

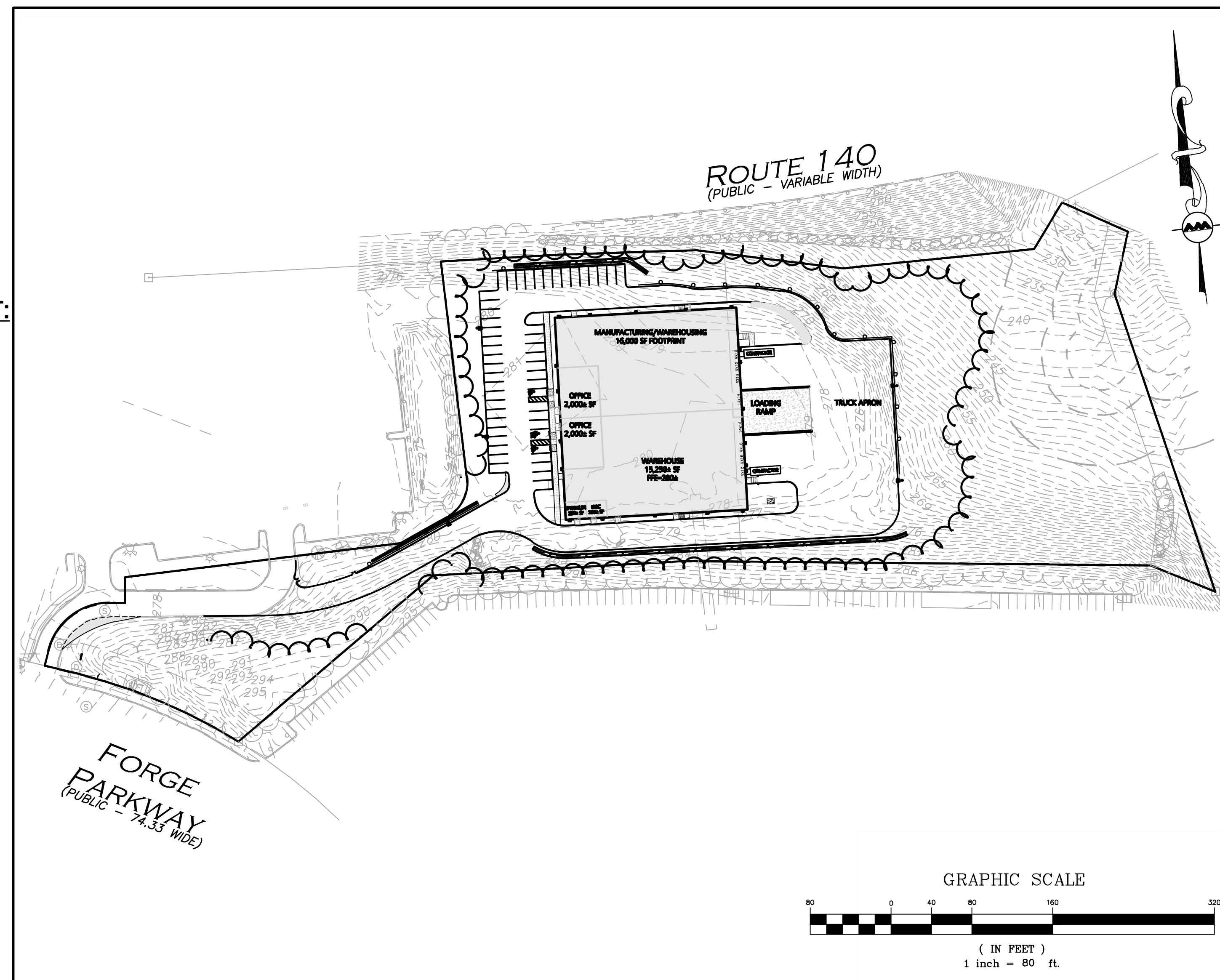
**LOCUS MAP**  
NOT TO SCALE

# SITE DEVELOPMENT PLANS FOR 6 FORGE PARKWAY FRANKLIN, MA 02038 TAX MAP 272, LOT 5

**APPLICANT/OWNER:**  
DONEGAL, LLC  
PO BOX 4430  
MANCHESTER, NH 03108

**CIVIL ENGINEER/LANDSCAPE ARCHITECT:**  
ALLEN & MAJOR ASSOCIATES, INC.  
400 HARVEY ROAD  
MANCHESTER, NH 03103

**SURVEYOR:**  
ALLEN & MAJOR ASSOCIATES, INC.  
100 COMMERCE WAY  
WOBURN, MA 01801



LIST OF DRAWINGS			
DRAWING TITLE	SHEET NO.	ISSUED	REVISED
COVER	C	01/31/24	-
EXISTING CONDITIONS	V-101	01/31/24	-
EROSION CONTROL & SITE PREPARATION NOTES	C-101A	01/31/24	04/01/24
OVERALL SITE PREPARATION PLAN	C-101	01/31/24	04/01/24
SITE PREPARATION PLAN	C-101A	01/31/24	04/01/24
SITE PREPARATION PLAN	C-101B	01/31/24	04/01/24
OVERALL LAYOUT & MATERIALS PLAN	C-102	01/31/24	04/18/24
LAYOUT & MATERIALS PLAN	C-102A	01/31/24	04/18/24
LAYOUT & MATERIALS PLAN	C-102B	01/31/24	04/18/24
OVERALL GRADING & DRAINAGE PLAN	C-103	01/31/24	04/01/24
GRADING & DRAINAGE PLAN	C-103A	01/31/24	04/01/24
GRADING & DRAINAGE PLAN	C-103B	01/31/24	04/01/24
UTILITIES PLAN	C-104	01/31/24	04/01/24
LIGHTING PLAN	C-105	01/31/24	04/01/24
TRUCK TURNING PLAN	C-106A	04/18/24	-
TRUCK TURNING PLAN	C-106B	04/18/24	-
SITE SECTIONS	C-107	04/18/24	-
DETAILS	C-501	01/31/24	04/01/24
DETAILS	C-502	01/31/24	04/18/24
DETAILS	C-503	01/31/24	04/18/24
DETAILS	C-504	01/31/24	04/01/24
DETAILS	C-505	01/31/24	04/01/24
DETAILS	C-506	01/31/24	04/01/24
DETAILS	C-507	01/31/24	04/18/24
LANDSCAPE PLAN	L-101	01/31/24	04/01/24
LANDSCAPE NOTES & DETAILS	L-501	01/31/24	04/01/24
LANDSCAPE DETAILS	L-502	01/31/24	04/01/24

NOTE: ALL PLANS WILL BE ON FILE AND AVAILABLE AT THE TOWN OF FRANKLIN PLANNING DEPARTMENT



PROFESSIONAL ENGINEER FOR  
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
3	04-18-24	MISC. UPDATES PER TOWN COMMENTS
2	04-01-24	MISC. UPDATES PER TOWN COMMENTS
1	02-27-24	MISC. UPDATES PER TOWN COMMENTS

**APPLICANT/OWNER:**  
DONEGAL, LLC  
PO BOX 4430  
MANCHESTER, NH 03108

**PROJECT:**  
**PROPOSED INDUSTRIAL BUILDING**  
6 FORGE PARKWAY  
FRANKLIN, MA  
PARCEL ID: 272-005-000-000

**PROJECT NO.** 1362-25 **DATE:** 02-05-24

**SCALE:** NONE **DWG.:** C-1362-25\_Cover

**DESIGNED BY:** SM **CHECKED BY:** MAM

PREPARED BY:

**ALLEN & MAJOR ASSOCIATES, INC.**  
civil engineering • land surveying  
environmental consulting • landscape architecture  
www.allenmajor.com  
100 COMMERCE WAY, SUITE 5  
WOBURN MA 01801  
TEL: (781) 935-6889  
FAX: (781) 935-2896  
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DRAWING TITLE:	SHEET No.
COVER	C
	01 OF 27

ISSUED FOR INITIAL REVIEW: FEBRUARY 5, 2024  
MISC UPDATES PER TOWN COMMENTS: APRIL 18, 2024

**APPROVED: TOWN OF FRANKLIN PLANNING BOARD**

_____	DATE APPROVED
_____	DATE SIGNED
_____	PLANNING BOARD MEMBER
_____	PLANNING BOARD MEMBER
_____	PLANNING BOARD MEMBER

**GENERAL NOTES:**

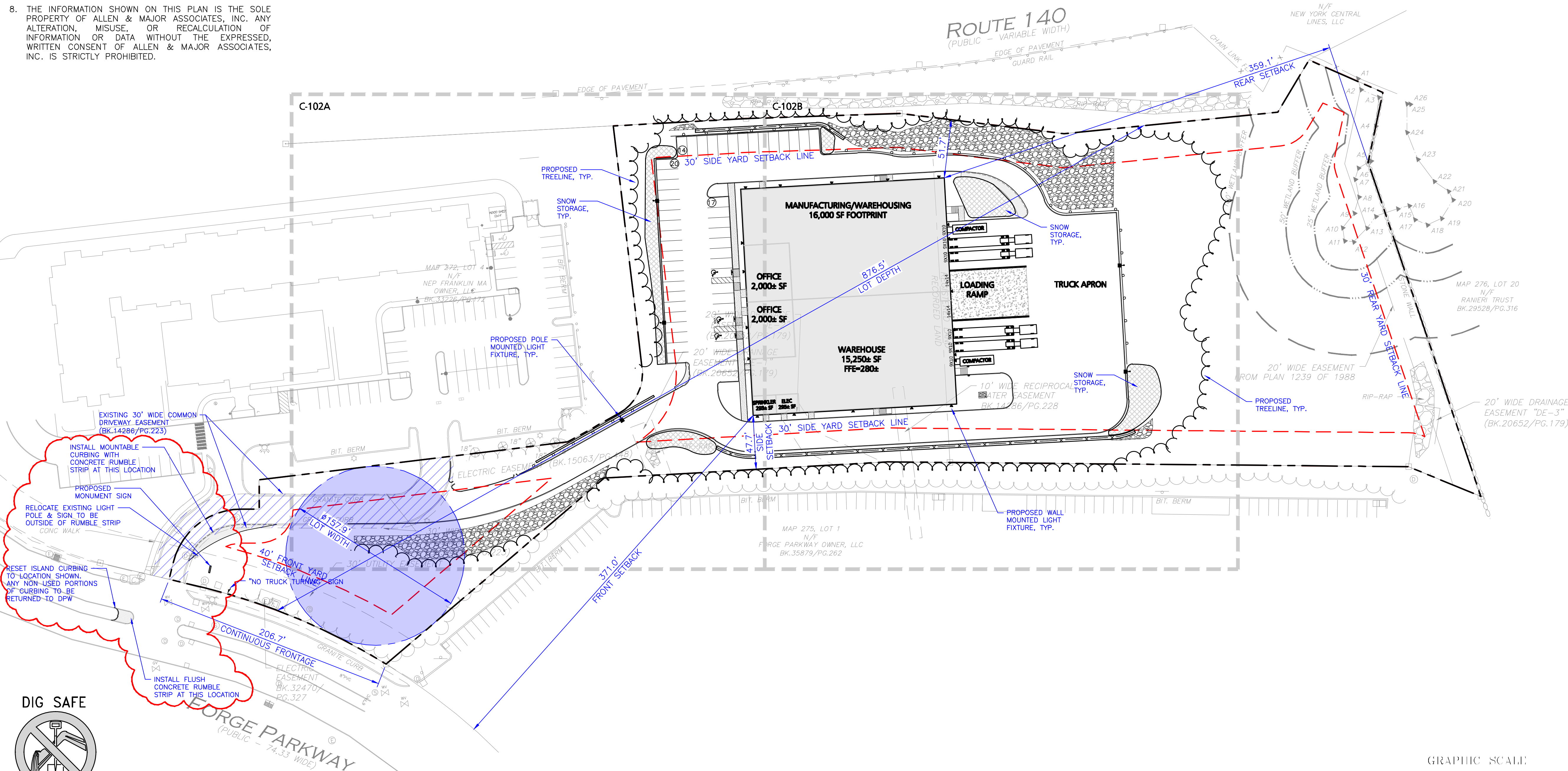
- ALL CURB RADII SHALL BE 3' UNLESS OTHERWISE NOTED.
- PARKING DIMENSIONS ARE TAKEN FROM THE FACE OF CURB UNLESS OTHERWISE NOTED.
- CONSTRUCTION DURING WET WEATHER OR WINTER CONDITIONS IS TO BE ANTICIPATED AND PROVISIONS TO ADEQUATELY ADDRESS THESE CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS INCLUDING THE TOWN OF FRANKLIN, MADOT, MADEP, MUTCD, AND AASHTO.
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- EXISTING CONDITIONS WERE COMPILED FROM AN ON THE GROUND SURVEY PERFORMED BY ALLEN & MAJOR ASSOCIATES, INC. AS WELL AS AVAILABLE RECORD PLANS OBTAINED FROM THE TOWN OF FRANKLIN, MA AND OTHER SOURCES.
- THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIGSAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK. THE CONTRACTOR SHALL ALSO CONTACT THE TOWN OF FRANKLIN, MA DEPARTMENT OF PUBLIC WORKS AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF LOCAL UTILITIES.
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TOWN OF FRANKLIN INDUSTRIAL (I) DISTRICT		
ITEM	REQUIRED	PROPOSED
MINIMUM LOT AREA	40,000 SF	257,317 SF
MINIMUM CONTINUOUS FRONTAGE	175 FEET	206.7 FEET
MINIMUM LOT DEPTH	200 FEET	876.5 FEET
MINIMUM LOT WIDTH	157.5 FEET	157.9 FEET
MINIMUM FRONT SETBACK	40 FEET	371.0 FEET
MINIMUM SIDE SETBACK	30 FEET	47.7 FEET
MINIMUM REAR SETBACK	30 FEET	359.1 FEET
MAXIMUM BUILDING STORIES	3	1
MAXIMUM BUILDING HEIGHT	N/A	33'-6"
MAXIMUM STRUCTURE COVERAGE	70%	14.0%
MAXIMUM IMPERVIOUS COVERAGE	80%	40.3%

OFF-STREET PARKING AND LOADING SUMMARY TABLE		
USE: WAREHOUSE OFFICE: 6,000 SF	REQUIRED	
1 SPACES PER 400 SQUARE FEET	10.0	PARKING SPACES
4,000 SF / 400 = 10.0 SPACES		
USE: WAREHOUSE: 31,250 SQUARE FEET		
1 SPACE REQUIRED PER 1,000 SQUARE FEET	31.3	PARKING SPACES
31,250 SF / 1,000 = 31.3 SPACES		
TOTAL REQUIRED PARKING = 41 PARKING SPACES		
ACCESSIBLE PARKING SPACE REQUIREMENT: FOR 51 TO 75 SPACES, 3 SHALL BE ACCESSIBLE, 1 SHALL BE VAN ACCESSIBLE)		
	3	ADA SPACES
<b>TOTAL PARKING PROVIDED: 51 PARKING SPACES</b>		
STANDARD	48	
ACCESSIBLE	3	

TABLE NOTES:  
1. PROPOSED PARKING SPACES SHALL BE A MINIMUM OF 9 FEET IN WIDTH AND 19 FEET IN DEPTH FOR 90° PARKING.

