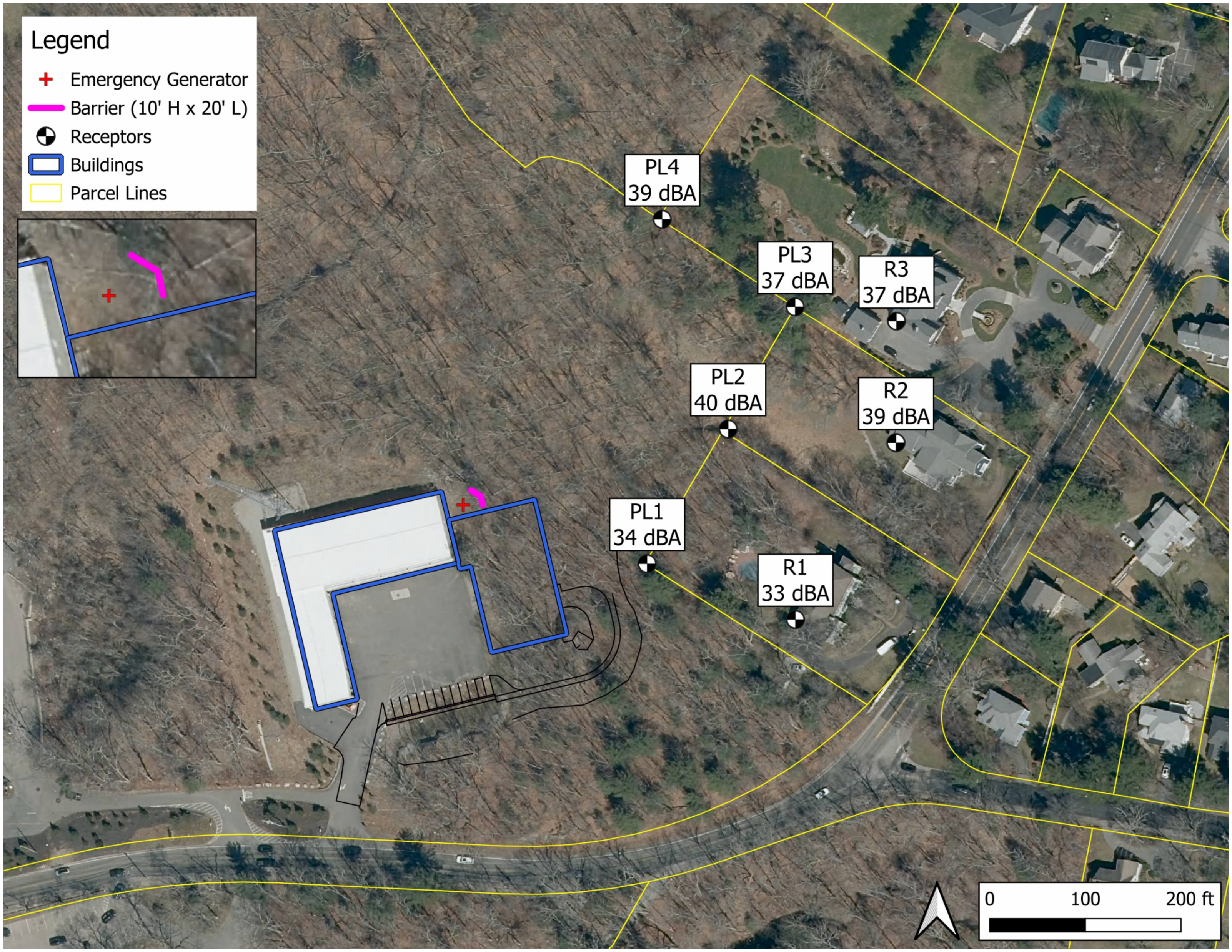
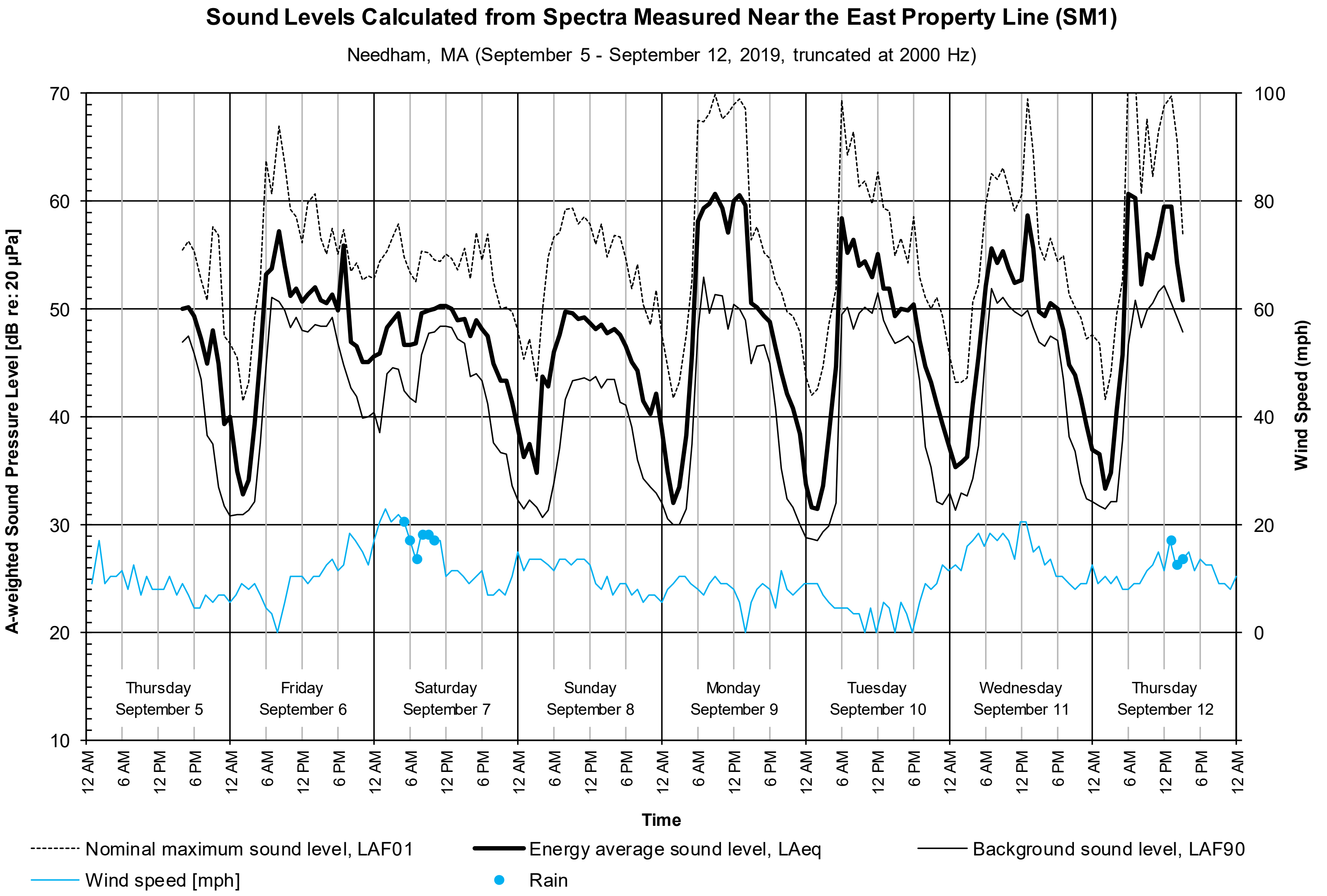


Figure 1

Estimated Emergency Generator Sound Levels at Receptor Locations


Sound Levels Calculated from Spectra Measured Near the East Property Line (SM1)

Needham, MA (September 5 - September 12, 2019, truncated at 2000 Hz)

S1

Figure 2

CAVANAUGHTOCCI

APPENDIX A

Sound Measurement Terminology

SOUND MEASUREMENT TERMINOLOGY

In order to quantify the amplitude, frequency, and temporal characteristics of sound, various acoustical descriptors are used. The following is an introduction to acoustic terminology that is used in this report.

Sound Level

Sound levels are typically quantified using a logarithmic decibel (dB) scale. The use of a logarithmic scale helps to compress the wide range of human sensitivity to sound amplitude into a scale that ranges from approximately 0 to 180 dB. Note however, that the use of the logarithmic scale prevents simple arithmetic operations when combining the cumulative impact of sources. For example, two sources of equal sound level operated simultaneously results in a combined sound level that is only 3 dB higher than if only one source was operated alone. An important feature of the human perception of continuous sound is that an increase or decrease in sound pressure level by 3 dB or less is barely perceptible, and an increase or decrease by 10 dB is perceived as a doubling or halving of noise level.

A-weighting

Generally, the sensitivity of human hearing is restricted to the frequency range of 20 Hz to 20,000 Hz. However, the human ear is most sensitive to sound in the 500 Hz to 5,000 Hz frequency range. Above and below this range, the ear becomes progressively less sensitive. To account for this feature of human hearing, sound level meters incorporate filtering of acoustic signals that corresponds to the varying sensitivity of the human ear to sound at different frequencies. This filtering is called A-weighting. Sound level measurements that are obtained using this filtering are referred to as A-weighted sound levels and are signified by the identifier, dBA. A-weighted sound levels are widely used for evaluating human exposure to environmental sounds. To help place A-weighted sound levels in perspective, Figure A-1 contains a scale showing typical sound levels for common interior and environmental sound sources.

Spectral Characteristics – Octave and 1/3 Octave Band Sound Levels

To characterize a sound, it is often necessary to evaluate the frequency distribution of the sound energy. As mentioned before, the frequencies of most interest where human exposure is concerned range between 20 Hz and 20,000 Hz. This frequency range is commonly divided into octave bands, where an octave band is a range of frequencies. Each octave band is referred to by its center frequency and has a bandwidth of one octave (a doubling of frequency). To cover the full range of human hearing, it is necessary to measure sound in 10 separate octave bands. Typically, the lowest frequency band measured has a center frequency of 31.5 Hz. The next frequency band has a center frequency of 63 Hz. This geometric series continues to the highest frequency band that has a center frequency of 16,000 Hz. A set of octave band sound levels to describe a particular sound is called an octave band spectrum. Covering the full range of hearing, an octave band spectrum would have 10 values, one for each band. Under certain circumstances, more frequency resolution in acoustical data is needed to identify the presence of tonal sounds. A 1/3 octave band spectrum uses filters that divide each octave band into 3 separate frequency bands. Note that octave band and 1/3 octave band sound levels are not usually A-weighted, with their units being dB.

Environmental Noise Descriptors

Sound levels in the environment are continuously fluctuating and it is difficult to quantify these time-varying levels with single number descriptors. Statistical approaches, which use *percentile sound levels* and *equivalent sound levels*, are often used to quantify the temporal characteristics of environmental sound.

Percentile sound levels (L_n) are the A-weighted sound levels that are exceeded for specific percentages of time within a noise measurement interval. For example, if a measurement interval is one hour long, the 50th percentile sound level (L_{50}) is the A-weighted sound level that is exceeded for 30 minutes of that interval.

- L_{90} is the sound level in dBA exceeded 90 percent of the time during the measurement period. The 90th percentile sound level represents the nominally lowest level reached during the monitoring interval and is typically influenced by sound of relatively low level, but nearly constant duration, such as distant traffic or continuously operating industrial equipment. The L_{90} is often used in standards to quantify the existing background or residual sound level.
- L_{50} is the median sound level: the sound level in dBA exceeded 50 percent of the time during the measurement period.
- L_{10} is the sound level exceeded only 10 percent of the time. It is close to the maximum level observed during the measurement period. The L_{10} is sometimes called the intrusive sound level because it is caused by occasional louder noises like those from passing motor vehicles or aircraft.

By using percentile sound levels, it is possible to characterize the sound environment in terms of the steady-state background sound (L_{90}) and occasional transient sound (L_{10}).

The equivalent sound level (L_{eq}) is the energy average of the A weighted sound level for the measurement interval. Sounds of low level and long duration, as well as sounds of high level and short duration influence this sound level descriptor.

Noise levels at night generally produce greater annoyance than do the same levels which occur during the day. It is generally agreed that a given level of environmental noise during the day would appear to be 10 dBA louder at night – at least in terms of potential for causing community concern. The day night average sound level (Ldn) is a 24 hour average A-weighted sound level where a 10 dB “penalty” is applied to sound occurring between the hours of 10:00 p.m. and 7:00 a.m. The 10 dB penalty accounts for the heightened sensitivity of a community to noise occurring at night.

When a steady continuous sound is measured, the L_{10}, L_{50}, L_{90} and L_{eq} are all equal. For a constant sound level, such as from a power plant operating continuously for a 24-hour period, the L_{dn} is approximately 6 dBA higher than the directly measured sound level.

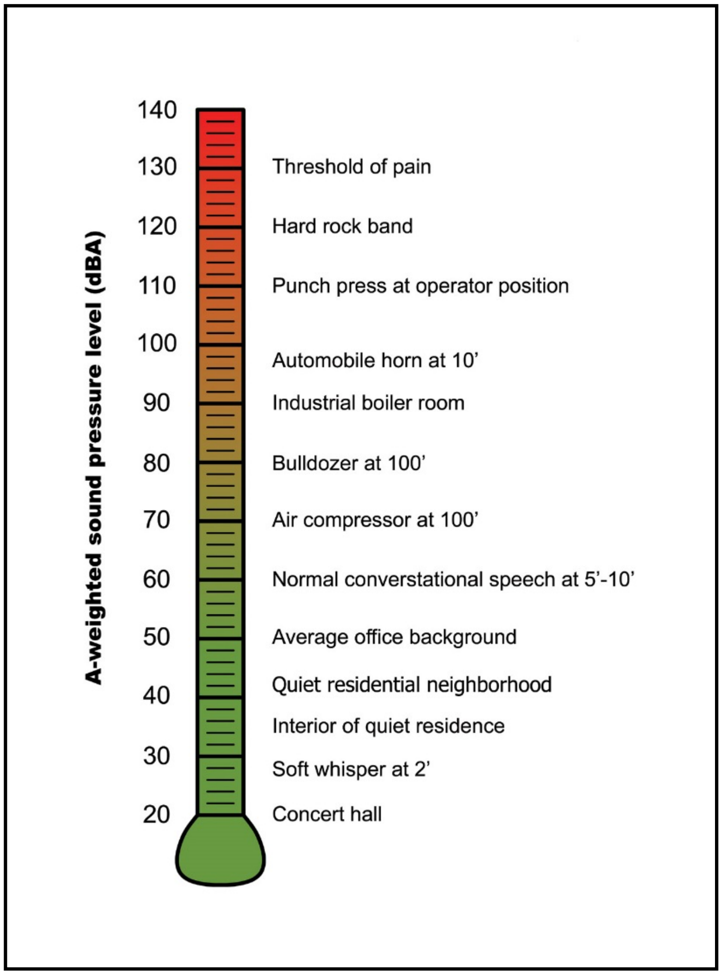


Figure A-1
Typical Sound Levels for Common Interior and Environmental Sources

APPENDIX B

Octave Band Computer Modeling Results Tables

Receptor Name	Octave Band (Hz) Sound Levels (dB)								Overall
	63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**dB(A)**
R1	49	39	39	29	22	16	7	0	**33**
R2	53	41	42	37	32	28	18	5	**39**
R3	52	40	41	35	30	26	17	3	**37**
PL1	53	41	39	29	22	16	8	0	**34**
PL2	57	46	41	38	33	29	19	7	**40**
PL3	54	43	37	36	31	27	18	5	**37**
PL4	55	44	38	37	33	29	19	7	**39**

Table B-1
Estimated Sound Levels from Computer Modeling (Equipment Only)
At Property Line and Residential Receptor Locations

Octave Band (Hz) Sound Levels (dB)								Overall
63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**dB(A)**
41	34	30	29	23	22	16	12	**30**

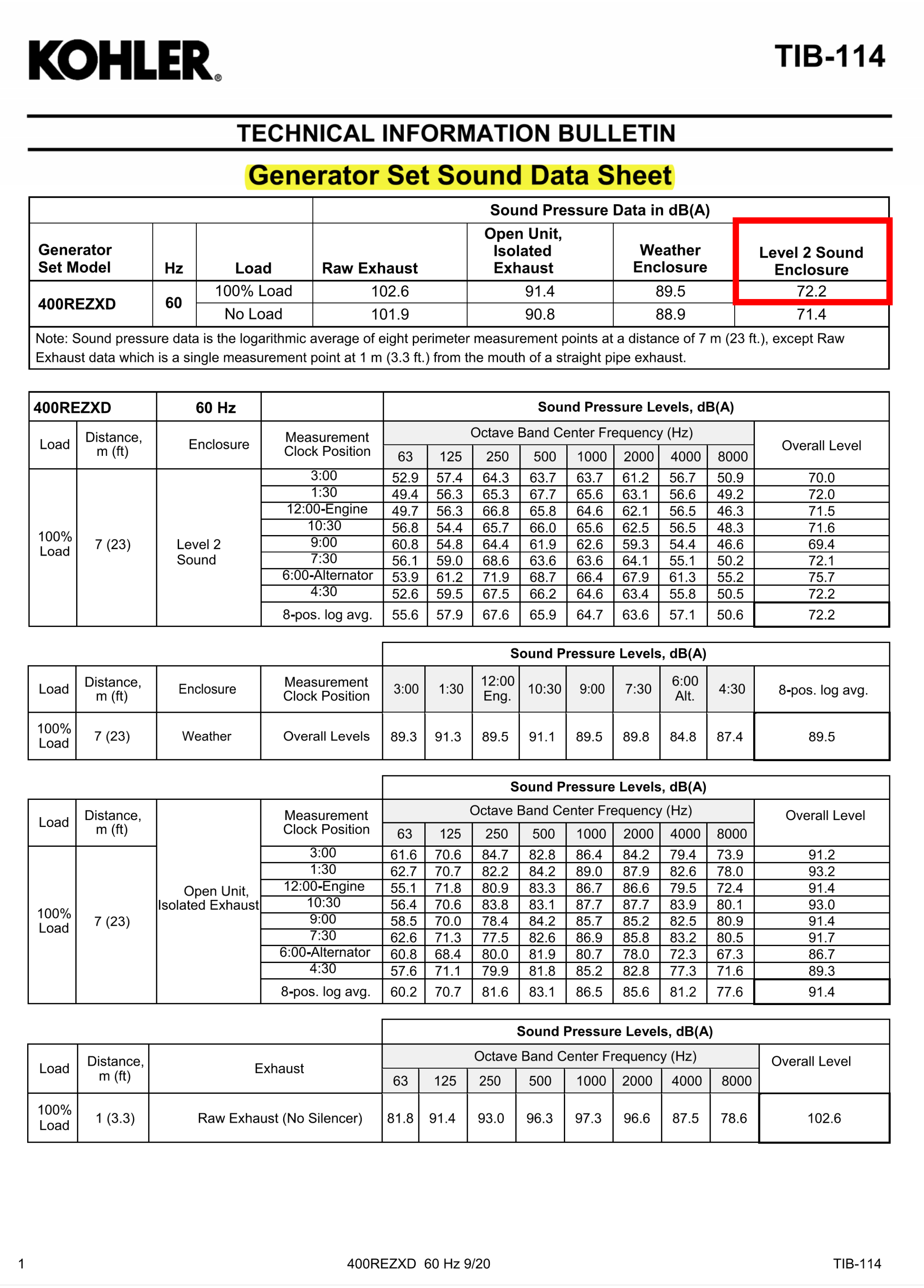
Table B-2
Existing Background Sound Level at Sound Monitoring Location

Receptor Name	Octave Band (Hz) Sound Levels (dB)								Overall
	63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**dB(A)**
R1	50	40	39	32	25	23	16	12	**35**
R2	53	42	42	37	32	29	20	13	**39**
R3	53	41	41	36	31	27	19	13	**38**
PL1	53	42	40	32	25	23	17	12	**36**
PL2	57	46	42	39	33	29	21	13	**40**
PL3	54	43	38	36	32	28	20	13	**38**
PL4	55	45	39	37	34	30	21	13	**39**

Table B-3
Estimated Sound Levels from Computer Modeling Plus Existing Background Sound (30 dBA)
At Property Line and Residential Receptor Locations

APPENDIX C

Manufacturer’s Sound Data



KOHLER.

TIB-114

TECHNICAL INFORMATION BULLETIN

Generator Set Sound Data Sheet

			Sound Pressure Data in dB(A)			
Generator Set Model	**Hz**	**Load**	**Raw Exhaust**	**Open Unit, Isolated Exhaust**	**Weather Enclosure**	**Level 2 Sound Enclosure**
400REZXD	**60**	100% Load	102.6	91.4	89.5	72.2
		No Load	101.9	90.8	88.9	71.4

Note: Sound pressure data is the logarithmic average of eight perimeter measurement points at a distance of 7 m (23 ft.), except Raw Exhaust data which is a single measurement point at 1 m (3.3 ft.) from the mouth of a straight pipe exhaust.

400REZXD		**60 Hz**		**Sound Pressure Levels, dB(A)**								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Level 2 Sound	3:00	52.9	57.4	64.3	63.7	63.7	61.2	56.7	50.9	70.0
			1:30	49.4	56.3	65.3	67.7	65.6	63.1	56.6	49.2	72.0
			12:00-Engine	49.7	56.3	66.8	65.8	64.6	62.1	56.5	46.3	71.5
			10:30	56.8	54.4	65.7	66.0	65.6	62.5	56.5	48.3	71.6
			9:00	60.8	54.8	64.4	61.9	62.6	59.3	54.4	46.6	69.4
			7:30	56.1	59.0	68.6	63.6	63.6	64.1	55.1	50.2	72.1
			6:00-Alternator	53.9	61.2	71.9	68.7	66.4	67.9	61.3	55.2	75.7
			4:30	52.6	59.5	67.5	66.2	64.6	63.4	55.8	50.5	72.2
			8-pos. log avg.	55.6	57.9	67.6	65.9	64.7	63.6	57.1	50.6	72.2

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Enclosure	Measurement Clock Position	3:00	1:30	12:00 Eng.	10:30	9:00	7:30	6:00 Alt.	4:30	8-pos. log avg.
100% Load	7 (23)	Weather	Overall Levels	89.3	91.3	89.5	91.1	89.5	89.8	84.8	87.4	89.5

				Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)		Measurement Clock Position	Octave Band Center Frequency (Hz)								Overall Level
				63	125	250	500	1000	2000	4000	8000	
100% Load	7 (23)	Open Unit, Isolated Exhaust	3:00	61.6	70.6	84.7	82.8	86.4	84.2	79.4	73.9	91.2
			1:30	62.7	70.7	82.2	84.2	89.0	87.9	82.6	78.0	93.2
			12:00-Engine	55.1	71.8	80.9	83.3	86.7	86.6	79.5	72.4	91.4
			10:30	56.4	70.6	83.8	83.1	87.7	87.7	83.9	80.1	93.0
			9:00	58.5	70.0	78.4	84.2	85.7	85.2	82.5	80.9	91.4
			7:30	62.6	71.3	77.5	82.6	86.9	85.8	83.2	80.5	91.7
			6:00-Alternator	60.8	68.4	80.0	81.9	80.7	78.0	72.3	67.3	86.7
			4:30	57.6	71.1	79.9	81.8	85.2	82.8	77.3	71.6	89.3
			8-pos. log avg.	60.2	70.7	81.6	83.1	86.5	85.6	81.2	77.6	91.4

			Sound Pressure Levels, dB(A)								
Load	Distance, m (ft)	Exhaust	Octave Band Center Frequency (Hz)								Overall Level
			63	125	250	500	1000	2000	4000	8000	
100% Load	1 (3.3)	Raw Exhaust (No Silencer)	81.8	91.4	93.0	96.3	97.3	96.6	87.5	78.6	102.6

Appendix C

Traffic Study

Weston & Sampson

MEMORANDUM

COMMONWEALTH OF MASSACHUSETTS
DOUGLAS M. OSTLER
CIVIL
No. 56814
REGISTERED
PROFESSIONAL ENGINEER

Digitally Signed
2025.04.11
09:53:06-04'00'

TO: Town of Needham Planning Board

FROM: Doug Ostler, PE, PTOE, Weston & Sampson

DATE: April 11, 2025

SUBJECT Needham Fleet Maintenance Facility – Traffic Impact Assessment

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Introduction

Weston & Sampson has prepared this traffic impact assessment for a proposed fleet maintenance facility addition to the Town of Needham's Department of Public Works (DPW) complex on the north side of Central Avenue west of Marked Tree Road. Based on the size and expected use of the proposed fleet maintenances facility, this report will review existing traffic volumes on the adjacent street, approximate trip generation of the facility, and discuss traffic impacts, if any, that are expected with the proposed facility.

Proposed Addition and Access

The proposed fleet maintenance facility will be on the east side of the existing Cogswell Building. The Cogswell Building is used for equipment storage for the town. A portion of the Cogswell building is being considered for an extra vehicle bay for servicing tires/wheels while the remained will continue to be used for storage. The proposed facility will provide four vehicle bays to facilitate maintenance and repairs of Town of Needham vehicles. The proposed project will modify the adjacent pavement and parking area and a portion of the internal road connection to support vehicular movement to/from the facility. The proposed project will not change the directional flow or restrictions of any of the existing four driveways that service the DPW complex. Access into the fleet maintenance facility is provided at the eastern most driveway which is not open to public traffic. Access out of the fleet maintenance facility is at the third driveway from the east which is the only public egress for the DPW facility and provides two exit lanes only.

Existing Roadway Description and Traffic Volumes

Central Avenue is functionally classified as an urban minor arterial, and it connects Elliot Street in Newton to Centre Avenue in Dover. Adjacent to the site, Central Avenue is approximately twenty-five feet wide and provides one eleven-foot-wide lane in each direction with a center double yellow stripe and white shoulder stripes. The posted speed limit within the vicinity of the site is 40 miles per hour (MPH).

Traffic volume counts with vehicular classification and speed data on Central Avenue were collected for forty-eight hours on Tuesday, February 25, through Wednesday, February 26, 2025. Based on the month of the traffic counts and functional classification, the traffic count data does not require a seasonal adjustment factor per Massachusetts Department of Transportation published correction factors. The traffic counts show an average of 13,953 daily traffic on Central Avenue. The AM peak hour began at

7:30 AM and was comprised of 1,302 vehicles, which was 9.3 percent of daily traffic. The PM peak hour began at 4:15 PM and was comprised of 1,249 vehicles, which was 9.0 percent of daily traffic. Truck traffic on Central Avenue averaged 2.0 percent of all vehicular traffic throughout the day. During the peak hours, truck percentage of total vehicular traffic was 2.4 percent during the AM peak hour and 0.6 percent during the PM peak hour. The 85th percentile speeds on Central Avenue on both days was 38 MPH eastbound and 39 MPH westbound.

Weston & Sampson received old traffic count data summaries from 2016 and 2019 for Central Avenue east of the Recycling Transfer Station. The 13,953 daily traffic volume count in 2025 is an increase of 12.0 percent over nine years (or 1.3 percent annually) from 12,453 vehicles per day in 2016 and a decrease of 3.4 percent over six years (or -0.6 percent annually) from 14,438 vehicles per day in 2019. Since the recent traffic volumes counts were less than the 2019 counts, there is not an expectation of large traffic volume growth that should be expected by from the date of the counts to when the project is completed.

Trip Generation of Proposed Development

The proposed development is expected to generate new trips by staff and vehicles being picked up and dropped off for maintenance. To estimate these types of trips generated by the new facility, the recent history of vehicle repair occurrence is considered. The Town of Needham DPW indicated that, in a twelve-month period between 2023 and 2024, there were 774 documented repair visits and estimated an additional ten percent of undocumented minor repairs for a total of 851 repairs. If all repairs occur Monday through Friday, then this equates to an average of approximately 3.3 repairs per workday. Not all repairs will generate external trips as some vehicles to be repaired are stationed at the recycle and transfer station. Vehicles normally stored off-site that require repair could be part of a maintenance schedule or transported by tow/trailer. Deliveries of vehicles for repair could include extra trips as the driver may leave in another vehicle while it is being serviced. For analysis purposes an average of twelve external trips generated per day (six in, six out) related to vehicle repairs.

In addition to trips associated with vehicles being repaired, trips will be generated by staff for commuting, retrieving materials, personal trips, etc. The facility is expected to have six staff on a typical workday. Six staff commuting trips are projected during the morning peak hour, six staff commuting trips out during the afternoon peak hour, and eight non-commute related trips during non-peak hours.

Table 1 - Trip Generation Estimates

Trip Type	Peak Hour	In	Out	Total
Repair Trips (some may be heavy vehicles)	Weekday, AM Peak Hour	2	2	4
	Weekday, PM Peak Hour	2	2	4
	Weekday, Total of Non-Peak Hours	2	2	4
	Weekday, Total	6	6	12
Staff Trips	Weekday, AM Peak Hour	6	0	6
	Weekday, PM Peak Hour	0	6	6
	Weekday, Total of Non-Peak Hours	4	4	8
	Weekday, Total	10	10	20
Total Trips	Weekday, AM Peak Hour	8	2	10
	Weekday, PM Peak Hour	2	8	10
	Weekday, Total of Non-Peak Hours	6	6	12
	Weekday, Total	16	16	32

Conclusions

The proposed fleet maintenance facility is anticipated to generate a total of thirty-two trips per day on a typical workday based on fleet repair history and staffing considerations, with ten trips during the AM peak hour of the adjacent street and ten trips during the PM peak hour of the adjacent street. Of the thirty-two trips, fewer than twelve are expected to be heavy vehicles

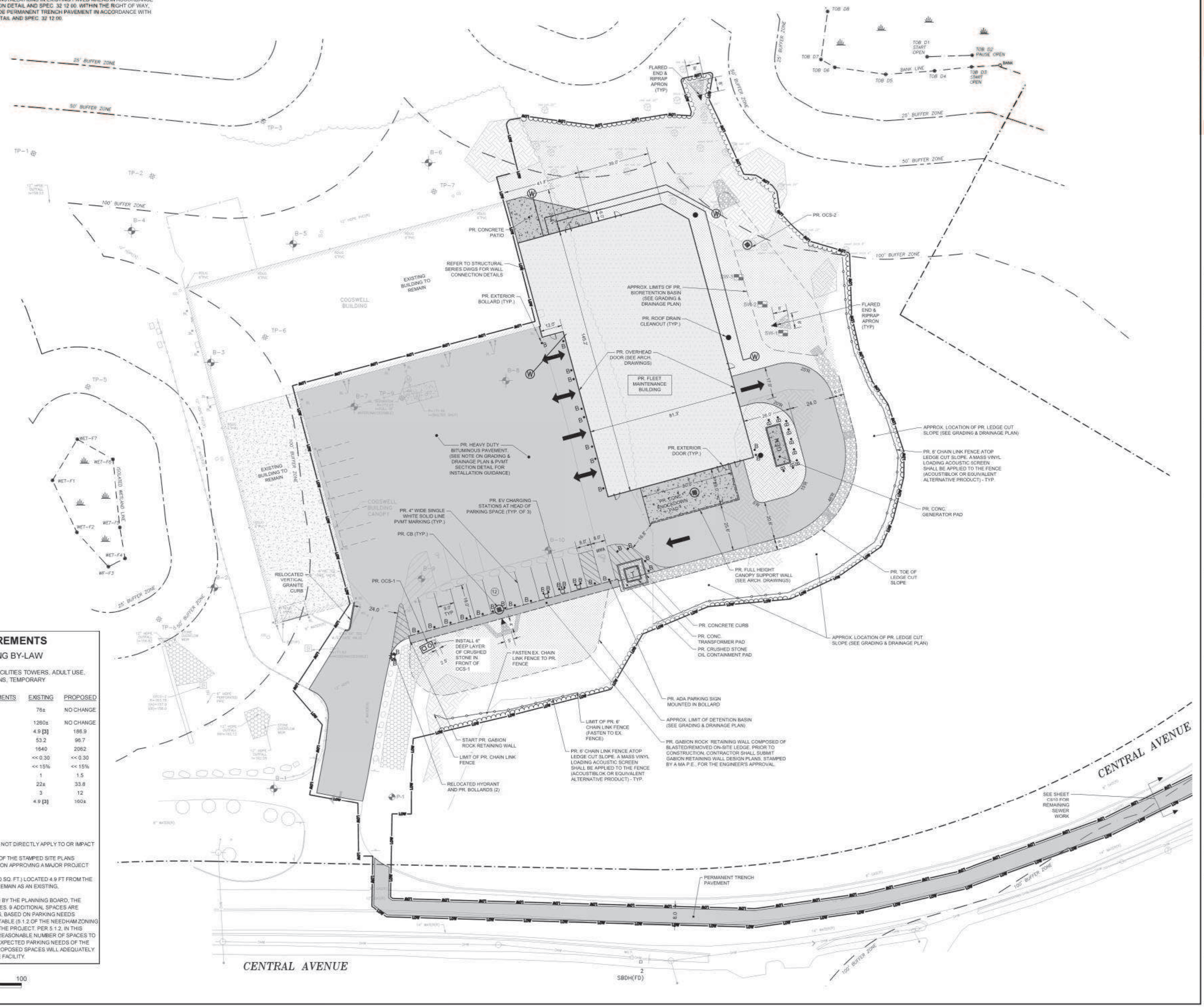
External trips by vehicles for repair will more likely be to/from the existing fleet facility at 470 Dedham Avenue where the town stores some of its vehicles. Staff commute trips will be distributed based on staff residency. Traffic volumes on Central Avenue may increase by 0.2 percent of total traffic with the addition of the proposed fleet maintenance facility and heavy vehicle traffic volume increase by less than 4.3 percent.

The proposed fleet maintenance facility is anticipated to have a negligible traffic impact on the local roadway network due to low trip generation relative to existing traffic volumes on Central Avenue. Central Avenue already supports heavy traffic to/from the Needham Recycling and Transfer Station.

NOTE:
1. THE CONTRACTOR SHALL GIVE TWENTY-FOUR (24) HOUR NOTICE TO PERTINENT TOWN DEPARTMENTS BEFORE COMMENCING ANY WORK IN THE FIELD.
2. DIRECTIONAL ARROWS ARE SHOWN FOR INFORMATION ONLY TO SHOW THE DIRECTION OF TRAFFIC ON SITE. THEY DO NOT INDICATE PAVEMENT MARKINGS.
3. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION SIGNAGE AS REQUIRED FOR CONTROL OF TRAFFIC AND PEDESTRIANS.
4. OUTSIDE OF THE RIGHT OF WAY, CONTRACTOR SHALL PROVIDE TEMP. PAVEMENT PATCH FOLLOWING UTILITY INSTALLATIONS IN EXISTING PAVED AREAS IN ACCORDANCE WITH THE PAVEMENT SECTION DETAIL AND SPEC. 32 12 00. WITHIN THE RIGHT OF WAY, CONTRACTOR SHALL PROVIDE PERMANENT TRENCH PAVEMENT IN ACCORDANCE WITH THE PAVEMENT SECTION DETAIL AND SPEC. 32 12 00.

LEGEND

▩	PR. BITUMINOUS PAVEMENT
▩	PR. CONCRETE
—LOW—	LIMIT OF PROPOSED WORK
░	PR. LOAM & SEED
▨	PR. CRUSHED ROCK (REPURPOSED BLASTED/REMOVED LEDGE)
▢	PR. BUILDING ADDITION



REQUESTED WAIVERS

ZONING BY-LAW SECTION	DESCRIPTION [1]
5.1.3(a) [2]	PARKING ILLUMINATION, AVERAGE OF 1 FOOTCANDLE
5.1.3(n) [2]	BICYCLE RACKS
5.1.3(k) & 5.1.3(n)	PARKING AREA LANDSCAPING

[1] REFER TO THE NARRATIVE SUBMITTED WITH THE MAJOR PROJECT SITE PLAN SPECIAL PERMIT APPLICATION FOR FURTHER INFORMATION PERTAINING TO EACH WAIVER REQUEST.
[2] WAIVER REQUESTED IS A CONTINUANCE OF THE SAME WAIVER REQUEST THAT WAS GRANTED AS PART OF THE PLANNING BOARD'S NOVEMBER 20, 2018 AMENDMENT DECISION.

DIMENSIONAL REQUIREMENTS

TOWN OF NEEDHAM ZONING BY-LAW

ZONING DISTRICT: SINGLE RESIDENCE A (SRA)
OVERLAY DISTRICT(S) [1]: WIRELESS COMMUNICATIONS FACILITIES TOWERS, ADULT USE, LARGE SCALE GROUND-MOUNTED SOLAR PV INSTALLATIONS, TEMPORARY METEOROLOGICAL TOWERS.

DIMENSIONAL CONSTRAINT	ZONE SRA REQUIREMENTS	EXISTING	PROPOSED
MIN. LOT AREA (AC.)	1	76±	NO CHANGE
MIN. FRONTAGE (Ft.)	150	1260±	NO CHANGE
MIN. FRONT YARD SETBACK (Ft.) [2]	35	4.9 [3]	186.9
MINIMUM SIDE YARD SETBACK (Ft.) [2]	25	53.2	96.7
MINIMUM REAR YARD SETBACK (Ft.) [2]	25	1640	2062
MAX. FLOOR AREA RATIO	0.30	<< 0.30	<< 0.30
MAX % LOT COVERAGE	15%	<< 15%	<< 15%
MAX STORIES	2.5	1	1.5
MAXIMUM BUILDING HEIGHT (Ft.)	35	22±	33.8
PARKING SPACES	SEE [4]	3	12
MIN. TRANSITION AREA (Ft.)	25	4.9 [3]	160±

N/A = NOT APPLICABLE
>> = SUBSTANTIALLY GREATER THAN
<< = SUBSTANTIALLY LESS THAN

[1] THE REQUIREMENTS OF THE LISTED OVERLAY DISTRICTS DO NOT DIRECTLY APPLY TO OR IMPACT THE PROJECT.
[2] EXISTING SETBACK DATA WAS OBTAINED FROM SHEET C0.01 OF THE STAMPED SITE PLANS ASSOCIATED WITH THE NOVEMBER 20, 2018 AMENDMENT DECISION APPROVING A MAJOR PROJECT SITE PLAN SPECIAL PERMIT FOR THE FLEET FACILITY.
[3] THE EXISTING GUARD SHED IS A STRUCTURE (LESS THAN 100 SQ. FT.) LOCATED 4.9 FT FROM THE FRONT PROPERTY LINE. IT IS ASSUMED THE STRUCTURE WILL REMAIN AS AN EXISTING, NONCONFORMING STRUCTURE.
[4] PER THE NOVEMBER 20, 2018 AMENDMENT DECISION ISSUED BY THE PLANNING BOARD, THE EXISTING FLEET FACILITY CONTAINS 3 OUTDOOR PARKING SPACES. 9 ADDITIONAL SPACES ARE PROPOSED TO ACHIEVE A TOTAL PARKING COUNT OF 12 SPACES, BASED ON PARKING NEEDS PROJECTED BY DPW STAFF. THE USES LISTED IN THE PARKING TABLE (5.1.2 OF THE NEEDHAM ZONING BY-LAW) DO NOT APPEAR TO DIRECTLY RELATE TO THE USE OF THE PROJECT. PER 5.1.2, IN THIS CIRCUMSTANCE, THE PLANNING BOARD SHALL RECOMMEND A REASONABLE NUMBER OF SPACES TO THE BUILDING COMMISSIONER AND APPLICANT BASED ON THE EXPECTED PARKING NEEDS OF THE PROJECT STAKEHOLDERS. THE APPLICANT BELIEVES THE 12 PROPOSED SPACES WILL ADEQUATELY SERVE THE PARKING NEEDS OF THE BUILDING ADDITION TO THE FACILITY.

0 20 50 100
SCALE: 1" = 20'

Project:
DPW COMPLEX PHASE I
FLEET MAINTENANCE FACILITY

1421 CENTRAL AVENUE
NEEDHAM, MA 02492

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:

Issued For:
DESIGN
DEVELOPMENT
REVIEW

Scale: AS NOTED

Date: MARCH 7, 2025
Drawn By: JLO
Reviewed By: JP
Approved By: TJC
W&S Project No.: ENG24-0773
W&S File No.:

Drawing Title:
SITE LAYOUT AND
MATERIALS PLAN

Sheet Number:
C300

Traffic Count Calculations

2-day Averages from 48-hour counts

Day Total		Non Heavy	Heavy	Total
	Both Directions	13,676	278	13,953
	% Trucks			2.0%

AM Peak Hour		Non Heavy	Heavy	Total
7:30 AM	EB	649	20	669
	WB	621	12	633
	Both Directions	1,270	32	1,302
	% Trucks			2.5%
	K-Value			9.3%
	D-Value			51.4%

PM Peak Hour		Non Heavy	Heavy	Total
4:15 PM	EB	629	4	633
	WB	612	5	617
	Both Directions	1241	8	1249
	% Trucks			0.6%
	K-Value			9.0%
	D-Value			50.6%

ADT Comparison with Older Traffic counts

Year	2016	2019	2025
EB	6150	6981	6861
WB	6303	7457	7093
Total	12453	14438	13953
% Change	12.0%	-3.4%	
Annual % Change	1.3%	-0.6%	

Location Map: 250468 Needham, MA

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com

(1) 48hr VCU-ATR (premium)
w/Radar for Speed

(1) VCU & (1) HR

Client:	Engineer:	Site Code:	Date:	PDI Job #	City, State:
Weston & Sampson	D. Ostler	ENG24-0073	Tuesday 2/25/25-Wednesday 2/26/25	250468	Needham, MA

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PDI File #: 250468 ATR-A

Count Date: **Tuesday, February 25, 2025**
Direction: **EB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	1	0	0	0	1
12:30 AM	0	0	1	0	1	0	2
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	2	0	0	0	2
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	1	0	0	0	1
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	1	0	0	0	1
2:45 AM	0	0	1	0	0	0	1
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	1	0	0	0	1
3:30 AM	0	0	5	0	0	0	5
3:45 AM	0	0	5	0	0	0	5
4:00 AM	0	0	4	0	0	0	4
4:15 AM	0	0	13	0	0	0	13
4:30 AM	0	0	4	0	0	0	4
4:45 AM	0	0	11	0	0	0	11
5:00 AM	0	0	14	0	1	0	15
5:15 AM	0	0	26	0	0	0	26
5:30 AM	0	0	42	0	0	1	43
5:45 AM	0	0	63	0	0	0	63
6:00 AM	0	0	76	0	0	0	76
6:15 AM	0	0	135	0	0	0	135
6:30 AM	0	0	197	1	1	0	199
6:45 AM	0	0	204	1	5	0	210
7:00 AM	0	0	212	2	3	0	217
7:15 AM	0	0	237	1	2	0	240
7:30 AM	0	1	255	1	2	1	260
7:45 AM	0	0	234	1	6	2	243
8:00 AM	0	0	211	1	8	0	220
8:15 AM	0	0	223	2	11	0	236
8:30 AM	0	0	154	0	9	0	163
8:45 AM	0	0	193	0	4	1	198
9:00 AM	0	0	172	0	3	0	175
9:15 AM	0	0	147	0	1	0	148
9:30 AM	0	0	135	0	5	0	140
9:45 AM	0	0	147	0	5	1	153
10:00 AM	0	0	104	0	3	1	108
10:15 AM	0	0	113	1	3	0	117
10:30 AM	0	0	136	0	2	0	138
10:45 AM	0	0	120	0	5	1	126
11:00 AM	0	0	92	0	0	0	92
11:15 AM	0	0	118	0	1	1	120
11:30 AM	0	0	92	0	2	0	94
11:45 AM	0	0	112	0	1	1	114
AM Total	**0**	**1**	**4015**	**11**	**84**	**10**	**4121**
Percentage	**0.00%**	**0.02%**	**97.43%**	**0.27%**	**2.04%**	**0.24%**	
AM Peak	12:00 AM	6:45 AM	7:00 AM	6:30 AM	7:45 AM	7:00 AM	7:15 AM
Volume	**0**	**1**	**938**	**5**	**34**	**3**	**963**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	83	0	2	0	85
12:15 PM	0	0	113	0	1	1	115
12:30 PM	0	0	112	0	5	0	117
12:45 PM	0	0	102	0	4	0	106
1:00 PM	0	0	88	0	2	0	90
1:15 PM	0	0	88	0	4	0	92
1:30 PM	2	0	100	1	0	0	103
1:45 PM	0	0	99	0	4	1	104
2:00 PM	2	0	95	0	2	0	99
2:15 PM	0	0	87	0	2	0	89
2:30 PM	1	0	77	0	3	0	81
2:45 PM	0	0	100	0	0	0	100
3:00 PM	0	1	92	2	3	0	98
3:15 PM	0	0	89	1	0	0	90
3:30 PM	0	0	108	3	0	0	111
3:45 PM	0	1	97	1	1	0	100
4:00 PM	0	0	65	1	0	0	66
4:15 PM	0	0	73	0	0	0	73
4:30 PM	0	0	75	0	0	0	75
4:45 PM	0	0	96	0	0	0	96
5:00 PM	1	0	68	0	0	0	69
5:15 PM	0	0	91	0	1	0	92
5:30 PM	0	0	55	0	0	0	55
5:45 PM	0	0	54	0	1	0	55
6:00 PM	0	0	66	2	0	1	69
6:15 PM	0	0	45	0	1	0	46
6:30 PM	0	0	50	0	0	0	50
6:45 PM	0	0	43	0	0	0	43
7:00 PM	0	0	36	0	0	0	36
7:15 PM	0	0	23	0	0	0	23
7:30 PM	0	0	19	0	0	0	19
7:45 PM	0	0	40	0	0	0	40
8:00 PM	0	0	17	0	0	0	17
8:15 PM	0	0	24	0	0	0	24
8:30 PM	0	0	22	0	0	0	22
8:45 PM	0	0	23	0	0	0	23
9:00 PM	0	0	20	0	0	0	20
9:15 PM	0	0	13	0	0	0	13
9:30 PM	0	0	13	0	0	0	13
9:45 PM	0	0	13	0	0	0	13
10:00 PM	0	0	15	0	0	0	15
10:15 PM	0	0	19	0	0	0	19
10:30 PM	0	0	12	0	0	0	12
10:45 PM	0	0	6	0	0	0	6
11:00 PM	0	0	7	0	0	0	7
11:15 PM	0	0	4	0	0	0	4
11:30 PM	0	0	3	0	0	0	3
11:45 PM	0	0	1	0	0	0	1
PM Total	**6**	**2**	**2641**	**11**	**36**	**3**	**2699**
Percentage	**0.22%**	**0.07%**	**97.85%**	**0.41%**	**1.33%**	**0.11%**	
PM Peak	1:15 PM	3:00 PM	12:15 PM	3:00 PM	12:30 PM	12:00 PM	12:15 PM
Volume	**4**	**2**	**415**	**7**	**15**	**1**	**428**
Day Total	**6**	**3**	**6656**	**22**	**120**	**13**	**6820**
Percentage	**0.09%**	**0.04%**	**97.60%**	**0.32%**	**1.76%**	**0.19%**	

