

SHEET INDEX



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ARCADIS U.S., INC.

CONSULTANTS

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SEALS

FRANKLIN, MASSACHUSETTS
TOWN OF FRANKLIN DPW

**BSI REPLACEMENT
AND PUMP STATION
DESIGN**

CLIENT PROJ. NO. ?

REVISIONS

NO.	DATE	ISSUED FOR	BY

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2021

DATE: MAY 2022

PROJECT NO.: 30065216

FILE NAME: G-1

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

GENERAL

SHEET INDEX

SCALE: AS SHOWN

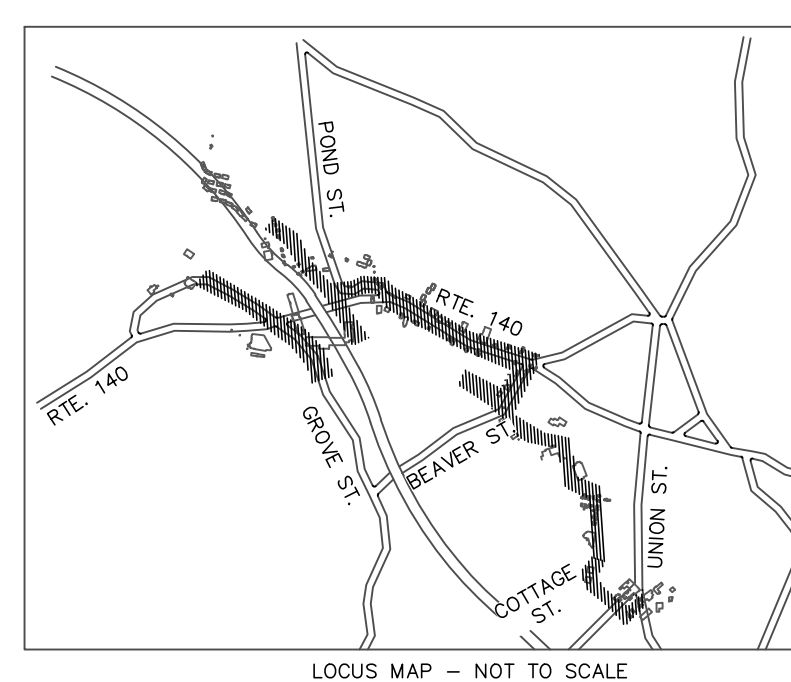
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DATE:	JUNE 2022		
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DESIGNED BY:	SPM		
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LEGEND

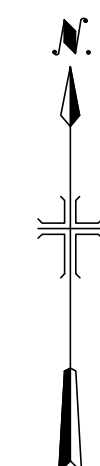
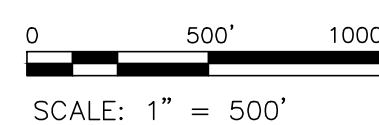
- BF# BANK FLAG
- BHL # BORE HOLE
- BUSH
- ⊕ BM # BENCHMARK
- BOUND (CONC, STONE, LAND COURT, ETC.)
- ⊙ CABLE MANHOLE
- ▣ CB CATCH BASIN - SQUARE
- ⊕ CB CATCH BASIN - D-FRAME
- ⊕ CB CATCH BASIN - ROUND
- ⊙ DSK DISK (CA/T, USC&GS, LAND COURT, ETC.)
- DH DRILL HOLE
- ⊙ DRAIN MANHOLE
- EHH ELECTRIC HANDHOLE
- ⊙ EHM ELECTRIC MANHOLE
- ⊙ EM ELECTRIC METER
- ⊙ EPLP ESCUTCHEON PIN IN LEAD PLUG
- ⊕ FB FLASHING BEACON
- △ FES FLARED END SECTION
- ⊙ FP FLAG POLE
- GF GAS FILL
- GG GAS GATE
- ⊕ GM GAS METER
- ⊕ GP GAS PUMP
- ⊙ GMS GAS MANHOLE
- GPL GUY POLE
- ⊕ HANDICAP SYMBOL
- ⊕ GUY WIRE ANCHOR
- HTP HIGH TENSION POWER POLE
- ⊕ FIRE HYDRANT
- IP IRON PIPE
- ⊕ LIGHT POLE
- ⊕ LIGHT POLE DOUBLE LIGHT
- ⊙ MAG MAG NAIL
- MB MAIL BOX
- MHB MASSACHUSETTS HIGHWAY BOUND
- ⊕ MW MONITORING WELL
- OIL OIL FILL
- ⊙ OTHER MANHOLE
- PB PULL BOX
- ⊕ PED PEDESTRIAN SIGNAL
- △ PHOTO CONTROL - H & V
- PHOTO CONTROL - V ONLY
- PK PK NAIL
- PM PARKING METER
- POST CIRCULAR POST
- POST SQUARE POST
- ⊕ RB REBAR/IRON PIN
- ⊕ RRS RAILROAD SPIKE
- ⊕ RRSR RAILROAD SIGNAL
- ⊕ RRSW RAILROAD SWITCH
- △ SN STAKE AND NAIL
- SP STAND PIPE
- ⊙ SMW SEWER MANHOLE
- ⊙ STMW STEAM MANHOLE
- STUMP
- TB TOWN LINE BOUND (CORNER)
- ⊕ TCS TRAFFIC SIGNAL CONTROL
- ⊕ CABINET TELEPHONE MANHOLE
- ⊕ TFMR TRANSFORMER
- TLR TOWN LINE ROAD STONE
- TPIT # TEST PIT
- TPL TROLLEY POLE
- △ TRAVERSE POINT
- 22" M TREE
- ⊕ TS TRAFFIC SIGNAL
- ⊕ TS TRAFFIC SIGNAL MAST ARM/SPAN WIRE POLE
- SIGN
- SIGN - DOUBLE POST
- STN STONE
- SW SIDEWALK
- SWL SOLID WHITE LINE
- SYL SOLID YELLOW LINE
- T TANGENT DISTANCE
- TMH TELEPHONE MANHOLE
- TR TOP OF RAIL
- TSC TRAFFIC SIGNAL CONDUIT
- TYP TYPICAL
- VAR VARIABLE
- VCP VITRIFIED CLAY PIPE
- UFB# UTILITY POLE W/ FIRE PULL BOX
- ULT# UTILITY POLE W/ LIGHT
- UPDL# UTILITY POLE W/ DOUBLE LIGHT
- UPUL# UTILITY POLE
- VP VENT PIPE
- WM WATER MANHOLE
- WG WATER GATE
- ⊕ WM WATER METER
- WSO WATER SHUTOFF
- ⊕ WELL WELL (POTABLE)
- WF# WETLAND FLAG
- X-CUT X-CUT

ABBREVIATIONS

- BD BOUND
- BIT BITUMINOUS
- BLDG BUILDING
- BM BENCHMARK
- BRK BRICK
- BWL BROKEN WHITE LINE
- BYL BROKEN YELLOW LINE
- CAB CABINET
- CB CATCH BASIN
- CI CURB INLET
- CLF CHAIN LINK FENCE
- CMP CORRUGATED METAL PIPE
- CO COUNTY
- CO BD COUNTY BOUND
- CONC CONCRETE
- CPP CORRUGATED PLASTIC PIPE
- CSP CORRUGATED STEEL PIPE
- CULV CULVERT
- CW CROSSWALK
- DBWL DOUBLE WHITE LINE
- DBYL DOUBLE YELLOW LINE
- DH DRILL HOLE
- DI DROP INLET
- DIA DIAMETER
- DIP DUCTILE IRON PIPE
- DMH DRAIN MANHOLE
- DSK DISK
- DWL DOTTED WHITE LINE
- DYL DOTTED YELLOW LINE
- EL ELEVATION
- EMH ELECTRIC MANHOLE
- EP EDGE OF PAVEMENT
- EPLP ESCUTCHEON PIN IN LEAD PLUG
- FS FILTER SOCK
- GRAN GRANITE
- GRAV GRAVEL
- GRL GUARDRAIL
- HDW HEADWALL
- HYD HYDRANT
- INV INVERT
- IP IRON PIPE
- L LENGTH OF CURVE
- LC LAND COURT
- LCB LAND COURT BOUND
- LCD LAND COURT DISK
- LO LAYOUT
- LP LIGHT POLE
- LPD LIGHT POLE DOUBLE LIGHT
- LSA LANDSCAPED AREA
- MAG MAG NAIL
- MBE MIDDLE BACK EDGE
- MH MANHOLE
- MTL METAL
- N/F NOW OR FORMERLY
- OHW OVERHEAD WIRE
- PED PEDESTRIAN
- PK PK NAIL
- ⊕ PROPERTY LINE
- PVC POLYVINYL CHLORIDE PIPE
- R RADIUS OF CURVATURE
- RB REBAR
- RCP REINFORCED CONCRETE PIPE
- RET RETAINING
- ROW RIGHT OF WAY
- RR RAILROAD
- RRS RAILROAD SPIKE
- SB STONE BOUND
- SF SILT FENCE
- SGE SLOPED GRANITE EDGING
- SHLO STATE HIGHWAY LAYOUT
- SMH SEWER MANHOLE
- SPK SPIKE
- STA STATION
- STN STONE
- SW SIDEWALK
- SWL SOLID WHITE LINE
- SYL SOLID YELLOW LINE
- T TANGENT DISTANCE
- TMH TELEPHONE MANHOLE
- TR TOP OF RAIL
- TSC TRAFFIC SIGNAL CONDUIT
- TYP TYPICAL
- VAR VARIABLE
- VCP VITRIFIED CLAY PIPE

ABBREVIATIONS

- VGC VERTICAL GRANITE CURB
- VLT VAULT
- WB WESTBOUND
- WCR WHEELCHAIR RAMP
- WD WOOD
- WIP WROUGHT IRON PIPE



E
D
C
B
A

SURVEY NOTES:

- THE INTENT OF THIS PLAN SET IS TO PREPARE AN EXISTING CONDITIONS SURVEY OF THE BEAVER STREET INTERCEPTOR SEWER LINE FROM COTTAGE STREET TO WEST CENTRAL STREET (NON-RTE 140), INCLUDING OVER-LAND PORTIONS. THE STREET ROW LINES ARE INTENDED TO BE SHOWN BASED ON STREET ACCEPTANCE/MASSDOT LAYOUTS, AND WHERE NOT GEOMETRICALLY DEFINED HAVE BEEN COMPILED FROM RECORD PLANS. PROPERTY LINES ARE APPROXIMATE AND SHOWN BASED ON GIS DATA. THE SEWER LINE EXISTS IN PUBLIC ROWS, AS WELL AS, CROSSING PRIVATE PROPERTY. WHERE CROSSING PRIVATE PROPERTY, THE EASEMENT LINES ARE BASED ON RECORD TAKING DOCUMENTS AND RECORDED PLANS, AND IN SOME INSTANCES ARE DEFINED AS A CERTAIN WIDTH BASED ON THE LOCATION OF EXISTING SEWER MANHOLE STRUCTURES. NOTE: EASEMENTS OTHER THAN SEWER DIRECTLY RELATED TO THE BEAVER STREET INTERCEPTOR ARE NOT ADDRESSED BY THIS SURVEY AND HAVE NOT BEEN RESEARCHED OR SHOWN HEREON.
- THE EXISTING CONDITIONS ARE BASED ON MAPPING PREPARED BY BLUESKY FLOWN DURING MAY 2021 FOR 40-SCALE MAPPING AND 1-FOOT CONTOURS. ADDITIONALLY, ALPHA ESTABLISHED PROJECT-WIDE GROUND CONTROL AND LOCATED LIMITED CROSS-SECTIONAL DATA AT 50-FOOT INTERVALS, VISIBLE UTILITIES, AND OTHER DETAILS WITHIN PROXIMITY TO THE SEWER ALIGNMENT.
- THE INFORMATION SHOWN HEREON IS BASED ON AN ON-THE-GROUND SURVEY PERFORMED BETWEEN MARCH 30 AND JULY 29, 2021 BY ALPHA SURVEY GROUP, LLC.
- THIS PROJECT IS REFERENCED TO THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83), CORS ADJUSTMENT (NA2011)/GEOID 12g) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE IN MAY 2021 UTILIZING KEYSTONE PRECISION INSTRUMENTS' KEYNET GPS VIRTUAL REFERENCE SYSTEM (VRS) NETWORK.
- THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), CORS ADJUSTMENT (NA2011)/GEOID 12a) AS DETERMINED BY REDUNDANT GPS OBSERVATIONS MADE ON MAY 2021 UTILIZING KEYSTONE PRECISION INSTRUMENTS' KEYNET GPS VIRTUAL REFERENCE SYSTEM (VRS) NETWORK.
- THE BEARINGS AND DISTANCES, AND THE COORDINATES ON WHICH THEY ARE BASED ARE IN U.S. SURVEY FEET IN THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83).
- THE ROW LINES FOR ROUTE 140/WEST CENTRAL STREET (FROM ITS EASTERLY TERMINUS TO GROVE STREET HAVE BEEN CALCULATED BASED ON MASSDOT LAYOUTS. THIS INCLUDES THE DISCONTINUANCE OF OLD WEST CENTRAL STREET, WHICH IS ALSO A STATE HIGHWAY LAYOUT PLAN. BEAVER, GROVE, AND POND STREETS, AND THE EASTERLY PORTION OF WEST CENTRAL STREET HAVE BEEN CALCULATED BASED ON THEIR RESPECTIVE COUNTY LAYOUTS. THE NON-ROUTE 140 PORTION OF WEST CENTRAL STREET, EXTENDING NORTHERLY FROM GROVE STREET, HAS BEEN CALCULATED BASED ON A COMBINATION OF THE SHLO FOR ROUTE 140 AND RECORD PLANS. FISHER STREET AND FISHER STREET EXTENSION, HAYWARD, AND COTTAGE DO NOT HAVE ACCEPTED ROW PLANS AND HAVE BEEN CALCULATED BASED ON A COMBINATION OF RECORDED PLANS CITED HEREON. THERE ARE NUMEROUS RELOCATIONS AND ALTERATIONS (PARTICULARLY AT STREET INTERSECTIONS) BETWEEN THE STATE HIGHWAY, COUNTY, AND MUNICIPAL LAYOUTS. AN INITIAL ATTEMPT WAS MADE TO MATHEMATICALLY CONNECT ALL OF THE DEFINED ROW LINES THROUGHOUT THE PROJECT AND CREATE ONE BEST FIT SOLUTION. DISCREPANCIES EXIST WHERE THE LAYOUTS INTERSECT, AND WHERE THERE ARE SUBSEQUENT ALTERATIONS, RELOCATIONS AND DISCONTINUANCES MAKING THIS APPROACH UNFEASIBLE. AS A RESULT, THE INDIVIDUAL LAYOUTS HAVE BEEN POSITIONED BASED ON THE ASSOCIATED RECORD MONUMENTS RECOVERED IN THE FIELD. EACH ROW HAS BEEN INDEPENDENTLY POSITIONED TO MONUMENTS SHOWN ON THE RECORD LAYOUT BASED ON A BEST FIT SOLUTION UTILIZING PRIMACODE'S TRANSFORM PROGRAM. THIS HAS RESULTED IN DISCREPANCIES IN THE GEOMETRY OF THE STREET INTERSECTIONS. IT WAS NOT THE INTENT OF THIS SURVEY TO RESOLVE ROW DISCREPANCIES.
- A SPECIAL NOTE WITH REGARDS TO THE RAILROAD ROW: ALPHA DID NOT HAVE ACCESS TO ENTER THE RR ROW. MANY MONUMENTS ALONG THE RR ROW WERE LOOKED FOR HOWEVER NONE WERE RECOVERED. ONCE AGAIN, THE PURPOSE OF THE SURVEY WAS FOR THE ALIGNMENT OF THE BEAVER STREET SEWER INTERCEPTOR AND NOT FOR A DEFINITIVE SURVEY OF THE RR ROW AND ABUTTING PROPERTIES. ALPHA DISCOVERED THAT RECORD PLANS OF THE SAME PROPERTIES CONTAINED DISCREPANCIES BETWEEN THEMSELVES IN THE RR ROW GEOMETRY, AND WITH THE APPLICABLE TRACK MAP. THE RR BOUNDARIES SHOWN HEREON ARE THE RESULT OF POSITIONING THE PROPERTIES ALONG THE STREET LINES, PARTICULARLY ALONG HAYWARD, FISHER STREET AND FISHER STREET EXTENSION, AND IN THE COTTAGE STREET AREA.
- A SPECIAL NOTE WITH REGARDS TO HAYWARD, FISHER AND FISHER STREET EXTENSION: HAYWARD STREET IS DEFINED FOR A PORTION OF ITS LENGTH FROM FISHER STREET WESTERLY FROM THERE, HAYWARD IS A VARIABLE WIDTH UNMONUMENTED PUBLIC WAY. FISHER STREET AND FISHER STREET EXTENSION (FROM THE WEST CENTRAL STREET INTERSECTION TO THEIR SOUTHERLY TERMINUS) BOTH LACK A GEOMETRICAL DEFINITION. RECORD SURVEYS APPEAR TO HAVE BEEN PERFORMED ON EITHER SIDE OF BOTH STREETS WITHOUT DEFINING THE WIDTH OF THE STREET. THE PROPERTIES THAT EXIST BETWEEN THE SOUTHERLY BOUNDARY OF WEST CENTRAL STREET COUNTY LAYOUT AND THE NORTHERLY RR BOUNDARY INCLUDE SOME OF THE OLDEST STREETS AND PROPERTIES IN FRANKLIN. THE COMBINED PROPERTIES IN THIS AREA, HAVE BEEN MATHEMATICALLY COMPILED BASED ON RECORD PLANS REFERENCED TO THE WEST CENTRAL STREET LAYOUT. TO COMPOUND MATTERS, THERE WAS LIMITED RECORD MONUMENTATION FOUND THROUGHOUT THIS AREA FOR POSITIONING THE COMPILED BLOCK OF PROPERTIES AND STREETS. BASED ON THE MONUMENTATION FOUND, A RECORD-TO-FIELD BEST FIT OF THE MONUMENTATION WAS PERFORMED. NO ATTEMPT WAS MADE TO RECONCILE DIFFERENCES IN THE RR ROW BASED ON THE ABOVE DESCRIBED 'COMPILATION', AS IT HAD NO BEARING ON THE POSITIONING OF THE SEWER EASEMENT(S).
- A SIMILAR PROCESS WAS APPLIED TO COTTAGE STREET AND THE ABUTTING RR ROW, WHERE THE RECORD PLANS WERE MATHEMATICALLY COMPILED BASED ON RECORD INFORMATION OF COTTAGE STREET AND A STREET EXTENSION. THE RECORD PLANS MATHEMATICALLY AGREED AND MONUMENTATION WAS LOCATED IN THE FIELD AND THEN BEST FIT USING THE PRIMACODE TRANSFORM PROGRAM. THE RESULTING SOLUTION ESTABLISHED THE RECORD RR BASELINE AND ROW LINES. MONUMENTS ALONG THE RR WERE LOOKED FOR BUT NOT RECOVERED. NAILS WERE FOUND IN RR TIES WHICH APPEAR TO HAVE BEEN SET BY PRIOR SURVEYORS TO DETERMINE THE RR ROW CENTERLINE. THESE NAILS WERE FIELD LOCATED AND COMPARED TO THE RESULTS OF THE BEST FIT SOLUTION OF COTTAGE STREET AND THE RECORD RR ROW AND WERE FOUND TO BE IN VERY CLOSE AGREEMENT. THE PRIVATE PROPERTIES OVER WHICH THE SEWER EASEMENT RUNS FROM COTTAGE STREET TO FISHER STREET WERE COMPILED BETWEEN THE COTTAGE STREET/RR ROW RESOLUTION AND THAT FOR THE HAYWARD AND FISHER STREETS AREA.
- THE FISHER STREET ROW IS POORLY DEFINED ALONG IT'S ENTIRE LENGTH AND PARTICULARLY WHERE IT INTERSECTS WITH SUGAR BEET STREET AND CROSSES THE RR ROW AND BECOMES FISHER STREET EXTENSION. THE 'CONNECTION' BETWEEN FISHER/SUGAR BEET STREET TO FISHER STREET EXTENSION WAS ACCOMPLISHED BASED ON A REVIEW OF THE NUMEROUS RECORDED COMPILED PLANS IN THIS AREA TO DEVELOP AN UNDERSTANDING OF THE 'HISTORIC' BOUNDARY CONFIGURATIONS AND RE-CREATE A BEST INTENT OF THE ORIGINAL LINES AS THEY NOW INTERSECT WITH THE RR ROW.