LEGEND	
PROPERTY LINE	---
SIGN	—
BOLLARD	•
BUILDING	▭
BUILDING ARCHITECTURE	▭
CURB	—
RETAINING WALL	—
PARKING STRIPING	—
HEAVY DUTY CONCRETE	▨
SIDEWALK	▨
ADA ACCESSIBLE RAMP	▨
RIPRAP	▨
SNOW STORAGE	▨
SETBACK LINE	—
PARKING COUNT	⊙
STEEL GUARDRAIL	—
CHAIN LINK FENCE	—
TREE LINE	—
TRANSFORMER	⊠
PRECAST CONCRETE CURB	PCC



PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

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PO BOX 4430  
MANCHESTER, NH 03108

PROJECT:  
**PROPOSED INDUSTRIAL BUILDING**  
6 FORGE PARKWAY  
FRANKLIN, MA  
PARCEL ID: 272-005-000-000

PROJECT NO. 1362-25 DATE: 02-05-24  
SCALE: 1" = 50' DWG.: C1362-25\_Layout & Materials  
DESIGNED BY: SM CHECKED BY: MAM

PREPARED BY:

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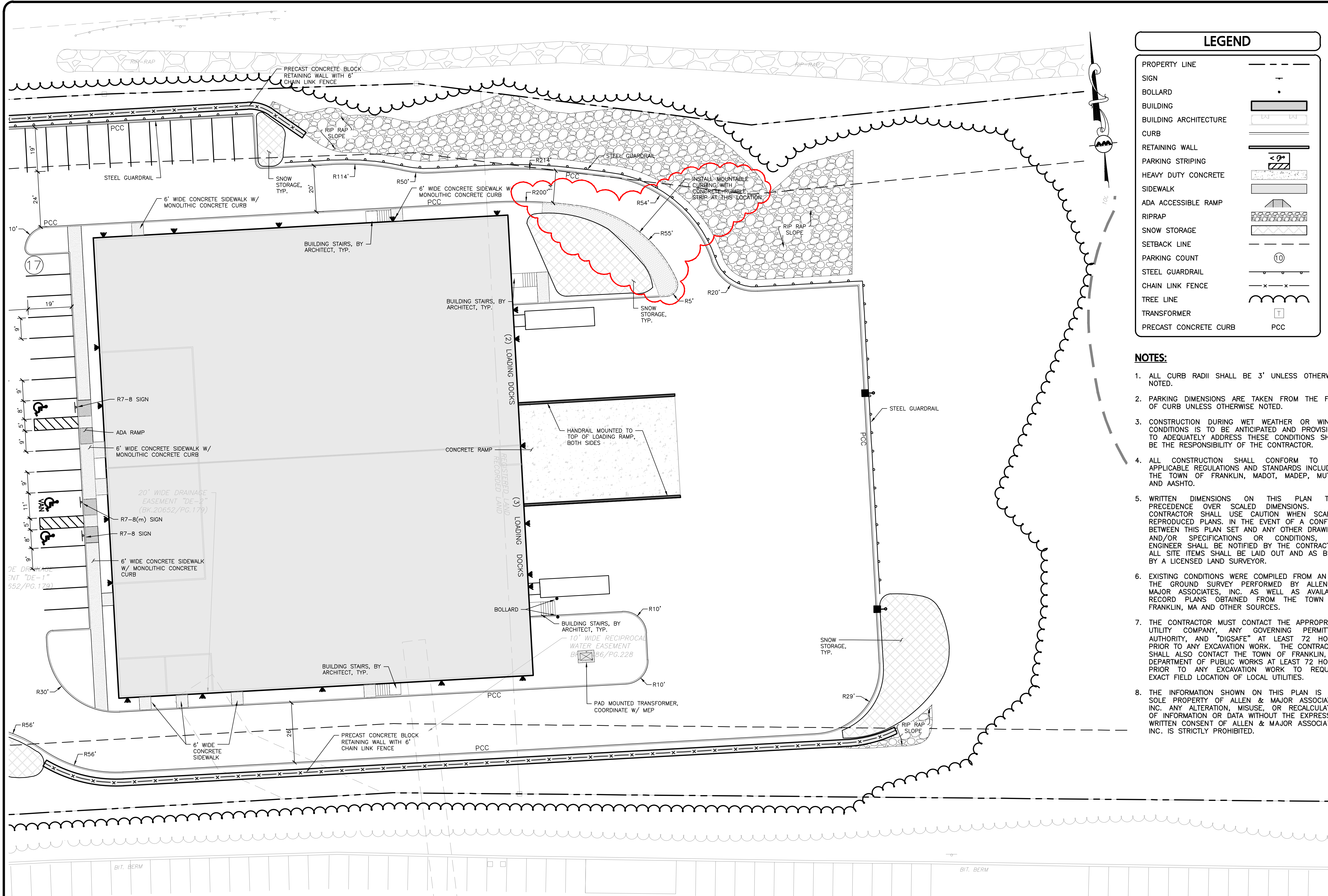
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DRAWING TITLE: **OVERALL LAYOUT & MATERIALS PLAN** SHEET No. **C-102**  
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**LEGEND**

PROPERTY LINE	---
SIGN	—
BOLLARD	•
BUILDING	▭
BUILDING ARCHITECTURE	▭
CURB	—
RETAINING WALL	—
PARKING STRIPING	—
HEAVY DUTY CONCRETE	▨
SIDEWALK	▨
ADA ACCESSIBLE RAMP	▨
RIPRAP	▨
SNOW STORAGE	▨
SETBACK LINE	—
PARKING COUNT	⑩
STEEL GUARDRAIL	—
CHAIN LINK FENCE	—
TREE LINE	—
TRANSFORMER	⊠
PRECAST CONCRETE CURB	PCC

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3	04-18-24	MISC. UPDATES PER TOWN COMMENTS
2	04-01-24	MISC. UPDATES PER TOWN COMMENTS
1	02-27-24	MISC. UPDATES PER TOWN COMMENTS

APPLICANT/OWNER:  
**DONEGAL, LLC**  
 PO BOX 4430  
 MANCHESTER, NH 03108

PROJECT:  
**PROPOSED INDUSTRIAL BUILDING**  
 6 FORGE PARKWAY  
 FRANKLIN, MA  
 PARCEL ID: 272-005-000-000

PROJECT NO. 1362-25 DATE: 02-05-24  
 SCALE: 1" = 20' DWG.: C1362-25\_Layout & Materials  
 DESIGNED BY: SM CHECKED BY: MAM

PREPARED BY:

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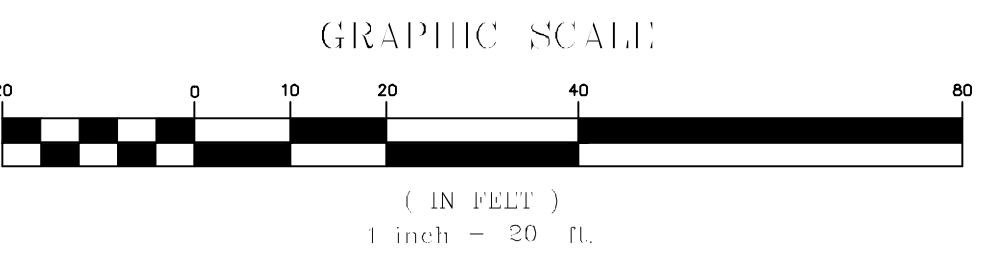
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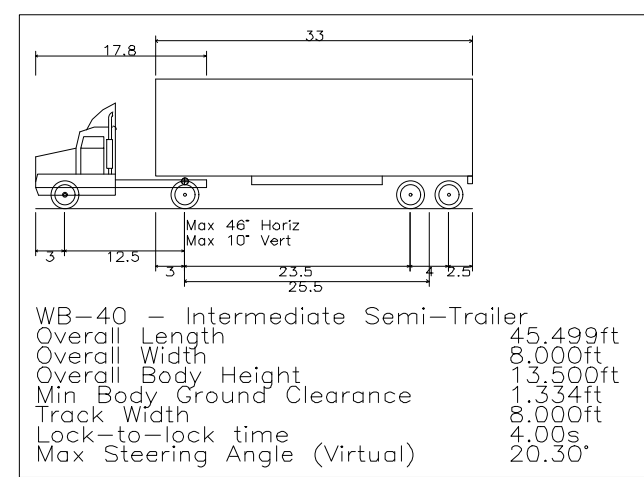
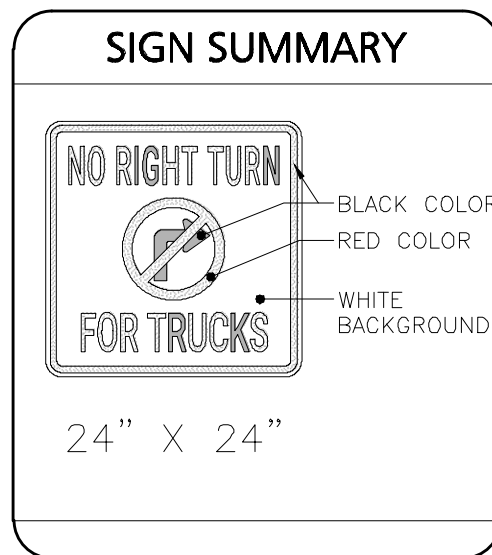
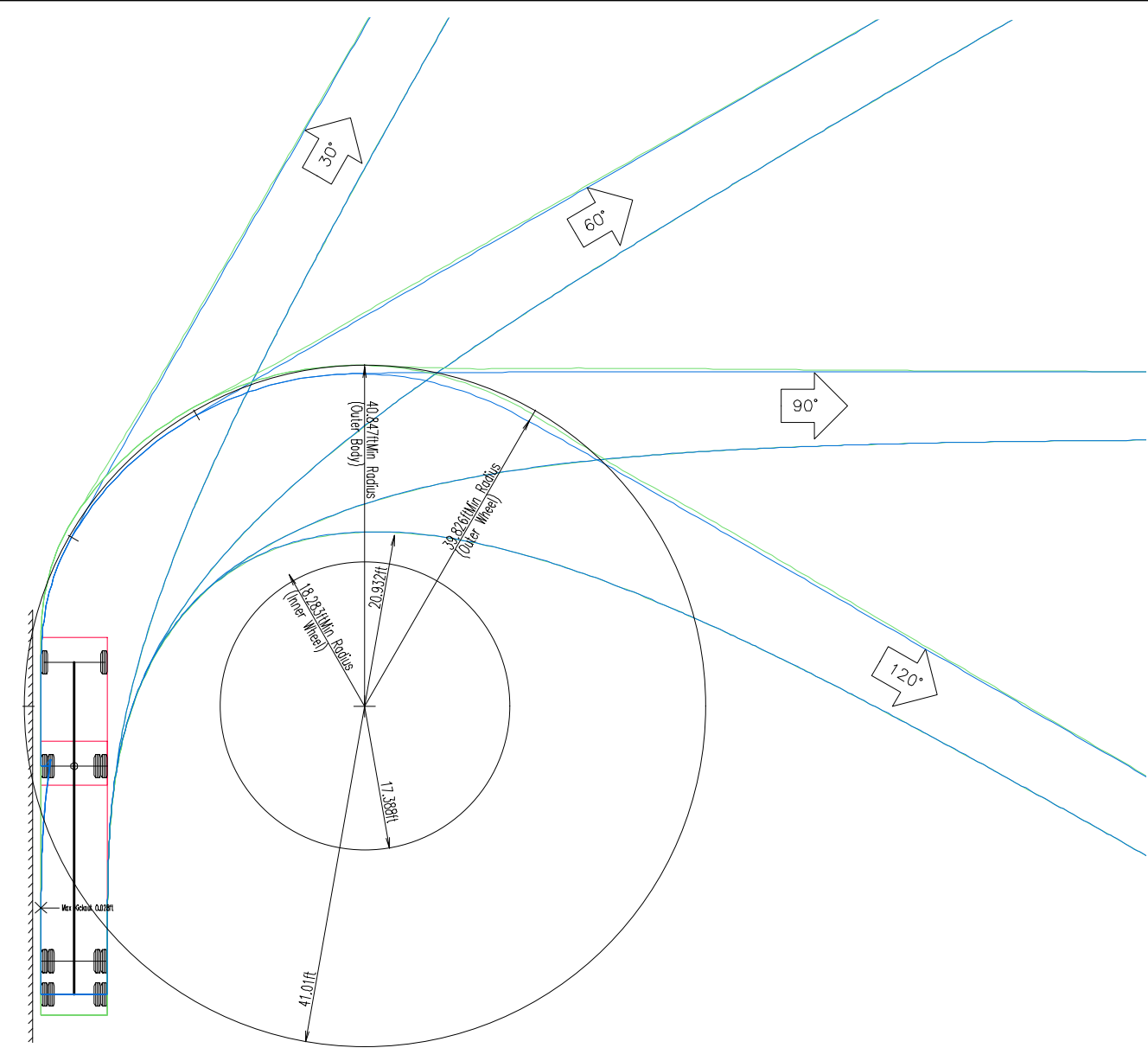
DRAWING TITLE: **LAYOUT & MATERIALS PLAN** SHEET NO. **C-102B**  
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MAP 275, LOT 1  
 N/A  
 FORGE PARKWAY OWNER, LLC  
 BK. 35879/PG. 262



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RESET ISLAND CURBING TO LOCATION SHOWN. ANY NON USED PORTIONS OF CURBING TO BE RETURNED TO DPW