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PDI File #: 250468 ATR-A

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Count Date: **Wednesday, February 26, 2025**
Direction: **EB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	1	0	0	0	1
12:15 AM	0	0	2	0	0	0	2
12:30 AM	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	1	0	0	0	1
1:15 AM	0	0	1	0	0	0	1
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	1	0	0	0	1
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	1	0	1	0	2
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	2	0	0	0	2
3:15 AM	0	0	1	0	0	0	1
3:30 AM	0	0	4	0	0	0	4
3:45 AM	0	0	2	0	0	0	2
4:00 AM	0	0	8	0	0	0	8
4:15 AM	0	0	8	0	0	0	8
4:30 AM	0	0	7	0	0	0	7
4:45 AM	0	0	5	0	0	0	5
5:00 AM	0	0	17	0	0	0	17
5:15 AM	0	0	29	0	0	0	29
5:30 AM	0	0	35	0	0	0	35
5:45 AM	0	0	43	0	0	0	43
6:00 AM	0	0	99	0	0	0	99
6:15 AM	0	0	115	0	1	0	116
6:30 AM	0	0	203	2	2	0	207
6:45 AM	0	0	229	0	2	0	231
7:00 AM	0	0	206	2	2	0	210
7:15 AM	0	0	223	1	2	0	226
7:30 AM	0	0	257	1	0	0	258
7:45 AM	0	0	222	2	2	1	227
8:00 AM	0	0	199	0	6	1	206
8:15 AM	0	0	233	2	4	0	239
8:30 AM	0	0	188	0	4	0	192
8:45 AM	0	0	199	0	3	0	202
9:00 AM	0	0	218	0	3	0	221
9:15 AM	0	0	147	0	2	0	149
9:30 AM	0	0	150	0	4	0	154
9:45 AM	0	0	115	0	4	0	119
10:00 AM	0	0	128	0	8	0	136
10:15 AM	0	0	94	1	7	0	102
10:30 AM	0	0	138	0	2	0	140
10:45 AM	0	0	99	0	3	0	102
11:00 AM	0	0	90	0	5	0	95
11:15 AM	0	0	102	0	1	0	103
11:30 AM	0	0	97	0	1	0	98
11:45 AM	0	0	109	0	2	0	111
AM Total	**0**	**0**	**4028**	**11**	**71**	**2**	**4112**
Percentage	**0.00%**	**0.00%**	**97.96%**	**0.27%**	**1.73%**	**0.05%**	
AM Peak	**12:00 AM**	**12:00 AM**	**6:45 AM**	**7:00 AM**	**9:30 AM**	**7:15 AM**	**7:30 AM**
Volume	**0**	**0**	**915**	**6**	**23**	**2**	**930**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	108	0	9	0	117
12:15 PM	0	0	99	0	0	0	99
12:30 PM	0	0	116	0	1	0	117
12:45 PM	2	0	108	0	1	0	111
1:00 PM	0	0	112	0	7	0	119
1:15 PM	0	0	105	0	2	0	107
1:30 PM	0	0	98	1	3	0	102
1:45 PM	0	0	93	0	3	0	96
2:00 PM	0	0	98	0	2	0	100
2:15 PM	0	0	106	0	4	0	110
2:30 PM	2	0	89	0	1	0	92
2:45 PM	0	0	100	0	3	1	104
3:00 PM	0	0	99	1	0	0	100
3:15 PM	1	0	91	2	2	0	96
3:30 PM	0	0	95	2	1	0	98
3:45 PM	0	0	98	2	1	0	101
4:00 PM	0	0	76	0	1	0	77
4:15 PM	0	0	78	1	0	0	79
4:30 PM	0	0	99	0	1	1	101
4:45 PM	0	0	76	0	0	0	76
5:00 PM	0	0	82	0	0	0	82
5:15 PM	0	0	69	0	0	0	69
5:30 PM	0	0	74	0	1	0	75
5:45 PM	0	0	73	1	0	0	74
6:00 PM	0	0	47	0	1	0	48
6:15 PM	0	0	64	0	1	0	65
6:30 PM	0	0	56	0	0	0	56
6:45 PM	0	0	36	0	0	0	36
7:00 PM	0	0	36	0	1	0	37
7:15 PM	0	0	44	0	0	0	44
7:30 PM	0	0	27	0	0	0	27
7:45 PM	0	0	36	0	0	0	36
8:00 PM	0	0	19	0	0	0	19
8:15 PM	0	0	21	0	0	0	21
8:30 PM	0	0	18	0	0	0	18
8:45 PM	0	0	9	0	0	0	9
9:00 PM	0	0	11	0	0	0	11
9:15 PM	0	0	8	0	0	0	8
9:30 PM	0	0	13	0	0	0	13
9:45 PM	0	0	7	0	0	0	7
10:00 PM	0	0	7	0	0	0	7
10:15 PM	0	0	6	0	1	0	7
10:30 PM	0	0	3	0	0	0	3
10:45 PM	0	0	5	0	0	0	5
11:00 PM	0	0	4	0	0	0	4
11:15 PM	0	0	2	0	0	0	2
11:30 PM	0	0	3	0	0	0	3
11:45 PM	0	0	1	0	0	0	1
PM Total	**5**	**0**	**2725**	**10**	**47**	**2**	**2789**
Percentage	**0.18%**	**0.00%**	**97.71%**	**0.36%**	**1.69%**	**0.07%**	
PM Peak	**2:30 PM**	**12:00 PM**	**12:30 PM**	**3:00 PM**	**1:00 PM**	**2:00 PM**	**12:30 PM**
Volume	**3**	**0**	**441**	**7**	**15**	**1**	**454**
Day Total	**5**	**0**	**6753**	**21**	**118**	**4**	**6901**
Percentage	**0.07%**	**0.00%**	**97.86%**	**0.30%**	**1.71%**	**0.06%**	

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 250468 ATR-A

Count Date: **Tuesday, February 25, 2025**
Direction: **WB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	5	0	0	0	5
12:15 AM	0	0	6	0	0	0	6
12:30 AM	0	0	1	0	0	0	1
12:45 AM	0	0	1	0	0	0	1
1:00 AM	0	0	2	0	0	0	2
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	1	0	0	0	1
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	1	0	0	0	1
3:45 AM	0	0	1	0	0	0	1
4:00 AM	0	0	1	0	0	0	1
4:15 AM	0	0	1	0	0	0	1
4:30 AM	0	0	1	0	0	0	1
4:45 AM	0	0	2	0	0	0	2
5:00 AM	0	0	1	0	0	0	1
5:15 AM	1	0	2	0	1	0	4
5:30 AM	0	0	5	0	0	0	5
5:45 AM	0	0	11	0	1	0	12
6:00 AM	0	0	7	1	0	0	8
6:15 AM	0	0	20	0	0	0	20
6:30 AM	0	0	15	1	1	0	17
6:45 AM	0	0	36	0	0	0	36
7:00 AM	0	0	34	0	1	0	35
7:15 AM	0	0	69	0	1	0	70
7:30 AM	0	0	92	1	2	0	95
7:45 AM	0	0	98	1	1	0	100
8:00 AM	0	0	85	3	3	0	91
8:15 AM	0	0	89	0	4	0	93
8:30 AM	0	0	79	0	4	3	86
8:45 AM	0	0	91	0	4	1	96
9:00 AM	0	0	78	0	5	1	84
9:15 AM	0	0	72	0	4	0	76
9:30 AM	0	0	67	0	7	1	75
9:45 AM	0	0	82	0	5	0	87
10:00 AM	0	0	77	0	3	0	80
10:15 AM	0	0	78	0	4	0	82
10:30 AM	0	0	78	0	3	0	81
10:45 AM	1	0	91	0	9	0	101
11:00 AM	0	0	112	0	6	0	118
11:15 AM	0	0	99	0	2	0	101
11:30 AM	0	0	84	0	6	4	94
11:45 AM	0	0	112	0	2	0	114

AM Total	**2**	**0**	**1787**	**7**	**79**	**10**	**1885**
Percentage	**0.11%**	**0.00%**	**94.80%**	**0.37%**	**4.19%**	**0.53%**	
AM Peak	**4:30 AM**	**12:00 AM**	**11:00 AM**	**7:15 AM**	**10:45 AM**	**8:15 AM**	**11:00 AM**
Volume	**1**	**0**	**407**	**5**	**23**	**5**	**427**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	101	0	6	1	108
12:15 PM	0	0	99	0	6	0	105
12:30 PM	0	1	116	0	2	0	119
12:45 PM	0	0	88	0	2	0	90
1:00 PM	0	0	87	0	1	0	88
1:15 PM	0	0	105	0	1	0	106
1:30 PM	0	0	112	0	3	0	115
1:45 PM	0	0	111	1	6	1	119
2:00 PM	0	0	117	0	7	1	125
2:15 PM	0	0	154	0	5	0	159
2:30 PM	1	0	165	1	7	0	174
2:45 PM	1	0	169	1	1	1	173
3:00 PM	0	0	150	1	2	0	153
3:15 PM	0	0	184	2	1	0	187
3:30 PM	0	0	230	0	0	0	230
3:45 PM	0	0	186	0	6	0	192
4:00 PM	0	0	225	1	2	0	228
4:15 PM	0	0	244	0	2	0	246
4:30 PM	0	0	224	2	1	0	227
4:45 PM	0	0	240	0	1	0	241
5:00 PM	0	0	235	0	3	0	238
5:15 PM	0	0	220	0	1	0	221
5:30 PM	0	0	198	0	2	0	200
5:45 PM	1	0	167	0	2	0	170
6:00 PM	0	0	215	0	1	0	216
6:15 PM	0	0	145	0	0	0	145
6:30 PM	0	0	116	0	1	0	117
6:45 PM	0	0	90	0	0	0	90
7:00 PM	0	0	90	0	1	0	91
7:15 PM	0	0	76	0	0	0	76
7:30 PM	0	0	57	0	0	0	57
7:45 PM	0	0	51	0	0	0	51
8:00 PM	0	0	58	0	0	0	58
8:15 PM	0	0	38	0	0	0	38
8:30 PM	0	0	37	0	1	0	38
8:45 PM	0	0	34	0	0	0	34
9:00 PM	0	0	37	0	0	0	37
9:15 PM	0	0	24	0	1	0	25
9:30 PM	1	0	23	0	0	0	24
9:45 PM	0	0	27	0	0	0	27
10:00 PM	0	0	32	0	0	0	32
10:15 PM	0	0	19	0	0	0	19
10:30 PM	0	0	14	0	0	0	14
10:45 PM	0	0	10	0	0	0	10
11:00 PM	0	0	17	0	0	0	17
11:15 PM	0	0	14	0	0	0	14
11:30 PM	0	0	9	0	0	0	9
11:45 PM	0	0	3	0	0	0	3

PM Total	**4**	**1**	**5163**	**9**	**75**	**4**	**5256**
Percentage	**0.08%**	**0.02%**	**98.23%**	**0.17%**	**1.43%**	**0.08%**	
PM Peak	**2:00 PM**	**12:00 PM**	**4:15 PM**	**2:30 PM**	**1:45 PM**	**1:15 PM**	**4:15 PM**
Volume	**2**	**1**	**943**	**5**	**25**	**2**	**952**
Day Total	**6**	**1**	**6950**	**16**	**154**	**14**	**7141**
Percentage	**0.08%**	**0.01%**	**97.33%**	**0.22%**	**2.16%**	**0.20%**	

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PDI File #: 250468 ATR-A

Count Date: **Wednesday, February 26, 2025**
Direction: **WB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	4	0	0	0	4
12:15 AM	0	0	7	0	0	0	7
12:30 AM	0	0	2	0	0	0	2
12:45 AM	0	0	2	0	0	0	2
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	3	0	0	0	3
1:30 AM	0	0	3	0	0	0	3
1:45 AM	0	0	1	0	0	0	1
2:00 AM	0	0	2	0	0	0	2
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	1	0	0	0	1
3:00 AM	0	0	1	0	0	0	1
3:15 AM	0	0	1	0	0	0	1
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	1	0	0	0	1
4:00 AM	0	0	2	0	0	0	2
4:15 AM	0	0	1	0	0	0	1
4:30 AM	0	0	0	0	0	0	0
4:45 AM	0	0	2	0	0	0	2
5:00 AM	0	0	2	0	0	0	2
5:15 AM	1	0	0	0	0	0	1
5:30 AM	0	0	8	0	0	0	8
5:45 AM	0	0	6	0	0	0	6
6:00 AM	0	0	7	1	1	0	9
6:15 AM	0	0	14	0	0	0	14
6:30 AM	0	0	22	1	3	0	26
6:45 AM	0	0	25	0	1	0	26
7:00 AM	0	0	44	0	0	0	44
7:15 AM	0	0	51	0	0	1	52
7:30 AM	0	0	64	2	3	0	69
7:45 AM	0	0	95	0	2	0	97
8:00 AM	0	0	84	3	2	0	89
8:15 AM	0	0	79	0	2	0	81
8:30 AM	0	0	100	0	5	0	105
8:45 AM	0	0	92	0	4	0	96
9:00 AM	0	0	72	0	2	0	74
9:15 AM	0	0	88	0	1	0	89
9:30 AM	0	0	80	1	1	0	82
9:45 AM	0	0	65	0	7	0	72
10:00 AM	0	0	87	0	10	0	97
10:15 AM	0	0	73	0	5	1	79
10:30 AM	0	1	83	0	6	0	90
10:45 AM	0	0	91	0	3	0	94
11:00 AM	0	0	104	0	2	0	106
11:15 AM	0	0	81	0	0	0	81
11:30 AM	0	0	109	0	2	0	111
11:45 AM	1	0	107	0	6	0	114
AM Total	**2**	**1**	**1766**	**8**	**68**	**2**	**1847**
Percentage	**0.11%**	**0.05%**	**95.61%**	**0.43%**	**3.68%**	**0.11%**	
AM Peak	**4:30 AM**	**9:45 AM**	**11:00 AM**	**7:15 AM**	**9:45 AM**	**6:30 AM**	**11:00 AM**
Volume	**1**	**1**	**401**	**5**	**28**	**1**	**412**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	100	0	1	0	101
12:15 PM	0	0	110	0	2	0	112
12:30 PM	2	0	110	0	5	0	117
12:45 PM	0	0	100	0	6	0	106
1:00 PM	0	0	111	1	1	0	113
1:15 PM	0	0	108	1	7	1	117
1:30 PM	0	0	127	0	3	0	130
1:45 PM	2	1	124	1	4	0	132
2:00 PM	0	0	96	1	2	0	99
2:15 PM	0	0	150	0	0	1	151
2:30 PM	0	0	146	0	2	0	148
2:45 PM	0	0	183	2	0	0	185
3:00 PM	0	0	153	1	3	0	157
3:15 PM	0	0	179	2	4	0	185
3:30 PM	0	0	204	1	2	0	207
3:45 PM	0	0	198	1	1	0	200
4:00 PM	0	0	175	1	0	0	176
4:15 PM	0	0	222	0	2	0	224
4:30 PM	0	0	215	1	2	0	218
4:45 PM	0	0	221	0	1	0	222
5:00 PM	0	0	229	0	2	0	231
5:15 PM	0	0	212	0	3	0	215
5:30 PM	0	0	223	0	2	0	225
5:45 PM	0	1	183	0	1	0	185
6:00 PM	0	0	189	0	1	0	190
6:15 PM	0	0	123	0	1	1	125
6:30 PM	0	0	123	0	0	0	123
6:45 PM	0	0	102	0	1	0	103
7:00 PM	0	0	80	0	0	0	80
7:15 PM	0	0	76	0	0	0	76
7:30 PM	0	0	50	0	0	0	50
7:45 PM	0	0	66	0	0	0	66
8:00 PM	0	0	60	0	0	0	60
8:15 PM	0	0	47	0	0	0	47
8:30 PM	0	0	49	0	0	0	49
8:45 PM	0	0	44	0	0	0	44
9:00 PM	0	0	35	0	0	0	35
9:15 PM	0	0	36	0	0	0	36
9:30 PM	0	0	32	0	0	0	32
9:45 PM	0	0	21	0	0	0	21
10:00 PM	0	0	26	0	0	0	26
10:15 PM	0	0	21	0	0	0	21
10:30 PM	0	0	18	0	0	0	18
10:45 PM	0	0	10	0	0	0	10
11:00 PM	0	0	12	0	0	0	12
11:15 PM	0	0	10	0	0	0	10
11:30 PM	0	0	4	0	0	0	4
11:45 PM	0	0	3	0	0	0	3
PM Total	**4**	**2**	**5116**	**13**	**59**	**3**	**5197**
Percentage	**0.08%**	**0.04%**	**98.44%**	**0.25%**	**1.14%**	**0.06%**	
PM Peak	**12:00 PM**	**1:00 PM**	**4:15 PM**	**2:45 PM**	**12:30 PM**	**12:30 PM**	**4:15 PM**
Volume	**2**	**1**	**887**	**6**	**19**	**1**	**895**
Day Total	**6**	**3**	**6882**	**21**	**127**	**5**	**7044**
Percentage	**0.09%**	**0.04%**	**97.70%**	**0.30%**	**1.80%**	**0.07%**	

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PDI File # **250468 ATR-A**

PRECISION
DATA
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Direction: **EB**

Weekly Report

Day	Tuesday		Wednesday												Week	
Date	02/25/25		02/26/25												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0	85	1	117	0	0	0	0	0	0	0	0	0	0	1	101
12:15	1	115	2	99	0	0	0	0	0	0	0	0	0	0	2	107
12:30	2	117	0	117	0	0	0	0	0	0	0	0	0	0	1	117
12:45	0	106	0	111	0	0	0	0	0	0	0	0	0	0	0	109
1:00	0	90	1	119	0	0	0	0	0	0	0	0	0	0	1	105
1:15	2	92	1	107	0	0	0	0	0	0	0	0	0	0	2	100
1:30	0	103	0	102	0	0	0	0	0	0	0	0	0	0	0	103
1:45	0	104	1	96	0	0	0	0	0	0	0	0	0	0	1	100
2:00	1	99	0	100	0	0	0	0	0	0	0	0	0	0	1	100
2:15	1	89	2	110	0	0	0	0	0	0	0	0	0	0	2	100
2:30	1	81	0	92	0	0	0	0	0	0	0	0	0	0	1	87
2:45	1	100	0	104	0	0	0	0	0	0	0	0	0	0	1	102
3:00	0	98	2	100	0	0	0	0	0	0	0	0	0	0	1	99
3:15	1	90	1	96	0	0	0	0	0	0	0	0	0	0	1	93
3:30	5	111	4	98	0	0	0	0	0	0	0	0	0	0	5	105
3:45	5	100	2	101	0	0	0	0	0	0	0	0	0	0	4	101
4:00	4	66	8	77	0	0	0	0	0	0	0	0	0	0	6	72
4:15	13	73	8	79	0	0	0	0	0	0	0	0	0	0	11	76
4:30	4	75	7	101	0	0	0	0	0	0	0	0	0	0	6	88
4:45	11	96	5	76	0	0	0	0	0	0	0	0	0	0	8	86
5:00	15	69	17	82	0	0	0	0	0	0	0	0	0	0	16	76
5:15	26	92	29	69	0	0	0	0	0	0	0	0	0	0	28	81
5:30	43	55	35	75	0	0	0	0	0	0	0	0	0	0	39	65
5:45	63	55	43	74	0	0	0	0	0	0	0	0	0	0	53	65
6:00	76	69	99	48	0	0	0	0	0	0	0	0	0	0	88	59
6:15	135	46	116	65	0	0	0	0	0	0	0	0	0	0	126	56
6:30	199	50	207	56	0	0	0	0	0	0	0	0	0	0	203	53
6:45	210	43	231	36	0	0	0	0	0	0	0	0	0	0	221	40
7:00	217	36	210	37	0	0	0	0	0	0	0	0	0	0	214	37
7:15	240	23	226	44	0	0	0	0	0	0	0	0	0	0	233	34
7:30	260	19	258	27	0	0	0	0	0	0	0	0	0	0	259	23
7:45	243	40	227	36	0	0	0	0	0	0	0	0	0	0	235	38
8:00	220	17	206	19	0	0	0	0	0	0	0	0	0	0	213	18
8:15	236	24	239	21	0	0	0	0	0	0	0	0	0	0	238	23
8:30	163	22	192	18	0	0	0	0	0	0	0	0	0	0	178	20
8:45	198	23	202	9	0	0	0	0	0	0	0	0	0	0	200	16
9:00	175	20	221	11	0	0	0	0	0	0	0	0	0	0	198	16
9:15	148	13	149	8	0	0	0	0	0	0	0	0	0	0	149	11
9:30	140	13	154	13	0	0	0	0	0	0	0	0	0	0	147	13
9:45	153	13	119	7	0	0	0	0	0	0	0	0	0	0	136	10
10:00	108	15	136	7	0	0	0	0	0	0	0	0	0	0	122	11
10:15	117	19	102	7	0	0	0	0	0	0	0	0	0	0	110	13
10:30	138	12	140	3	0	0	0	0	0	0	0	0	0	0	139	8
10:45	126	6	102	5	0	0	0	0	0	0	0	0	0	0	114	6
11:00	92	7	95	4	0	0	0	0	0	0	0	0	0	0	94	6
11:15	120	4	103	2	0	0	0	0	0	0	0	0	0	0	112	3
11:30	94	3	98	3	0	0	0	0	0	0	0	0	0	0	96	3
11:45	114	1	111	1	0	0	0	0	0	0	0	0	0	0	113	1
Total	**4121**	**2699**	**4112**	**2789**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4117**	**2744**
Day Total	**6820**		**6901**		**0**		**0**		**0**		**0**		**0**		**6861**	
Peak HR	**7:15 AM**	**12:15 PM**	**7:30 AM**	**12:30 PM**											**7:30 AM**	**12:15 PM**
Volume	**963**	**428**	**930**	**454**											**945**	**437**

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PDI File # **250468 ATR-A**

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

Direction: **WB**

Weekly Report

Day	Tuesday		Wednesday												Week	
Date	02/25/25		02/26/25												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	5	108	4	101	0	0	0	0	0	0	0	0	0	0	5	105
12:15	6	105	7	112	0	0	0	0	0	0	0	0	0	0	7	109
12:30	1	119	2	117	0	0	0	0	0	0	0	0	0	0	2	118
12:45	1	90	2	106	0	0	0	0	0	0	0	0	0	0	2	98
1:00	2	88	0	113	0	0	0	0	0	0	0	0	0	0	1	101
1:15	0	106	3	117	0	0	0	0	0	0	0	0	0	0	2	112
1:30	0	115	3	130	0	0	0	0	0	0	0	0	0	0	2	123
1:45	0	119	1	132	0	0	0	0	0	0	0	0	0	0	1	126
2:00	0	125	2	99	0	0	0	0	0	0	0	0	0	0	1	112
2:15	0	159	0	151	0	0	0	0	0	0	0	0	0	0	0	155
2:30	0	174	0	148	0	0	0	0	0	0	0	0	0	0	0	161
2:45	0	173	1	185	0	0	0	0	0	0	0	0	0	0	1	179
3:00	1	153	1	157	0	0	0	0	0	0	0	0	0	0	1	155
3:15	0	187	1	185	0	0	0	0	0	0	0	0	0	0	1	186
3:30	1	230	0	207	0	0	0	0	0	0	0	0	0	0	1	219
3:45	1	192	1	200	0	0	0	0	0	0	0	0	0	0	1	196
4:00	1	228	2	176	0	0	0	0	0	0	0	0	0	0	2	202
4:15	1	246	1	224	0	0	0	0	0	0	0	0	0	0	1	235
4:30	1	227	0	218	0	0	0	0	0	0	0	0	0	0	1	223
4:45	2	241	2	222	0	0	0	0	0	0	0	0	0	0	2	232
5:00	1	238	2	231	0	0	0	0	0	0	0	0	0	0	2	235
5:15	4	221	1	215	0	0	0	0	0	0	0	0	0	0	3	218
5:30	5	200	8	225	0	0	0	0	0	0	0	0	0	0	7	213
5:45	12	170	6	185	0	0	0	0	0	0	0	0	0	0	9	178
6:00	8	216	9	190	0	0	0	0	0	0	0	0	0	0	9	203
6:15	20	145	14	125	0	0	0	0	0	0	0	0	0	0	17	135
6:30	17	117	26	123	0	0	0	0	0	0	0	0	0	0	22	120
6:45	36	90	26	103	0	0	0	0	0	0	0	0	0	0	31	97
7:00	35	91	44	80	0	0	0	0	0	0	0	0	0	0	40	86
7:15	70	76	52	76	0	0	0	0	0	0	0	0	0	0	61	76
7:30	95	57	69	50	0	0	0	0	0	0	0	0	0	0	82	54
7:45	100	51	97	66	0	0	0	0	0	0	0	0	0	0	99	59
8:00	91	58	89	60	0	0	0	0	0	0	0	0	0	0	90	59
8:15	93	38	81	47	0	0	0	0	0	0	0	0	0	0	87	43
8:30	86	38	105	49	0	0	0	0	0	0	0	0	0	0	96	44
8:45	96	34	96	44	0	0	0	0	0	0	0	0	0	0	96	39
9:00	84	37	74	35	0	0	0	0	0	0	0	0	0	0	79	36
9:15	76	25	89	36	0	0	0	0	0	0	0	0	0	0	83	31
9:30	75	24	82	32	0	0	0	0	0	0	0	0	0	0	79	28
9:45	87	27	72	21	0	0	0	0	0	0	0	0	0	0	80	24
10:00	80	32	97	26	0	0	0	0	0	0	0	0	0	0	89	29
10:15	82	19	79	21	0	0	0	0	0	0	0	0	0	0	81	20
10:30	81	14	90	18	0	0	0	0	0	0	0	0	0	0	86	16
10:45	101	10	94	10	0	0	0	0	0	0	0	0	0	0	98	10
11:00	118	17	106	12	0	0	0	0	0	0	0	0	0	0	112	15
11:15	101	14	81	10	0	0	0	0	0	0	0	0	0	0	91	12
11:30	94	9	111	4	0	0	0	0	0	0	0	0	0	0	103	7
11:45	114	3	114	3	0	0	0	0	0	0	0	0	0	0	114	3
Total	1885	5256	1847	5197	0	0	0	0	0	0	0	0	0	0	1866	5227
Day Total	7141		7044		0		0		0		0		0		7093	
Peak HR	11:00 AM	4:15 PM	11:00 AM	4:15 PM											11:00 AM	4:15 PM
Volume	427	952	412	895											420	924

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 250468 ATR-A (Speed)

Count Date
Tuesday, February 25, 2025

Speed (60-minute)

EB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	1	2	1	0	0	0	0	0	0	5	39.8	35.0
1:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	35.9	35.5
2:00 AM	0	0	0	0	1	3	0	0	0	0	0	0	0	4	37.6	36.3
3:00 AM	0	0	0	0	1	7	3	0	1	0	0	0	0	12	40.0	38.6
4:00 AM	0	0	0	0	4	13	13	2	0	0	0	0	0	32	42.4	39.1
5:00 AM	0	0	0	3	34	88	29	0	0	0	0	0	0	154	40.0	36.6
6:00 AM	0	0	0	13	241	343	39	1	0	0	0	0	0	637	38.0	35.1
7:00 AM	0	4	5	69	517	319	27	0	0	0	0	0	0	941	37.0	33.5
8:00 AM	28	36	66	103	220	164	29	1	0	0	0	0	0	647	37.0	30.0
9:00 AM	6	8	12	49	257	227	39	0	0	0	0	0	0	598	38.0	33.5
10:00 AM	0	5	4	57	224	190	27	1	0	0	0	0	0	508	37.0	33.6
11:00 AM	0	0	2	67	206	136	17	2	0	0	1	0	0	431	37.0	33.3
12:00 PM	0	0	0	34	220	169	26	0	0	0	0	0	0	449	37.0	34.1
1:00 PM	0	4	11	40	191	131	19	3	0	0	0	0	0	399	37.3	33.4
2:00 PM	0	0	5	46	166	134	26	1	0	0	0	0	0	378	38.0	33.8
3:00 PM	0	1	10	27	171	167	31	3	0	0	0	0	0	410	38.0	34.2
4:00 PM	0	0	0	16	142	131	30	2	1	0	0	0	0	322	38.9	35.0
5:00 PM	0	0	1	13	128	116	29	1	0	0	0	0	0	288	38.0	34.8
6:00 PM	0	0	1	19	104	71	17	2	0	0	0	0	0	214	38.0	34.0
7:00 PM	0	0	0	3	53	52	12	1	1	0	0	0	0	122	39.0	35.2
8:00 PM	0	0	0	2	31	37	15	3	0	0	0	0	0	88	41.0	36.2
9:00 PM	0	1	1	2	23	23	9	1	0	0	0	0	0	60	40.0	34.8
10:00 PM	0	0	1	2	18	24	6	3	0	0	0	0	0	54	40.0	36.0
11:00 PM	0	0	0	1	3	6	5	1	0	0	0	0	0	16	42.8	37.8
Total	34	59	119	567	2956	2555	449	28	3	0	1	0	0	6771	38.0	33.8
Percent	0.50%	0.87%	1.76%	8.37%	43.66%	37.73%	6.63%	0.41%	0.04%	0.00%	0.01%	0.00%	0.00%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	6:00 AM	6:00 AM	4:00 AM	3:00 AM		11:00 AM			7:00 AM		
Volume	28	36	66	103	517	343	39	2	1	0	1	0	0	941		
PM Peak		1:00 PM	1:00 PM	2:00 PM	12:00 PM	12:00 PM	3:00 PM	1:00 PM	4:00 PM					12:00 PM		
Volume	0	4	11	46	220	169	31	3	1	0	0	0	0	449		

15th Percentile:	30.0 MPH	Average Speed:	33.8 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	34.0 MPH	10 MPH Pace:	30 to 39 MPH	Number of Vehicles > 30 MPH:	5679
85th Percentile:	38.0 MPH	Number in Pace:	5511	Percent of Vehicles > 30 MPH:	83.9%
95th Percentile:	40.0 MPH	Percent in Pace:	81.4%		

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 250468 ATR-A (Speed)

Count Date
Tuesday, February 25, 2025

Speed (60-minute)

WB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	4	8	1	0	0	0	0	0	0	13	38.0	35.2
1:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	37.0	37.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	1	1	1	0	0	0	0	0	0	3	39.7	37.7
4:00 AM	0	0	0	1	0	4	0	0	0	0	0	0	0	5	37.8	35.2
5:00 AM	0	1	0	1	4	8	6	3	0	0	0	0	0	23	41.7	36.7
6:00 AM	0	0	0	0	20	54	17	2	0	0	0	0	1	94	41.0	37.5
7:00 AM	0	0	5	17	86	122	24	2	0	0	0	0	0	256	39.0	34.9
8:00 AM	0	3	8	45	124	109	21	1	0	0	0	0	0	311	38.0	33.4
9:00 AM	2	0	3	26	125	132	30	2	0	0	0	0	1	321	38.0	34.6
10:00 AM	1	1	3	37	145	123	27	2	0	0	0	0	0	339	38.0	33.9
11:00 AM	0	1	4	55	172	138	38	4	1	0	0	0	0	413	38.0	34.0
12:00 PM	0	1	4	35	138	167	51	2	0	0	1	0	0	399	39.0	34.9
1:00 PM	1	3	6	25	156	197	51	5	0	0	0	0	0	444	39.0	35.0
2:00 PM	0	0	11	38	217	283	50	5	1	0	0	0	0	605	39.0	34.8
3:00 PM	0	0	3	17	202	388	95	4	2	0	0	0	0	711	39.0	36.1
4:00 PM	0	3	3	12	222	512	135	13	1	1	0	0	0	902	40.0	36.5
5:00 PM	0	0	1	26	219	433	131	12	1	0	0	0	0	823	40.0	36.3
6:00 PM	0	2	1	14	170	324	50	1	1	0	0	0	0	563	39.0	35.6
7:00 PM	1	0	1	2	79	178	25	2	1	0	0	0	0	289	39.0	36.0
8:00 PM	0	0	0	3	53	96	33	1	0	0	0	0	0	186	40.0	36.3
9:00 PM	0	1	2	3	28	68	21	2	0	0	0	0	0	125	40.0	36.2
10:00 PM	0	0	0	1	13	45	17	3	0	0	0	0	0	79	40.3	37.2
11:00 PM	0	0	0	0	12	27	7	0	0	0	0	0	0	46	39.3	36.7
Total	5	16	55	358	2190	3419	831	66	8	1	1	0	2	6952	39.0	35.5
Percent	0.07%	0.23%	0.79%	5.15%	31.50%	49.18%	11.95%	0.95%	0.12%	0.01%	0.01%	0.00%	0.03%			
AM Peak	9:00 AM	8:00 AM	8:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM	11:00 AM				6:00 AM	11:00 AM		
Volume	2	3	8	55	172	138	38	4	1	0	0	0	1	413		
PM Peak	1:00 PM	1:00 PM	2:00 PM	2:00 PM	4:00 PM	4:00 PM	4:00 PM	4:00 PM	3:00 PM	4:00 PM	12:00 PM			4:00 PM		
Volume	1	3	11	38	222	512	135	13	2	1	1	0	0	902		

15th Percentile: 32.0 MPH
50th Percentile: 36.0 MPH
85th Percentile: 39.0 MPH
95th Percentile: 41.0 MPH

Average Speed: 35.5 MPH
10 MPH Pace: 31 to 40 MPH
Number in Pace: 5758
Percent in Pace: 82.8%

Posted Speed Limit: 30 MPH
Number of Vehicles > 30 MPH: 6321
Percent of Vehicles > 30 MPH: 90.9%

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PRECISION
D A T A
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 250468 ATR-A (Speed)

Count Date
Tuesday, February 25, 2025

Speed (60-minute)

Combined EB and WB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	1	5	10	2	0	0	0	0	0	0	18	39.0	35.1
1:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	4	37.0	36.3
2:00 AM	0	0	0	0	1	3	0	0	0	0	0	0	0	4	37.6	36.3
3:00 AM	0	0	0	0	2	8	4	0	1	0	0	0	0	15	40.0	38.4
4:00 AM	0	0	0	1	4	17	13	2	0	0	0	0	0	37	42.0	38.5
5:00 AM	0	1	0	4	38	96	35	3	0	0	0	0	0	177	41.0	36.7
6:00 AM	0	0	0	13	261	397	56	3	0	0	0	0	1	731	38.0	35.4
7:00 AM	0	4	10	86	603	441	51	2	0	0	0	0	0	1197	37.0	33.8
8:00 AM	28	39	74	148	344	273	50	2	0	0	0	0	0	958	37.0	31.1
9:00 AM	8	8	15	75	382	359	69	2	0	0	0	0	1	919	38.0	33.9
10:00 AM	1	6	7	94	369	313	54	3	0	0	0	0	0	847	38.0	33.7
11:00 AM	0	1	6	122	378	274	55	6	1	0	1	0	0	844	38.0	33.6
12:00 PM	0	1	4	69	358	336	77	2	0	0	1	0	0	848	38.0	34.5
1:00 PM	1	7	17	65	347	328	70	8	0	0	0	0	0	843	38.0	34.2
2:00 PM	0	0	16	84	383	417	76	6	1	0	0	0	0	983	38.0	34.4
3:00 PM	0	1	13	44	373	555	126	7	2	0	0	0	0	1121	39.0	35.4
4:00 PM	0	3	3	28	364	643	165	15	2	1	0	0	0	1224	39.0	36.1
5:00 PM	0	0	2	39	347	549	160	13	1	0	0	0	0	1111	40.0	35.9
6:00 PM	0	2	2	33	274	395	67	3	1	0	0	0	0	777	38.0	35.2
7:00 PM	1	0	1	5	132	230	37	3	2	0	0	0	0	411	39.0	35.8
8:00 PM	0	0	0	5	84	133	48	4	0	0	0	0	0	274	40.0	36.3
9:00 PM	0	2	3	5	51	91	30	3	0	0	0	0	0	185	40.0	35.8
10:00 PM	0	0	1	3	31	69	23	6	0	0	0	0	0	133	40.0	36.7
11:00 PM	0	0	0	1	15	33	12	1	0	0	0	0	0	62	40.0	37.0
Total	39	75	174	925	5146	5974	1280	94	11	1	2	0	2	13723	39.0	34.6
Percent	0.28%	0.55%	1.27%	6.74%	37.50%	43.53%	9.33%	0.68%	0.08%	0.01%	0.01%	0.00%	0.01%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	9:00 AM	11:00 AM	3:00 AM		11:00 AM		6:00 AM	7:00 AM		
Volume	28	39	74	148	603	441	69	6	1	0	1	0	1	1197		
PM Peak	1:00 PM	1:00 PM	1:00 PM	2:00 PM	2:00 PM	4:00 PM	4:00 PM	4:00 PM	3:00 PM	4:00 PM	12:00 PM			4:00 PM		
Volume	1	7	17	84	383	643	165	15	2	1	1	0	0	1224		

15th Percentile:	31.0 MPH	Average Speed:	34.6 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	35.0 MPH	10 MPH Pace:	31 to 40 MPH	Number of Vehicles > 30 MPH:	12000
85th Percentile:	39.0 MPH	Number in Pace:	11142	Percent of Vehicles > 30 MPH:	87.4%
95th Percentile:	41.0 MPH	Percent in Pace:	81.2%		

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PRECISION
DATA
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 250468 ATR-A (Speed)

Count Date
Wednesday, February 26, 2025

Speed (60-minute)

EB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	1	1	0	1	0	0	0	0	0	3	45.1	39.3
1:00 AM	0	0	0	1	1	0	1	0	0	0	0	0	0	3	41.0	35.7
2:00 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	2	36.3	34.5
3:00 AM	0	0	0	0	2	2	4	1	0	0	0	0	0	9	42.8	39.0
4:00 AM	0	0	0	1	4	12	7	5	0	0	0	0	0	29	46.4	39.4
5:00 AM	0	0	0	1	24	84	20	6	0	0	0	0	0	135	40.0	37.3
6:00 AM	0	0	0	33	241	353	29	1	0	0	0	0	0	657	38.0	34.9
7:00 AM	3	8	9	51	438	382	28	1	0	0	0	0	0	920	37.0	33.9
8:00 AM	6	23	32	119	359	241	11	2	0	0	0	0	0	793	36.0	32.0
9:00 AM	0	0	1	34	323	254	36	1	0	0	0	0	0	649	37.0	34.2
10:00 AM	0	0	5	42	224	186	26	0	0	0	0	0	0	483	38.0	33.9
11:00 AM	0	0	1	32	180	168	24	2	0	0	0	0	0	407	38.0	34.3
12:00 PM	0	2	8	38	201	181	29	1	0	0	0	0	0	460	38.0	33.9
1:00 PM	0	1	2	47	205	160	31	0	0	0	0	0	0	446	38.0	33.9
2:00 PM	0	1	2	54	213	139	24	1	0	0	0	0	1	435	37.0	33.6
3:00 PM	0	1	0	26	199	155	26	3	0	0	0	0	0	410	38.0	34.3
4:00 PM	0	0	1	28	147	151	31	2	0	0	0	0	0	360	39.0	34.7
5:00 PM	0	0	0	20	120	138	24	3	0	0	0	0	0	305	39.0	35.0
6:00 PM	0	0	0	12	110	90	17	1	0	0	0	0	0	230	38.0	34.5
7:00 PM	0	0	0	10	64	60	18	2	1	0	0	0	0	155	39.0	35.1
8:00 PM	0	0	0	5	22	29	13	0	1	0	0	0	0	70	40.0	35.9
9:00 PM	0	1	0	2	14	12	10	3	1	0	0	0	0	43	43.7	36.7
10:00 PM	0	0	1	1	6	6	8	1	1	0	0	0	0	24	43.0	37.5
11:00 PM	0	0	0	1	2	3	2	2	0	0	0	0	0	10	44.7	38.5
Total	9	37	62	558	3101	2808	419	39	4	0	0	0	1	7038	38.0	34.1
Percent	0.13%	0.53%	0.88%	7.93%	44.06%	39.90%	5.95%	0.55%	0.06%	0.00%	0.00%	0.00%	0.01%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	9:00 AM	5:00 AM						7:00 AM		
Volume	6	23	32	119	438	382	36	6	0	0	0	0	0	920		
PM Peak		12:00 PM	12:00 PM	2:00 PM	2:00 PM	12:00 PM	1:00 PM	3:00 PM	7:00 PM				2:00 PM	12:00 PM		
Volume	0	2	8	54	213	181	31	3	1	0	0	0	1	460		

15th Percentile: 31.0 MPH
50th Percentile: 34.0 MPH
85th Percentile: 38.0 MPH
95th Percentile: 40.0 MPH

Average Speed: 34.1 MPH
10 MPH Pace: 30 to 39 MPH
Number in Pace: 5909
Percent in Pace: 84.0%

Posted Speed Limit: 30 MPH
Number of Vehicles > 30 MPH: 6080
Percent of Vehicles > 30 MPH: 86.4%

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PRECISION
DATA
INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 250468 ATR-A (Speed)

Count Date
Wednesday, February 26, 2025

Speed (60-minute)

WB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	3	8	4	0	0	0	0	0	0	15	40.9	37.0
1:00 AM	0	0	0	1	1	4	1	0	0	0	0	0	0	7	39.1	35.3
2:00 AM	0	0	0	0	2	2	0	0	0	0	0	0	0	4	37.1	35.5
3:00 AM	0	0	0	0	1	1	2	0	0	0	0	0	0	4	40.0	37.8
4:00 AM	0	0	0	0	3	1	2	0	0	0	0	0	0	6	40.3	36.2
5:00 AM	0	1	0	1	1	5	6	3	1	0	0	0	0	18	46.0	39.2
6:00 AM	0	0	0	0	24	26	19	3	0	0	0	0	0	72	41.0	37.0
7:00 AM	0	0	1	11	81	96	32	5	0	0	0	0	0	226	40.0	35.4
8:00 AM	1	1	8	39	132	125	38	1	0	0	0	0	0	345	39.0	34.2
9:00 AM	1	2	5	27	91	140	33	6	1	1	0	0	0	307	39.0	34.8
10:00 AM	0	0	3	37	130	158	28	3	2	0	0	0	0	361	38.0	34.5
11:00 AM	1	0	5	26	149	180	35	4	1	0	0	0	0	401	39.0	34.9
12:00 PM	2	1	4	33	170	162	37	2	0	0	0	0	0	411	38.0	34.2
1:00 PM	1	2	6	44	181	206	43	2	1	0	0	0	0	486	38.0	34.4
2:00 PM	0	0	2	34	193	292	53	5	2	0	0	0	1	582	39.0	35.4
3:00 PM	0	2	2	30	262	364	65	4	0	0	0	0	0	729	39.0	35.3
4:00 PM	0	2	5	21	251	475	111	8	0	1	0	0	0	874	39.0	35.9
5:00 PM	4	0	1	14	260	462	87	7	0	0	0	0	0	835	39.0	35.6
6:00 PM	0	0	1	6	183	304	59	4	0	0	0	0	0	557	39.0	35.8
7:00 PM	0	0	0	3	85	159	48	2	1	0	0	0	0	298	40.0	36.3
8:00 PM	0	0	0	1	56	130	25	3	0	0	0	0	0	215	39.0	36.4
9:00 PM	0	0	0	2	39	66	23	2	0	0	0	0	0	132	40.0	36.5
10:00 PM	0	0	0	3	20	44	14	1	0	0	0	0	0	82	40.0	36.4
11:00 PM	0	0	0	0	7	17	6	1	0	0	0	0	0	31	40.5	36.7
Total	10	11	43	333	2325	3427	771	66	9	2	0	0	1	6998	39.0	35.4
Percent	0.14%	0.16%	0.61%	4.76%	33.22%	48.97%	11.02%	0.94%	0.13%	0.03%	0.00%	0.00%	0.01%			
AM Peak	8:00 AM	9:00 AM	8:00 AM	8:00 AM	11:00 AM	11:00 AM	8:00 AM	9:00 AM	10:00 AM	9:00 AM				11:00 AM		
Volume	1	2	8	39	149	180	38	6	2	1	0	0	0	401		
PM Peak	5:00 PM	1:00 PM	1:00 PM	1:00 PM	3:00 PM	4:00 PM	4:00 PM	4:00 PM	2:00 PM	4:00 PM			2:00 PM	4:00 PM		
Volume	4	2	6	44	262	475	111	8	2	1	0	0	1	874		

15th Percentile:	32.0 MPH	Average Speed:	35.4 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	35.0 MPH	10 MPH Pace:	31 to 40 MPH	Number of Vehicles > 30 MPH:	6421
85th Percentile:	39.0 MPH	Number in Pace:	5903	Percent of Vehicles > 30 MPH:	91.8%
95th Percentile:	41.0 MPH	Percent in Pace:	84.4%		

Central Avenue between
Marked Tree Road and DPW Driveway
City, State: Needham, MA
Client: Weston & Sampson/ D. Ostler
Site Code: ENG24-0073

PDI File #: 250468 ATR-A (Speed)

Count Date
Wednesday, February 26, 2025

Speed (60-minute)
Combined EB and WB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	4	9	4	1	0	0	0	0	0	18	41.5	37.4
1:00 AM	0	0	0	2	2	4	2	0	0	0	0	0	0	10	39.7	35.4
2:00 AM	0	0	0	0	3	3	0	0	0	0	0	0	0	6	37.3	35.2
3:00 AM	0	0	0	0	3	3	6	1	0	0	0	0	0	13	42.2	38.6
4:00 AM	0	0	0	1	7	13	9	5	0	0	0	0	0	35	44.0	38.8
5:00 AM	0	1	0	2	25	89	26	9	1	0	0	0	0	153	41.0	37.5
6:00 AM	0	0	0	33	265	379	48	4	0	0	0	0	0	729	38.0	35.1
7:00 AM	3	8	10	62	519	478	60	6	0	0	0	0	0	1146	37.0	34.2
8:00 AM	7	24	40	158	491	366	49	3	0	0	0	0	0	1138	37.0	32.7
9:00 AM	1	2	6	61	414	394	69	7	1	1	0	0	0	956	38.0	34.4
10:00 AM	0	0	8	79	354	344	54	3	2	0	0	0	0	844	38.0	34.1
11:00 AM	1	0	6	58	329	348	59	6	1	0	0	0	0	808	38.0	34.6
12:00 PM	2	3	12	71	371	343	66	3	0	0	0	0	0	871	38.0	34.0
1:00 PM	1	3	8	91	386	366	74	2	1	0	0	0	0	932	38.0	34.1
2:00 PM	0	1	4	88	406	431	77	6	2	0	0	0	2	1017	38.0	34.6
3:00 PM	0	3	2	56	461	519	91	7	0	0	0	0	0	1139	38.0	34.9
4:00 PM	0	2	6	49	398	626	142	10	0	1	0	0	0	1234	39.0	35.5
5:00 PM	4	0	1	34	380	600	111	10	0	0	0	0	0	1140	39.0	35.5
6:00 PM	0	0	1	18	293	394	76	5	0	0	0	0	0	787	39.0	35.5
7:00 PM	0	0	0	13	149	219	66	4	2	0	0	0	0	453	40.0	35.9
8:00 PM	0	0	0	6	78	159	38	3	1	0	0	0	0	285	39.0	36.3
9:00 PM	0	1	0	4	53	78	33	5	1	0	0	0	0	175	41.0	36.5
10:00 PM	0	0	1	4	26	50	22	2	1	0	0	0	0	106	41.0	36.6
11:00 PM	0	0	0	1	9	20	8	3	0	0	0	0	0	41	42.0	37.1
Total	19	48	105	891	5426	6235	1190	105	13	2	0	0	2	14036	38.0	34.7
Percent	0.14%	0.34%	0.75%	6.35%	38.66%	44.42%	8.48%	0.75%	0.09%	0.01%	0.00%	0.00%	0.01%			
AM Peak	8:00 AM	8:00 AM	8:00 AM	8:00 AM	7:00 AM	7:00 AM	9:00 AM	5:00 AM	10:00 AM	9:00 AM				7:00 AM		
Volume	7	24	40	158	519	478	69	9	2	1	0	0	0	1146		
PM Peak	5:00 PM	12:00 PM	12:00 PM	1:00 PM	3:00 PM	4:00 PM	4:00 PM	4:00 PM	2:00 PM	4:00 PM			2:00 PM	4:00 PM		
Volume	4	3	12	91	461	626	142	10	2	1	0	0	2	1234		

15th Percentile:	31.0 MPH	Average Speed:	34.7 MPH	Posted Speed Limit:	30 MPH
50th Percentile:	35.0 MPH	10 MPH Pace:	31 to 40 MPH	Number of Vehicles > 30 MPH:	12501
85th Percentile:	38.0 MPH	Number in Pace:	11711	Percent of Vehicles > 30 MPH:	89.1%
95th Percentile:	41.0 MPH	Percent in Pace:	83.4%		

