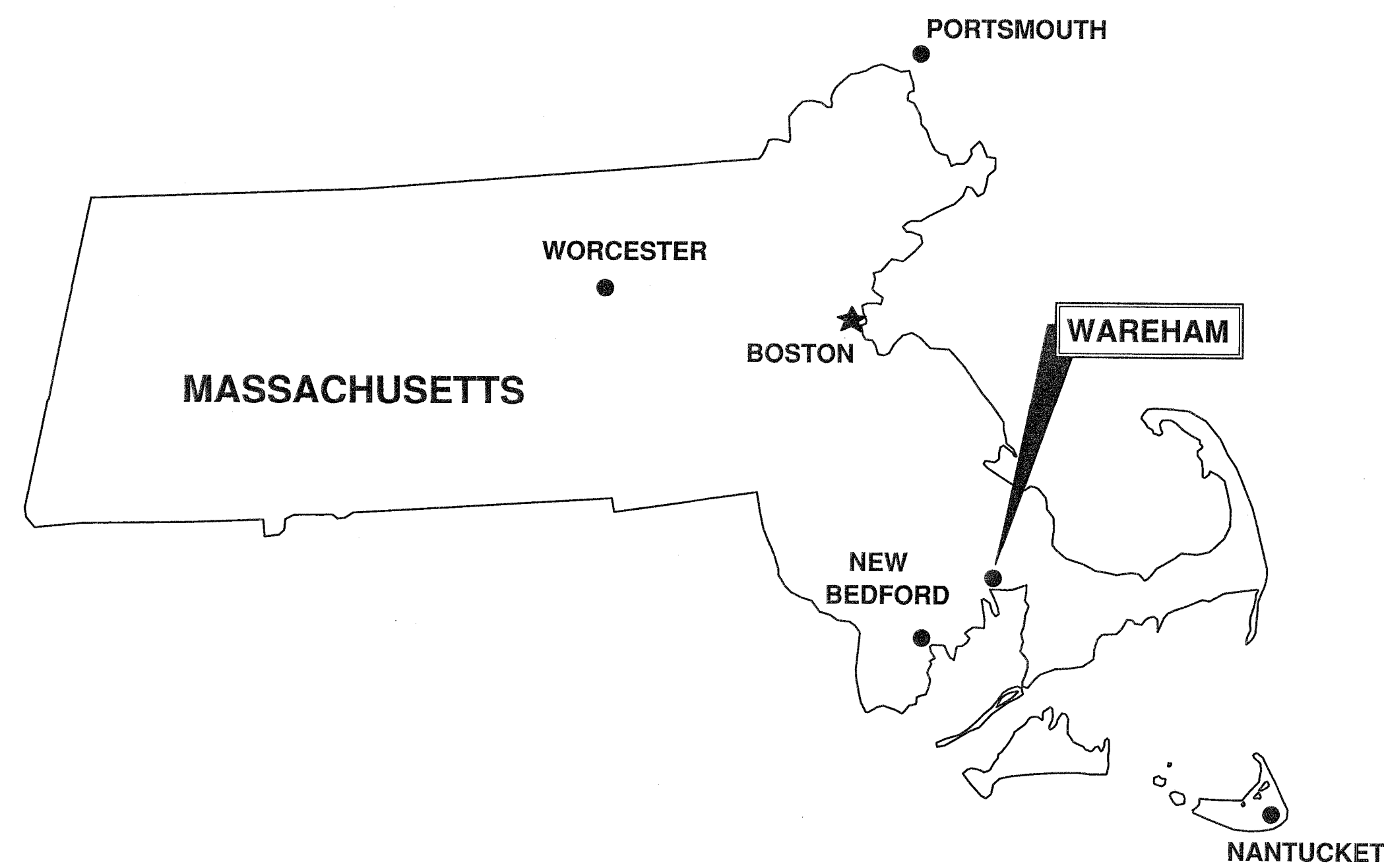


TOWN OF WAREHAM, MASSACHUSETTS

RFP 2023-02

NARROWS PUMP STATION FORCE MAIN REHABILITATION

SEPTEMBER 2023

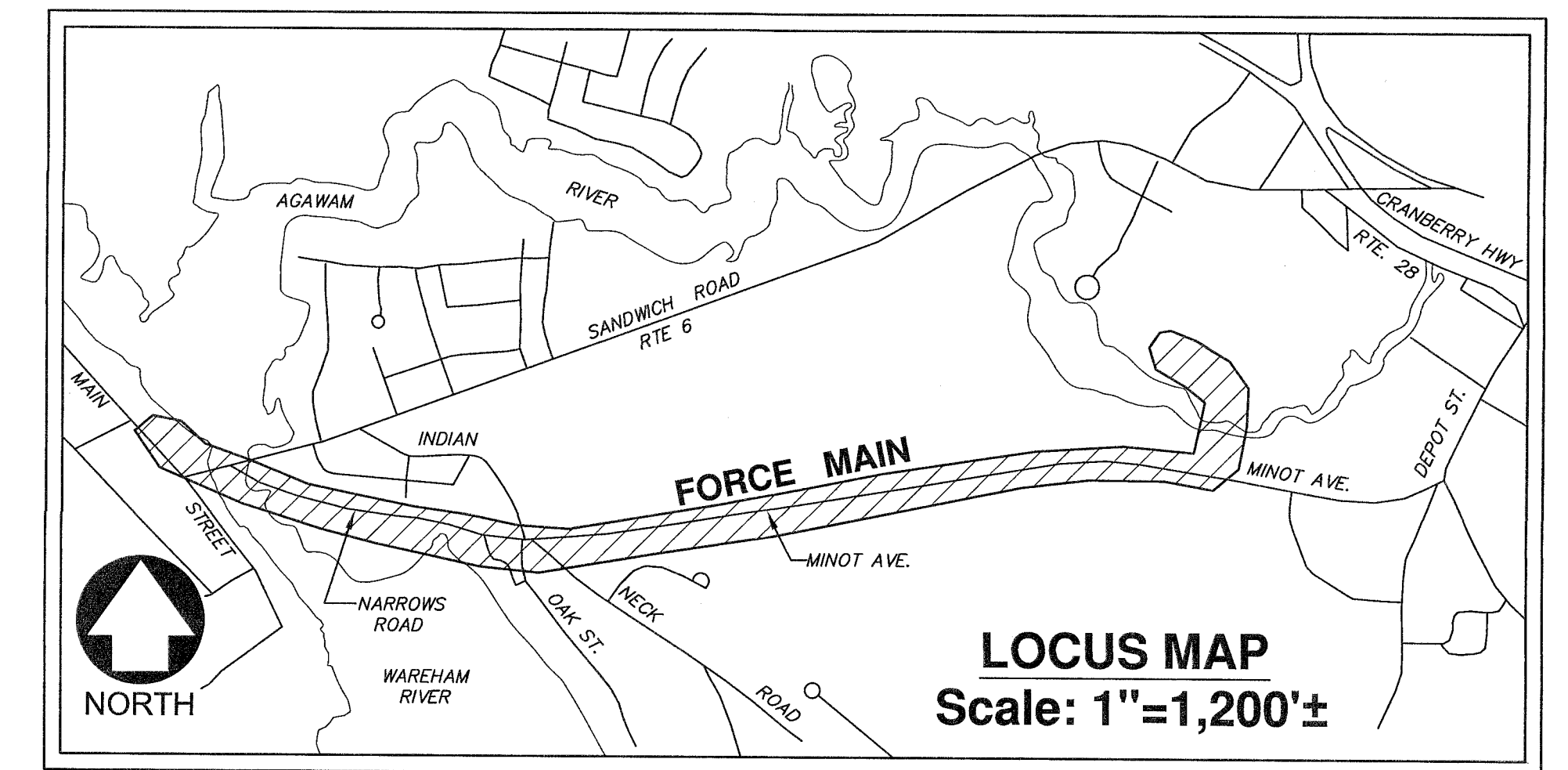


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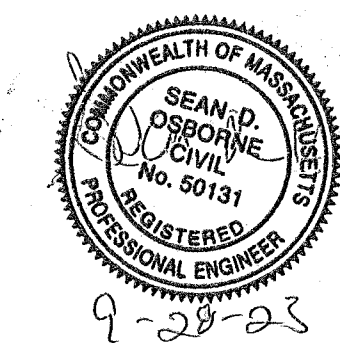
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TOWN MANAGER
DEREK SULLIVAN

SEWER DEPARTMENT
GUY CAMPINHA SR.
DIRECTOR OF WATER POLLUTION CONTROL

OSD ENGINEERING CONSULTANTS
LEXINGTON, MASSACHUSETTS



9-20-23

GENERAL NOTES

- THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR THIS PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE APPLICABLE PROVISIONS OF EACH PERMIT AS THEY APPLY TO THE WORK PRIOR TO BIDDING AND ABIDE BY THOSE PROVISIONS DURING CONSTRUCTION.
- SOME LAND BETWEEN WAREHAM RIVER AND THE WAREHAM WATER POLLUTION CONTROL FACILITY HAS BEEN DESIGNATED AS AN "ESTIMATED HABITAT OF RARE WILDLIFE" OR A "PRIORITY HABITAT OF RARE SPECIES" BY THE NATURAL HABITAT AND ENDANGERED SPECIES PROGRAM (NHESP). PRIOR TO CONDUCTING ANY WORK, CONTRACTOR SHALL CONTACT THE SOUTHEASTERN MASSACHUSETTS NHESP OFFICE AT 508-389-6385 TO DETERMINE IF ANY REGULATORY REQUIREMENTS APPLY. CONTRACTOR SHALL COMPLY WITH ANY AND ALL APPLICABLE REGULATIONS.
- THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY RIGHTS OF WAY AND EASEMENTS. THE CONTRACTOR SHALL VERIFY THAT THE NECESSARY EASEMENTS HAVE BEEN SECURED BY THE OWNER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE APPLICABLE PROVISIONS OF EACH EASEMENT AS IT APPLIES TO THE WORK PRIOR TO BIDDING AND ABIDE BY THOSE PROVISIONS DURING CONSTRUCTION. COPIES OF ALL RIGHTS-OF-WAY AND EASEMENTS ARE AVAILABLE FOR REVIEW FROM THE OWNER.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW AT ALL TIMES. CONTRACTOR SHALL INSTALL AND MAINTAIN TRAFFIC CONTROL SIGNS IN ACCORDANCE WITH THE MUTCD AND ALL STATE AND LOCAL REGULATIONS. THE CONTRACTOR IS REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN TO THE OWNER PRIOR TO COMMENCING CONSTRUCTION. THE WAREHAM POLICE DEPARTMENT AND WAREHAM FIRE DEPARTMENT ARE TO BE NOTIFIED AT LEAST 24-HOURS IN ADVANCE OF ANY STREET CLOSING OR DETOUR.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
- CONTRACTOR, AT NO ADDITIONAL COST TO THE TOWN, SHALL COMPLY WITH THE COORDINATION REQUIREMENTS DESCRIBED IN THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL NOTE THAT, IN GENERAL, ALL EXISTING CONDITION INFORMATION ON THE DRAWINGS IS SHOWN WITH A LIGHTER LINE WEIGHT.
- ALL EXISTING GRAVITY SEWER AND STORM DRAIN LINES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE. ANY EXISTING GRAVITY SEWERS, STORM DRAIN LINES OR CULVERTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER, EXCEPT WHEN NOT SHOWN OR INDICATED.
- ALL STRUCTURES AND PIPELINES LOCATED ADJACENT TO TRENCH EXCAVATION SHALL BE PROTECTED AND FIRMLY SUPPORTED BY THE CONTRACTOR UNTIL THE TRENCH IS BACKFILLED. INJURY TO ANY SUCH STRUCTURES CAUSED BY OR RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE RESPECTIVE UTILITY.
- IN THOSE INSTANCES WHERE POWER OR TELEPHONE POLE SUPPORT IS REQUIRED, THE CONTRACTOR SHALL PROVIDE A MINIMUM 48-HOUR NOTICE TO THE RESPECTIVE UTILITY POLE OWNER. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR TEMPORARY BRACING OF UTILITIES.
- STATE HIGHWAYS: SANDWICH ROAD AND THE SANDWICH ROAD BRIDGE FALL WITHIN THE JURISDICTION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION. ALL WORK CONDUCTED WITHIN THESE ROADWAYS SHALL CONFORM TO MASSDOT STANDARDS AND ROAD OPENING PERMIT REQUIREMENTS.
- ALL TEST PITS SHALL BE EXCAVATED PRIOR TO CONSTRUCTION LAYOUT AND RESULTS REPORTED TO THE ENGINEER FOR REVIEW FOR CONFORMANCE WITH THE PLANS. TESTS PITS ARE REQUIRED WHERE SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER. TEST PITS WILL BE DUG PRIOR TO THE START OF CONSTRUCTION. THE RESULTS OF TEST PITS WILL BE REPORTED TO THE ENGINEER AT LEAST 10 DAYS PRIOR TO ANY WORK. ADJUSTMENTS TO LENGTHS OF PROPOSED SEWER LINING MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL AT ALL TIMES CONDUCT OPERATIONS SO AS TO INTERFERE AS LITTLE AS POSSIBLE WITH EXISTING WORKS. THE CONTRACTOR SHALL DEVELOP A PROGRAM, IN COOPERATION WITH THE ENGINEER AND INTERESTED OFFICIALS, WHICH SHALL PROVIDE FOR THE CONSTRUCTION AND PUTTING INTO SERVICE OF THE NEW WORKS IN THE MOST ORDERLY MANNER POSSIBLE. THIS PROGRAM SHALL BE ADHERED TO EXCEPT AS DEVIATIONS THEREFROM ARE EXPRESSLY PERMITTED.
- CONNECTIONS SHALL BE AS FIELD DETERMINED THROUGH CCTV INSPECTION AND AS STATED IN THE CONTRACT DOCUMENTS.
- INITIAL PAVING SHALL BE CONDUCTED WITHIN TWO WEEKS OF COMPLETION OF PLACEMENT OF FINAL BACKFILL UNLESS OTHERWISE AUTHORIZED BY ENGINEER. INITIAL PAVEMENT SHALL BE INSTALLED AND MAINTAINED BY CONTRACTOR FOR A MINIMUM PERIOD OF TWO MONTHS BEFORE FINAL PAVEMENT IS PLACED. THE BASE COURSE PAVING SHALL BE INSTALLED PRIOR TO WINTER AND THE FINAL PAVING SHALL BE INSTALLED NO LATER THAN THE SPRING OF 2025. FINAL PAVEMENT MAY BE PLACED OVER THE INITIAL PAVING PROVIDED INITIAL PAVING COURSE IS IN GOOD REPAIR. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND SHIMMING THE INITIAL PAVEMENT AS NECESSARY TO ACCEPT THE FINAL PAVING COURSE. IF CONDITIONS WARRANT, THE CONTRACTOR MAY BE REQUIRED TO REMOVE AND REPLACE INITIAL PAVING PRIOR TO FINAL PAVING.
- THE RIGHT-OF-WAY FOR ROADS AND PERMANENT EASEMENT BOUNDARIES ARE THE CONSTRUCTION LIMITS.
- THE TEMPORARY BYPASS SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AND SHALL REMAIN IN PLACE AND ADEQUATELY SUPPORTED THROUGHOUT CONSTRUCTION UNTIL THE WORK IS COMPLETE.
- ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL NOTIFY DIGSAFE AT LEAST 72 HOURS IN ADVANCE, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO ANY EXCAVATION.
- DO NOT SCALE DRAWINGS UNLESS OTHERWISE NOTED. WRITTEN DIMENSIONS AND STATIONING SHALL PREVAIL. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
- THE CONTRACTOR SHALL RESTORE ALL PROPERTY TO ITS PRE-CONSTRUCTION CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON INFORMATION OBTAINED FROM AVAILABLE DRAWINGS AND RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL ELEVATIONS, DIMENSIONS, ANGLES AND EXISTING CONDITIONS AT THE WORK SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- ALL EXISTING SEWER FORCE MAIN LINES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE UNLESS OTHERWISE NOTED. THE CONTRACTOR AT NO ADDITIONAL COST TO THE TOWN SHALL REPAIR ANY EXISTING INFRASTRUCTURE DAMAGED DURING CONSTRUCTION.
- IN THOSE INSTANCES WHERE POWER OR TELEPHONE POLE SUPPORT IS REQUIRED, THE CONTRACTOR SHALL PROVIDE A MINIMUM 48-HOUR NOTIFICATION TO THE RESPECTIVE UTILITY COMPANY. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR TEMPORARY BRACING OF UTILITIES.
- DAMAGE TO ANY STRUCTURES CAUSED BY OR RESULTING FROM THE CONTRACTORS OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. ALL UTILITIES REQUIRING REPAIR, RELOCATION, OR ADJUSTMENT AS A RESULT OF THE PROJECT SHALL BE COORDINATED THROUGH THE RESPECTIVE UTILITY AND THE TOWN.
- THE CONTRACTOR IS TO TAKE SPECIAL CARE NOT TO DAMAGE TREES, BUSHES, PLANTS, FLOWERS, STONEMANS, FENCES, ETC. WITHIN THE CONSTRUCTION AREA UNLESS THEY ARE NOTED TO BE REMOVED. CONTRACTOR SHALL REPLACE ALL DAMAGED ITEMS AT NO ADDITIONAL COST TO OWNER.
- THE CONTRACTOR SHALL REMOVE AND REPLACE NEW, OR REPAIR, ALL CURBS, SIDEWALKS, PAVEMENT AND OTHER ITEMS DAMAGED BY HIS/HER CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, AND TO THE SATISFACTION OF THE OWNER AND ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL BE REQUIRED TO FURNISH AND MAINTAIN A TELEPHONE NUMBER WHERE THE CONTRACTOR CAN BE REACHED 24 HOURS A DAY, 7 DAYS A WEEK UNTIL THE PROJECT HAS REACHED SUBSTANTIAL COMPLETION.
- THE LOCATION AND LIMITS OF ALL ON-SITE WORK AND STORAGE AREAS SHALL BE REVIEWED/COORDINATED WITH, AND ACCEPTABLE TO, THE OWNER AND THE ENGINEER. THE CONTRACTOR SHALL LIMIT HIS ACTIVITIES TO THESE AREAS.
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR WORK IN ROADWAYS AND EASEMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL PERMITS AS AN INTEGRAL PART OF HIS/HER WORK.
- CONSTRUCTION WORK HOURS WILL BE MONDAY THROUGH FRIDAY, 7:00 AM - 3:30 PM, EXCEPT FOR FEDERAL, STATE, AND LOCAL HOLIDAYS. ALL PROPOSED WORK TO BE PERFORMED OUTSIDE NORMAL WORKING HOURS MUST BE SUBMITTED TO THE ENGINEER IN WRITING AT LEAST 7-DAYS IN ADVANCE FOR REVIEW AND APPROVAL AND SHALL BE COORDINATED WITH THE OWNER.
- IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO REVIEW THE SITE CONDITIONS BEFORE THE PREPARATION AND SUBMITTAL OF HIS/HER BID. THE CONTRACTOR SHALL HANDLE ALL MISCELLANEOUS MATERIALS WITHIN THE EASEMENT LIMITS AS NECESSARY TO COMPLETE THE WORK OF THIS PROJECT AND ASSUMES ALL COSTS (REFLECTED IN HIS/HER BID) FOR THE EXECUTION OF THIS WORK.
- ANY ALTERATIONS REQUIRED ON THESE DRAWINGS DURING CONSTRUCTION SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION AND RECORDED BY THE CONTRACTOR.

EXISTING SITE CONDITIONS

- THE LOCATIONS OF UNDERGROUND UTILITIES AND STRUCTURES, AS SHOWN ON THE DRAWINGS, ARE APPROXIMATE AND MAY NOT BE COMPLETE. NO GUARANTEE IS MADE THAT UTILITIES OR STRUCTURES WILL BE ENCOUNTERED WHERE SHOWN, OR THAT ALL UNDERGROUND UTILITIES AND STRUCTURES ARE SHOWN. ALL LOCATIONS AND SIZES OF EXISTING UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD.
- BELOW GRADE UTILITY LOCATION SHOWN IS ONLY APPROXIMATE AND MAY NOT BE COMPLETE. PRIVATE UNDERGROUND UTILITIES SUCH AS, BUT NOT LIMITED TO, SEWER LINES, WATER LINES AND BURIED ELECTRICAL SERVICE ENTRANCES, ARE NOT SHOWN. THE CONTRACTOR SHALL ASCERTAIN THE LOCATION AND SIZE OF EXISTING UTILITIES IN THE FIELD WITH THE RESPECTIVE UTILITY COMPANY REPRESENTATIVE PRIOR TO COMMENCING WORK.
- THERE ARE NO KNOWN HAZARDOUS ENVIRONMENTAL CONDITIONS WITHIN THE AREA OF WORK. IF THE PRESENCE OF HAZARDOUS ENVIRONMENTAL CONDITIONS IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER IMMEDIATELY. ALL ACTIVITIES, HANDLING AND DISPOSAL OF HAZARDOUS ENVIRONMENTAL CONDITIONS AND MATERIALS SHALL BE IN ACCORDANCE WITH OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS.
- THE LOCATIONS AND DEPTHS OF EXISTING WATER AND FORCE MAIN CONNECTIONS ARE UNKNOWN. CONTRACTOR SHALL ANTICIPATE AT LEAST ONE WATER AND FORCE MAIN CONNECTION FOR EACH BUILDING. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO THE EXISTING WATER AND FORCE MAIN CONNECTIONS. THE CONTRACTORS SCHEDULE SHALL TAKE INTO CONSIDERATION REASONABLE TIME TO CROSS AND IF REQUIRED TO RELOCATE EXISTING FORCE MAIN CONNECTIONS AND WATER MAINS AFFECTED BY THE WORK AND SHALL HAVE NO CLAIMS FOR ADDITIONAL TIME OR COSTS ASSOCIATED WITH THESE ROUTINE RELOCATIONS.

CIVIL SITE LAYOUT

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THIS PROVIDED LAYOUT INFORMATION THROUGHOUT THE COURSE OF CONSTRUCTION. REPORT ANY LAYOUT DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
- THE LOCATIONS AND LIMITS OF ALL ON-SITE WORK AND STORAGE AREAS SHALL BE REVIEWED BY AND COORDINATED WITH, AND ACCEPTABLE TO, THE OWNER AND ENGINEER. THE CONTRACTOR SHALL LIMIT ACTIVITIES TO THESE AREAS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING AND RESETTING ALL EXISTING PROPERTY MONUMENTATION DISTURBED BY CONSTRUCTION. THIS WORK SHALL BE DONE BY A LAND SURVEYOR REGISTERED IN THE STATE OF MASSACHUSETTS, AT NO ADDITIONAL COST TO THE OWNER.
- WRITTEN DIMENSIONS SHALL PREVAIL. DO NOT SCALE DISTANCES FROM THE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER.
- ALL ELEVATIONS REFER TO THE NAVD88 DATUM. ORIENTATION IS GRID NORTH ON THE NAD83 MASSACHUSETTS STATE PLANE, MAINLAND ZONE, COORDINATE SYSTEM. PROJECT BENCH MARK IS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL VERIFY BENCHMARK ELEVATIONS PRIOR TO USING IN CONSTRUCTION.
- EXISTING CONDITIONS SITE PLAN DEVELOPED FROM SURVEY DATA PREPARED BY JC ENGINEERING AND EXISTING AVAILABLE DRAWING INFORMATION.
- WETLAND BOUNDARIES DELINEATED BY JC ENGINEERING. WETLANDS FLAGS SURVEYED BY JC ENGINEERING.

CIVIL SITE PIPING

- DIAMETERS OF MANHOLES ARE NOTED ON THE DRAWINGS. THE TOP OF MANHOLE FRAMES SHALL BE SET FLUSH WITH FINISH GRADE, UNLESS OTHERWISE NOTED ON DRAWINGS.
- PIPES WITHIN VALVE PITS (MANHOLES) SHALL BE SUPPORTED 12 INCHES ABOVE BOTTOM OF MANHOLE ON ADJUSTABLE CONCRETE PIER OR PIPE SADDLE SUPPORTS, UNLESS OTHERWISE INDICATED.
- COMPACTION TESTS WILL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY SETTLEMENT OCCURRING WITHIN ONE-YEAR OF FINAL COMPLETION OF THE WORK SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- OPEN TRENCHES IN THE ROADWAY MUST BE BACKFILLED AT THE END OF THE WORKDAY. OPEN TRENCHES OUTSIDE OF THE ROADWAY MUST BE COVERED AT THE END OF EACH DAY.
- WHERE NEW PIPING IS TO BE CONNECTED TO EXISTING PIPING, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL ADAPTERS, FITTINGS, AND ADDITIONAL PIPE AS REQUIRED TO COMPLETE THE CONNECTION. CONTRACTOR SHALL VERIFY LOCATION, ELEVATION, ORIENTATION AND MATERIAL OF CONSTRUCTION. TEST PITS SHALL BE USED AS REQUIRED.
- ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION ARE TO REMAIN IN SERVICE UNLESS OTHERWISE NOTED ON THE PLANS. ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

SITE DEMOLITION

- CONTRACTOR SHALL COORDINATE SITE DEMOLITION WITH OWNER AND ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND DISPOSING OF ALL DEMOLISHED PIPING, EQUIPMENT AND MATERIALS. DISPOSAL SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS. THE OWNER RESERVES THE RIGHT TO RETAIN ANY SUCH PIPING, EQUIPMENT AND MATERIALS DESIGNATED FOR DEMOLITION. SUCH MATERIALS TO BE RETAINED SHALL BE PROPERLY STORED IN AN ON-SITE LOCATION. COORDINATE LOCATION AND MATERIALS TO BE SALVAGED WITH THE OWNER/ENGINEER. THE CONTRACTOR SHALL KEEP A RECORD OF DEMOLITION AS PART OF THE PROJECT RECORD DOCUMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE APPROPRIATE DISPOSAL OF FLOWS RESULTING FROM PRECIPITATION AND GROUNDWATER DEWATERING OPERATIONS.

DIMENSIONS AND QUANTITIES

- ALL DIMENSIONS AND QUANTITIES SHALL BE DETERMINED OR VERIFIED BY THE CONTRACTOR.
- THE CONTRACTOR IS ADVISED TO TAKE ALL PRECAUTIONS AND MAKE ALL INVESTIGATIONS NECESSARY TO PERFORM THE WORK. THE OWNER WILL NOT CONSIDER CONTRACTOR'S UNFAMILIARITY WITH THE PROJECT OR SITE CONDITIONS AT THE TIME OF BID AS A BASIS FOR ADDITIONAL COMPENSATION.

PROTECTION NOTES

- ADEQUATE PROTECTION OF PERSONS AND PROPERTY SHALL BE PROVIDED AT ALL TIMES. THE WORK SHALL BE EXECUTED IN SUCH A WAY AS TO AVOID HAZARD TO PERSONS AND PROPERTY. WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL, STATE AND FEDERAL AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- PROVIDE ALL NECESSARY TEMPORARY PROTECTION AND BARRIERS TO SEGREGATE THE WORK AREA AND TO PREVENT DAMAGE TO ADJACENT AREAS, AS REQUIRED BY ALL JURISDICTION REGULATIONS.
- PROVIDE PROPER PROTECTION AND BARRIERS BETWEEN THE WORK OF THIS CONTRACT AND EXISTING STRUCTURES TO REMAIN.