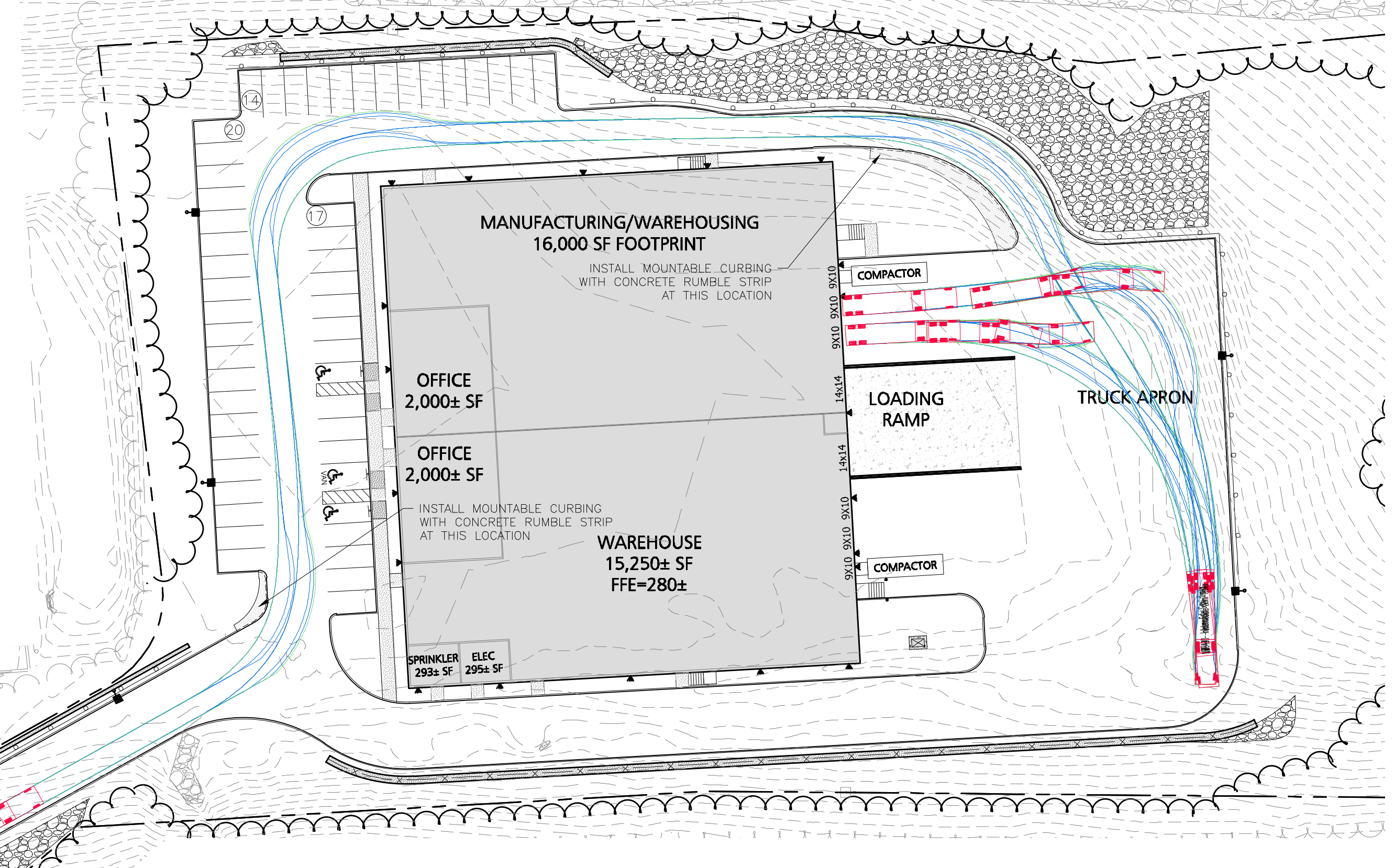
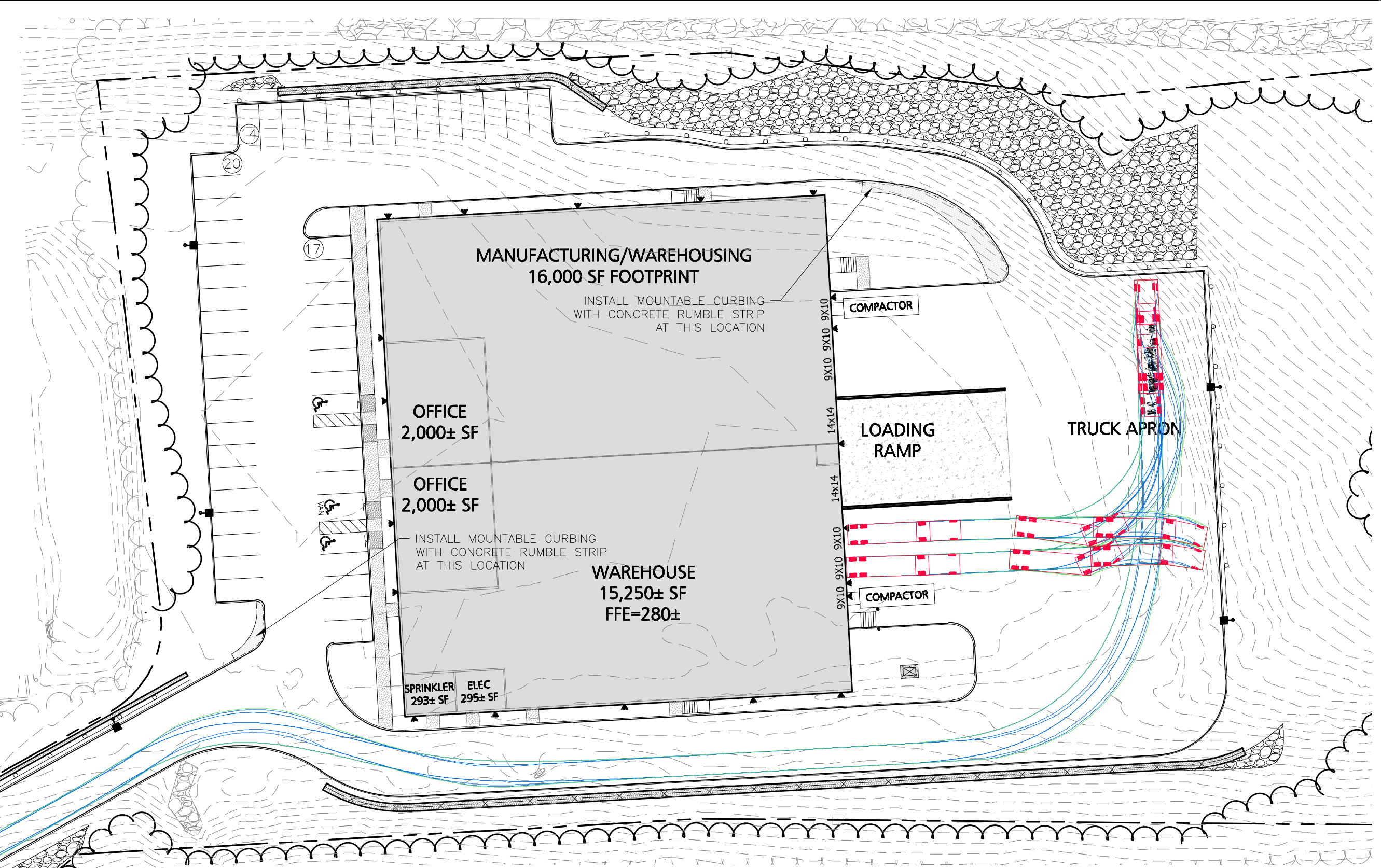
INSTALL MOUNTABLE CURBING WITH CONCRETE RUMBLE STRIP AT THIS LOCATION  
 RELOCATE EXISTING LIGHT POLE & SIGN TO BE OUTSIDE OF RUMBLE STRIP  
 "NO TRUCK TURNING" SIGN

INSTALL FLUSH CONCRETE RUMBLE STRIP AT THIS LOCATION

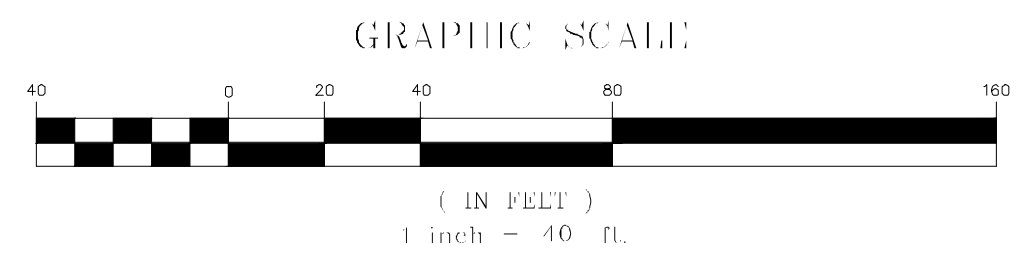
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PROFESSIONAL ENGINEER FOR  
 ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
APPLICANT/OWNER: DONEGAL, LLC PO BOX 4430 MANCHESTER, NH 03108		
PROJECT: <b>PROPOSED INDUSTRIAL BUILDING</b> 6 FORGE PARKWAY FRANKLIN, MA PARCEL ID: 272-005-000-000		
PROJECT NO.	1362.25	DATE: 04-18-24
SCALE:	1" = 40'	DWG.: C-1362-25_Truck Turn
DESIGNED BY:	SM	CHECKED BY: MAM
PREPARED BY:		

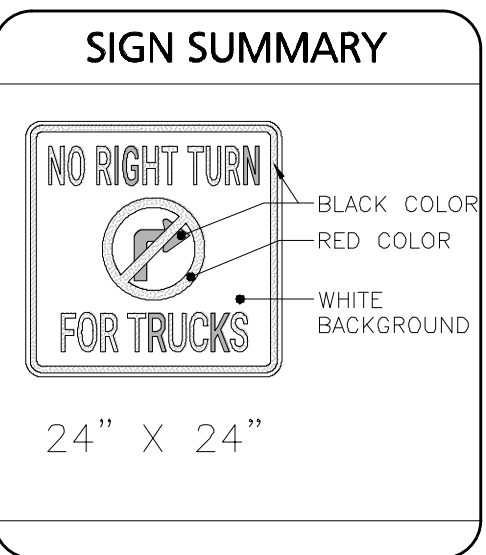
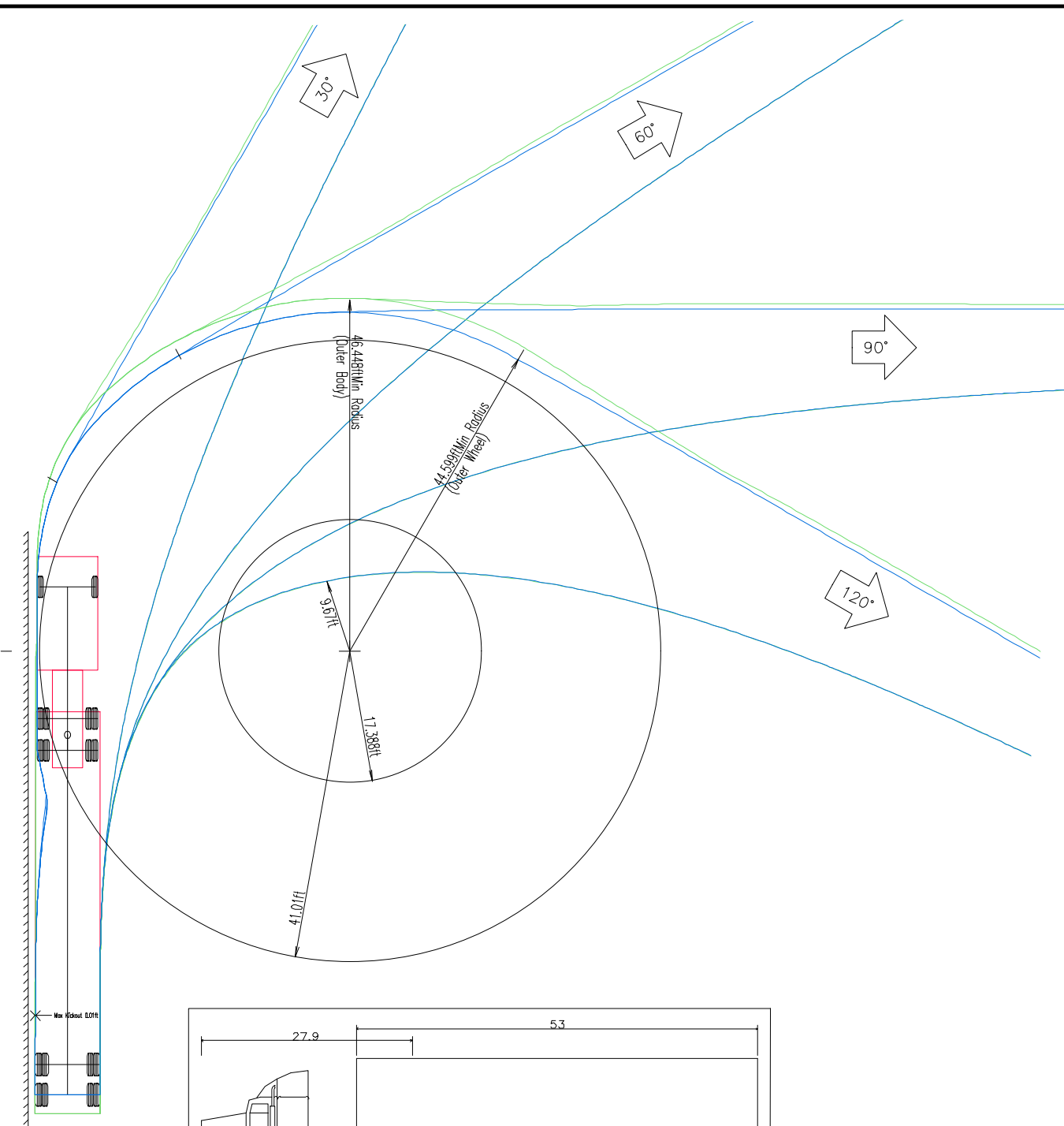
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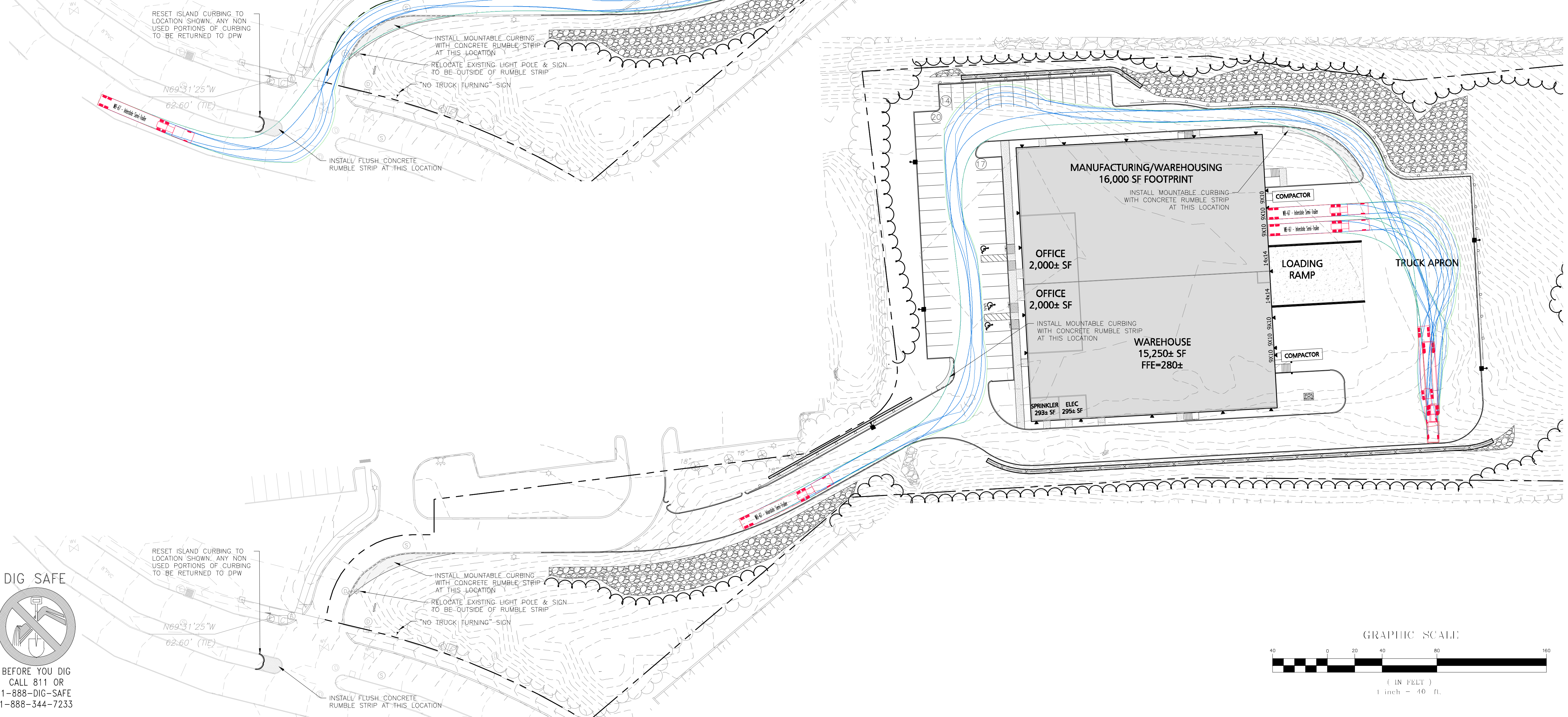
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DRAWING TITLE: <b>TRUCK TURN PLAN WB-40 TRUCK</b>	SHEET No. <b>C-106A</b> 15 OF 27
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R:\PROJECTS\1362-25\CIVIL DRAWINGS\CURRENT\C-1362-25-TRUCK TURN.DWG



WB-67 - Interstate Semi-Trailer	73.50ft
Overall Length	8.50ft
Overall Width	13.50ft
Overall Body Height	1.35ft
Min Body Ground Clearance	8.50ft
Max Track Width	6.00ft
Lock-to-lock time	28.40
Max Steering Angle (Virtual)	



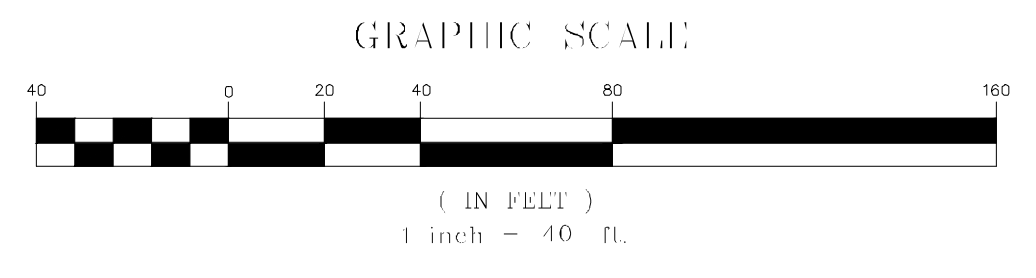
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DONEGAL, LLC PO BOX 4430 MANCHESTER, NH 03108		
PROJECT:		
PROPOSED INDUSTRIAL BUILDING 6 FORGE PARKWAY FRANKLIN, MA PARCEL ID: 272-005-000-000		
PROJECT NO.	1362.25	DATE: 04-18-24
SCALE:	1" = 40'	DWG.: C-1362-25_Truck Turn
DESIGNED BY:	SM	CHECKED BY: MAM
PREPARED BY:		