PLAN REFERENCES:

- A STREET EXTENSION**
545-11 (2005)
- BEAVER STREET**
316-1295 (1984)
347-1882 (1986)
417-772(1/4) (1993)
420-186 (1994)
554-45 (2006)
556-26 (2006)
592-85 (2009)
615-3 (2012)
675-51 (2018)
- COTTAGE STREET**
193-170 (1955)
225-225 (1969)/365-159 (1988)
268-433 (1978)
365-159 (1988)
367-405 (1988)
390-195 (1990)
515-699 (2003)/520-80 (2004)
697-31 (2020)
- COTTAGE (OFF)**
DB 2254 P 111 (1939)
- FISHER STREET**
341-1218 (1986)
546-81 (2005)
546-82 (2005)
DB 1129 P 441 (1909)
DB 1554 P 315
DB 1971 P 40 (1932)
DB 2014 P 563 (1933)
DB 2449-END (#210 OF 1943)
#2569 TOWN OF FRANKLIN
- FISHER STREET EXTENSION**
369-617 (1988)
452-791 (1997)
452-849 (1997)
718-98 (1998)
#231 TOWN OF FRANKLIN
- GROVE STREET**
3454-334 (1956)
4065-466 (1963)
4148-171 (1964)
4223-21 (1964)
4499-664 (1968)
4647-125 (1970)
288-438 (1981)
318-1548 (1984)
359-1159 (1987)
456-282 (1998)
511-491 (2003)
618-40 (2012)
647-20 (2016)
- HAYWARD STREET**
305-740 (1983)
313-880 (1984)
341-1131 (1986)
451-746 (1997)
DB 1201 P 548
- DB 5715 P 242 (#187 OF 1980)
#3722 TOWN OF FRANKLIN
- OLD WEST CENTRAL**
247-13 (1975)
315-1063 (1984)
319-120 (1985)
332-122 (1986)
443-800 (1996)
494-206 (2002)
634-53 (2014)
- POND STREET**
3472-50 (1956)
216-76 (1964)
4379-590 (1966)
5004-500 (1973)
307- 51 (1984)
390-130 (1990)
396-902 (1990)
400-461 (1991)
416-585 (1993)
658-62 (2017)
SITE AS-BUILT PLAN FOR "BROOKVIEW"
POND STREET FRANKLIN, MA, 8-14-2018,
REV: 1-19-21 (PROVIDED BY TOWN OF FRANKLIN)
- UNION STREET**
450-600 (1997)
- WEST CENTRAL STREET/RTE 140**
86-4193 (1917)
DB 2519 P 465 (#502 OF 1944)
216-174 (1964)
258-911 (1976)
286-1071(B/2) (1980)
576-62 (2007)

PLAN REFERENCES (CONT'D):

- WEST CENTRAL (NOT RTE 140)**
1635-147 (1925)
119-16 (1935)
4636-67 (1969)
249-455 (1998)
492-5 (2002)
567-19 (2007)
582-35 (2008)
598-81 (2010)
613-97 (2012)
- HIGHWAY/STREET LAYOUTS**
CENTRAL STREET 6/29/1915 CTY LO FROM
END STATE HIGHWAY TO UNION STREET
WEST CENTRAL STREET 9/16/975 RELOCATION
& WIDENING
GROVE STREET (BETWEEN BEAVER & WEST
CENTRAL ST) COUNTY LO OF 10/08/1957
204-1130
GROVE STREET (BETWEEN WASHINGTON AND
BEAVER ST) COUNTY LO OF 9/24/1940
GROVE STREET 12/02/1943 ALTERATION DB
2468 P 245 (#407 OF 1943)
GROVE STREET RELOCATION COUNTY LO OF
10/08/1957 -210-8 (1961)
POND STREET (WEST CENTRAL TO OAK)
5/01/1962 COUNTY LO -212-561 (1962)
- LAND COURT PLANS**
2984A
29840
4530A
4530C
4530D
4530E
4530F
4530G
4530H
8807A
8807B
18471A
22250A
26897A
23897W
32598A
- RAILROAD PLANS**
V4321 (1921)
252-804 (1975)
252-805 (1975)
V4321 (1975)
V4322 (1975)
V41230 (1975)
V41730 (1975)
C1CN26 CONTRACT DRAWING (1987)
- SEWER PLANS**
1291-638 (1914)
1281-108 (1914)
74-3568 (1915)
76-3692 (1915)
76-3693 (1915)
1316-187/195 (1915)
1318-434 (1915)
1316-192 (1915)
1971-40 (1932)
2022-118 (1934)
221-1173 (1966)
221-1174 (1966)
223-1068 (1967)
223-1069 (1967)
223-1070 (1967)
223-1072 (1967)
225-900 (1968)
225-901 (1968)
313-880 (1984)
- PANTHER WAY AND PANTHER WAY "EXTENSION"**
MASS HWY L.O. #7321
266-246 (1978)
422-366 (1994)
TOWN OF FRANKLIN PLAN #3986 "SITE PLAN 420-438 WEST CENTRAL STREET SHOPPES, RETAIL,
OFFICE AND RESTAURANT FRANKLIN, MA" PREPARED BY GUERRIERE & HALNON DATED 4/26/2012
AND REVISED THRU 5/07/2012
- 408-564 PANTHER WAY L.O. DATED 5/12/1992
LCC 2984P
- RAYMOND AVENUE
LC 2984N

UTILITY NOTES:

- ALL UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND WERE COMPILED ACCORDING TO AVAILABLE RECORD PLANS FROM THE VARIOUS UTILITY COMPANIES AND PUBLIC AGENCIES. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD. BEFORE DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACK FILLING, GRADING, PAVEMENT RESTORATION OR REPAIRING, ALL UTILITY COMPANIES, PUBLIC & PRIVATE, MUST BE NOTIFIED INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN. SEE CHAPTER 370, ACTS OF 1963, MASSACHUSETTS. ALPHA SURVEY GROUP, LLC ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. BEFORE FUTURE CONNECTIONS, THE APPROPRIATE UTILITY ENGINEERING DEPARTMENTS MUST BE CONSULTED. CALL "DIG SAFE" AT 811.
- ALPHA SURVEY DID NOT ENTER ANY DRAINAGE OR SEWER STRUCTURES, ALL PIPE INVERTS, TYPES AND SIZES WERE DETERMINED FROM GROUND LEVEL OBSERVATIONS. DUE TO LIMITED VISIBILITY IN CERTAIN STRUCTURES WHEREVER DISCREPANCIES BETWEEN OBSERVED AND RECORD PIPE SIZES OR TYPES WAS NOTED THE RECORD SIZE OR TYPE IS SHOWN ON THIS PLAN.
- THE TOWN OF FRANKLIN PROVIDED GIS SHAPEFILES FOR THE UNDERGROUND WATER SYSTEM THROUGHOUT THE PROJECT, AS WELL AS, MARKED THE WATER LINES IN THE FIELD. WHERE NO MARKINGS WERE FOUND THE GIS DATA WAS USED, AND IF MARKINGS WERE FOUND THOSE LOCATIONS WERE USED.

LEGEND:

- PROFILE VIEW - NEW GRAVITY SEWER PIPES AND MANHOLES
- PROFILE VIEW - EXISTING SEWER PIPE AND MANHOLE TO BE REHABILITATED
- PLAN AND PROFILE VIEW - GRAVITY SEWER PIPES AND MANHOLES TO BE ABANDONED/DEMOLISHED
- PLAN VIEW - EXISTING SEWER PIPE AND MANHOLE TO BE REHABILITATED
- PLAN VIEW - NEW GRAVITY SEWER PIPES AND MANHOLES

USCS DESIGNATION: TYPICAL SOIL DESCRIPTION

- SW WELL GRADED SANDS, GRAVELLY SANDS
- SM SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
- SP POORLY GRADED SANDS, GRAVELLY SANDS
- OL ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
- ML INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
- SW-SM
- SW-SP
- SP-SM



LEGAL ENTITY:
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CONSULTANTS

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SEALS

FRANKLIN, MASSACHUSETTS
TOWN OF FRANKLIN DPW

BSI REPLACEMENT
AND PUMP STATION
DESIGN

CLIENT PROJ. NO. ?

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DATE: JUNE 2022

PROJECT NO.: 30065216

FILE NAME: G-2

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

GENERAL

SURVEY NOTES,
UTILITY NOTES,
REFERENCES

SCALE: AS SHOWN

G-2

SHEET NO.: 02 OF 66

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PROJECT NO.: 30065216

FILE NAME: C-1 TO C-36

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL

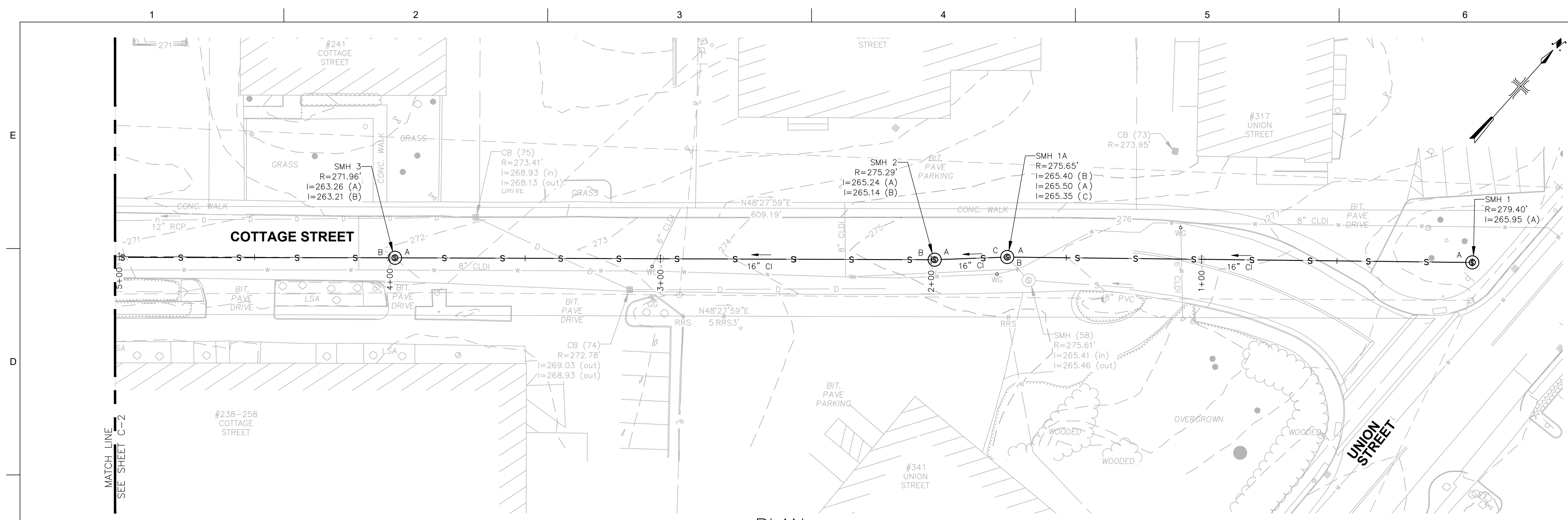
PLAN AND PROFILE

NAVD 88
BASE ELEV
255.00

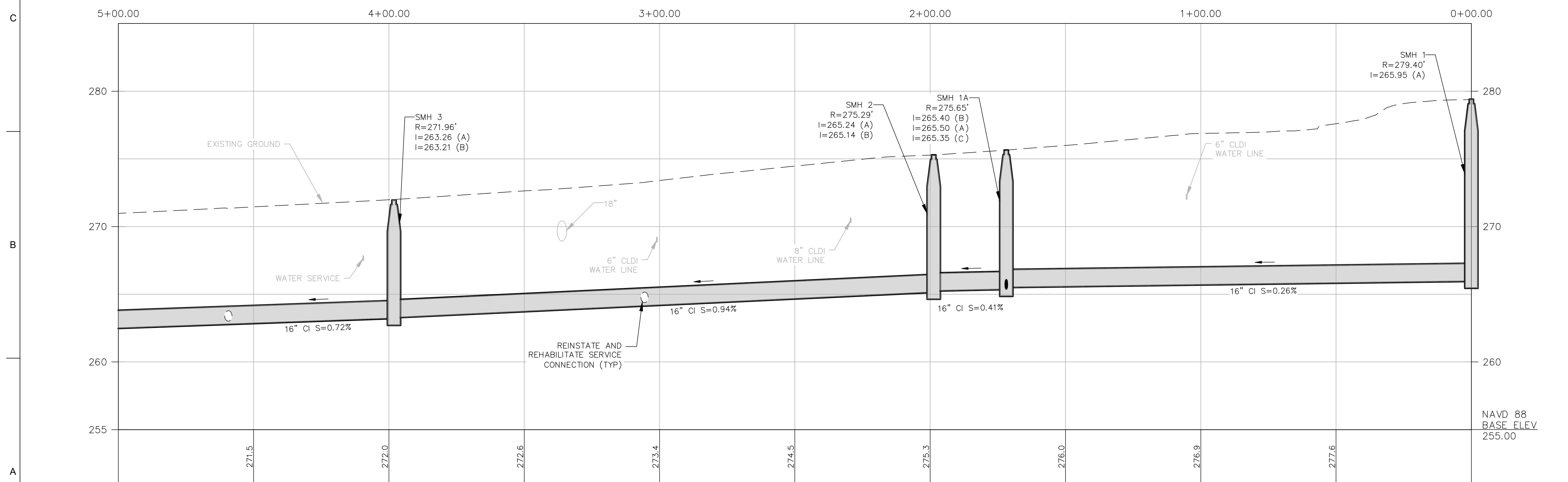
SCALE: 1" = 20'