SITE CLEARING, GRUBBING AND GRADING

- CONTRACTOR SHALL MINIMIZE CLEARING OPERATIONS. CLEARING LIMITS SHALL BE WITHIN EXISTING ROAD RIGHTS-OF-WAY AND PROPERTY LINES ON STATE OR COUNTY-OWNED PROPERTY OR EASEMENTS. ALL CLEARING AND GRUBBING MATERIAL SHALL BE THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT A SITE PROVIDED BY THE CONTRACTOR IN COMPLIANCE WITH ALL STATE AND LOCAL LAWS.
- CONTRACTOR SHALL PROVIDE PROPER EROSION CONTROL AND DRAINAGE MEASURES IN ALL AREAS OF WORK. PRIOR TO BEGINNING EXCAVATION WORK, EROSION CONTROL FENCE SHALL BE INSTALLED AT THE DOWN GRADIENT PERIMETER OF THE ACTUAL LIMITS OF GRUBBING AND/OR GRADING. CONTRACTOR SHALL TAKE ALL NECESSARY EROSION CONTROL MEASURES. EROSION CONTROL FENCE SHALL ALSO BE INSTALLED AT THE DOWN GRADIENT PERIMETER OF THE TOPSOIL STOCKPILES. ALL DISTURBED EARTH SURFACES SHALL BE STABILIZED IN THE SHORTEST PRACTICAL TIME AND TEMPORARY EROSION CONTROL DEVICES SHALL BE EMPLOYED UNTIL SUCH TIME AS ADEQUATE SOIL STABILIZATION HAS BEEN ACHIEVED. TEMPORARY STORAGE OF EXCAVATED MATERIAL SHALL BE STABILIZED IN A MANNER THAT WILL MINIMIZE EROSION. ALL INSTALLED EROSION CONTROL FACILITIES SHALL BE REMOVED AT THE END OF THE PROJECT.
- ALL STORM DRAINAGE INLETS SHALL BE PROTECTED BY HAY BALE FILTERS TO PREVENT ENTRY OF SEDIMENT FROM RUNOFF WATERS DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL COLLECTED SEDIMENT, AND THAT WHICH COLLECTS IN THE STORM DRAIN SYSTEM. REFER TO THE CIVIL DETAIL DRAWINGS.
- CONTRACTOR SHALL CONTROL DUST ON THE CONSTRUCTION SITE TO A REASONABLE LIMIT, AS DETERMINED BY THE ENGINEER, AND AS OUTLINED IN THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL NOT TRACK OR SPILL EARTH, DEBRIS OR OTHER CONSTRUCTION MATERIAL ON PUBLIC OR PRIVATE STREETS AND PLANT DRIVES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE ASSOCIATED CLEAN UP.
- ALL CATCH BASINS, MANHOLES, VALVE PITS, VALVE BOXES AND OTHER BURIED FACILITIES WITH SURFACE ACCESS SHALL BE ADJUSTED TO MATCH FINAL GRADES, UNLESS OTHERWISE INDICATED.
- THE CONTRACTOR SHALL NOT HAVE ANY RIGHT OF PROPERTY IN ANY MATERIALS TAKEN FROM ANY EXCAVATION. SUITABLE EXCAVATED MATERIAL MAY BE INCORPORATED IN THE PROJECT, WITH EXCESS MATERIAL DISPOSED OF AT A LOCATION PROVIDED BY THE CONTRACTOR. THESE PROVISIONS SHALL IN NO WAY RELIEVE THE CONTRACTOR OF OBLIGATIONS TO PROPERLY DISPOSE OF AND REPLACE ANY MATERIAL DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILLING. THE CONTRACTOR SHALL DISPOSE OF UNSUITABLE AND EXCESS MATERIAL IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL REMOVE AND REPLACE, OR REPAIR, ALL CURBS, SIDEWALKS, PAVEMENT AND OTHER ITEMS DAMAGED BY CONSTRUCTION ACTIVITIES TO AT LEAST THEIR ORIGINAL CONDITION, TO THE SATISFACTION OF THE OWNER AND ENGINEER.
- WHERE EXISTING PAVEMENT IS REMOVED AND REPLACED, MATCH EXISTING GRADES TO THE EXTENT POSSIBLE. COORDINATE FINE GRADING WITH THE ENGINEER.
- ALL ROAD AND DRIVE CROSS SLOPES SHALL PITCH 1/4-INCH PER FOOT MINIMUM. ALL PAVED SURFACES SHALL PITCH 1% UNLESS OTHERWISE NOTED.
- ALL NON-ROADWAY AREAS THAT ARE EXCAVATED, FILLED, OR OTHERWISE DISTURBED BY THE CONTRACTOR SHALL BE LOAMED, GRADED, LIMED, FERTILIZED, SEEDED AND MULCHED, UNLESS OTHERWISE NOTED. THE TOP 4 INCHES OF SOIL SHALL BE LOAM.

CIVIL ABBREVIATIONS


&	AND
Ø/DIA	DIAMETER
#, NO	NUMBER
AC	ASBESTOS CEMENT
APP'D	APPROVED
BR	BRICK
BLDGS	BUILDING
CB	CATCH BASIN
CEN	CENTER
CI	CAST IRON
CIPP	CURED-IN-PLACE-PIPE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CONC	CONCRETE
COR	CORNER
CY	CUBIC YARD
DEMO	DEMOLITION
DI	DUCTILE IRON
DMH	DRAIN MANHOLE
DWG	DRAWING
EL	ELEVATION
EMH	ELECTRIC MANHOLE
EP	EDGE OF PAVEMENT
FM	FORCE MAIN
FT	FEET
G	GAS
HDPE	HIGH DENSITY POLYETHYLENE
HYD	HYDRANT
IN	INCH
INF	INFLEUNT
INV	INVERT
LBS	POUNDS
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
MW	MONITORING WELL
N	NORTH
NGVD	NATIONAL GEODETIC VERTICAL DATUM
N/A	NOT AVAILABLE/APPLICABLE
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
ND	NOTED
OUT	OUTFALL
PC	PERFORATED CLAY
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
TOS	TOP OF STRUCTURE
UG	UNDERGROUND
UGE	UNDERGROUND ELECTRIC
VC	VITRIFIED CLAY
VF	VERTICAL FOOT
W	POTABLE WATER

EXISTING LEGEND

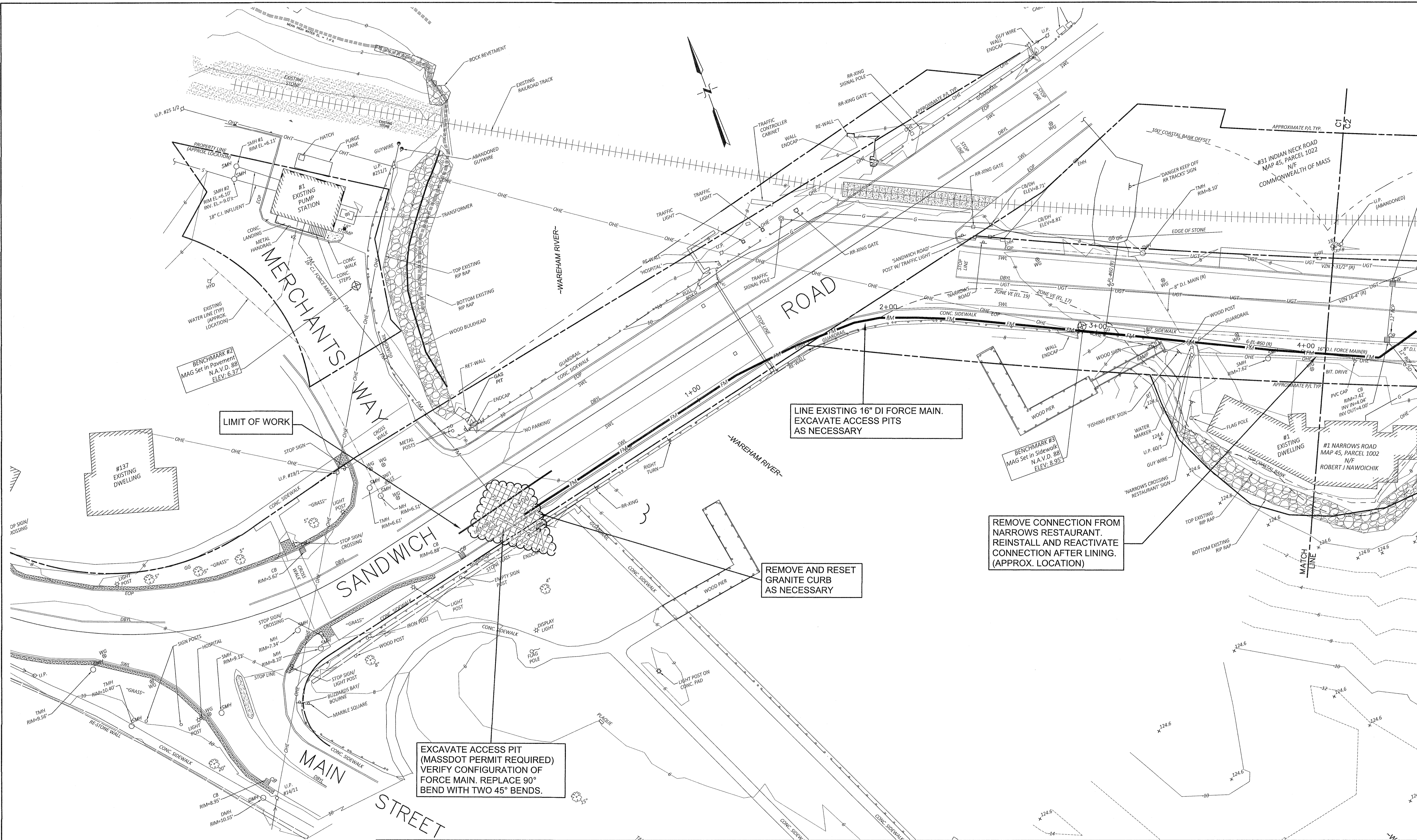
	PROPERTY/ROW LINE
	SETBACK LINE
	EASEMENT LINE
	CENTERLINE
	EDGE OF PAVEMENT
	CURBING
	EDGE OF GRAVEL
	EDGE OF CONCRETE
	CONTOUR
	BUILDING
	STONEWALL
	TREELINE
	CHAIN LINK FENCE
	STOCKADE FENCE
	BARB WIRE FENCE
	RETAINING WALL
	GUARDRAIL
	SEWER
	SEWER FORCE MAIN
	GAS
	WATER
	STORM DRAIN
	UNDERDRAIN
	CULVERT
	UNDERGROUND ELECTRIC
	OVERHEAD ELECTRIC
	UNDERGROUND TELEPHONE
	UNDERGROUND CABLE TV
	IRON PIPE/REBAR
	DRILLHOLE
	MONUMENT
	SURVEY CONTROL POINT
	SPOT ELEVATION
	SEWER MANHOLE
	DRAINAGE MANHOLE
	CATCH BASIN
	ELECTRIC MANHOLE
	TELEPHONE MANHOLE
	SHUTOFF VALVE
	WATER SERVICE SHUTOFF
	YARD HYDRANT
	HYDRANT
	GAS SERVICE SHUTOFF
	GAS GATE VALVE
	UTILITY POLE
	UTILITY POLE W/GUY
	UTILITY POLE W/LIGHT
	LIGHT POLE
	BOLLARD
	FLAGPOLE
	CONIFEROUS TREE
	DECIDUOUS TREE
	SHRUB
	WETLAND FLAG
	EDGE OF WATER
	STREAM
	EDGE OF WETLANDS
	FLOODPLAIN
	WETLANDS
	DRAINAGE FLOW
	DRAINAGE SWALE
	PAVEMENT MARKINGS
	SIGN
	MAILBOX
	TEMPORARY BENCHMARK
	TEST PIT
	RIPRAP
	RAILROAD
	ROCK OUTCROP

PROPOSED LEGEND

	SEWER FORCE MAIN
	LIMIT OF WORK
	MATCHLINE
	ACCESS PIT

PROJECT NO.: WARS-008 DESIGNED: S. OSBORNE CAD: G.RICE DATE: SEPTEMBER, 2023		OSD ENGINEERING CONSULTANTS 1844B MASSACHUSETTS AVE. LEXINGTON, MA 02420	TOWN OF WAREHAM, MASSACHUSETTS NARROWS PUMP STATION FORCE MAIN REHABILITATION	SHEET NO. G1
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GENERAL NOTES AND LEGEND



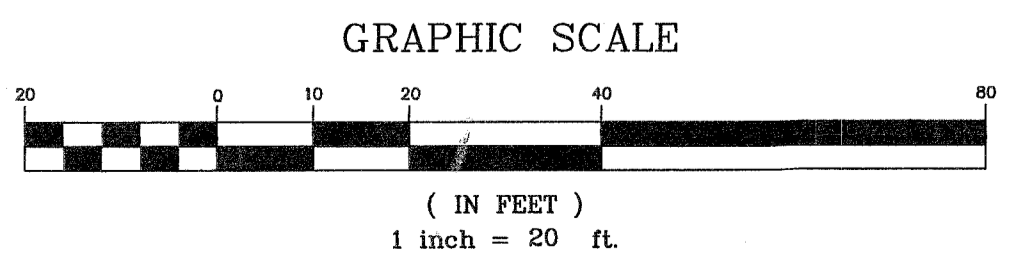
LIMIT OF WORK

LINE EXISTING 16" DI FORCE MAIN.
EXCAVATE ACCESS PITS
AS NECESSARY

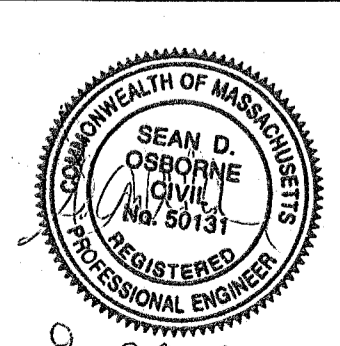
REMOVE AND RESET
GRANITE CURB
AS NECESSARY

REMOVE CONNECTION FROM
NARROWS RESTAURANT.
REINSTALL AND REACTIVATE
CONNECTION AFTER LINING.
(APPROX. LOCATION)

EXCAVATE ACCESS PIT
(MASSDOT PERMIT REQUIRED)
VERIFY CONFIGURATION OF
FORCE MAIN. REPLACE 90°
BEND WITH TWO 45° BENDS.



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G.RICE
DATE: SEPTEMBER, 2023



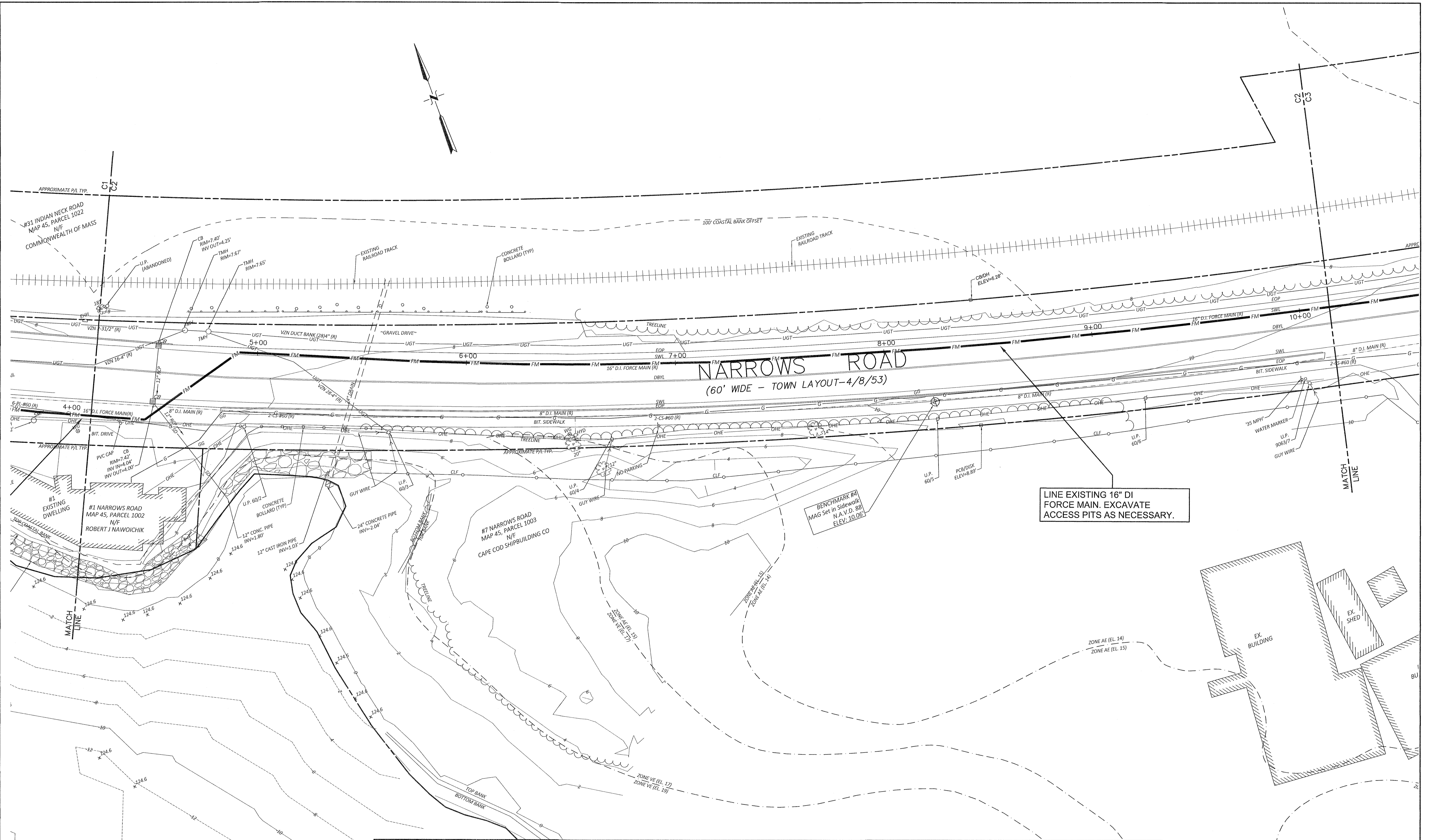
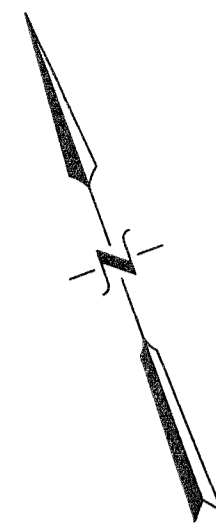
OSD ENGINEERING CONSULTANTS
1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 00+00 TO STA 4+00

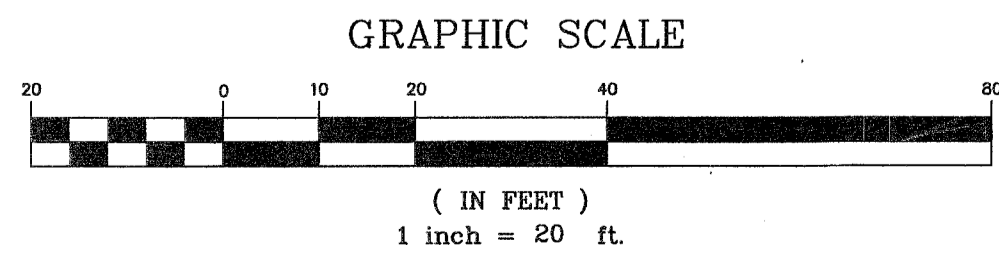
SHEET NO.
C1

9-28-23

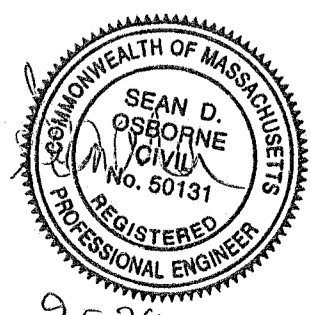


LINE EXISTING 16" DI FORCE MAIN. EXCAVATE ACCESS PITS AS NECESSARY.

BENCHMARK #4
MAG Set in Sidewalk
N.A.V.D. 88
ELEV: 10.06'



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G.RICE
DATE: SEPTEMBER, 2023



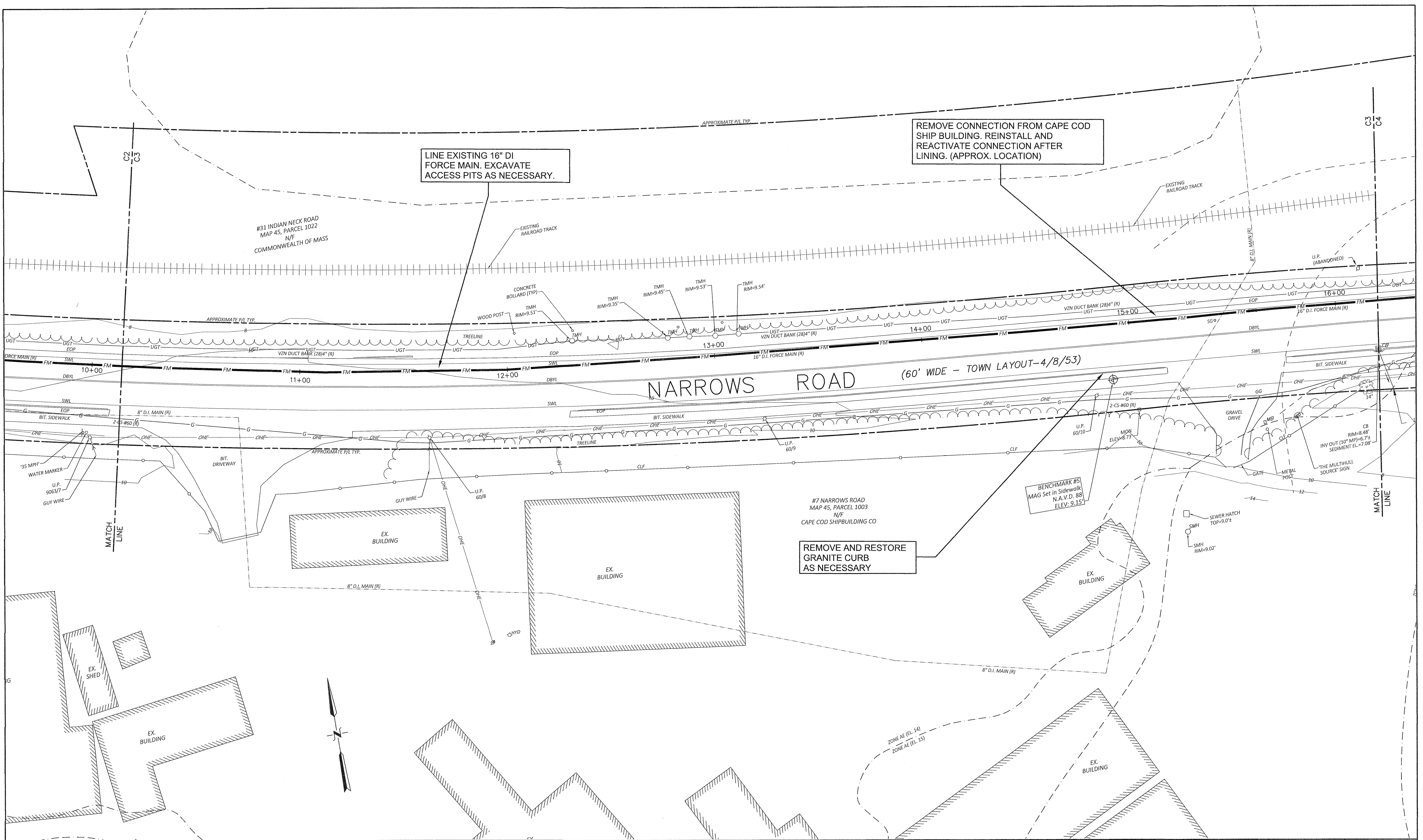
OSD ENGINEERING CONSULTANTS
1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 4+00 TO STA 10+00

SHEET NO.
C2

9-28-23



LINE EXISTING 16" DI
FORCE MAIN. EXCAVATE
ACCESS PITS AS NECESSARY.