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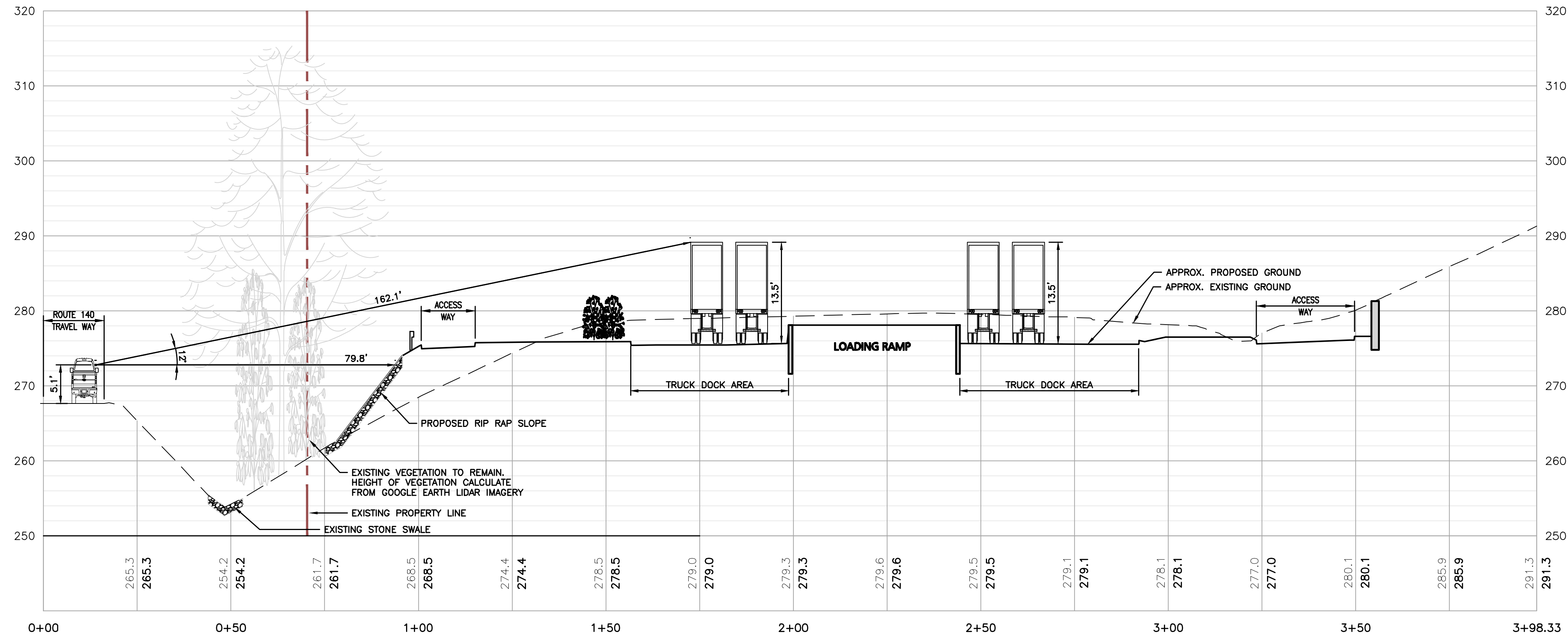
DRAWING TITLE:	SHEET No.
TRUCK TURN PLAN WB-67 TRUCK	C-106B
	16 OF 27

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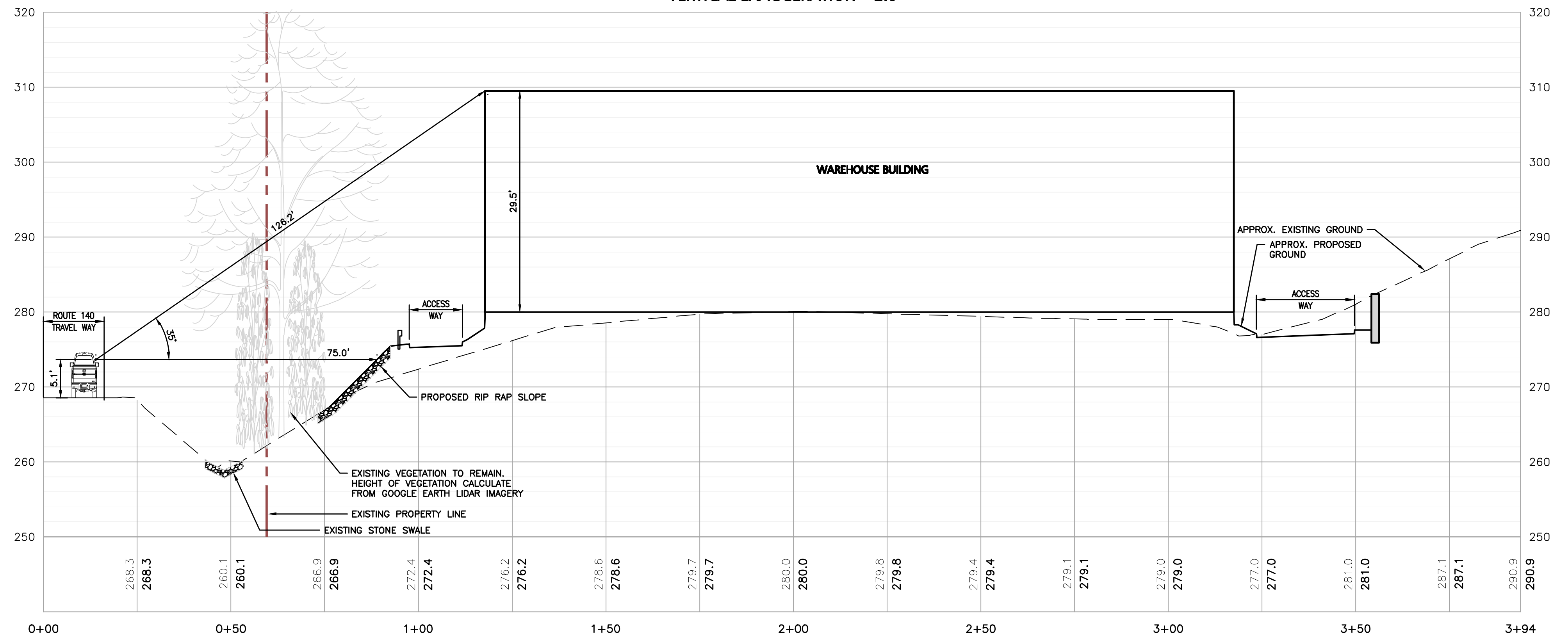
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1-888-344-7233

Site Section - 1 CENTERLINE PROFILE  
VERTICAL EXAGGERATION = 2.0



Site Section - 2 CENTERLINE PROFILE  
VERTICAL EXAGGERATION = 2.0



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PARCEL ID: 272-005-000-000

PROJECT NO. 1362-25    DATE: 04-18-24  
SCALE: 1" = 20'    DWG.: C-1362-25\_Grading & Drainage  
DESIGNED BY: SM    CHECKED BY: MAM

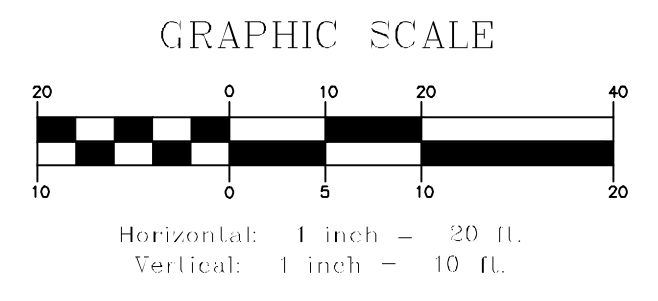
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DRAWING TITLE: <b>SITE SECTIONS</b>	SHEET No. <b>C-107</b>
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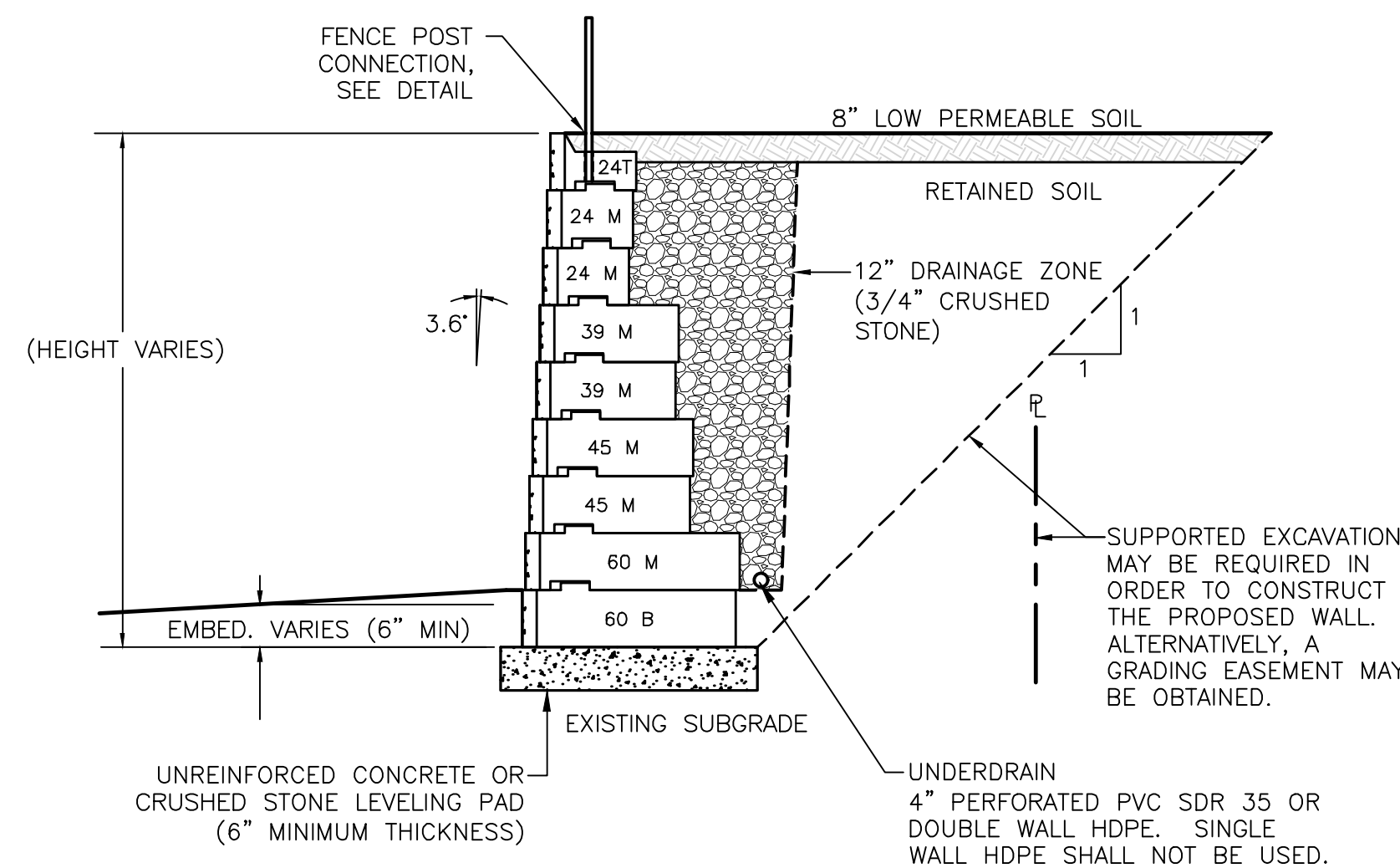
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R:\PROJECTS\1362-25\CIVIL DRAWINGS\CURRENT\0-1362-25-GRADING & DRAINAGE.DWG