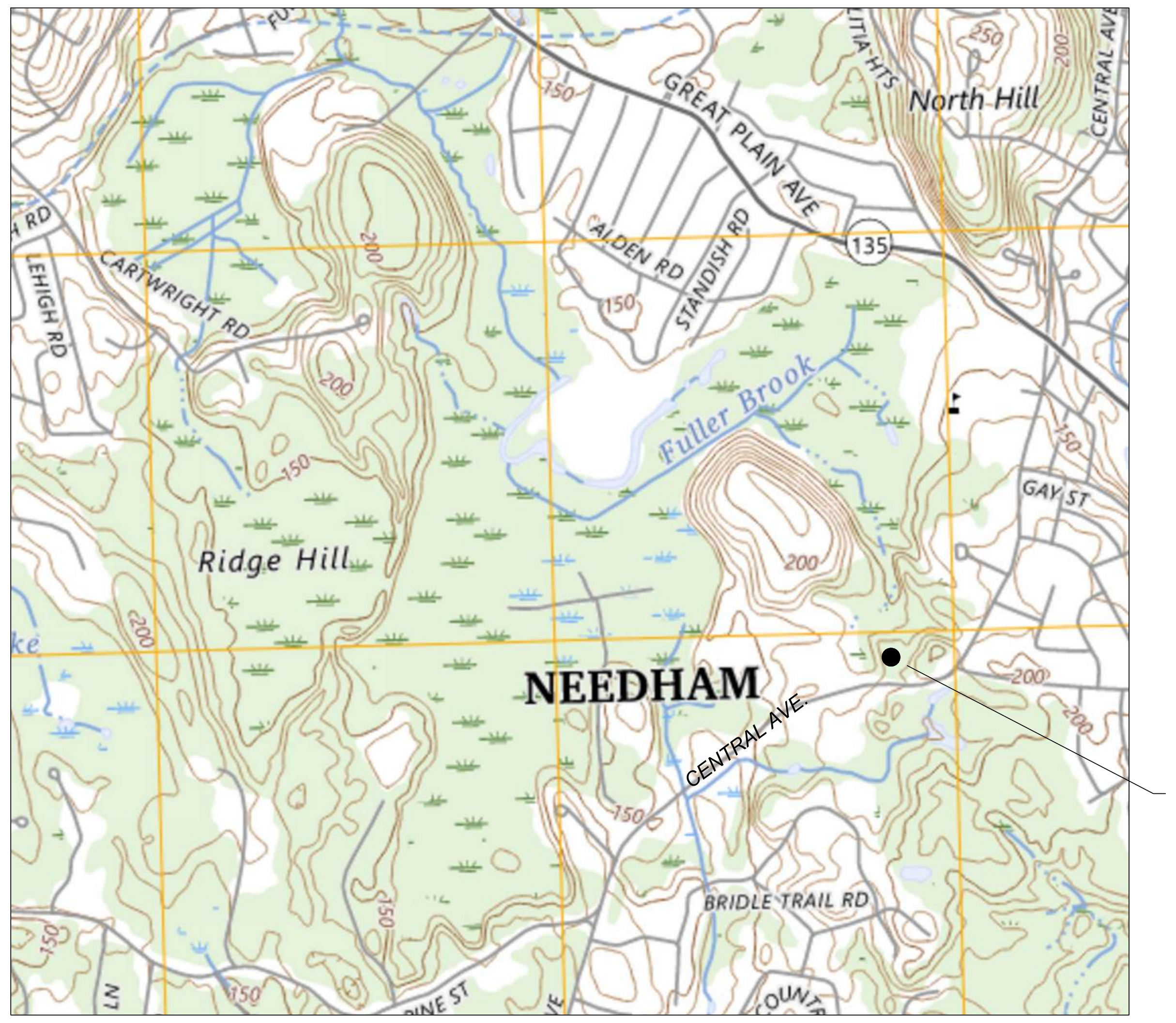
Appendix D

Site Development and Planting Plans

TOWN OF NEEDHAM, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS
PHASE I FLEET MAINTENANCE FACILITY

1421 CENTRAL AVENUE



SITE
LOCATION

USGS LOCUS: NATICK QUADRANGLE
1" = 1000'

DRAWING INDEX

SHEET NO.	DRAWING NO.	TITLE
1	C000	COVER
2	C001	GENERAL NOTES & LEGEND
3	C100	EXISTING CONDITIONS PLAN I
4	C101	EXISTING CONDITIONS PLAN I
5	C110	OVERALL SITE REFERENCE PLAN
6	C200	SITE PREPARATION PLAN
7	C300	SITE LAYOUT AND MATERIALS PLAN
8	C400	GRADING AND DRAINAGE PLAN
9	C500	UTILITY PLAN
10	C510	SEWER PROFILE
11	C600	DETAILS I
12	C601	DETAILS II
13	C602	DETAILS III
14	C700	EXISTING SITE PHOTOS
15	L100	LANDSCAPING PLAN
16	L101	LANDSCAPING DETAILS

Weston & Sampson Engineers, Inc.
55 Walkers Brook Drive, Suite 100, Reading, MA 01867

Project:
DPW COMPLEX PHASE I
FLEET MAINTENANCE FACILITY

1421 CENTRAL AVENUE
NEEDHAM, MA 02492

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON

www.westonandsampson.com

Consultants:

Revisions:

No.	Date	Description

COA:

Seal:
JAMES I. PEARSON
CIVIL
No. 50675
04/15/2025

Issued For:
PERMITTING

Scale: AS NOTED

Date: APRIL 15, 2025
Drawn By: JLO
Reviewed By: JP
Approved By: TJC

W&S Project No.: ENG24-0773
W&S File No.:

Drawing Title:
COVER

Sheet Number:
C000

GENERAL NOTES

1. TOPOGRAPHICAL INFORMATION IS BASED ON AN ON THE GROUND SURVEY PERFORMED BY WELCH ASSOCIATES LAND SURVEYORS INC. FROM SEPTEMBER-OCTOBER 2024. THE HORIZONTAL COORDINATES ARE BASED ON NAD 83, THE VERTICAL DATUM IS NAVD 88.
2. WETLAND DELINEATION WAS PERFORMED ON AUGUST 14, 2024 BY A QUALIFIED WESTON & SAMPSON PROFESSIONAL TRAINED IN WETLAND DELINEATION USING THE U.S. ARMY CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION METHODOLOGIES.
3. LOCATIONS OF ANY UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF SUCH UTILITIES, PROTECTING ALL EXISTING UTILITIES AND REPAIRING ANY DAMAGE DONE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE COORDINATION WITH UTILITY COMPANIES AND PUBLIC AGENCIES AND FOR OBTAINING ALL REQUIRED PERMITS AND PAYING ALL REQUIRED FEES. IN ACCORDANCE WITH M.G.L. CHAPTER 82, SECTION 40, INCLUDING AMENDMENTS, CONTRACTORS SHALL NOTIFY ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES IN WRITING PRIOR TO EXCAVATION. CONTRACTOR SHALL ALSO CALL "DIG SAFE" AT (888) 344-7233 NO LESS THAN 72 HOURS, (EXCLUSIVE OF WEEKENDS AND HOLIDAYS), PRIOR TO SUCH EXCAVATION. DOCUMENTATION OF REQUESTS SHALL BE PROVIDED TO PROJECT REPRESENTATIVE PRIOR TO EXCAVATION WORK.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
5. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING ALL DRAWINGS AND SPECIFICATIONS TO DETERMINE THE EXTENT OF EXCAVATION AND DEMOLITION REQUIRED TO RECEIVE SITE IMPROVEMENTS.
7. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE DRAWINGS AND EXISTING CONDITIONS, EXISTING CONDITIONS TO REMAIN, TEMPORARY CONSTRUCTION, PERMANENT CONSTRUCTION AND WORK OF ADJACENT CONTRACTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER BEFORE PROCEEDING. ITEMS ENCOUNTERED IN AREAS OF EXCAVATION THAT ARE NOT INDICATED ON THE DRAWINGS, BUT ARE VISIBLE ON SURFACE, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER.
8. ANY ALTERATIONS TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE GENERAL CONTRACTOR ON "AS-BUILT" DRAWINGS.
9. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS OUTSIDE THE PROJECT LIMITS, SHALL BE RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.
10. ALL WORK SHOWN ON THE PLANS AS BOLD SHALL REPRESENT PROPOSED WORK. THE TERM "PROPOSED (PROP)" INDICATES WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET (R&R)", OR REMOVE, RELOCATE, RESET, (R,R&R).
11. ALL KNOWN EXISTING STATE, COUNTY AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND ARE INDICATED ON THE PLANS.
12. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT HIS EMPLOYEES, AS WELL AS PUBLIC USERS FROM INJURY DURING THE ENTIRE CONSTRUCTION PERIOD USING ALL NECESSARY SAFEGUARDS, INCLUDING BUT NOT LIMITED TO, THE ERECTION OF TEMPORARY WALKS, STRUCTURES, PROTECTIVE BARRIERS, COVERING, OR FENCES AS NEEDED.
13. THE CONTRACTOR SHALL SUPPLY THE OWNER WITH THE NAME OF THE OSHA "COMPETENT PERSON" PRIOR TO CONSTRUCTION.
14. FILLING OF EXCAVATED AREAS SHALL NOT TAKE PLACE WITHOUT THE PRESENCE OR PERMISSION OF THE OWNER.
15. EXISTING TREES TO REMAIN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES. NO STOCKPILING OF MATERIAL, EQUIPMENT OR VEHICULAR TRAFFIC SHALL BE ALLOWED WITHIN THE DRIP LINE OF TREES TO REMAIN. NO GUYS SHALL BE ATTACHED TO ANY TREE TO REMAIN. WHEN NECESSARY OR AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL ERECT TEMPORARY BARRIERS FOR THE PROTECTION OF EXISTING TREES DURING CONSTRUCTION.
16. TREES AND SHRUBS WITHIN THE LIMITS OF WORK SHALL BE REMOVED ONLY UPON THE APPROVAL OF THE ENGINEER OR AS NOTED ON THE PLANS.
17. NO FILLING SHALL OCCUR AROUND EXISTING TREES TO REMAIN WITHOUT THE APPROVAL OF THE OWNER OR OWNER REPRESENTATIVE.
18. THE CONTRACTOR SHALL REMOVE ALL SURFACE VEGETATION PRIOR TO GRADING THE SITE. TEMPORARY EROSION CONTROL MEASURES SHOWN ON THE DRAWINGS (INCLUDING SILT FENCE AND COMPOSITE FILTER TUBES) SHALL BE INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THESE TEMPORARY EROSION CONTROL MEASURES THROUGHOUT THE PROJECT WHICH COST SHALL BE INCIDENTAL TO THE PROJECT.
19. ALL SURPLUS AND/OR UNSUITABLE MATERIAL FROM CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE TOWN IN ACCORDANCE WITH SPECIFICATION 02 61 00.16 - HANDLING, TRANSPORTATION, REUSE AND OFF-SITE DISPOSAL OF SURPLUS EXCAVATED MATERIAL. SUITABLE SOIL EXCAVATION AS PART OF THE PROJECT MUST MEET ONE OR MORE OF THE MATERIAL REQUIREMENTS SPECIFIED IN 31 00 00 - EARTHWORK. ON-SITE FILL MATERIALS, WHICH DO NOT CONFORM TO SPEC 31 00 00, SHALL NOT BE USED BELOW ANY STRUCTURES. IF THE CONTRACTOR PROPOSES TO USE THE EXISTING FILL ON SITE BELOW PAVEMENT AREAS, OR FOR THE EARTHEN BERM, IT MUST BE DEMONSTRATED THAT THE FILL MEETS THE REQUIREMENTS PER 31 00 00. ALL EXCAVATED FILL MATERIAL WHICH DOES NOT MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH SPECIFICATION 02 61 00.16.
20. CONTRACTOR IS RESPONSIBLE FOR STAKING CONSTRUCTION BASELINES IN FIELD. NO CONSTRUCTION WILL BE PERFORMED WITHOUT THE PROPOSED BASELINES AND LAYOUTS APPROVED BY THE ENGINEER.
21. NO FILL SHALL CONTAIN HAZARDOUS MATERIALS.
22. CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AROUND PERIMETER OF WORK AREA (LIMIT OF WORK). FENCE SHALL NOT IMPEDE TRAVEL WAYS.
23. ANY QUANTITIES SHOWN ON PLANS ARE FOR COMPARATIVE BIDDING PURPOSES ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE PROJECT SITE TO VERIFY ALL QUANTITIES AND CONDITIONS PRIOR TO SUBMITTING BID.
24. ALL EXISTING DRAINAGE FACILITIES TO REMAIN SHALL BE MAINTAINED FREE OF DEBRIS, SOIL, SEDIMENT, AND FOREIGN MATERIAL AND OPERATIONAL THROUGHOUT THE LIFE OF THE CONTRACT. REMOVE ALL SOIL, SEDIMENT, DEBRIS AND FOREIGN MATERIAL FROM ALL DRAINAGE STRUCTURES, INCLUDING BUT NOT LIMITED TO, DRAINAGE INLETS, MANHOLES AND CATCH BASINS WITHIN THE LIMIT OF WORK AND DRAINAGE STRUCTURES OUTSIDE THE LIMIT OF WORK THAT ARE IMPACTED BY THE WORK FOR THE ENTIRE DURATION OF CONSTRUCTION.
25. CONTRACTOR'S STAGING AREA MUST BE WITHIN THE CONTRACT LIMIT LINE AND IN AREAS APPROVED BY OWNER. ANY OTHER AREAS THAT THE CONTRACTOR MAY WISH TO USE FOR STAGING MUST BE COORDINATED WITH THE OWNER.
26. THE CONTRACTOR SHALL KEEP ALL STREETS, PARKING LOTS AND SIDEWALKS THAT ARE NOT RESTRICTED FROM PUBLIC USE DURING CONSTRUCTION BROOM CLEAN AT ALL TIMES. THE CONTRACTOR SHALL USE ACCEPTABLE METHODS AND MATERIALS TO MAINTAIN ADEQUATE DUST CONTROL THROUGHOUT CONSTRUCTION.
27. CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER.
28. CONTRACTOR SHALL DEWATER AS NECESSARY TO PERFORM THE PROPOSED WORK. SEE SPECIFICATION SECTION 003132 SUBSURFACE DATA).
29. THE LIMIT OF WORK SHALL BE DELINEATED IN THE FIELD PRIOR TO THE START OF SITE CLEARING OR CONSTRUCTION.
30. DEEP SUMP CATCH BASINS AND STORMWATER BASIN SHALL BE CLEANED FOLLOWING CONSTRUCTION AND SHALL FOLLOW THE OPERATION AND MAINTENANCE PLAN THEREAFTER.
31. HAULING OF EARTH MATERIALS TO AND FROM THE SITE SHALL BE RESTRICTED TO THE HOURS OF 7 AM TO 4 PM MONDAY THROUGH FRIDAY.
32. ANY BOULDERS 3 CY OR SMALLER SHALL BE CONSIDERED UNDOCUMENTED FILL AND SHALL BE DISPOSED OF AT NO ADDITIONAL COST TO THE TOWN.
33. WORK ON SATURDAYS SHALL ONLY BE CONDUCTED IF PRIOR WRITTEN PERMISSION IS PROVIDED BY THE OWNER.
34. THE TERM "AS DIRECTED" AS USED IN THE CONTRACT DRAWINGS SHALL BE REPLACED WITH "AS REQUIRED".

EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE PUT INTO PLACE PRIOR TO BEGINNING ANY CONSTRUCTION OR DEMOLITION. REFER TO PLAN FOR APPROXIMATE LOCATION OF EROSION AND SEDIMENT CONTROL. REFER TO SPECS AND DETAILS FOR TYPE OF EROSION AND SEDIMENT CONTROL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUAL MAINTENANCE OF ALL CONTROL DEVICES THROUGHOUT THE DURATION OF THE PROJECT.
3. CONTRACTOR SHALL MEET ALL OF THE STATE OF MASSACHUSETTS D.E.P. AND THE TOWN OF NEEDHAM WETLANDS PROTECTION REGULATIONS FOR SEDIMENT AND EROSION CONTROL.
4. EXCAVATED MATERIAL STOCKPILED ON THE SITE SHALL BE SURROUNDED BY A RING OF UNBROKEN SEDIMENT AND EROSION CONTROL FENCE. THE LIMITS OF ALL GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE APPROVED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THE LIMIT OF CONTRACT SHALL REMAIN TOTALLY UNDISTURBED UNLESS OTHERWISE APPROVED BY OWNER'S REPRESENTATIVE.
5. ALL CATCH BASINS, DRAIN GRATES, AND CURB INLETS WITHIN OR ADJACENT TO THE PROJECT LIMITS SHALL BE PROTECTED WITH INLET SEDIMENT CONTROL DURING THE ENTIRE DURATION OF CONSTRUCTION.
6. SEDIMENT CONTROL BARRIERS TO BE INSTALLED AT THE TOE OF SLOPES. SEE GRADING & DRAINAGE PLANS, NOTES, DETAILS AND SPECIFICATIONS.
7. ANY AREA OUTSIDE THE PROJECT LIMIT THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER.
8. THE CONTRACTOR SHALL PROVIDE DUST CONTROL FOR CONSTRUCTION OPERATIONS AS APPROVED BY OWNER.
9. ALL POINTS OF CONSTRUCTION EGRESS OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ON TO PUBLIC/PRIVATE ROADS.

GRADING, UTILITIES & DRAINAGE NOTES

1. ALL WORK RELATING TO INSTALLATION, RENOVATION OR MODIFICATION OF WATER, DRAINAGE AND/OR SEWER SERVICES SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS OF THE TOWN OF NEEDHAM.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.
3. ALL GRADING IS TO BE SMOOTH AND CONTINUOUS WHERE PROPOSED GRAVEL SURFACE MEETS EXISTING SURFACE, BLEND THE TWO PAVEMENTS AND ELIMINATE ROUGH SPOTS AND ABRUPT GRADE CHANGES AND MEET LINE AND GRADE OF EXISTING CONDITIONS WITH NEW IMPROVEMENTS.
4. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE (1.5% MINIMUM) AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.
5. CONTRACTOR SHALL ENSURE ALL AREAS ARE PROPERLY PITCHED TO DRAIN, WITH NO SURFACE WATER PONDING OR PUDDLING.
6. ALL NEW WALKWAYS / ACCESS PATHS MUST CONFORM TO CURRENT AMERICANS WITH DISABILITIES ACT (ADA) REGULATIONS: WALKWAYS SHALL MAINTAIN A CROSS PITCH OF NOT MORE THAN ONE AND A HALF PERCENT (1.5%) AND THE RUNNING SLOPE (PARALLEL TO THE DIRECTION OF TRAVEL) BETWEEN 1% MIN. AND 5% MAX.
7. MINIMUM SLOPE ON ALL WALKWAYS WILL BE 1:100 OR 1% TO PROVIDE POSITIVE DRAINAGE. ANY DISCREPANCIES NOT ALLOWING THIS TO OCCUR SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONTINUING WORK.
8. ALL UTILITY GRATES, COVERS OR OTHER SURFACE ELEMENTS INTENDED TO BE EXPOSED AT GRADE SHALL BE FLUSH WITH THE ADJACENT FINISHED GRADE AND ADJUSTED TO PROVIDE A SMOOTH TRANSITION AT ALL EDGES.
9. THE CONTRACTOR SHALL SET SUBGRADE ELEVATIONS TO ALLOW FOR POSITIVE DRAINAGE AND PROVIDE EROSION CONTROL DEVICES, STRUCTURES, MATERIALS AND CONSTRUCTION METHODS TO DIRECT SILT MIGRATION AWAY FROM DRAINAGE AND OTHER UTILITY SYSTEMS, PUBLIC/PRIVATE STREETS AND WORK AREAS. CLEAN BASINS REGULARLY AND AT THE END OF THE PROJECT.
10. EXCAVATION REQUIRED WITHIN PROXIMITY OF KNOWN EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
11. WHERE NEW EARTHWORK MEETS EXISTING EARTHWORK, CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING, PROVIDING VERTICAL CURVES OR ROUNDS AT ALL TOP AND BOTTOM OF SLOPES.
12. WHERE A SPECIFIC LIMIT OF WORK LINE IS NOT OBVIOUS OR IMPLIED, BLEND GRADES TO EXISTING CONDITIONS WITHIN 5 FEET OF PROPOSED CONTOURS.
13. RESTORE ALL DISTURBED AREAS AND LIMITS OF ALL REMOVALS TO LOAM AND SEED (L&S) UNLESS OTHERWISE NOTED.
14. SEE EARTHWORK SECTION OF SPECIFICATIONS FOR SPECIFIC EXCAVATION AND FILLING PROCEDURES.
15. FOR STRUCTURE REMODELING (REMOD), CONSTRUCTION METHODS SHALL FOLLOW MASSACHUSETTS DOT STANDARD SPEC. LATEST EDITION (SECTION 220).

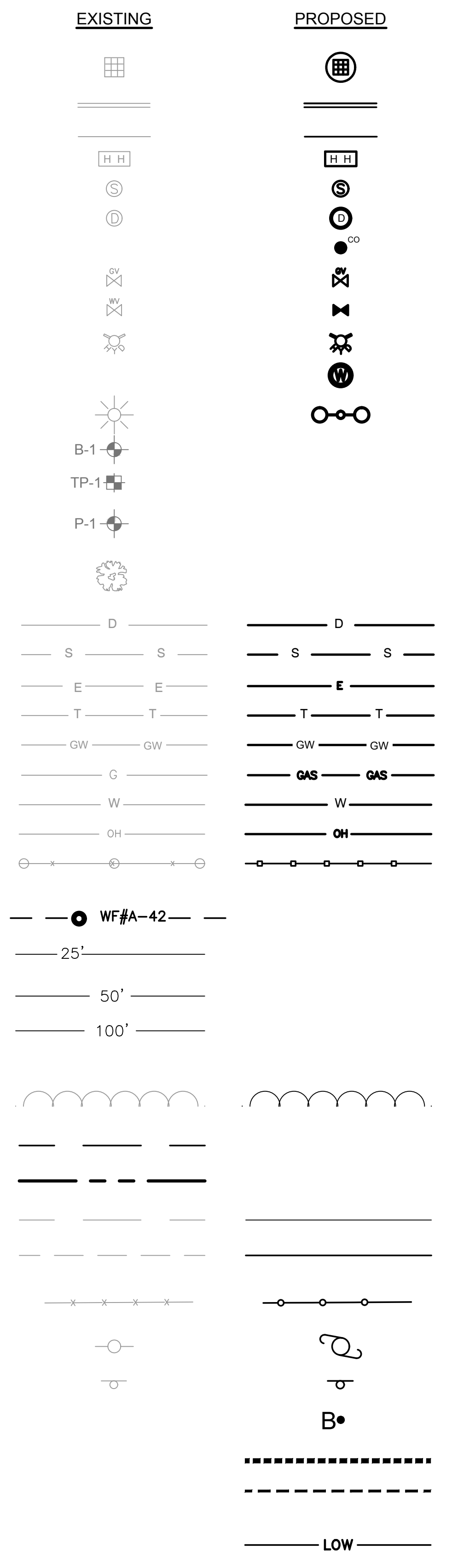
DEMOLITION & SITE PREPARATION NOTES

1. THE CONTRACTOR SHALL INCLUDE IN THE BID THE COST OF REMOVING ANY EXISTING SITE FEATURES AND APPURTENANCES NECESSARY TO ACCOMPLISH THE CONSTRUCTION OF THE PROPOSED SITE IMPROVEMENTS. THE CONTRACTOR SHALL ALSO INCLUDE IN THE BID THE COST NECESSARY TO RESTORE SUCH ITEMS IF THEY ARE SCHEDULED TO REMAIN AS PART OF THE FINAL SITE IMPROVEMENTS. REFER TO PLANS TO DETERMINE EXCAVATION, DEMOLITION AND TO DETERMINE THE LOCATION OF THE PROPOSED SITE IMPROVEMENTS.
2. THE OWNER RESERVES THE RIGHT TO REVIEW ALL MATERIALS DESIGNATED FOR REMOVAL AND TO RETAIN OWNERSHIP OF SUCH MATERIALS. IF THE OWNER RETAINS ANY MATERIAL THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE OWNER TO HAVE THOSE MATERIALS REMOVED OFF SITE AT NO ADDITIONAL COST.
3. UNLESS SPECIFICALLY NOTED TO BE SAVED / STOCKPILED (R&S) OR REUSED / RELOCATED (R&R), ALL SITE FEATURES CALLED FOR REMOVAL (REM) SHALL BE REMOVED WITH THEIR FOOTINGS, ATTACHMENTS, BASE MATERIAL, ETC, TRANSPORTED FROM THE SITE TO BE DISPOSED OF IN A LAWFUL MANNER AT AN ACCEPTABLE DISPOSAL SITE AND AT NO COST TO THE OWNER.
4. ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
5. DURING EARTHWORK OPERATIONS, CONTRACTOR SHALL TAKE CARE TO NOT DISTURB EXISTING MATERIALS TO REMAIN, OUTSIDE THE LIMITS OF EXCAVATION AND BACKFILL AND SHALL TAKE WHATEVER MEASURES NECESSARY, AT THE CONTRACTOR'S EXPENSE, TO PREVENT ANY EXCAVATED MATERIAL FROM COLLAPSING. ALL BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED AS SPECIFIED TO THE SUBGRADE REQUIRED FOR THE INSTALLATION OF THE REMAINDER OF THE CONTRACT WORK.
6. IT SHALL BE THE CONTRACTOR'S OPTION, WITH CONCURRENCE OF THE OWNER, TO REUSE EXISTING GRAVEL IF IT MEETS THE REQUIREMENTS OF THE SPECIFICATIONS FOR GRAVEL BORROW.
7. ALL ITEMS CALLED FOR REMOVAL SHALL BE REMOVED TO FULL DEPTH INCLUDING ALL FOOTINGS, FOUNDATIONS, AND OTHER APPURTENANCES, EXCEPT AS SPECIFICALLY NOTED OTHERWISE.
8. 'CLEAR AND GRUB VEGETATION' SHALL INCLUDE REMOVAL OF GRASS, SHRUBS, AND UNDERBRUSH, REMOVAL OF ROOTS, ROUGH GRADING, INSTALLATION OF LOAM (IF APPLICABLE), FINE GRADING, SEEDING AND TURF ESTABLISHMENT BY THE CONTRACTOR.
9. TREES DESIGNATED FOR REMOVAL SHALL BE TAGGED BY CONTRACTOR AND APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
10. THE STORAGE OF MATERIALS AND EQUIPMENT WILL BE PERMITTED AT LOCATIONS DESIGNATED BY OWNER OR OWNER'S REPRESENTATIVE. PROTECTION OF STORED MATERIALS AND EQUIPMENT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. STRIP & STORE EXISTING TOPSOIL FOR LATER REUSE WHERE APPROPRIATE, AND AS NOTED ON PLAN, WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS.
12. THE CONTRACTOR SHALL PROTECT EXISTING TREES TO REMAIN, CONTRACTOR SHALL INSTALL TREE PROTECTION BARRIER AFTER CLEARING UNDERBRUSH AND TAKE DUE CARE TO PREVENT INJURY TO TREES DURING CLEARING OPERATIONS.

LAYOUT & MATERIALS NOTES

1. REFER TO EXISTING CONDITIONS PLANS FOR SURVEY INFORMATION (SHEETS EC0.00 AND EX-1-0 THROUGH EX-1-11).
2. COORDINATE ALL LAYOUT ACTIVITIES WITH THE SCOPE OF WORK CALLED FOR BY DEMOLITION, GRADING AND UTILITIES OPERATIONS ENCOMPASSED BY THIS CONTRACT. SET, PROTECT AND REPLACE REFERENCE STAKES AS NECESSARY OR AS REQUIRED BY THE OWNER'S REPRESENTATIVE.
3. ALL WORK SHALL BE PERFORMED BY CONTRACTOR UNLESS SPECIFICALLY INDICATED THAT THE WORK WILL BE PERFORMED "BY OWNER".
4. THE LAYOUT OF SITE AMENITIES AND FENCES MUST BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
5. THE LAYOUT OF ALL NEW PATHWAYS / WALKWAYS AND THE GRADING OF ALL SLOPES AND CROSS SLOPES SHALL CONFORM TO THE COMMONWEALTH OF MASSACHUSETTS RULES AND REGULATIONS FOR HANDICAP ACCESS CMR 521, AND THE AMERICANS WITH DISABILITIES ACT (ADA), TITLE 3. THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE REQUIRED.
6. ALL LAYOUT LINES, OFFSETS, OR REFERENCES TO LOCATING OBJECTS ARE EITHER PARALLEL OR PERPENDICULAR UNLESS OTHERWISE DESIGNATED WITH ANGLE OFFSETS NOTED.
7. ALL PROPOSED SITE FEATURES SHALL BE LAID OUT AND STAKED FOR REVIEW AND APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF INSTALLATION. ANY REQUIRED ADJUSTMENTS TO THE LAYOUT SHALL BE UNDERTAKEN AS DIRECTED, AT NO ADDITIONAL COST TO THE OWNER.
8. ALL PROPOSED PAVEMENTS SHALL MEET THE LINE AND GRADE OF EXISTING ADJACENT PAVEMENT SURFACES AND SHALL BE TREATED WITH AN RS-1 TACK COAT AT POINT OF CONNECTION. ALL PATHWAY WIDTHS SHALL BE AS NOTED ON THE LAYOUT AND MATERIALS PLAN.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE OWNER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD MEASUREMENT OF ALL PROPOSED FENCES AND GATES.
11. THE DEPTH OF LOAM BORROW FOR ALL PROPOSED LAWN AREAS SHALL BE 6" MINIMUM. ALL DISTURBED AREAS SHALL BE RESTORED WITH LOAM AND SEED UNLESS OTHERWISE NOTED
12. ALL REFERENCES TO LOAM AND SEED (L&S) REFER TO HYDROMULCH SEEDED LAWN.
13. REFER TO DETAIL DRAWINGS FOR CONSTRUCTION DETAILS.

LEGEND



CATCH BASIN
CURB -TYPE NOTED
EDGE OF PAVEMENT
HANDHOLE (NUMBER AS NOTED)
SEWER MANHOLE
DRAINAGE STRUCTURE
GAS GATE
WATER GATE VALVE
HYDRANT
GEOTHERMAL WELL
LIGHTPOLE
BORING
TEST PIT
GEOPROBE
EXISTING TREE SURVEYED BY WESTON & SAMPSON
DRAIN PIPE
SEWER LINE
ELECTRIC DUCT
TELEPHONE/COMMUNICATIONS
GARAGE WASTE LINE
GAS MAIN
WATER PIPE
OVERHEAD WIRES
GUARD RAIL
WETLANDS
25' WETLAND BUFFER
50' WETLAND BUFFER
100' WETLAND BUFFER
TREE LINE
SETBACK LINE
PROPERTY LINE
MAJOR CONTOUR
MINOR CONTOUR
FENCE (SIZE AND TYPE NOTED)
UTILITY POLE
SIGN
BOLLARD
PVMT SAWCUT
LIMIT OF PROPOSED GRADES (SEE GRAD. & DRAINAGE PLAN)
LIMIT OF WORK

ABBREVIATIONS

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BOS	BOTTOM OF SLOPE
CB	CATCH BASIN
CONC.	CEMENT CONCRETE
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLDI	CEMENT LINED DUCTILE IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONT	CONTINUOUS
CONST	CONSTRUCTION
DIA	DIAMETER
DI	DUCTILE IRON PIPE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
FDN.	FOUNDATION
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH
LP	LIGHT POLE
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
OCS	OUTLET CONTROL STRUCTURE
PROJ	PROJECT
PR. OR PROP	PROPOSED
PT	POINT OF TANGENCY
PVMT	PAVEMENT
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
SB	STONE BOUND
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SPEC	SPECIFICATION
T	TANGENT DISTANCE OF CURVE
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VERT	VERTICAL
VC	VERTICAL CURVE
WCR	WHEEL CHAIR RAMP
WG	WATER GATE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

Project:
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GENERAL NOTES & LEGEND

Sheet Number:
C001

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
2	2925598.0647	721934.6692	180.54	SBDH–FD
3	2925824.2976	721936.7902	179.12	RBP–SET
4	2925771.9142	721725.2174	172.10	MN–SET
5	2925629.9775	721548.2935	168.32	RBP–SET
6	2925987.0225	721667.8201	171.50	RBP–SET
7	2926020.7382	721871.6073	171.55	SN–SET

TRAVERSE TABLE

PROJECT BENCHMARK "A":
XCUT SET ON NORTHEASTERLY BONNET BOLT OF HYDRANT ON SOUTH SIDE OF CENTRAL AVENUE
ELEVATION=182.76 (DATUM: NAVD88)

PROJECT BENCHMARK "B":
MAG–SET SET IN WOOD GUARDRAIL POST AT THE NORTHWEST CORNER OF EXISTING BUILDING
ELEVATION=173.71 (DATUM: NAVD88)

PROJECT BENCHMARK "C":
INK MARK ON CONCRETE CANOPY COLUMN ON EASTERLY SIDE OF EXISTING BUILDING
ELEVATION=176.30 (DATUM: NAVD88)

SURVEYOR NOTES:

1. THE ELEVATIONS SHOWN ON THIS SURVEY ARE BASED ON NAVD 88 DATUM AND WERE GENERATED VIA RTK GPS SURVEY MEASUREMENTS MADE USING LEICA GS18 RECEIVERS (AND SUPPLEMENTED WITH ON-THE-GROUND INSTRUMENT SURVEY) IN CONJUNCTION WITH THE SMARTNET NORTH AMERICA RTK NETWORK.

2. THE COORDINATES SHOWN ON THIS SURVEY ARE BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM - MAINLAND ZONE 2001 AS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83). THE COORDINATES WERE GENERATED VIA RTK GPS SURVEY MEASUREMENTS MADE USING LEICA GS18 RECEIVERS (AND SUPPLEMENTED WITH ON-THE-GROUND INSTRUMENT SURVEY) IN CONJUNCTION WITH THE SMARTNET NORTH AMERICA RTK NETWORK.

3. UNDERGROUND UTILITY LOCATIONS AS SHOWN HEREON ARE TAKEN FROM AVAILABLE RECORD AND FIELD INFORMATION AND ARE APPROXIMATE ONLY. CONTACT DIG-SAFE BEFORE PLANNING ANY CONSTRUCTION. 8" GAS MAIN SHOWN WITHIN CENTRAL AVENUE IS SHOWN PER GAS PAINT MARKS AS SHOWN IN THE NOVEMBER 2022 GOOGLE MAPS STREET VIEW (GOOGLE. (2024). STREET VIEW CENTRAL AVENUE, NEEDHAM, MA. RETRIEVED FROM HTTPS://WWW.GOOGLE.COM/MAPS ON OCTOBER 2, 2024.)

4. INVERTS, PIPE SIZES, AND PIPE CLASSIFICATIONS FOR SANITARY SEWER AND STORM DRAIN SYSTEMS, AS SHOWN HEREON, WERE DETERMINED BY INSPECTION AND MEASUREMENTS PERFORMED AT GROUND SURFACE LEVEL (STRUCTURES WERE NOT PHYSICALLY ENTERED). THE RESULTS OF THE INSPECTIONS AND MEASUREMENTS MAY VARY FROM ACTUAL CONDITIONS AS COULD BE DETERMINED BY EXCAVATION OR USE OF CONFINED SPACE ENTRY PERSONNEL AND/OR EQUIPMENT.

5. SUBJECT PROPERTY IS LOCATED WITHIN FLOOD ZONE X (OTHER AREAS) AS DELINEATED ON FLOOD INSURANCE RATE MAP NUMBER 25021C0019E WITH AN EFFECTIVE DATE OF JULY 17, 2012.

6. WETLANDS/TOP OF BANK FLAGS SHOWN HEREON WERE DELINEATED BY WESTON & SAMPSON ENGINEERING, INC. AND PROVIDED VIA AUTOCAD FILE ENTITLED: "Needham DPW - Wetland Flags (GPS).dwg" ON AUGUST 21, 2024. FOR MORE INFORMATION AND ASSOCIATED BUFFERS REFER TO WETLAND FIELD REPORT PREPARED BY WESTON & SAMPSON, INC.

7. BORDERING VEGETATED WETLAND FLAGS "BVW A1 THRU A11", "BVW BI & B2", "C1 THRU C7", TOP OF BANK FLAGS "A1 THRU A7", "B1 THRU B4", "D1 THRU D14" AND WETLAND FLAGS "F1 THRU F7" WERE SURVEYED BY WELCH ASSOCIATES LAND SURVEYORS, INC. VIA AN ON-THE-GROUND INSTRUMENT SURVEY. REMAINING WETLAND/TOP OF BANK FLAGS WERE SURVEYED BY OTHERS & PROVIDED VIA AUTOCAD FILE REFERENCED IN NOTE 6.

8. APPROXIMATE PROPERTY LINES SHOWN ON THIS SURVEY ARE SHOWN PER PLAN ENTITLED: "LOT CONSOLIDATION PLAN IN NORFOLK COUNTY, PREPARED FOR THE TOWN OF NEEDHAM, RECYCLING TRANSFER STATION, (ASSESSOR'S MAP 308 PARCEL 2)", DATED MAY 12, 2022, PREPARED BY GREENMAN-PEDERSEN, INC., RECORDED IN PLAN BOOK 712 AT PAGE 34. WELCH ASSOCIATES LAND SURVEYORS, INC. HAS NOT PERFORMED A BOUNDARY RETRACEMENT SURVEY AS PART OF THIS SURVEY.

9. THIS PLAN IS COPYRIGHT PROTECTED. IT IS A VIOLATION OF COPYRIGHT LAWS TO EDIT THIS PLAN AND CONTINUE TO REPRESENT IT AS THE ORIGINAL WORK OF WELCH ASSOCIATES LAND SURVEYORS, INC.. IT IS ALSO A VIOLATION OF COPYRIGHT LAWS FOR ANYONE TO REPRESENT THIS PLAN AS THEIR OWN ORIGINAL WORK, WITH OR WITHOUT EDITING.

0 20 50 100
SCALE: 1" = 20'

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Reviewed By: JP
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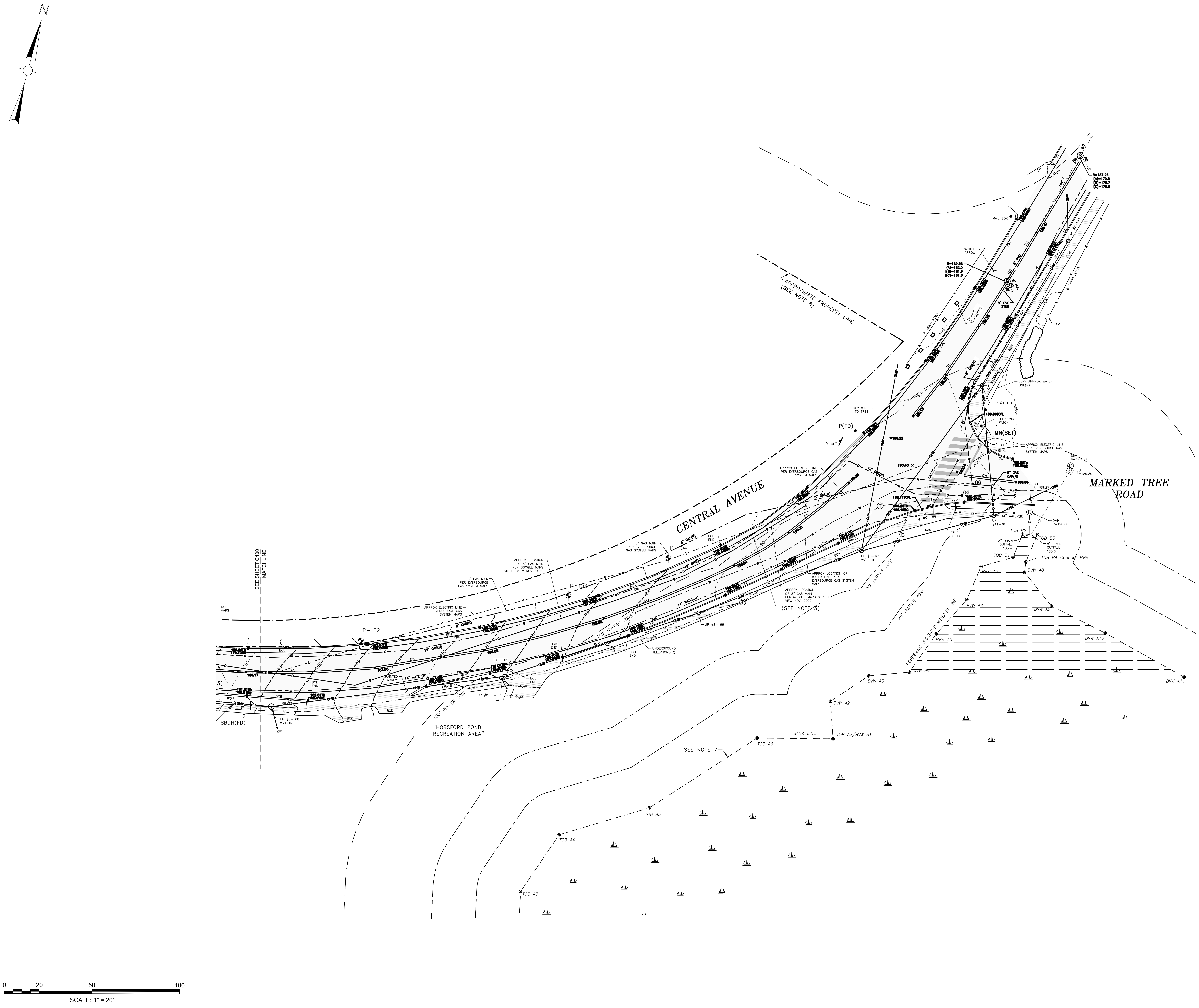
EXISTING CONDITIONS PLAN I

Sheet Number:

C100



SCALE: 1" = 20'

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EXISTING CONDITIONS PLAN II

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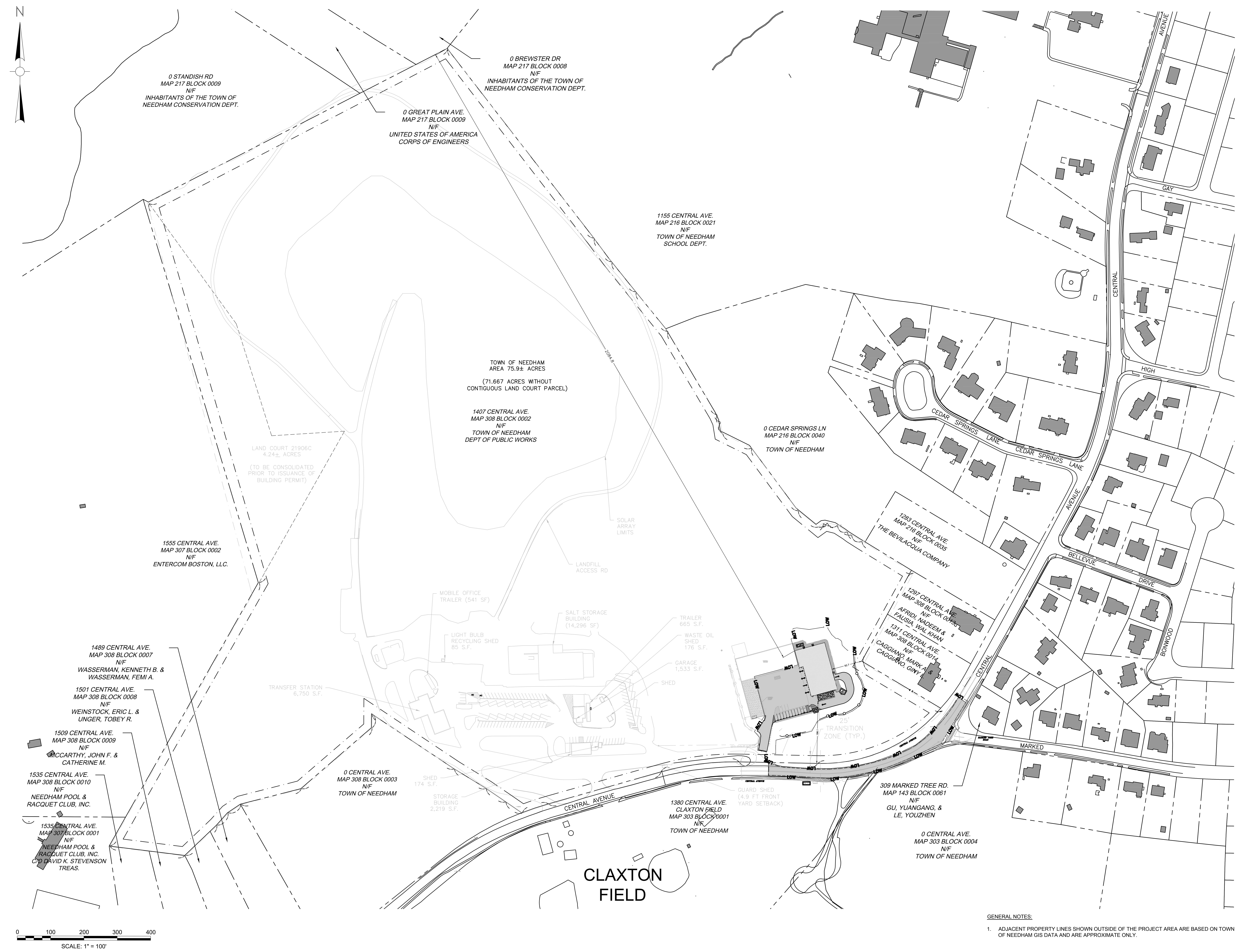
C101



GENERAL NOTES:

1. ADJACENT PROPERTY LINES SHOWN OUTSIDE OF THE PROJECT AREA ARE BASED ON TOWN OF NEEDHAM GIS DATA AND ARE APPROXIMATE ONLY.