REMOVE CONNECTION FROM CAPE COD
SHIP BUILDING. REINSTALL AND
REACTIVATE CONNECTION AFTER
LINING. (APPROX. LOCATION)

REMOVE AND RESTORE
GRANITE CURB
AS NECESSARY

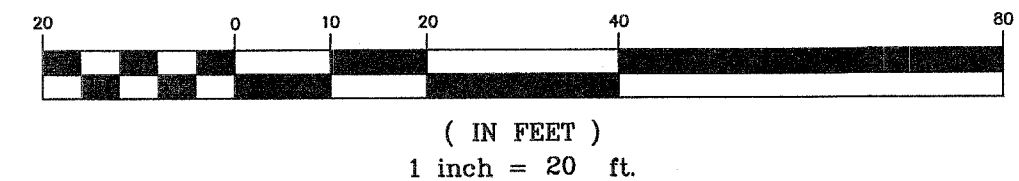
#31 INDIAN NECK ROAD
MAP 45, PARCEL 1022
N/F
COMMONWEALTH OF MASS

#7 NARROWS ROAD
MAP 45, PARCEL 1003
N/F
CAPE COD SHIPBUILDING CO

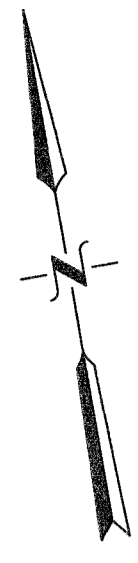
BENCHMARK #5
MAG Set in Sidewalk
N.A.V.D. 88
ELEV: 9.15'

SEWER HATCH
TOP=9.0'±
SMH
RIM=9.02'

GRAPHIC SCALE



PROJECT NO.: WARS-008 DESIGNED: S. OSBORNE CAD: G.RICE DATE: SEPTEMBER, 2023		OSD ENGINEERING CONSULTANTS 1844B MASSACHUSETTS AVE. LEXINGTON, MA 02420	TOWN OF WAREHAM, MASSACHUSETTS NARROWS PUMP STATION FORCE MAIN REHABILITATION	SITE LAYOUT STA 10+00 TO STA 16+00	SHEET NO. C3
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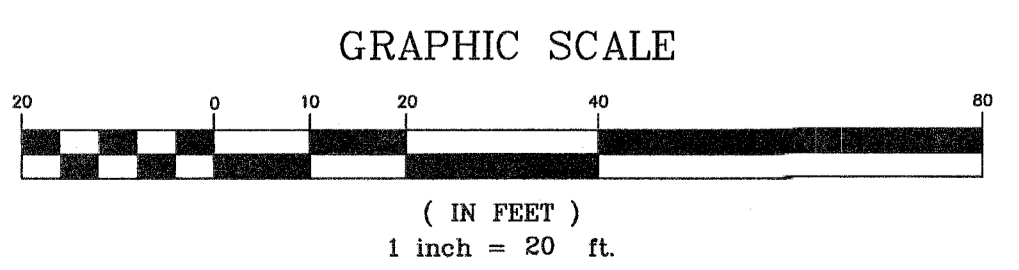
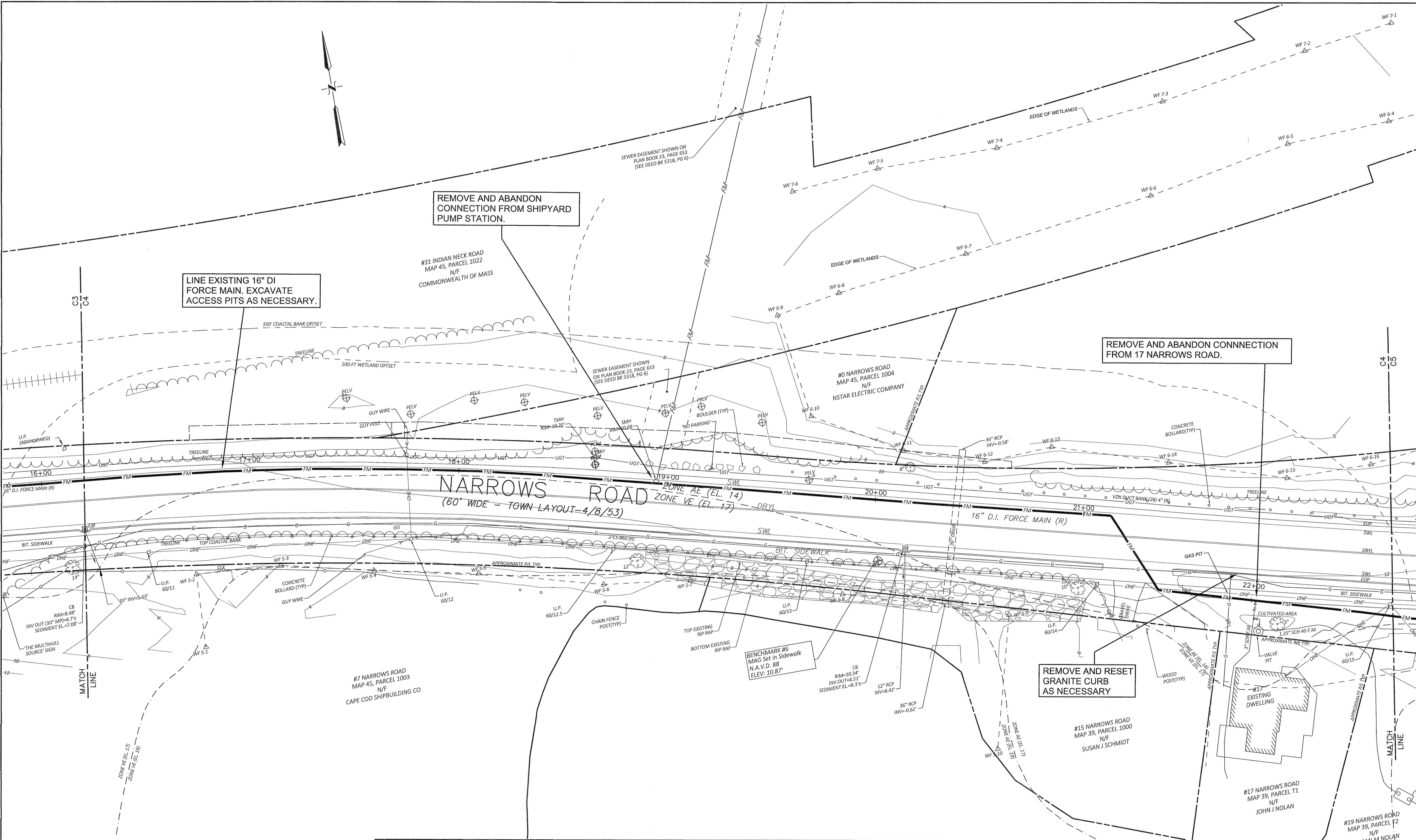


LINE EXISTING 16" DI FORCE MAIN. EXCAVATE ACCESS PITS AS NECESSARY.

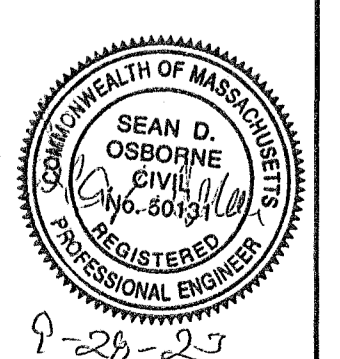
REMOVE AND ABANDON CONNECTION FROM SHIPYARD PUMP STATION.

REMOVE AND ABANDON CONNECTION FROM 17 NARROWS ROAD.

REMOVE AND RESET GRANITE CURB AS NECESSARY



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G.RICE
DATE: SEPTEMBER, 2023

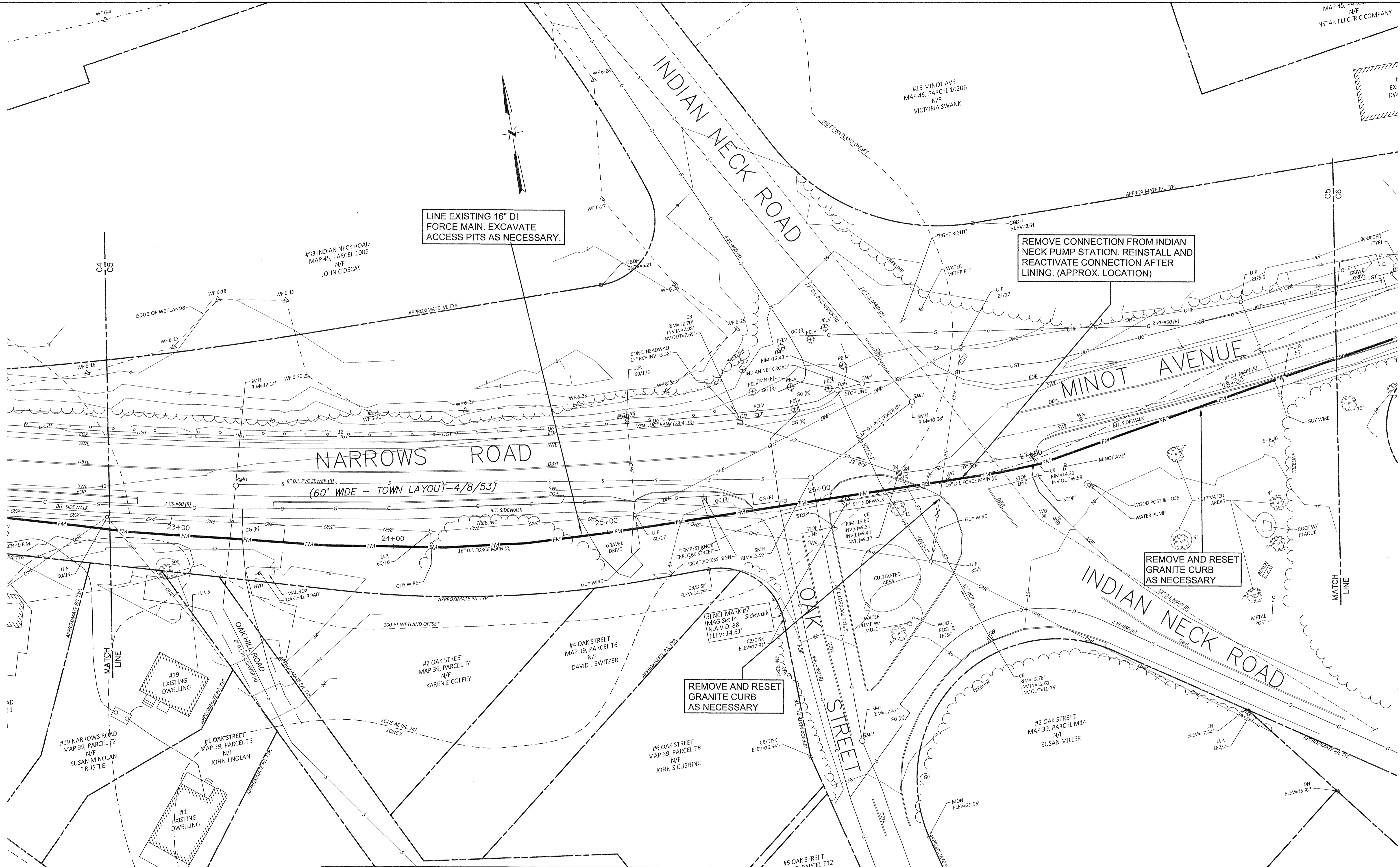


OSD ENGINEERING CONSULTANTS
1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 16+00 TO STA 22+00

SHEET NO.
C4

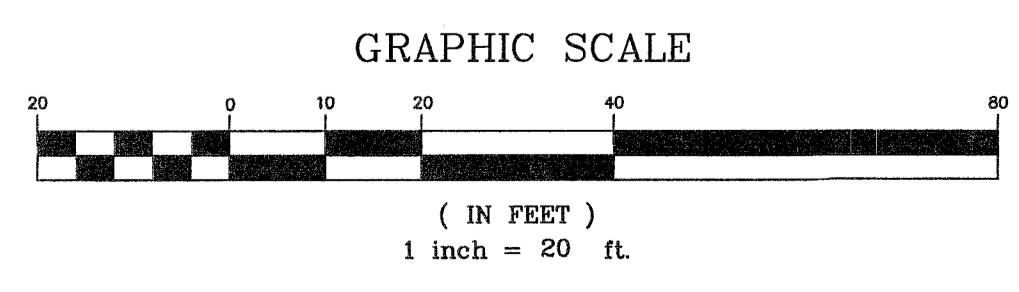


LINE EXISTING 16" DI
FORCE MAIN. EXCAVATE
ACCESS PITS AS NECESSARY.

REMOVE CONNECTION FROM INDIAN
NECK PUMP STATION. REINSTALL AND
REACTIVATE CONNECTION AFTER
LINING. (APPROX. LOCATION)

REMOVE AND RESET
GRANITE CURB
AS NECESSARY

REMOVE AND RESET
GRANITE CURB
AS NECESSARY



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G. RICE
DATE: SEPTEMBER, 2023

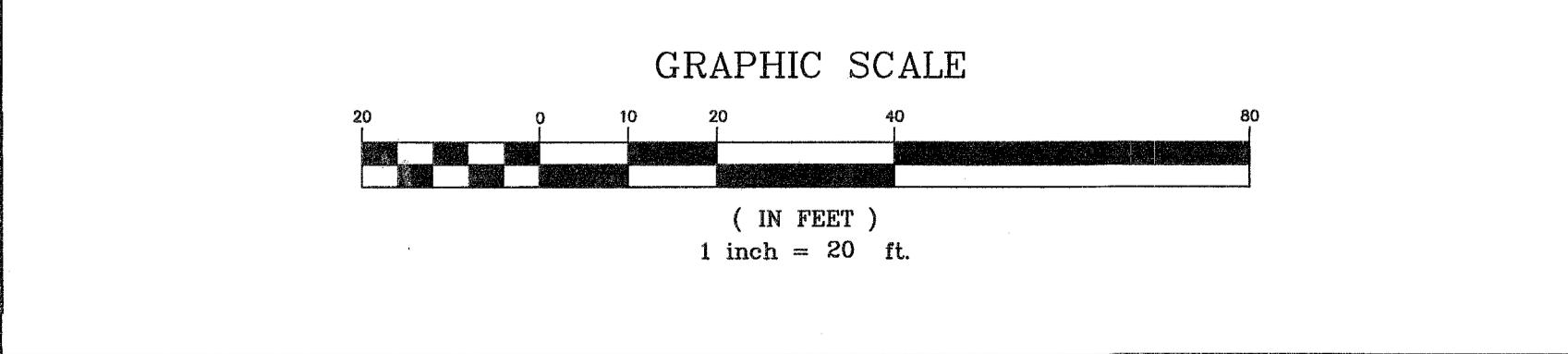
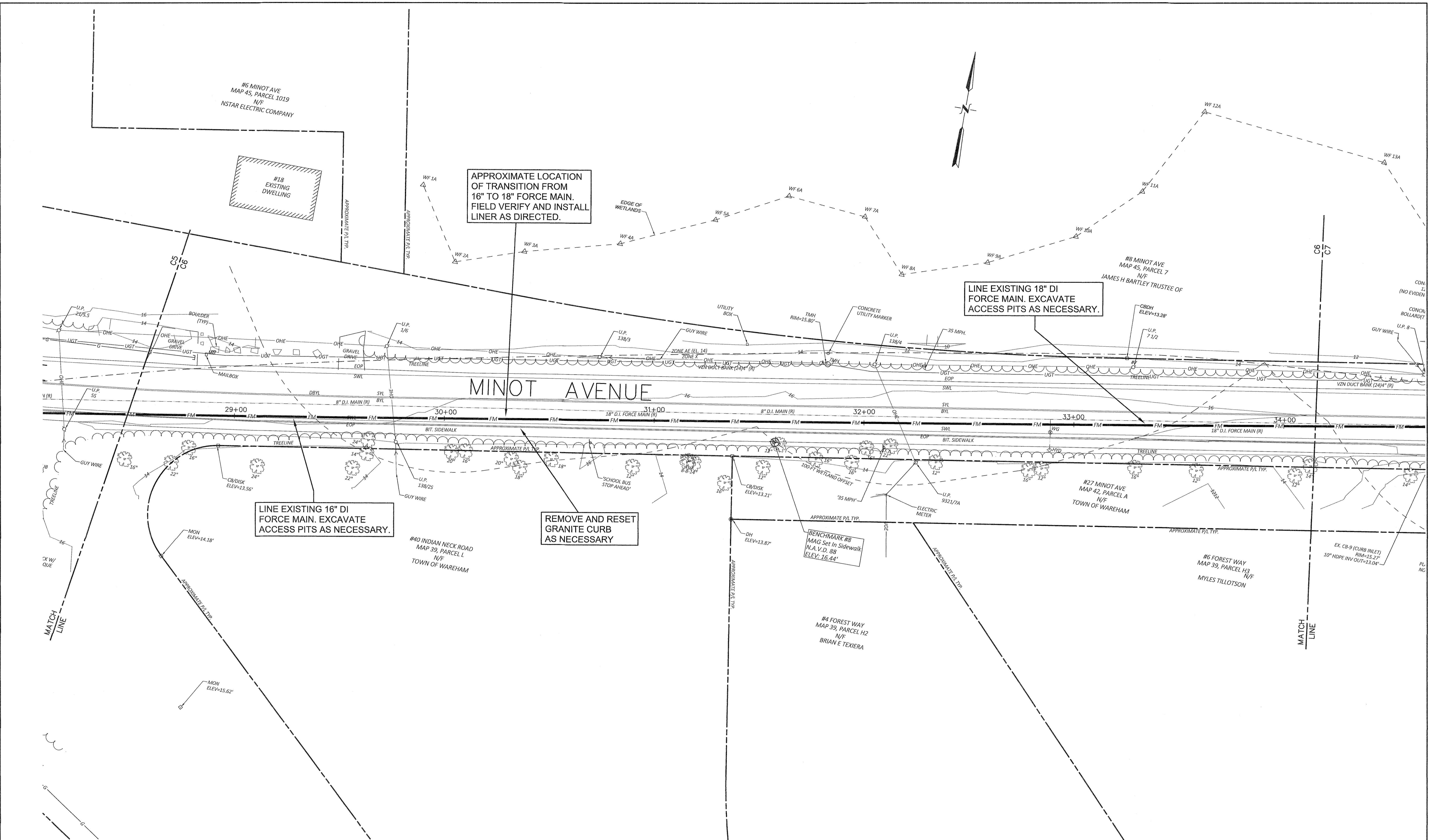


OSD ENGINEERING CONSULTANTS
1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

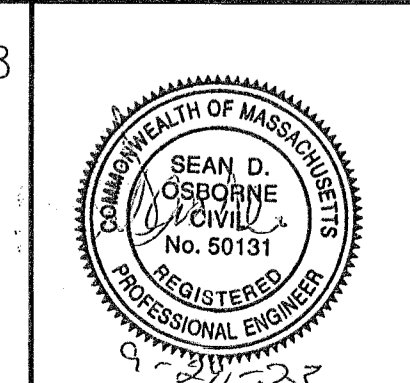
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 22+00 TO STA 28+00

SHEET NO.
C5



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023

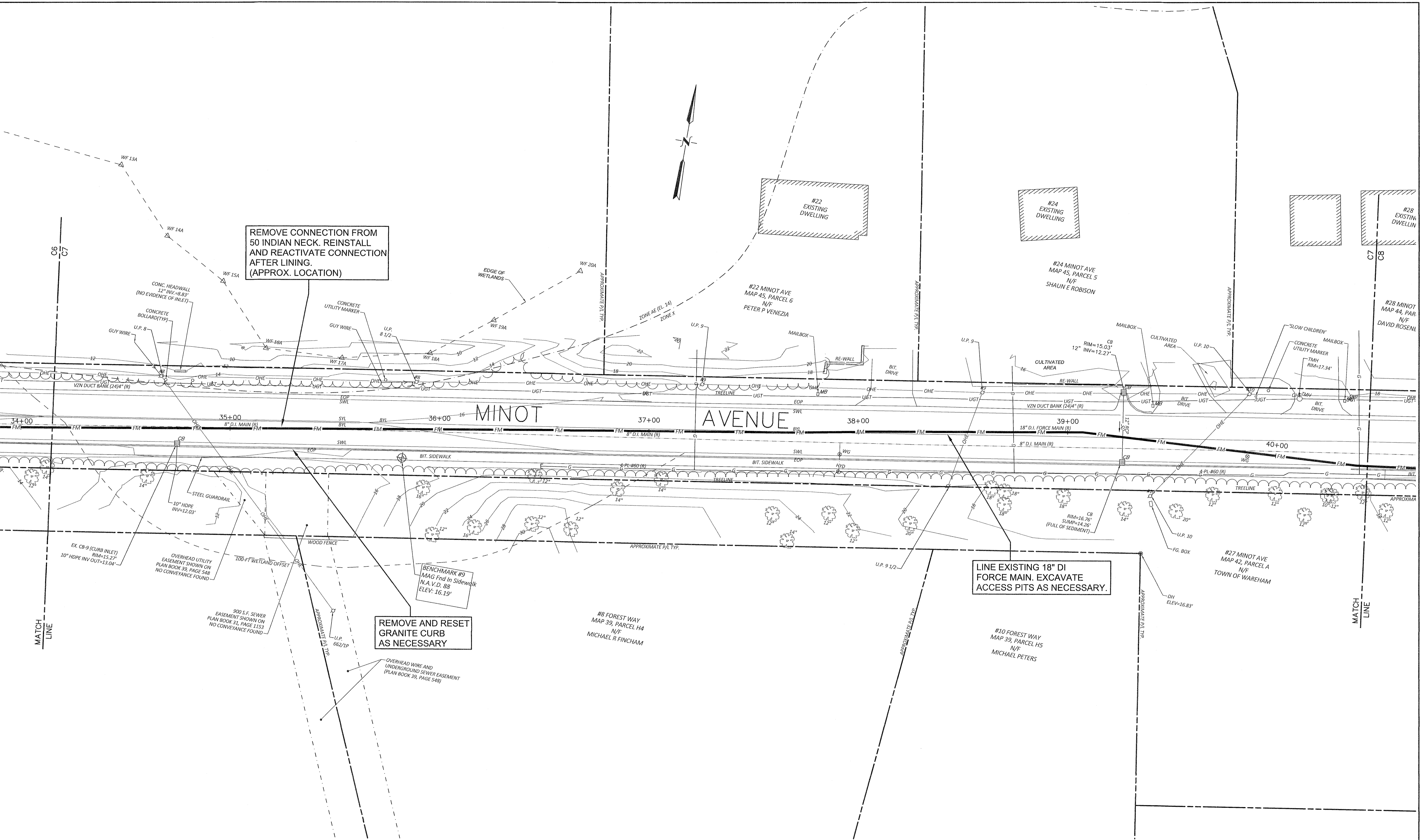


OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
 STA 28+00 TO STA 34+00

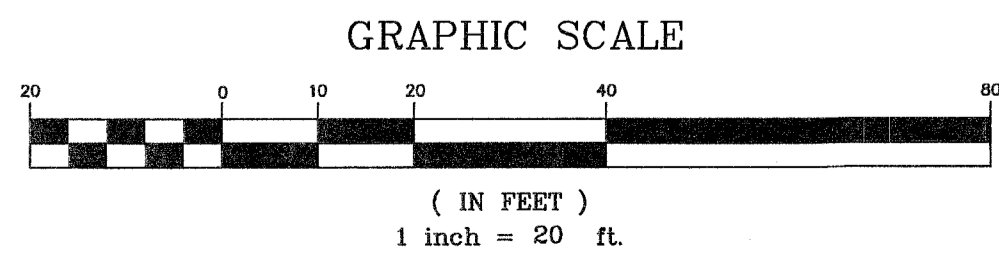
SHEET NO.
C6



REMOVE CONNECTION FROM 50 INDIAN NECK. REINSTALL AND REACTIVATE CONNECTION AFTER LINING. (APPROX. LOCATION)

REMOVE AND RESET GRANITE CURB AS NECESSARY

LINE EXISTING 18" DI FORCE MAIN. EXCAVATE ACCESS PITS AS NECESSARY.



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023

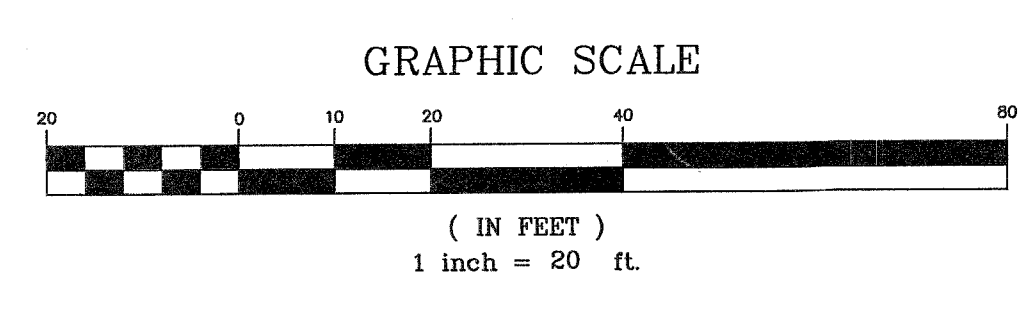
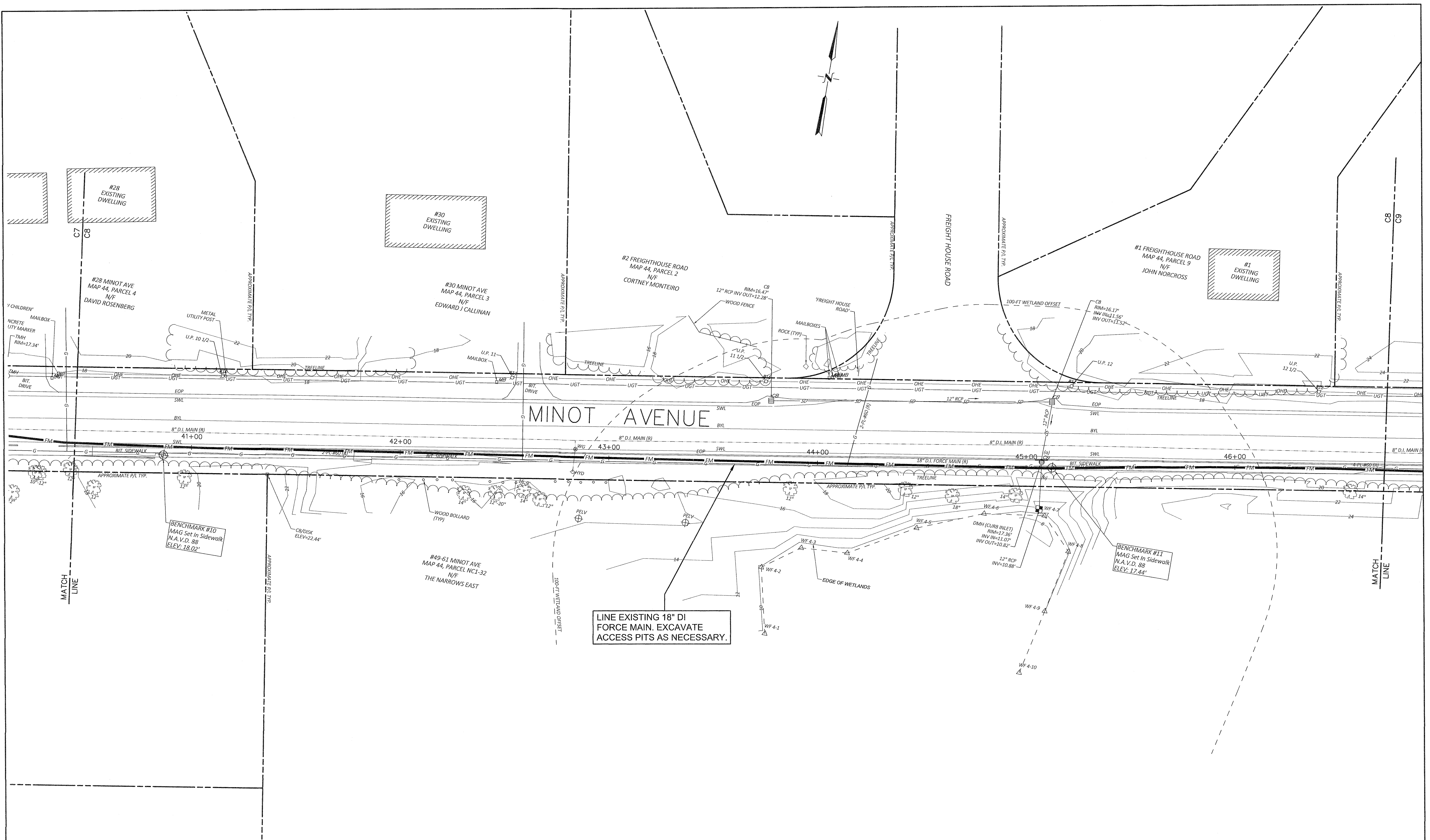


OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

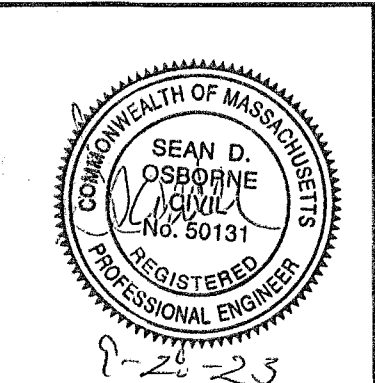
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
 STA 34+00 TO STA 40+00

SHEET NO.
C7



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G. RICE
 DATE: SEPTEMBER, 2023