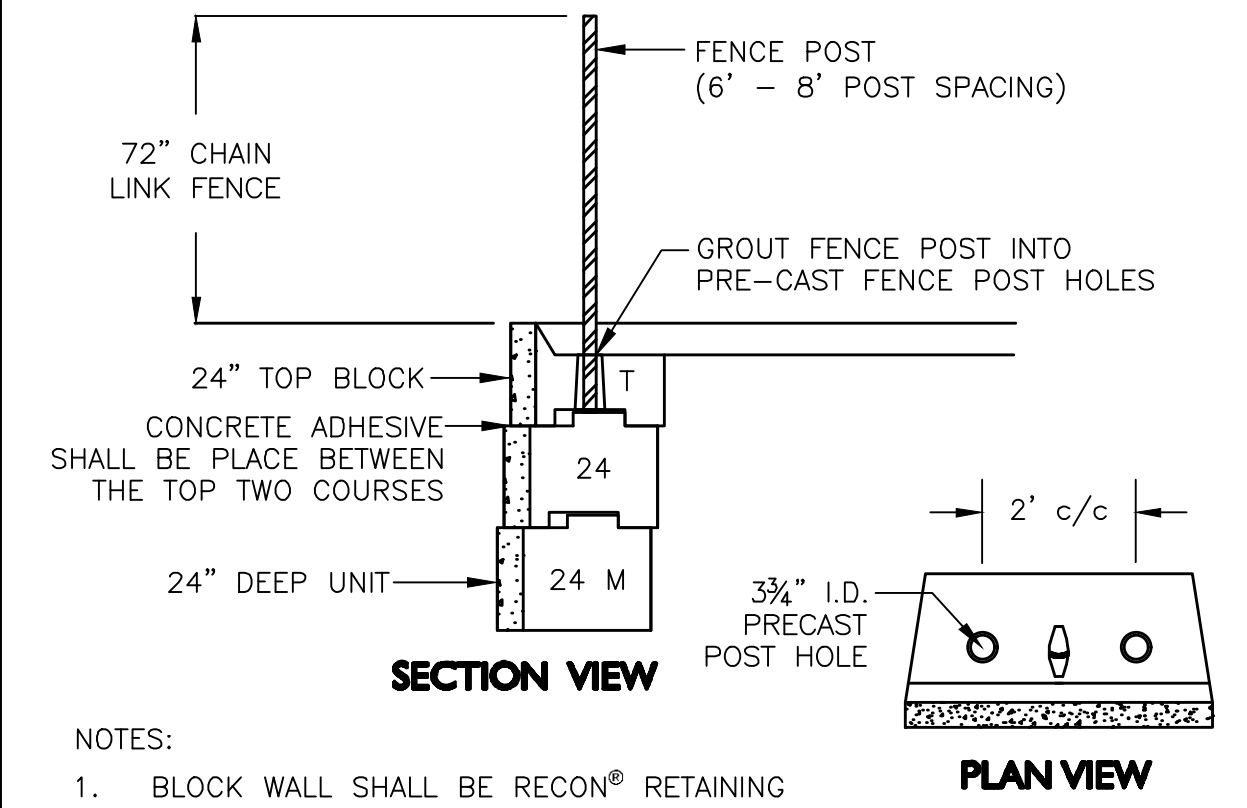






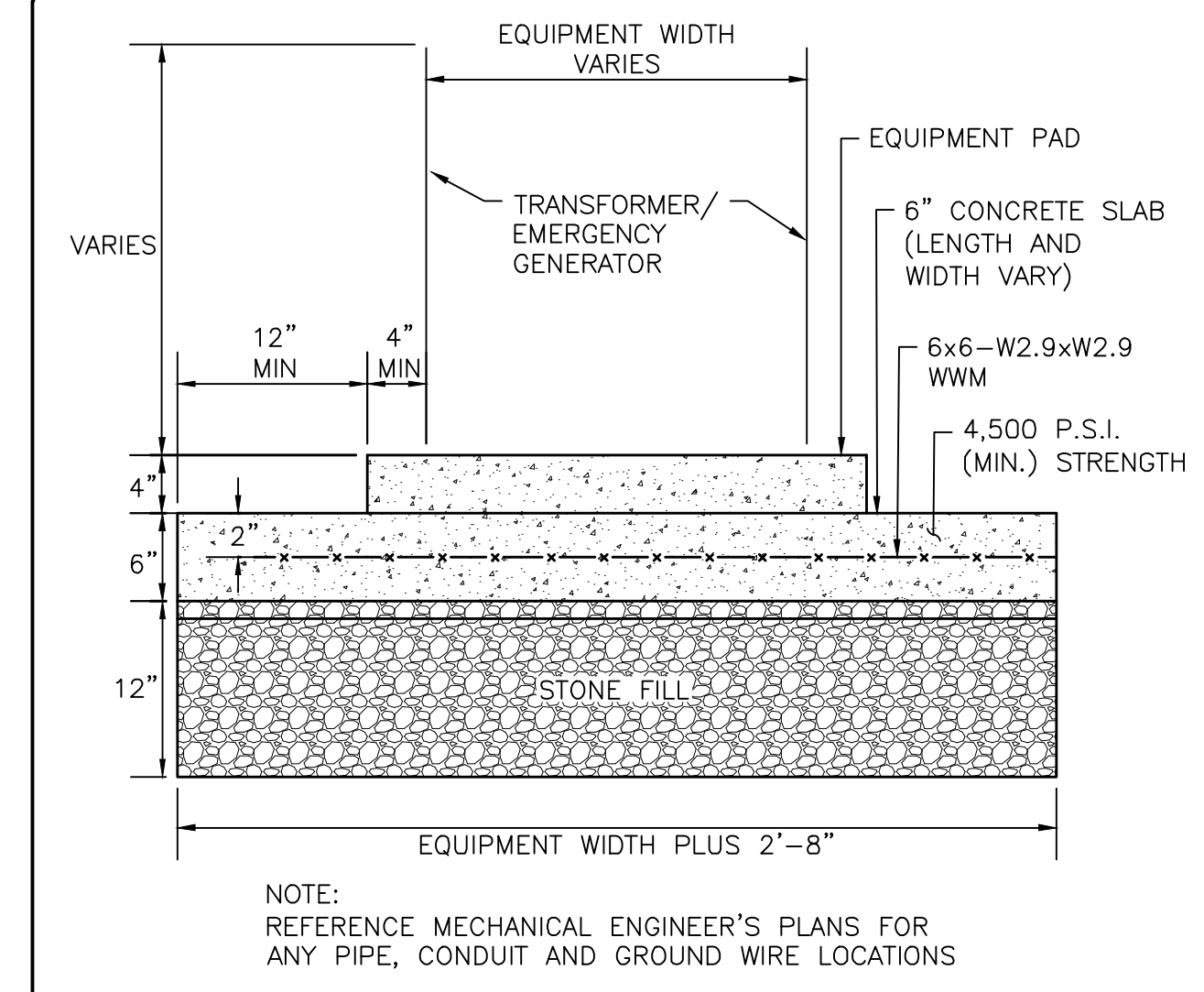
- NOTES:
- BLOCK WALL SHALL BE RECON® RETAINING WALL SYSTEMS OR APPROVED EQUAL.
  - VENDOR INFORMATION:  
SHEA WALL SYSTEM INC.  
87 HAVERHILL STREET  
AMESBURY, MA 01913  
PHONE: 800-696-7432  
www.sheaconcrete.com
  - RECON BLOCK STYLE SHALL BE "NORTH SHORE GRANITE".
  - THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND WALL CALCULATIONS, PREPARED AND ENDORSED BY A MA REGISTERED PROFESSIONAL ENGINEER, TO THE ENGINEER-OF-RECORD FOR APPROVAL.
  - SEE GRADING PLANS FOR WALL LAYOUT AND HEIGHTS.
  - SHORING, IF USED, WOULD REQUIRE A FORMAL SUBMITTAL, STAMPED BY A GEOTECHNICAL ENGINEER.

**BLOCK RETAINING WALL SECTION**  
NOT TO SCALE



- NOTES:
- BLOCK WALL SHALL BE RECON® RETAINING WALL SYSTEMS OR APPROVED EQUAL.
  - VENDOR INFORMATION:  
SHEA WALL SYSTEM INC.  
87 HAVERHILL STREET  
AMESBURY, MA 01913  
PHONE: 800-696-7432  
www.sheaconcrete.com

**FENCE CONNECTION TO TOP OF WALL**  
NOT TO SCALE

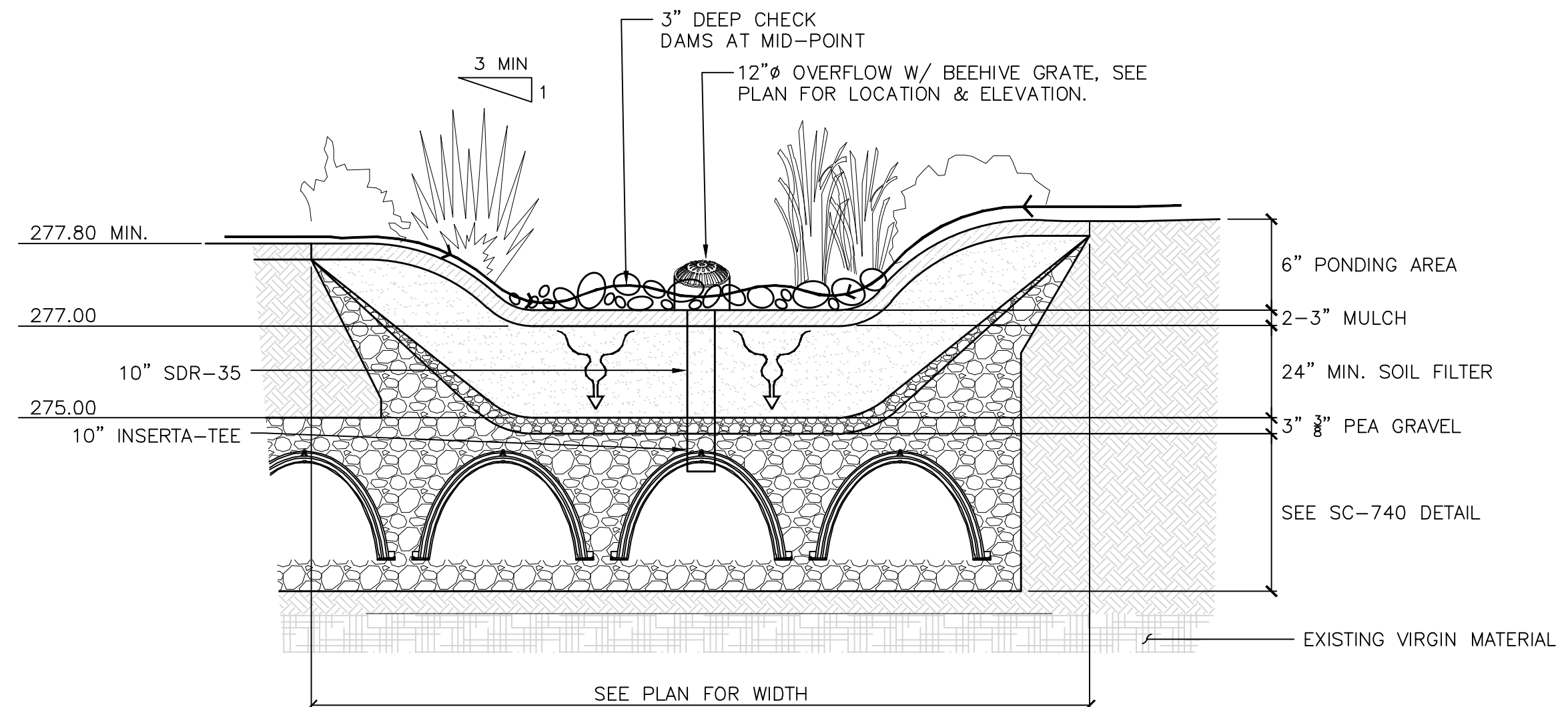


NOTE:  
REFERENCE MECHANICAL ENGINEER'S PLANS FOR ANY PIPE, CONDUIT AND GROUND WIRE LOCATIONS

**TRANSFORMER PAD**  
NOT TO SCALE

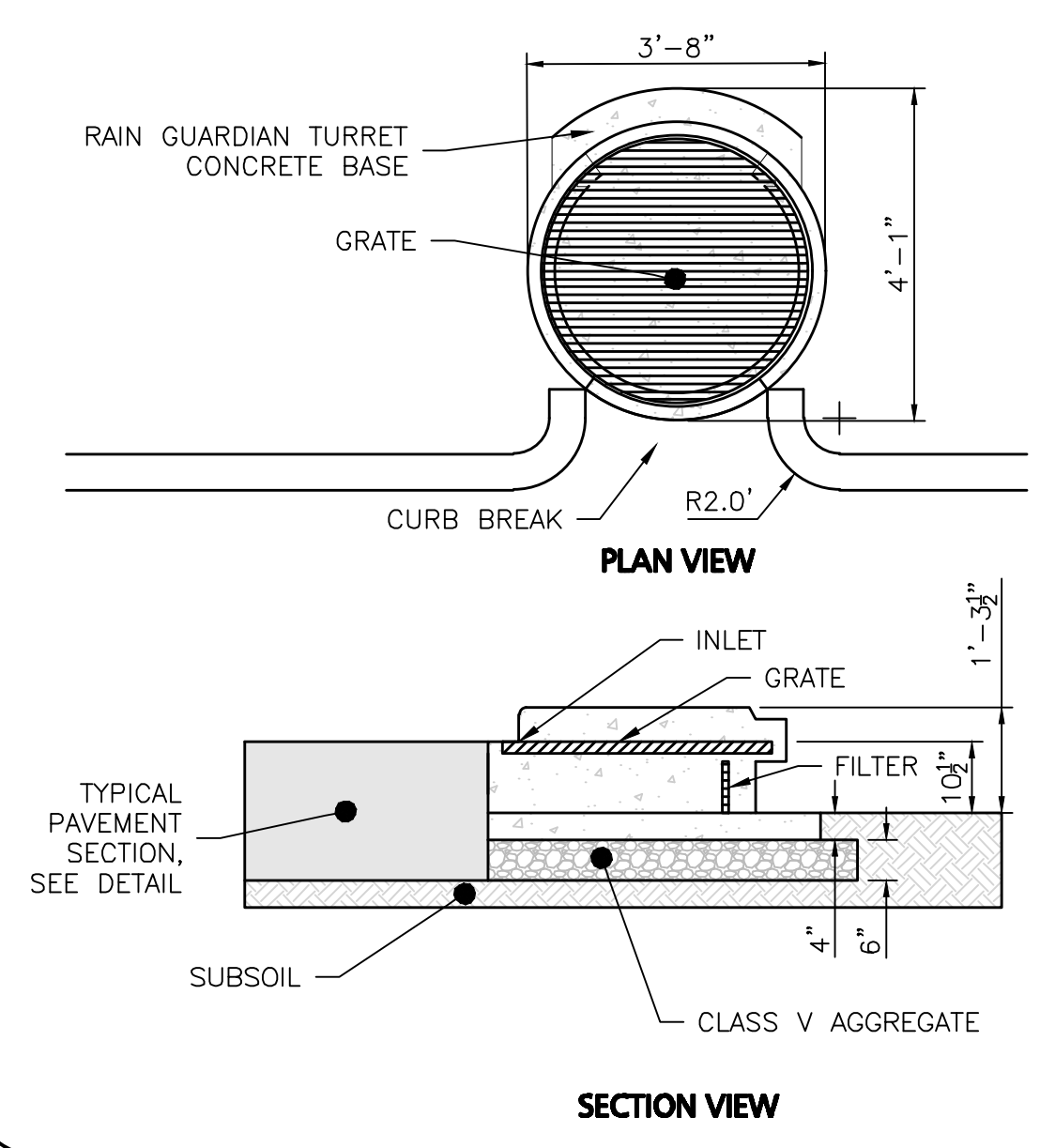
BIORETENTION FILTER MEDIA		GRADATION OF MATERIAL	
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	SIEVE NO.	PERCENT BY WEIGHT PASSING STANDARD SIEVE
ASTM D 422 SAND	40%	200	<5%
LOAMY SAND TOPSOIL, WITH FINES AS INDICATED	20 TO 30%		
COMPOST	30 TO 40%		

- NOTES:
- SOIL MIX SHALL BE UNIFORM, FREE OF STONES, STUMPS, ROOTS OR SIMILAR OBJECTS LARGER THAN 2".
  - SOIL pH SHOULD GENERALLY BE BETWEEN 5.5-6.5.
  - TOPSOIL COMPONENT SHALL BE A SANDY LOAM, LOAMY SAND, OR LOAM TEXTURE.
  - THE COMPOST COMPONENT SHALL BE PROCESSED FROM YARD WASTE IN ACCORDANCE WITH MASSDEP GUIDELINES. THE COMPOST SHALL NOT CONTAIN BIOSOLIDS.
  - ON-SITE SOIL MIXING OR PLACEMENT IS NOT ALLOWED IF SOIL IS SATURATED OR SUBJECT TO WATER WITHIN 48 HOURS. COVER AND STORE SOIL TO PREVENT WETTING OR SATURATION.



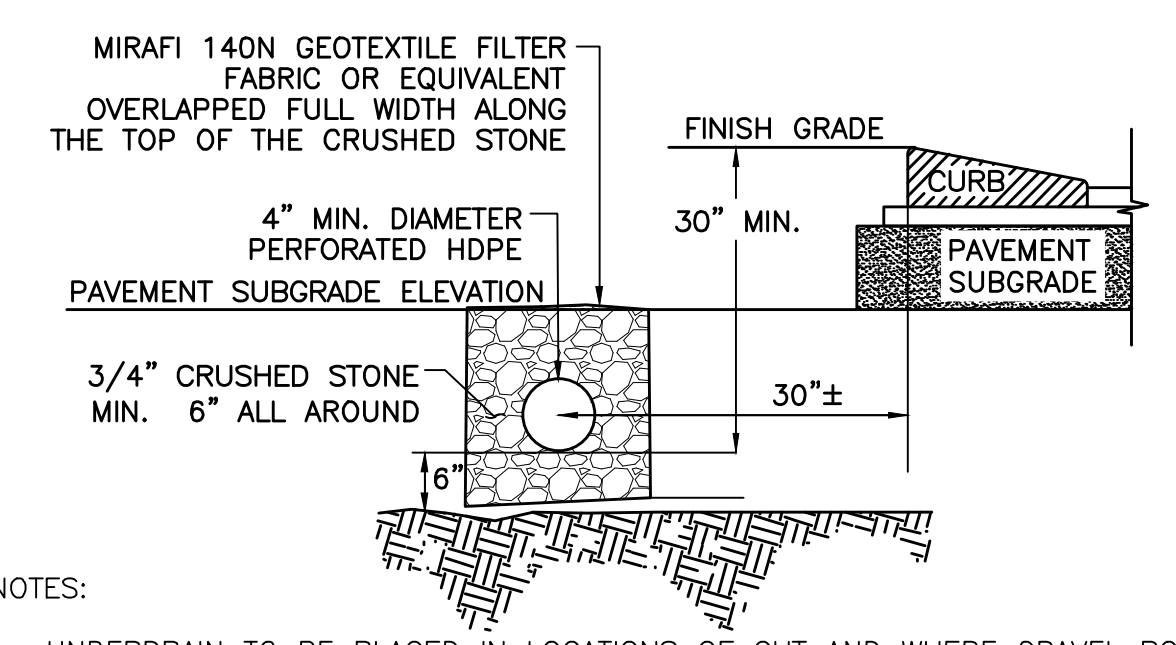
- NOTES:
- SEE LANDSCAPE PLAN FOR PLANT TYPES.
  - GRADING, AND PLANTING OF BIORETENTION SHALL BE COMPLETED IN EARLY PHASES OF CONSTRUCTION. PLANTS AND SEED ON SLOPES AND BOTTOM OF BASIN MUST BE ESTABLISHED PRIOR TO CONNECTING STORM DRAINAGE SYSTEM OUTLETS TO BIORETENTION AREA. PLANTS AND SEED MIX SHALL HAVE A MINIMUM OF 6 MONTHS GROWING, BE ESTABLISHED AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO CONNECTING STORM DRAINAGE SYSTEM OUTLETS TO BIORETENTION AREA.
  - EROSION CONTROL MEASURES AS SHOWN ON THE EROSION CONTROL PLAN, SHALL BE IN PLACE PRIOR TO ANY REGRADING ACTIVITY.
  - EXCAVATION, FILLING AND PLANTING SHALL OCCUR IN THE DRY. WATER LEVELS MUST BE LOWERED IN THE BIORETENTION AREA BY RELYING ON DRY SEASON AND OR DRY SPELLS; OR MAY BE ACCOMPLISHED THROUGH THE USE OF DEWATERING METHODS. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ANY DEWATERING METHODS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
  - WATER FROM ANY DEWATERING OPERATION SHALL BE TREATED TO REDUCE TOTAL SUSPENDED SOLIDS AND BE IN COMPLIANCE WITH STATE AND FEDERAL STANDARDS.
- CONSTRUCTION NOTES:
- DO NOT PLACE THE BIORETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
  - DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
  - DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