C-1

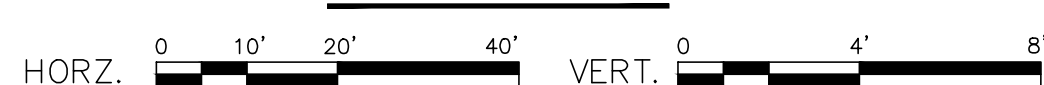
SHEET NO.: 03 OF 66



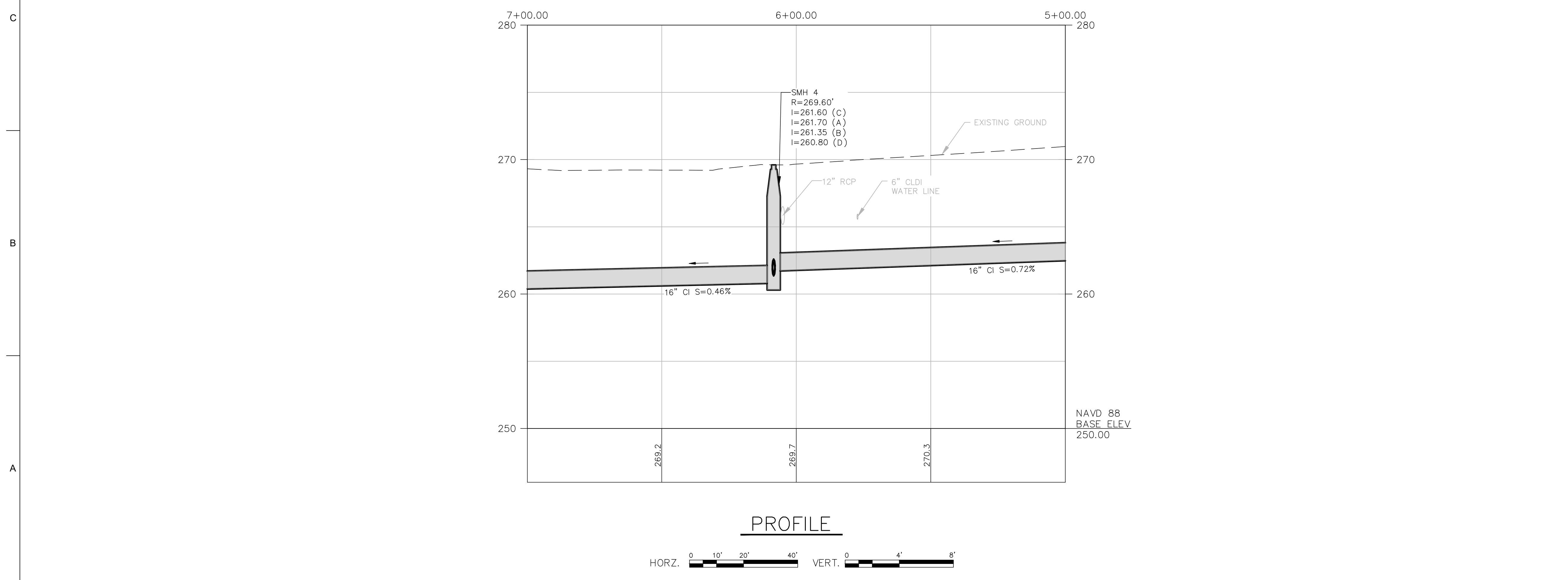
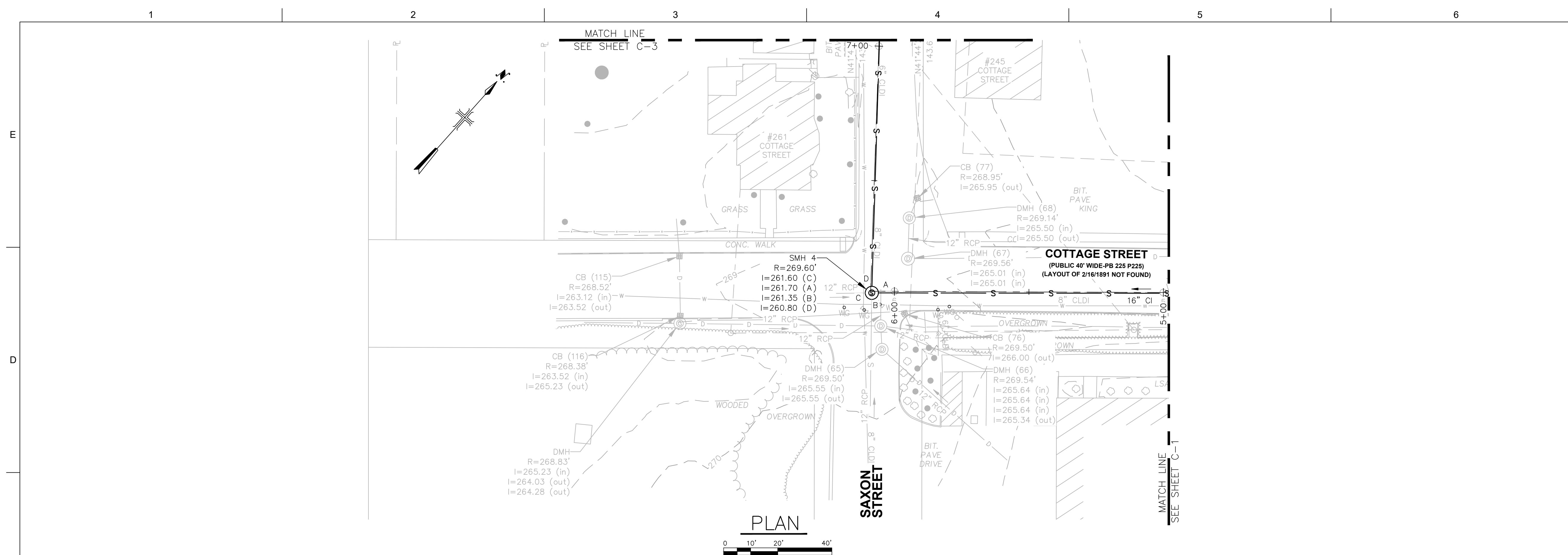
PLAN
0 10' 20' 40'



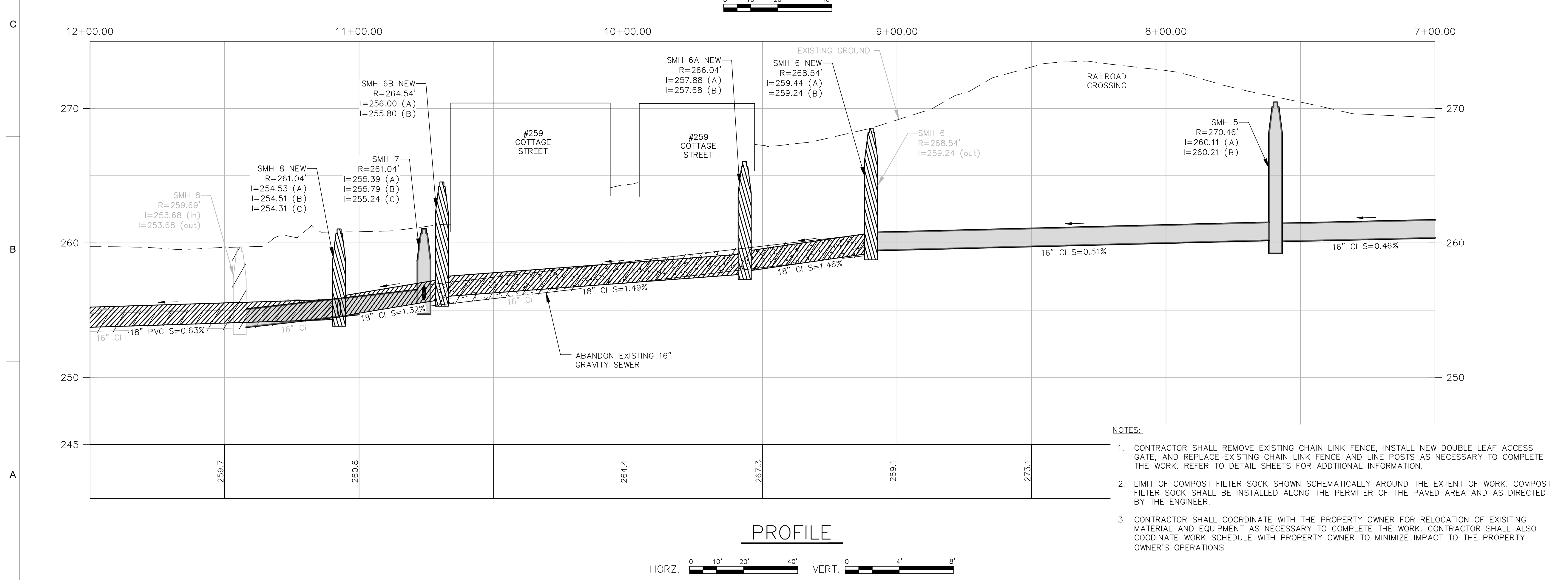
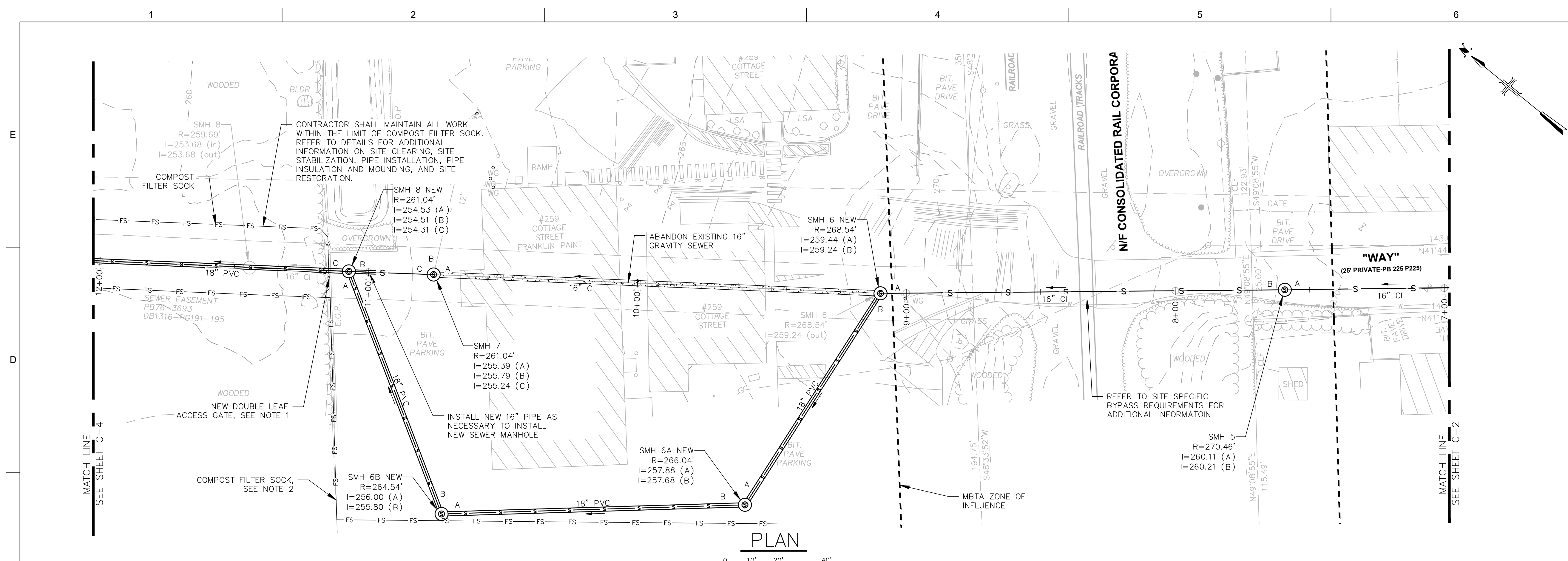
PROFILE



NO.	DATE	ISSUED FOR	BY



NO.	DATE	ISSUED FOR	BY



- NOTES:**
- CONTRACTOR SHALL REMOVE EXISTING CHAIN LINK FENCE, INSTALL NEW DOUBLE LEAF ACCESS GATE, AND REPLACE EXISTING CHAIN LINK FENCE AND LINE POSTS AS NECESSARY TO COMPLETE THE WORK. REFER TO DETAIL SHEETS FOR ADDITIONAL INFORMATION.
 - LIMIT OF COMPOST FILTER SOCK SHOWN SCHEMATICALLY AROUND THE EXTENT OF WORK. COMPOST FILTER SOCK SHALL BE INSTALLED ALONG THE PERIMETER OF THE PAVED AREA AND AS DIRECTED BY THE ENGINEER.
 - CONTRACTOR SHALL COORDINATE WITH THE PROPERTY OWNER FOR RELOCATION OF EXISTING MATERIAL AND EQUIPMENT AS NECESSARY TO COMPLETE THE WORK. CONTRACTOR SHALL ALSO COORDINATE WORK SCHEDULE WITH PROPERTY OWNER TO MINIMIZE IMPACT TO THE PROPERTY OWNER'S OPERATIONS.



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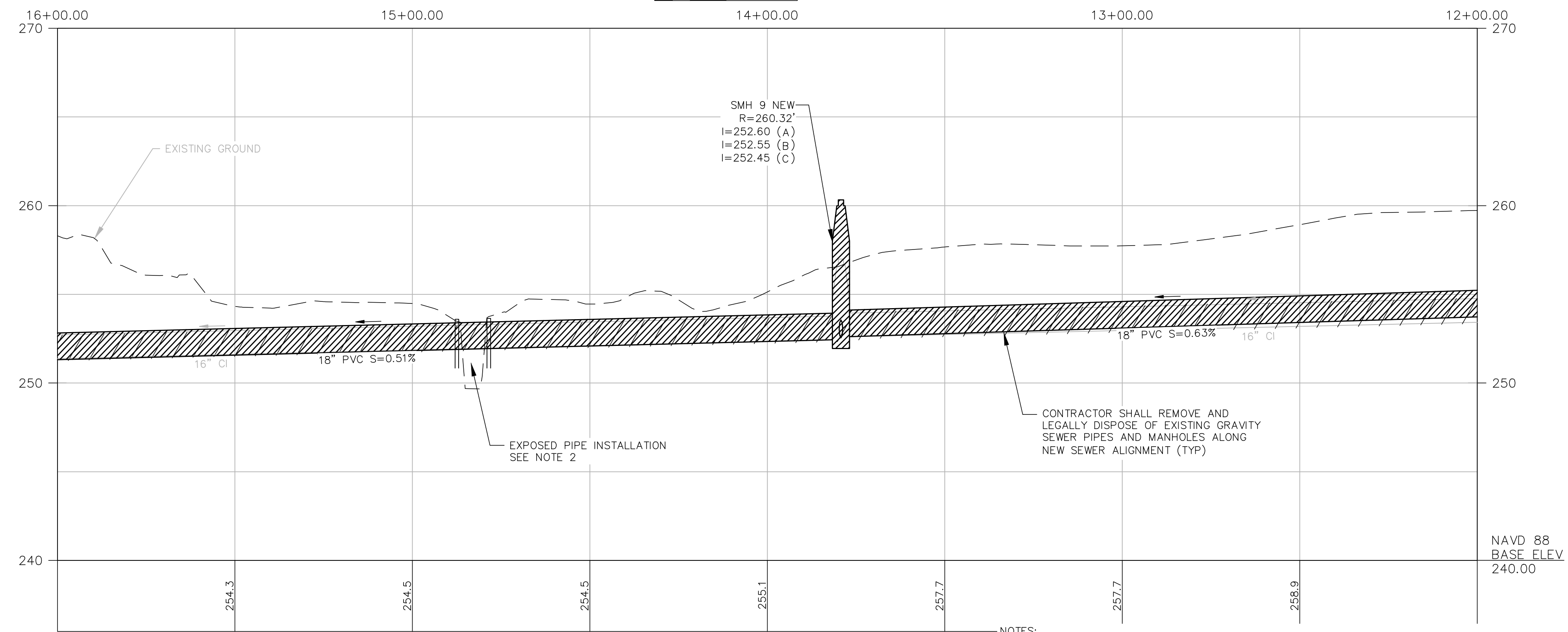
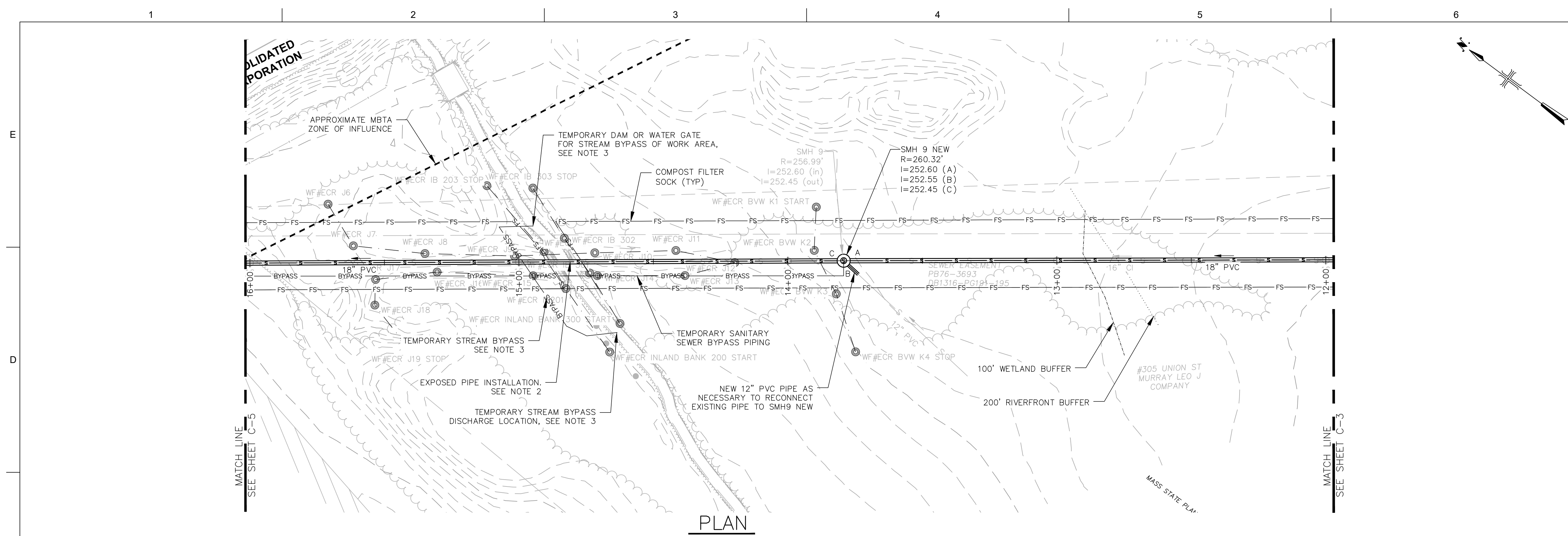
SHEET TITLE

CIVIL
PLAN AND PROFILE

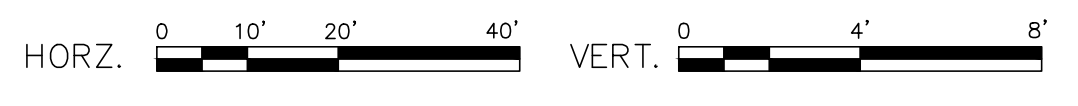
SCALE: 1" = 20'

C-4

SHEET NO.: 06 OF 66



- NOTES:
- CONTRACTOR SHALL MAINTAIN ALL WORK WITHIN THE LIMIT OF SILT FENCE AND HAY BAIL BARRIER. REFER TO DETAILS FOR ADDITIONAL INFORMATION ON SITE CLEARING, SITE STABILIZATION, SITE PROTECTION, PIPE INSTALLATION, PIPE INSULATION AND MOUNDING, AND SITE RESTORATION.
 - CONTRACTOR SHALL REMOVE EXISTING RETAINING WALLS AND EXPOSED PIPE AND INSTALL NEW RETAINING WALL AND 18\"/>
 - CONTRACTOR SHALL INSTALL TEMPORARY DAM OR WATER GATE AND COMPLETE ANY REQUIRED STREAM BANK IMPROVEMENTS TO PROPERLY INSTALL TEMPORARY DAM. BYPASS PUMPS AND PIPING SHALL BE SIZED PROPERLY TO MAINTAIN A DRY WORK AREA WHILE REMOVING AND REPLACING THE EXISTING RETAINING WALLS AND GRAVITY SEWER. BYPASS PIPING SHALL BE MAINTAINED OUTSIDE OF THE DELINEATED WETLANDS (WHERE POSSIBLE) AND DISCHARGE TO THE STREAM DOWNSTREAM OF THE WORK AREA IN ACCORDANCE WITH THE DEWATERING AND SURFACE WATER BYPASS DETAIL. ANY DISTURBED AREAS SHALL BE RESTORED WITH TOP SOIL, WETLANDS SEED MIX, AND EROSION CONTROL BLANKET. ALL WORK SHALL BE IN ACCORDANCE WITH ALL PERMITTING AGENCIES HAVING JURISDICTION.