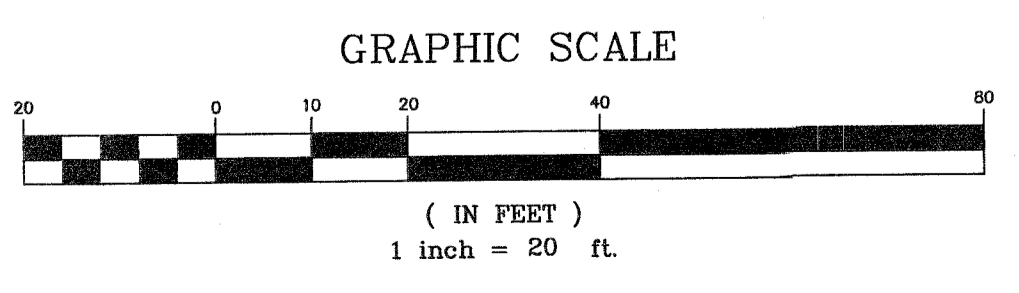
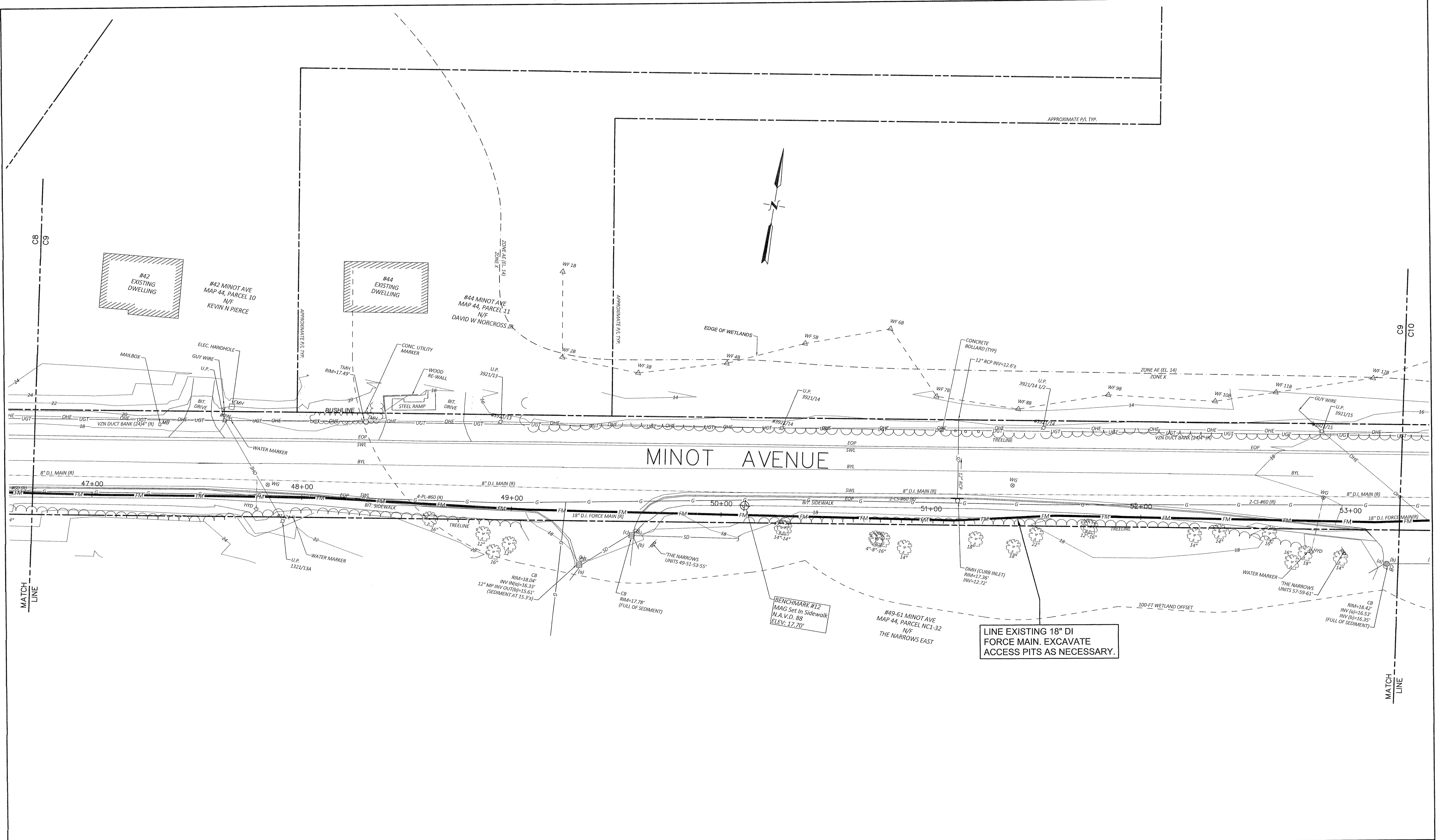


OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

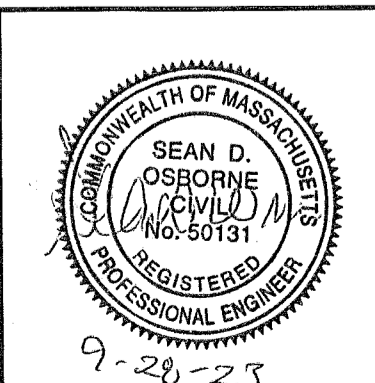
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
 STA 40+00 TO STA 46+00

SHEET NO.
C8



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023



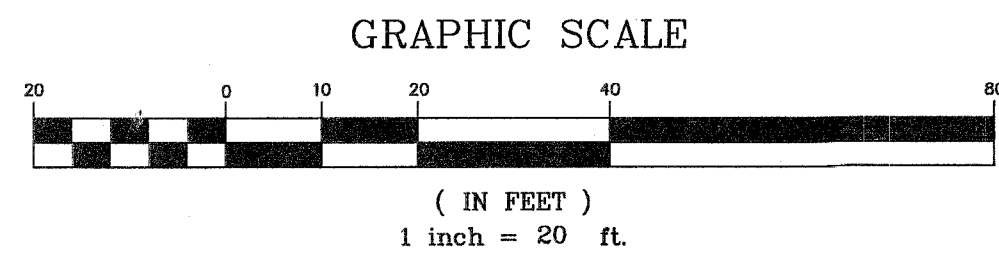
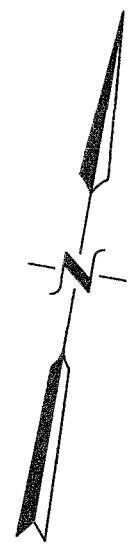
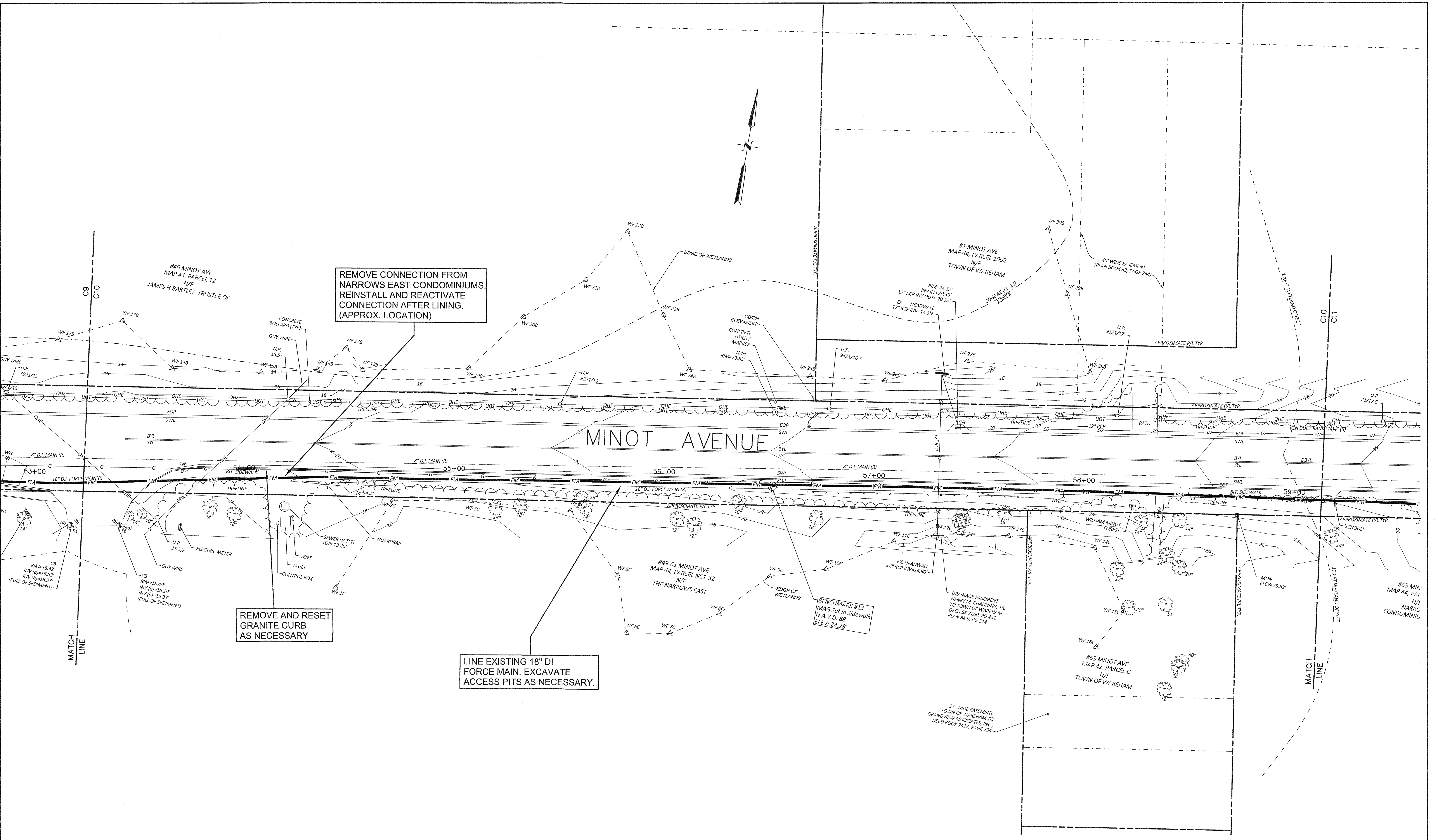
OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

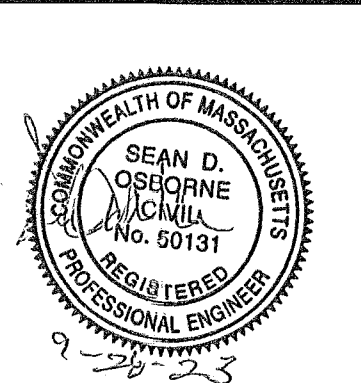
SITE LAYOUT
STA 46+00 TO STA 53+00

SHEET NO.
C9

9-26-23



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023

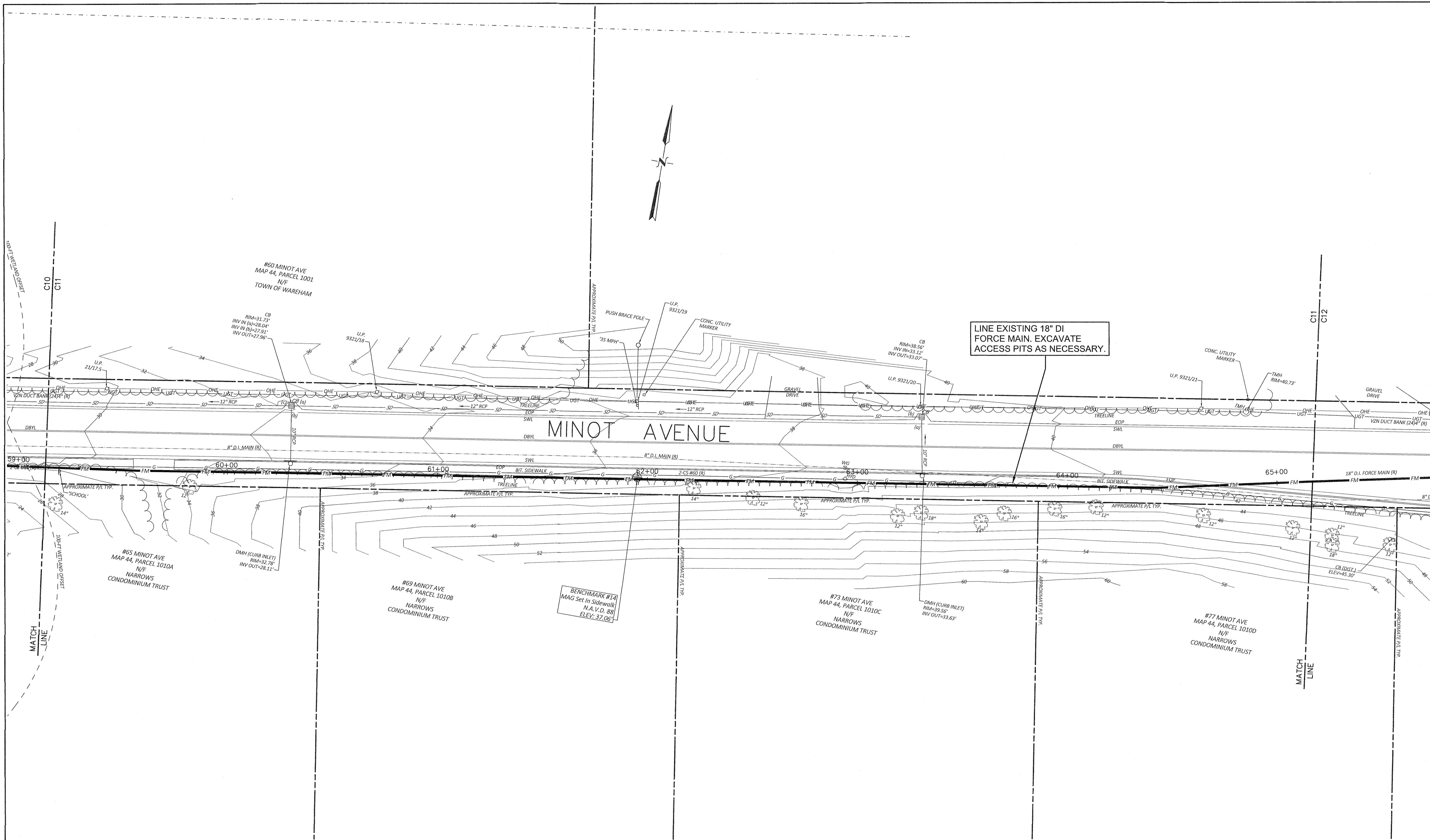


OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

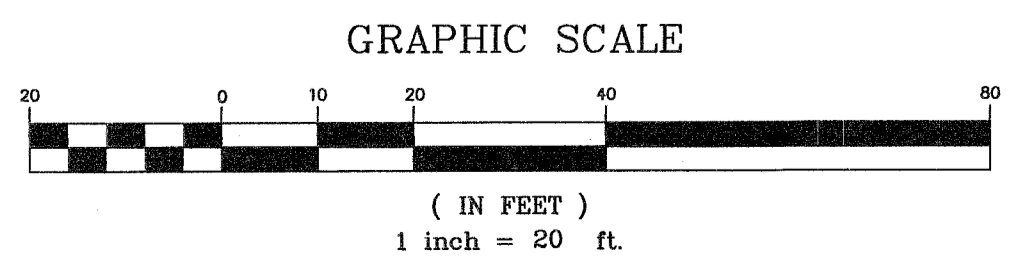
SITE LAYOUT
 STA 53+00 TO STA 59+00

SHEET NO.
C10

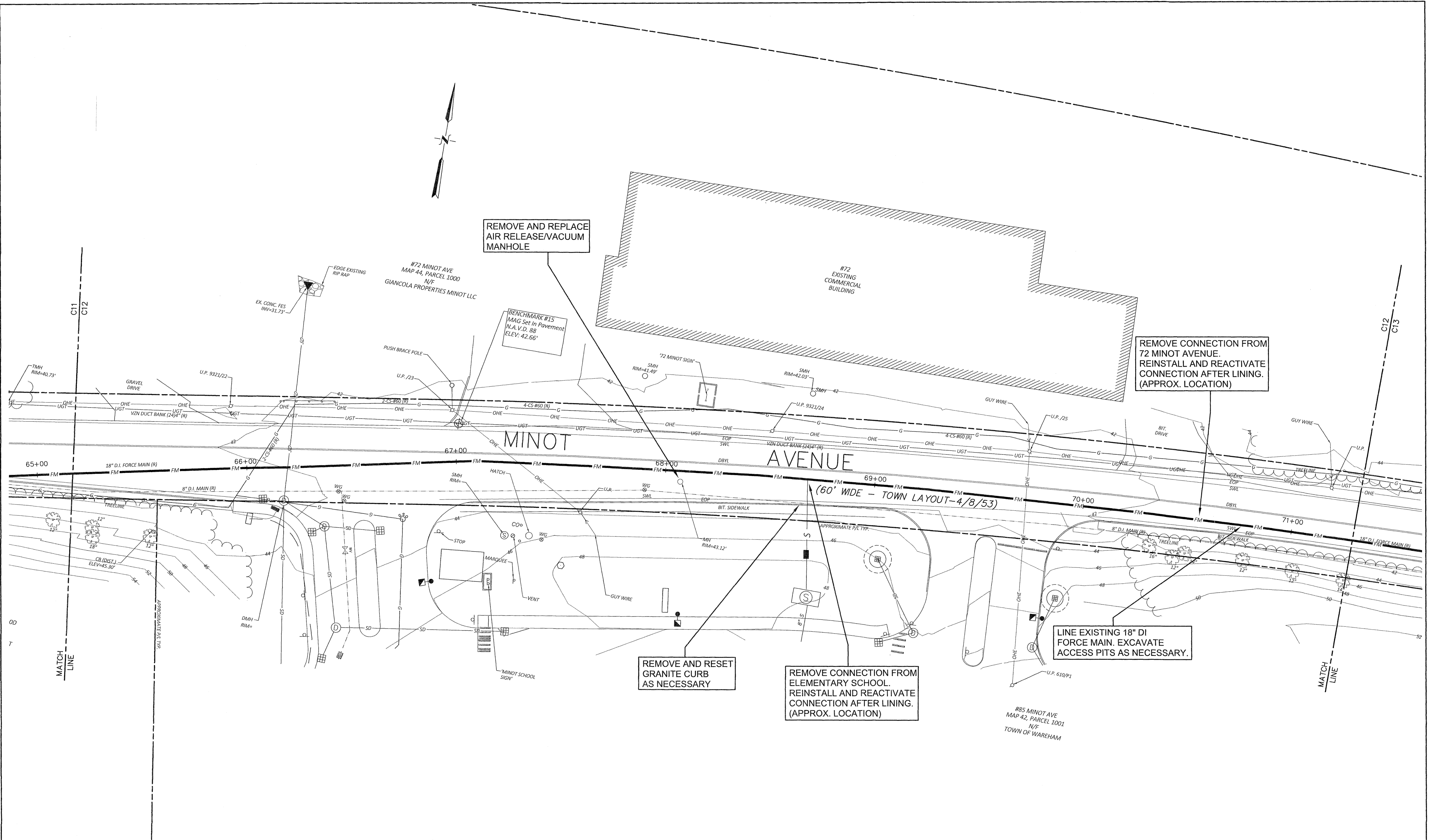


LINE EXISTING 18" DI
FORCE MAIN. EXCAVATE
ACCESS PITS AS NECESSARY.

MINOT AVENUE



<p>PROJECT NO.: WARS-008 DESIGNED: S. OSBORNE CAD: G.RICE DATE: SEPTEMBER, 2023</p>		<p>OSD ENGINEERING CONSULTANTS 1844B MASSACHUSETTS AVE. LEXINGTON, MA 02420</p>	<p>TOWN OF WAREHAM, MASSACHUSETTS NARROWS PUMP STATION FORCE MAIN REHABILITATION</p>	<p>SITE LAYOUT STA 59+00 TO STA 65+00</p>	<p>SHEET NO. C11</p>
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REMOVE AND REPLACE
AIR RELEASE/VACUUM
MANHOLE

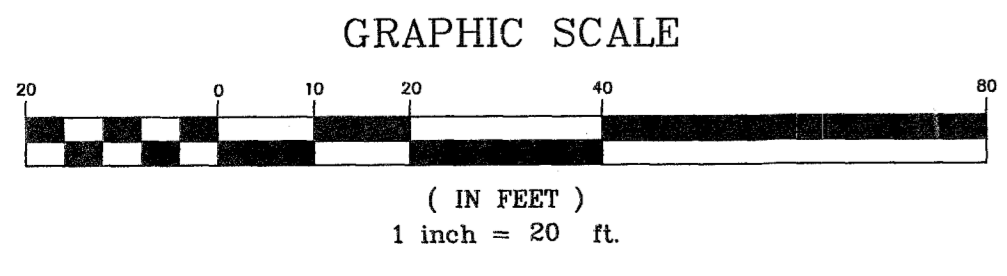
BENCHMARK #15
MAG Set In Pavement
N.A. V.D. 88
ELEV: 42.66'

REMOVE CONNECTION FROM
72 MINOT AVENUE.
REINSTALL AND REACTIVATE
CONNECTION AFTER LINING.
(APPROX. LOCATION)

LINE EXISTING 18" DI
FORCE MAIN. EXCAVATE
ACCESS PITS AS NECESSARY.

REMOVE AND RESET
GRANITE CURB
AS NECESSARY

REMOVE CONNECTION FROM
ELEMENTARY SCHOOL.
REINSTALL AND REACTIVATE
CONNECTION AFTER LINING.
(APPROX. LOCATION)



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G.RICE
DATE: SEPTEMBER, 2023

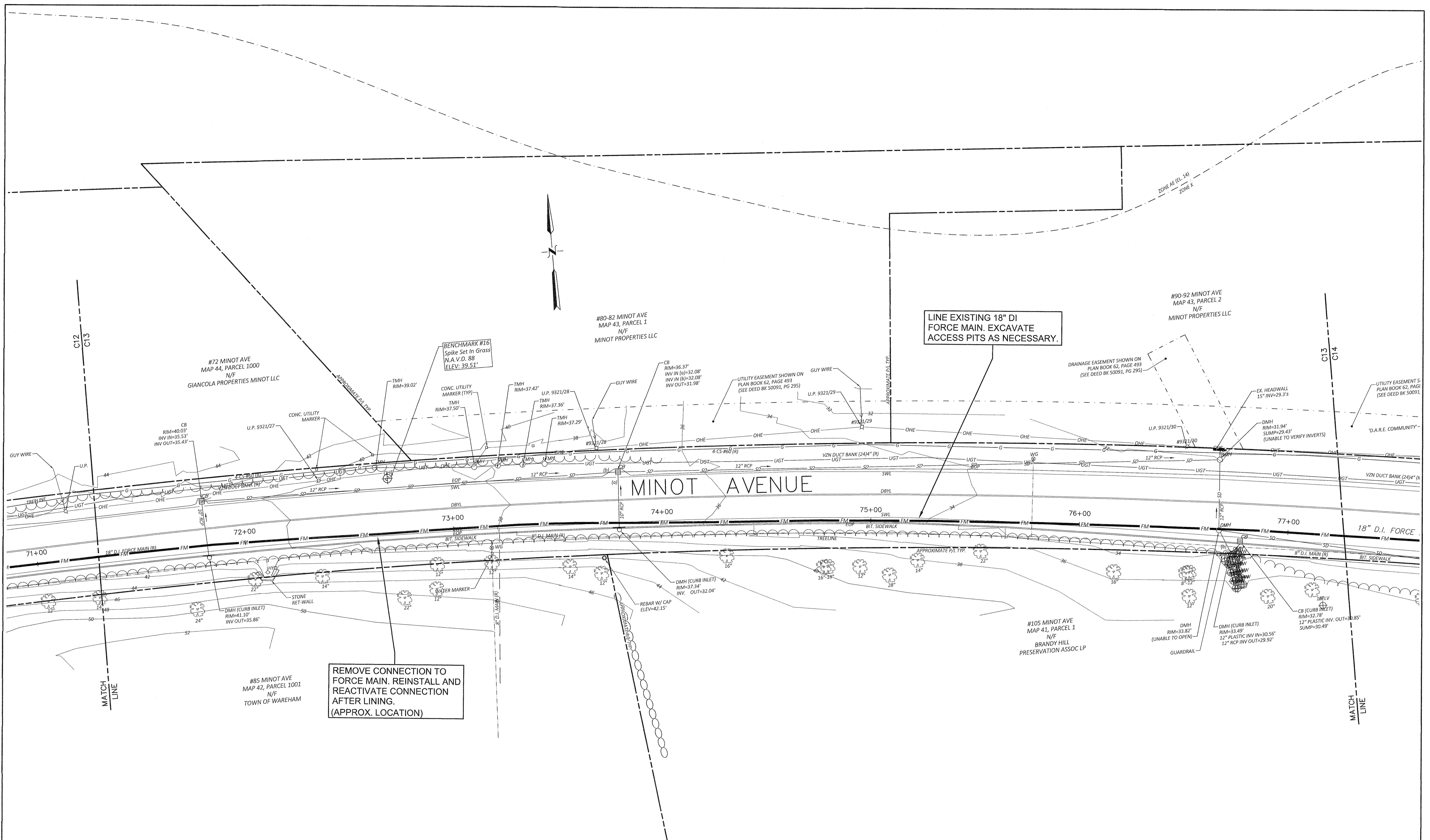


OSD ENGINEERING CONSULTANTS
1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 65+00 TO STA 71+00

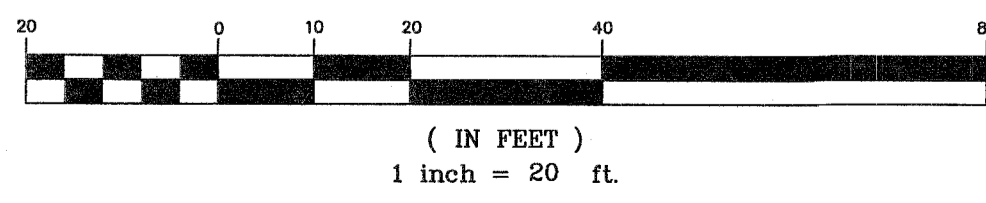
SHEET NO.
C12



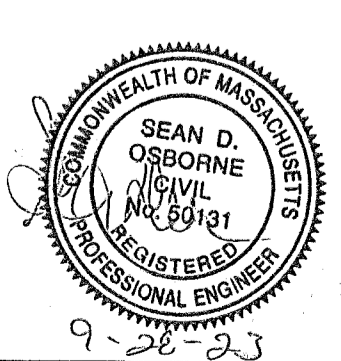
LINE EXISTING 18" DI
FORCE MAIN. EXCAVATE
ACCESS PITS AS NECESSARY.