Project:

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OVERALL SITE
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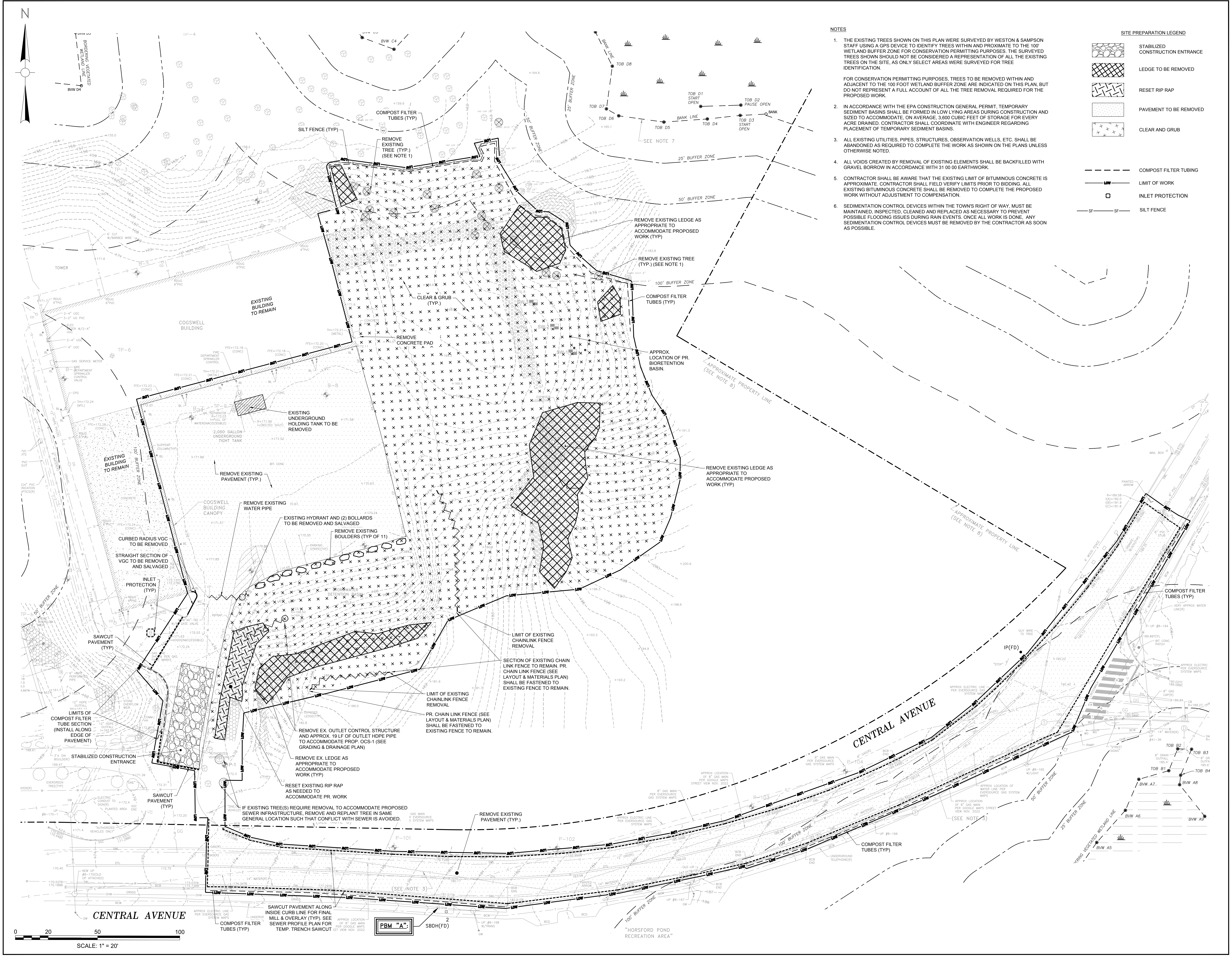

NOTES

1. THE EXISTING TREES SHOWN ON THIS PLAN WERE SURVEYED BY WESTON & SAMPSON STAFF USING A GPS DEVICE TO IDENTIFY TREES WITHIN AND PROXIMATE TO THE 100' WETLAND BUFFER ZONE FOR CONSERVATION PERMITTING PURPOSES. THE SURVEYED TREES SHOWN SHOULD NOT BE CONSIDERED A REPRESENTATION OF ALL THE EXISTING TREES ON THE SITE, AS ONLY SELECT AREAS WERE SURVEYED FOR TREE IDENTIFICATION.

   FOR CONSERVATION PERMITTING PURPOSES, TREES TO BE REMOVED WITHIN AND ADJACENT TO THE 100 FOOT WETLAND BUFFER ZONE ARE INDICATED ON THIS PLAN, BUT DO NOT REPRESENT A FULL ACCOUNT OF ALL THE TREE REMOVAL REQUIRED FOR THE PROPOSED WORK.
2. IN ACCORDANCE WITH THE EPA CONSTRUCTION GENERAL PERMIT, TEMPORARY SEDIMENT BASINS SHALL BE FORMED IN LOW LYING AREAS DURING CONSTRUCTION AND SIZED TO ACCOMMODATE, ON AVERAGE, 3,600 CUBIC FEET OF STORAGE FOR EVERY ACRE DRAINED. CONTRACTOR SHALL COORDINATE WITH ENGINEER REGARDING PLACEMENT OF TEMPORARY SEDIMENT BASINS.
3. ALL EXISTING UTILITIES, PIPES, STRUCTURES, OBSERVATION WELLS, ETC. SHALL BE ABANDONED AS REQUIRED TO COMPLETE THE WORK AS SHOWN ON THE PLANS UNLESS OTHERWISE NOTED.
4. ALL VOIDS CREATED BY REMOVAL OF EXISTING ELEMENTS SHALL BE BACKFILLED WITH GRAVEL BORROW IN ACCORDANCE WITH 31 00 00 EARTHWORK.
5. CONTRACTOR SHALL BE AWARE THAT THE EXISTING LIMIT OF BITUMINOUS CONCRETE IS APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY LIMITS PRIOR TO BIDDING. ALL EXISTING BITUMINOUS CONCRETE SHALL BE REMOVED TO COMPLETE THE PROPOSED WORK WITHOUT ADJUSTMENT TO COMPENSATION.
6. SEDIMENTATION CONTROL DEVICES WITHIN THE TOWN'S RIGHT OF WAY, MUST BE MAINTAINED, INSPECTED, CLEANED AND REPLACED AS NECESSARY TO PREVENT POSSIBLE FLOODING ISSUES DURING RAIN EVENTS. ONCE ALL WORK IS DONE, ANY SEDIMENTATION CONTROL DEVICES MUST BE REMOVED BY THE CONTRACTOR AS SOON AS POSSIBLE.

SITE PREPARATION LEGEND

▨	STABILIZED CONSTRUCTION ENTRANCE
▩	LEDGE TO BE REMOVED
▧	RESET RIP RAP
░	PAVEMENT TO BE REMOVED
✕	CLEAR AND GRUB
— — —	COMPOST FILTER TUBING
——LOW——	LIMIT OF WORK
⬚	INLET PROTECTION
——SF——SF——	SILT FENCE

Project:
DPW COMPLEX PHASE I
FLEET MAINTENANCE FACILITY

1421 CENTRAL AVENUE
NEEDHAM, MA 02492

Weston & Sampson Engineers, Inc.
100 Foxborough Boulevard, Suite 250
Foxborough, MA 02035
978.532.1900 800.SAMPSON
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Consultants:

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No.	Date	Description

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Seal:
JAMES I. PEARSON
CIVIL
No. 50675
04/15/2025

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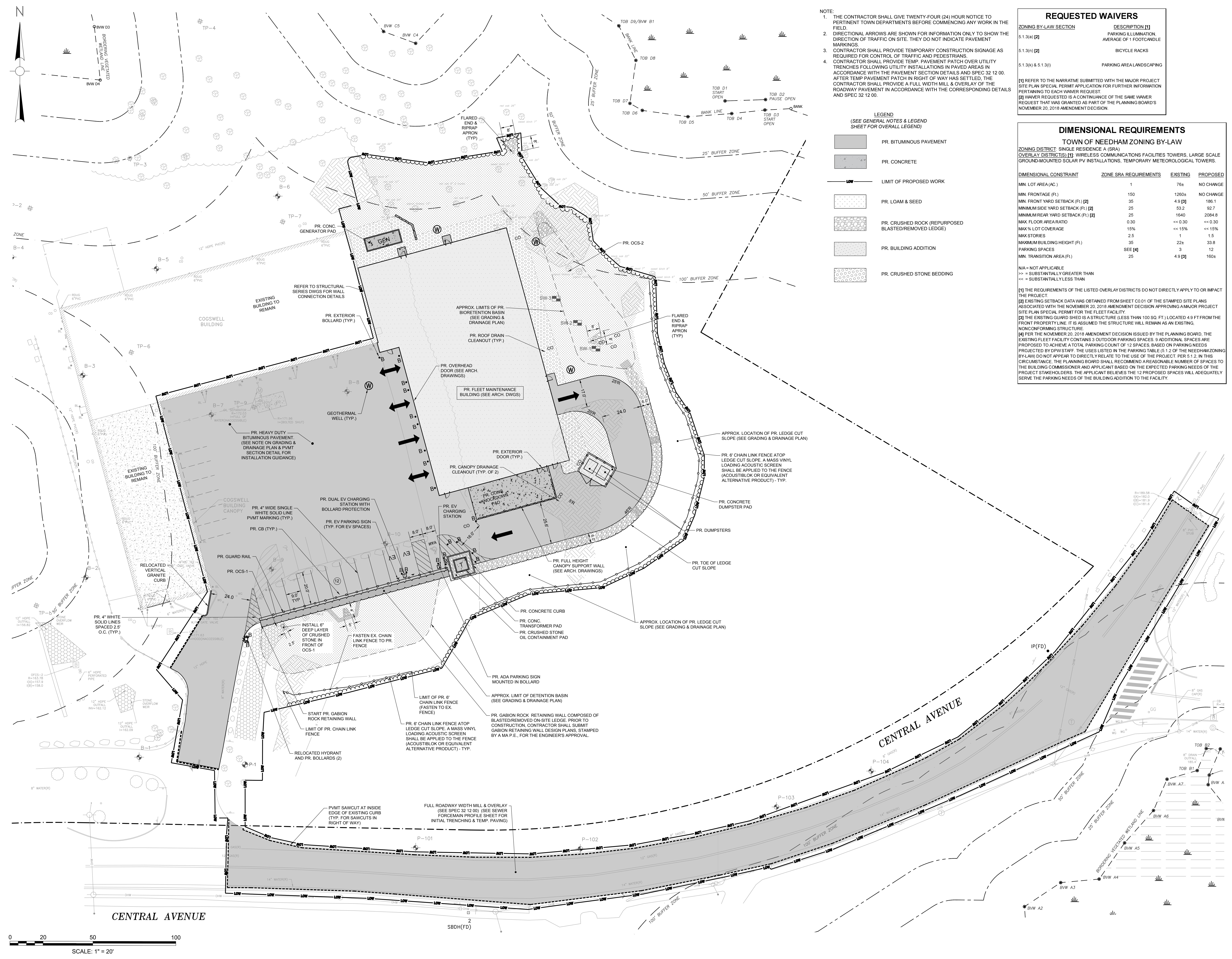
Drawing Title:
SITE
PREPARATION
PLAN

Sheet Number:
C200



NOTE:

1. THE CONTRACTOR SHALL GIVE TWENTY-FOUR (24) HOUR NOTICE TO PERTINENT TOWN DEPARTMENTS BEFORE COMMENCING ANY WORK IN THE FIELD.
2. DIRECTIONAL ARROWS ARE SHOWN FOR INFORMATION ONLY TO SHOW THE DIRECTION OF TRAFFIC ON SITE. THEY DO NOT INDICATE PAVEMENT MARKINGS.
3. CONTRACTOR SHALL PROVIDE TEMPORARY CONSTRUCTION SIGNAGE AS REQUIRED FOR CONTROL OF TRAFFIC AND PEDESTRIANS.
4. CONTRACTOR SHALL PROVIDE TEMP. PAVEMENT PATCH OVER UTILITY TRENCHES FOLLOWING UTILITY INSTALLATIONS IN PAVED AREAS IN ACCORDANCE WITH THE PAVEMENT SECTION DETAILS AND SPEC 32 12 00. AFTER TEMP PAVEMENT PATCH IN RIGHT OF WAY HAS SETTLED, THE CONTRACTOR SHALL PROVIDE A FULL WIDTH MILL & OVERLAY OF THE ROADWAY PAVEMENT IN ACCORDANCE WITH THE CORRESPONDING DETAILS AND SPEC 32 12 00.

LEGEND

(SEE GENERAL NOTES & LEGEND SHEET FOR OVERALL LEGEND)

▨	PR. BITUMINOUS PAVEMENT
▨	PR. CONCRETE
—LOW—	LIMIT OF PROPOSED WORK
▨	PR. LOAM & SEED
▨	PR. CRUSHED ROCK (REPURPOSED BLASTED/REMOVED LEDGE)
▨	PR. BUILDING ADDITION
▨	PR. CRUSHED STONE BEDDING

REQUESTED WAIVERS

ZONING BY-LAW SECTION	DESCRIPTION **[1]**
5.1.3(a) **[2]**	PARKING ILLUMINATION, AVERAGE OF 1 FOOTCANDLE
5.1.3(n) **[2]**	BICYCLE RACKS
5.1.3(k) & 5.1.3(l)	PARKING AREA LANDSCAPING

[1] REFER TO THE NARRATIVE SUBMITTED WITH THE MAJOR PROJECT SITE PLAN SPECIAL PERMIT APPLICATION FOR FURTHER INFORMATION PERTAINING TO EACH WAIVER REQUEST.

[2] WAIVER REQUESTED IS A CONTINUANCE OF THE SAME WAIVER REQUEST THAT WAS GRANTED AS PART OF THE PLANNING BOARD'S NOVEMBER 20, 2018 AMENDMENT DECISION.

DIMENSIONAL REQUIREMENTS

TOWN OF NEEDHAM ZONING BY-LAW

ZONING DISTRICT: SINGLE RESIDENCE A (SRA)

OVERLAY DISTRICT(S) **[1]**: WIRELESS COMMUNICATIONS FACILITIES TOWERS, LARGE SCALE GROUND-MOUNTED SOLAR PV INSTALLATIONS, TEMPORARY METEOROLOGICAL TOWERS.

DIMENSIONAL CONSTRAINT	ZONE SRA REQUIREMENTS	EXISTING	PROPOSED
MIN. LOT AREA (AC.)	1	76±	NO CHANGE
MIN. FRONTAGE (Ft.)	150	1260±	NO CHANGE
MIN. FRONT YARD SETBACK (Ft.) **[2]**	35	4.9 **[3]**	186.1
MINIMUM SIDE YARD SETBACK (Ft.) **[2]**	25	53.2	92.7
MINIMUM REAR YARD SETBACK (Ft.) **[2]**	25	1640	2084.8
MAX. FLOOR AREA RATIO	0.30	<< 0.30	<< 0.30
MAX % LOT COVERAGE	15%	<< 15%	<< 15%
MAX STORIES	2.5	1	1.5
MAXIMUM BUILDING HEIGHT (Ft.)	35	22±	33.8
PARKING SPACES	SEE **[4]**	3	12
MIN. TRANSITION AREA (Ft.)	25	4.9 **[3]**	160±

N/A = NOT APPLICABLE
>> = SUBSTANTIALLY GREATER THAN
<< = SUBSTANTIALLY LESS THAN

[1] THE REQUIREMENTS OF THE LISTED OVERLAY DISTRICTS DO NOT DIRECTLY APPLY TO OR IMPACT THE PROJECT.

[2] EXISTING SETBACK DATA WAS OBTAINED FROM SHEET C0.01 OF THE STAMPED SITE PLANS ASSOCIATED WITH THE NOVEMBER 20, 2018 AMENDMENT DECISION APPROVING A MAJOR PROJECT SITE PLAN SPECIAL PERMIT FOR THE FLEET FACILITY.

[3] THE EXISTING GUARD SHED IS A STRUCTURE (LESS THAN 100 SQ. FT.) LOCATED 4.9 FT FROM THE FRONT PROPERTY LINE. IT IS ASSUMED THE STRUCTURE WILL REMAIN AS AN EXISTING, NONCONFORMING STRUCTURE.

[4] PER THE NOVEMBER 20, 2018 AMENDMENT DECISION ISSUED BY THE PLANNING BOARD, THE EXISTING FLEET FACILITY CONTAINS 3 OUTDOOR PARKING SPACES. 9 ADDITIONAL SPACES ARE PROPOSED TO ACHIEVE A TOTAL PARKING COUNT OF 12 SPACES, BASED ON PARKING NEEDS PROJECTED BY DPW STAFF. THE USES LISTED IN THE PARKING TABLE (5.1.2 OF THE NEEDHAM ZONING BY-LAW) DO NOT APPEAR TO DIRECTLY RELATE TO THE USE OF THE PROJECT. PER 5.1.2, IN THIS CIRCUMSTANCE, THE PLANNING BOARD SHALL RECOMMEND A REASONABLE NUMBER OF SPACES TO THE BUILDING COMMISSIONER AND APPLICANT BASED ON THE EXPECTED PARKING NEEDS OF THE PROJECT STAKEHOLDERS. THE APPLICANT BELIEVES THE 12 PROPOSED SPACES WILL ADEQUATELY SERVE THE PARKING NEEDS OF THE BUILDING ADDITION TO THE FACILITY.

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Drawing Title:
SITE LAYOUT AND MATERIALS PLAN

Sheet Number:
C300

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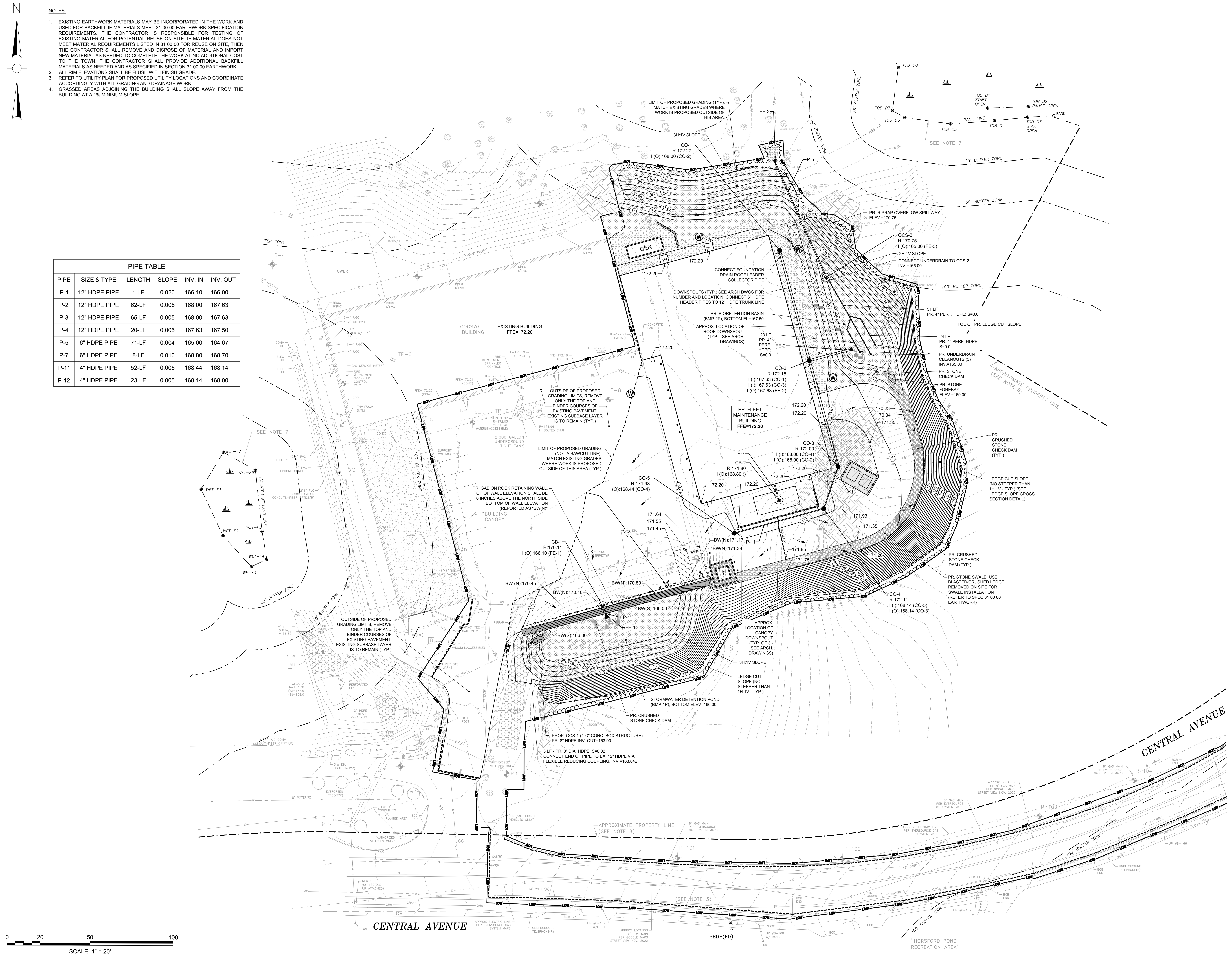
NOTES:

1. EXISTING EARTHWORK MATERIALS MAY BE INCORPORATED IN THE WORK AND USED FOR BACKFILL IF MATERIALS MEET 31 00 00 EARTHWORK SPECIFICATION REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR TESTING OF EXISTING MATERIAL FOR POTENTIAL REUSE ON SITE. IF MATERIAL DOES NOT MEET MATERIAL REQUIREMENTS LISTED IN 31 00 00 FOR REUSE ON SITE, THEN THE CONTRACTOR SHALL REMOVE AND DISPOSE OF MATERIAL AND IMPORT NEW MATERIAL AS NEEDED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE TOWN. THE CONTRACTOR SHALL PROVIDE ADDITIONAL BACKFILL MATERIALS AS NEEDED AND AS SPECIFIED IN SECTION 31 00 00 EARTHWORK.
2. ALL RIM ELEVATIONS SHALL BE FLUSH WITH FINISH GRADE.
3. REFER TO UTILITY PLAN FOR PROPOSED UTILITY LOCATIONS AND COORDINATE ACCORDINGLY WITH ALL GRADING AND DRAINAGE WORK.
4. GRASSED AREAS ADJOINING THE BUILDING SHALL SLOPE AWAY FROM THE BUILDING AT A 1% MINIMUM SLOPE.

PIPE TABLE

PIPE	SIZE & TYPE	LENGTH	SLOPE	INV. IN	INV. OUT
P-1	12" HDPE PIPE	1-LF	0.020	166.10	166.00
P-2	12" HDPE PIPE	62-LF	0.006	168.00	167.63
P-3	12" HDPE PIPE	65-LF	0.005	168.00	167.63
P-4	12" HDPE PIPE	20-LF	0.005	167.63	167.50
P-5	6" HDPE PIPE	71-LF	0.004	165.00	164.67
P-7	6" HDPE PIPE	8-LF	0.010	168.80	168.70
P-11	4" HDPE PIPE	52-LF	0.005	168.44	168.14
P-12	4" HDPE PIPE	23-LF	0.005	168.14	168.00



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GRADING & DRAINAGE PLAN

Sheet Number:

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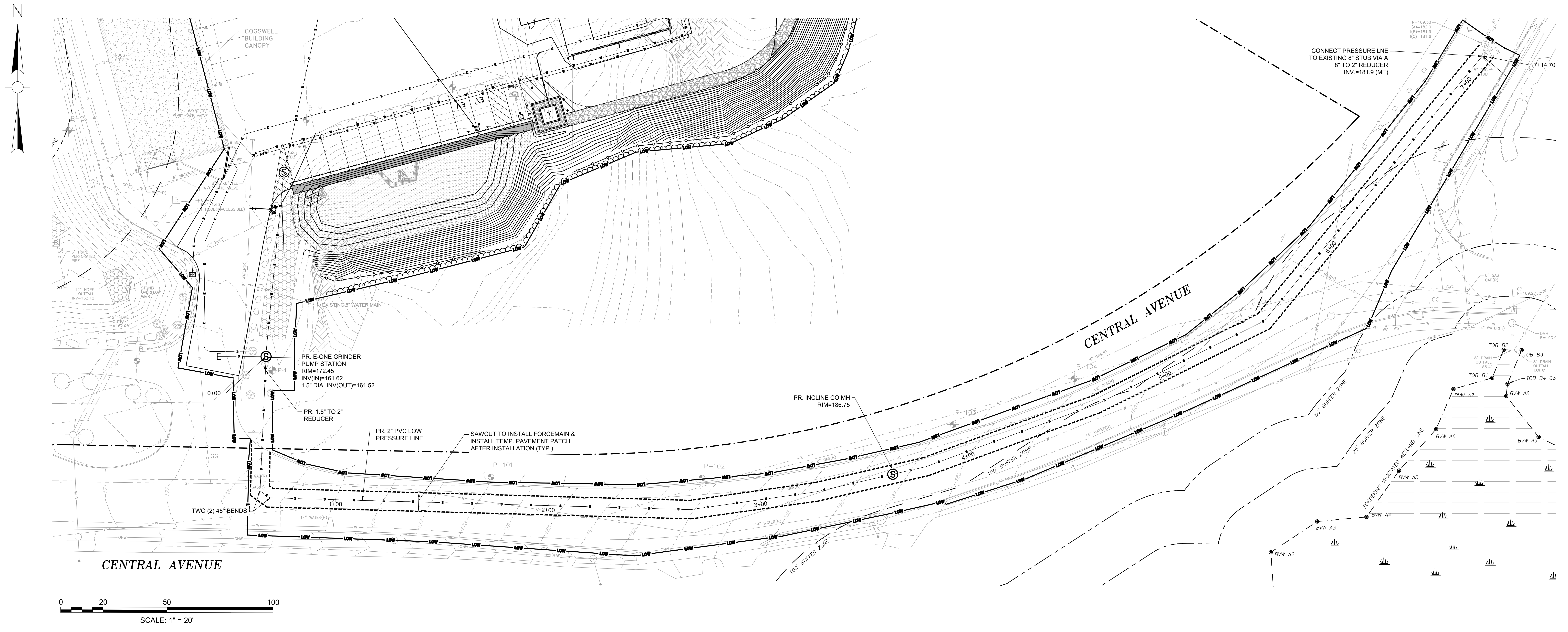

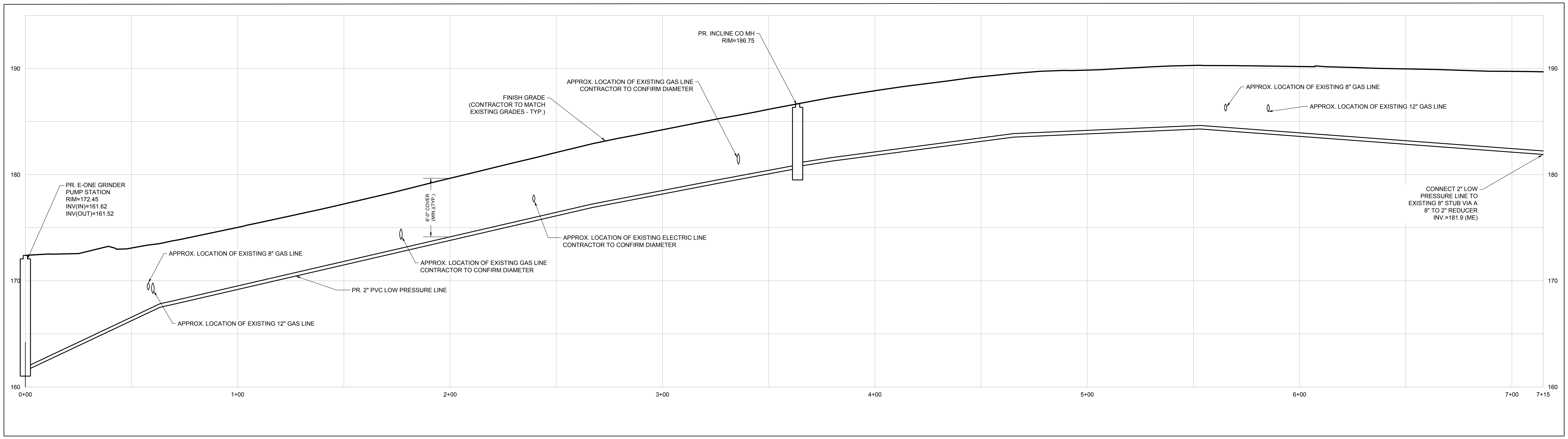

PROFILE VERTICAL SCALE: 1" = 4'
PROFILE HORIZONTAL SCALE: 1" = 20'

NOTE: LOCATIONS WHERE EXISTING SUBSURFACE UTILITIES CROSS THE PROPOSED FORCE MAIN ARE BASED ON THE EXISTING CONDITIONS SURVEY AND SHOULD BE CONSIDERED APPROXIMATE. THE DEPICTED DEPTH OF EXISTING SUBSURFACE UTILITIES AT THESE PROPOSED CROSSING LOCATIONS IS ASSUMED. THE CONTRACTOR SHALL CONFIRM THE DEPTH OF EXISTING UTILITIES AT THESE CROSSING LOCATIONS. IF IT IS FOUND THE PROPOSED FORCE MAIN CONFLICTS WITH AN EXISTING UTILITY, NOTIFY THE ENGINEER AND OWNER.

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SEWER PROFILE

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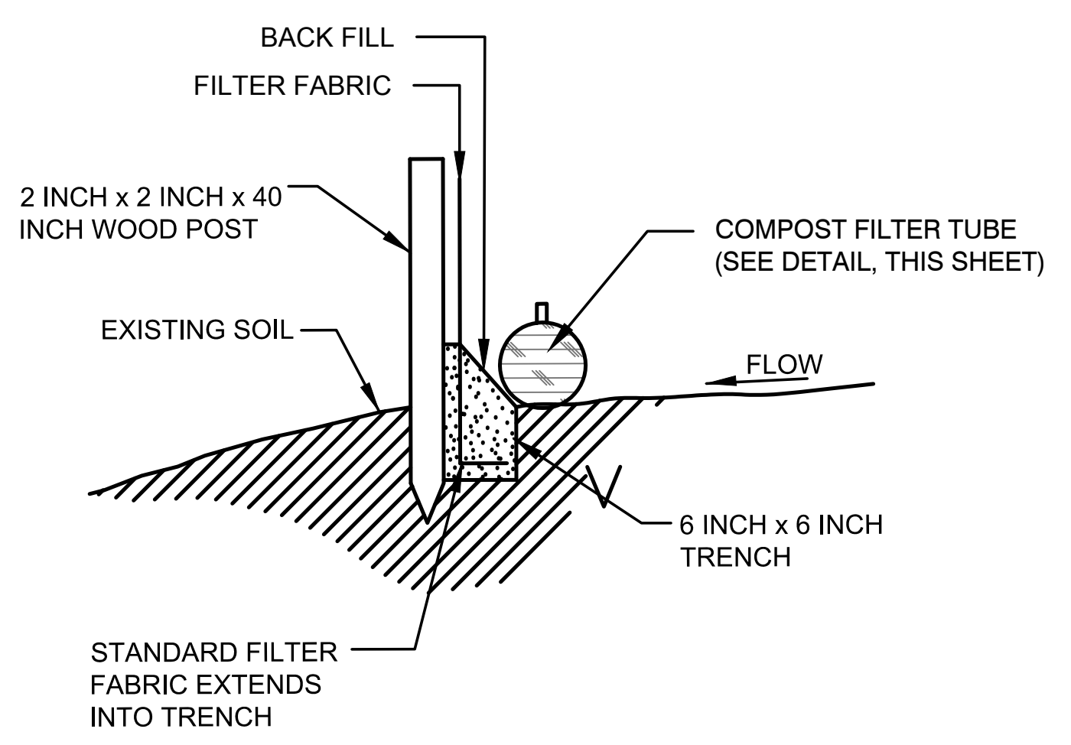
C510

WHEN JOINING TWO OR MORE SILTATION FENCES, TIE THE TWO END POSTS TOGETHER WITH NYLON CORD.

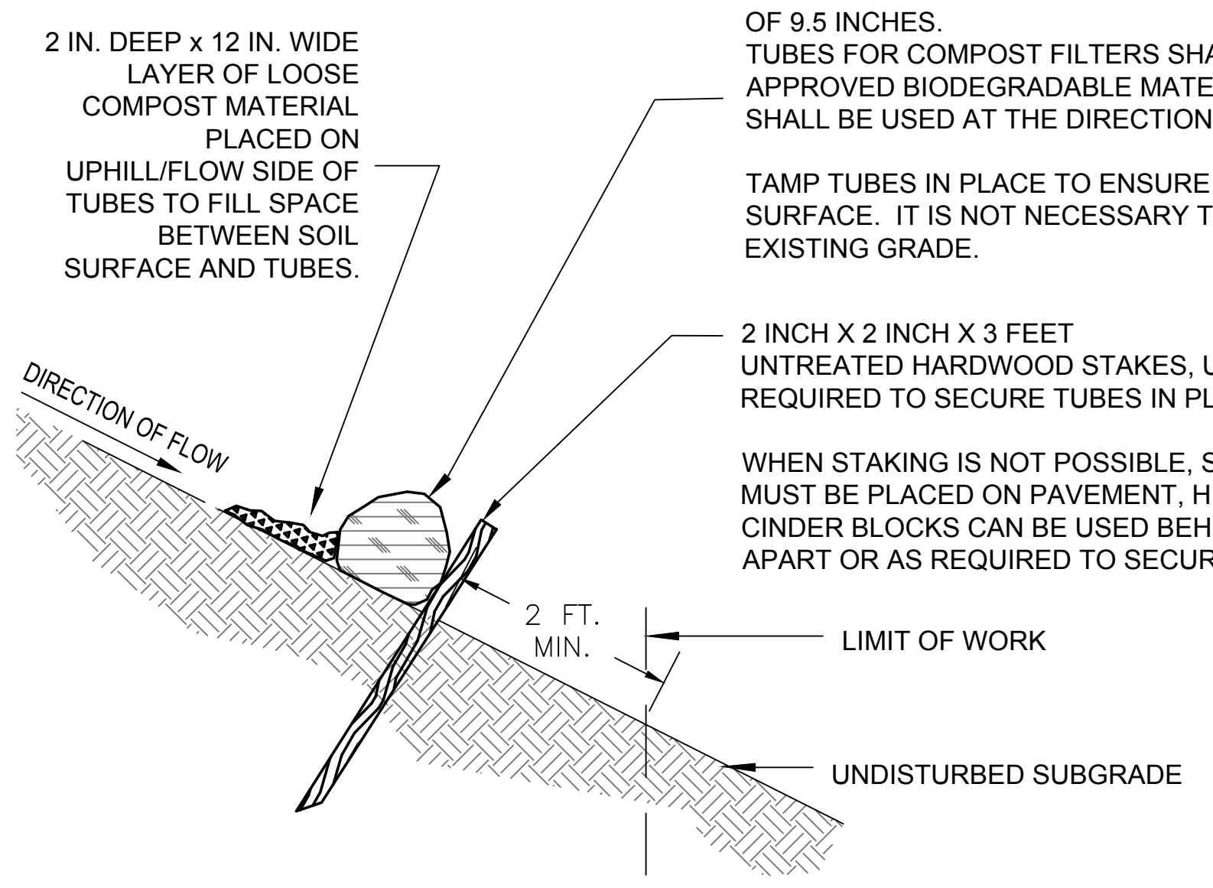


EROSION CONTROL MEASURE: SILT FENCE

N.T.S.

NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH, WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. TO THE EXTENT PRACTICABLE, INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. MULCH MATERIAL FOR THE FILTER TUBES SHALL BE WEED-FREE STRAW, WOOD EXCELSIOR, COMPOST, OR WOOD CHIPS, OR COIR. STRAW SHALL BE WEED FREE AND DERIVED FROM THRESHING OF GRAIN CROP.



COMPOST FILTER TUBE
MINIMUM 12 INCHES IN DIAMETER WITH AN EFFECTIVE HEIGHT OF 9.5 INCHES.
TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.

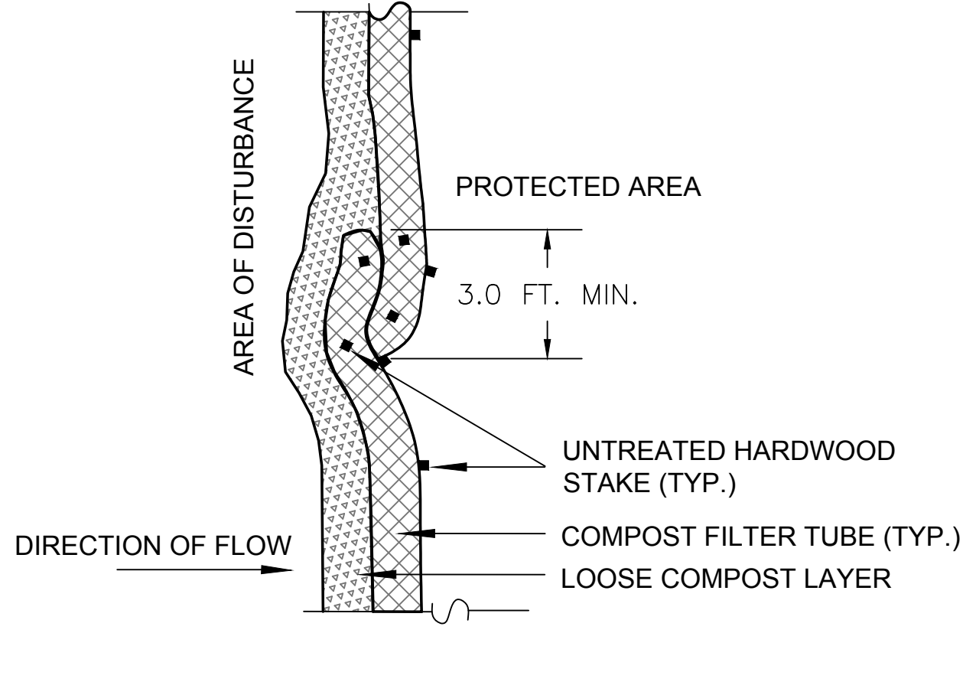
TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.

2 INCH X 2 INCH X 3 FEET
UNTREATED HARDWOOD STAKES, UP TO 5 FT. APART OR AS REQUIRED TO SECURE TUBES IN PLACE.

WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5 FT. APART OR AS REQUIRED TO SECURE TUBES IN PLACE.

PROVIDE A 3 FT. MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW.
STAKE JOINING TUBES TIGHTLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THE TUBES.

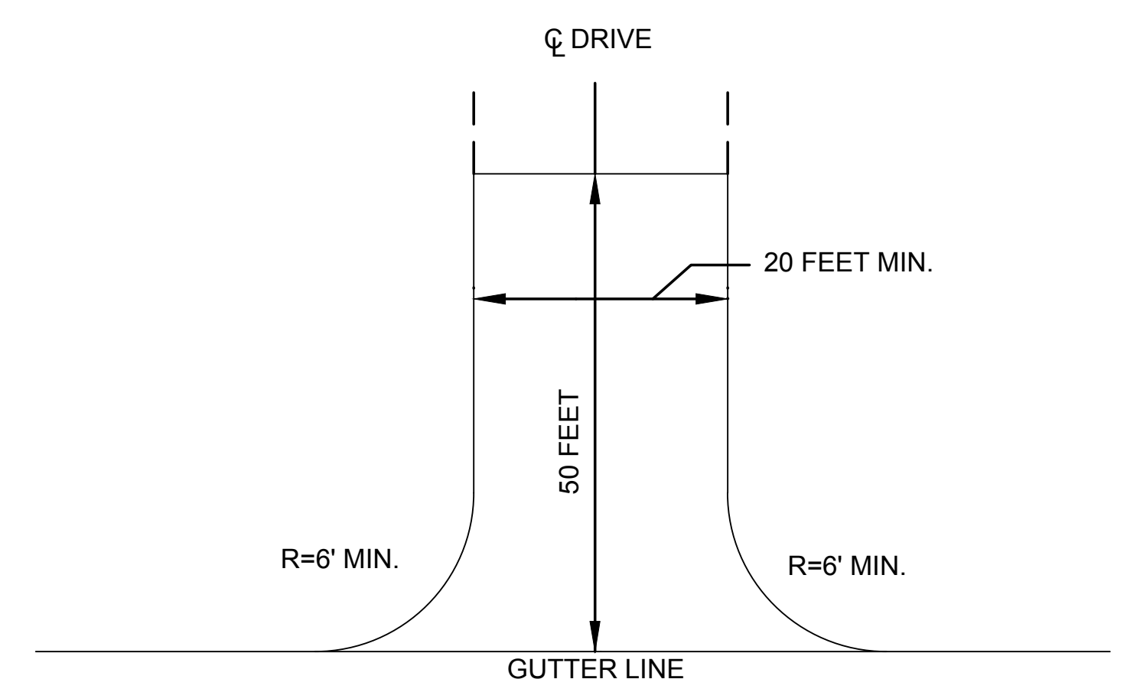
SECURE ENDS OF TUBES WITH STAKES SPACED 18 IN. APART DRIVEN THROUGH TOP OF TUBES.



PLAN VIEW - JOINING DETAIL

EROSION CONTROL MEASURE: COMPOST FILTER TUBE

N.T.S.

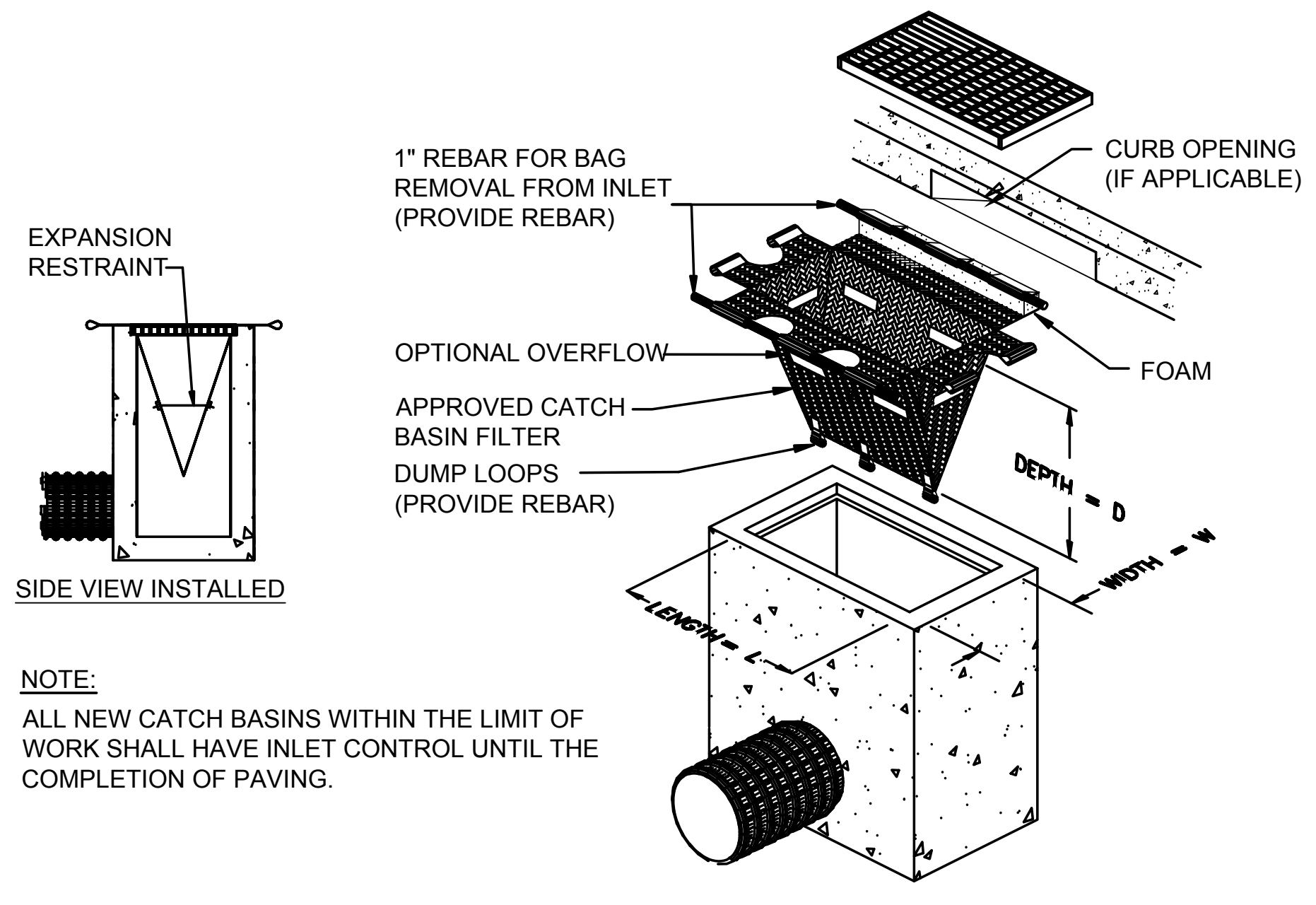


NOTES:

1. AT LEAST ONE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT EACH ENTRANCE TO THE SITE, THROUGHOUT CONSTRUCTION ACTIVITIES.
2. THE LOCATION OF THE CONSTRUCTION ENTRANCE(S) SHALL BE APPROVED BY THE OWNER PRIOR TO PLACEMENT.
3. CONSTRUCTION ENTRANCE(S) SHALL CONSIST OF 2" CRUSHED STONE PLACED AT A DEPTH OF A MINIMUM 8 INCHES PLACED OVER GEOTEXTILE FABRIC.
4. CONTRACTOR IS RESPONSIBLE FOR DAILY INSPECTION AND ALL NECESSARY MAINTENANCE OF ALL ENTRANCES.
5. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF SEDIMENTS OR ANY OTHER MATERIALS TRACKED ONTO THE STREET, AS WELL MAINTENANCE OF EROSION CONTROL MEASURES.
6. EQUIVALENT ALTERNATIVE PROPRIETARY ANTI-TRACKING PRODUCT, SUCH AS A FODS MAP, SHALL ONLY BE USED IF APPROVED BY THE OWNER AND ENGINEER.

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE/EXIT

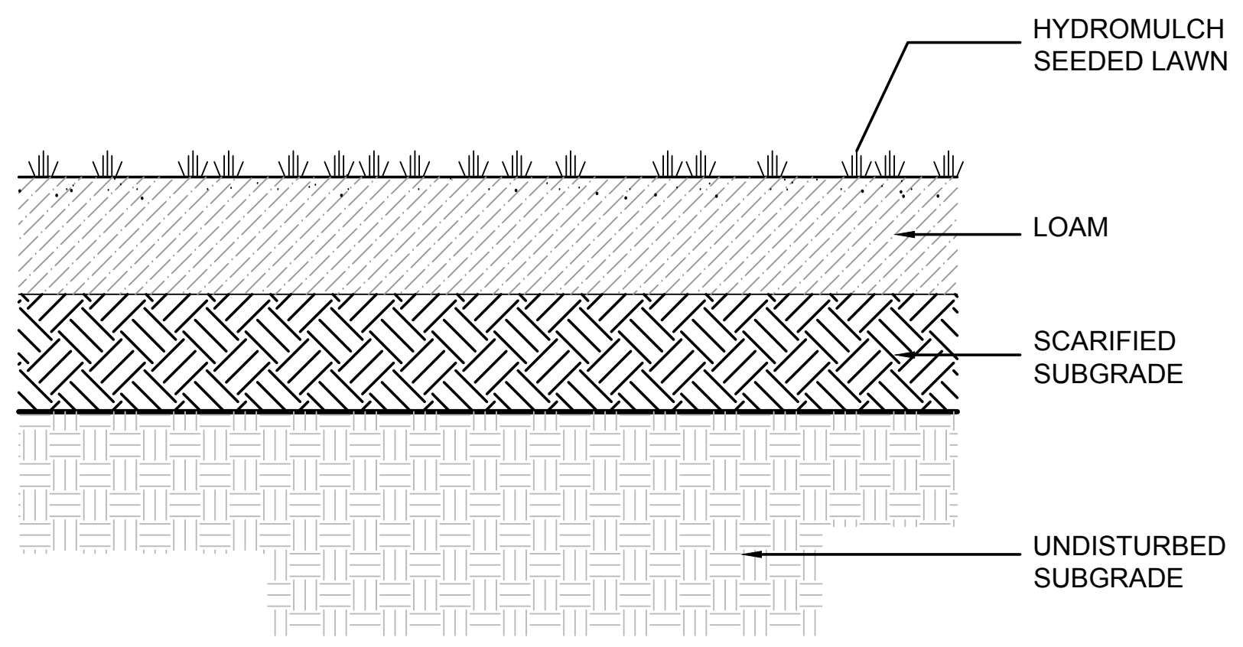
N.T.S.



NOTE:
ALL NEW CATCH BASINS WITHIN THE LIMIT OF WORK SHALL HAVE INLET CONTROL UNTIL THE COMPLETION OF PAVING.

INLET SEDIMENT CONTROL DEVICE

N.T.S.