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SHEET TITLE

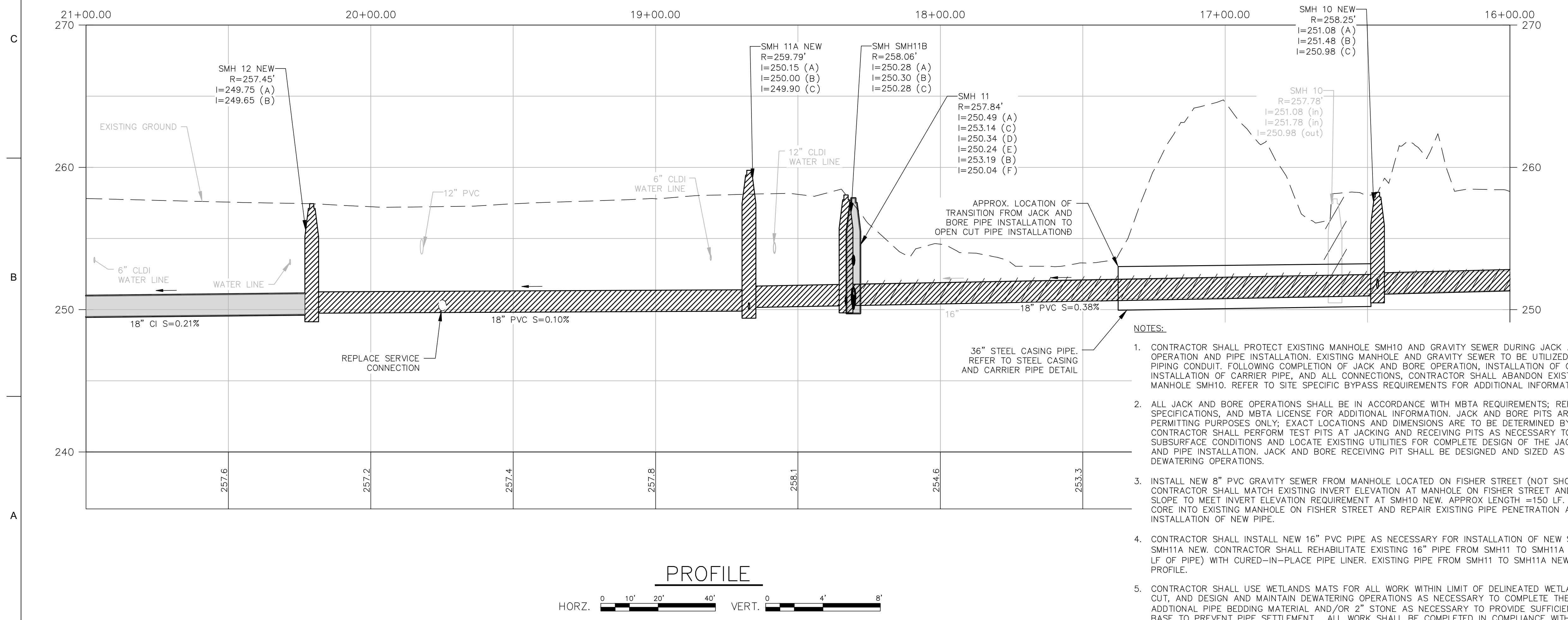
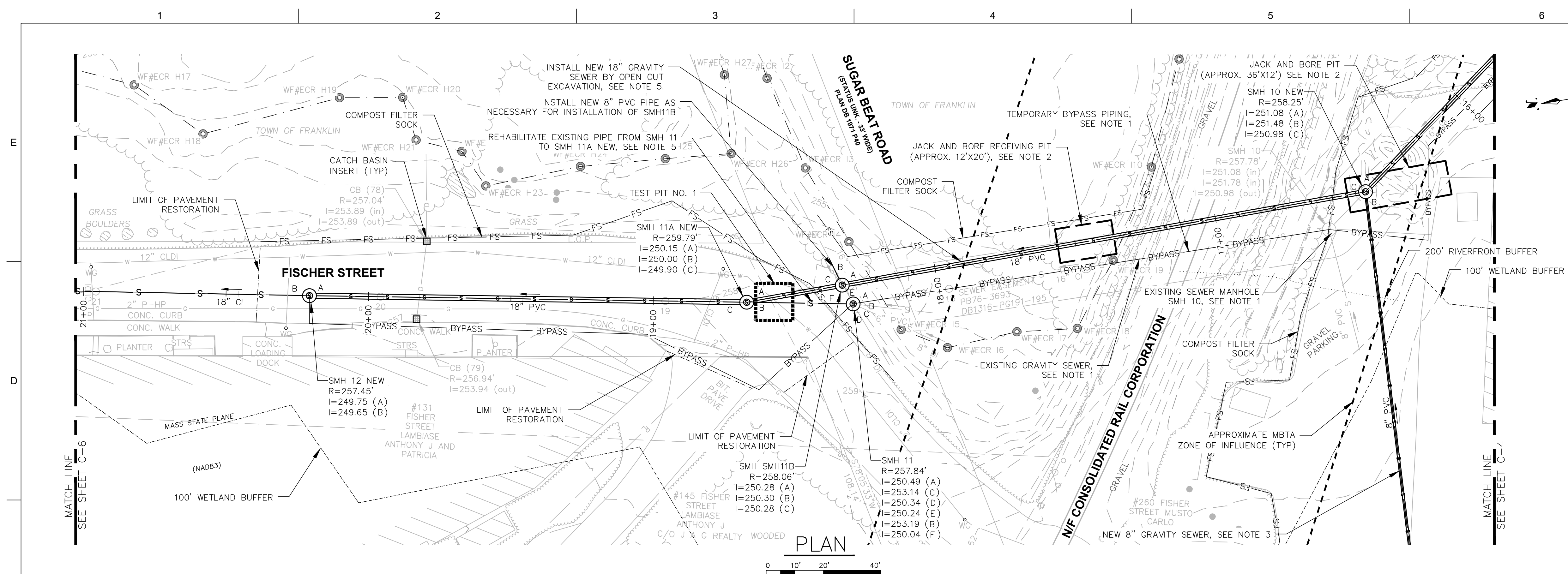
CIVIL

PLAN AND PROFILE

SCALE: 1" = 20'

C-5

SHEET NO.: 07 OF 66



- NOTES:**
- CONTRACTOR SHALL PROTECT EXISTING MANHOLE SMH10 AND GRAVITY SEWER DURING JACK AND BORE OPERATION AND PIPE INSTALLATION. EXISTING MANHOLE AND GRAVITY SEWER TO BE UTILIZED FOR BYPASS PIPING CONDUIT. FOLLOWING COMPLETION OF JACK AND BORE OPERATION, INSTALLATION OF CASING PIPE, INSTALLATION OF CARRIER PIPE, AND ALL CONNECTIONS, CONTRACTOR SHALL ABANDON EXISTING PIPE AND MANHOLE SMH10. REFER TO SITE SPECIFIC BYPASS REQUIREMENTS FOR ADDITIONAL INFORMATION.
 - ALL JACK AND BORE OPERATIONS SHALL BE IN ACCORDANCE WITH MBTA REQUIREMENTS; REFER TO DETAILS, SPECIFICATIONS, AND MBTA LICENSE FOR ADDITIONAL INFORMATION. JACK AND BORE PITS ARE SHOWN FOR PERMITTING PURPOSES ONLY; EXACT LOCATIONS AND DIMENSIONS ARE TO BE DETERMINED BY THE CONTRACTOR. CONTRACTOR SHALL PERFORM TEST PITS AT JACKING AND RECEIVING PITS AS NECESSARY TO DETERMINE SUBSURFACE CONDITIONS AND LOCATE EXISTING UTILITIES FOR COMPLETE DESIGN OF THE JACK AND BORE PITS AND PIPE INSTALLATION. JACK AND BORE RECEIVING PIT SHALL BE DESIGNED AND SIZED AS NECESSARY FOR DEWATERING OPERATIONS.
 - INSTALL NEW 8" PVC GRAVITY SEWER FROM MANHOLE LOCATED ON FISHER STREET (NOT SHOWN ON PLANS). CONTRACTOR SHALL MATCH EXISTING INVERT ELEVATION AT MANHOLE ON FISHER STREET AND PROVIDE UNIFORM SLOPE TO MEET INVERT ELEVATION REQUIREMENT AT SMH10 NEW. APPROX LENGTH =150 LF. CONTRACTOR SHALL CORE INTO EXISTING MANHOLE ON FISHER STREET AND REPAIR EXISTING PIPE PENETRATION AS NECESSARY FOR INSTALLATION OF NEW PIPE.
 - CONTRACTOR SHALL INSTALL NEW 16" PVC PIPE AS NECESSARY FOR INSTALLATION OF NEW SEWER MANHOLE SMH11A NEW. CONTRACTOR SHALL REHABILITATE EXISTING 16" PIPE FROM SMH11 TO SMH11A NEW (APPROX. 40 LF OF PIPE) WITH CURED-IN-PLACE PIPE LINER. EXISTING PIPE FROM SMH11 TO SMH11A NEW IS NOT SHOWN IN PROFILE.
 - CONTRACTOR SHALL USE WETLANDS MATS FOR ALL WORK WITHIN LIMIT OF DELINEATED WETLANDS, SELECTIVELY CUT, AND DESIGN AND MAINTAIN DEWATERING OPERATIONS AS NECESSARY TO COMPLETE THE WORK. INSTALL ADDITIONAL PIPE BEDDING MATERIAL AND/OR 2" STONE AS NECESSARY TO PROVIDE SUFFICIENT SUBBASE AND BASE TO PREVENT PIPE SETTLEMENT. ALL WORK SHALL BE COMPLETED IN COMPLIANCE WITH ALL APPLICABLE PERMIT REQUIREMENTS.

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FILE NAME:		C-1 TO C-36	
DESIGNED BY:		SPM	
DRAWN BY:		AKR	
CHECKED BY:		SRH/AAG	

SHEET TITLE

CIVIL

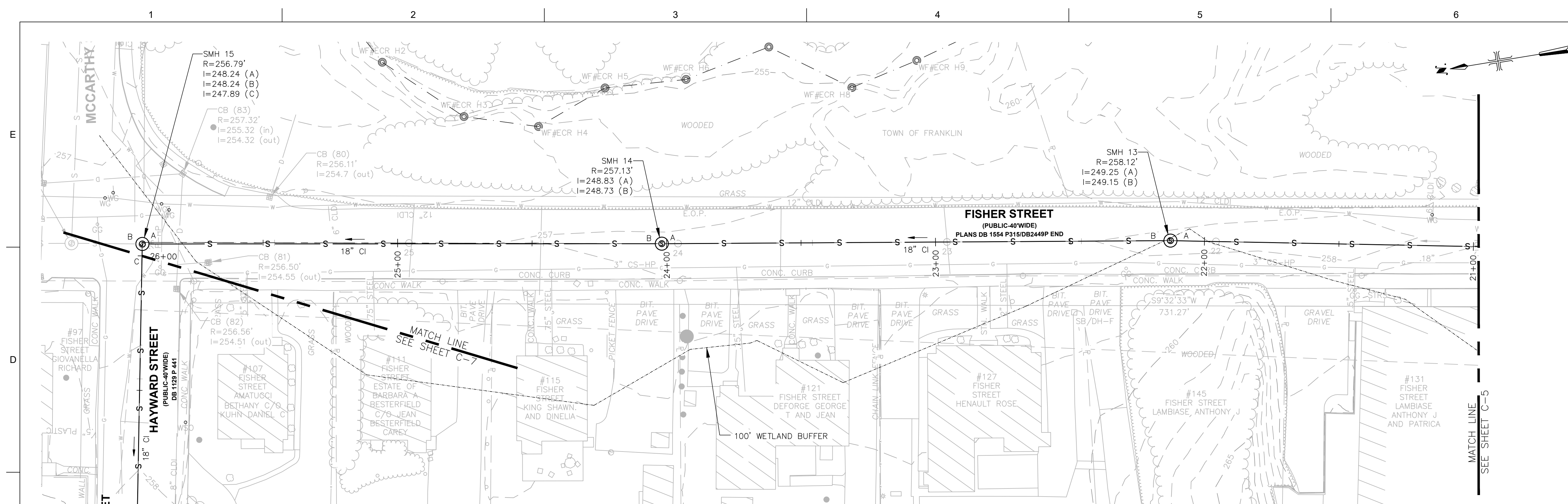
PLAN AND PROFILE

NAVD 88
BASE ELEV
240.00

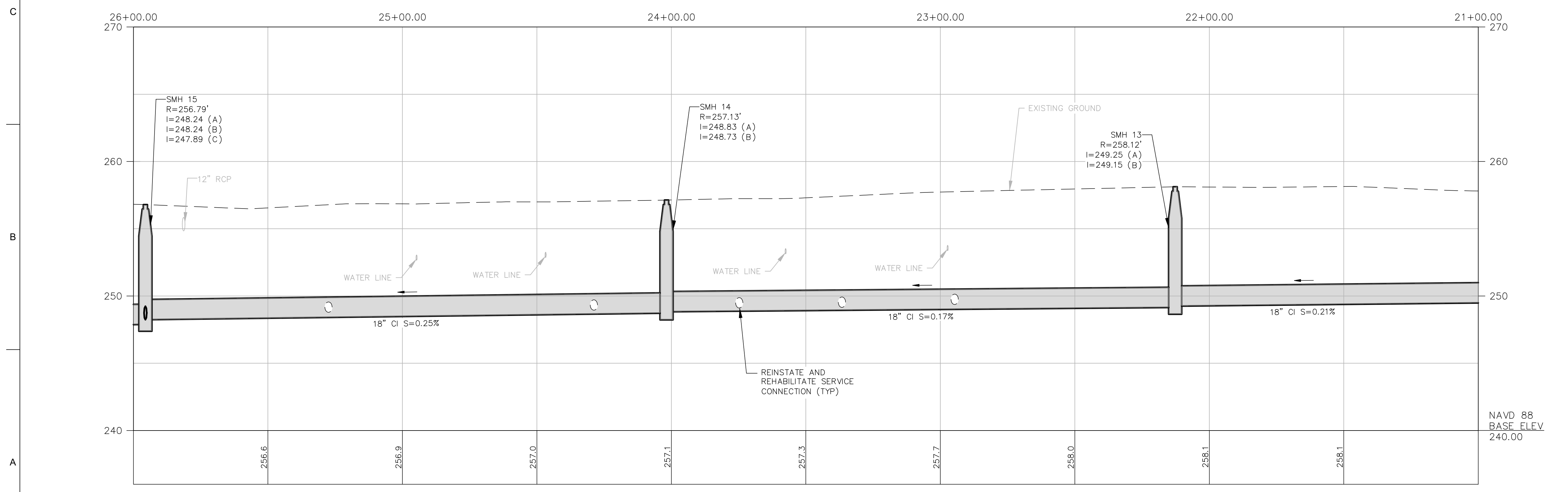
SCALE: 1" = 20'

C-6

SHEET NO.: 08 OF 66



PLAN
0 10' 20' 40'



PROFILE
HORZ. 0 10' 20' 40' VERT. 0 4' 8'

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CHECKED BY:	SRH/AAG

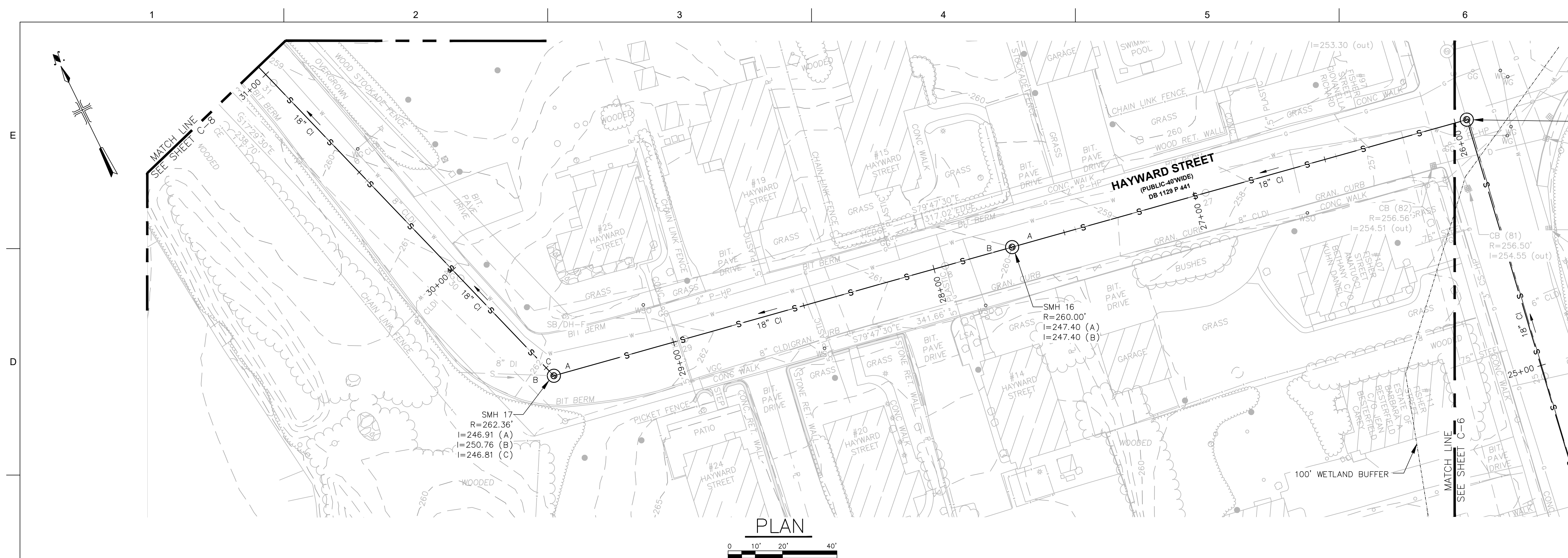
SHEET TITLE

CIVIL
PLAN AND PROFILE

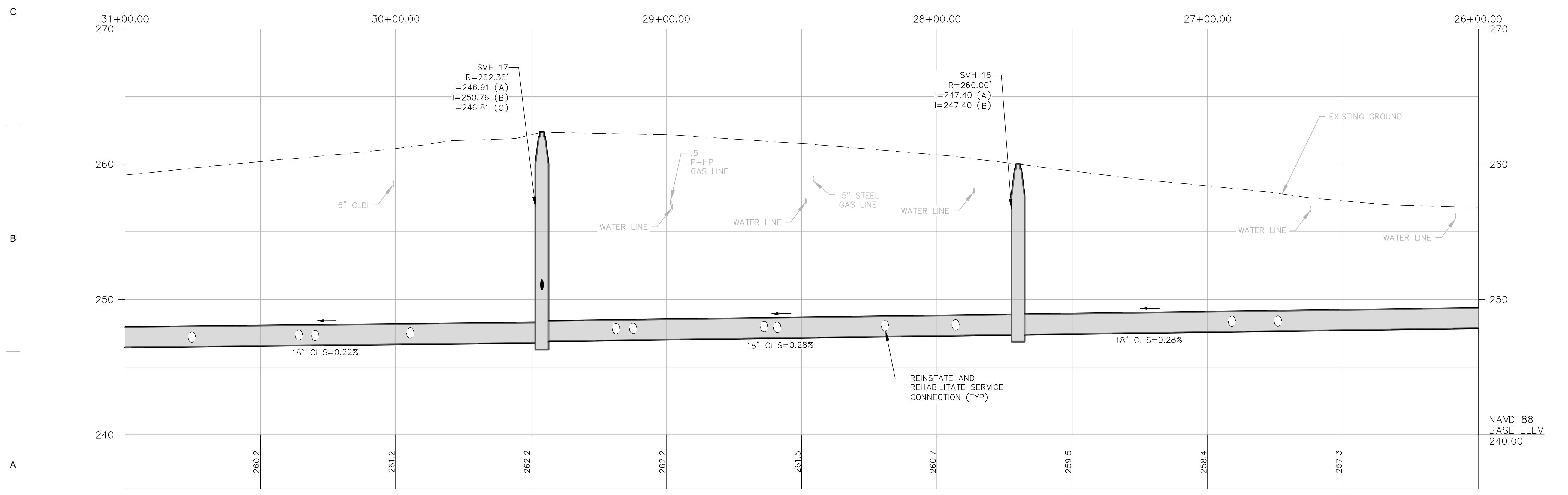
SCALE: 1" = 20'