REMOVE CONNECTION TO
FORCE MAIN. REINSTALL AND
REACTIVATE CONNECTION
AFTER LINING.
(APPROX. LOCATION)

GRAPHIC SCALE



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G.RICE
DATE: SEPTEMBER, 2023

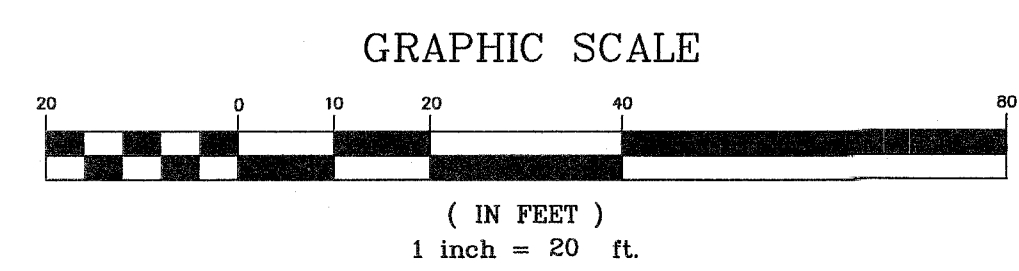
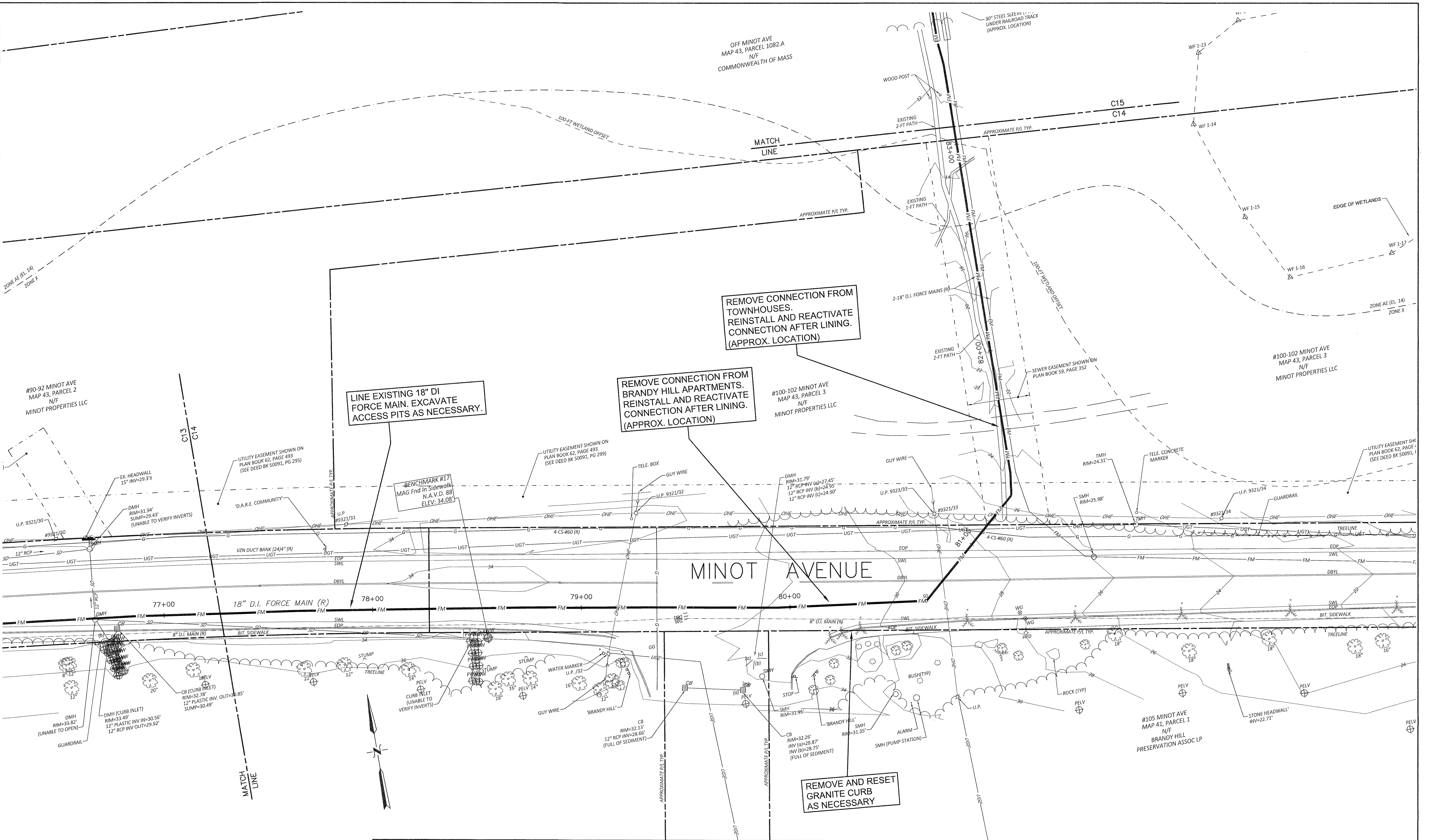


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1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

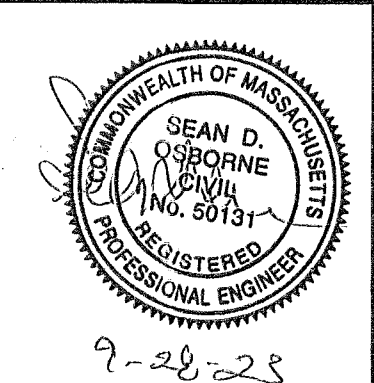
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 71+00 TO STA 77+00

SHEET NO.
C13



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023



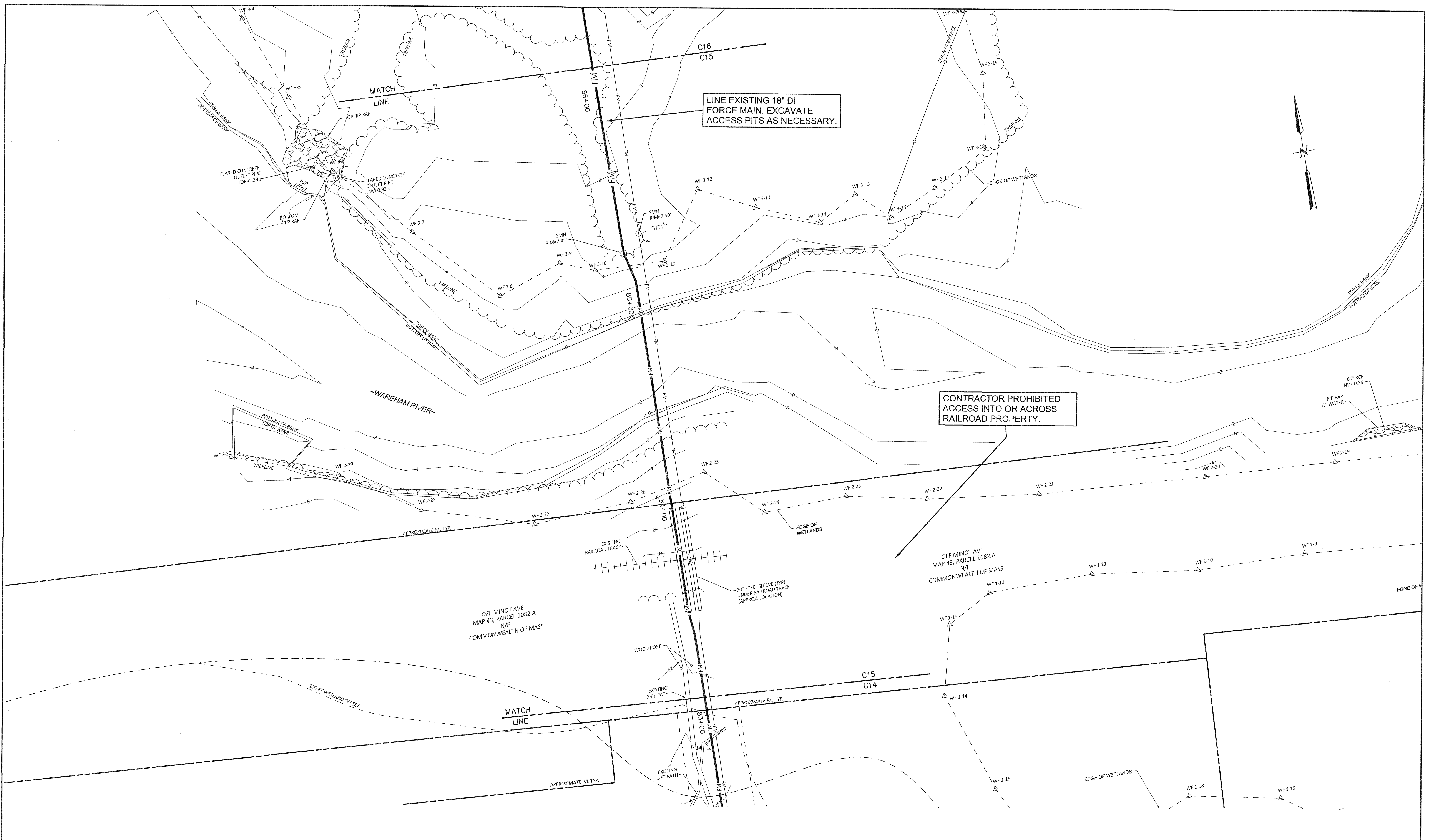
OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
 STA 77+00 TO STA 83+00

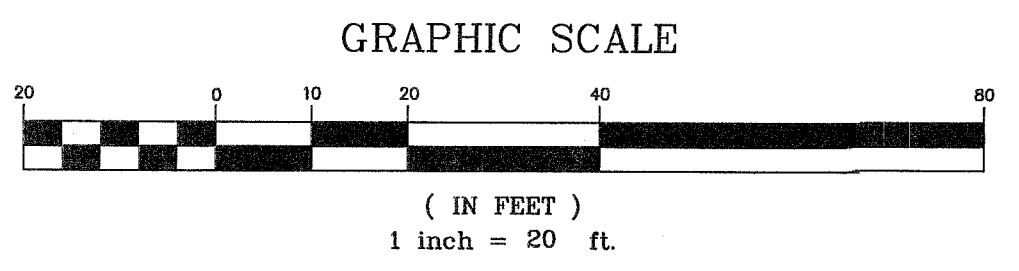
SHEET NO.
C14

9-28-23

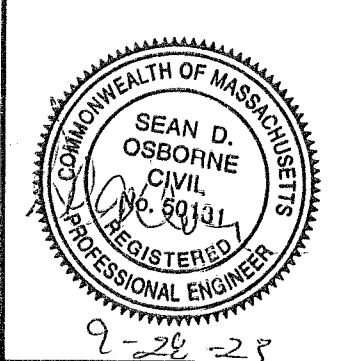


LINE EXISTING 18" DI
FORCE MAIN. EXCAVATE
ACCESS PITS AS NECESSARY.

CONTRACTOR PROHIBITED
ACCESS INTO OR ACROSS
RAILROAD PROPERTY.



PROJECT NO.: WARS-008
DESIGNED: S. OSBORNE
CAD: G. RICE
DATE: SEPTEMBER, 2023

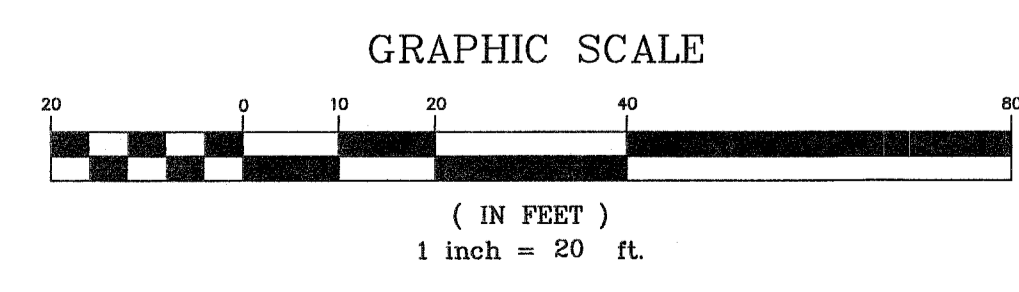
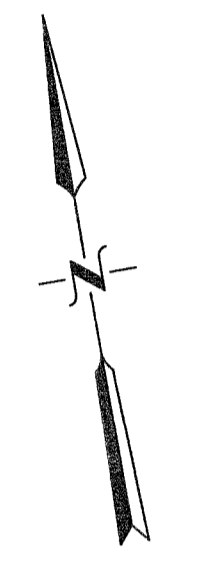
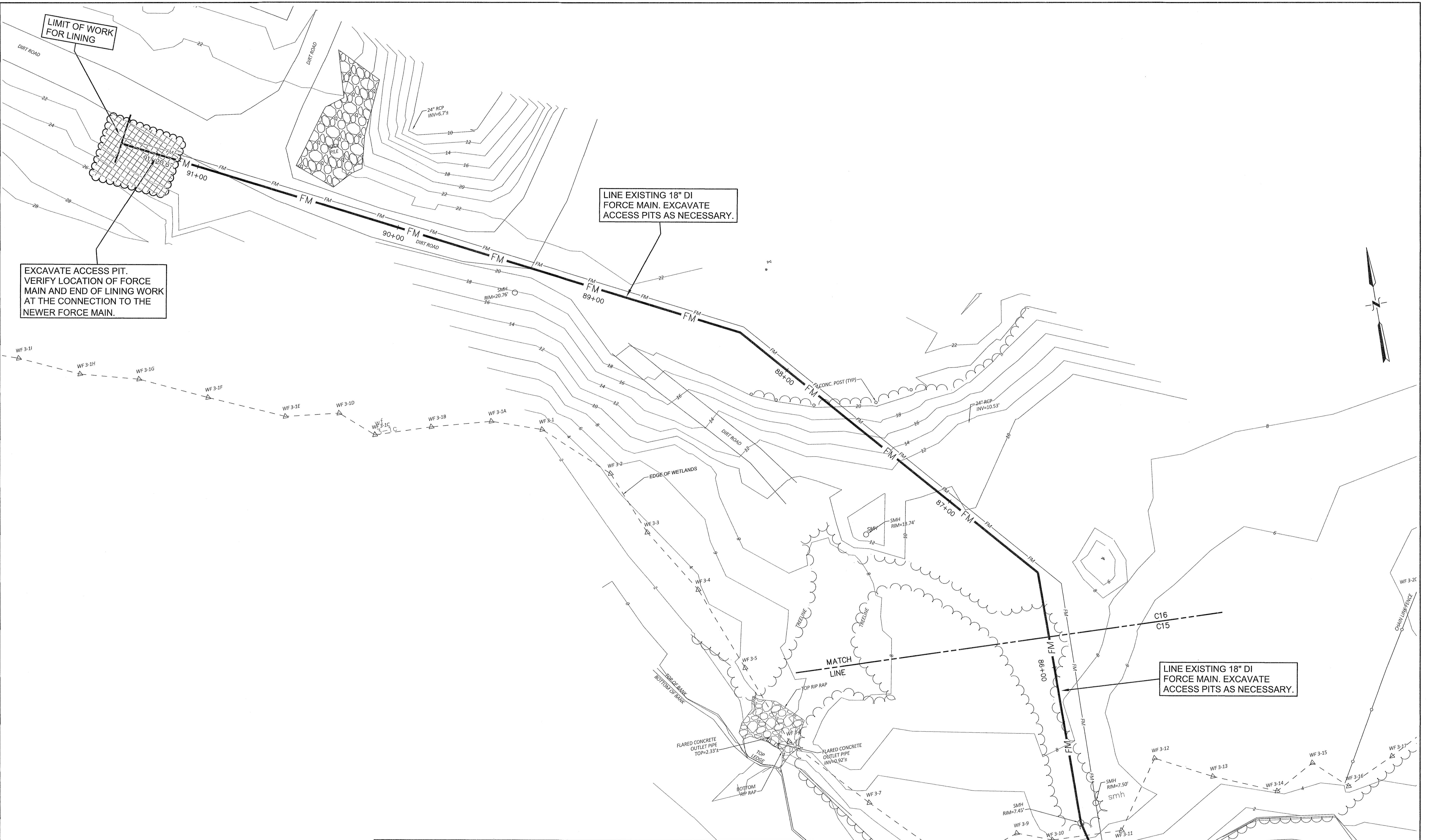


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1844B MASSACHUSETTS AVE.
LEXINGTON, MA 02420

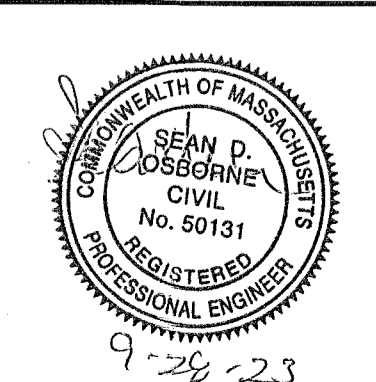
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 83+00 TO 86+00

SHEET NO.
C15



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023



OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

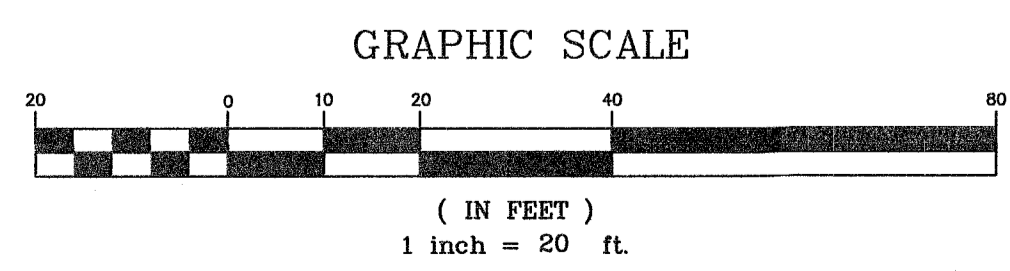
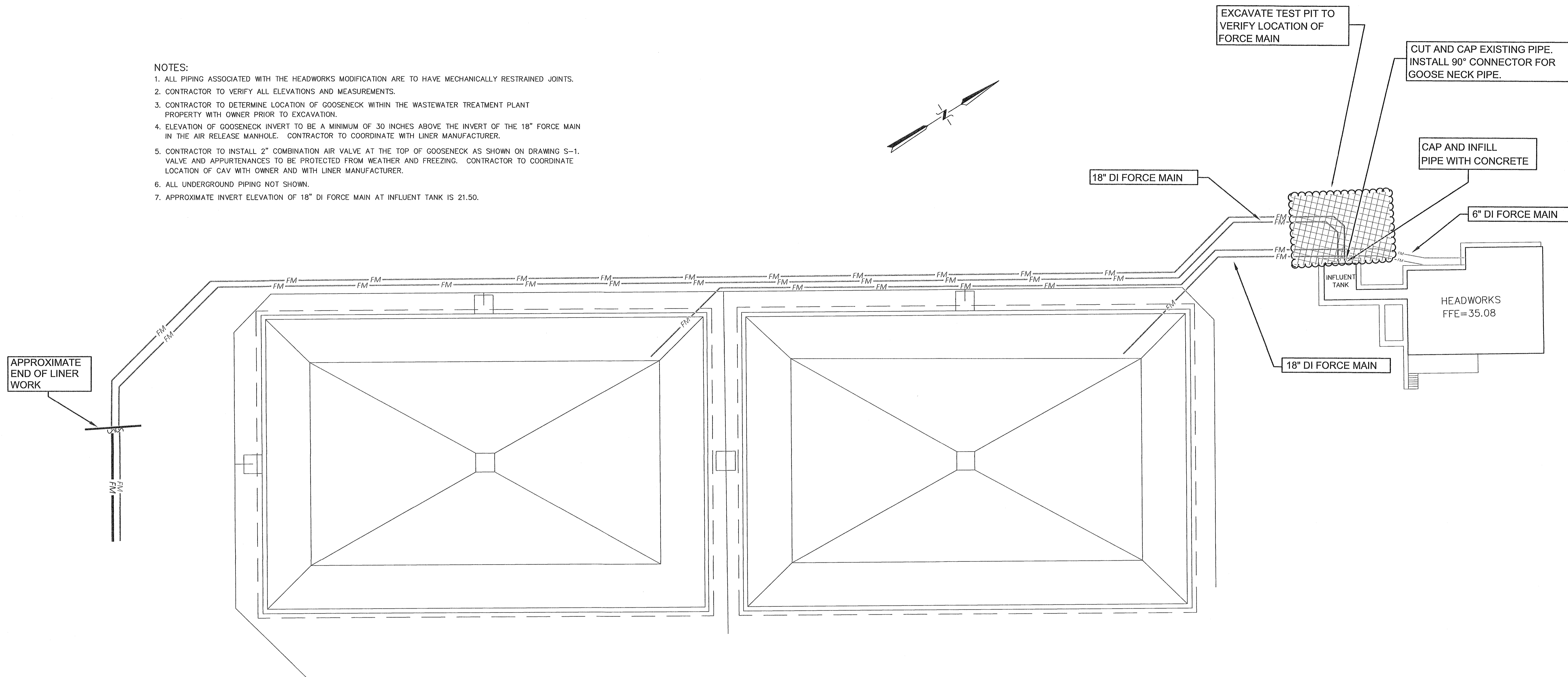
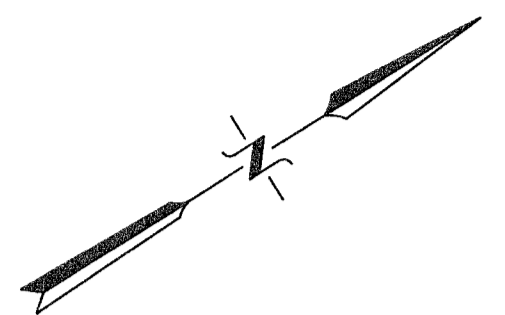
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE LAYOUT
STA 86+00 TO END

SHEET NO.
C16

NOTES:

1. ALL PIPING ASSOCIATED WITH THE HEADWORKS MODIFICATION ARE TO HAVE MECHANICALLY RESTRAINED JOINTS.
2. CONTRACTOR TO VERIFY ALL ELEVATIONS AND MEASUREMENTS.
3. CONTRACTOR TO DETERMINE LOCATION OF GOOSENECK WITHIN THE WASTEWATER TREATMENT PLANT PROPERTY WITH OWNER PRIOR TO EXCAVATION.
4. ELEVATION OF GOOSENECK INVERT TO BE A MINIMUM OF 30 INCHES ABOVE THE INVERT OF THE 18" FORCE MAIN IN THE AIR RELEASE MANHOLE. CONTRACTOR TO COORDINATE WITH LINER MANUFACTURER.
5. CONTRACTOR TO INSTALL 2" COMBINATION AIR VALVE AT THE TOP OF GOOSENECK AS SHOWN ON DRAWING S-1. VALVE AND APPURTENANCES TO BE PROTECTED FROM WEATHER AND FREEZING. CONTRACTOR TO COORDINATE LOCATION OF CAV WITH OWNER AND WITH LINER MANUFACTURER.
6. ALL UNDERGROUND PIPING NOT SHOWN.
7. APPROXIMATE INVERT ELEVATION OF 18" DI FORCE MAIN AT INFLUENT TANK IS 21.50.



PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023

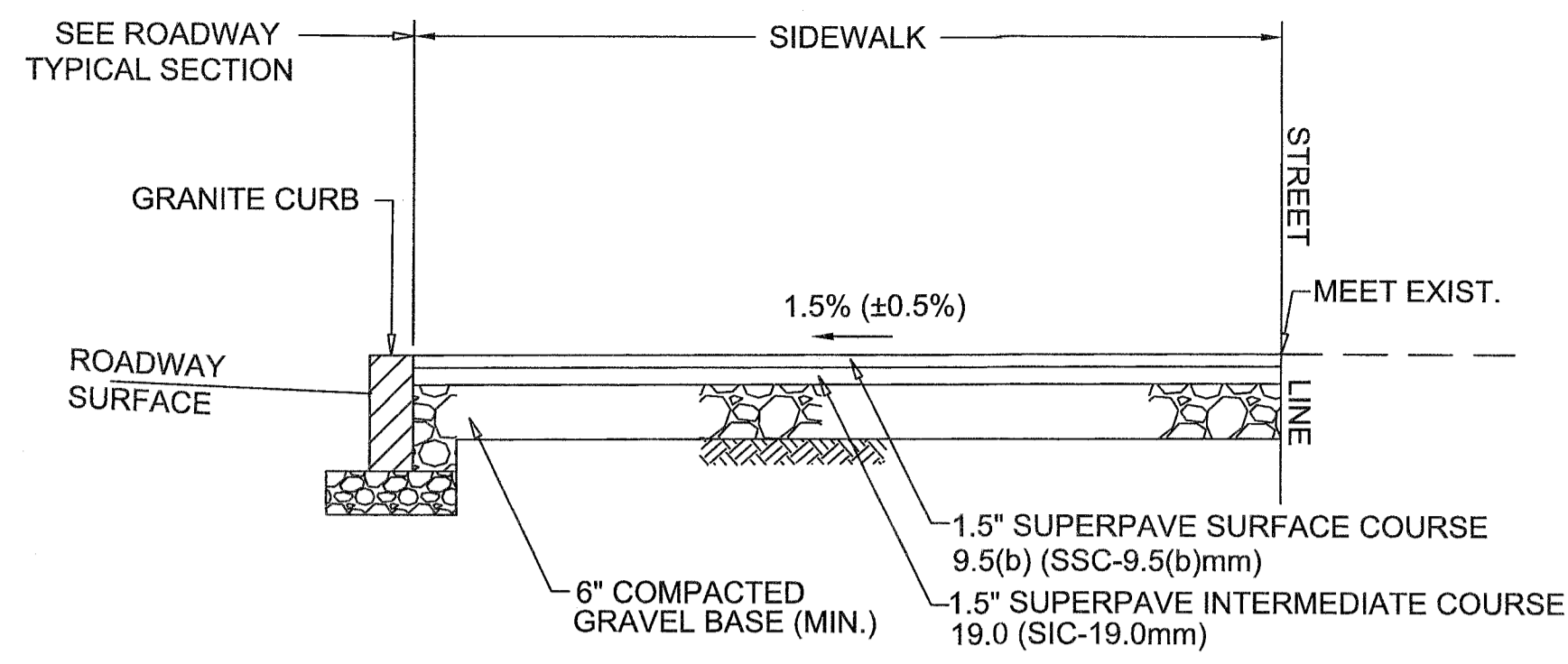


OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

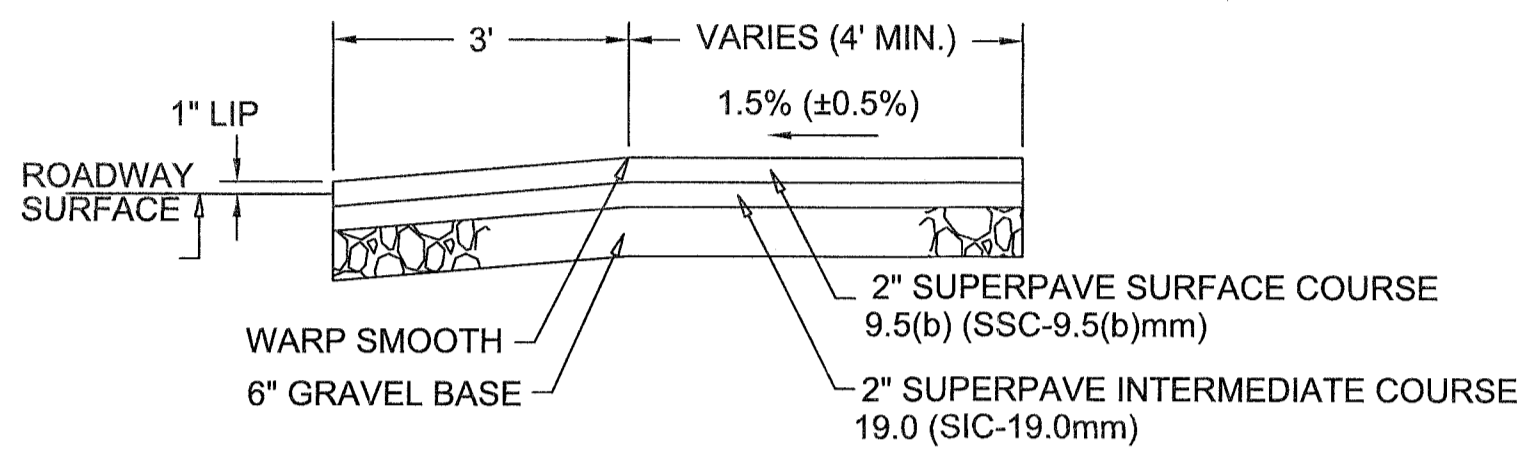
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