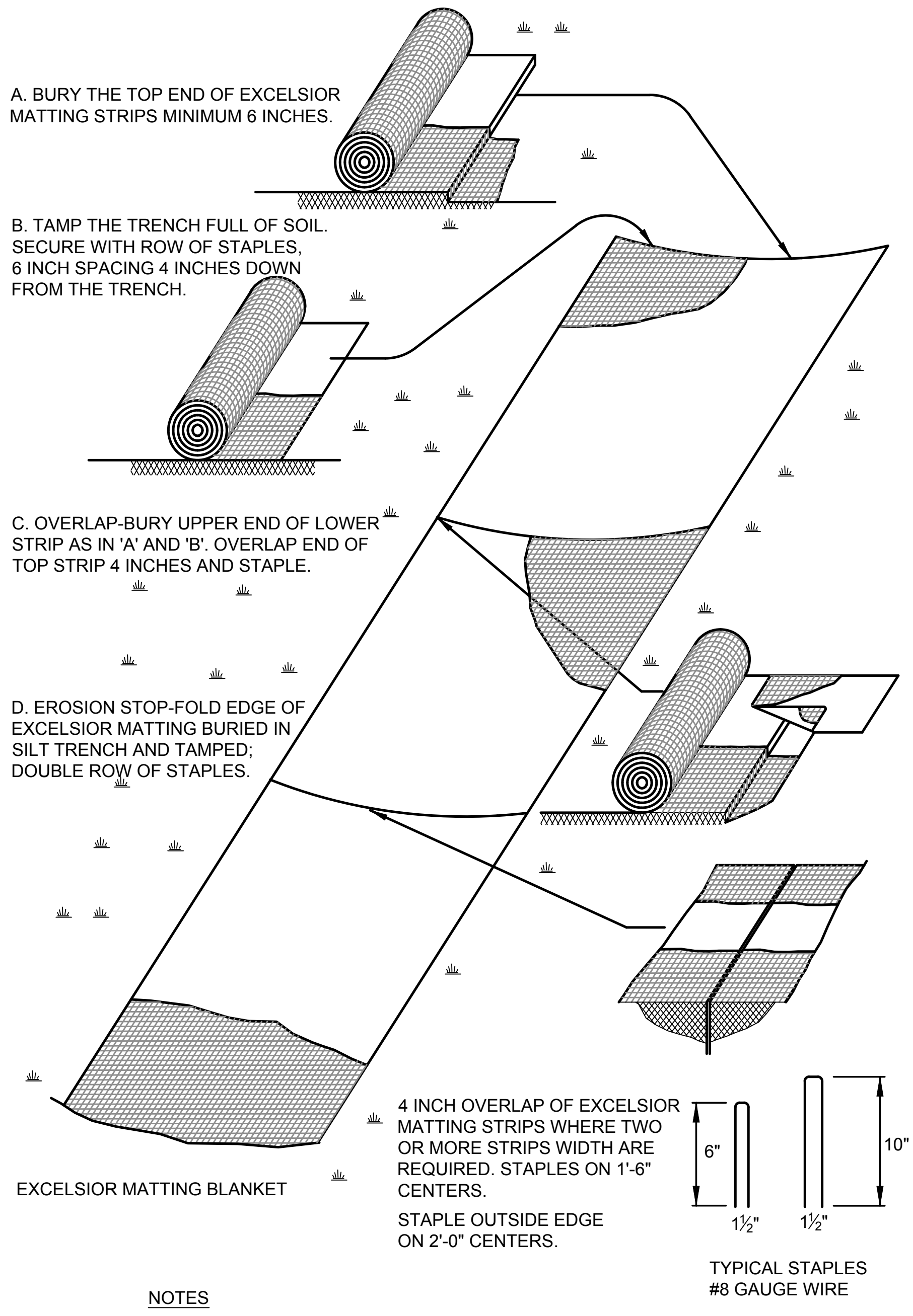


NOTES:

1. REFER TO THE SITE LAYOUT & MATERIALS PLAN FOR ADDITIONAL INFORMATION AND LOCATION OF LOAM AND SEED AREAS.

LOAM & SEED

N.T.S.

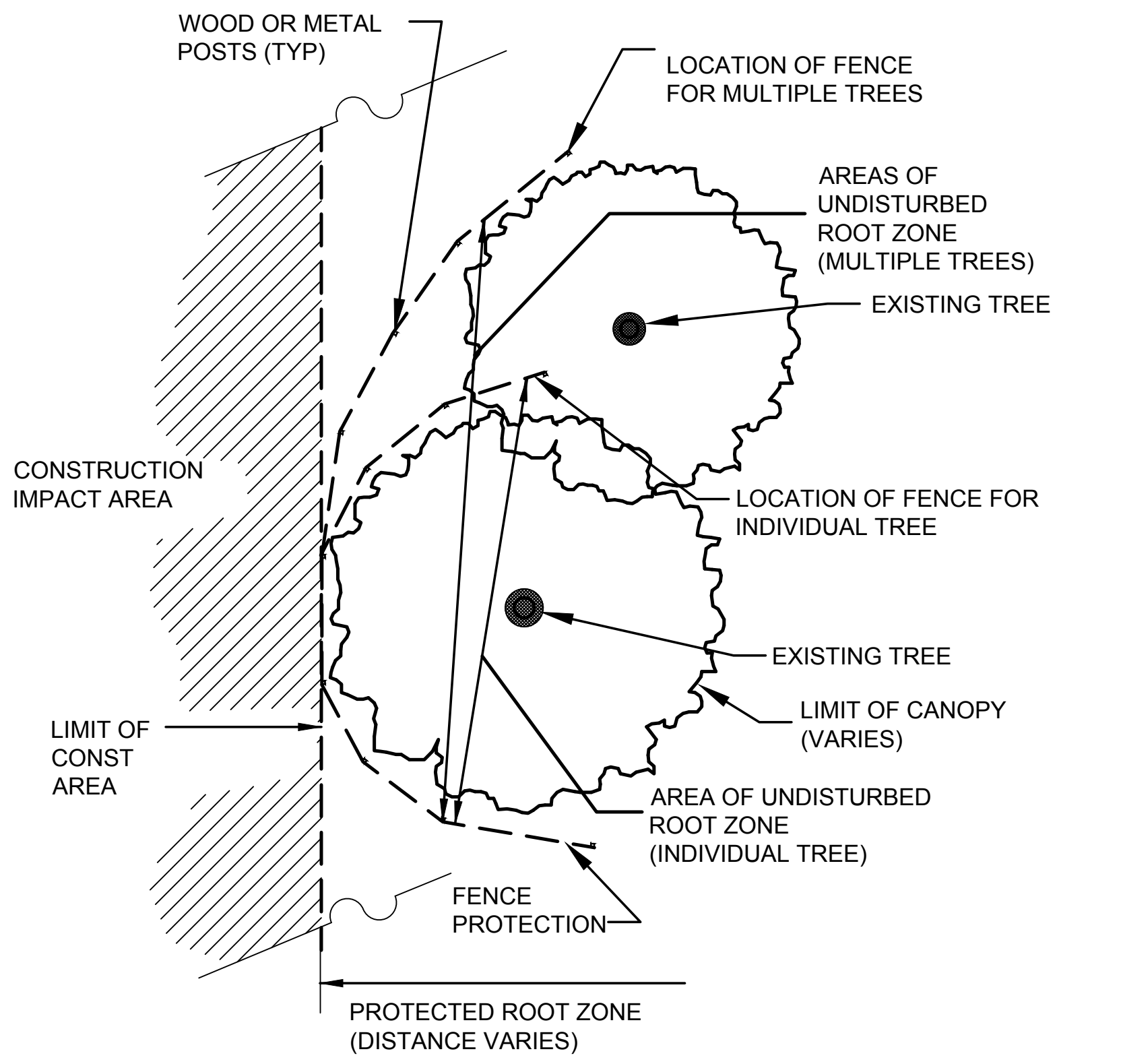


NOTES

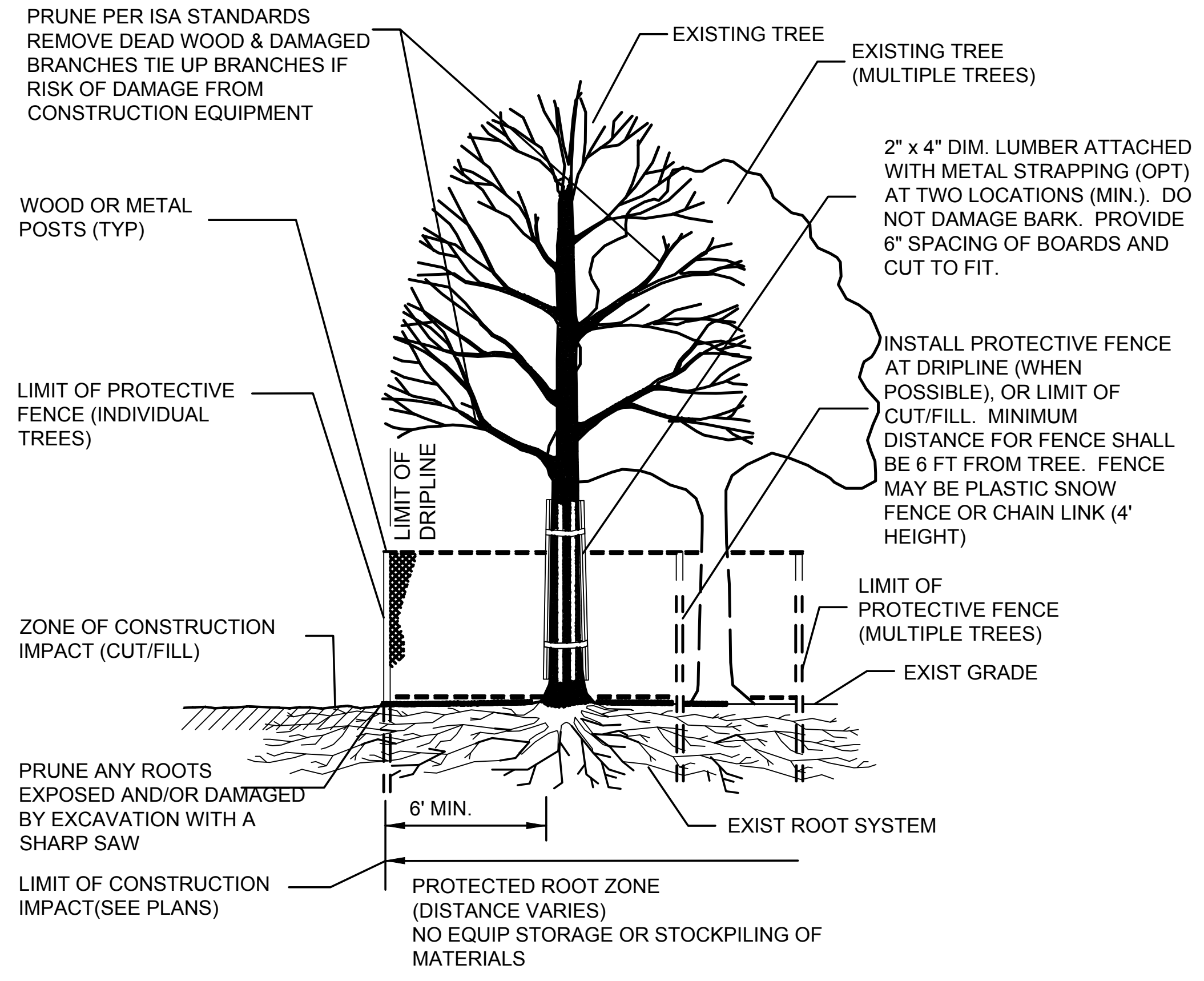
1. EROSION CONTROL BLANKET SHALL BE THE EXCELSIOR MATTING BLANKET OR AN APPROVED ALTERNATIVE.
2. EROSION CONTROL BLANKET SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER REQUIREMENTS ON ALL SLOPES 3H:1V OR STEEPER, EXCEPT FOR THE PROPOSED 1H:1V LEDGE CUT SLOPES.

EROSION CONTROL BLANKET

N.T.S.



PLAN VIEW

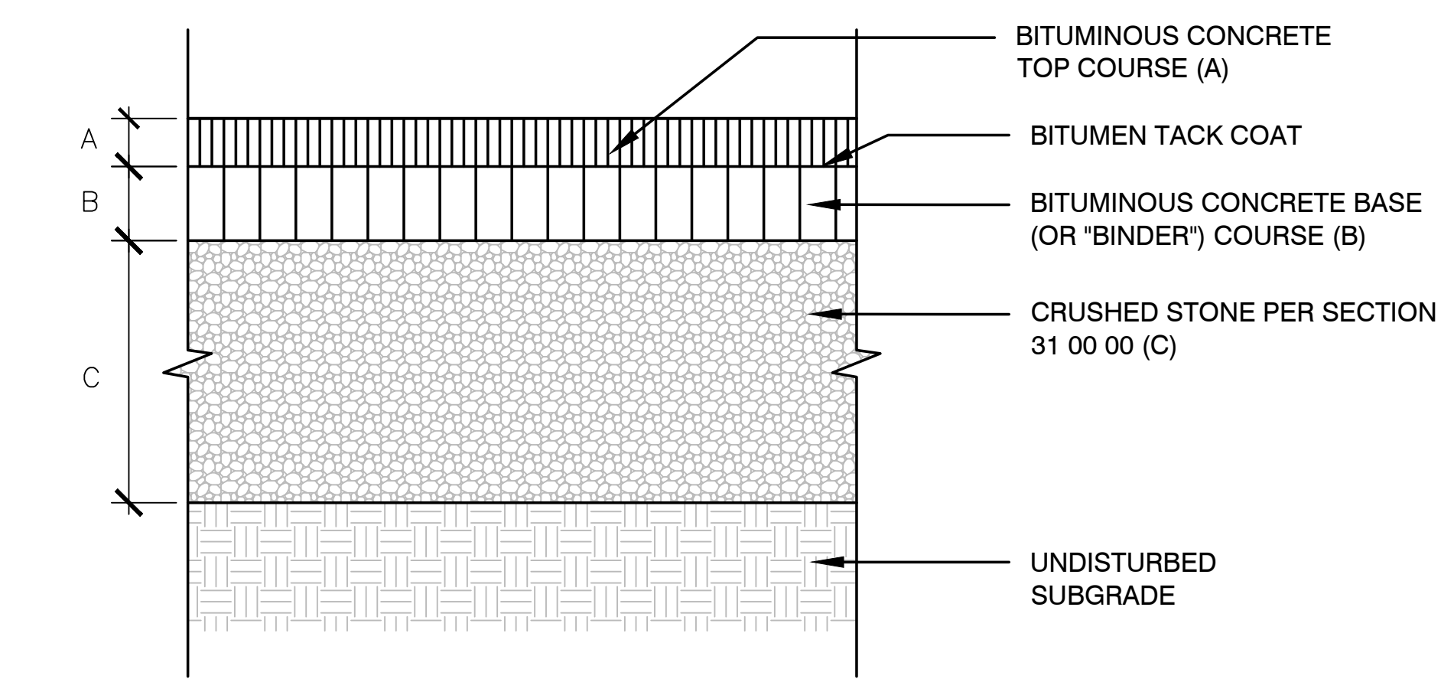


EXISTING TREE PROTECTION

N.T.S.

PAVEMENT DEPTH SCHEDULE

	TOP (A)	BASE/BINDER (B)	SUBBASE (C)
HEAVY DUTY PERMANENT PVMT	1.5"	2.5"	12"
ROADWAY PERMANENT TRENCH PVMT	1.5"	2.5"	12"

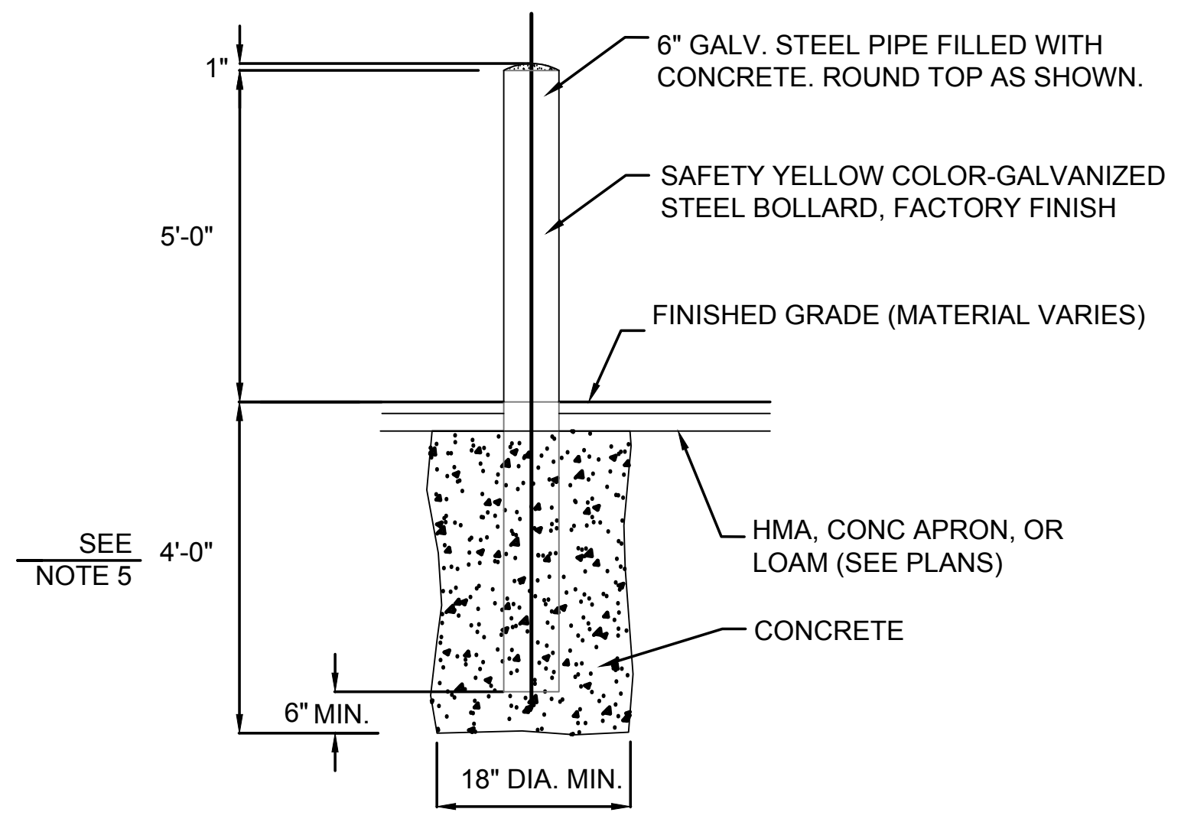


NOTES:

1. WHERE EXISTING PAVEMENT GRADES ARE PROPOSED TO REMAIN, CONTRACTOR SHALL REMOVE ONLY THE EXISTING TOP AND BINDER BITUMINOUS COURSES, AND FINE GRADE THE UNDERLYING SUBBASE LAYER AS NEEDED TO ACCOMMODATE NEWLY INSTALLED TOP AND BINDER COURSES WITH THE LAYER THICKNESSES SPECIFIED IN THIS DETAIL. SEE GRADING AND DRAINAGE PLAN FOR LIMITS OF PAVEMENT AREA WHERE NEW GRADES ARE PROPOSED.
2. CONTRACTOR TO PROVIDE SMOOTH TRANSITION WHERE NEW PAVEMENT ABUTS EXISTING PAVEMENT, TYP.

TYPICAL PAVEMENT SECTION

N.T.S.

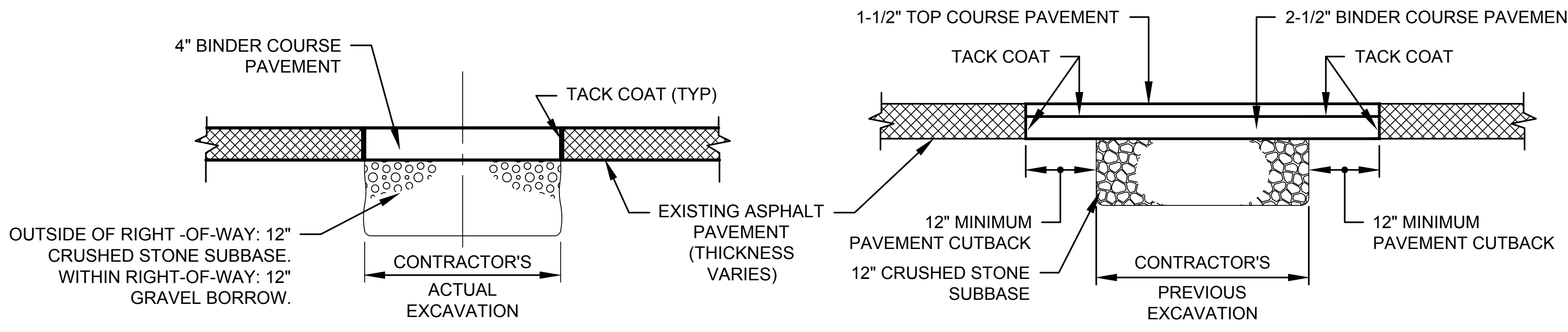


NOTES:

1. BOLLARD FOUNDATION CONCRETE TO BE 3000 PSI MIN.
2. EXACT LOCATION TO BE DETERMINED IN THE FIELD AND APPROVED BY OWNER BEFORE INSTALLATION.
3. 6" GALVANIZED PIPE PROVIDED BY MISC. METALS CONTRACTOR. INSTALLATION AND CONCRETE BY GENERAL CONTRACTOR.
4. CONCRETE DEPTH AND OVERALL BOLLARD HEIGHT VARIES FOR BOLLARDS AT FACE OF BUILDING. SEE STRUCTURAL DRAWINGS FOR BOLLARD DETAIL AT BUILDING FOUNDATION.
5. COLOR TO BE DETERMINED BY OWNER.

STEEL PIPE BOLLARD

N.T.S.



TEMPORARY TRENCH PAVEMENT

PERMANENT TRENCH PAVEMENT

NOTES:

1. SAWCUT TO A STRAIGHT AND VERTICAL EDGE. CARE SHALL BE TAKEN NOT TO DISTURB OR IN ANY WAY DAMAGE THE SURFACE BEYOND THE EDGES.
2. TRENCH BACKFILL SHALL BE PLACED, COMPACTED, AND TESTED IN ACCORDANCE WITH SECTION 31 00 00 (EARTHWORK) .
3. REFER TO APPROPRIATE TRENCH DETAIL FOR TRENCH LIMITS.
4. IN THE EVENT THERE IS LESS THAN 2 FEET BETWEEN THE PVMT TRENCH PATCH AND THE EDGE OF EXISTING PAVEMENT, EXTEND THE PATCH TO THE EDGE OF THE PAVEMENT AND IN ACCORDANCE WITH SPEC 32 12 00.
5. ALL JOINTS BETWEEN EXISTING AND NEW TOP COURSE PAVEMENT SHALL BE SEALED WITH HOT POURED RUBBERIZED ASPHALT JOINT SEALANT.
6. PERMANENT TRENCH PAVEMENT TO BE INSTALLED IN ACCORDANCE WITH SPEC 32 12 00 ONLY FOR TRENCHING OUTSIDE THE RIGHT OF WAY. MILL & OVERLAY PAVEMENT IN THE RIGHT OF WAY, AS DEPICTED ON THE PLANS, AFTER THE TEMPORARY PATCH HAS SAT FOR A PERIOD OF TIME AS SPECIFIED IN SPEC 32 12 00.

TRENCH PAVEMENT

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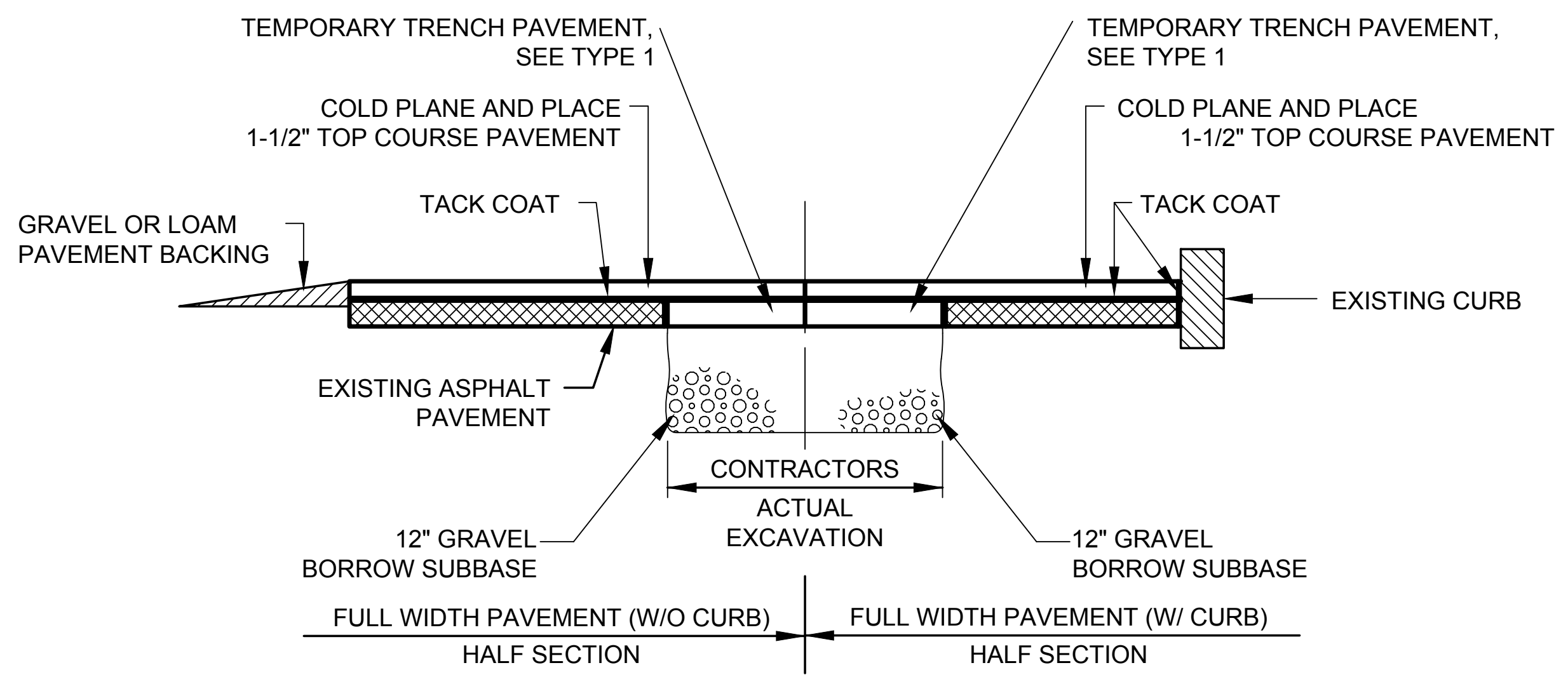

FULL ROADWAY WIDTH PAVEMENT

FULL ROADWAY WIDTH MILL & OVERLAY

N.T.S.

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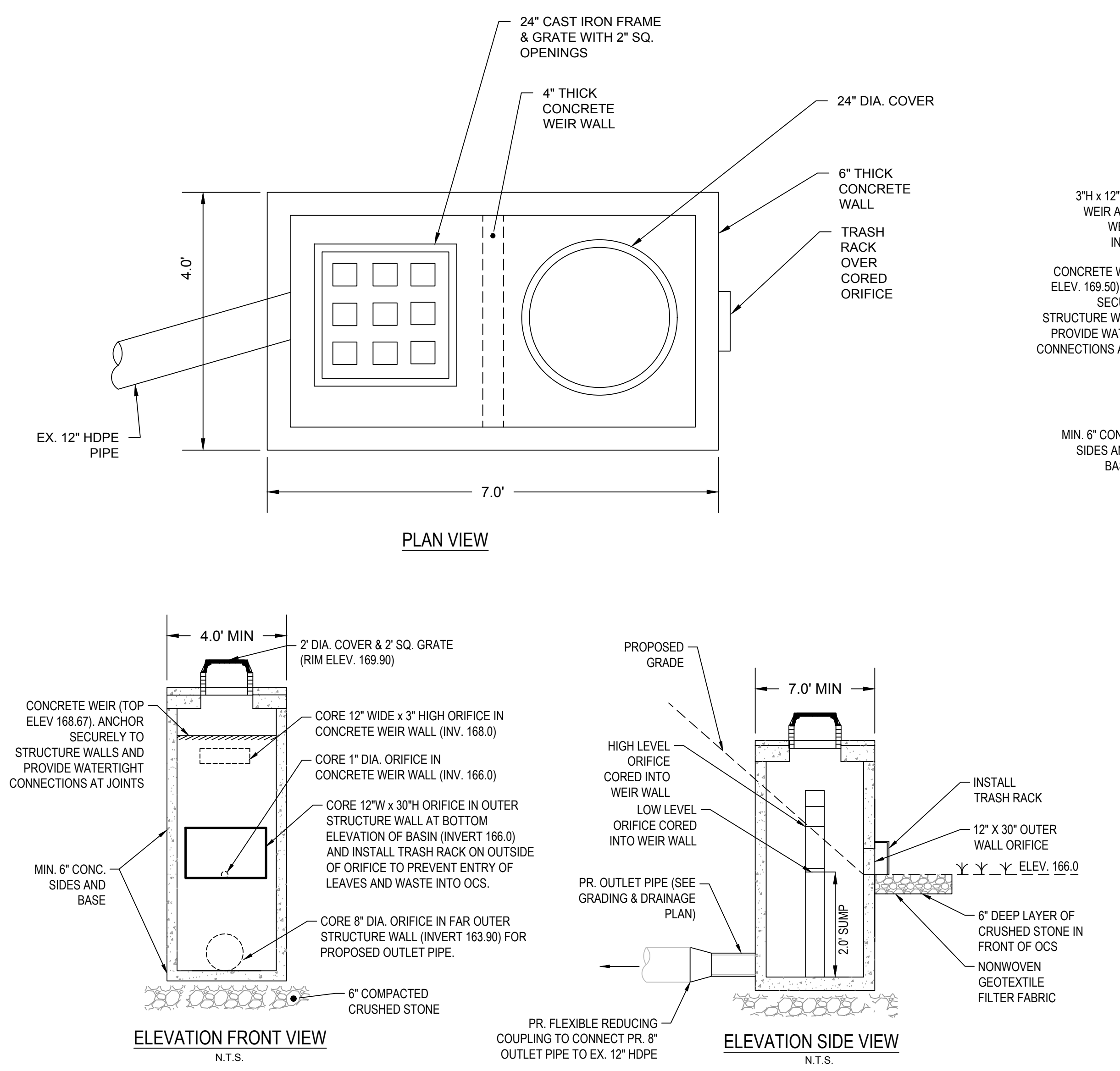
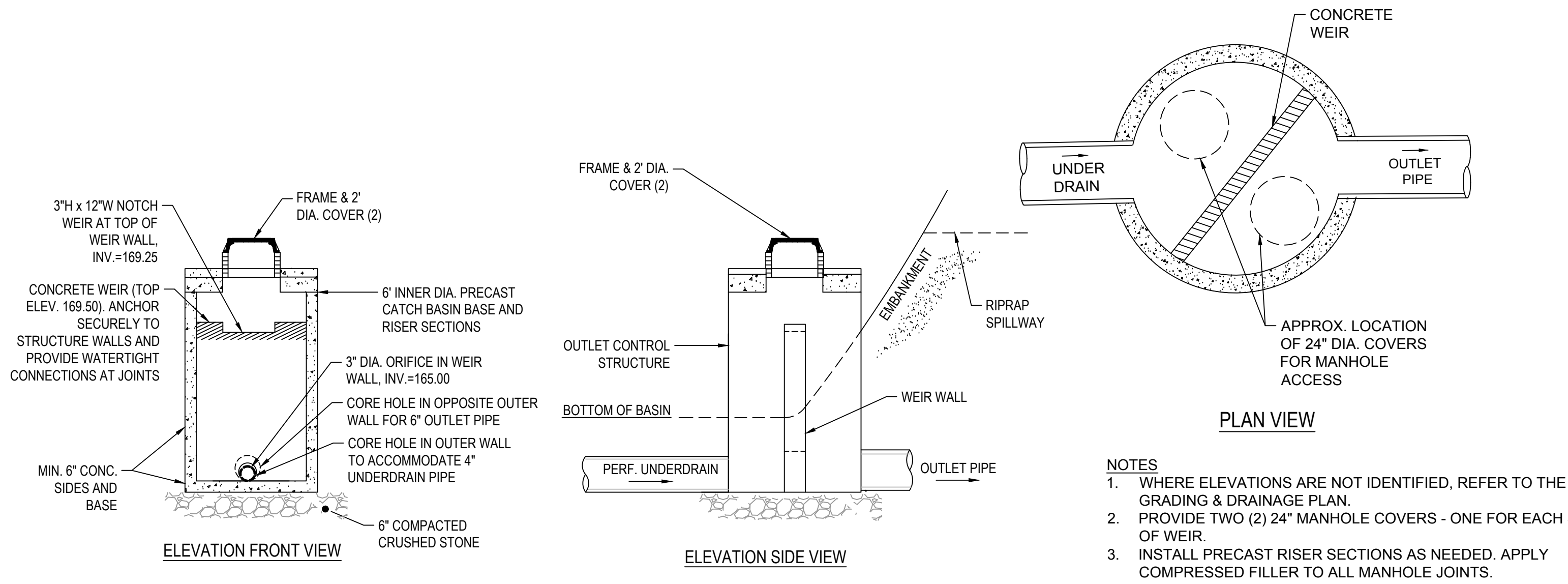


OUTLET CONTROL STRUCTURE 1 (OCS-1)

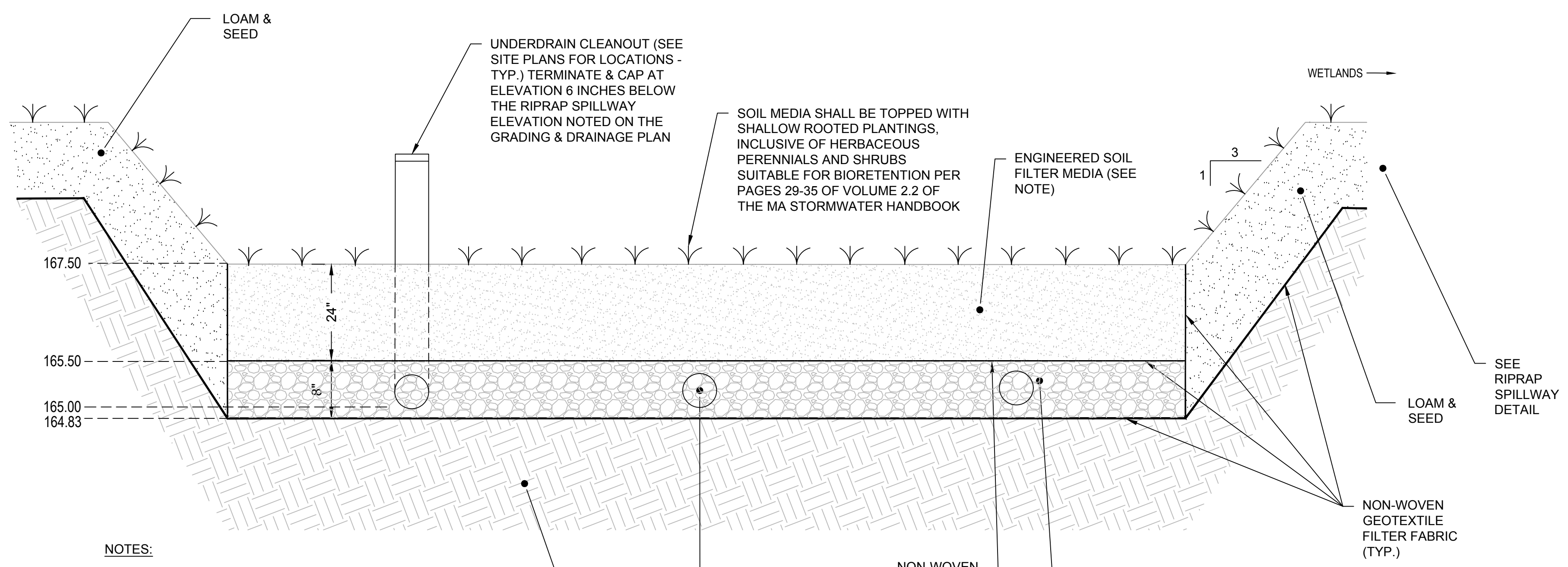
N.T.S.



NOTES
1. WHERE ELEVATIONS ARE NOT IDENTIFIED, REFER TO THE GRADING & DRAINAGE PLAN.
2. PROVIDE TWO (2) 24" MANHOLE COVERS - ONE FOR EACH SIDE OF WEIR.
3. INSTALL PRECAST RISER SECTIONS AS NEEDED. APPLY COMPRESSED FILLER TO ALL MANHOLE JOINTS.
4. ALL STRUCTURES SHALL MEET THE REQUIREMENTS OF ASTM C478.
5. INSTALL FLEXIBLE RUBBER BOOT (OR APPROVED ALTERNATE) TO FORM A WATERTIGHT SEAL AT PIPE CONNECTIONS

OUTLET CONTROL STRUCTURE 2 (OCS-2)

N.T.S.

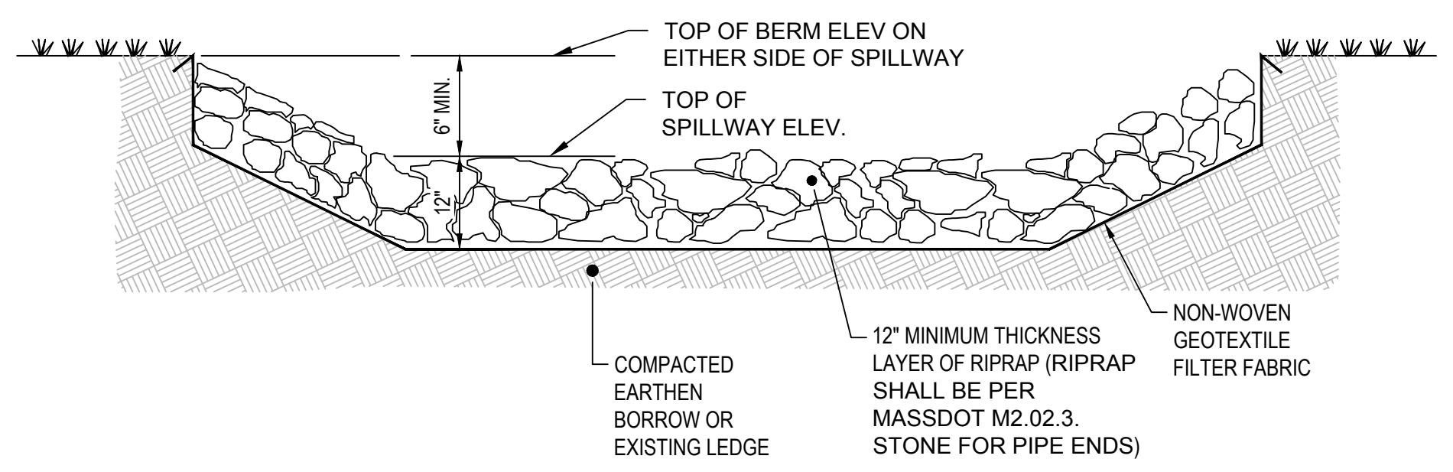


NOTES:

1. THE ENGINEERED SOIL FILTER MEDIA SHOULD BE A HOMOGENEOUS SOIL MIX CONTAINING THE PARTICLE SIZE DISTRIBUTION AND COMPOSITION REQUIREMENTS OUTLINED IN SPECIFICATION SECTION 32 91 13.13.
2. UNDERDRAINS CONNECT TO OCS-2. SEE OCS-2 DETAIL.
3. CUT GAPS IN THE IMPERMEABLE LINER AS NEEDED TO ACCOMMODATE THE PROPOSED OUTLET CONTROL STRUCTURE AND ITS OUTLET PIPE. ADHERE THE LINER TO THE OUTSIDE PIPE AND STRUCTURE SURFACES AS NEEDED TO CREATE A WATERTIGHT SEAL IN ACCORDANCE WITH SPECIFICATION SECTION 33 41 13.16 PERFORATED POLYETHYLENE DRAINAGE PIPE. REFER TO THE OUTLET CONTROL STRUCTURE DETAIL AND ITS LOCATION ON THE GRADING & DRAINAGE PLAN.

BIORETENTION BASIN

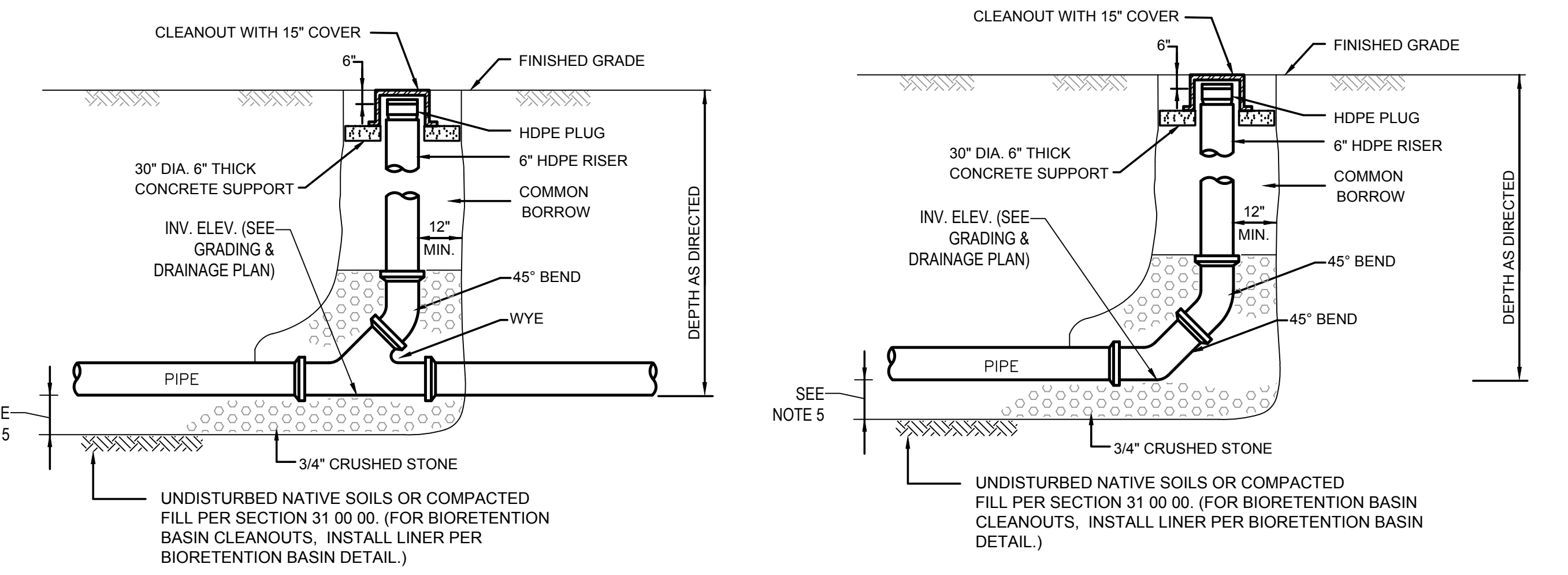
N.T.S.



NOTES
1. SEE GRADING & DRAINAGE PLAN FOR DIMENSIONS AND ELEVATIONS.

RIPRAP SPILLWAY

N.T.S.

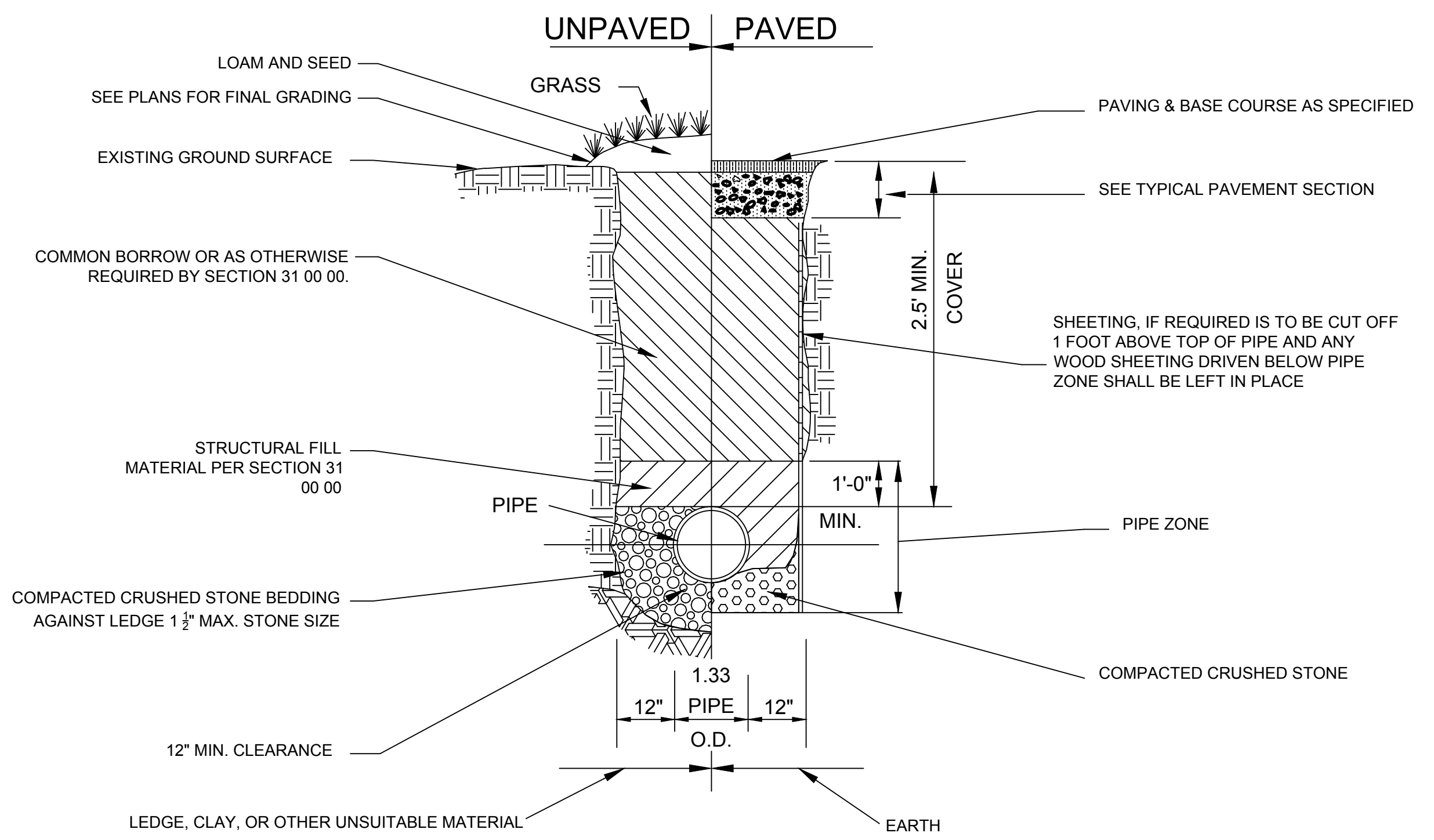


NOTES:

1. CLEANOUTS TO BE INSTALLED WHERE INDICATED ON THE PLANS.
2. CLEANOUT DROP PIPE DIAMETER TO BE SAME SIZE AND MATERIAL AS DOWNSTREAM PIPE, UP TO 8" MAX.
3. BACKFILL TO TOP OF 45° BEND WITH 3/4" CRUSHED STONE.
4. CLEANOUTS LOCATED IN PAVED AREAS SHALL BE H-20 WHEEL LOAD RATED.
5. FOR CLEANOUTS IN BIORETENTION BASIN, SEE BIORETENTION BASIN DETAIL. OTHERWISE, PROVIDE 8" OF CRUSHED STONE BELOW PIPE.