**BIORETENTION SYSTEM DETAIL**  
NOT TO SCALE



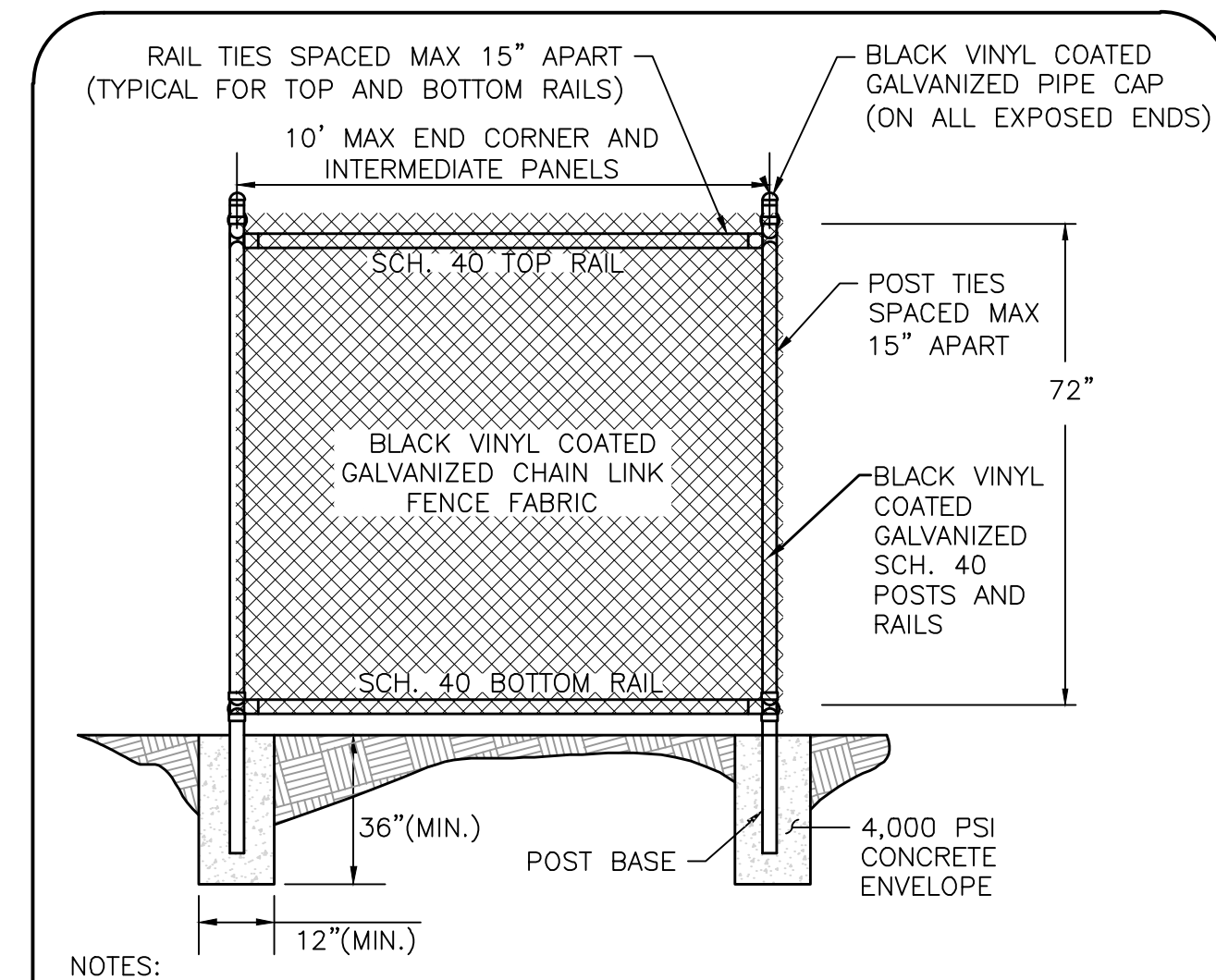
- NOTES:
- STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURE (1,030 LBS).
  - CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME).
  - MANUFACTURED AND DESIGNED TO ASTM C858.
  - THREE-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
  - SOIL UNDER BASE TO BE COMPACTED TO 95% STANDARD PROCTOR.
  - TWO-PIECE LIGHT DUTY GALVANIZED GRATE (34.5 LBS/PIECE) FOR 541 LB CONCENTRATED LOAD OR 309 LB/SQ FT UNIFORM LOAD.
  - TWO-PIECE HEAVY DUTY GALVANIZED GRATE (77.5 LBS/PIECE) FOR 2,456 LB CONCENTRATED LOAD OR 1,404 LB/SQ FT UNIFORM LOAD.
  - USE EXPANSION JOINT MATERIAL BETWEEN TURRET AND BIORETENTION INLET.
  - PLACE TUBULAR BARRIER ACROSS CURB BREAK DURING CONSTRUCTION TO PREVENT SEDIMENT FROM ENTERING BIORETENTION SYSTEM.

**RAIN GUARDIAN - TURRET TYPICAL DETAIL**  
NOT TO SCALE



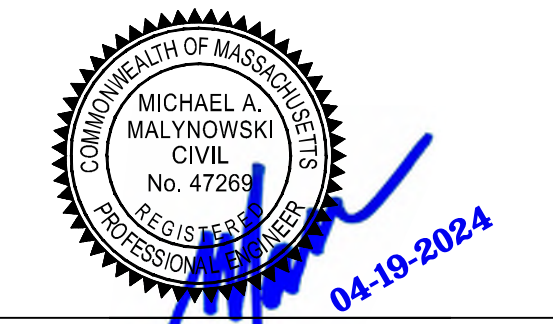
- NOTES:
- UNDERDRAIN TO BE PLACED IN LOCATIONS OF CUT AND WHERE GRAVEL ROAD BASE WILL BE BELOW EXISTING GRADE.
  - THE UNDERDRAIN SHALL CONSIST OF A 4 INCH DIAMETER PERFORATED HDPE PIPE SURROUNDED WITH AT LEAST 6 INCHES OF 3/4" STONE ALONG THE SIDES AND BOTTOM OF THE PIPE. CRUSHED STONE OVER THE TOP OF PIPE SHALL EXTEND UP TO THE PROPOSED PAVEMENT SUBGRADE ELEVATION.
  - THE CRUSHED STONE SHALL BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR APPROVED EQUAL) AND OVERLAPPED FULL WIDTH ON THE TOP.
  - THE PIPE SHALL BE LAID FLAT AND SHALL CONNECT TO A SOLID PIPE BEFORE GOING UNDER ANY PAVEMENT AREAS.
  - THE BOTTOM OF THE PIPE SHALL BE AT LEAST 30 INCHES BELOW THE PROPOSED FINISH GRADE.

**DRIVEWAY UNDERDRAIN**  
NOT TO SCALE



- NOTES:
- TENSION BARS AND TENSION BRACES INSTALLED AT CORNERS AND ENDS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO PURCHASE OF MATERIALS.

**72\"/>**



PROFESSIONAL ENGINEER FOR  
ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION
3	04-18-24	MISC. UPDATES PER TOWN COMMENTS
2	04-01-24	MISC. UPDATES PER TOWN COMMENTS
1	02-27-24	MISC. UPDATES PER TOWN COMMENTS

APPLICANT/OWNER:  
**DONEGAL, LLC**  
PO BOX 4430  
MANCHESTER, NH 03108

PROJECT:  
**PROPOSED INDUSTRIAL BUILDING**  
6 FORGE PARKWAY  
FRANKLIN, MA  
PARCEL ID: 272-005-000-000

PROJECT NO. 1362-25 DATE: 02-05-24

SCALE: AS SHOWN DWG.: C-1362-25\_Details

DESIGNED BY: SM CHECKED BY: MAM

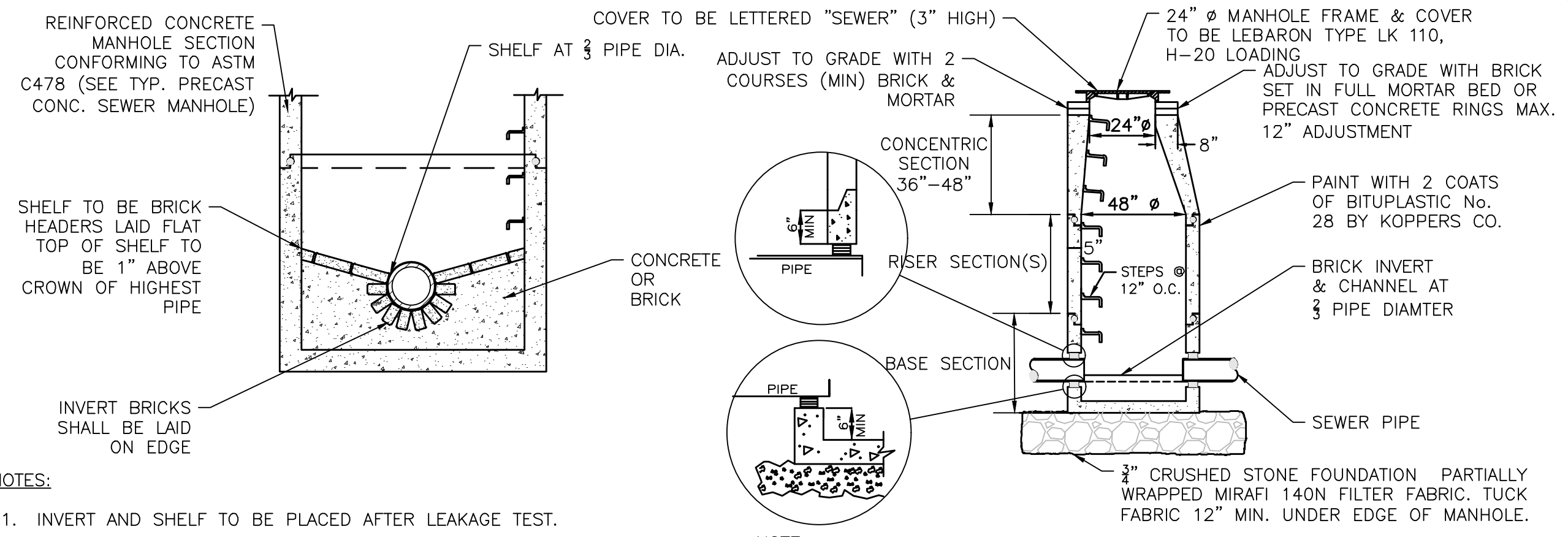
PREPARED BY:



WOBURN, MA • LAKEVILLE, MA • MANCHESTER, NH

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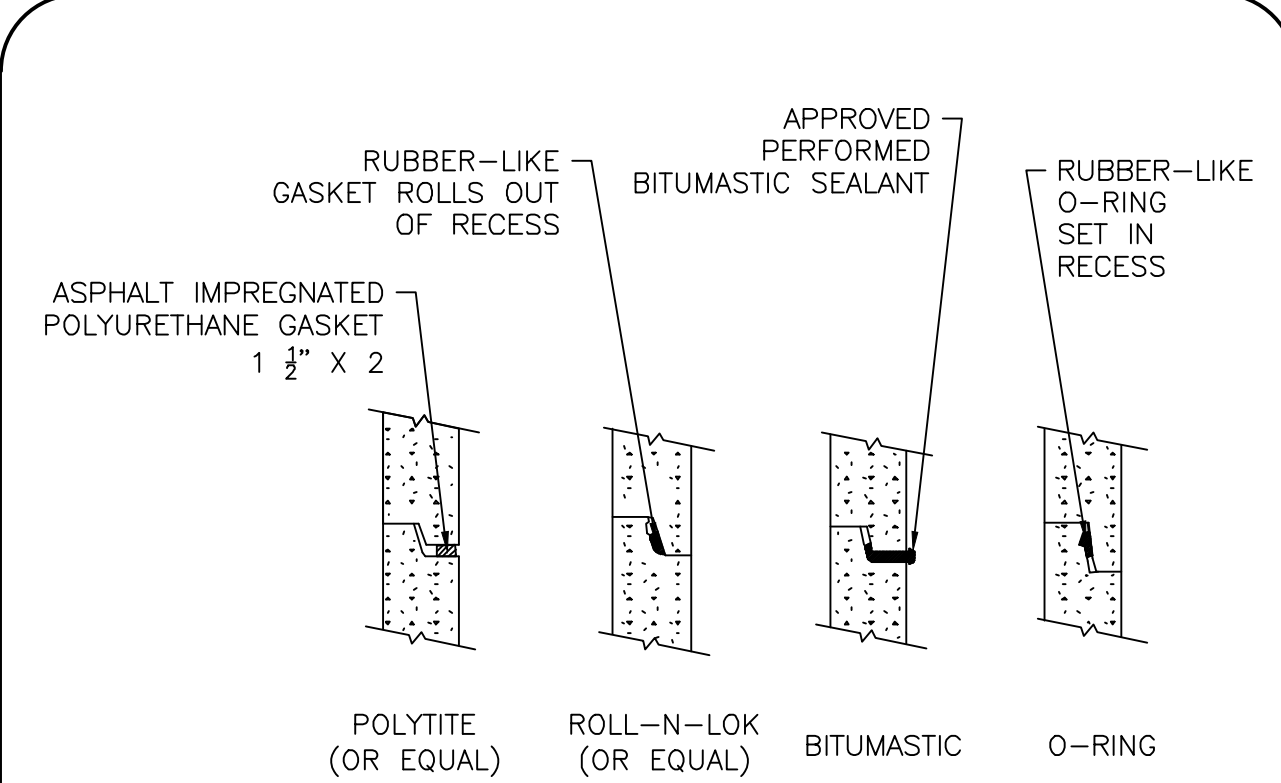
DRAWING TITLE: **DETAILS** SHEET No. **C-503**



- NOTES:**
1. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
  2. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF CEMENT CONCRETE OR BRICK IN MORTAR.