C-7

SHEET NO.: 09 OF 66



PLAN
0 10' 20' 40'



PROFILE
HORZ. 0 10' 20' 40' VERT. 0 4' 8'

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FILE NAME: C-1 TO C-36

DESIGNED BY: SPM

DRAWN BY: AKR

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SHEET TITLE

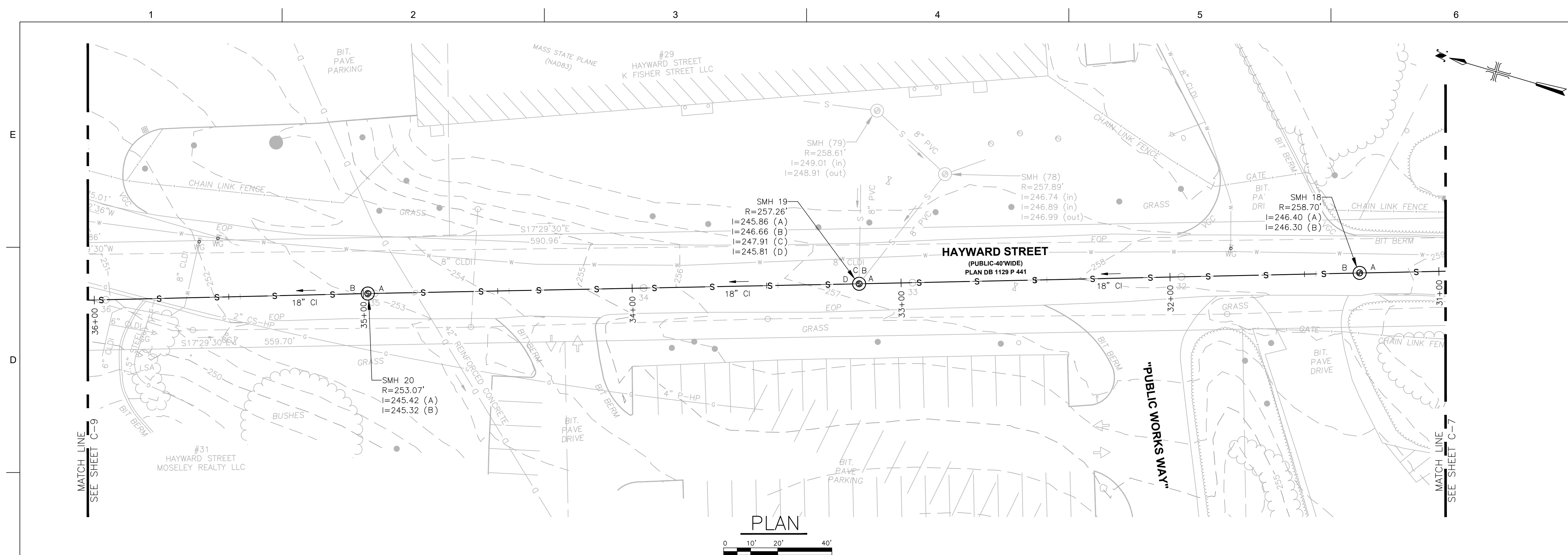
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PLAN AND PROFILE

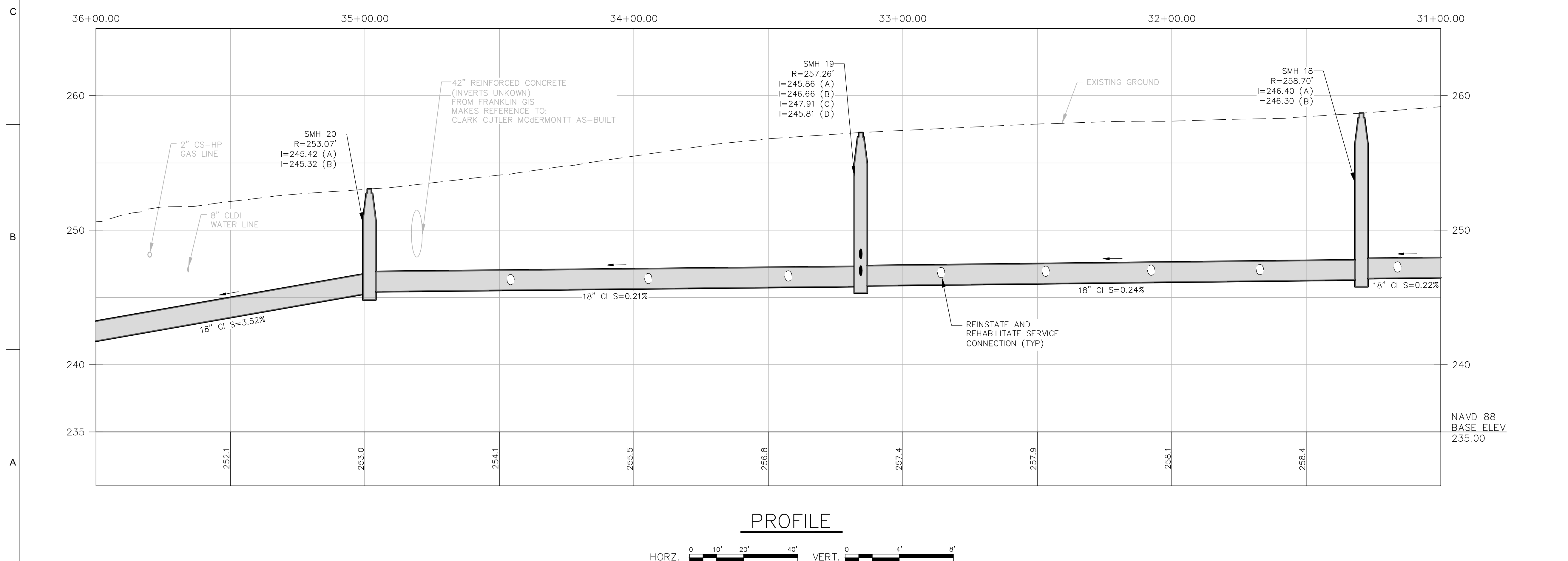
SCALE: 1" = 20'

C-8

SHEET NO.: 10 OF 66



PLAN
0 10' 20' 40'



PROFILE

HORIZ. 0 10' 20' 40' VERT. 0 4' 8'

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SHEET TITLE

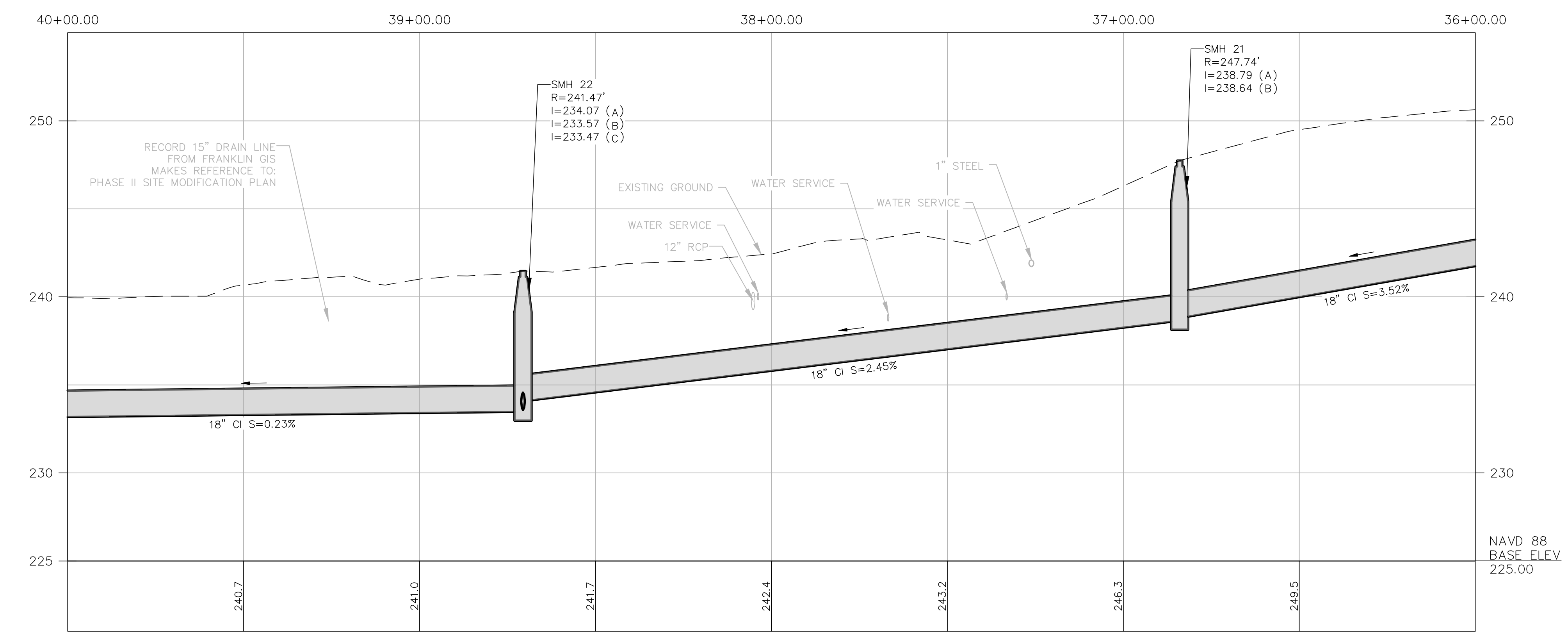
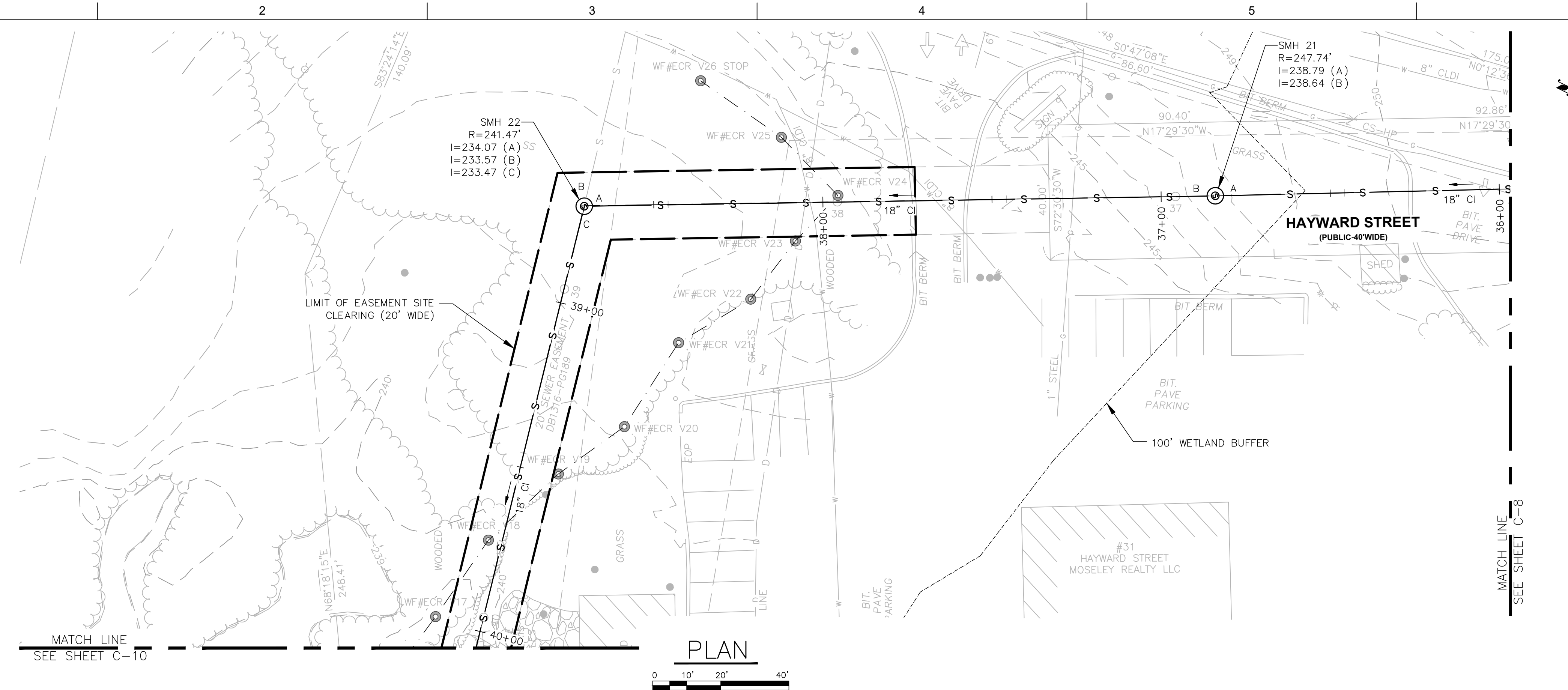
CIVIL

PLAN AND PROFILE

SCALE: 1" = 20'

C-9

SHEET NO.: 11 OF 66



E
D
C
B
A

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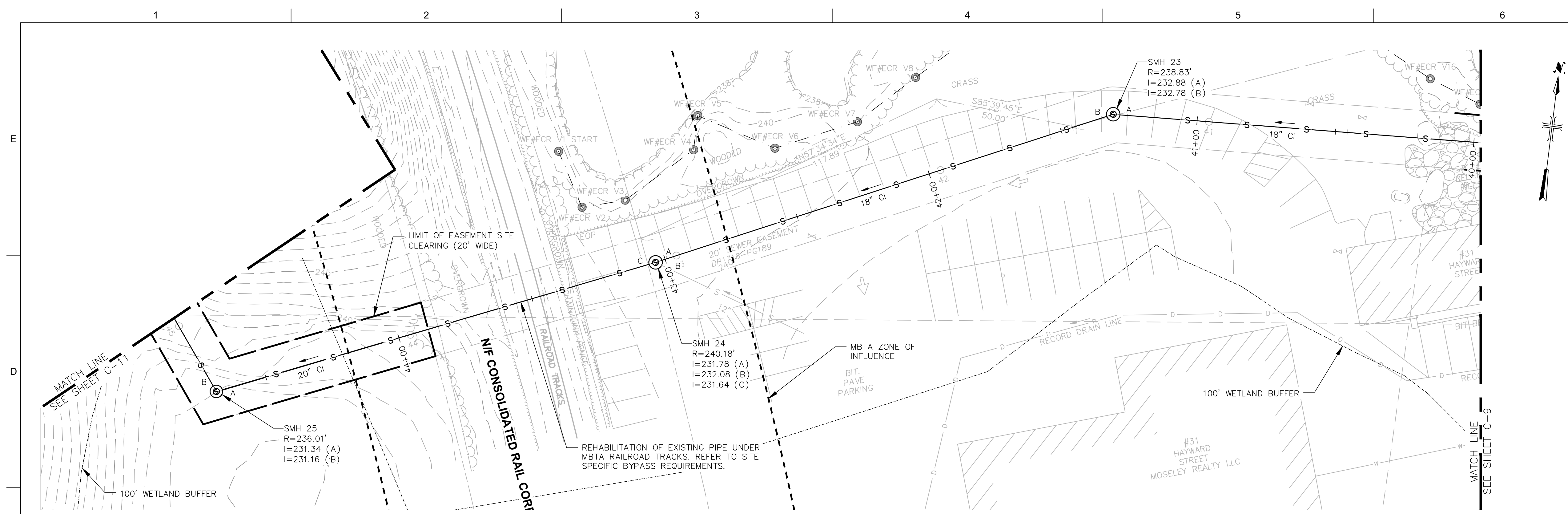
DATE: JUNE 2022
PROJECT NO.: 30065216
FILE NAME: C-1 TO C-36
DESIGNED BY: SPM
DRAWN BY: AKR
CHECKED BY: SRH/AAG