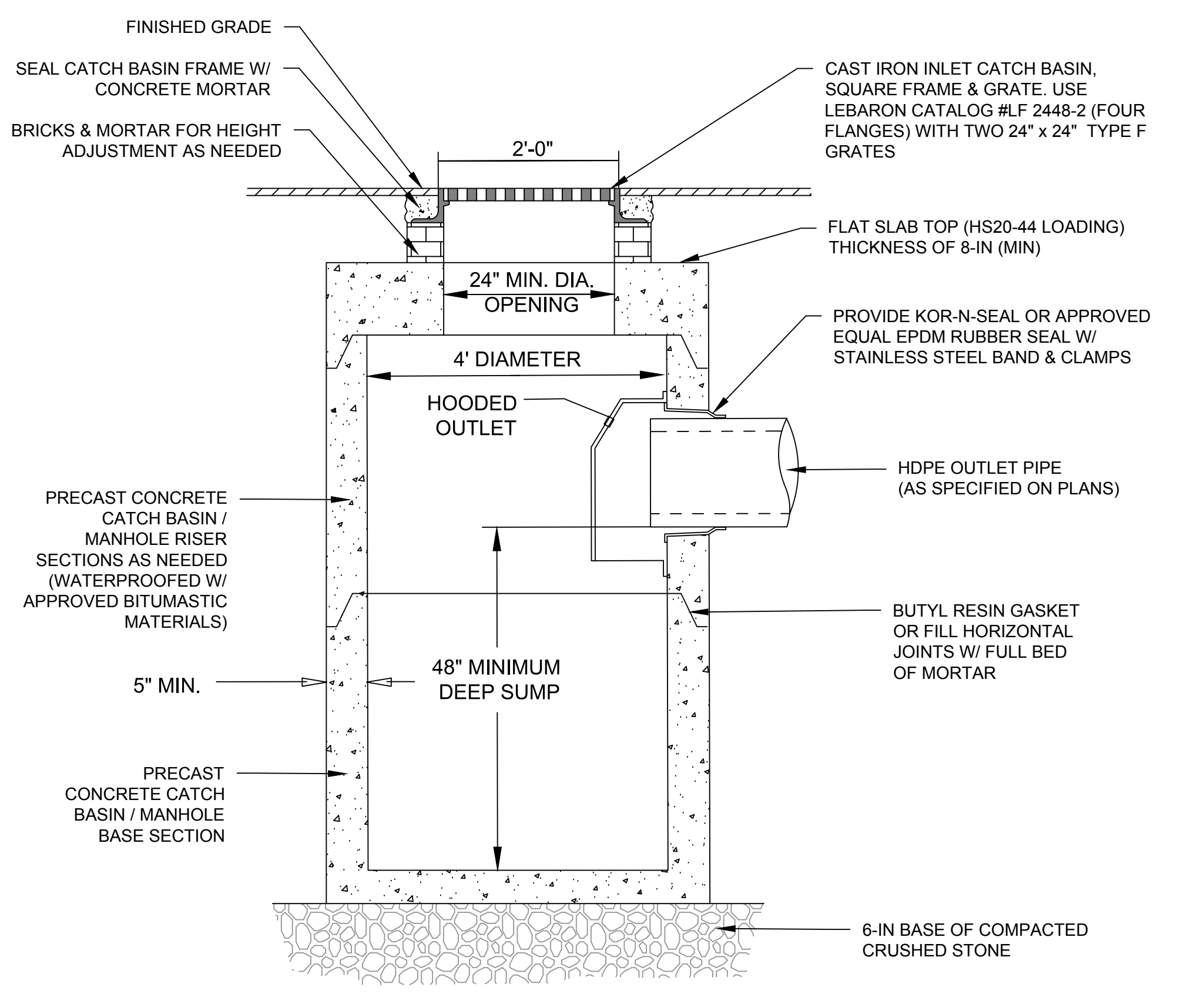
ROOF DRAIN PIPE CLEANOUT

N.T.S.



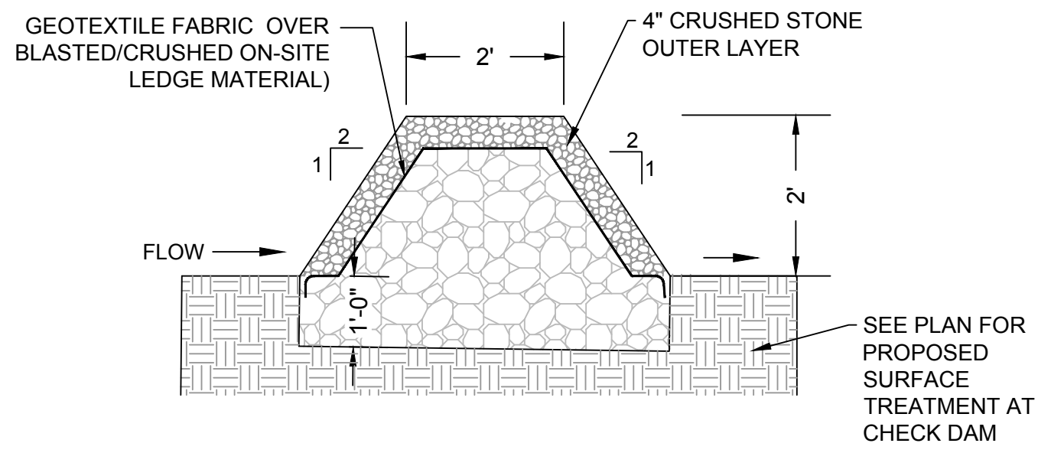
TYPICAL STORM DRAIN TRENCH

N.T.S.



PRECAST CONCRETE CATCH BASIN

N.T.S.

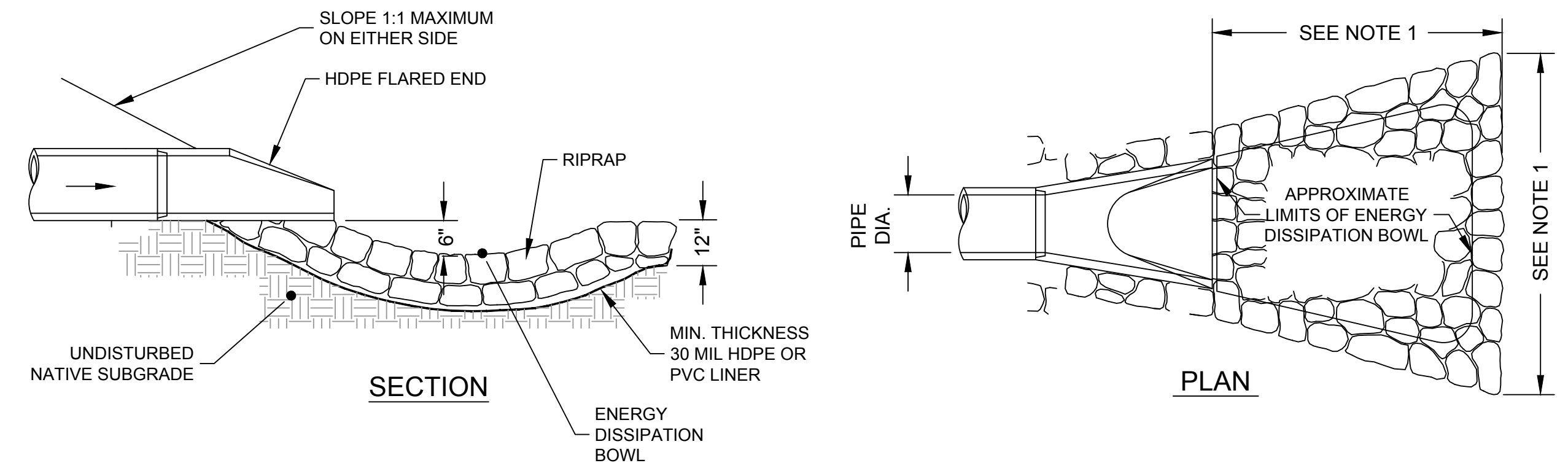


NOTES:

1. CHECK DAM TO BE COMPRISED OF BLASTED/CRUSHED ON-SITE LEDGE, WITH A MAXIMUM STONE DIAMETER OF 6 INCHES AND A MINIMUM STONE DIAMETER OF 1 INCH.
2. ENSURE FILTER FABRIC IS KEYED IN UPON INSTALLATION TO ANCHOR THE FABRIC.

CRUSHED STONE CHECK DAM

N.T.S.

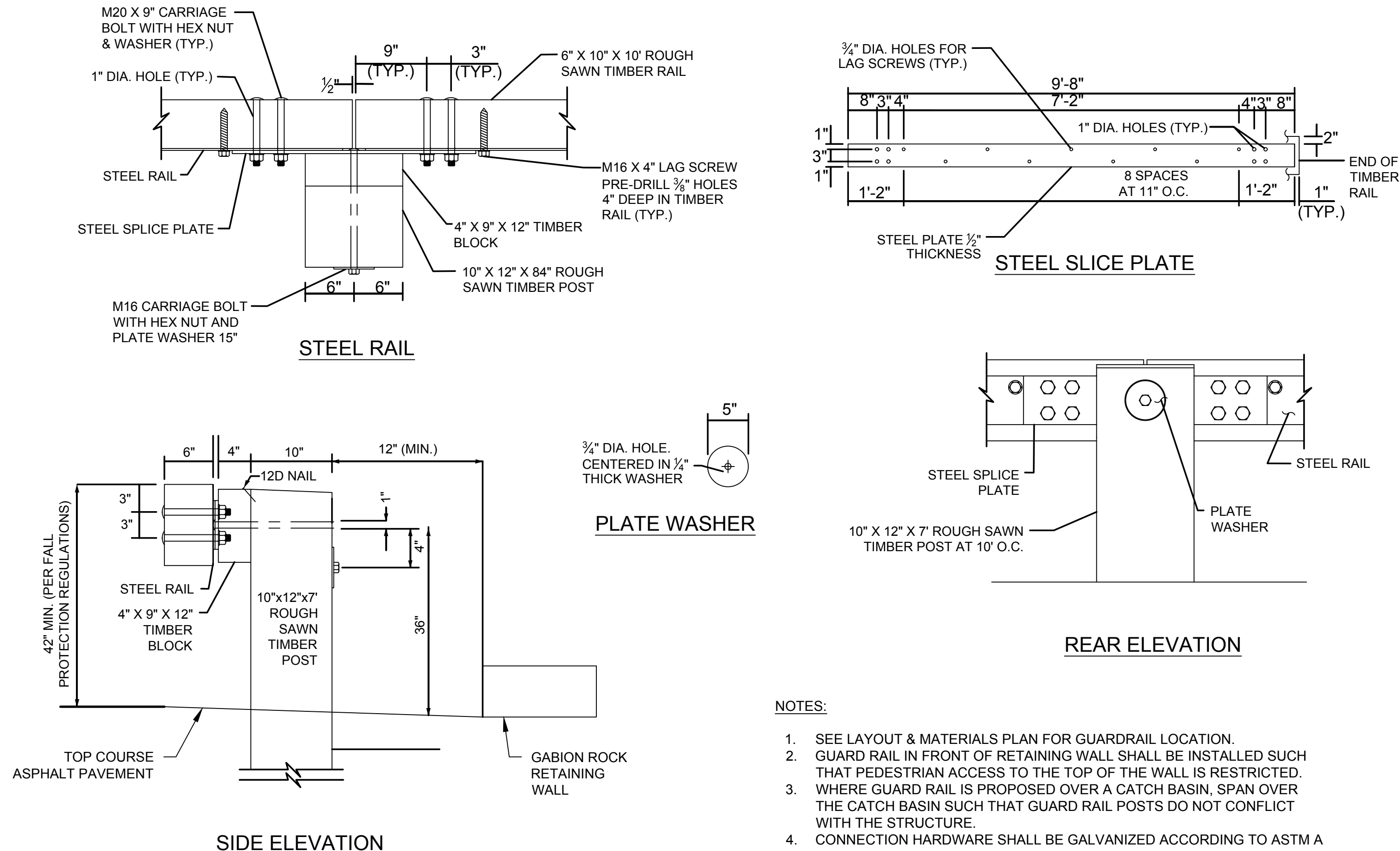


NOTES:

1. ALL APRON DIMENSIONS SHALL BE AS DEPICTED ON THE PLANS.
2. RIPRAP SHALL BE PER MASSDOT M2.02.3. STONE FOR PIPE ENDS

FLARED END RIP RAP APRON

N.T.S.

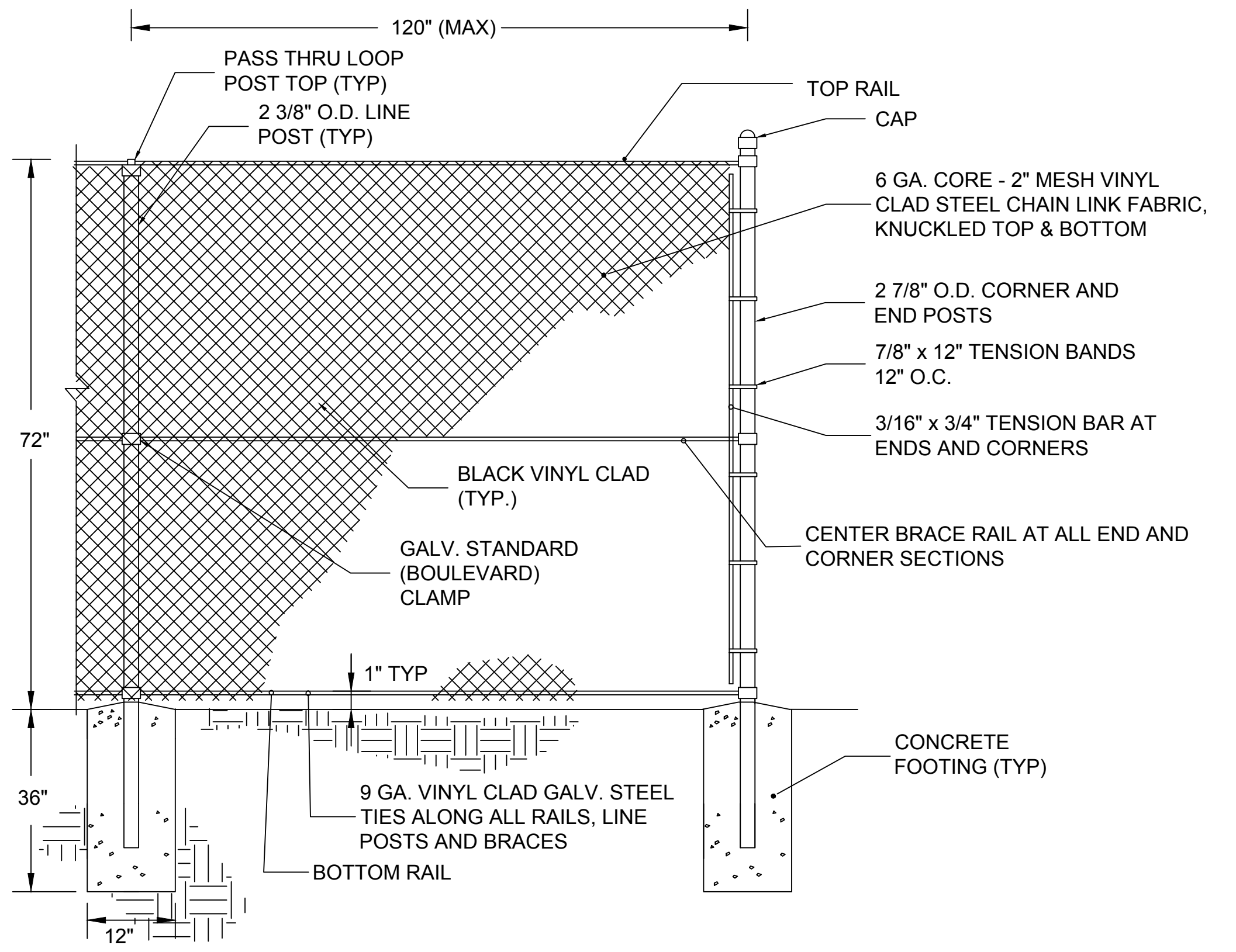


NOTES:

1. SEE LAYOUT & MATERIALS PLAN FOR GUARDRAIL LOCATION.
2. GUARD RAIL IN FRONT OF RETAINING WALL SHALL BE INSTALLED SUCH THAT PEDESTRIAN ACCESS TO THE TOP OF THE WALL IS RESTRICTED.
3. WHERE GUARD RAIL IS PROPOSED OVER A CATCH BASIN, SPAN OVER THE CATCH BASIN SUCH THAT GUARD RAIL POSTS DO NOT CONFLICT WITH THE STRUCTURE.
4. CONNECTION HARDWARE SHALL BE GALVANIZED ACCORDING TO ASTM A 123-78.

WOOD GUARD RAIL

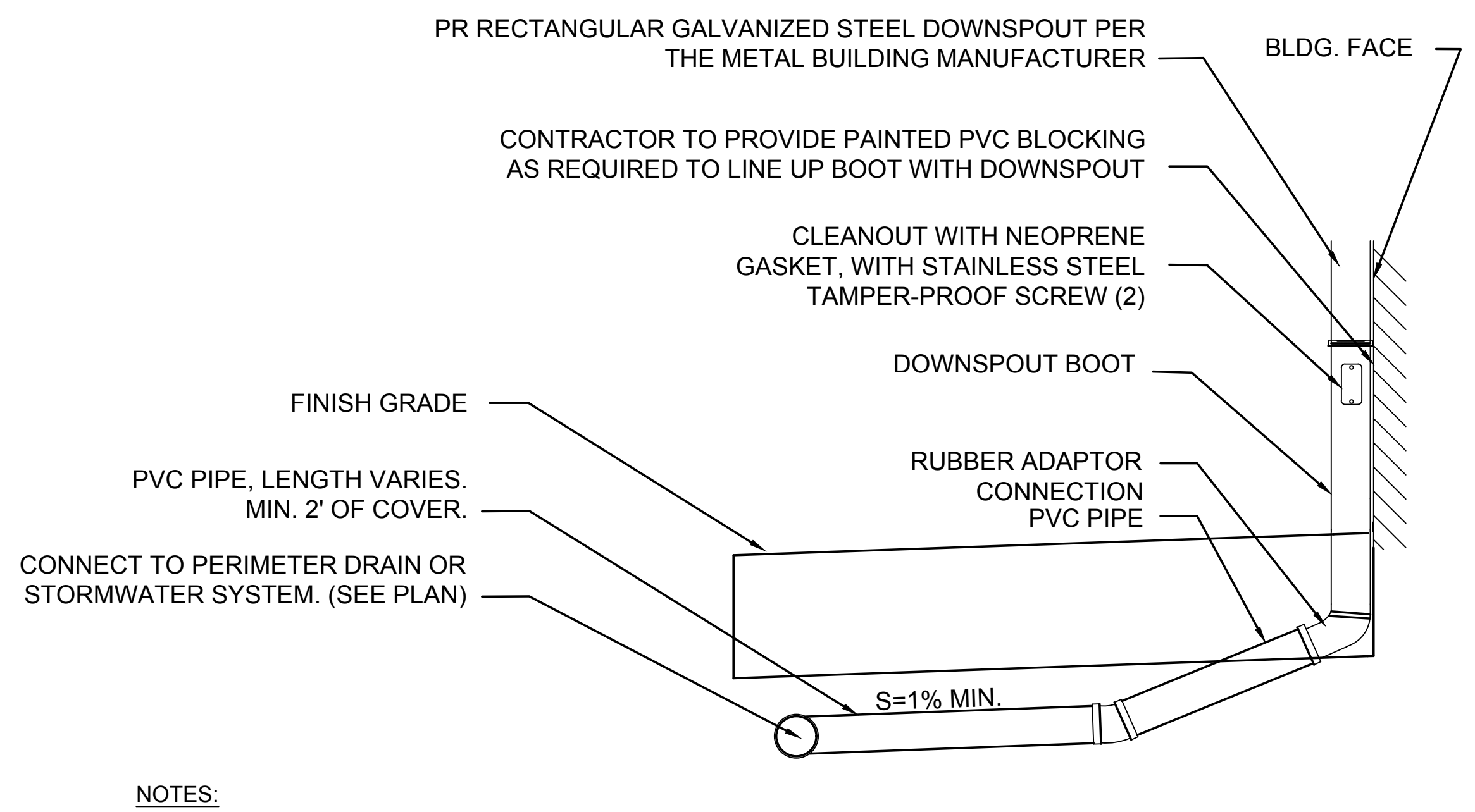
N.T.S.



NOTES:
1. ALL FENCE PIPE SHALL BE SCH. 40, VINYL CLAD HOT DIP GALV. STEEL PIPE.
2. ALL LINE POSTS SHALL BE INSTALLED EQUALLY SPACED BETWEEN END & CORNER POSTS.
3. ALL CLAMPS, TIES, POST TOPS, BANDS, POSTS, ETC. SHALL BE VINYL CLAD TO MATCH FABRIC.

CHAIN LINK FENCE

N.T.S.



NOTES:
1. DOWNSPOUT DETAIL IS TYPICAL FOR BUILDING GUTTER DOWNSPOUTS.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT QUANTITY & LOCATION.
3. COORDINATE WITH CIVIL SITE PLANS FOR CONNECTIONS TO STORM SYSTEM.
4. PROVIDE A DOWNSPOUT BOOT AT EACH DOWNSPOUT TO ALLOW THE DOWNSPOUT TO TRANSITION TO THE ROUND CAST IRON RECEPTOR PIPE.
5. PAINT DOWNSPOUT ADAPTER BY PAINTING SUBCONTRACTOR. COLOR AS SELECTED BY THE ARCHITECT.
6. DOWNSPOUT ADAPTER SHALL BE MANUFACTURED BY J.R. HOE AND SONS, NEENAH FOUNDRY, PIEDMONT MANUFACTURING, OR APPROVED EQUAL.

DOWNSPOUT CONNECTION

N.T.S.

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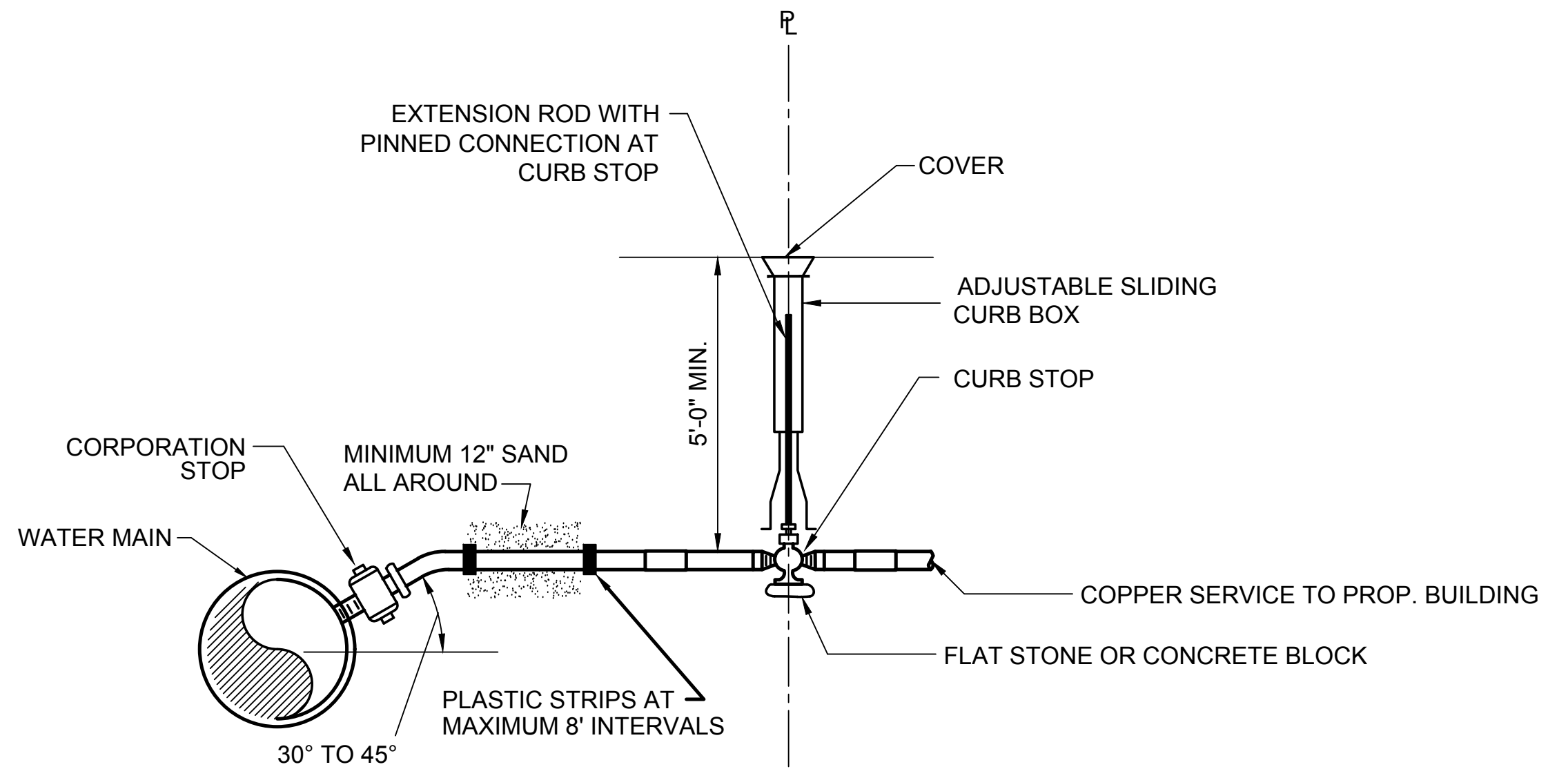
Drawing Title:
DETAILS II

Sheet Number:
C601

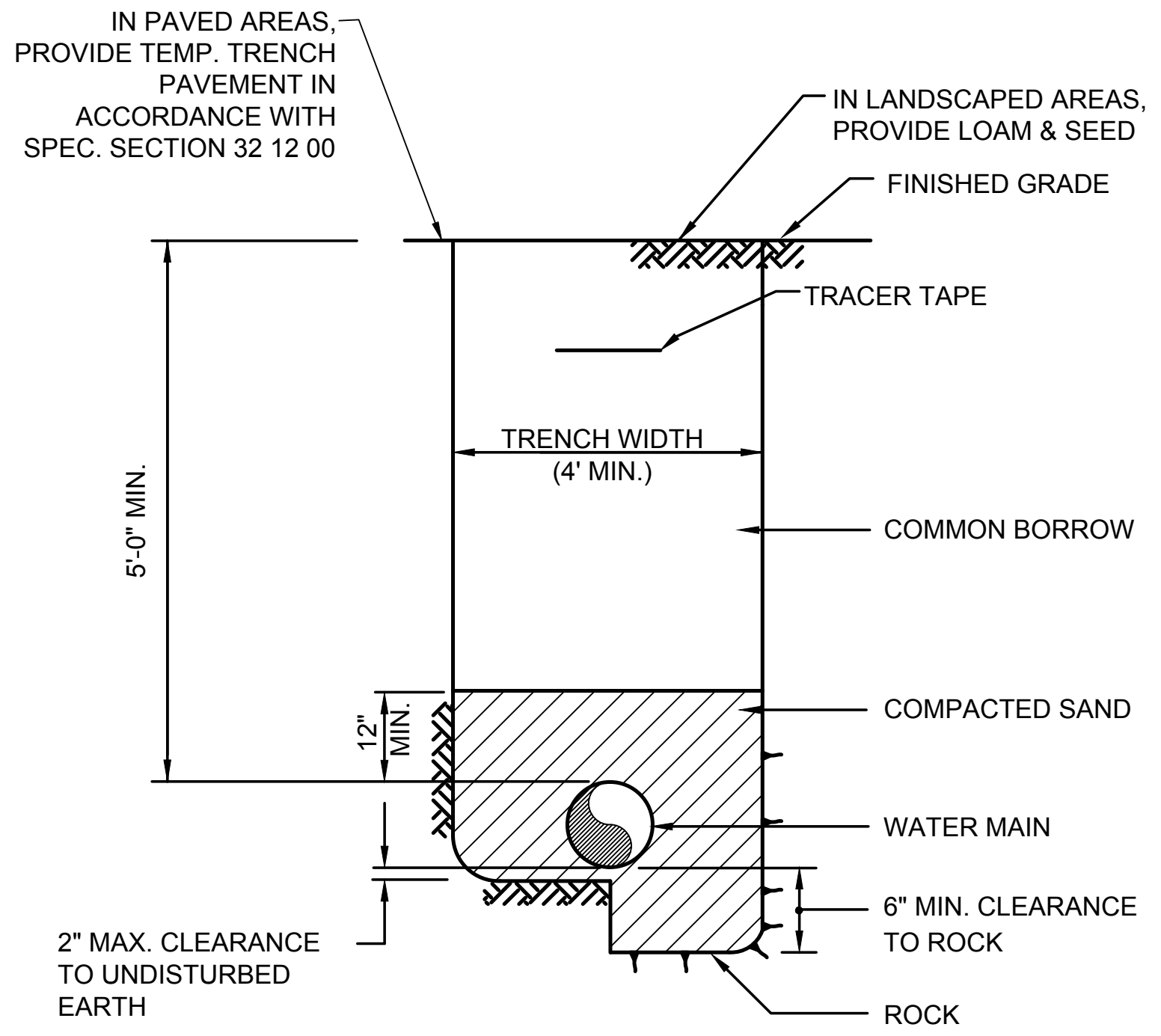


NOTES:

1. PROVIDE SOLID SADDLE CONNECTION FOR ALL 2" OR LARGER STOPS.
2. PROPER SIZE VALVE BOX SHALL BE INSTALLED WHERE GATE VALVES ARE SHOWN ON PLANS.
3. PROVIDE CONCRETE COLLAR FOR VALVE BOX COVERS IN UNPAVED AREAS. COLLAR SHALL BE 4000 PSI CEMENT CONCRETE & FLUSH WITH VALVE BOX COVER, 9" DEEP AND EXTEND 12" OUTWARD FROM EDGE OF BOX.

DOMESTIC WATER SERVICE

N.T.S.

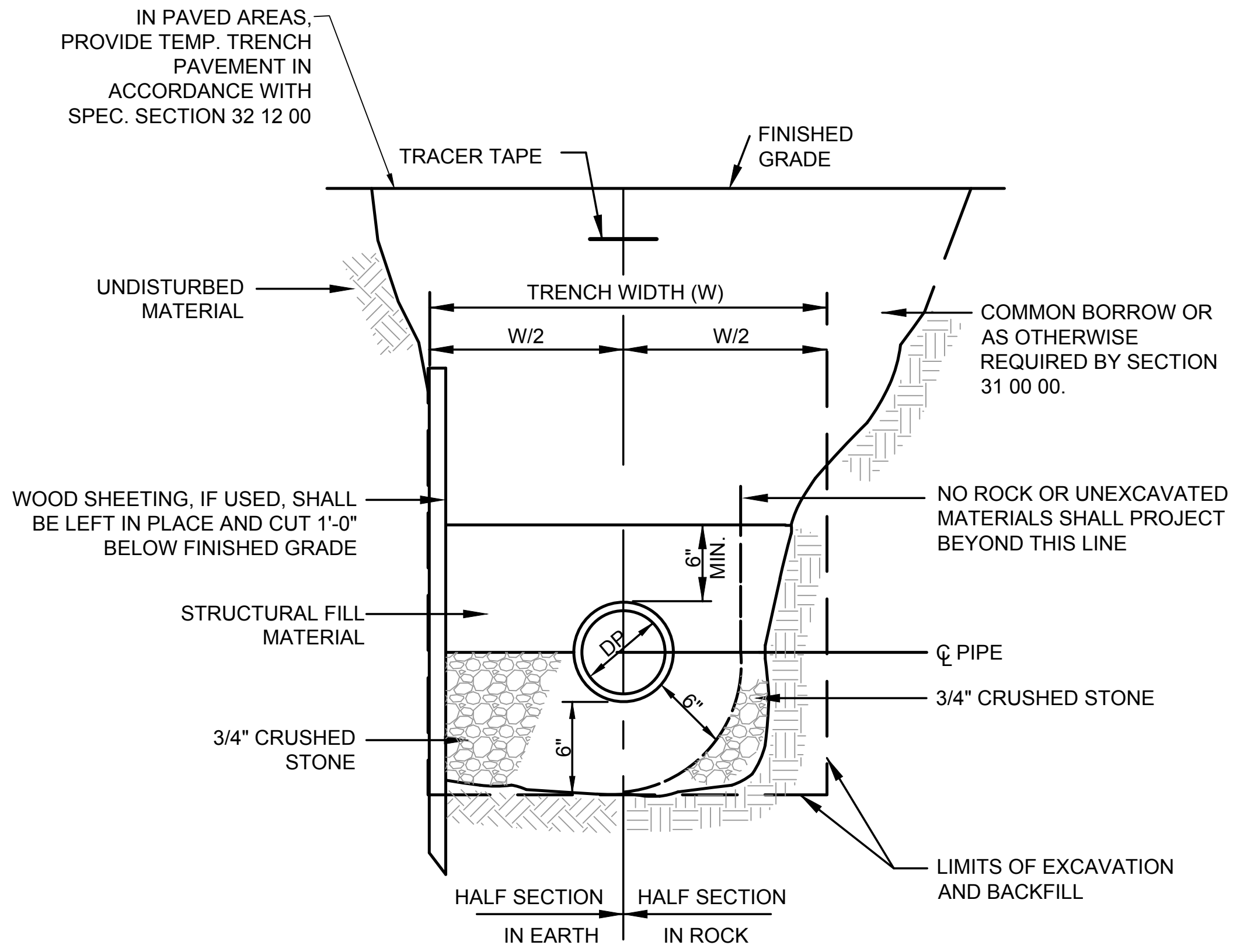


NOTES:

1. ALL PROPOSED DUCTILE IRON WATER PIPE SHALL BE INSTALLED WITH POLYETHYLENE ENCASEMENT PER SECTION 33 11 13.13.

WATER MAIN TRENCH

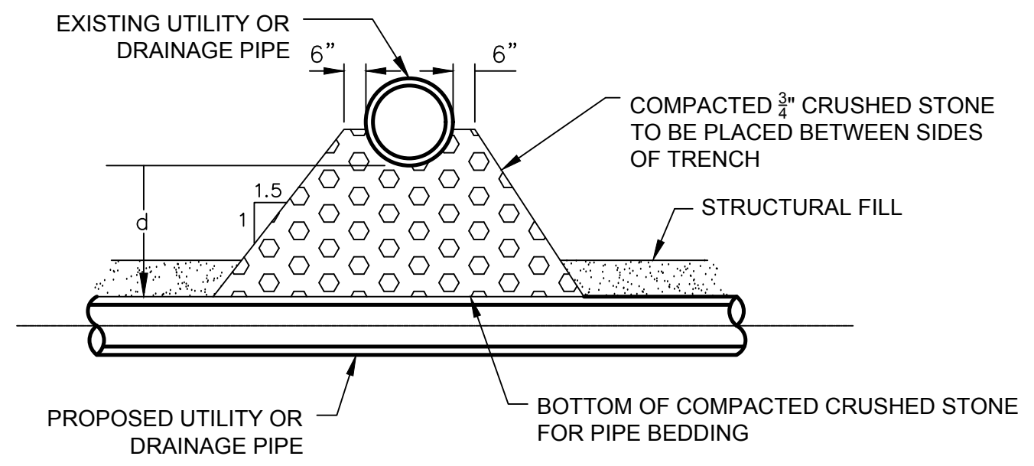
N.T.S.



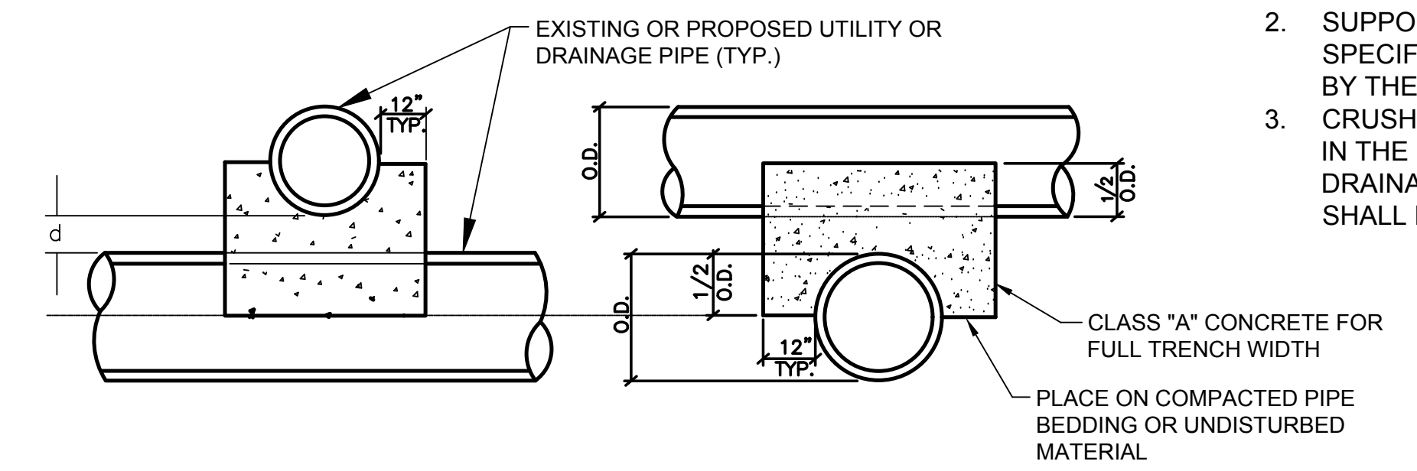
DEPTH TO INVERT	DIAMETER OF PIPE (DP)	MAX. TRENCH WIDTH BELOW LINE OF NARROW TRENCH LIMIT (SHEETED OR UNSHEETED) (W)
0-12'	6"	5'-0"

GRAVITY SEWER TRENCH

N.T.S.



CRUSHED STONE SUPPORT WHEN d>12"



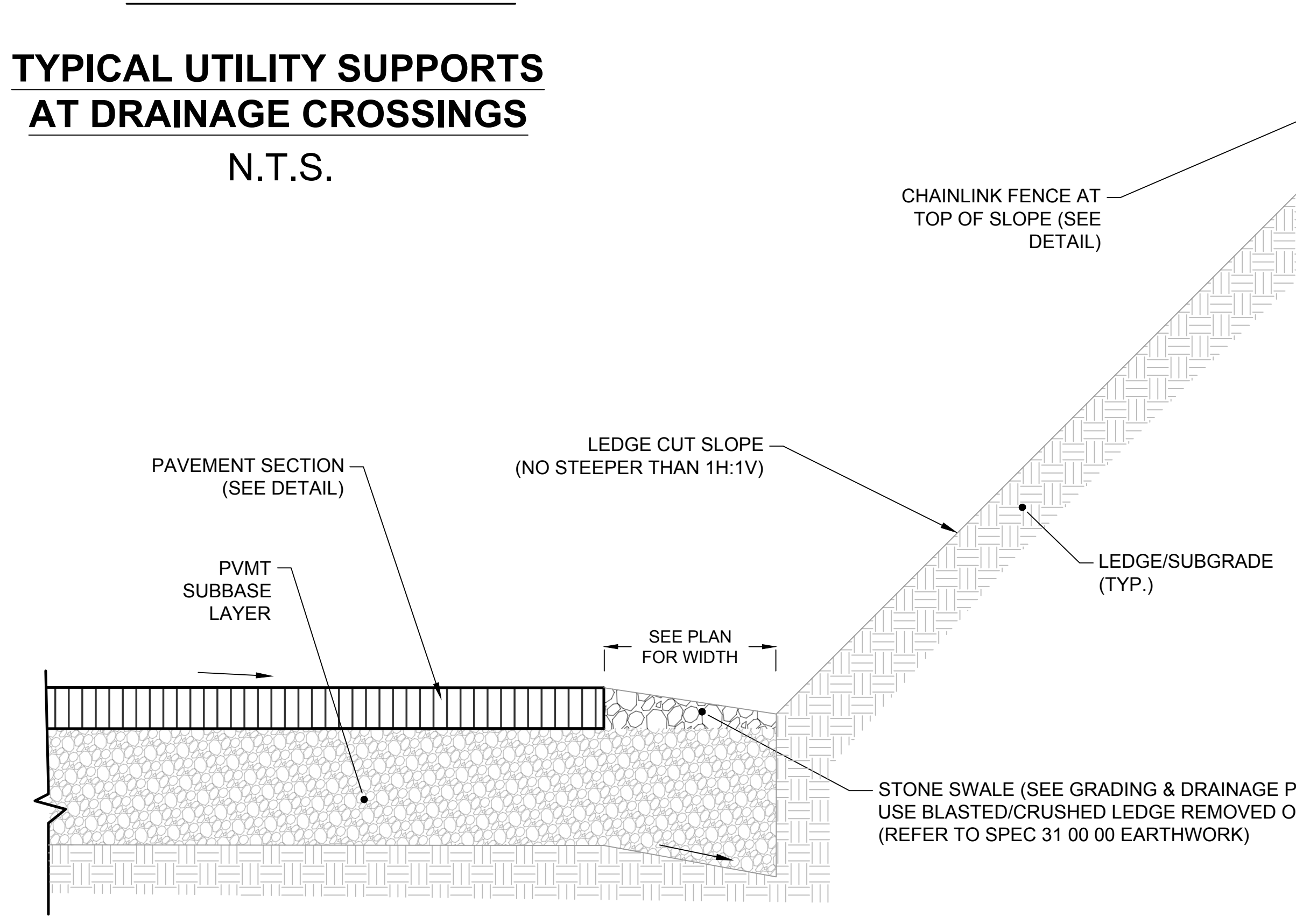
CONCRETE PIPE CRADLE WHEN d<12"

NOTES:

1. d = DISTANCE BETWEEN UTILITY AND DRAINAGE PIPES.
2. SUPPORTS SHALL BE INSTALLED WHERE SPECIFIED ON THE PLANS AND WHERE DIRECTED BY THE ENGINEER.
3. CRUSHED STONE SUPPORTS SHALL BE INCLUDED IN THE COST OF THE PROPOSED UTILITY OR DRAINAGE PIPE AND CONCRETE PIPE CRADLES SHALL BE PAID FOR AS "FIELD CONCRETE."

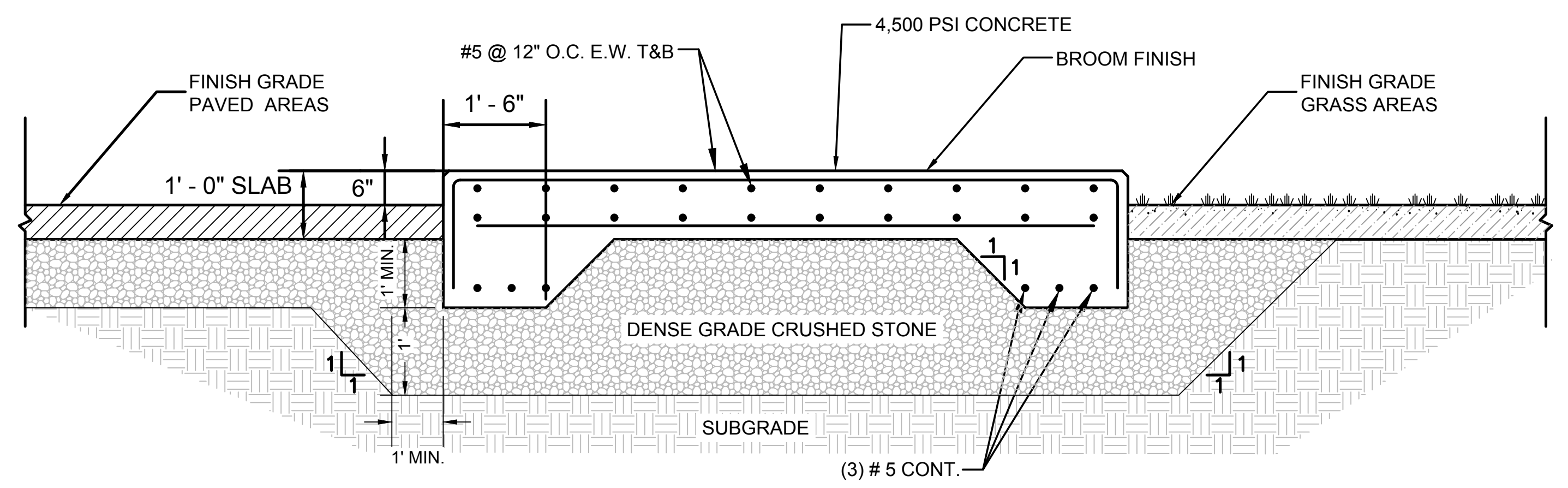
TYPICAL UTILITY SUPPORTS AT DRAINAGE CROSSINGS

N.T.S.



LEDGE CUT SLOPE CROSS SECTION

N.T.S.

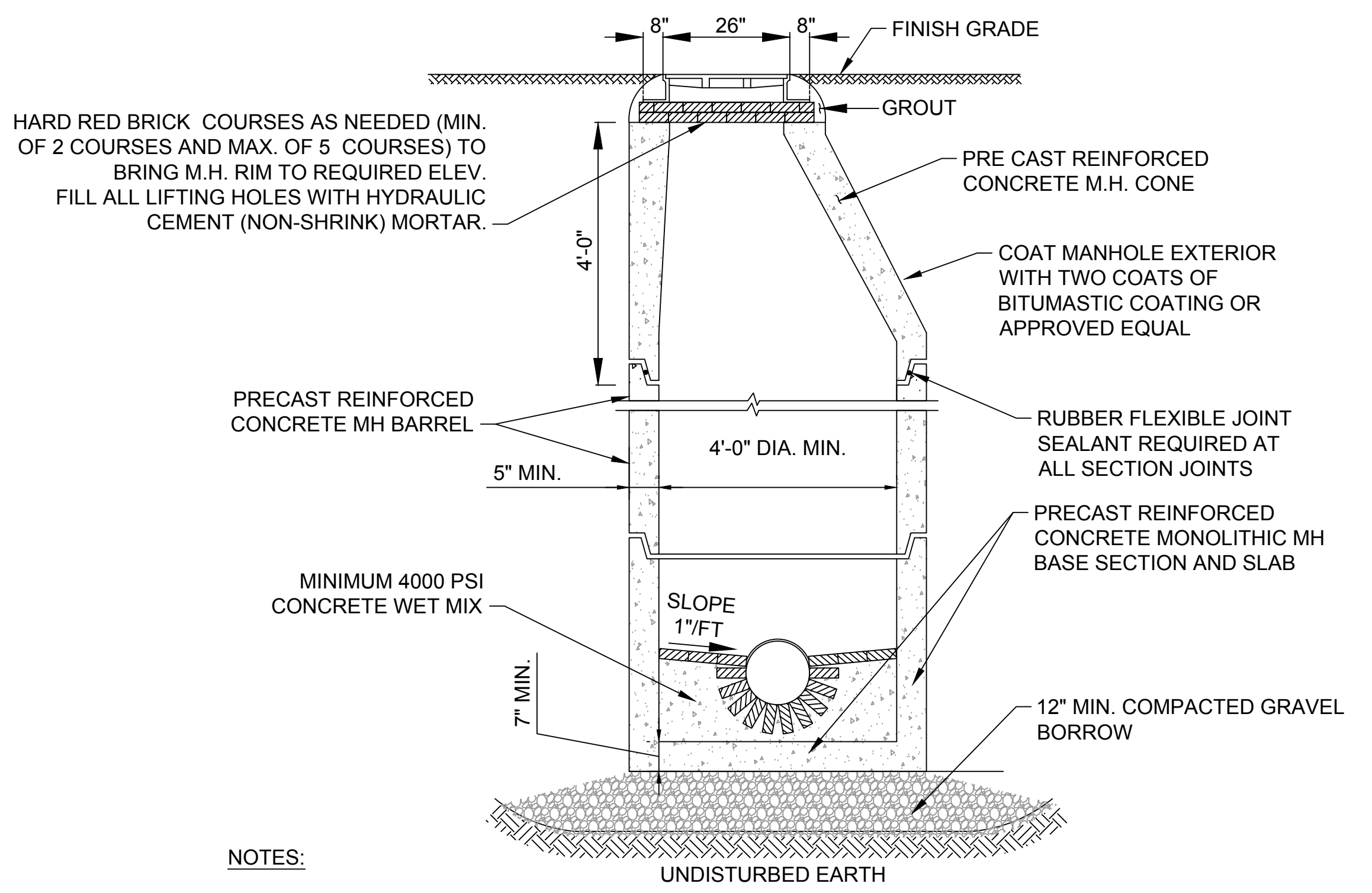


TYPICAL EQUIPMENT PAD

N.T.S.