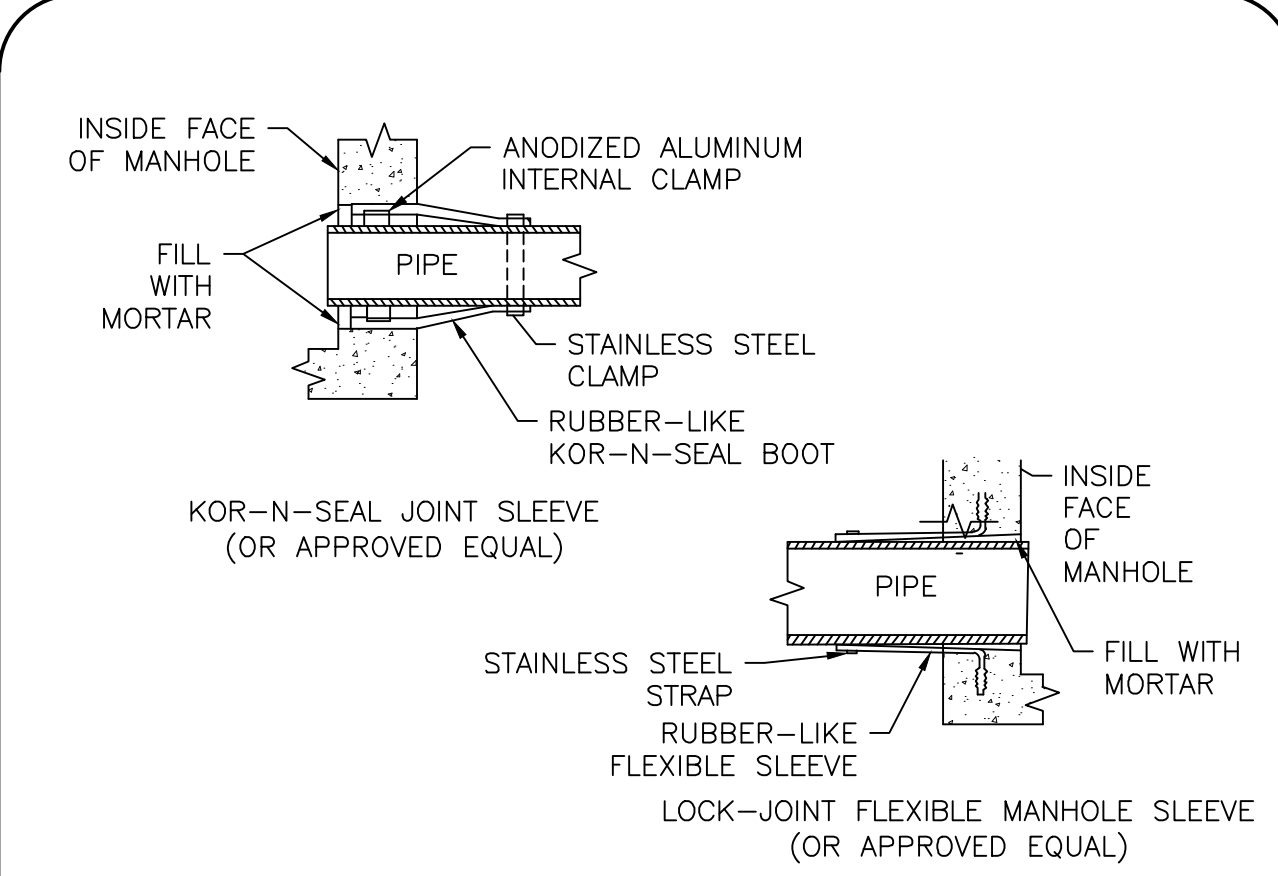
**NOTE:**  
THE MANHOLE, INCLUDING ALL COMPONENT PARTS, SHALL HAVE ADEQUATE SPACE, STRENGTH AND LEAK PROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE SPACE REQUIREMENT AND CONFIGURATIONS SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OR PRECAST SECTIONS, WITH OR WITHOUT STEEL REINFORCEMENT, WITH ADEQUATE JOINTING OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE.

**PRECAST CONCRETE SEWER MANHOLE**  
NOT TO SCALE



- NOTES:**
1. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH SHALL, IN GENERAL, DEPEND FOR WATER TIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET.
  2. ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
  3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.

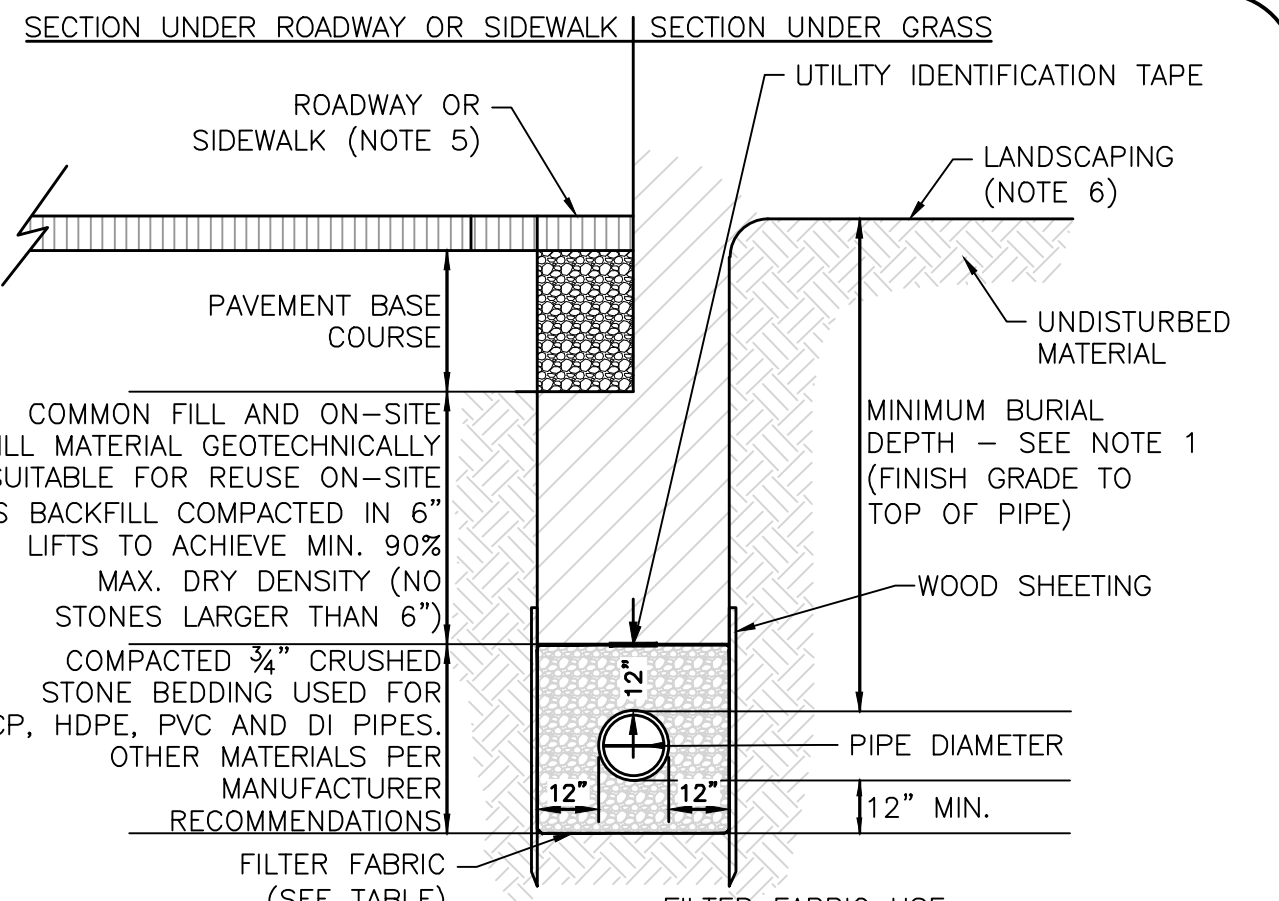
**SEWER MANHOLE JOINTING METHODS**  
NOT TO SCALE



- NOTES:**
1. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND FOR WATER TIGHTNESS UPON ELASTOMETRIC SEALANT
  2. NON-SHRINKING MORTAR SHALL ONLY BE USED WHERE SPECIFICALLY APPROVED BY THE ENGINEER.

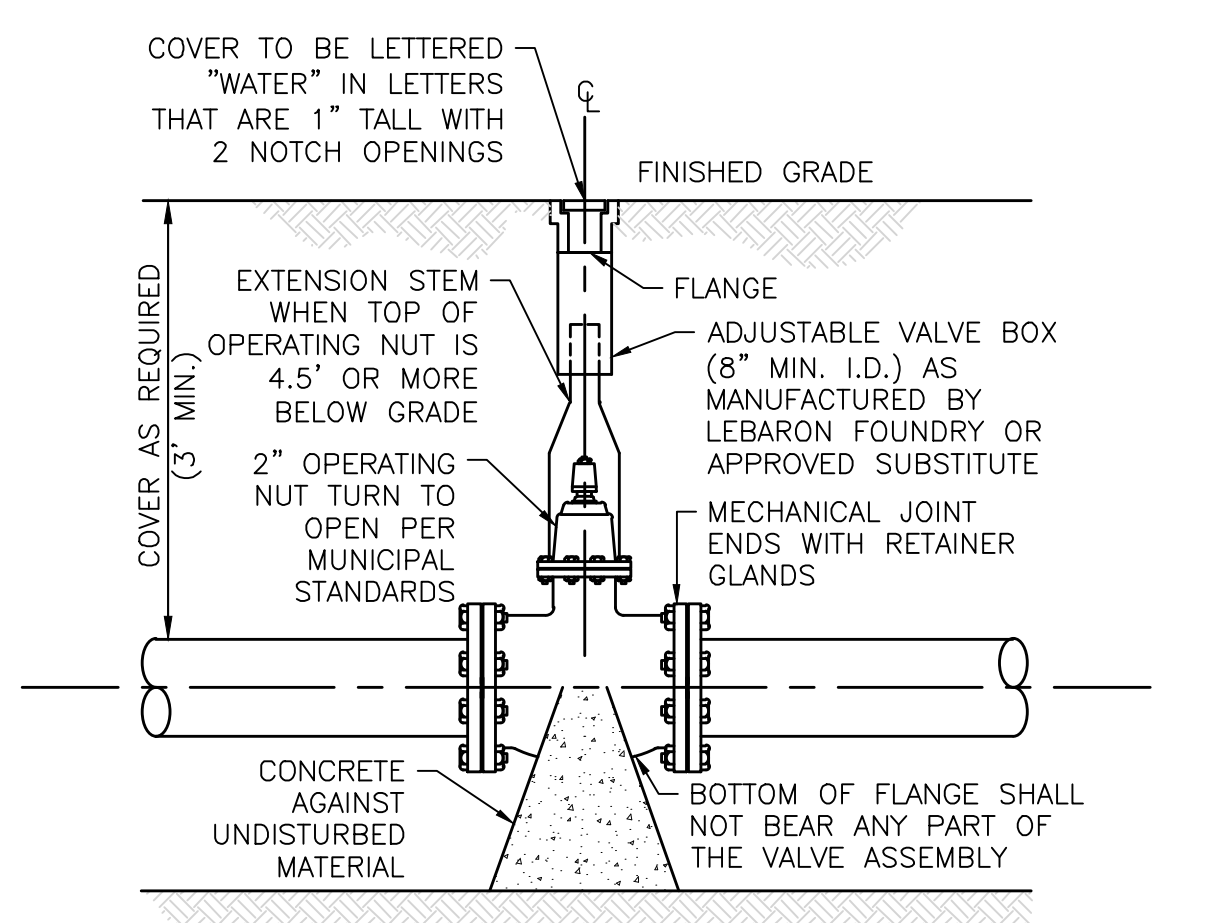
**PIPE CONNECTION TO SEWER MANHOLE**  
NOT TO SCALE

- NOTES:**
1. MINIMUM BURIAL DEPTH (FINISH GRADE TO TOP OF PIPE)
    - GRAVITY PIPE (SEWER & DRAIN) - SEE PLAN OR PROFILE, PROVIDE INSULATION WHERE COVER IS LESS THAN 4' OVER SEWER
    - PRESSURE PIPE UNDER PAVING - 4'
    - PRESSURE PIPE BENEATH UNPAVED - 3'
    - WATER PIPE - 5'
  2. WHERE BACKFILL IS DESIGNATED AS COMPACTED, THIS MEANS 90 TO 95% STANDARD PROCTOR, AASHTO T-99. ALL FILL PLACED BELOW PIPES AND STRUCTURES MUST MEET THIS REQUIREMENT.
  3. TRENCHES WITHIN PUBLIC RIGHT OF WAY MAY REQUIRE FLOWABLE FILL. VERIFY WITH MUNICIPAL ENGINEER.
  4. WHERE WASTE FILLS ARE ENCOUNTERED AT SUBGRADE LEVEL FOR NEW UTILITIES, THE FILL SHOULD BE OVER-EXCAVATED, THE SUBGRADE SHOULD BE RE-COMPACTED, AND BACKFILL CONSISTING OF PIPE BEDDING MATERIAL, CRUSHED STONE OR OTHER SUITABLE GRANULAR FILL SHOULD BE PLACED TO A SUFFICIENT DEPTH TO CREATE A FIRM AND STABLE SUBGRADE (TYPICALLY 12 TO 18 INCHES OVER-EXCAVATION).
  5. REFER TO PAVING, CURBS, WALKS AND DRIVEWAY DETAILS.
  6. REFER TO LANDSCAPING DETAILS.
  7. SHEETING, WHEN REQUIRED, TO BE CUT OFF AT LEAST 5' BELOW STREET AND A MINIMUM OF 1' ABOVE TOP OF PIPE. WOOD SHEETING DRIVEN BELOW MID-DIAMETER OF THE PIPE SHALL BE LEFT IN PLACE. STEEL SHEETING DRIVEN BELOW MID-DIAMETER MAY BE WITHDRAWN IF APPROVED IN WRITING BY THE ENGINEER. FOR PVC PIPE ALL SHEETING DRIVEN BELOW MID-DIAMETER SHALL BE LEFT IN PLACE.
  8. WHEN APPROVED BY THE ENGINEER FOR PIPES OTHER THAN PVC, SELECTED GRAVEL FILL MATERIAL MAY BE USED FROM MID-DIAMETER OF PIPE TO 12" ABOVE TOP OF PIPE. NO STONES LARGER THAN 2" IN ANY DIMENSION WILL BE PERMITTED IN THIS AREA - MASSDOT MATERIAL STANDARD M1.03.0 TYPE C.
  9. PROVIDE AT LEAST ONE IMPERVIOUS DAM IN GRAVEL BEDDING BETWEEN EACH MANHOLE WHERE DIRECTED, OR EVERY 300 FT, WHICHEVER IS LESS.
  10. BEDDING MATERIAL FOR PVC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D2321 CLASS I OR CLASS II EMBEDMENT MATERIALS.



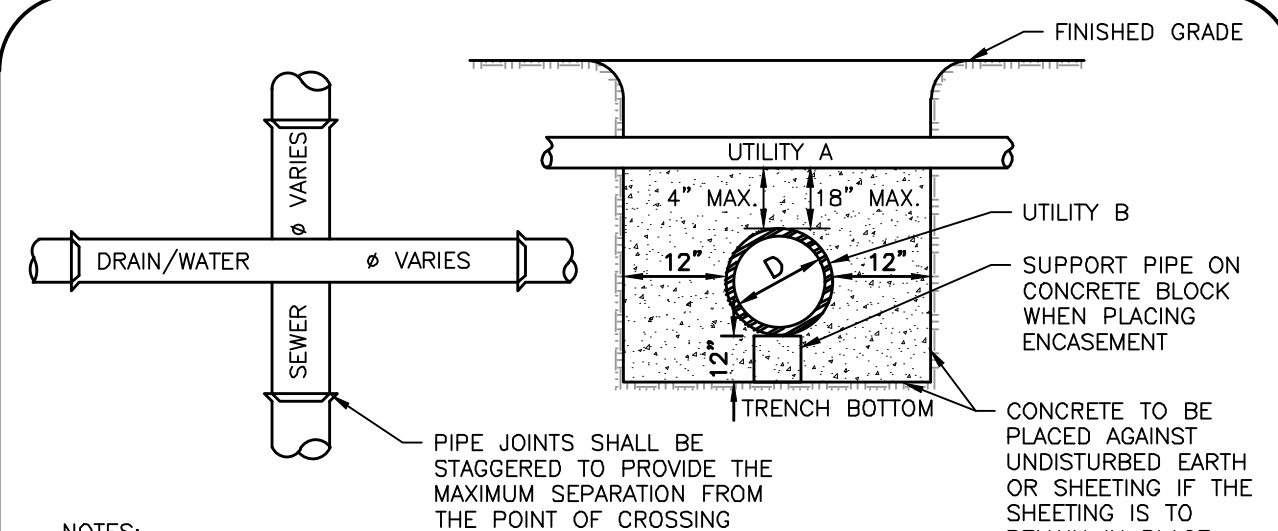
	SOIL TYPE	
	SILT OR CLAY	GRANULAR SOIL
ABOVE GROUND WATER	FILTER FABRIC NOT REQUIRED	FILTER FABRIC NOT REQUIRED
BELOW GROUND WATER	FILTER FABRIC REQUIRED	FILTER FABRIC NOT REQUIRED