SITE PLAN FOR
 HEADWORKS MODIFICATIONS

SHEET NO.
C17



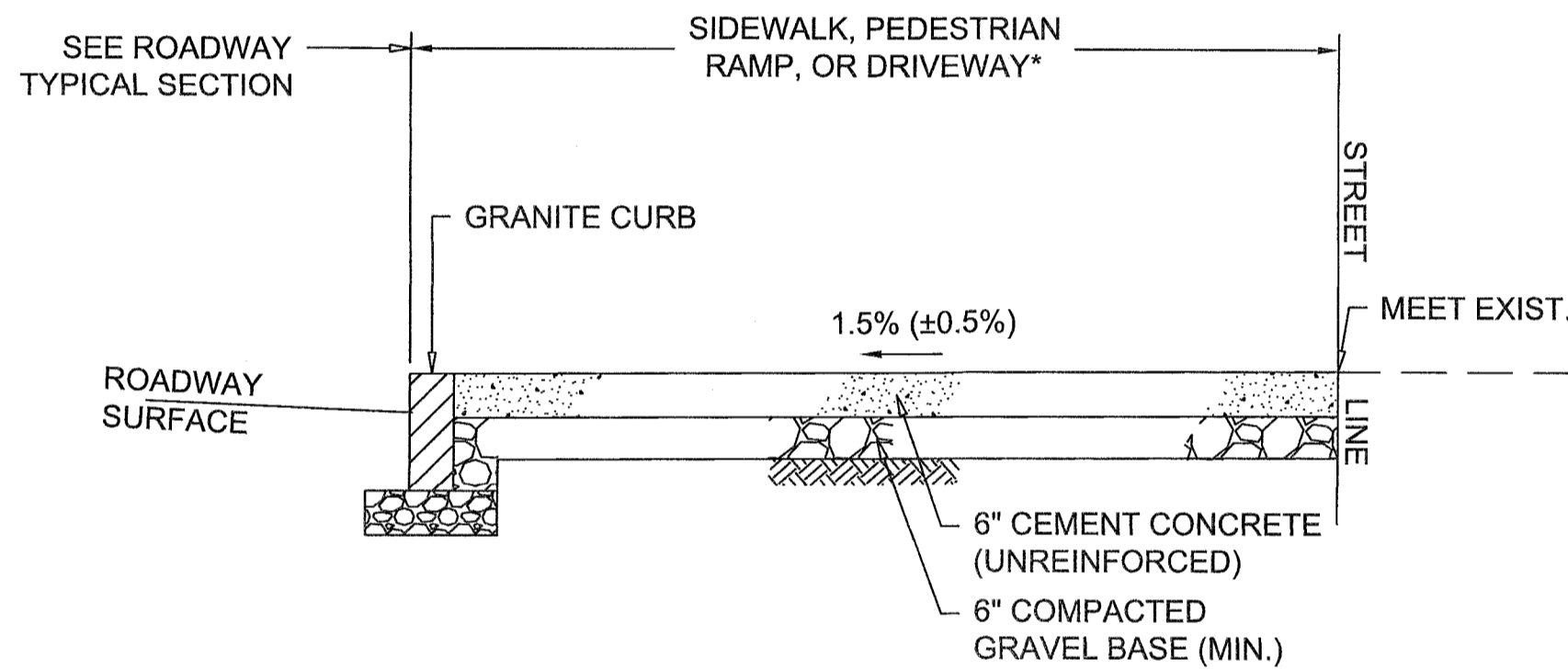
TYPICAL SIDEWALK SECTION



TYPICAL DRIVEWAY SECTION

TYPICAL DRIVEWAY SECTION

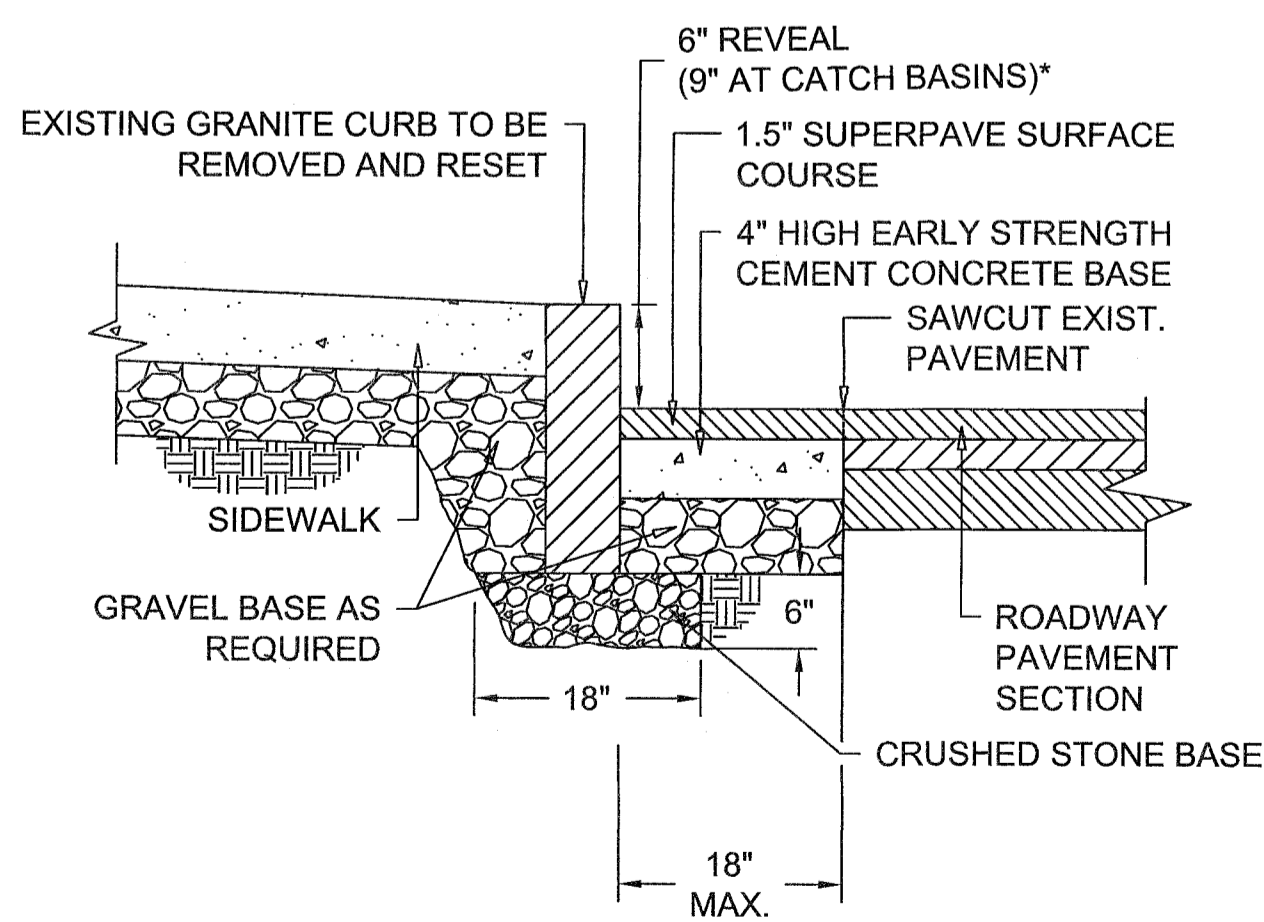
SCALE: N.T.S.



CONCRETE SIDEWALK WITH GRANITE CURB

SCALE: N.T.S.

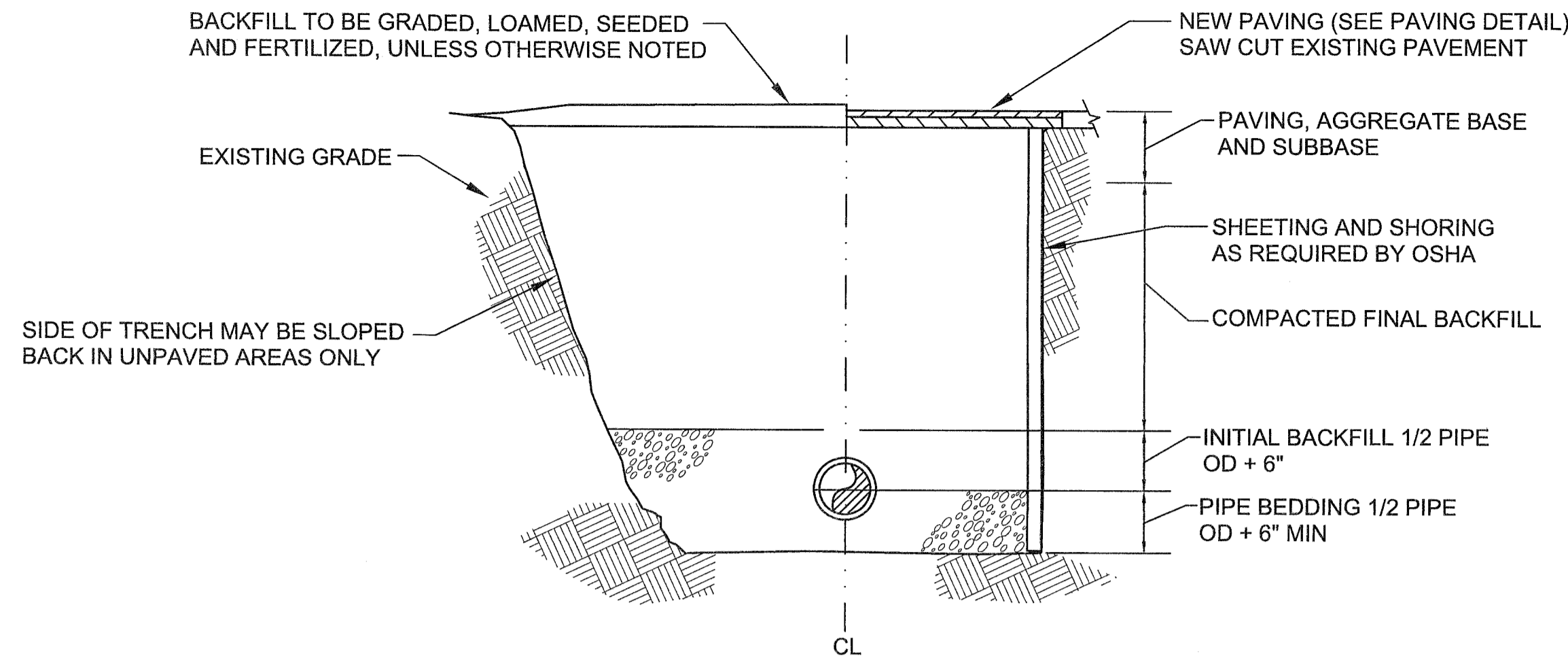
*DETAIL DEPICTS SIDEWALK CONDITION ALTHOUGH THE SAME CROSS SECTION SHALL BE USED FOR CURB RAMPS OR DRIVEWAYS.



GRANITE CURB RESET

SCALE: N.T.S.

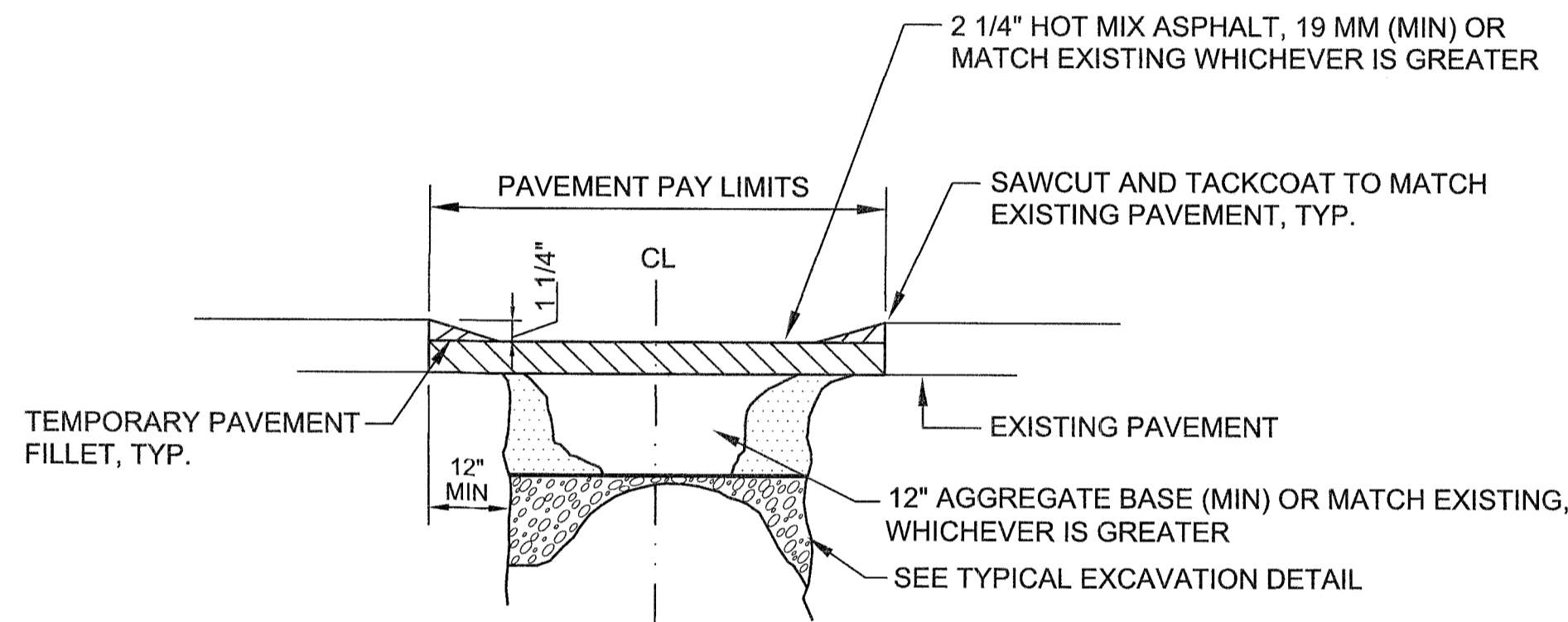
*6" REVEAL TYPICAL. REVEAL MAY VARY FROM 3" TO 9" WITH PWD APPROVAL.



EXCAVATION PIT

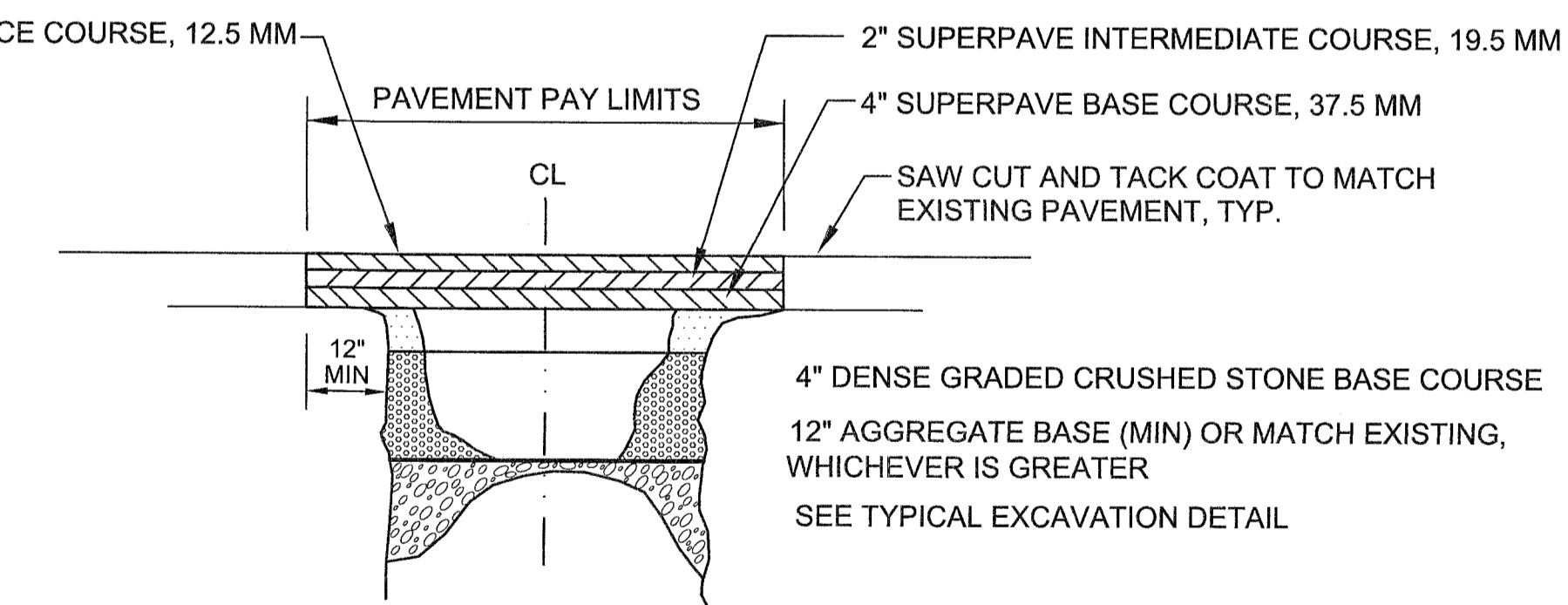
SCALE: N.T.S.

- NOTES:
1. ALL EXCAVATION MUST MEET OSHA STANDARDS.
 2. SEE SPECIFICATIONS FOR BEDDING AND BACKFILL REQUIREMENTS.



INITIAL PAVING MINOT AVENUE AND NARROWS ROAD

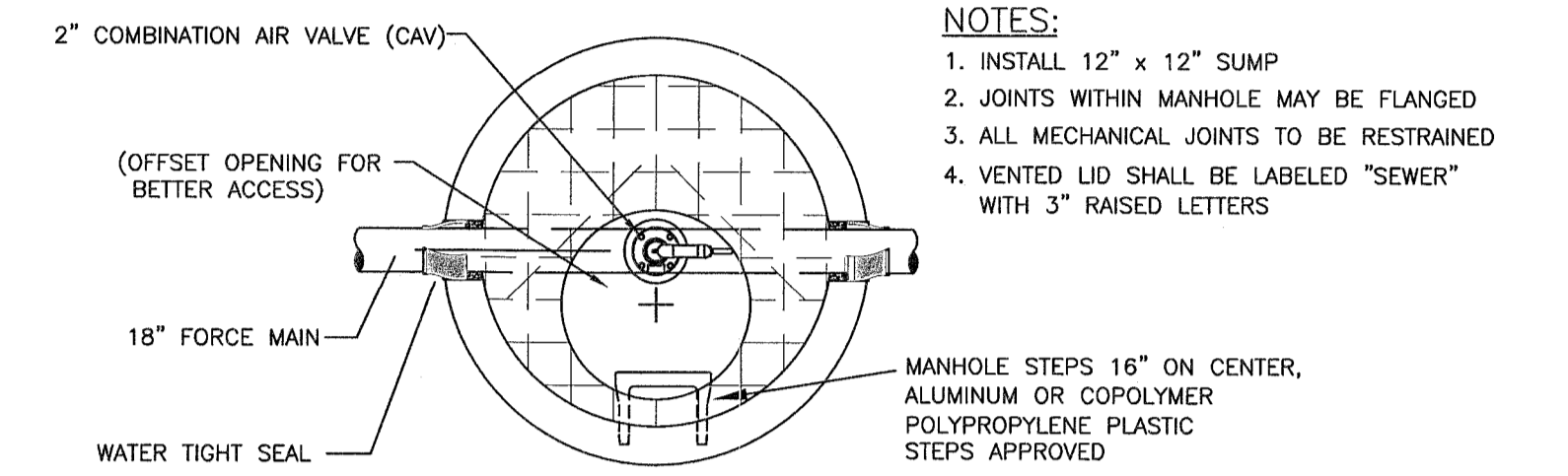
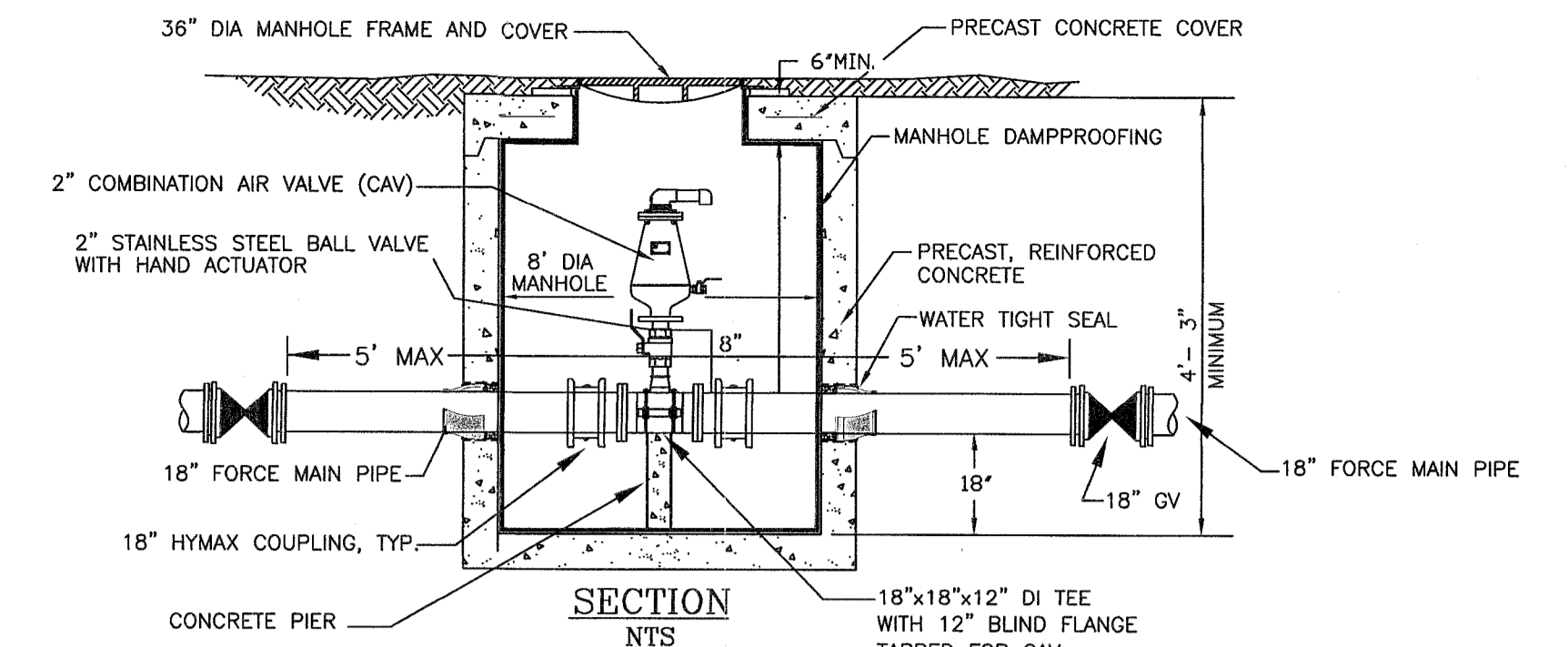
SCALE: N.T.S.



PERMANENT PAVING SANDWICH ROAD

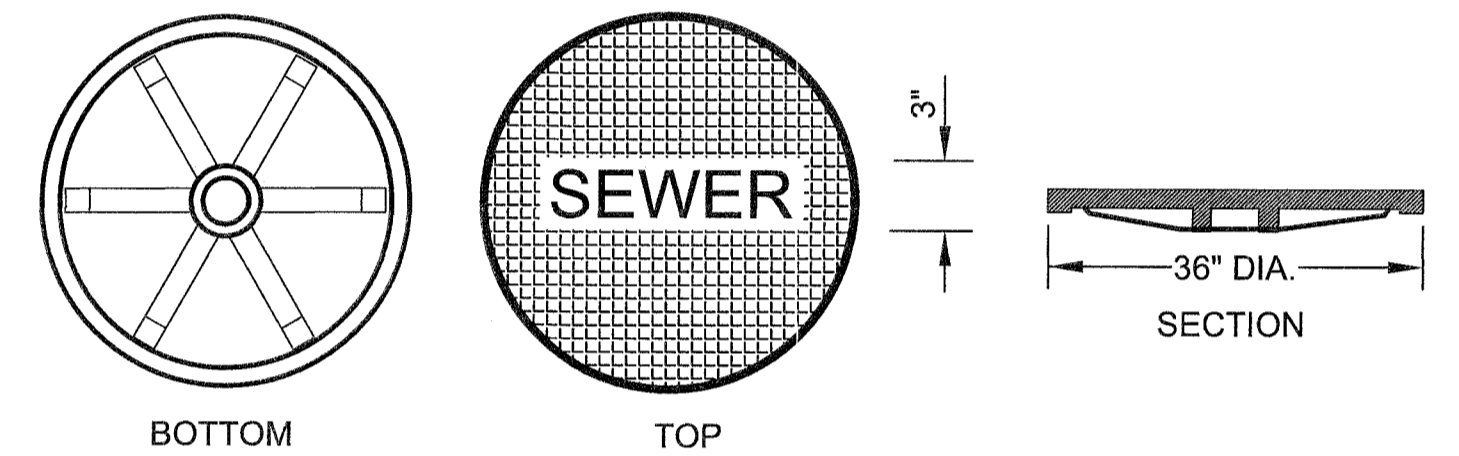
SCALE: N.T.S.

- NOTES:
1. THIS DETAIL IS TO BE USED FOR EXCAVATION PITS WITHIN STATE HIGHWAY LIMITS.
 2. TOTAL PAVEMENT THICKNESS IS TO BE 7.5" OR MATCH EXISTING, WHICHEVER IS GREATER.
 3. SAWCUT AND EXCAVATE TRENCH WITH 12" OVERCUTS OF ORIGINAL EXCAVATION.
 4. IF EDGE OF PERMANENT PAVEMENT OVERCUT IS LESS THAN 24 INCHES FROM NEAREST CURB/BERM, EXPAND PATCH TO FACE OF CURB/BERM.