SHEET TITLE
CIVIL
PLAN AND PROFILE

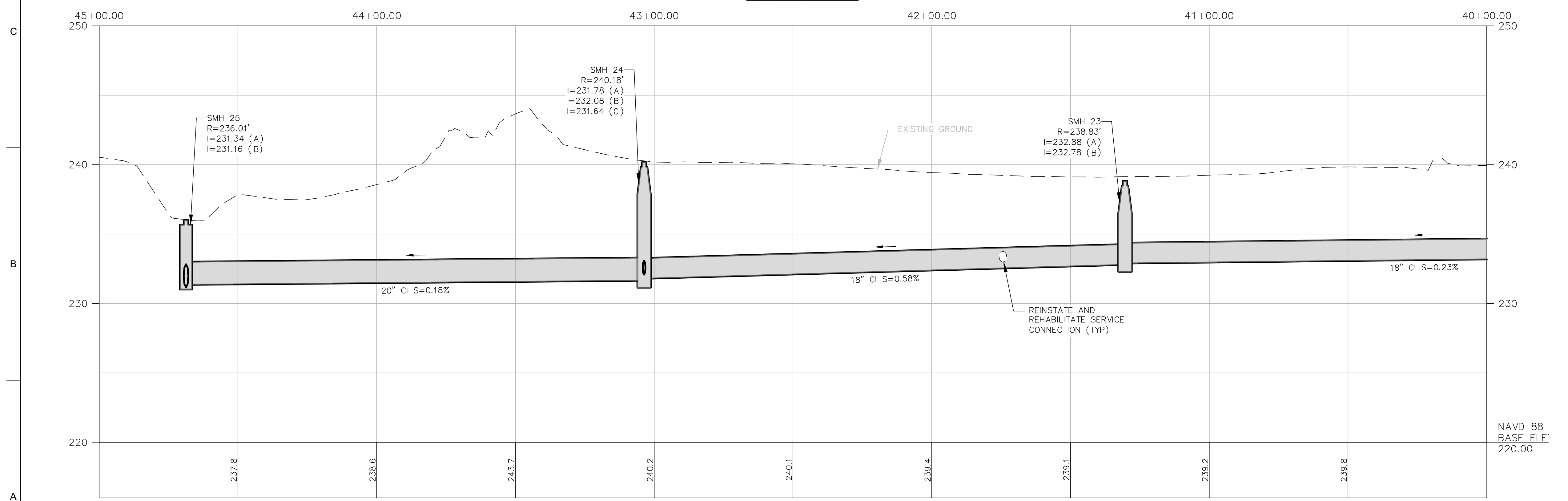
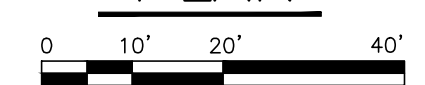
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C-10

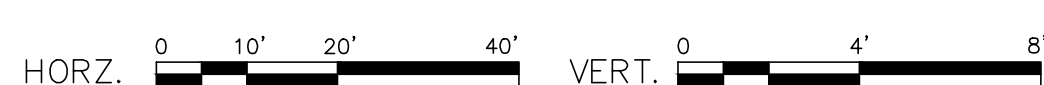
SHEET NO.: 12 OF 66



PLAN



PROFILE



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DESIGNED BY: SPM

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SHEET TITLE

CIVIL

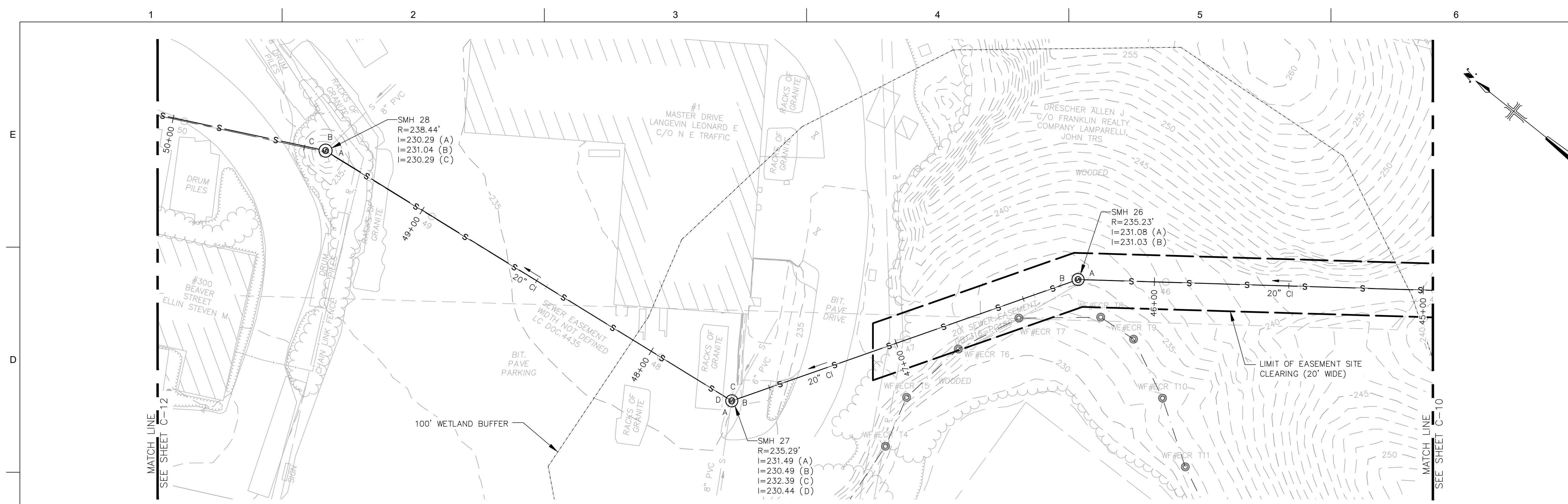
PLAN AND PROFILE

NAVD 88
BASE ELEV.
215.00

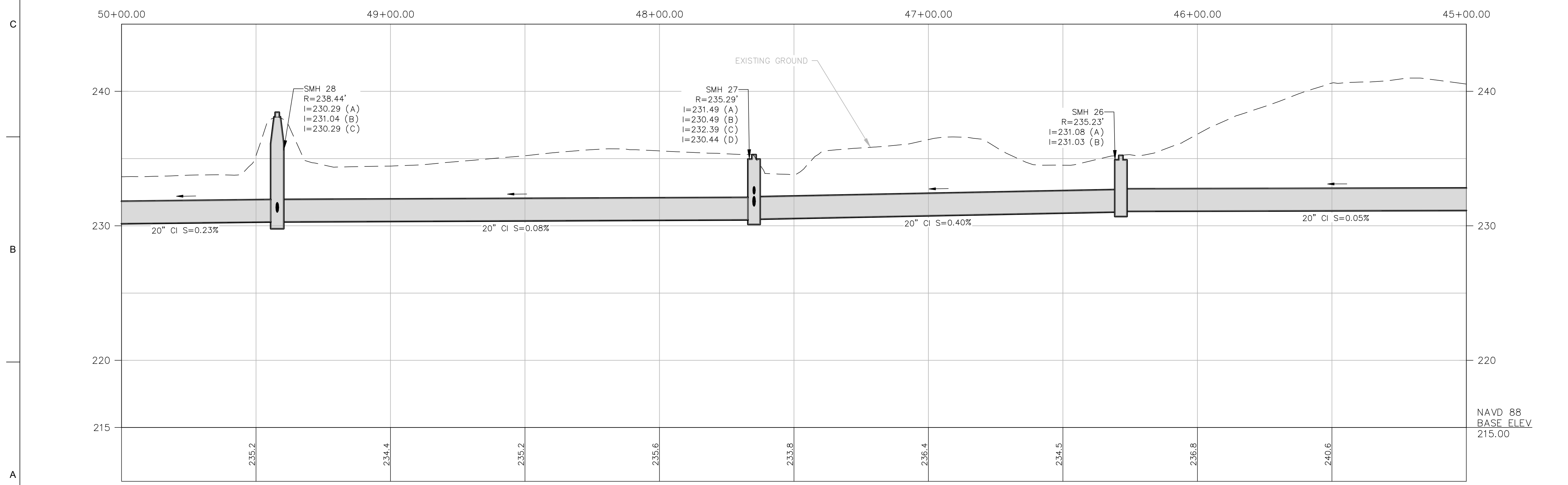
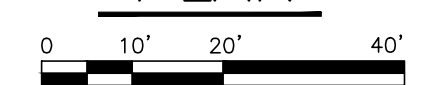
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C-11

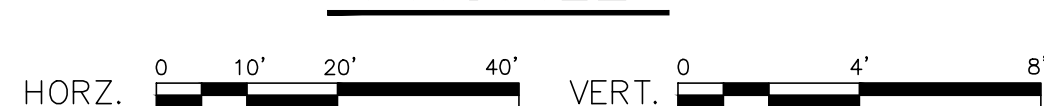
SHEET NO.: 13 OF 66



PLAN



PROFILE





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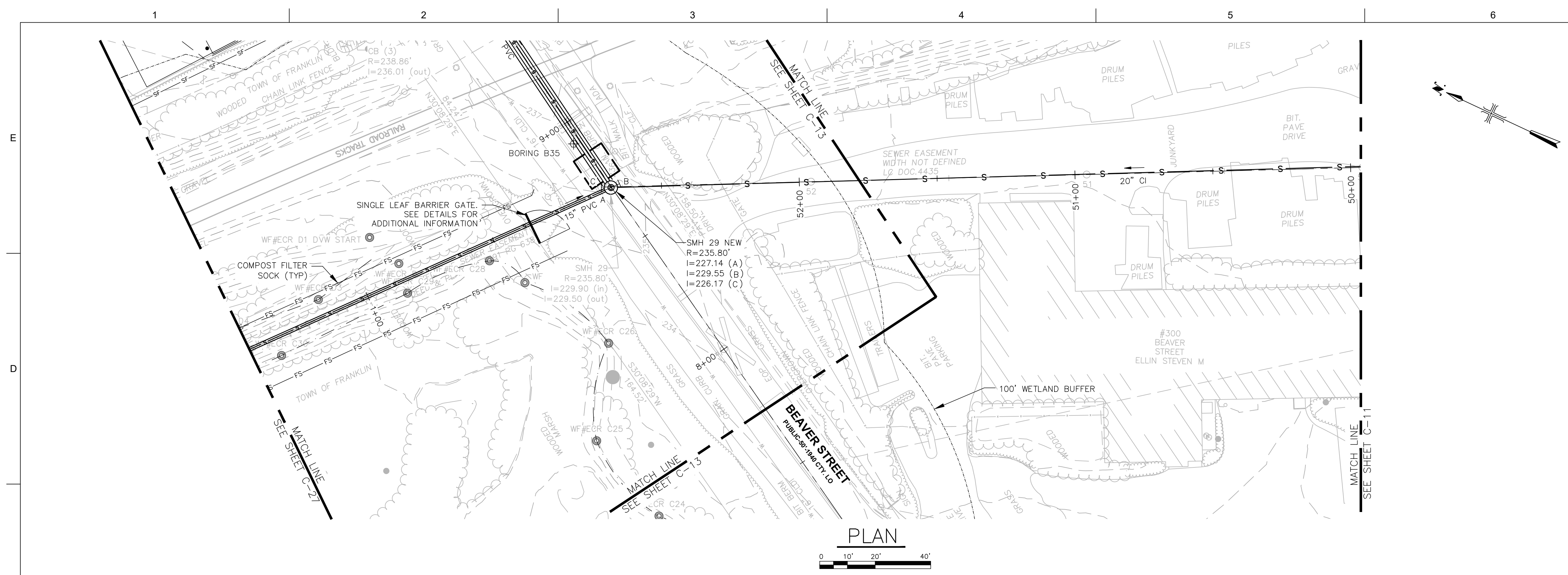
CIVIL

PLAN AND PROFILE

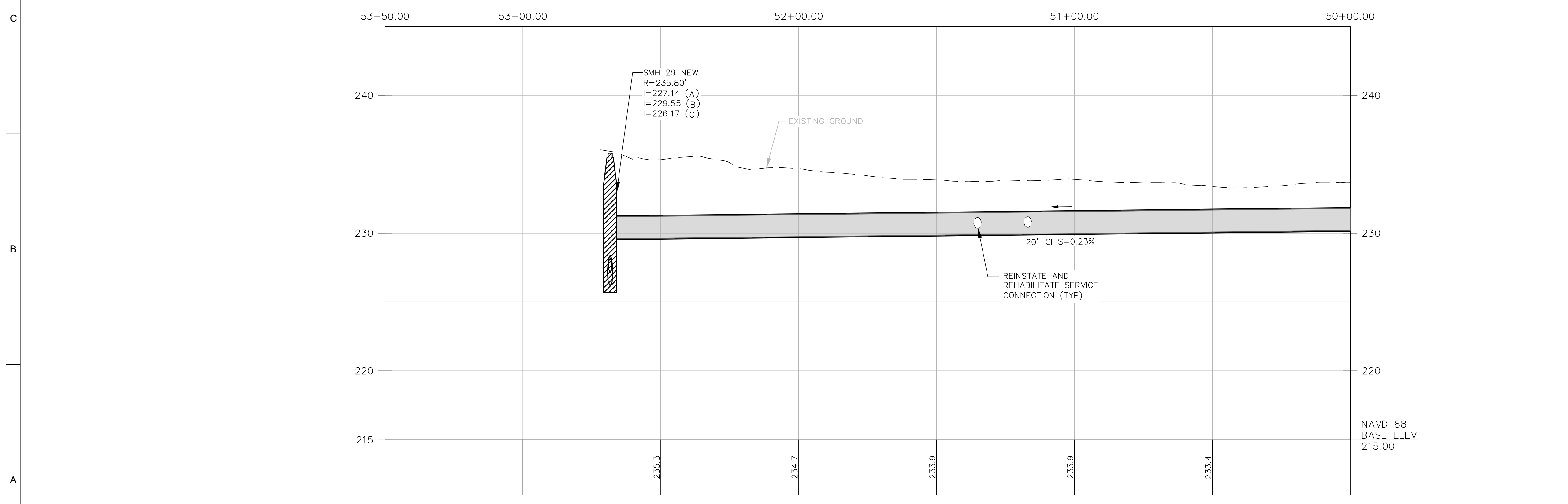
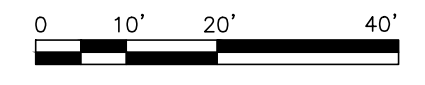
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C-12

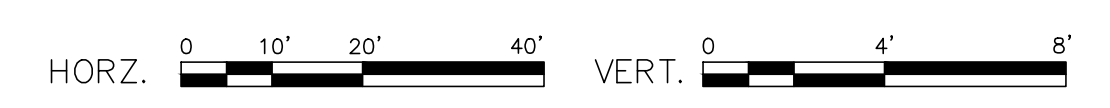
SHEET NO. 14 OF 66

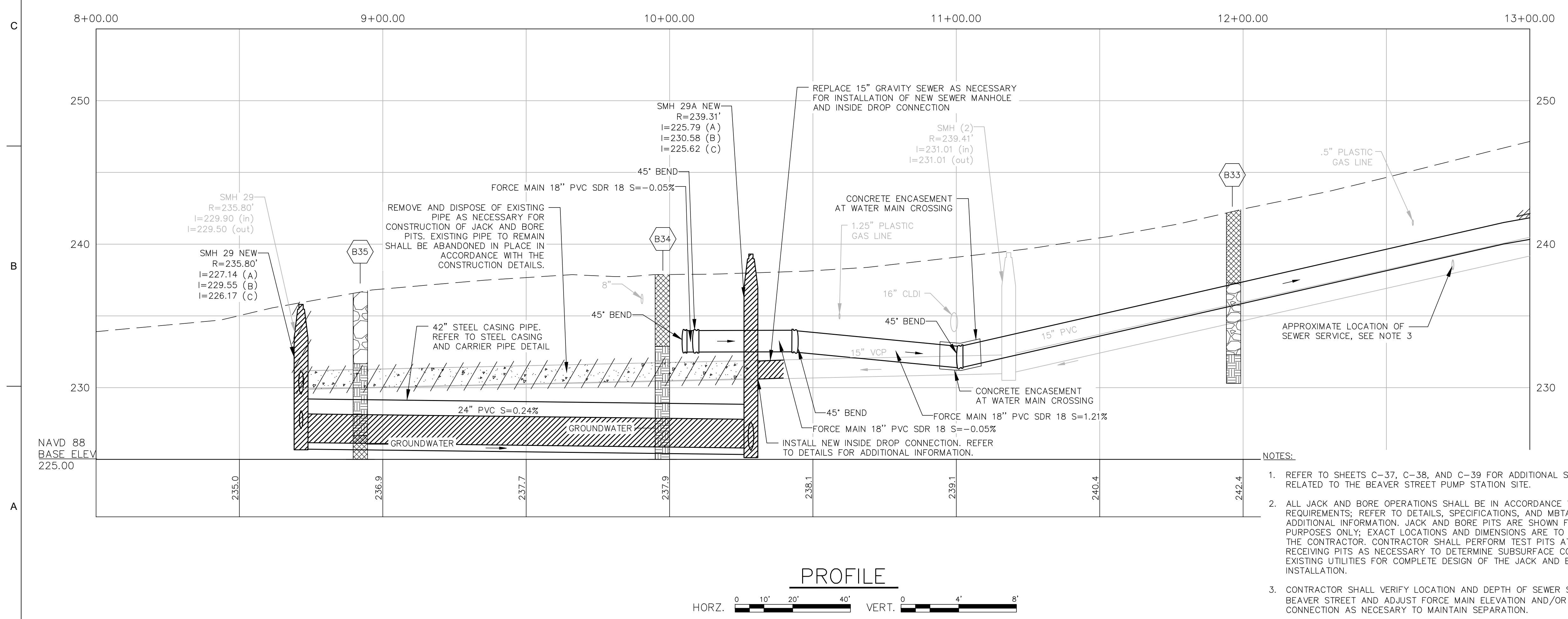
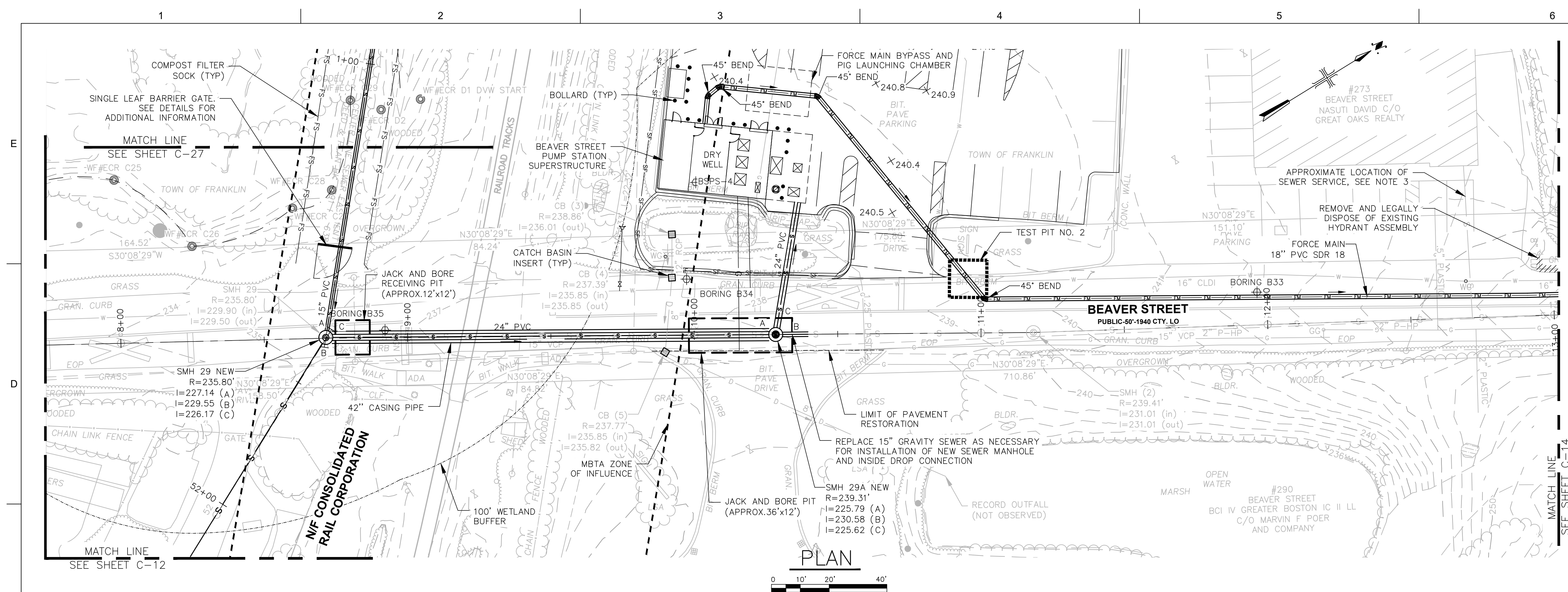


PLAN



PROFILE





- NOTES:
- REFER TO SHEETS C-37, C-38, AND C-39 FOR ADDITIONAL SITE WORK INFORMATION RELATED TO THE BEAVER STREET PUMP STATION SITE.
 - ALL JACK AND BORE OPERATIONS SHALL BE IN ACCORDANCE WITH MBTA REQUIREMENTS; REFER TO DETAILS, SPECIFICATIONS, AND MBTA LICENSE FOR ADDITIONAL INFORMATION. JACK AND BORE PITS ARE SHOWN FOR PERMITTING PURPOSES ONLY; EXACT LOCATIONS AND DIMENSIONS ARE TO BE DETERMINED BY THE CONTRACTOR. CONTRACTOR SHALL PERFORM TEST PITS AT JACKING AND RECEIVING PITS AS NECESSARY TO DETERMINE SUBSURFACE CONDITIONS AND LOCATE EXISTING UTILITIES FOR COMPLETE DESIGN OF THE JACK AND BORE PITS AND PIPE INSTALLATION.
 - CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF SEWER SERVICE FROM #273 BEAVER STREET AND ADJUST FORCE MAIN ELEVATION AND/OR RELOCATE SERVICE CONNECTION AS NECESSARY TO MAINTAIN SEPARATION.