NOTES:

1. GENERAL CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF ALL CONCRETE PADS.
2. SEE GRADING & DRAINAGE PLAN FOR FINISHED GRADE.
3. SLABS 8" OR LESS IN THICKNESS SHALL HAVE ONE LAYER OF REINFORCEMENT PLACED IN THE TOP ONE THIRD OF THE SLAB.
4. THE EXACT SIZE, SHAPE AND LOCATION OF EQUIPMENT PAD(S), BOLLARD PROTECTION, AND ANY OIL CONTAINMENT AREAS SHALL BE DETERMINED BY THE CONTRACTOR, PER COORDINATION WITH UTILITY PROVIDER(S) AND MANUFACTURER(S). ANCHOR BOLTS, WHERE REQUIRED, SHALL BE SIZED AND LOCATED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS.
5. CONTRACTOR SHALL PROVIDE CAULK WITH POLYSULFIDE SEALANT AND PREFORMED JOINT FILLER WHERE EQUIPMENT PADS ADJOIN THE BUILDING.
6. EQUIPMENT PAD DETAIL SHALL BE USED FOR, BUT NOT LIMITED TO, THE ELECTRICAL TRANSFORMER PAD AND EMERGENCY GENERATOR PAD.
7. CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR CONDUIT PENETRATIONS IN EQUIPMENT PADS

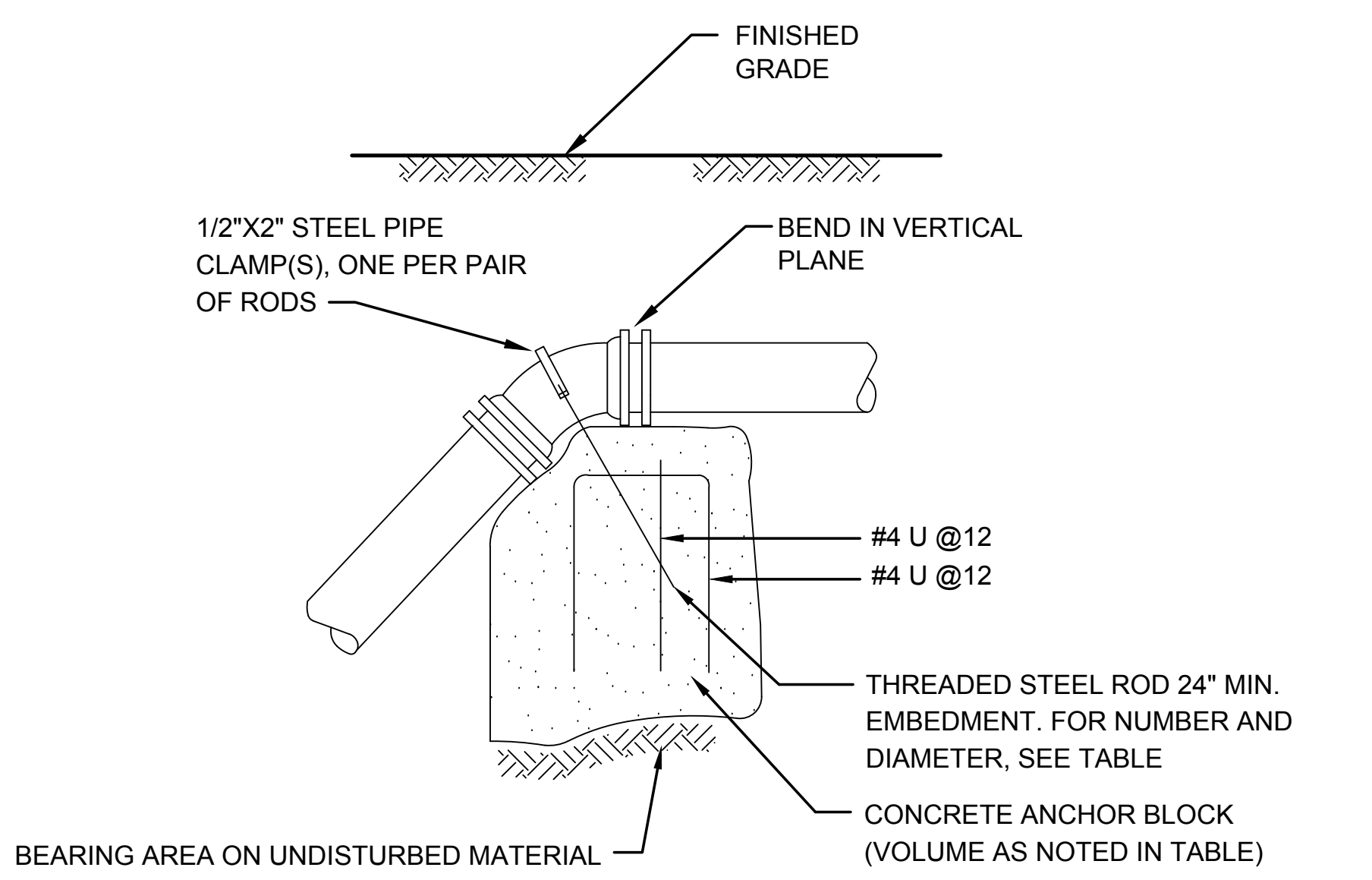


NOTES:

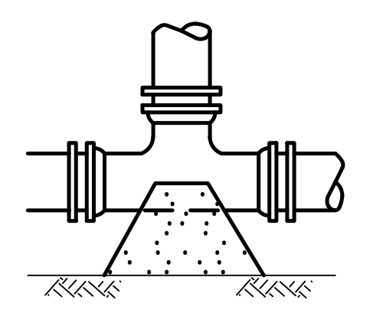
1. FRAME AND COVER SHALL BE HEAVY DUTY, 24 INCH DIAMETER, MARBLEHEAD PATTERN AS MANUFACTURED BY EJ OR APPROVED EQUAL.
2. EACH COVER SHALL READ "SEWER".
3. FRAME AND COVER SHALL BE SET IN FULL BED OF MORTAR.
4. 5'-0" INNER DIAMETER FOR ALL MANHOLE DEPTHS GREATER THAN 12 FEET.
5. 6" MIN. WALL THICKNESS FOR 5'-0" DIAMETER MANHOLES.
6. INNER EDGE OF BRICK TABLE TO BE AT ELEVATION OF CROWN OF TOP OF PIPE.
7. ALL INVERTS SHALL BE 4,000 PSI CEMENT CONCRETE IN VOID AREAS AND RED SEWER BRICK CONSTRUCTION.
8. INVERTS SHALL NOT BE BUILT ABOVE GRADE. ALL INVERTS SHALL BE BUILT IN PLACE AFTER ALL PIPES HAVE BEEN INSTALLED.
9. ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.
10. MANHOLE SHALL BE VACUUM TESTED AND PRESSURE TESTED PRIOR TO BEING PLACED INTO SERVICE. ALL TESTING SHALL BE WITNESSED/COORDINATED WITH LOCAL SEWER DEPARTMENT.

SEWER MANHOLE

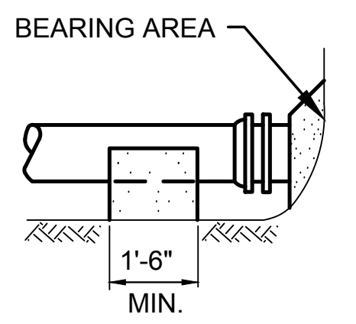
N.T.S.



BEND DETAIL
(PLAN VIEW)



TEE DETAIL
(PLAN VIEW)



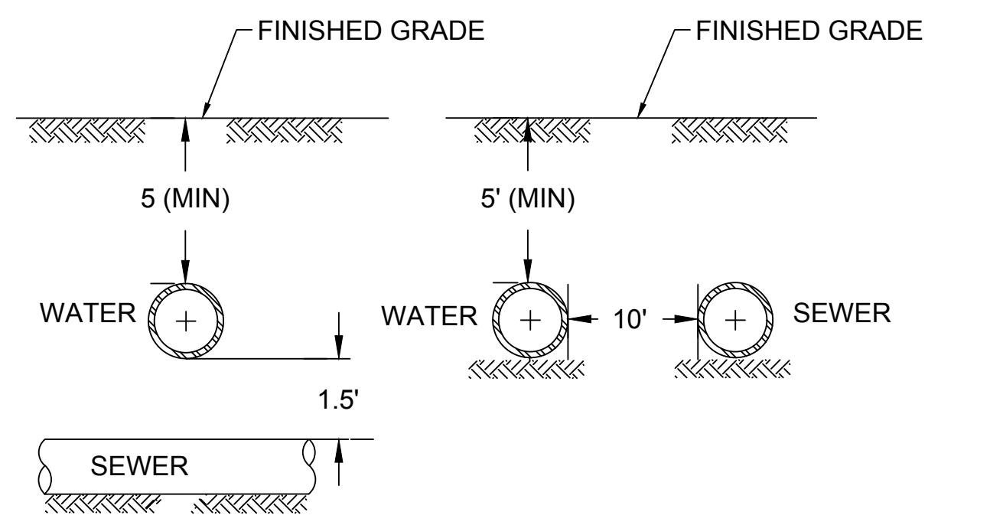
CAP DETAIL
(PLUG SIMILAR)
(SECTION VIEW)

TABLE OF DIMENSIONS FOR ANCHOR BLOCKS		NO. AND SIZE OF THREADED RODS	
BEND SIZE	Volume	NO.	DIAM.
6"-22.5°	0.6 C.Y.	2	1/2"
6"-45°	1.0 C.Y.	2	1/2"
8"-22.5°	1.0 C.Y.	2	1/2"
8"-45°	1.8 C.Y.	2	3/4"
12"-22.5°	2.5 C.Y.	2	3/4"
12" 45°	4.0 C.Y.	4	3/4"

1. CONCRETE THRUST RESISTANCE FOR DUCTILE IRON PIPES SHALL ONLY BE USED WHERE OTHER MEANS OF RESTRAINT ARE NOT FEASIBLE.
2. SIZE OF BEARING AREA IN SQUARE FEET AGAINST UNDISTURBED MATERIAL SHALL BE AS TABULATED IN SECTION 33 11 13.13.
3. CONTRACTOR SHALL USE CARE TO AVOID PLACEMENT OF CONCRETE ON THE FITTING JOINTS.

CONCRETE THRUST RETRAINT FOR WATER FITTINGS

N.T.S.

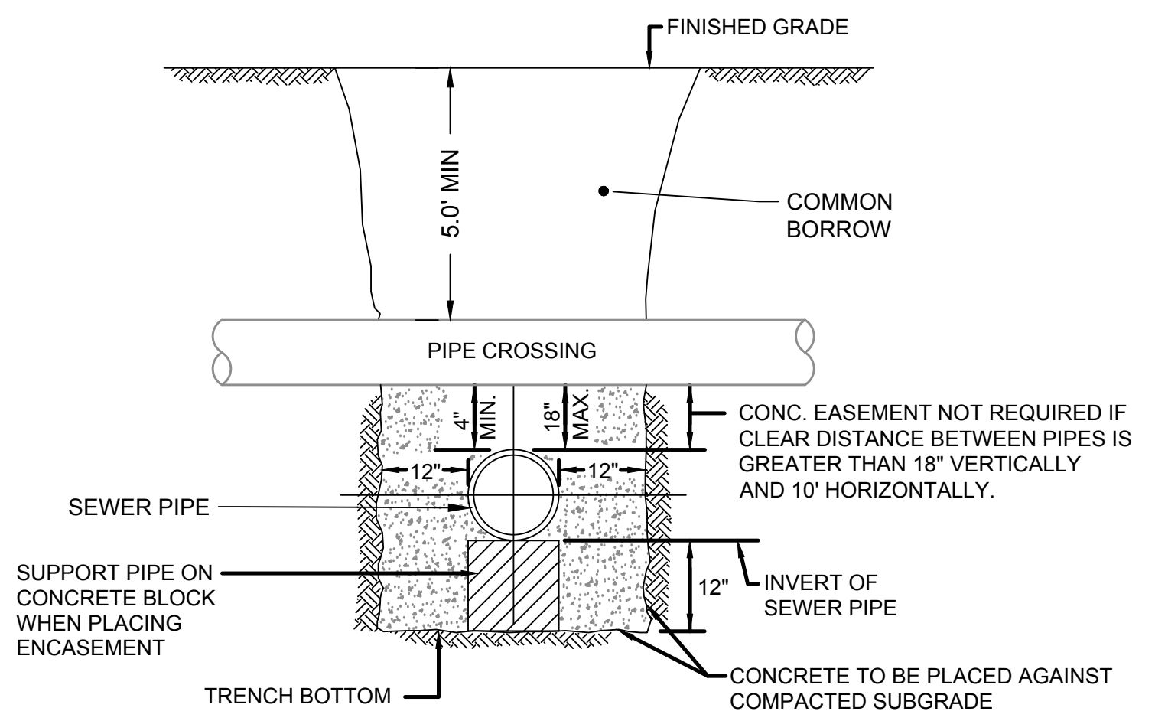


NOTE:

1. AT ALL SUBSURFACE CROSSINGS OF GRAVITY AND NON-GRAVITY UTILITIES, THE GRAVITY-FED PIPE SHALL TAKE PRECEDENCE OVER THE OTHER UTILITY. THE OTHER UTILITY SHALL BE INSTALLED ABOVE OR BELOW THE GRAVITY PIPE WITH MINIMUM REQUIRED COVER.
2. 10' HORIZONTAL SEPARATION AND 1.5' VERTICAL SEPARATION SHALL BE PROVIDED BETWEEN WATER AND SEWER AS DEPICTED IN THIS DETAIL OR SEWER SHALL BE ENCASED IN CONCRETE IN SECTIONS WHERE SEPARATIONS SHALL NOT BE ACHIEVED.

UTILITY CROSSINGS

N.T.S.

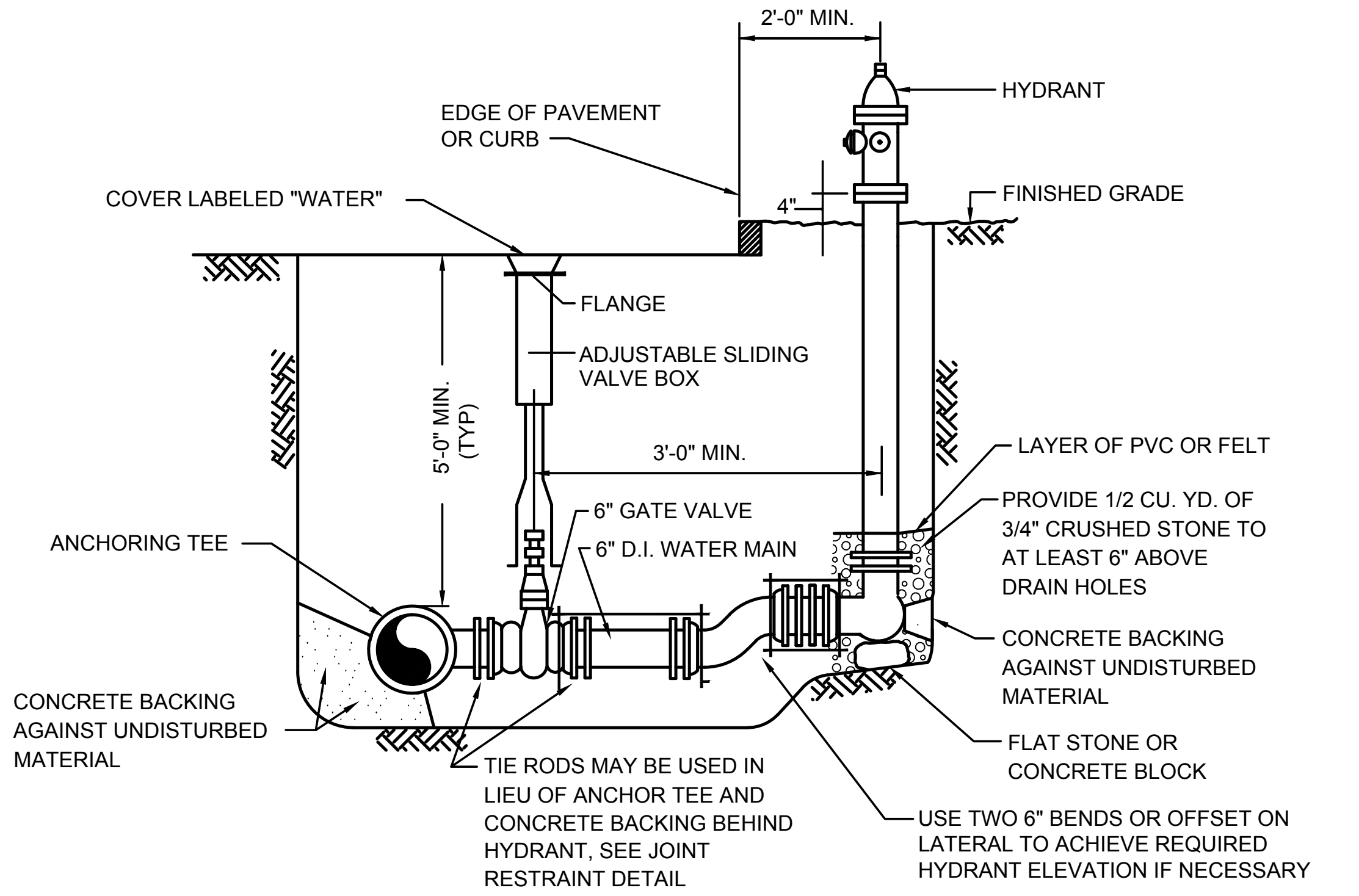


NOTES:

1. CONCRETE ENCASEMENT OF SEWER PIPING IS REQUIRED AS INDICATED ON THE PLANS AND/OR AS FOLLOWS:
   1.1. IF SEWER AND WATER LINES RUN PARALLEL, CONCRETE ENCASEMENT OF THE SEWER PIPE IS REQUIRED IN AREAS WHERE LESS THAN 10' OF HORIZONTAL SEPARATION IS PROVIDED BETWEEN SEWER AND WATER PIPES.
   1.2. IF SEWER AND WATER LINES CROSS AND 18" OR MORE VERTICAL SEPARATION BETWEEN THE PIPE WALLS IS NOT ACHIEVED, CONCRETE ENCASEMENT OF THE SEWER PIPE IS REQUIRED AND SHALL EXTEND 10' ON EITHER SIDE OF THE PIPE CROSSING LOCATION.
2. PIPE MUST BE BRACED VERTICALLY & HORIZONTALLY TO PREVENT FLOATATION DURING PLACEMENT OF CONCRETE

CONCRETE PIPE ENCASEMENT

N.T.S.



NOTES:

1. REFER TO SECTION 33 12 22 FOR MORE INFORMATION ABOUT COLOR, APPURTENANCES, ANCHORAGE, ETC.
2. GATE VALVE TO BE LOCATED WITHIN PAVEMENT WHERE POSSIBLE.
3. WHERE HYDRANT IS WITHIN 30 FT OF TEE, ALL JOINTS BETWEEN HYDRANT AND TEE SHALL BE RESTRAINED. WHERE HYDRANT IS GREATER THAN 30 FT FROM TEE, ALL JOINTS WITHIN 30 FT OF THE HYDRANT SHALL BE RESTRAINED.

HYDRANT

N.T.S.

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04/15/2025

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Drawn By: JLO
Reviewed By: JP
Approved By: TJC
W&S Project No.: ENG24-0773
W&S File No.:

Drawing Title:
DETAILS III

Sheet Number:
C602

A: OVERHEAD GARAGE DOORS

B: CANOPY STORAGE

C: YARD WEST OF CANOPY STORAGE

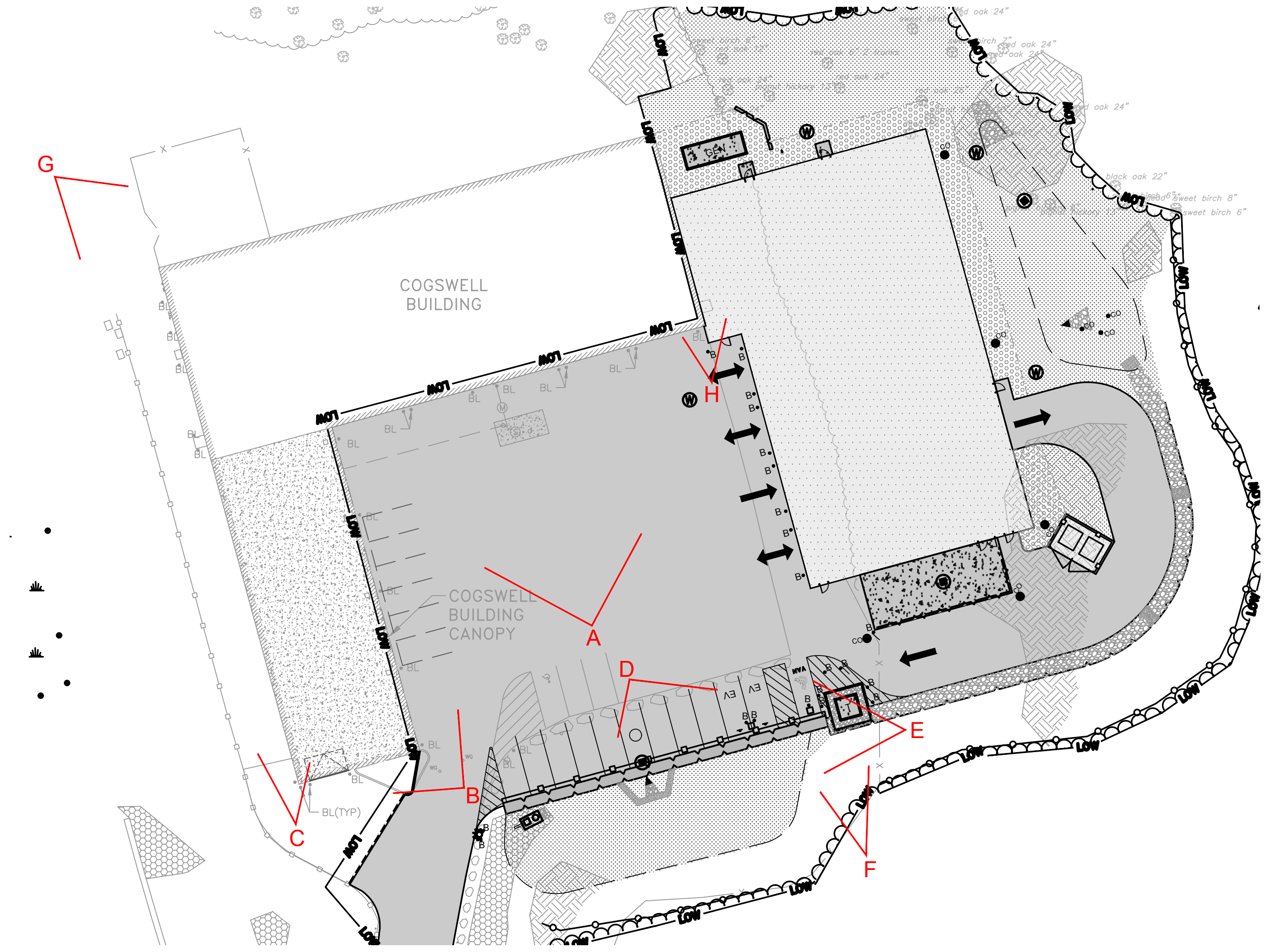
D: YARD SOUTH OF PARKING LOT

E: HILL SOUTH OF PARKING LOT

F: HILL EAST OF PARKING LOT

G: NORTHWEST CORNER OF BUILDING

H: NORTHEAST FACE OF BUILDING



KEY PLAN

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Sheet Number:
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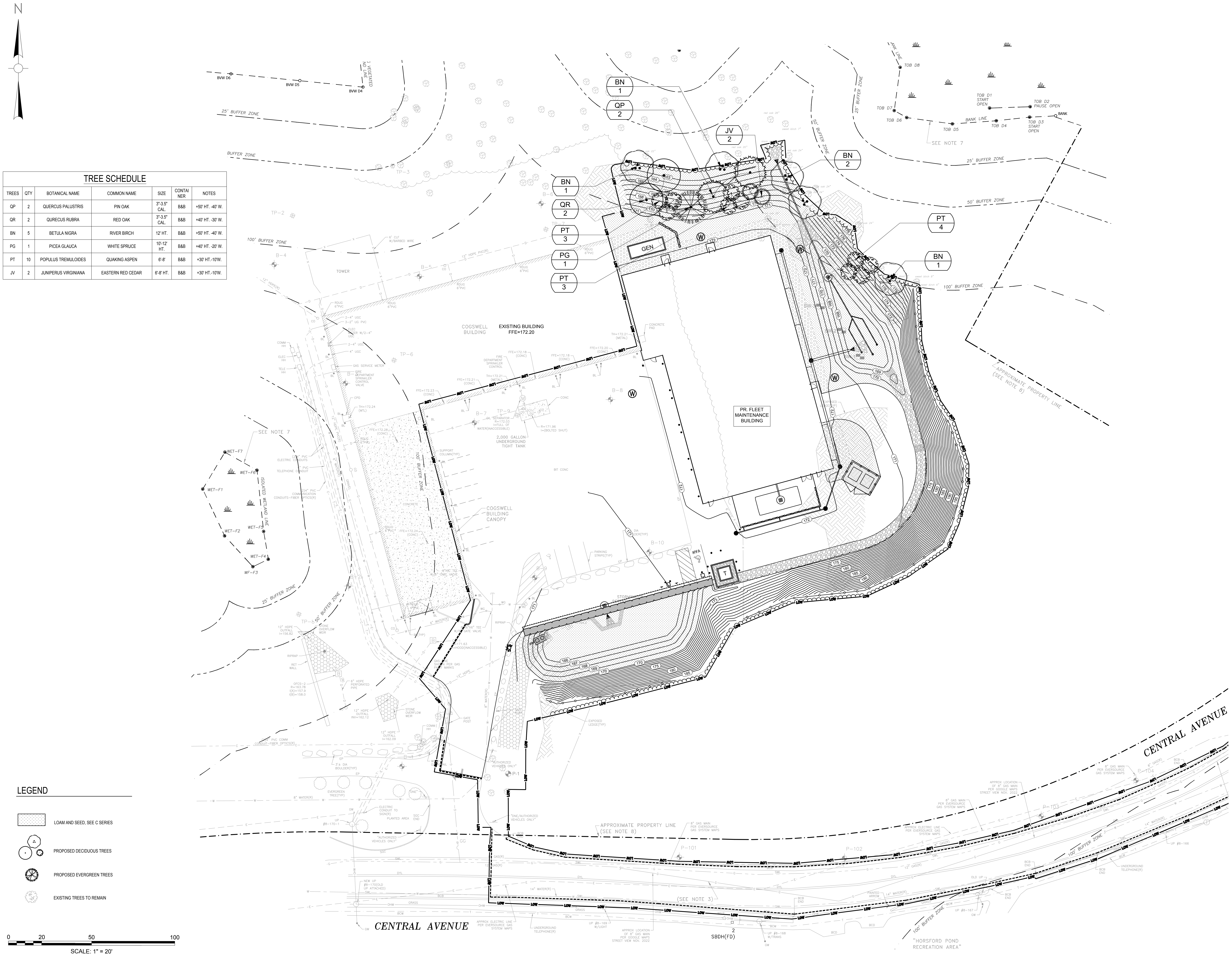

TREE SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	NOTES
QP	2	QUERCUS PALUSTRIS	PIN OAK	3"-3.5" CAL.	B&B	+50' HT. -40' W.
QR	2	QURECUS RUBRA	RED OAK	3"-3.5" CAL.	B&B	+40' HT. -30' W.
BN	5	BETULA NIGRA	RIVER BIRCH	12' HT.	B&B	+50' HT. -40' W.
PG	1	PICEA GLAUCA	WHITE SPRUCE	10'-12' HT.	B&B	+40' HT. -20' W.
PT	10	POPULUS TREMULOIDES	QUAKING ASPEN	6'-8'	B&B	+30' HT.-10'W.
JV	2	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6'-8' HT.	B&B	+30' HT.-10'W.

LEGEND

▨	LOAM AND SEED, SEE C SERIES
○	PROPOSED DECIDUOUS TREES
✳	PROPOSED EVERGREEN TREES
○	EXISTING TREES TO REMAIN

0 20 50 100
SCALE: 1" = 20'

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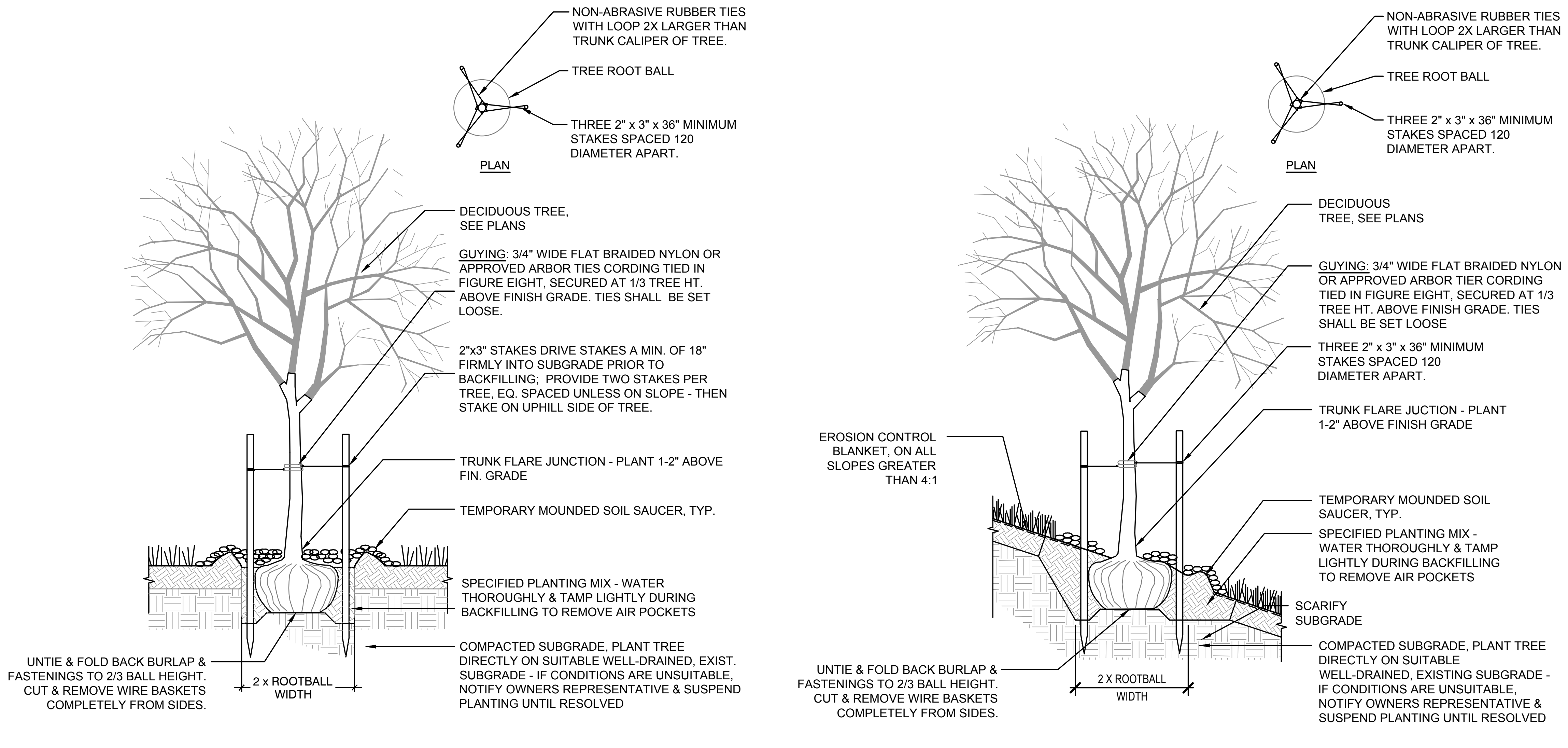
Drawing Title:
PLANTING PLAN

Sheet Number:
L100



FLAT CONDITION

SLOPED CONDITION

1

TREE STAKING AND PLANTING
SCALE: N.T.S.

Quercus Palustris
Pin Oak

Quercus Rubra
Red Oak

Betula Nigra
River Birch

Picea Glauca
White Spruce

Populus Tremuloides
Quaking Aspen

Juniperus Virginiana
Eastern Red Cedar

2

TREE PLANTING EXAMPLES
SCALE: N.T.S.

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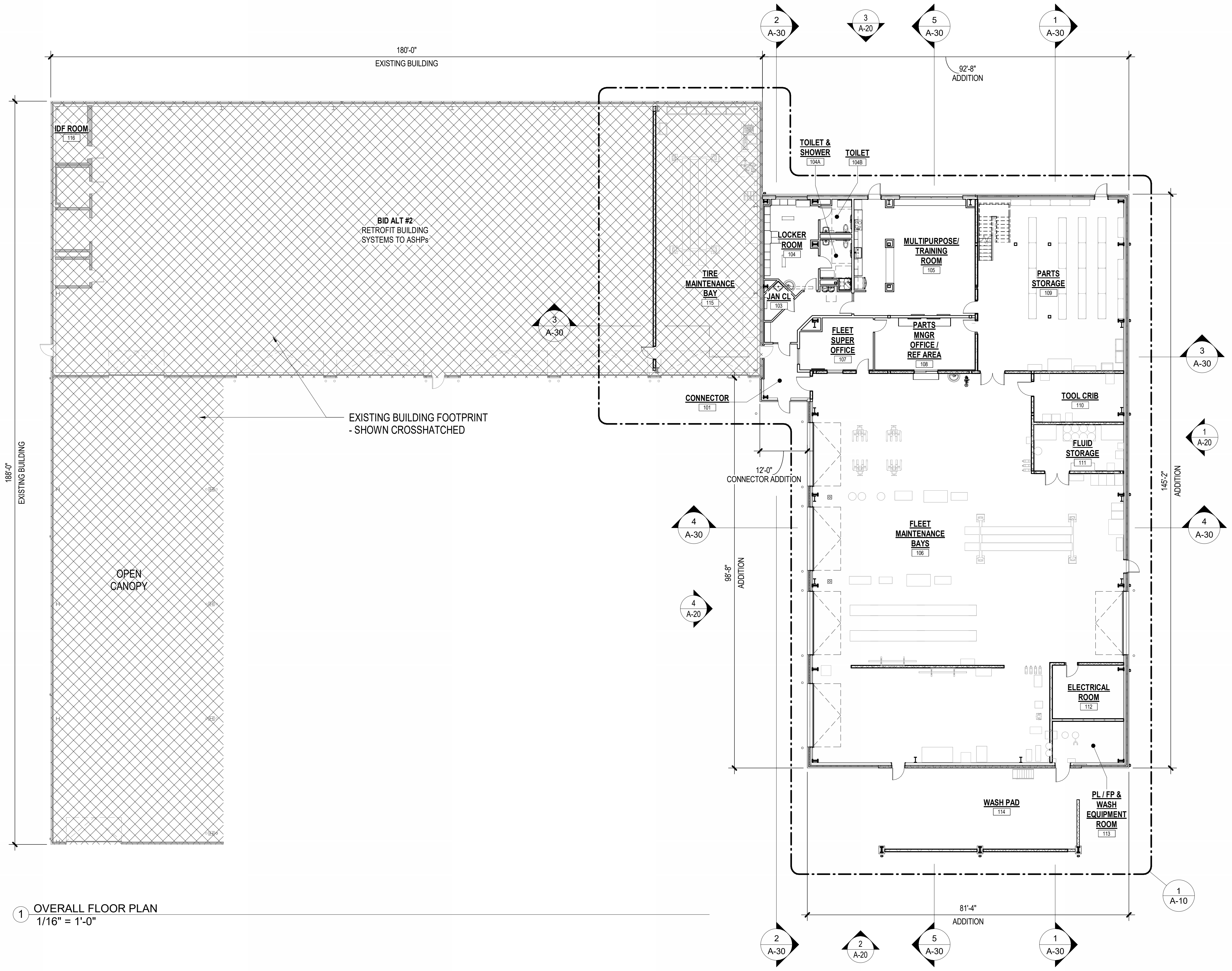
L101

Appendix E

Architectural Plans



① OVERALL FLOOR PLAN
1/16" = 1'-0"

PROJECT SUMMARY:

THE PROPOSED NEEDHAM DEPARTMENT OF PUBLICS WORKS FLEET MAINTENANCE FACILITY CONSISTS OF A NON-SEPARATED "MIXED-USE" BUILDING PROGRAM, INCLUDING THREE (3) MAIN OPERATIONAL COMPONENTS, AS FOLLOWS:

1. **USE GROUP "B", BUSINESS**: A ONE-STORY ADMINISTRATION WING, CONSISTING OF EMPLOYEE SUPPORT SPACES (i.e. LUNCH/TRAINING ROOM, LOCKER ROOM, ETC.), OFFICES, AND SUPPORT SPACES.

2. **USE GROUP "S-1" MODERATE HAZARD USE**: SINGLE-STORY, DOUBLE-HEIGHT VEHICLE MAINTENANCE. MAINTENANCE AREA HAS ASSOCIATED OPEN MEZZANINE SPACE.

3. **USE GROUP "S-2" MODERATE HAZARD USE (EXISTING):** SINGLE-STORY, MINIMALLY HEATED UTILITY AND ELECTRICAL SUPPLY AND STORAGE AREA

THE EXISTING AND PROPOSED BUILDINGS ARE STEEL-FRAMED WITH CONCRETE SLAB FLOORS AND MEZZANINE LEVEL STEEL DECK AND CONCRETE SLAB. THE BUILDING ENCLOSURE CONSISTS OF A INSULATED STANDING SEAM METAL ROOF SYSTEM, FACTORY FOAMED IN PLACE INDUSTRIAL METAL PANEL WALL SYSTEM ON EITHER METAL STUD BACKUP WALL OR GIRT FRAMING, AND AN INSULATED CMU BASE WALL. TRIPLE-GLAZED CURTAIN WALL AND WINDOWS ARE PROVIDED AT THE ADMINISTRATION WING AND TRANSLUCENT PANEL DAYLIGHT SYSTEMS ARE INCORPORATED INTO THE WALL PANEL SYSTEM AT THE INDUSTRIAL SHOP AREAS.

GENERAL BUILDING INFORMATION:
ALL AREAS ARE SHOWN IN GROSS SQUARE FEET (GSF).

BUILDING FOOTPRINT AREA (NOT INCLUDING VEHICLE CANOPY):		
	EXISTING	**12,600 GSF**
	PROPOSED	**12,336 GSF**
	TOTAL	**24,936 GSF**
TOTAL BUILDING SQUARE FOOT AREA (NOT INCLUDING MEZZANINES):		**24,936 GSF**
1. USE GROUP "B", BUSINESS (ADMINISTRATION / STAFF WING)		**1,924 GSF**
2. USE GROUP "S-1", MODERATE HAZARD STORAGE (NEW VEHICLE MAINTENANCE):		**10,412 GSF**
2. USE GROUP "S-1", MODERATE HAZARD STORAGE (RENOVATED EXISTING BAY, LEVEL 3 ALTERATION):		**1,885 GSF**
3. USE GROUP "S-2", LOW HAZARD STORAGE (EXISTING WITH MINOR REPAIRS, TBD)		**10,715 GSF**
BUILDING HEIGHT (TO ROOF RIDGE AT VEHICLE MAINTENANCE AREA):		**33' - 10"**

APPLICABLE CODES AND STANDARDS:

- MASSACHUSETTS STATE BUILDING CODE & APPROPRIATE AMENDMENTS:
  - 780 CMR NINTH EDITION
  - IBC 2021
- 2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC)
- 2021 INTERNATIONAL MECHANICAL CODE (IMC)
- 248 CMR 10.00 UNIFORM STATE PLUMBING CODE (USPC)
- 2023 NATIONAL ELECTRICAL CODE
- 2023 MASSACHUSETTS ENERGY CODE
  - 2021 IECC W/ MA AMENDMENTS
  - 225 CMR 23.00 - MA COMMERCIAL STRETCH ENERGY CODE
  - APPENDIX CC - MA MUNICIPAL OPT-IN SPECIALIZED ENERGY CODE
- 2019 MASSACHUSETTS COMPREHENSIVE FIRE CODE
  - 527 CMR, BOARD OF FIRE PREVENTION REGULATIONS
  - NFPA 1 FIRE CODE, 2015 EDITION
- 271 CMR: BOARD OF EXAMINERS OF SHEET METAL WORKERS
- 521 CMR ARCHITECTURAL ACCESS BOARD REGULATIONS

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MAINTENANCE FACILITY

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Draw By: SRP
Reviewed By: DRD
Approved By: DJS

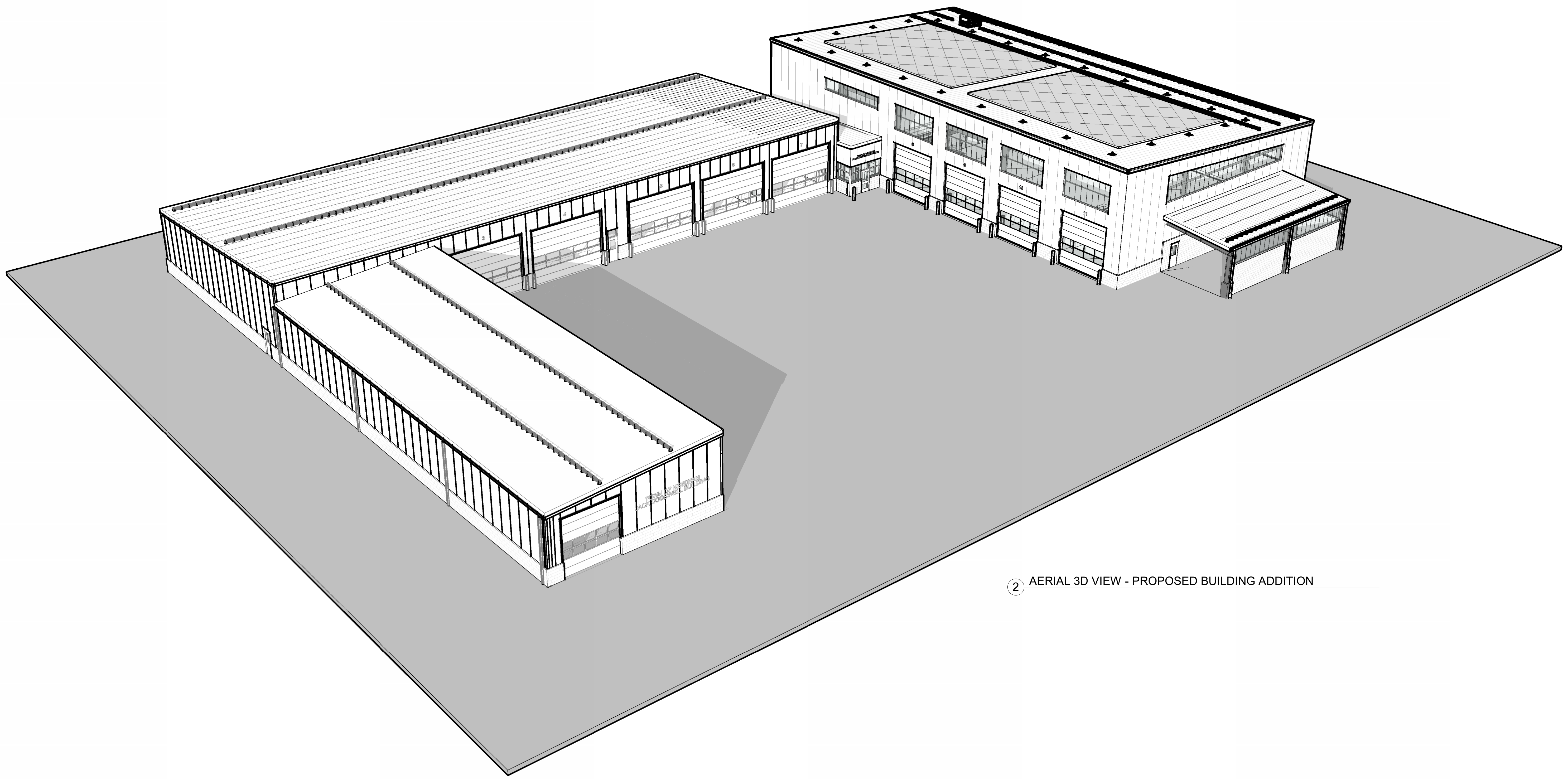
W&S Project No.: 24-0773
W&S File No.: XXX

Drawing Title:

PROJECT INFORMATION & OVERALL FLOOR PLAN

Sheet Number:

A-00



② AERIAL 3D VIEW - PROPOSED BUILDING ADDITION

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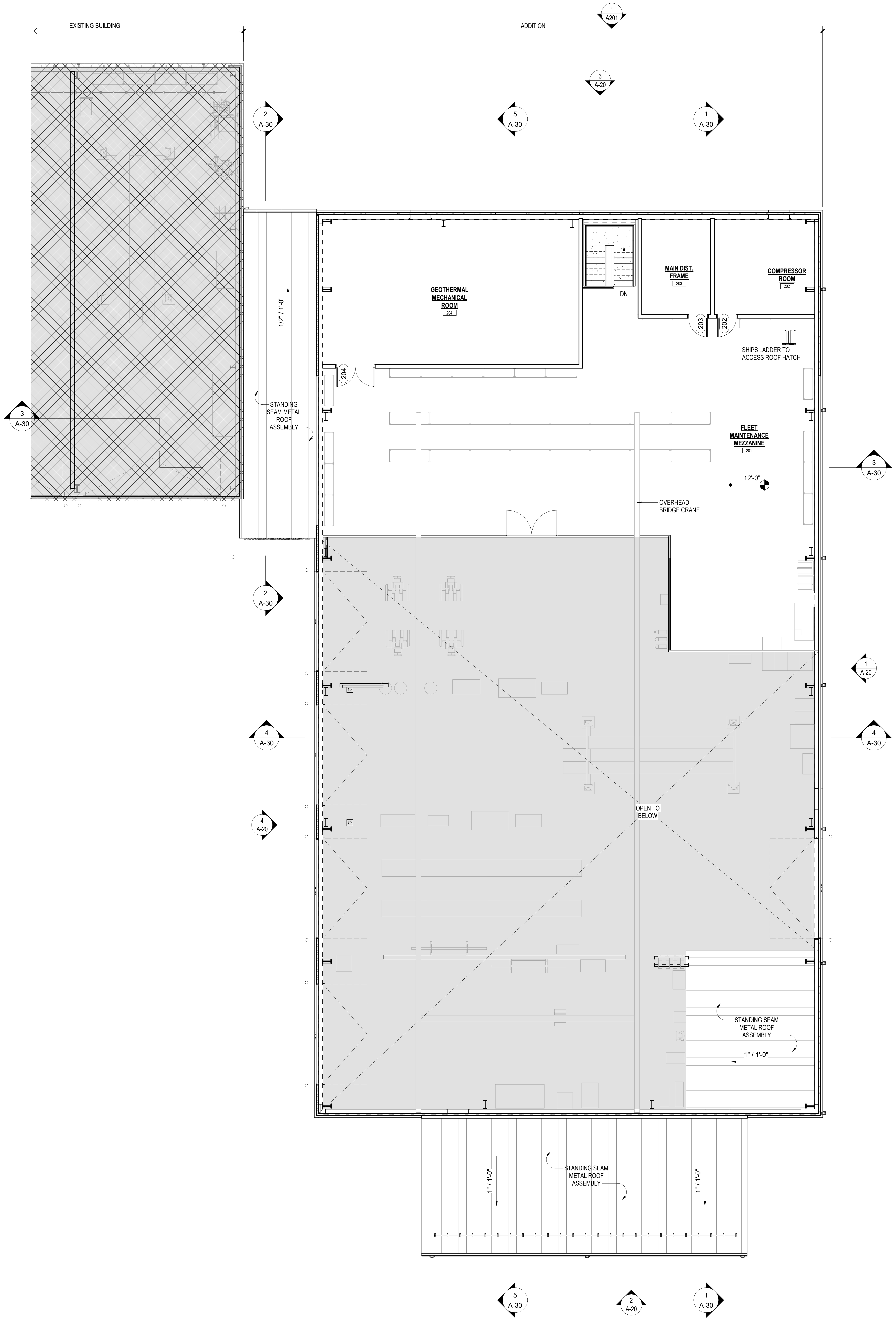
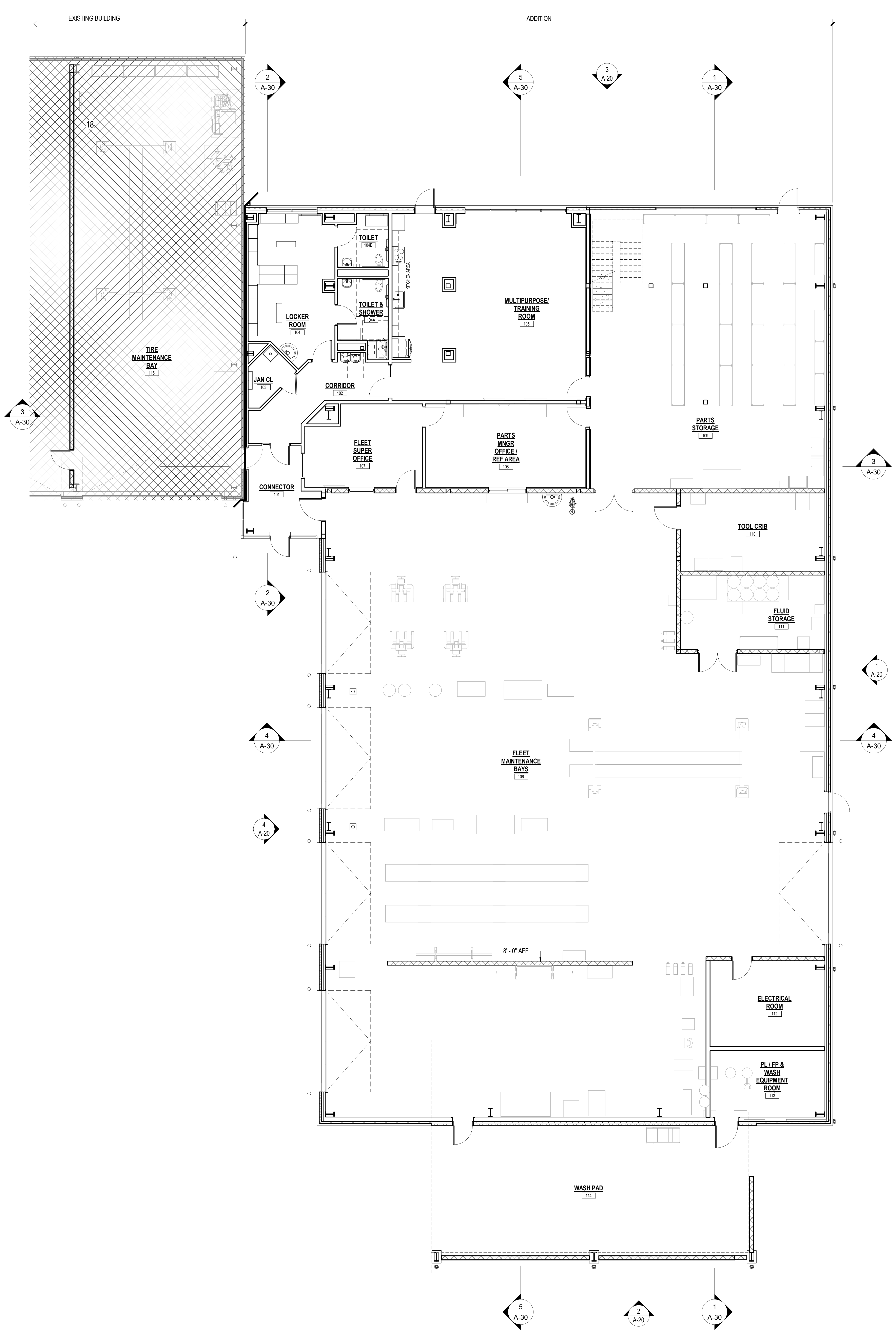


2 LARGE SCALE MEZZANINE - ADDITION
1/8" = 1'-0"



1 LARGE SCALE FLOOR PLAN - ADDITION
1/8" = 1'-0"
1/ A-00

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T

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LARGE SCALE FLOOR PLANS - ADDITION

Sheet Number:

A-10

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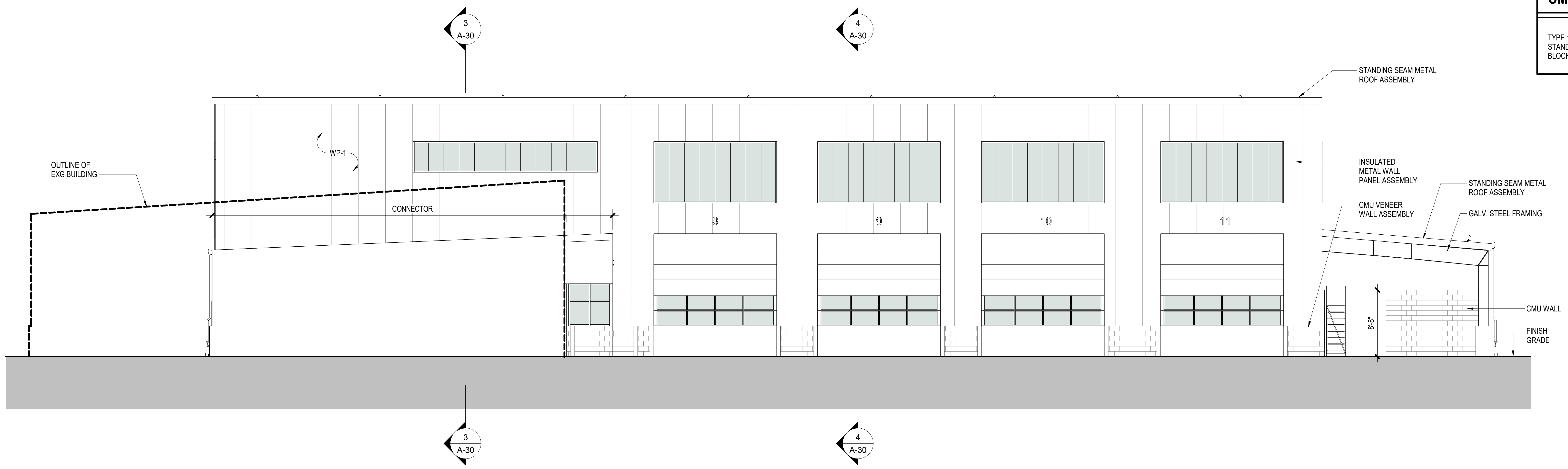
WALL PANEL TYPES LEGEND:

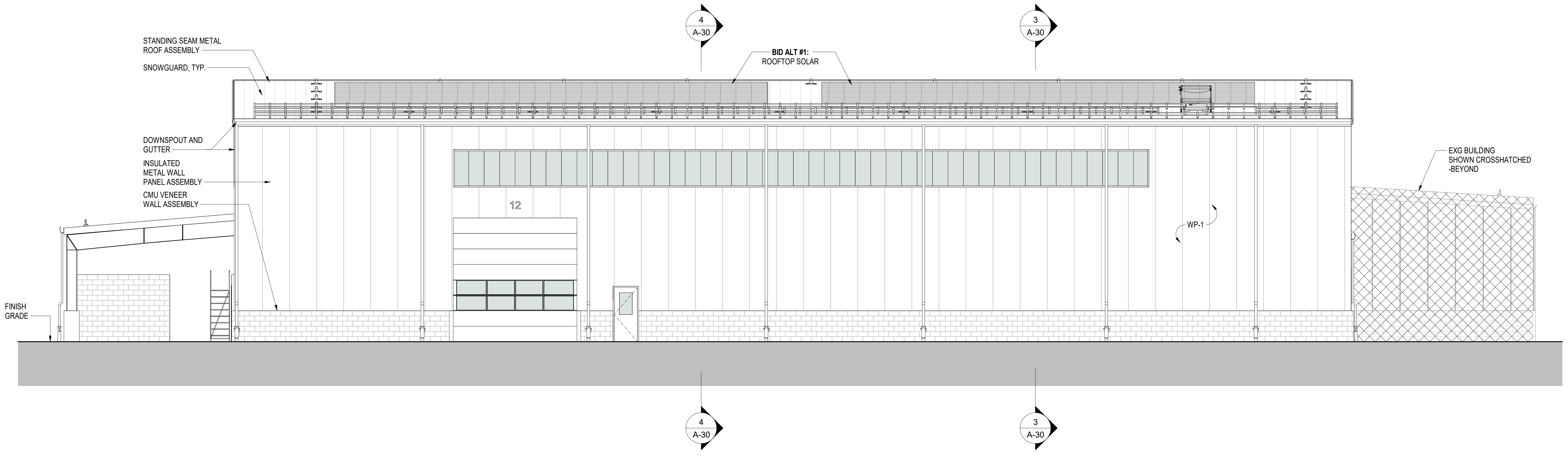
WP-1 - EXTENTS OF INSULATED METAL WALL PANEL ASSEMBLY — 3'-6"

CMU VENEER LEGEND:

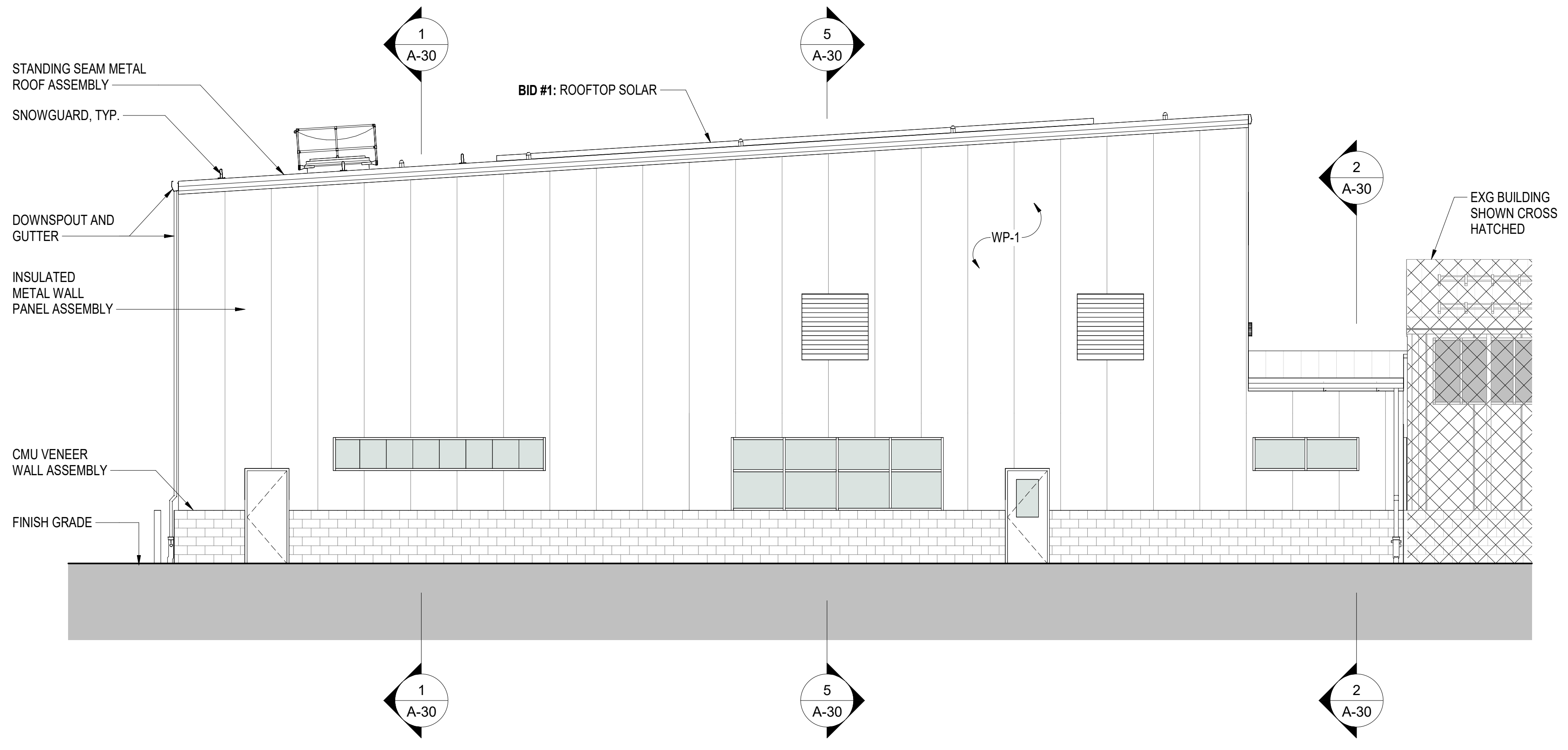
TYPE 1 - CMU VENEER WALL ASSEMBLY
STANDARD GROUND FACE MASONRY
BLOCK: 8" X 16"



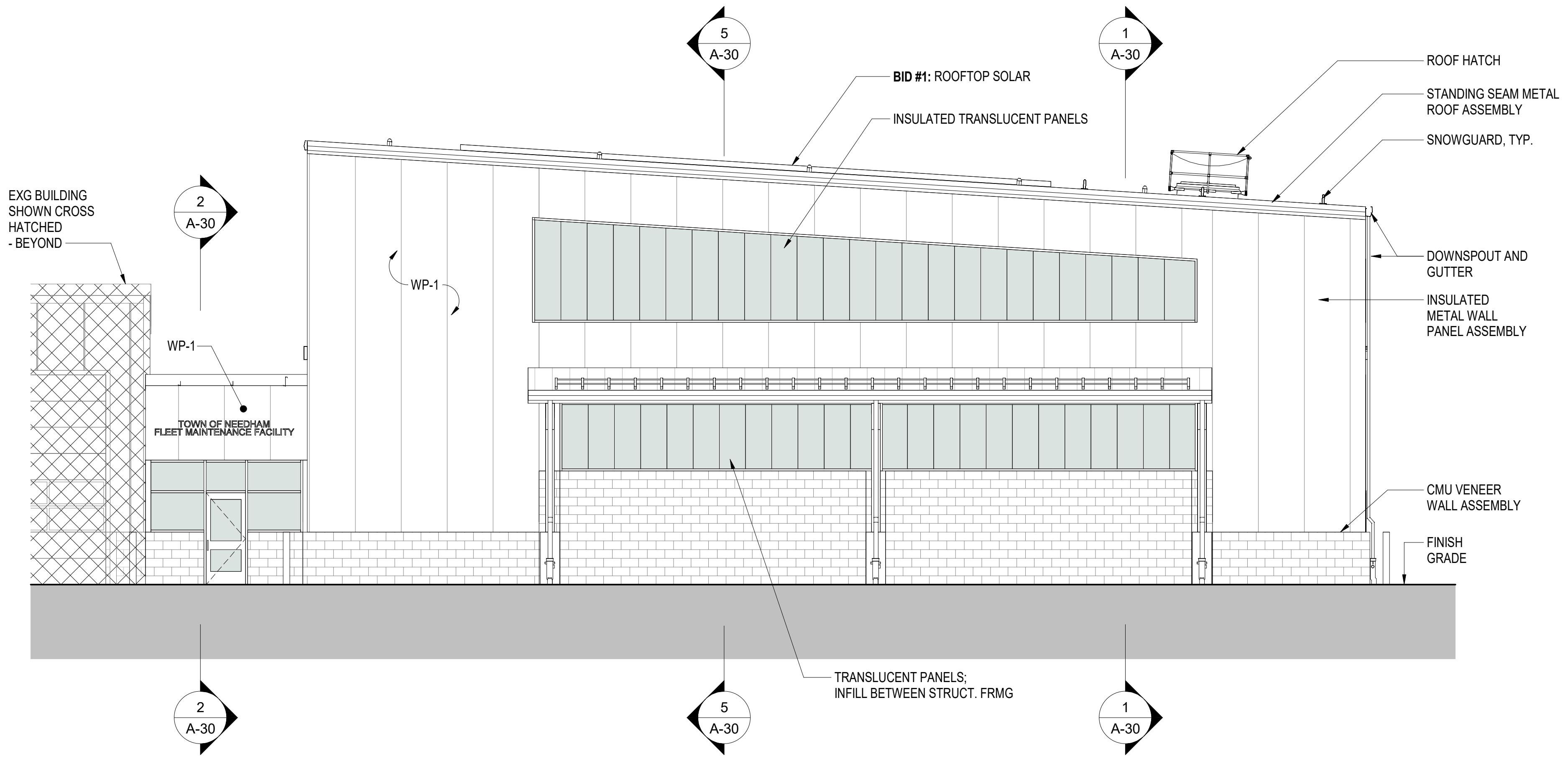
④ WEST ELEVATION
1/8" = 1'-0"



① EAST ELEVATION
1/8" = 1'-0"



③ NORTH ELEVATION
1/8" = 1'-0"



② SOUTH ELEVATION
1/8" = 1'-0"

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LARGE SCALE
EXTERIOR
ELEVATIONS -
ADDITION

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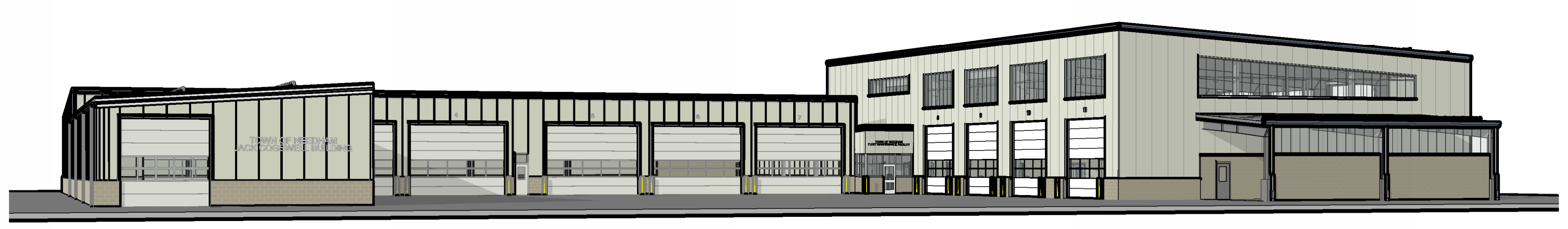
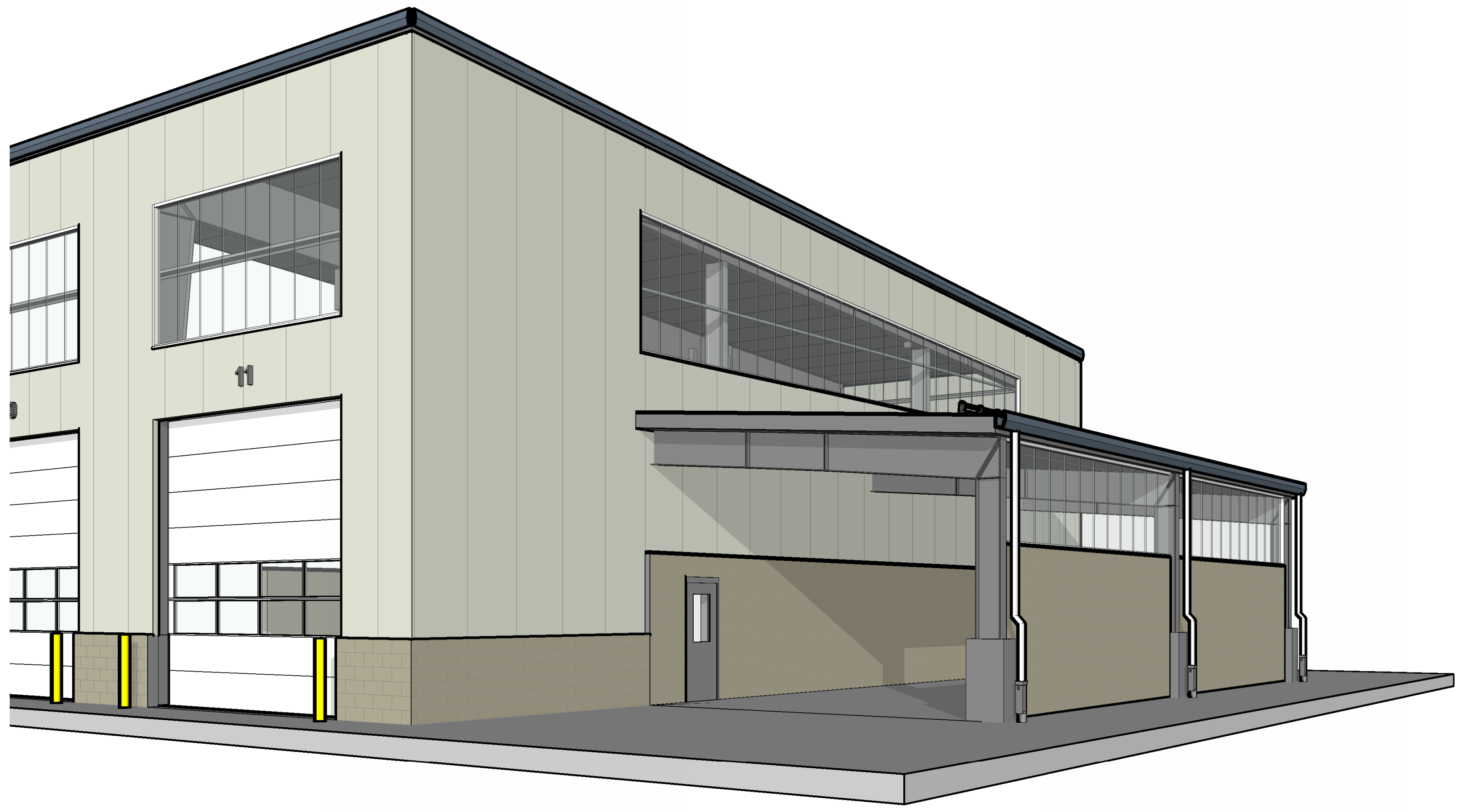
A-20

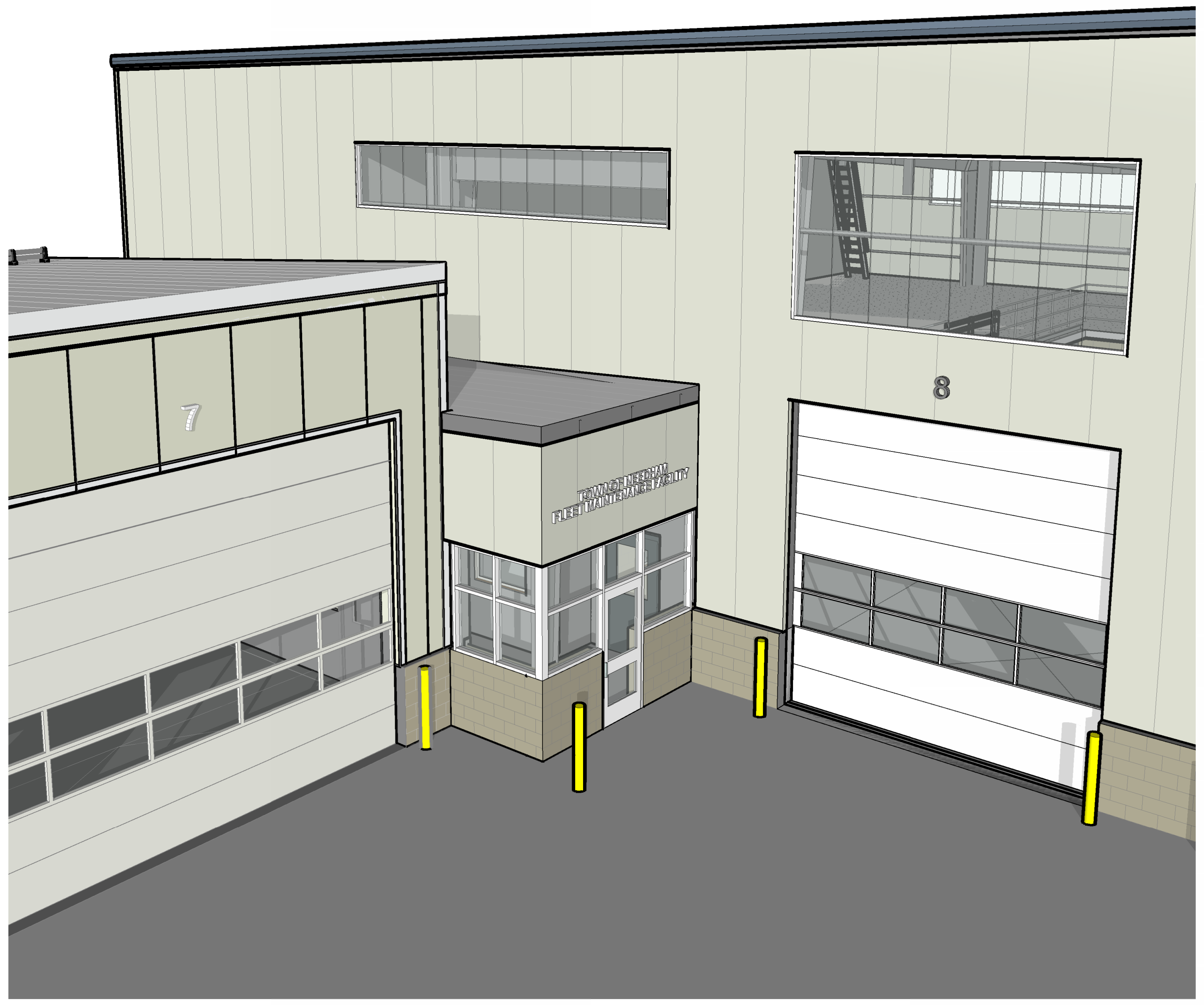
① EXISTING JACK COGSWELL BUILDING
1" = 1'-0"



② PROPOSED BUILDING ADDITION



④ 3D VIEW - WASH PAD



⑤ 3D VIEW - CONNECTOR

METAL WALL PANEL ASSEMBLY

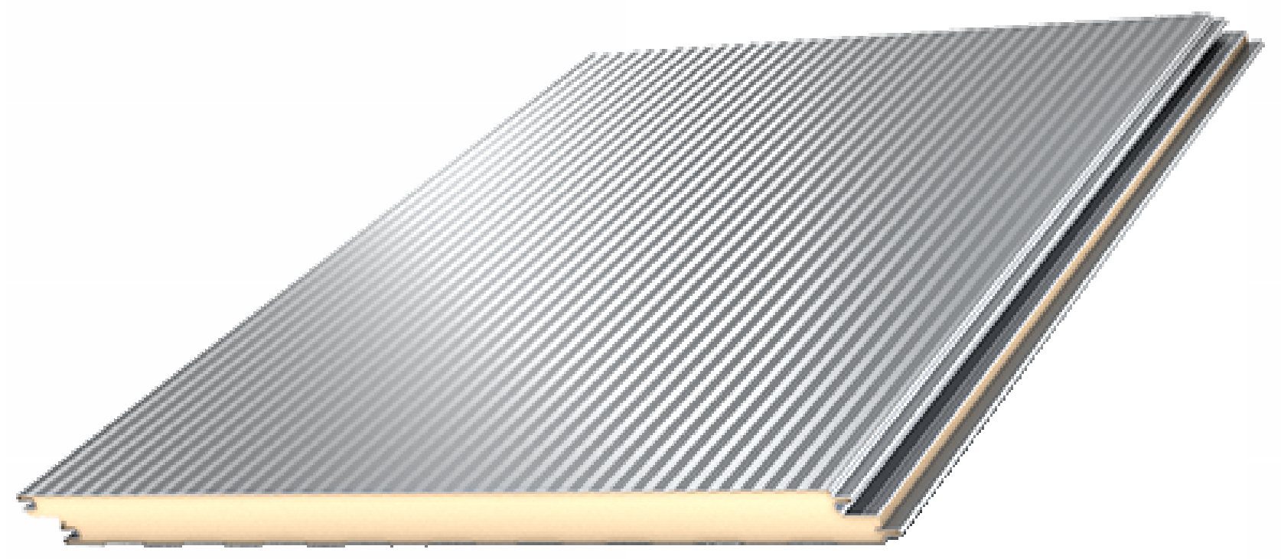
WARM WHITE
PREFERRED - EXISTING WALL PANEL COLOR

DRIFTWOOD
ALTERNATE WALL PANEL COLOR

TAUPESTONE
ALTERNATE WALL PANEL COLOR

SPARTAN BRONZE
ALTERNATE WALL PANEL COLOR

ZINC GRAY
ALTERNATE WALL PANEL COLOR

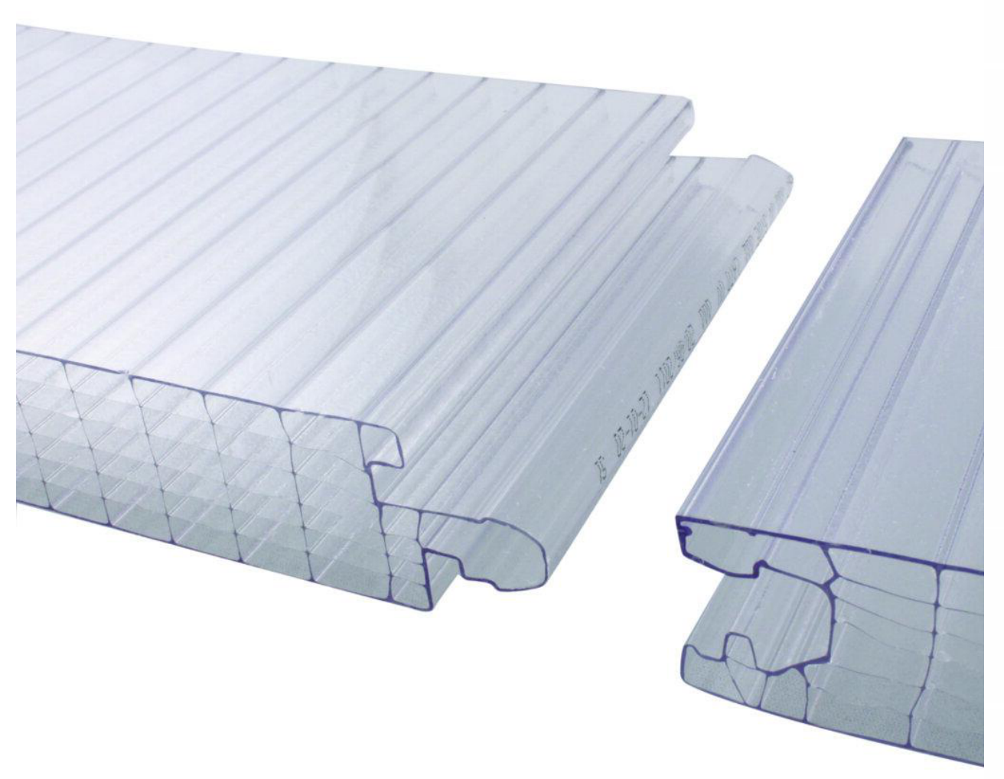


STRIATED WALL PANEL - ST40
WALL PANEL PROFILE

STANDING SEAM METAL ROOF ASSEMBLY

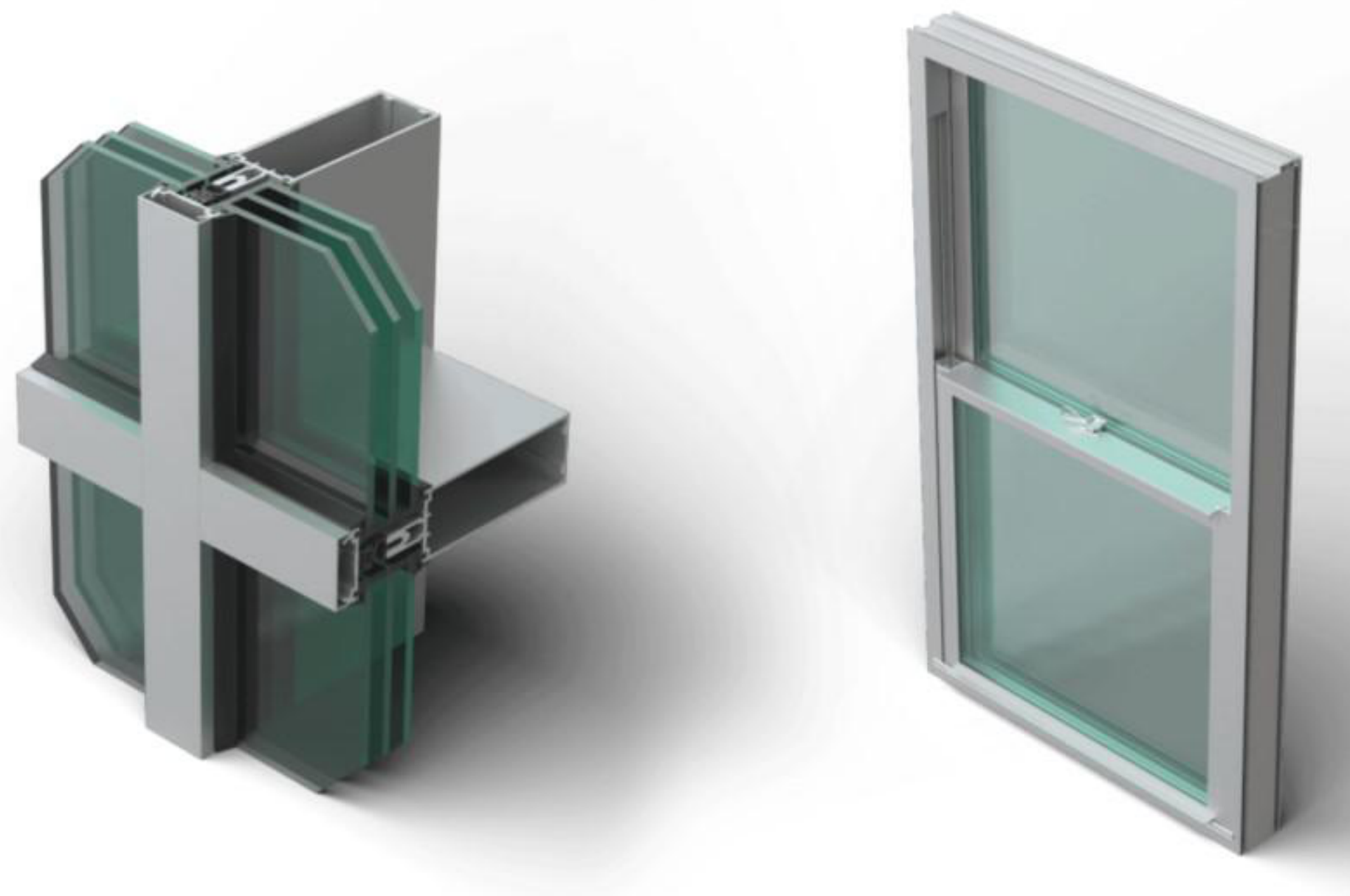
REGAL WHITE
MATCH EXISTING ROOF COLOR

POLYCARBONATE WALL PANEL ASSEMBLY



INSULATED TRANSLUCENT PANEL - OPAL

CURTAIN WALL & WINDOW



TRIPLE GLAZED CURTAIN WALL AND WINDOW
FRAME COLOR TO MATCH WALL PANEL

CMU VENEER WALL ASSEMBLY

GROUND FACE CMU BLOCK - 9308
EXISTING CMU WALL BASE COLOR

LIGHTING FIXTURES

DARK BRONZE
EXTERIOR LIGHT
FIXTURES

INSULATED SECTIONAL OVERHEAD DOORS

WHITE - 2-ROW LITE
MATCH EXISTING OVERHEAD DOOR
COLOR & 2-ROW LITE OPTION

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3D VIEWS & MATERIAL SAMPLES

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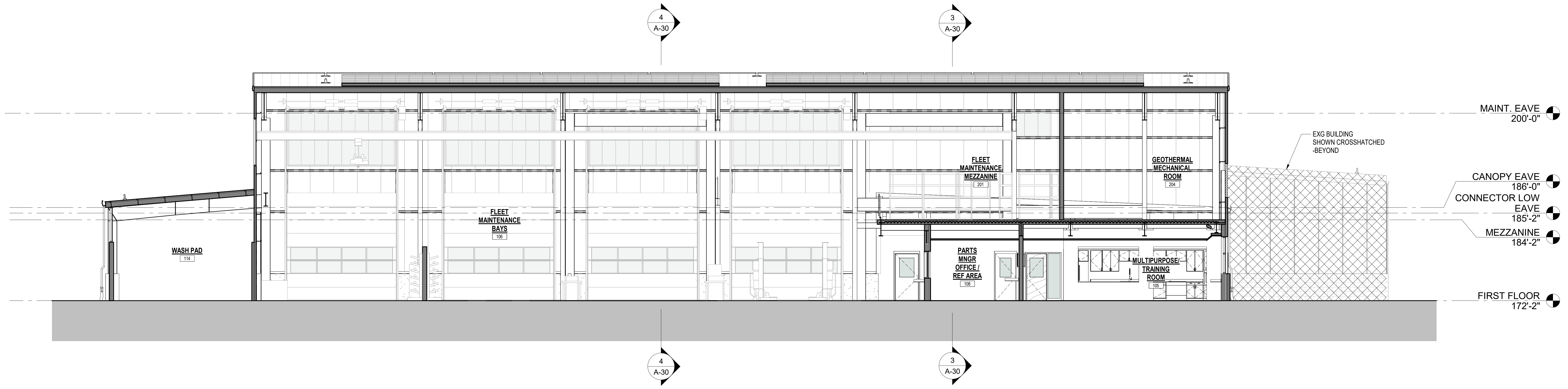
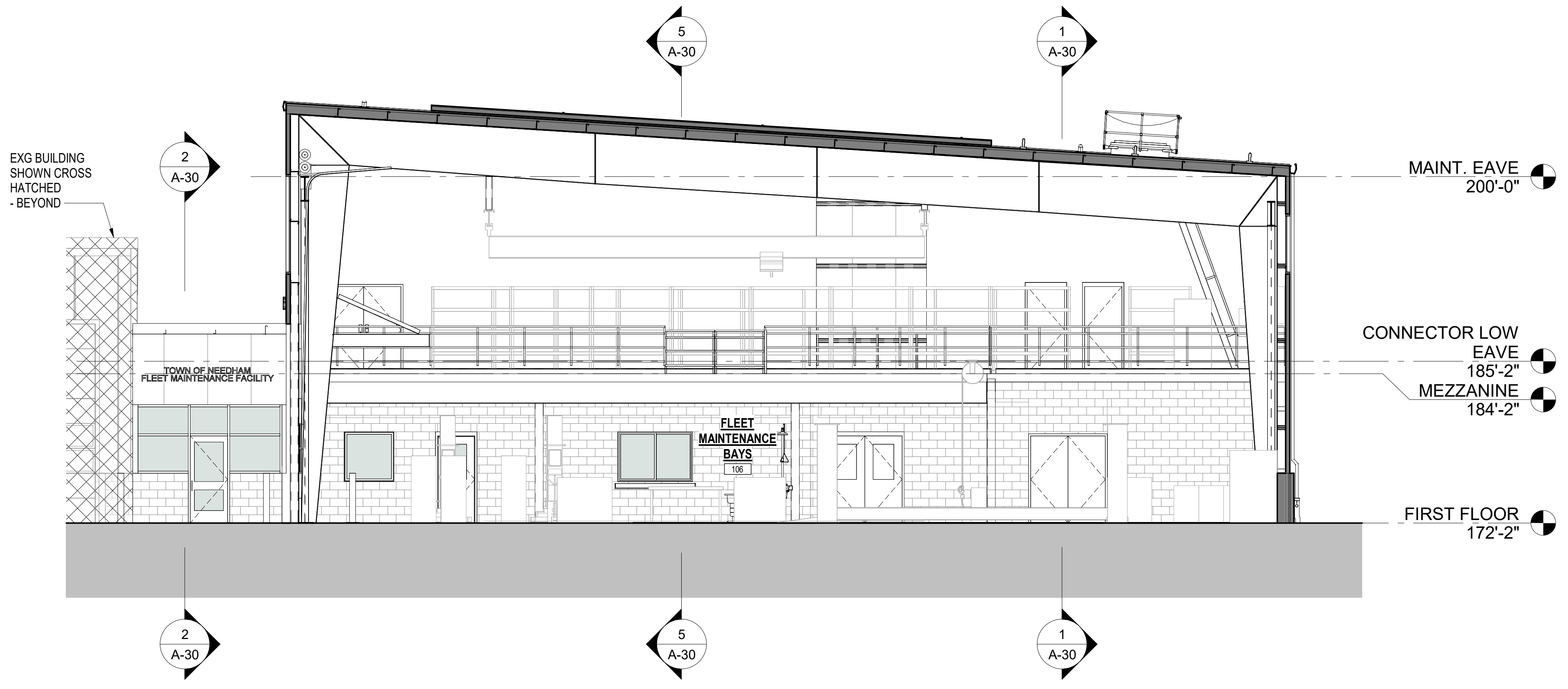
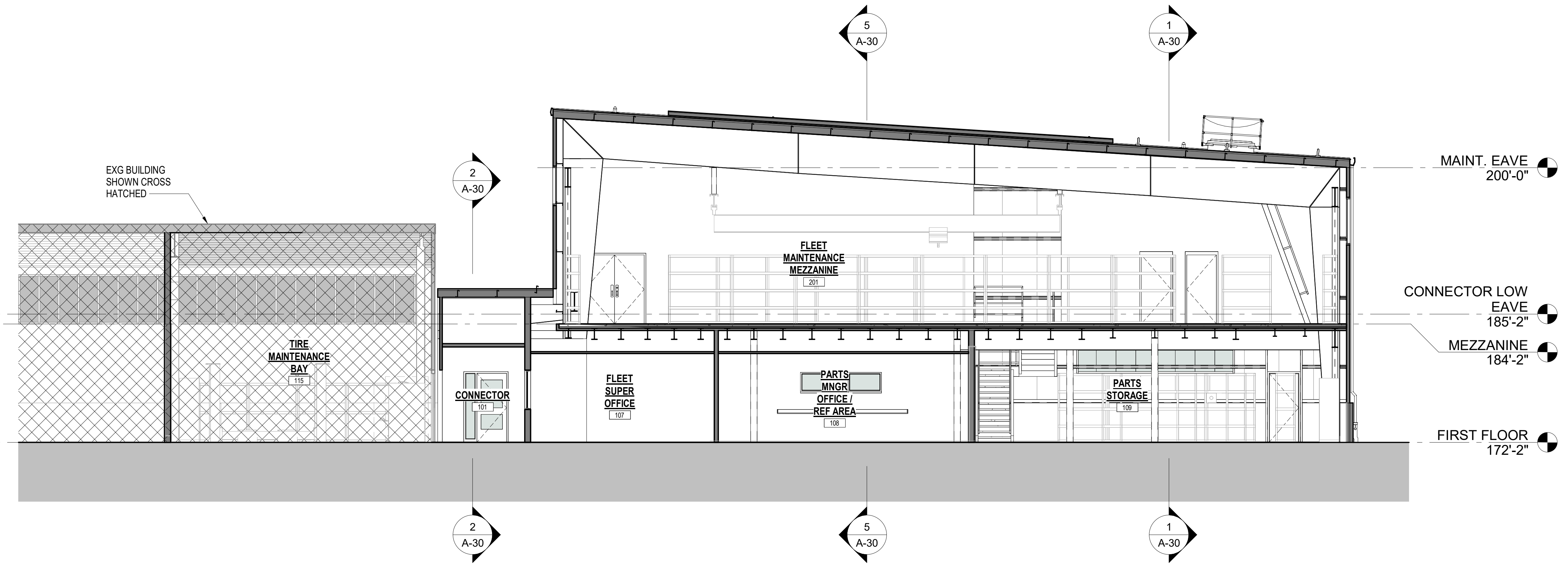


5 BUILDING SECTION - NORTH TO SOUTH FACING WEST
1/8" = 1'-0" 1/ A101

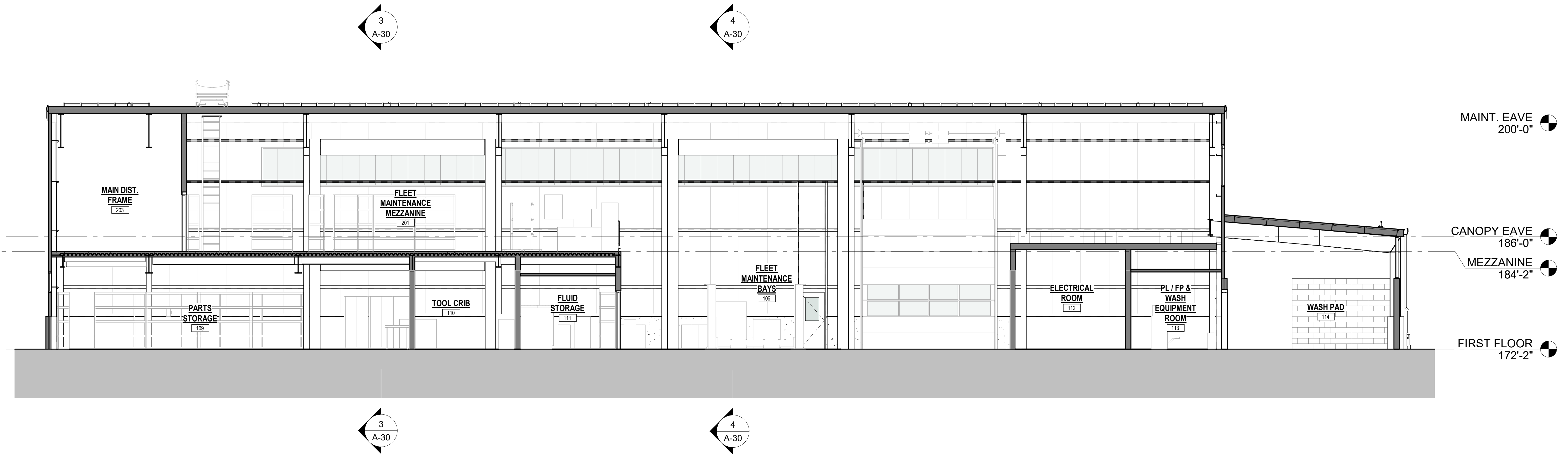


4 BUILDING SECTION - EAST TO WEST THRU ADDITION
1/8" = 1'-0" 1/ A101



3 BUILDING SECTION - EAST TO WEST THRU EXG AND ADDITION
1/8" = 1'-0" 1/ A101

2 BUILDING SECTION - THRU CONNECTOR
1/8" = 1'-0" 1/ A101



1 BUILDING SECTION - NORTH TO SOUTH FACING EAST
1/8" = 1'-0" 1/ A101

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BUILDING SECTIONS - ADDITION

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