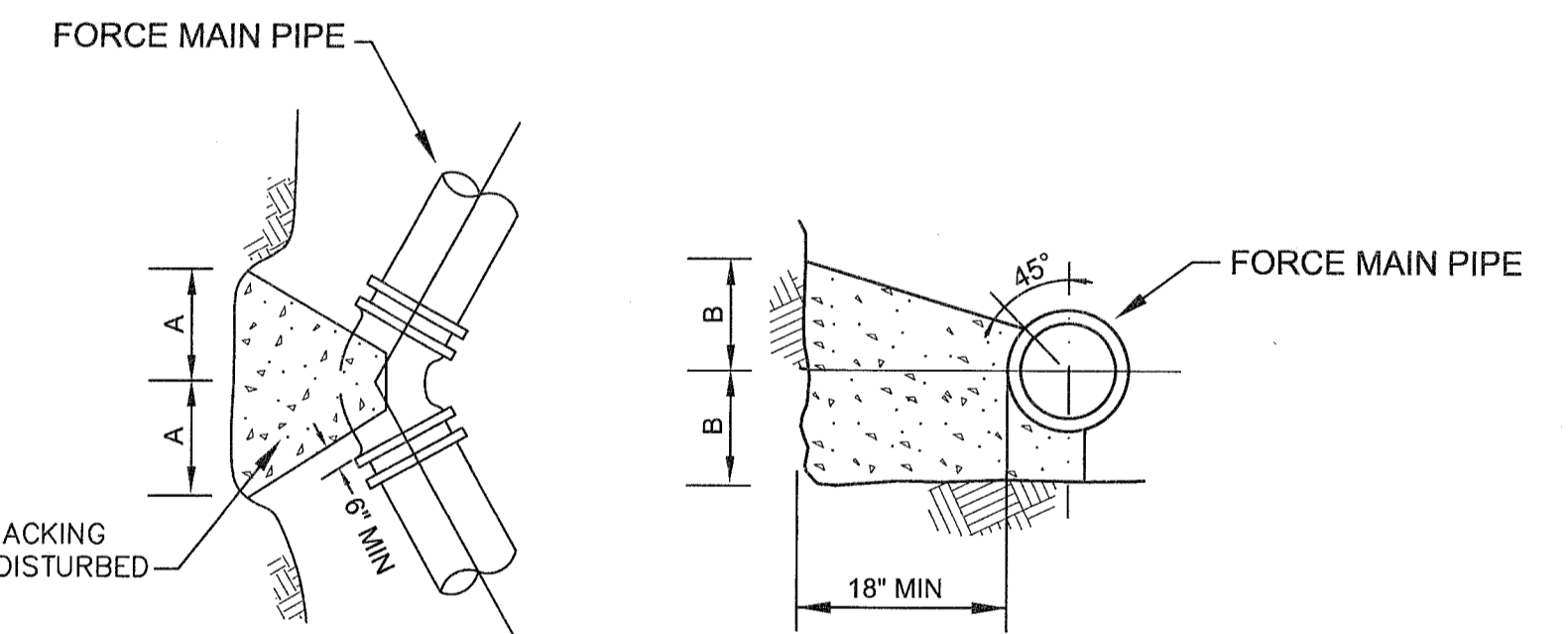
2" AIR RELEASE VALVE AND MANHOLE

SCALE: N.T.S.



MANHOLE STANDARD FRAME AND COVER

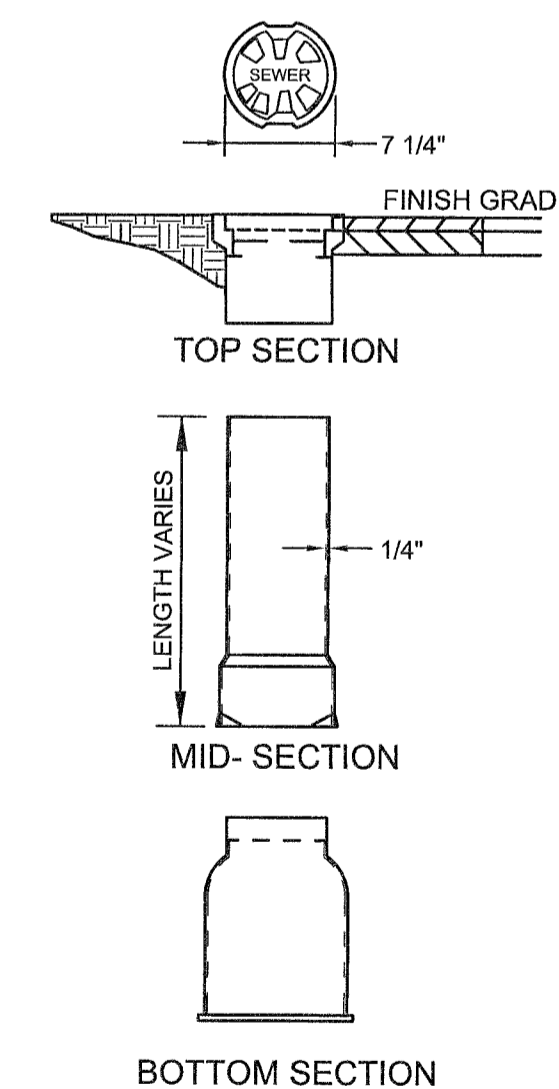
SCALE: N.T.S.



- NOTES:
1. THRUST BLOCK SIZES ABOVE ARE BASED ON A SOIL BEARING CAPACITY OF 1000 PSF AND TEST PRESSURES OF 100 PSI. CONTRACTOR SHALL NOTIFY THE ENGINEER IF LOW BEARING STRENGTH SOILS ARE ENCOUNTERED.
 2. RETAINER GLANDS MAY BE USED IN LIEU OF THRUST BLOCKS ON DUCTILE IRON FORCE MAINS ONLY. INSTALL IN COMPLIANCE WITH DUCTILE IRON & PIPE MANUFACTURERS STANDARDS.

FORCE MAIN THRUST BLOCK

SCALE: N.T.S.



VALVE BOX

SCALE: N.T.S.

PIPE SIZE	90° BEND		90° BEND		22 1/2° BEND	
	A	B	A	B	A	B
2"	9"	9"	9"	9"	6"	6"
4"	18"	12"	12"	9"	9"	9"
6"	18"	12"	12"	9"	9"	9"
8"	24"	15"	15"	12"	12"	12"
10"	24"	20"	15"	15"	12"	12"
12"	24"	24"	18"	18"	15"	12"
14"	27"	27"	21"	21"	15"	15"
16"	30"	30"	24"	24"	18"	18"

PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023



OSD ENGINEERING CONSULTANTS
 1844B MASSACHUSETTS AVE.
 LEXINGTON, MA 02420

TOWN OF WAREHAM, MASSACHUSETTS
 NARROWS PUMP STATION
 FORCE MAIN REHABILITATION

CIVIL DETAILS I

SHEET NO.

C18

SOIL EROSION AND SEDIMENTATION CONTROL NOTES

- ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN COMPLIANCE WITH THE SPECIFICATIONS.
- ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE DONE IN ACCORDANCE WITH THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS", REPRINTED MAY 2003.
- THE CONTRACTOR SHALL PROVIDE ALL EROSION AND SEDIMENT CONTROL DEVICES AS DIRECTED BY THE TOWN OF WAREHAM AND THE ENGINEER. CONSTRUCTION SHALL NOT COMMENCE UNTIL THESE MEASURES HAVE BEEN APPROVED BY THE TOWN OF WAREHAM AND THE ENGINEER.
- THE CONTRACTOR SHALL STOCKPILE SUFFICIENT SOIL EROSION AND SEDIMENT CONTROL MATERIALS ON SITE TO REPAIR ANY DAMAGED SOIL EROSION AND SEDIMENT CONTROLS.
- SILTATION AND EROSION CONTROL STRUCTURES ARE REQUIRED, AT A MINIMUM, AT THE PUMP STATION, TEST PITS, ACCESS PITS, AIR RELEASE MANHOLE AND WATER/SEWER SERVICE EXCAVATIONS. PROVIDE SILT FENCE, STONE CHECK DAMS AND OTHER EROSION CONTROL MEASURES AS REQUIRED TO ADEQUATELY PREVENT SEDIMENT TRANSPORT.
- SEDIMENT BARRIERS (SILT FENCE, STONE CHECK DAMS, ETC.) SHOULD BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF UPGRADIENT DRAINAGE AREAS.
- INSTALL SILT FENCE AT TOE OF SLOPES TO FILTER SILT FROM RUNOFF. SEE SILT FENCE DETAIL FOR PROPER INSTALLATION.
- ALL EROSION CONTROL STRUCTURES WILL BE INSPECTED, REPLACED AND/OR REPAIRED EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR WHEN NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION OR DECOMPOSURE.
- SEDIMENT DEPOSITS MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
- SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED.
- NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2 TO 1) UNLESS STABILIZED WITH PERMANENT EROSION CONTROL MEASURES.
- IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT TO BE COMPLETED 30 DAYS PRIOR TO THE ANTICIPATED DATE OF THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY PERMANENT SEEDING, UNTIL UPGRADIENT AREAS ARE STABILIZED.
- WHEN FEASIBLE, TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINISH GRADED SHALL BE COMPLETED 30 DAYS PRIOR TO THE FIRST KILLING FROST.
- DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO THE SITE AND REGRADED ONTO OPEN AREAS. POST SEEDING SEDIMENT, IF ANY, WILL BE DISPOSED OF IN AN ACCEPTABLE MANNER.
- REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED, AND REVEGETATED AS FOLLOWS:
 - A MINIMUM OF FOUR (4) INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.
 - APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT DEEMED FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE (138 LB PER 1,000 SQ. FT.).
 - FOLLOWING SEED BED PREPARATION, DITCHES AND BACK SLOPES WILL BE SEEDED WITH A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP, AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED WITH A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE, AND 12% PERENNIAL RYE GRASS. SEEDING RATE IS 3.0 LBS PER 1000 SQ. FT. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED.
 - HAY MULCH AT THE RATE OF 70-90 LBS PER 1000 SQUARE FEET OR A HYDRO-APPLICATION OF CELLULOSE FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER WILL BE USED ON HAY MULCH FOR WIND CONTROL.
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE WORK AREA IS STABILIZED.
- WETLANDS (EXCEPTING THOSE WHICH ARE TO BE FILLED IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS) WILL BE PROTECTED WITH SILT FENCE INSTALLED AT THE EDGE OF THE WETLAND OR THE BOUNDARY OF WETLAND DISTURBANCE.
- IN GENERAL, AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS SHALL HAVE A MAXIMUM PERIOD OF EXPOSURE OF NOT MORE THAN 15 DAYS.
- FOLLOW APPROPRIATE EROSION CONTROL MEASURES PRIOR TO EACH STORM IN ALL AREAS WITHIN 100 FEET OF DELINEATED WETLANDS OR STREAMS.

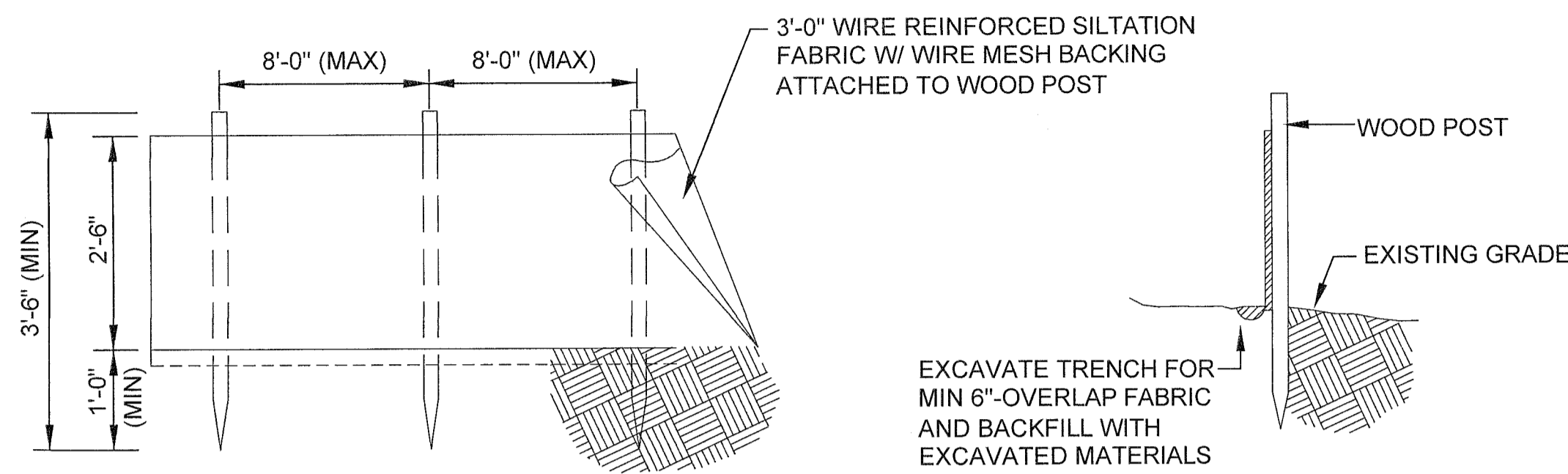
SOIL EROSION AND SEDIMENTATION CONTROL DURING WINTER CONSTRUCTION

- WINTER CONSTRUCTION PERIOD DEFINED: NOVEMBER 1 THROUGH APRIL 15.
- WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
- EXPOSED AREA SHOULD BE LIMITED TO THAT WHICH CAN BE MULCHED IN ONE DAY PRIOR TO ANY PRECIPITATION EVENT.
- AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 100 POUNDS PER 1,000 SQUARE FEET (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED, AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
- BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE-FREEZING TEMPERATURES, THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED, AND IS SMOOTH, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE 200%-300% HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT EXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS PERMIT, ALL DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS.
- BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15,
 - ALL MULCH SHALL BE EITHER WOOD CELLULOSE FIBER OR BE ANCHORED WITH MULCH NETTING OR CHEMICAL TACK.
 - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3%, FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%.
 - MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1, THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
- AFTER NOVEMBER 1, THE CONTRACTOR SHALL APPLY DORMANT SEEDING OR MULCH AND ANCHORING ON ALL BARE EARTH AT THE END OF EACH WORKING DAY.
- DURING WINTER CONSTRUCTION PERIODS, ALL SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

MULCH AND MULCH ANCHORING

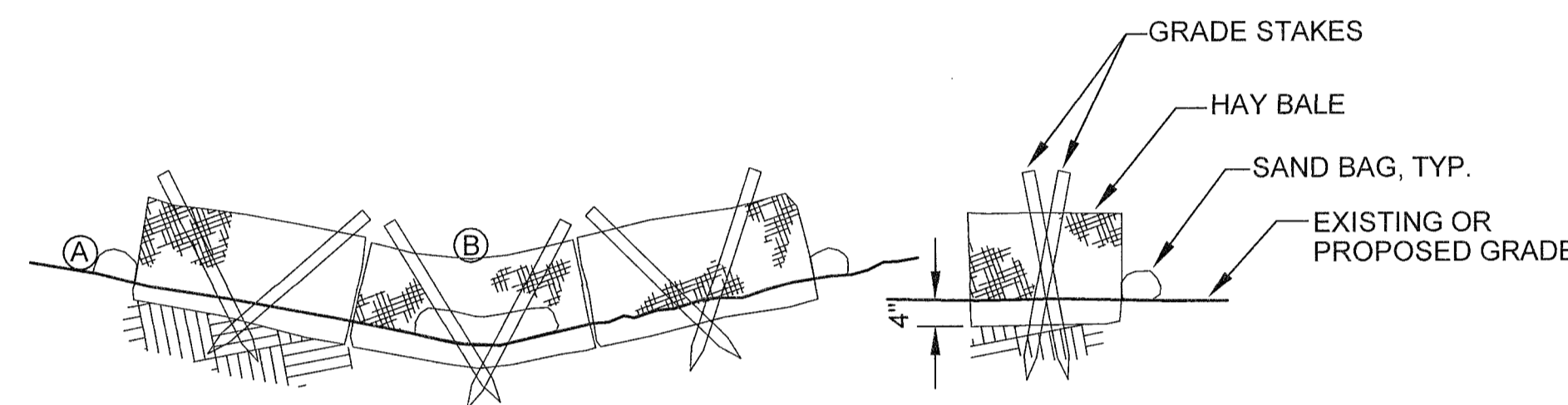
ANCHOR MULCH WITH: MULCH NETTING (AS PER MANUFACTURER) OR BE WOOD CELLULOSE FIBER (2000 LBS/ACRE).

LOCATION	MULCH MATERIAL	APPLICATION RATE PER 1,000 SF
PROTECTED AREA	HAY OR STRAW	90-100 LBS
WINDY AREAS	ANCHORED HAY OR STRAW	90-100 LBS
STEEP SLOPE	JUTE TWISTED YARN	48"x 50 YDS



SILT FENCE INSTALLATION DETAIL

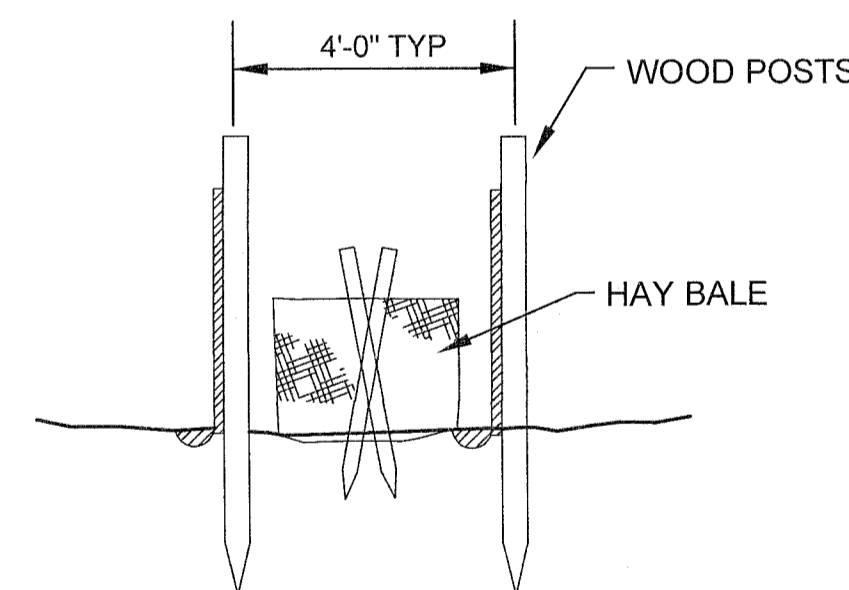
SCALE: N.T.S.



EROSION CHECK TO BE BALES OF HAY SECURED TO THE GROUND WITH TWO 4' LONG GRADE STAKED FOR EACH BALE. SAND BAG AS REQUIRED, PLACE SUFFICIENT BALES TO ESTABLISH ELEVATIONS AT (A) AT LEAST 6" ABOVE OVERFLOW AT (B)

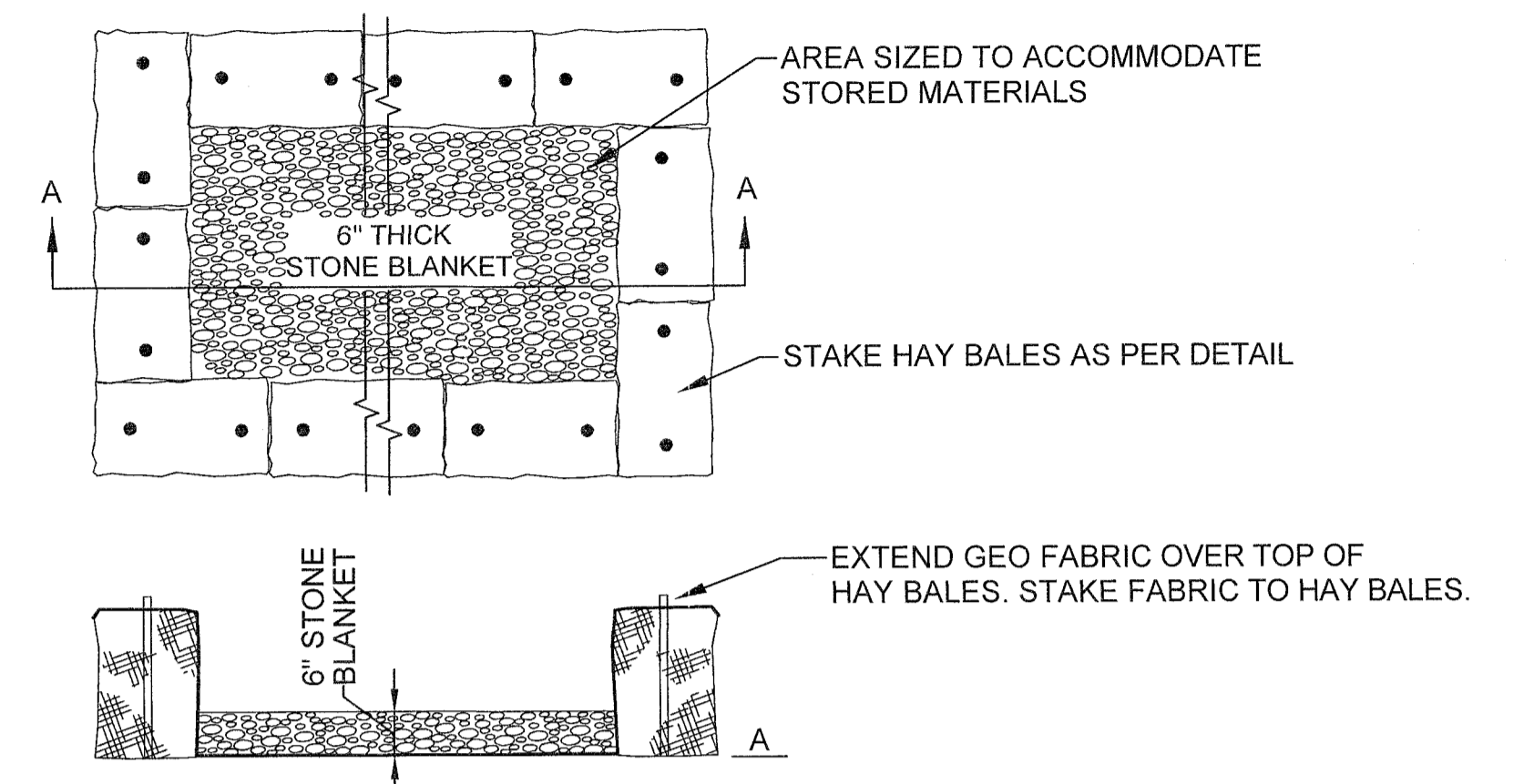
HAY BALE CHECK DAM

SCALE: N.T.S.



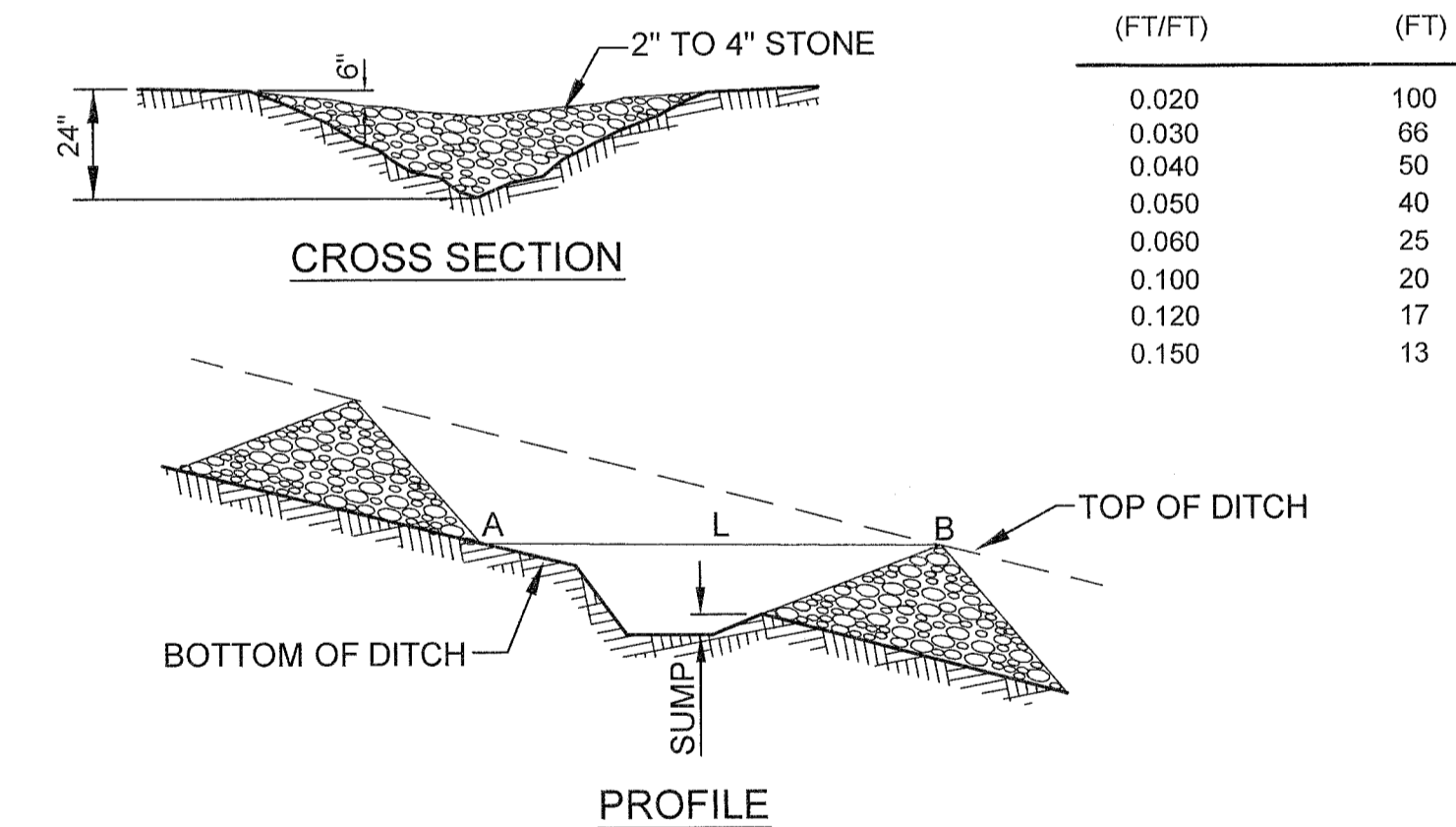
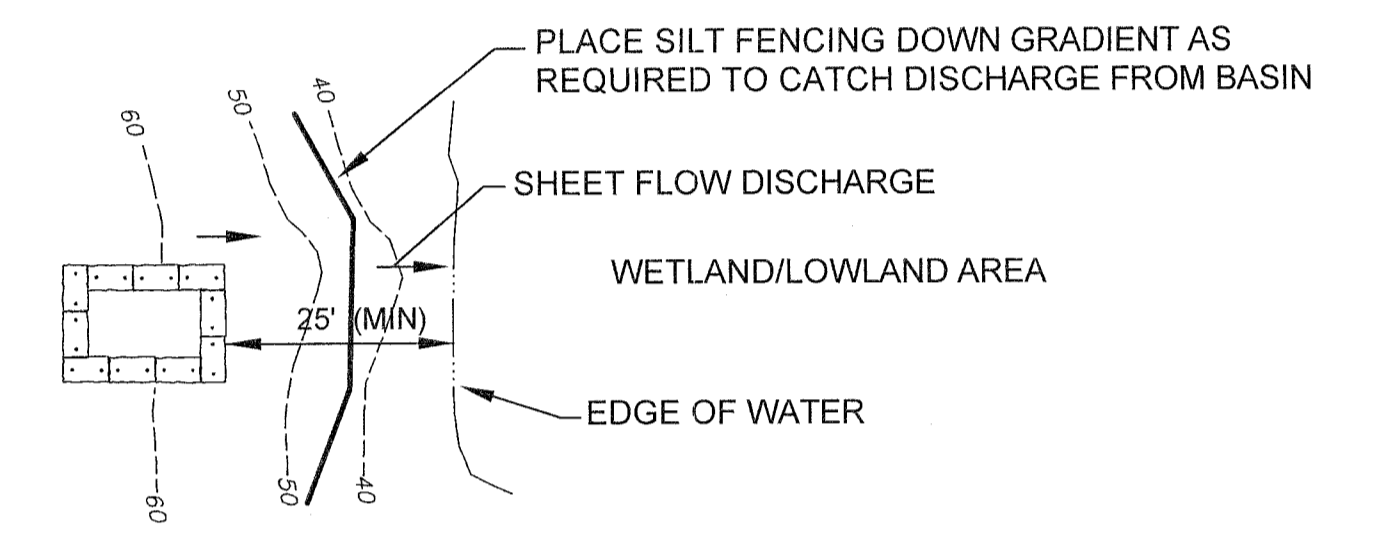
COMBINATION SILT FENCE AND HAY BALE BARRIER

SCALE: N.T.S.