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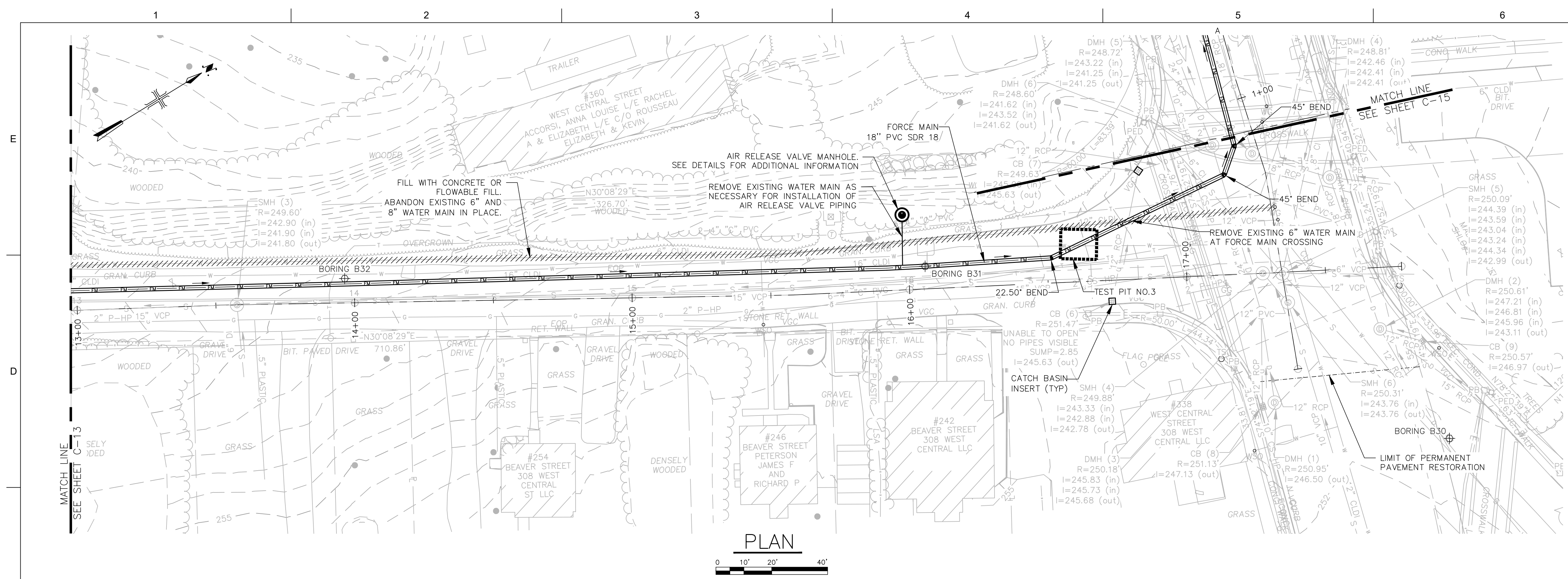
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PROJECT NO.:	30065216
FILE NAME:	C-1 TO C-36
DESIGNED BY:	SPM
DRAWN BY:	AKR
CHECKED BY:	SRH/AAG
SHEET TITLE	CIVIL

PLAN AND PROFILE

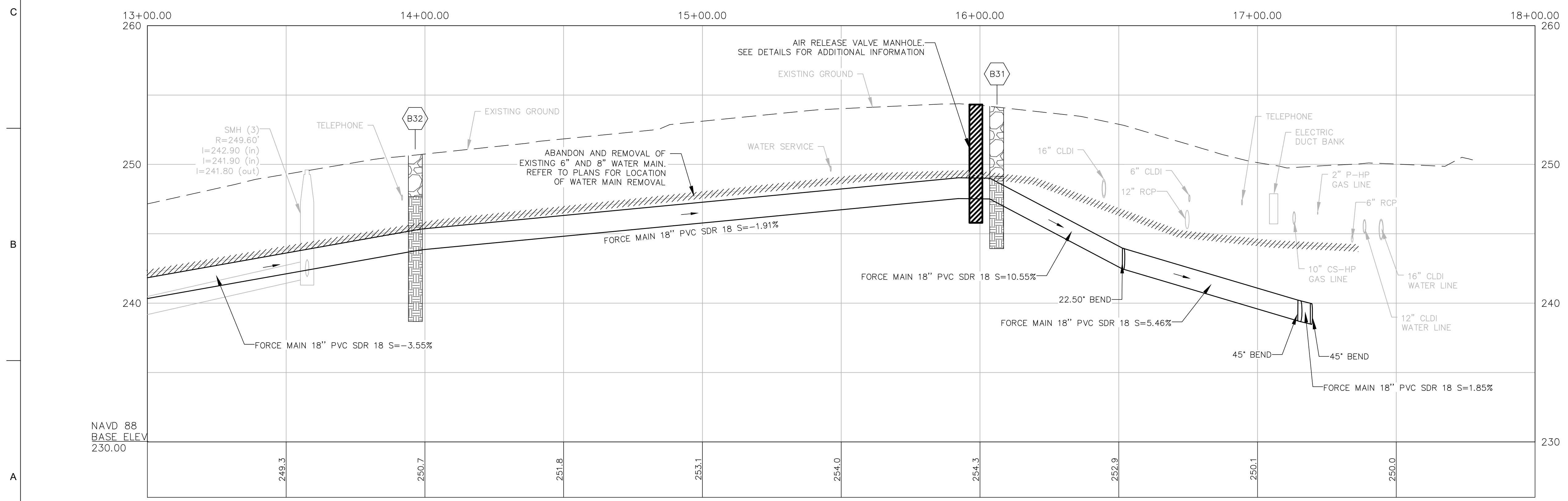
SCALE: 1" = 20'

C-14

SHEET NO. 16 OF 66



PLAN
0 10' 20' 40'



PROFILE

HORZ. 0 10' 20' 40' VERT. 0 4' 8'

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NO.	DATE	ISSUED FOR	BY

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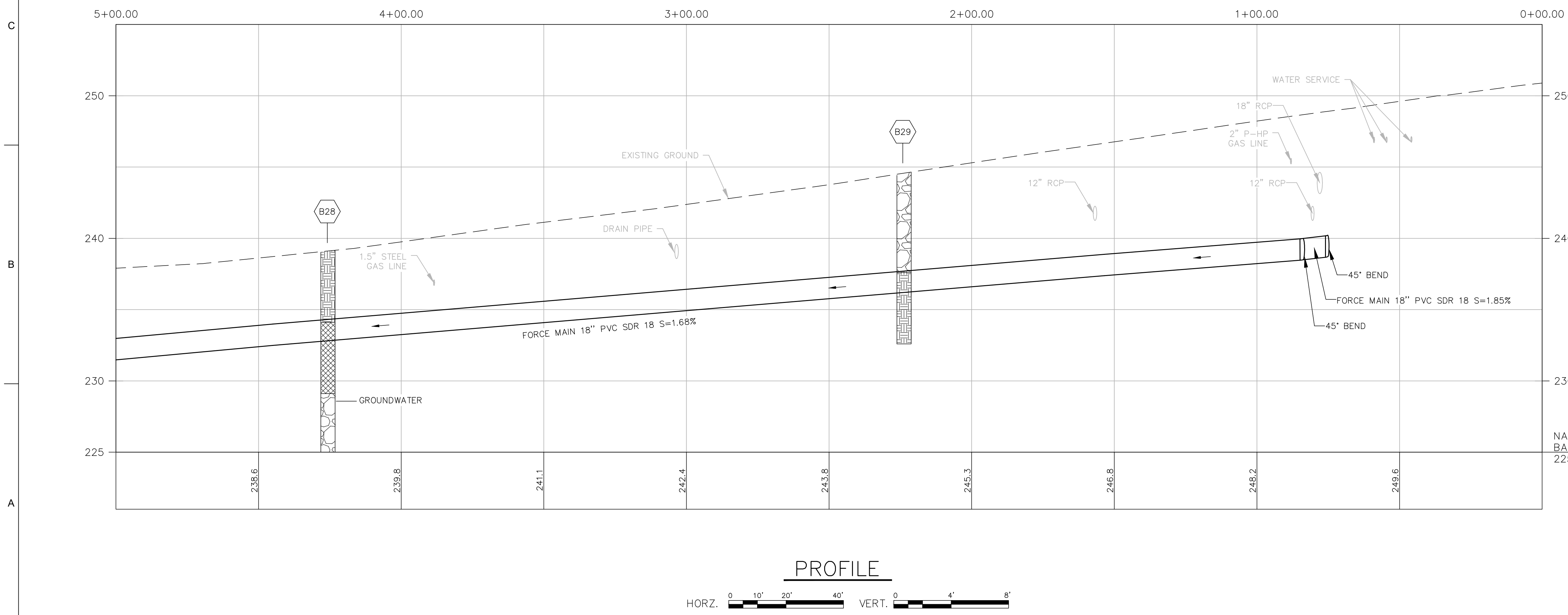
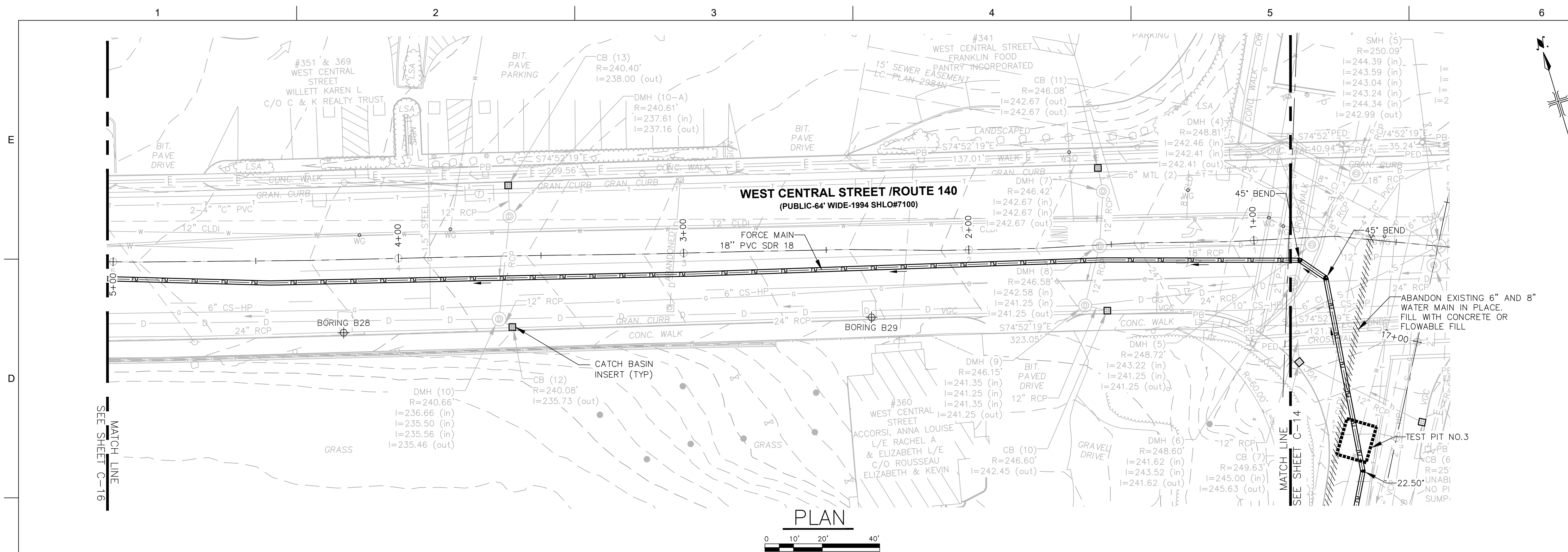
CIVIL

PLAN AND PROFILE

SCALE: 1" = 20'

C-15

SHEET NO. 17 OF 66



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PROJECT NO.:	30065216		
FILE NAME:	C-1 TO C-36		
DESIGNED BY:	SPM		
DRAWN BY:	AKR		
CHECKED BY:	SRH/AAG		

SHEET TITLE

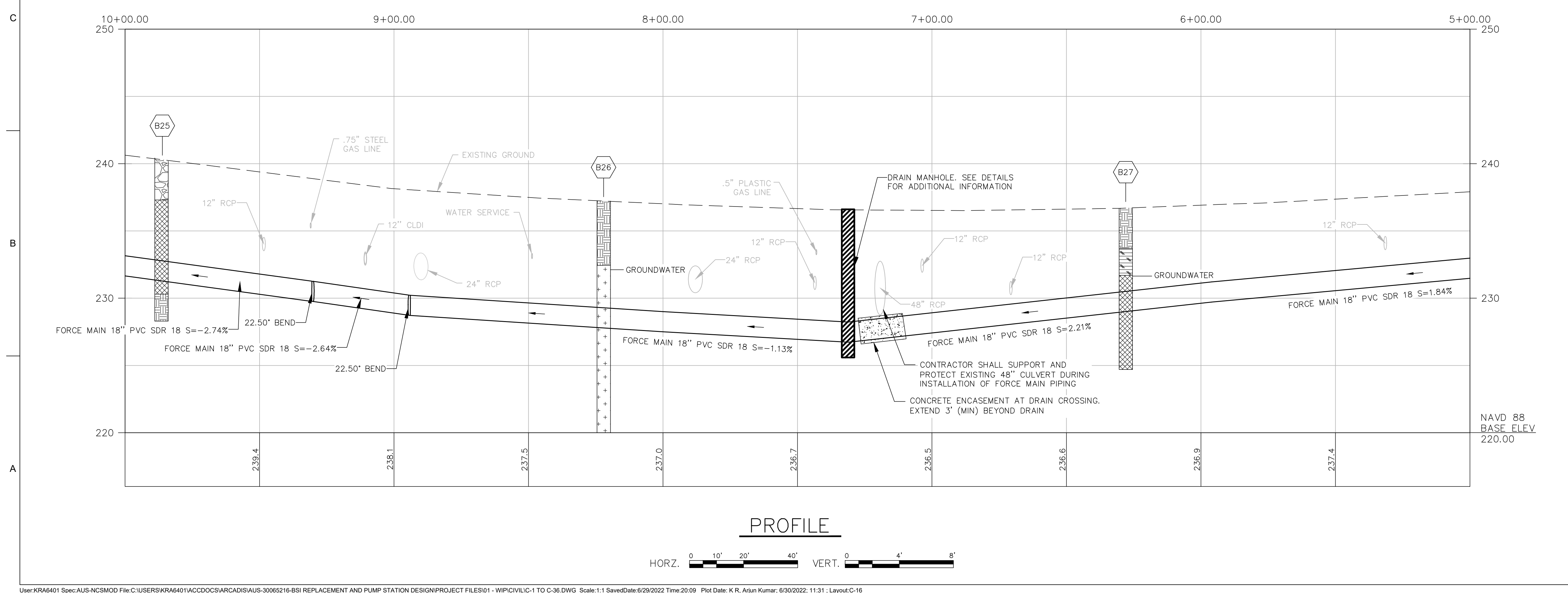
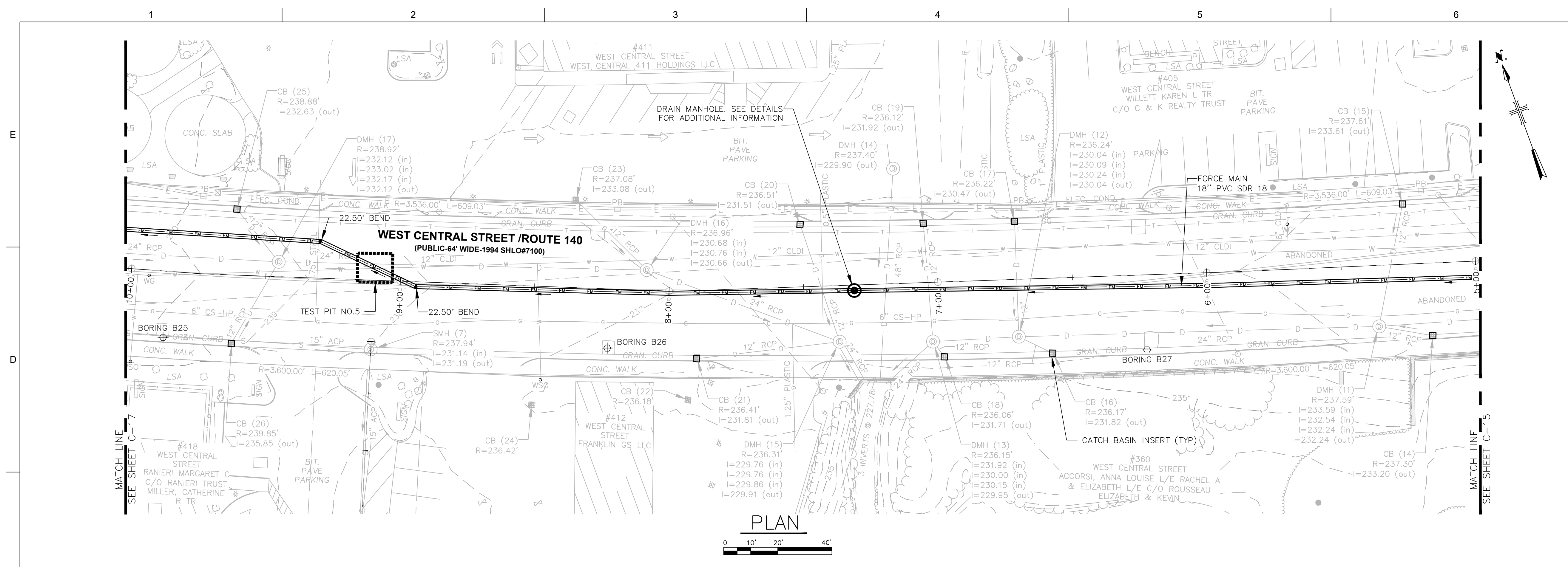
CIVIL