**UTILITY TRENCH DETAIL**  
NOT TO SCALE



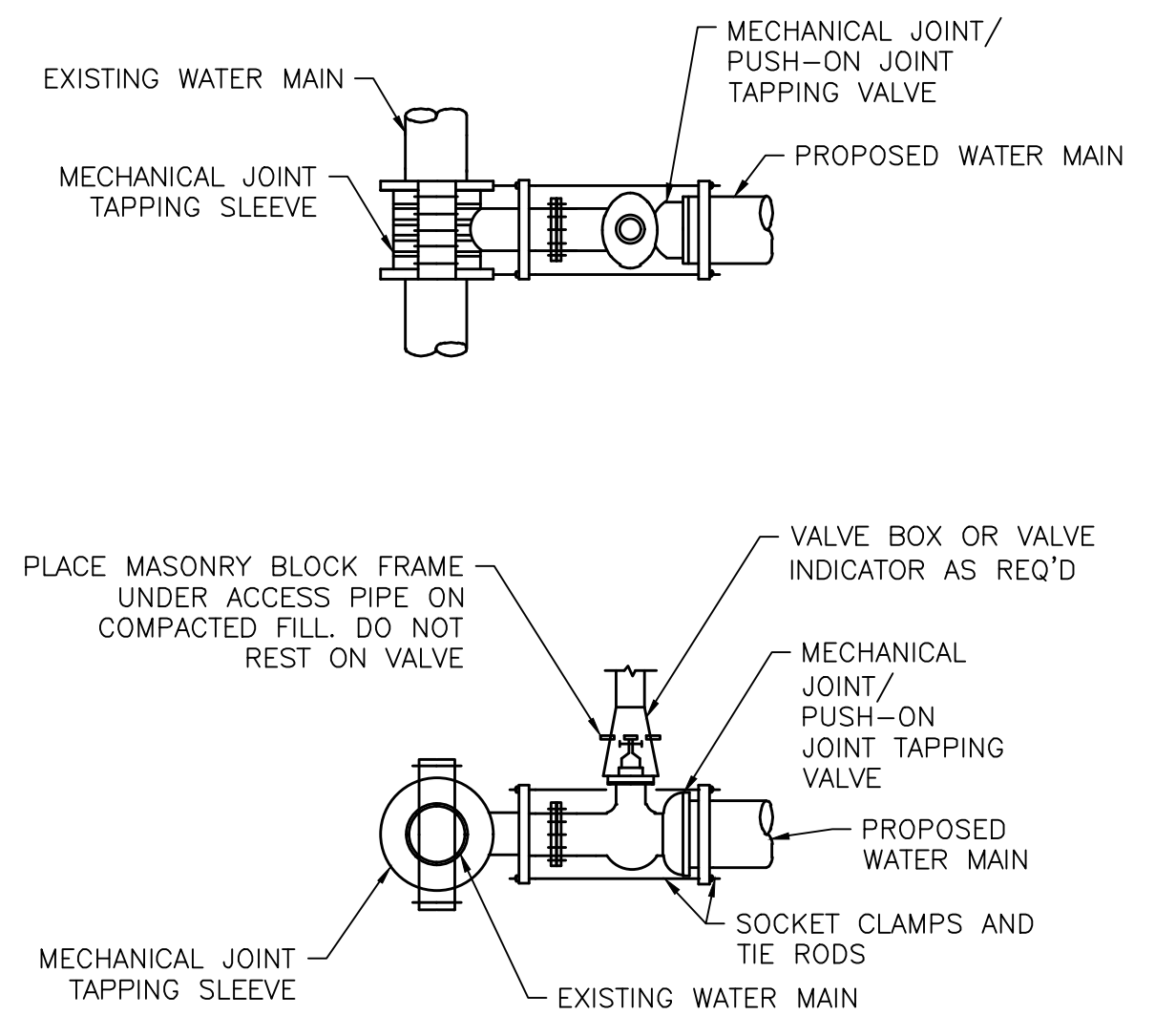
- NOTE:**
1. CONTRACTOR MAY USE ANCHOR TEES AT HIS OPTION.
  2. HYDRANTS AND VALVES TO OPERATE PER MUNICIPAL STANDARDS

**GATE VALVE**  
NOT TO SCALE

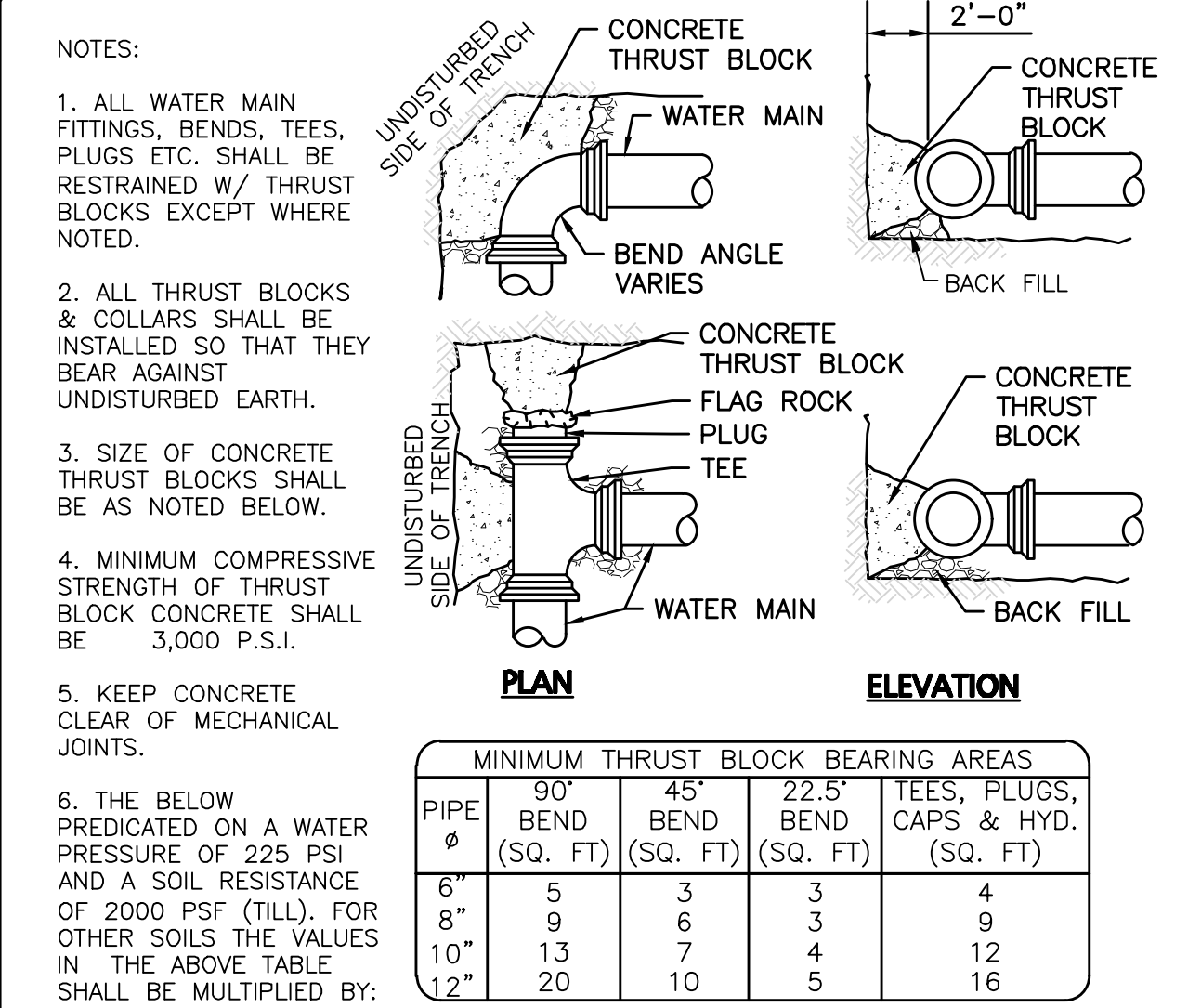


- NOTES:**  
WHENEVER CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET BETWEEN A SEWER MAIN AND A WATER/DRAIN MAIN:
1. THE WATER/DRAIN MAIN SHALL BE LAID IN A SEPARATE TRENCH AND THE DIFFERENCE IN ELEVATION BETWEEN THE WATER/DRAIN MAIN AND THE SEWER MAIN SHALL BE AT LEAST 18 INCHES.
  2. THE PIPE CROSSING SHALL OCCUR AS CLOSE TO 90° AS PRACTICABLE.
  3. THE PIPE JOINTS SHALL BE STAGGERED TO PROVIDE THE MAXIMUM SEPARATION FROM THE POINT OF CROSSING.
  4. THE CROSSING SHALL BE ENCASED IN CONCRETE FOR THE ENTIRE WIDTH OF THE TRENCH AND FOR A DISTANCE OF 10 LINEAR FEET CENTERED ON THE CROSSING.
  5. UTILITIES A AND B CAN BE EITHER NEW OR EXISTING.
  6. WHEN ONE UTILITY IS A SANITARY SEWER, IT IS PREFERABLE TO BE POSITIONED AS SHOWN FOR UTILITY B.
  7. ENCASUREMENT EXTENDS 10'-0" ON EACH SIDE OF THE CENTERLINE OF UTILITY A.
  8. PIPE MUST BE BRACED VERTICALLY AND HORIZONTALLY TO PREVENT FLOATATION DURING PLACEMENT OF CONCRETE.

**SEWER WATER/DRAIN CROSSING**  
NOT TO SCALE



**TAPPING VALVE AND SLEEVE**  
NOT TO SCALE

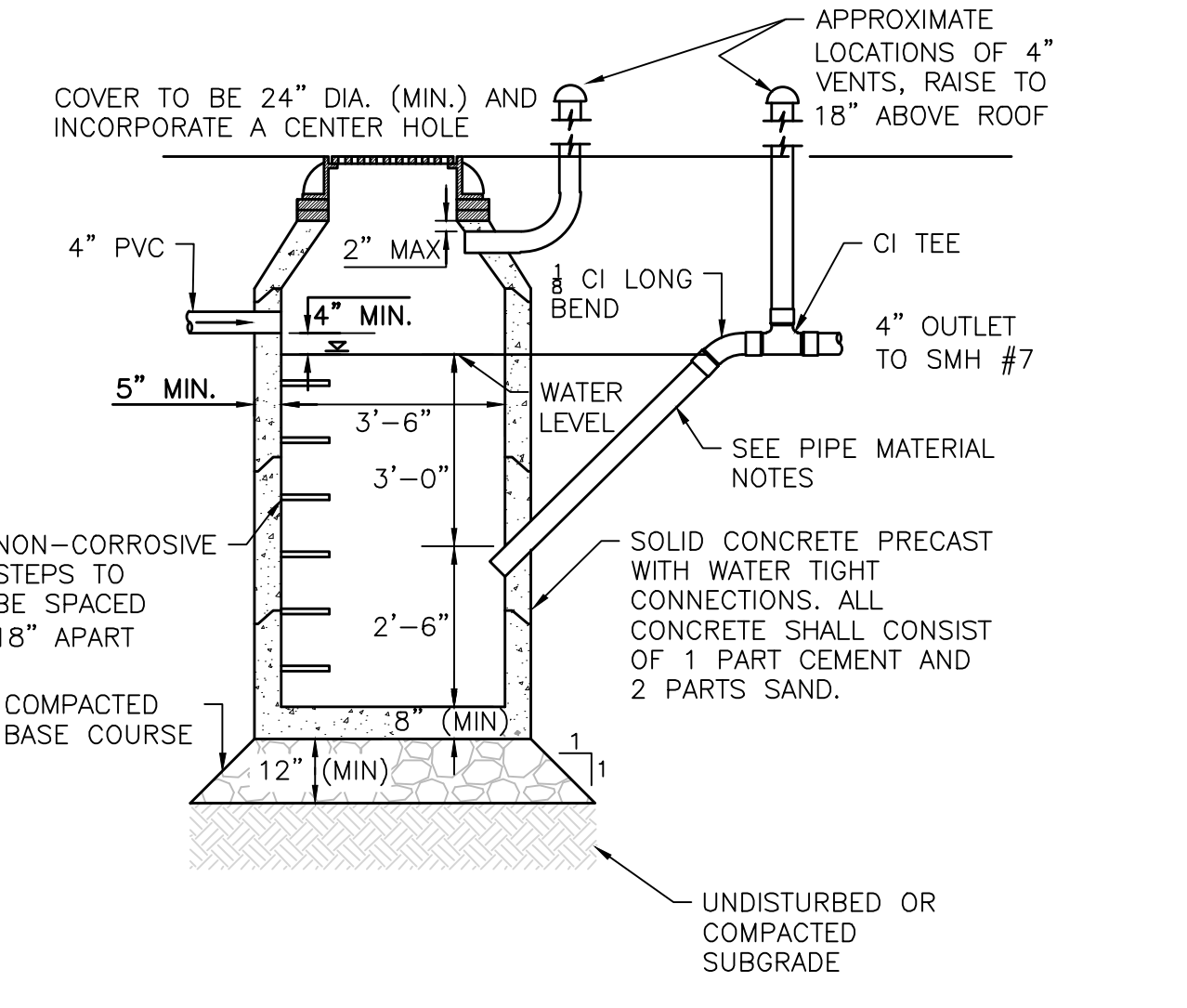


- NOTES:**
1. ALL WATER MAIN FITTINGS, BENDS, TEES, PLUGS ETC. SHALL BE RESTRAINED W/ THRUST BLOCKS EXCEPT WHERE NOTED.
  2. ALL THRUST BLOCKS & COLLARS SHALL BE INSTALLED SO THAT THEY BEAR AGAINST UNDISTURBED EARTH.
  3. SIZE OF CONCRETE THRUST BLOCKS SHALL BE AS NOTED BELOW.
  4. MINIMUM COMPRESSIVE STRENGTH OF THRUST BLOCK CONCRETE SHALL BE 3,000 P.S.I.
  5. KEEP CONCRETE CLEAR OF MECHANICAL JOINTS.
  6. THE BELOW PREDICATED ON A WATER PRESSURE OF 225 PSI AND A SOIL RESISTANCE OF 2000 PSF (TILL). FOR OTHER SOILS THE VALUES IN THE ABOVE TABLE SHALL BE MULTIPLIED BY:

PIPE Ø	90° BEND (SQ. FT.)		45° BEND (SQ. FT.)		22.5° BEND (SQ. FT.)		TEES, PLUGS, CAPS & HYD. (SQ. FT.)
	6"	8"	10"	12"	6"	8"	
6"	5	3	3	3	4	4	
8"	9	6	3	3	9	9	
10"	13	7	4	4	12	12	
12"	20	10	5	5	16	16	

**THRUST BLOCK DETAILS**  
NOT TO SCALE

- PIPE MATERIAL NOTES:**
1. NO-HUB CAST IRON WITH PRODUCT-APPROVED STAINLESS STEEL CLAMPS.
  2. SERVICE WEIGHT CAST IRON WITH PRODUCT-APPROVED RESILIENT GASKETS OR LEAD AND OAKUM JOINTS.
  3. EXTRA HEAVY CAST IRON WITH PRODUCT-APPROVED RESILIENT GASKETS OR LEAD AND OAKUM JOINTS.
- GENERAL CONSTRUCTION NOTES:**
1. SEPARATOR TO BE LOCATED OUTSIDE WHERE POSSIBLE, WHEN LOCATED OUTSIDE, MANHOLE SHALL HAVE A CENTER HOLE.
  2. SEPARATOR SHALL BE LOCATED AND CONSTRUCTED TO PREVENT SURFACE OR SUB-SURFACE WATER FROM ENTERING.
  3. OUTLET TO BE BELOW FROST LINE.
  4. SEPARATOR MUST BE FILLED WITH CLEAN WATER AND LEAK TESTED BEFORE BEING INTRODUCED INTO SERVICE.
  5. OIL AND GAS TO BE REMOVED BEFORE CLEANING AND SHALL NOT BE DISCHARGED TO THE SEWER THROUGH ANY FIXTURES.
  6. INLET SHALL BE SET A MINIMUM OF THREE FEET BELOW GRADE



**GAS AND OIL SEPARATOR**  
NOT TO SCALE



PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

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3	04-18-24	MISC. UPDATES PER TOWN COMMENTS
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APPLICANT/OWNER:

DONEGAL, LLC  
PO BOX 4430  
MANCHESTER, NH 03108

**PROJECT:**  
**PROPOSED INDUSTRIAL BUILDING**  
6 FORGE PARKWAY  
FRANKLIN, MA  
PARCEL ID: 272-005-000-000

PROJECT NO. 1362-25 DATE: 02-05-24

SCALE: AS SHOWN DWG.: C-1362-25\_Details

DESIGNED BY: SM CHECKED BY: MAM

PREPARED BY:



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DRAWING TITLE: DETAILS SHEET No. C-507