TEMPORARY HAY BALE SEDIMENT BASIN

SCALE: N.T.S.



STONE CHECK DAM DETAIL

SCALE: N.T.S.

PROJECT NO.: WARS-008
 DESIGNED: S. OSBORNE
 CAD: G.RICE
 DATE: SEPTEMBER, 2023

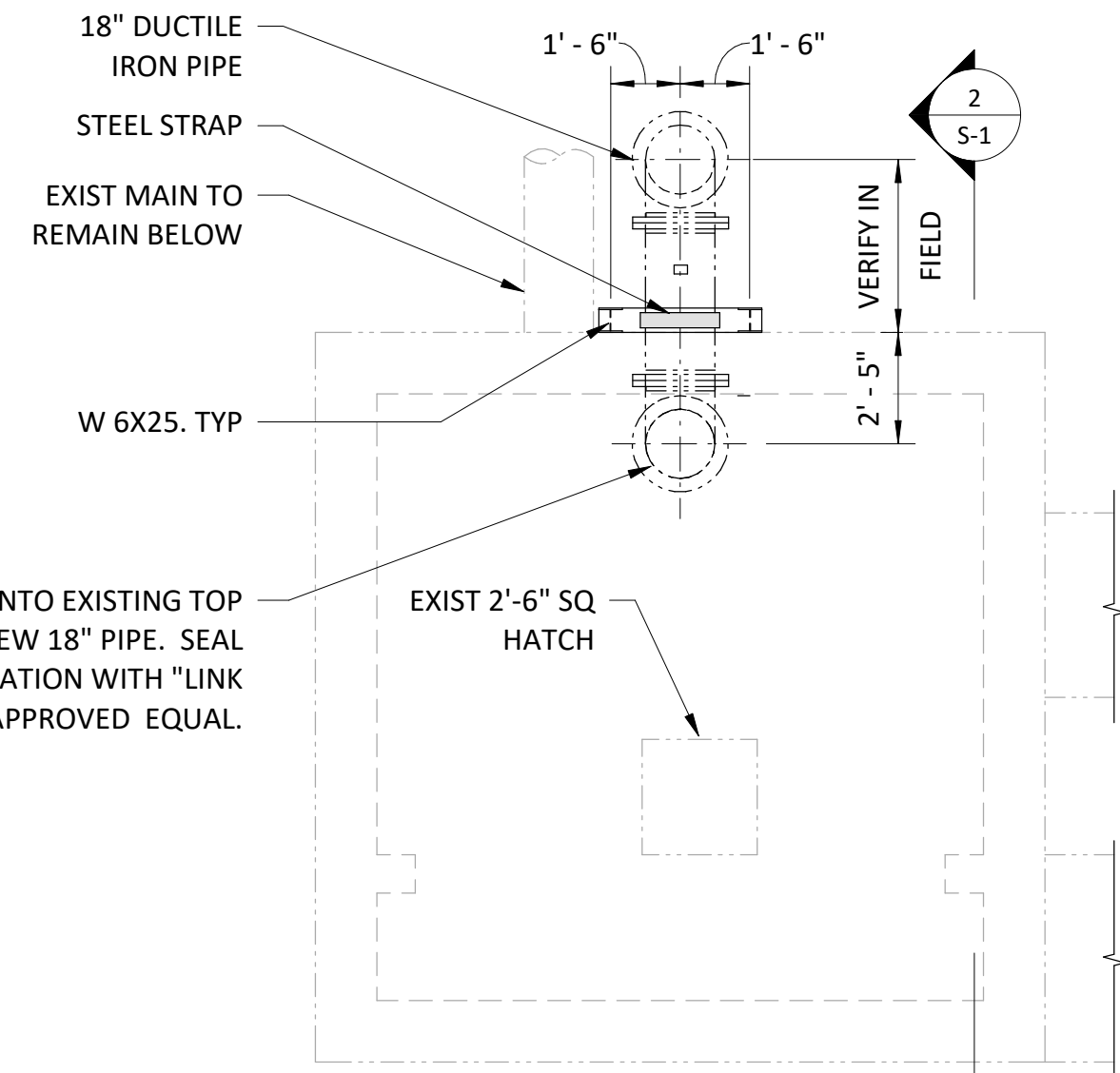


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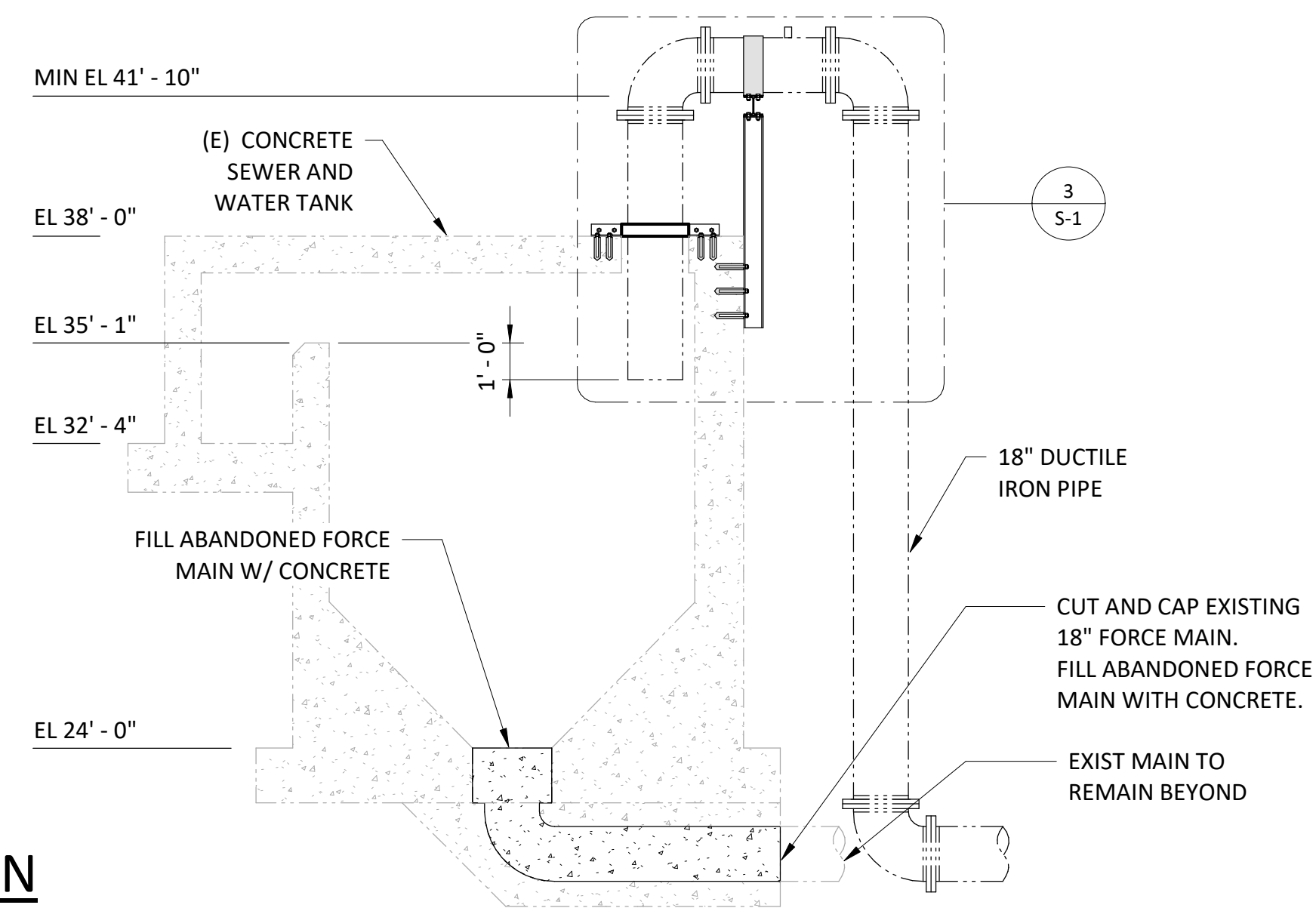
TOWN OF WAREHAM, MASSACHUSETTS
NARROWS PUMP STATION
FORCE MAIN REHABILITATION

CIVIL DETAILS II

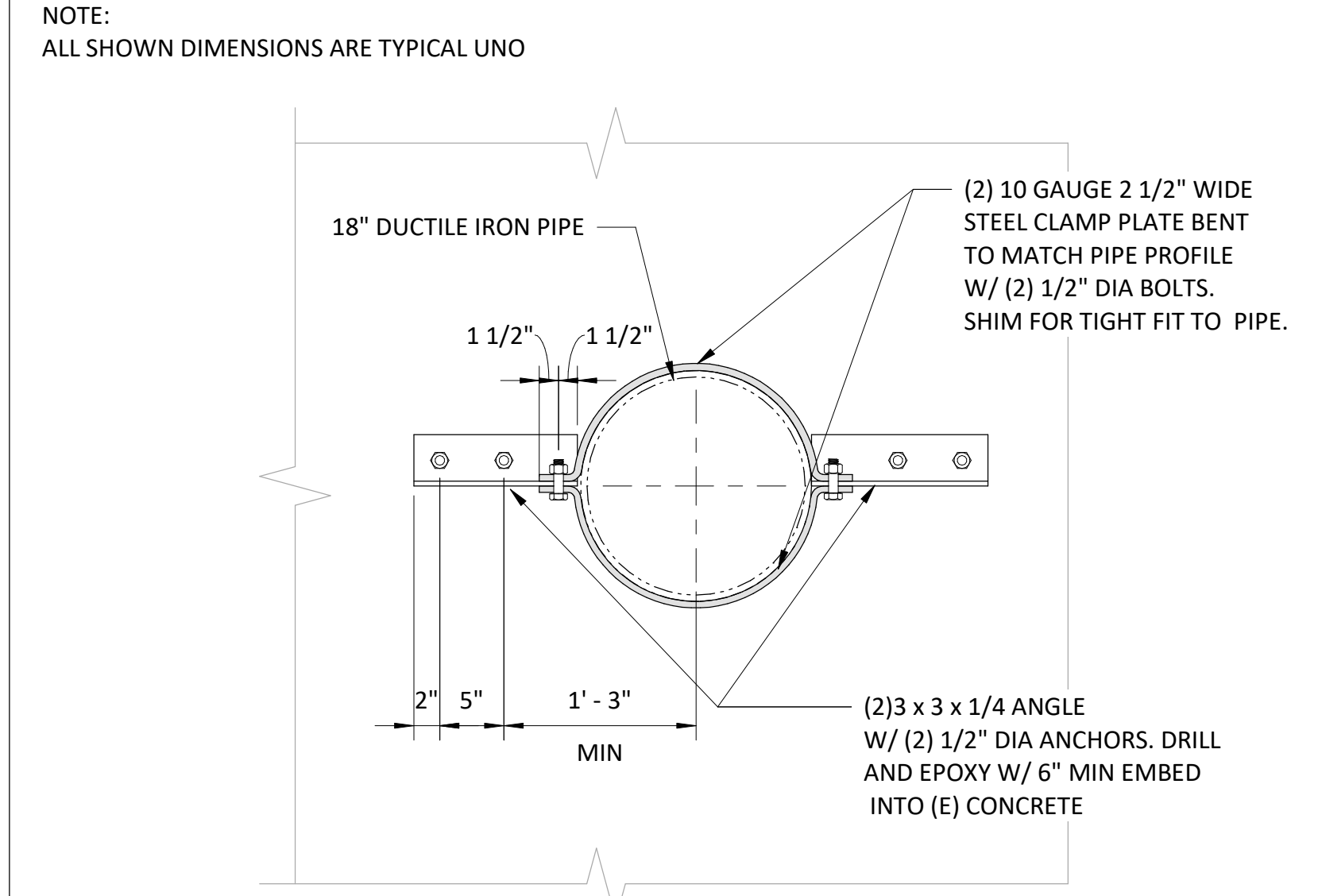
SHEET NO.
C19



1 TANK PLAN VIEW
1/4" = 1'-0"

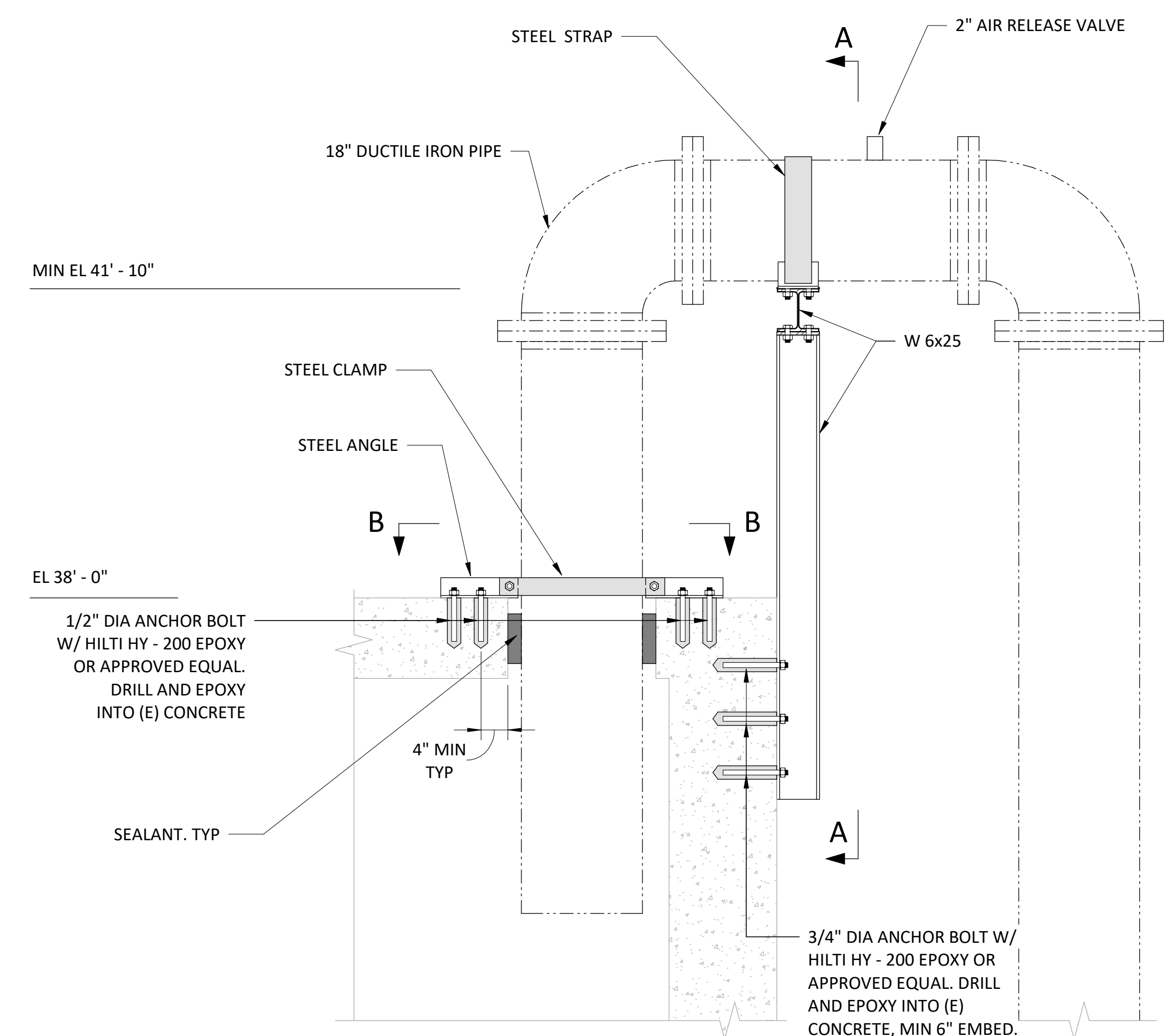


2 TANK ELEVATION
1/4" = 1'-0"

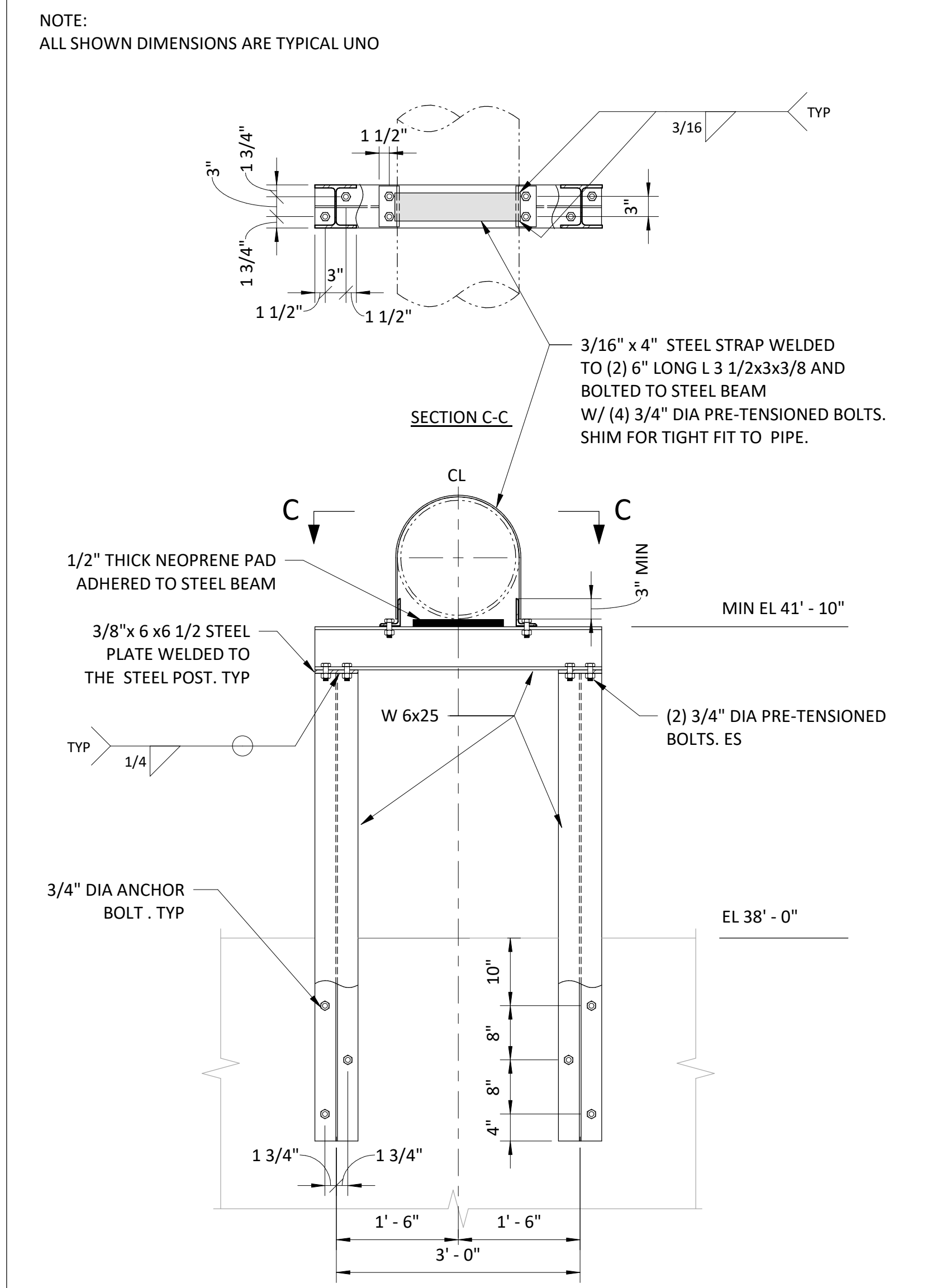


5 SECTION B-B
1" = 1'-0"

- A GENERAL**
- A1 STRUCTURAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE, NINTH EDITION AND THE INTERNATIONAL BUILDING CODE, 2015.
- A2 VERIFY AND COORDINATE ALL NEW AND EXISTING DIMENSIONS RELATED TO THIS PROJECT.
- A3 DETAILS NOT SPECIFICALLY SHOWN SHALL BE SIMILAR TO THOSE SHOWN FOR THE MOST NEARLY SIMILAR CONDITION AS DETERMINED BY THE ENGINEER.
- A4 INFORMATION REGARDING EXISTING CONSTRUCTION IS BASED UPON AVAILABLE CONSTRUCTION DOCUMENTS PREPARED BY THE ENGINEER, WHICH MAY OR MAY NOT REFLECT ALL AS BUILT CONDITIONS. NOTIFY ENGINEER OF ANY DISCREPANCIES DISCOVERED DURING THE COURSE OF CONSTRUCTION BEFORE PROCEEDING WITH WORK IN THE AREA.
- B CONCRETE**
- B1 CONCRETE WORK SHALL CONFORM TO "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" (ACI 318-14), AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE" (ACI 301-05).
- B2 CONCRETE SHALL BE CONTROLLED CONCRETE, PROPORTIONED, MIXED, AND PLACED IN THE PRESENCE OF A REPRESENTATIVE OF AN APPROVED TESTING AGENCY.
- B3 UNLESS NOTED OTHERWISE, CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH AND BE OF A TYPE AS FOLLOWS:
- | | |
|------------------------------|-------------------------|
| (A) GENERAL CONCRETE, U.N.O. | 4000 PSI (NORMALWEIGHT) |
|------------------------------|-------------------------|
- B4 ALLOW ADEQUATE TIME FOR CONCRETE TO CURE AND DRY TO PROPERLY APPLY ALL FINISHES DIRECTLY ADHERED TO FINISHED CONCRETE SURFACES.
- C STRUCTURAL STEEL**
- C1 STRUCTURAL STEEL WORK SHALL CONFORM TO "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" (AISC 360-10); "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS & BRIDGES" (AISC 303-10); "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS, INCLUDING SUPPLEMENT NO.1 DATED 2006" (AISC 341-10); AND "STRUCTURAL WELDING CODE - STEEL" (AWS D1.1-11).
- C2 STRUCTURAL STEEL SHALL BE DETAILED IN ACCORDANCE WITH "DETAILING FOR STEEL CONSTRUCTION 3RD EDITION (2009)" AND, WHERE REQUIRED, DESIGNED IN ACCORDANCE WITH REFERENCED STANDARDS.
- C3 STRUCTURAL STEEL DETAILS NOT SPECIFICALLY SHOWN SHALL BE TAKEN AS BEING SIMILAR TO THOSE SHOWN FOR THE MOST NEARLY SIMILAR CONDITION AS DETERMINED BY THE ENGINEER.
- C4 STRUCTURAL STEEL SHALL BE NEW STEEL CONFORMING TO THE FOLLOWING:
- | | |
|---|--|
| (A) UNLESS NOTED OTHERWISE | ASTM A992 OR A588 GRADE 50 (Fy = 50 KSI) |
| (B) ANGLES, CHANNELS, PLATES, BASE PLATES, AND BARS | ASTM A36 (Fy = 36 KSI), UNO |
| (C) ANCHOR RODS | ASTM F1554, UNO |
| (D) HIGH STRENGTH BOLTS | ASTM A325, UNO |
- C5 STEEL CONNECTIONS SHALL BE DESIGNED CONSIDERING THAT BOLTS WILL NOT SHARE LOAD IN COMBINATION WITH WELDS.
- C6 BOLTED CONNECTIONS SHALL BE AS FOLLOWS:
- | |
|---|
| (A) MINIMUM BOLT DIAMETER - 3/4"; TWO BOLTS MINIMUM. UNO |
| (B) STANDARD, OVERSIZED, OR HORIZONTAL SHORT-SLOTTED HOLES IN WEBS OF BEAMS |
- C7 WELDED CONNECTIONS SHALL BE MADE BY APPROVED CERTIFIED WELDERS USING FILLER METAL CONFORMING TO E70XX OR F7X-EXXX WITH LOW HYDROGEN.
- C8 WELDS SHALL DEVELOP THE FULL STRENGTH OF THE MATERIALS BEING WELDED, UNLESS NOTED OTHERWISE, EXCEPT THAT FILLET WELDS SHALL BE A MINIMUM OF 1/4".
- C9 STRUCTURAL STEEL MEMBERS AND CONNECTIONS EXPOSED TO THE WEATHER SHALL BE GALVANIZED. REGIONS OF FIELD WELDS TO BE GALVANIZED SHALL BE TOUCHED UP WITH A ZINC RICH COATING AFTER COMPLETION AND INSPECTION OF THE WELD.
- D RENOVATION AND RESTORATION**
- D1 WORK SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE STATED ABOVE.
- D2 THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN, IN THE COURSE OF CONSTRUCTION OR DEMOLITION, CONDITIONS ARE UNCOVERED WHICH ARE UNANTICIPATED OR OTHERWISE APPEAR TO PRESENT A DANGEROUS CONDITION.
- D3 INFORMATION REGARDING EXISTING CONSTRUCTION OR CONDITIONS IS BASED ON AVAILABLE RECORD DRAWINGS WHICH MAY OR MAY NOT TRULY REFLECT EXISTING CONDITIONS. SUCH INFORMATION IS INCLUDED ON THE ASSUMPTION THAT IT MAY BE OF INTEREST TO THE CONTRACTOR, BUT THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ITS ACCURACY OR COMPLETENESS.
- D4 VERIFY ALL DIMENSIONS AND CONDITIONS ON THE JOB. DISCREPANCIES SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THAT PART OF THE WORK.
- D5 STRUCTURAL MATERIALS AND COMPONENTS SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.



3 18" DUCTILE IRON PIPE SUPPORT AND CONNECTION DETAIL
3/4" = 1'-0"



4 SECTION A-A
3/4" = 1'-0"

PROJECT NO.: WARS-008 DESIGNED: NM CAD: NM DATE: SEPTEMBER 2023	PRIME CONSULTANT: OSD ENGINEERING CONSULTANTS 1844B MASSACHUSETTS AVE, LEXINGTON, MA 02420	STRUCTURAL CONSULTANT: B+AC 214 ARLINGTON ST, CHELSEA, MA 02150	TOWN OF WAREHAM, MASSACHUSETTS NARROWS PUMP STATION FORCE MAIN REHABILITATION	HEADWORKS DEMOLITION AND MODIFICATIONS PLANS, SECTIONS AND DETAILS	SHEET NO. S-1
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