PLAN AND PROFILE

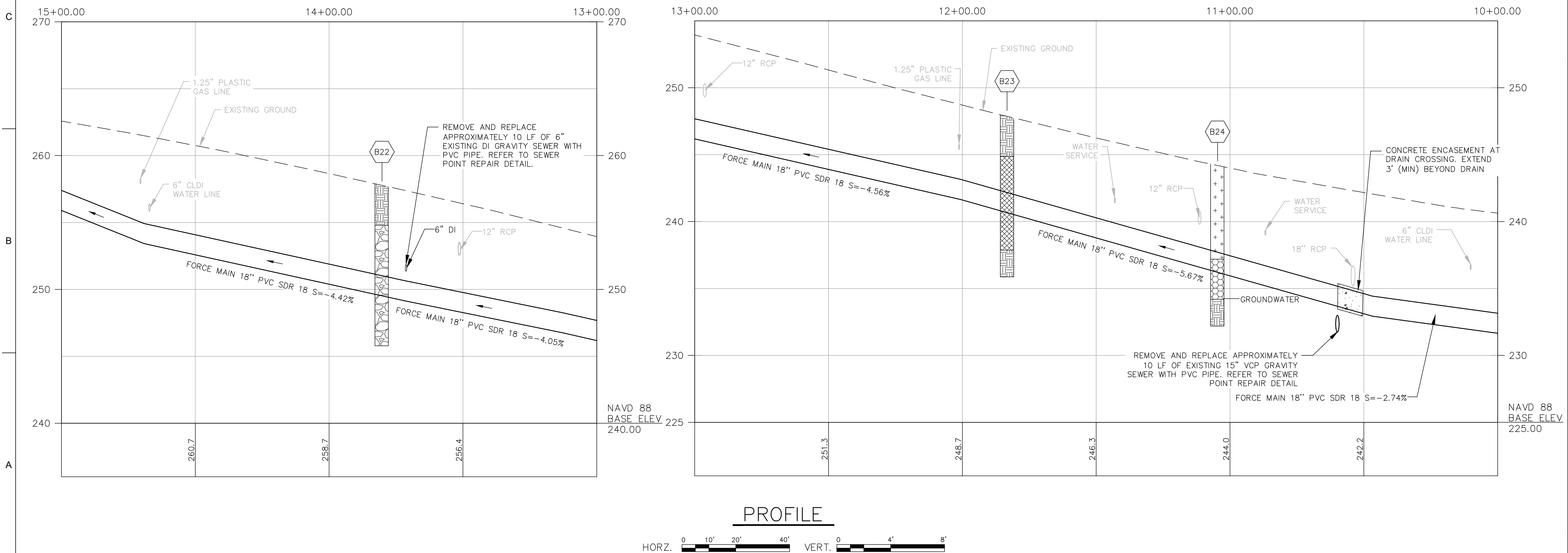
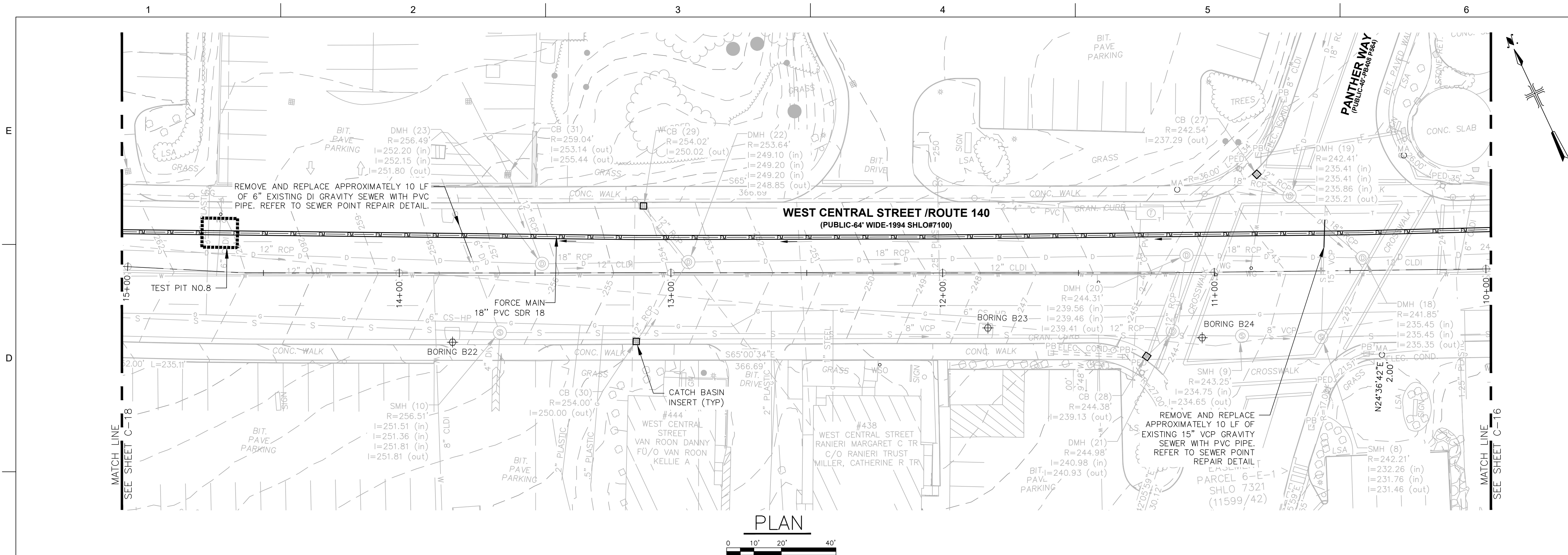
SCALE: 1" = 20'

C-16

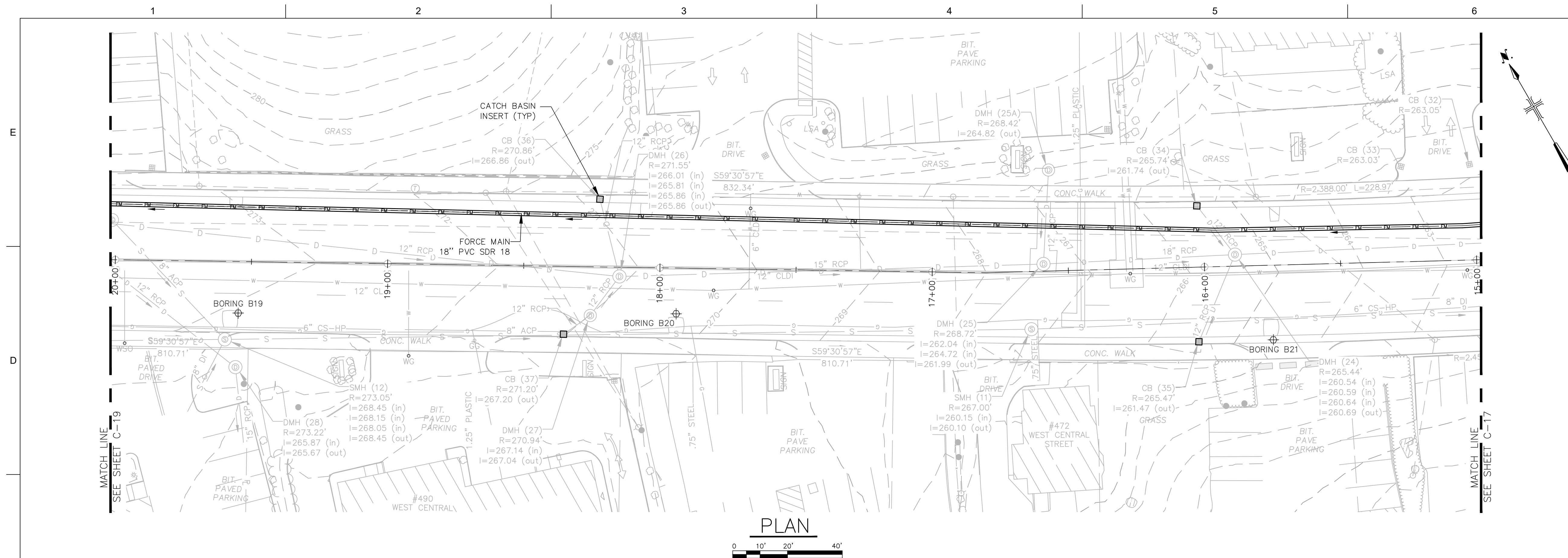
SHEET NO. 18 OF 66



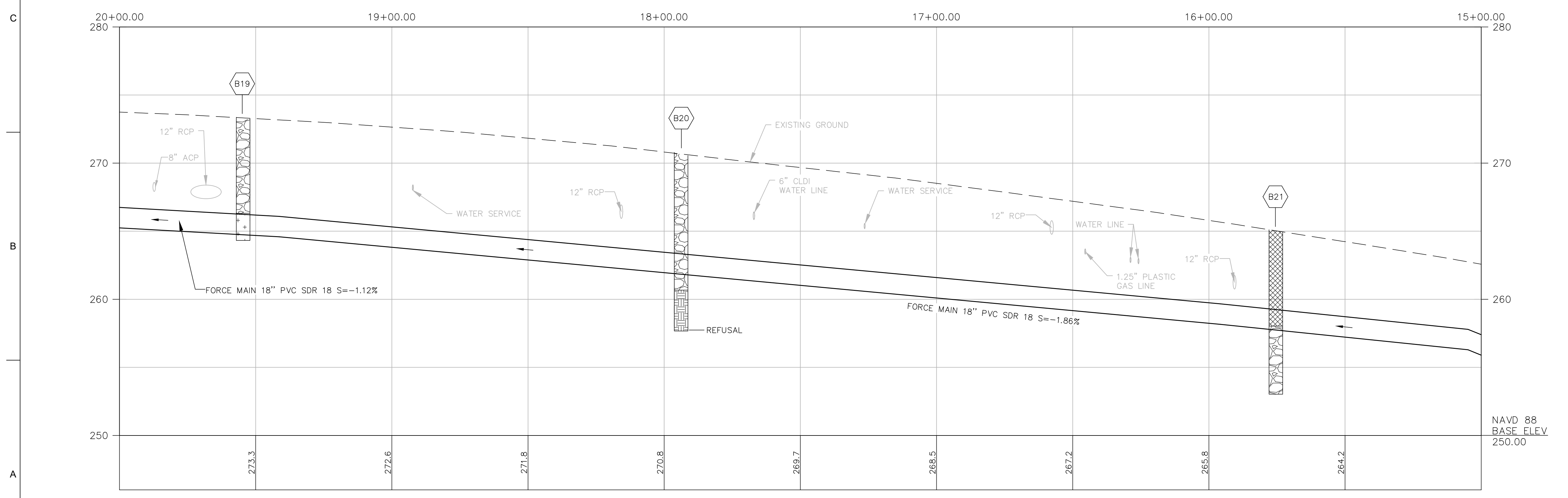
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PLAN
0 10' 20' 40'



PROFILE

HORIZ. 0 10' 20' 40' VERT. 0 4' 8'

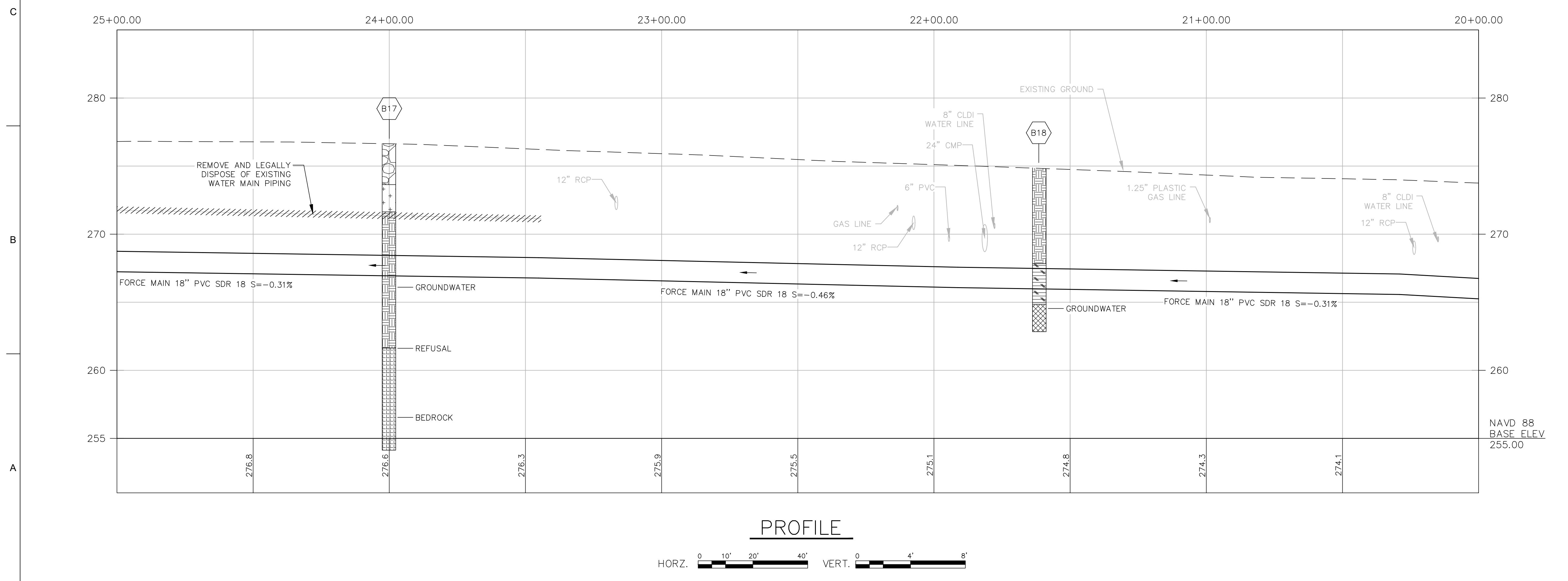
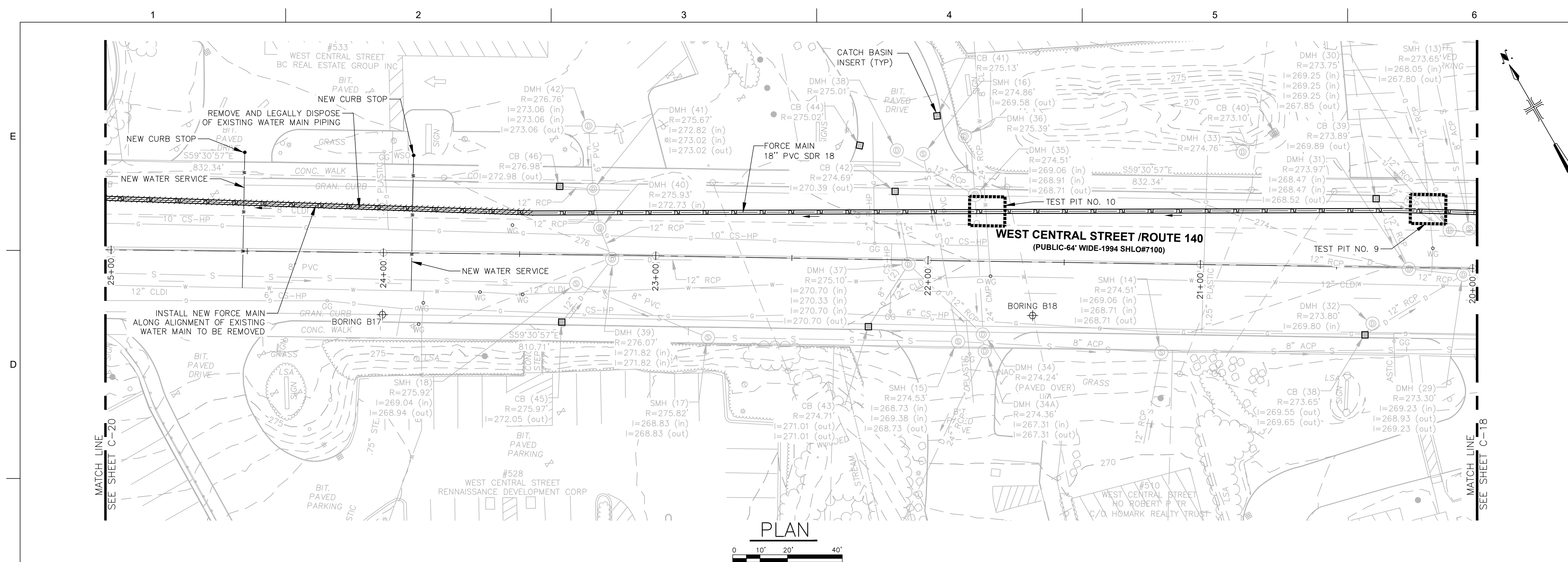
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SHEET TITLE
CIVIL
PLAN AND PROFILE

SCALE: 1" = 20'

C-19
SHEET NO. 21 OF 66



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CHECKED BY:	SRH/AAG		

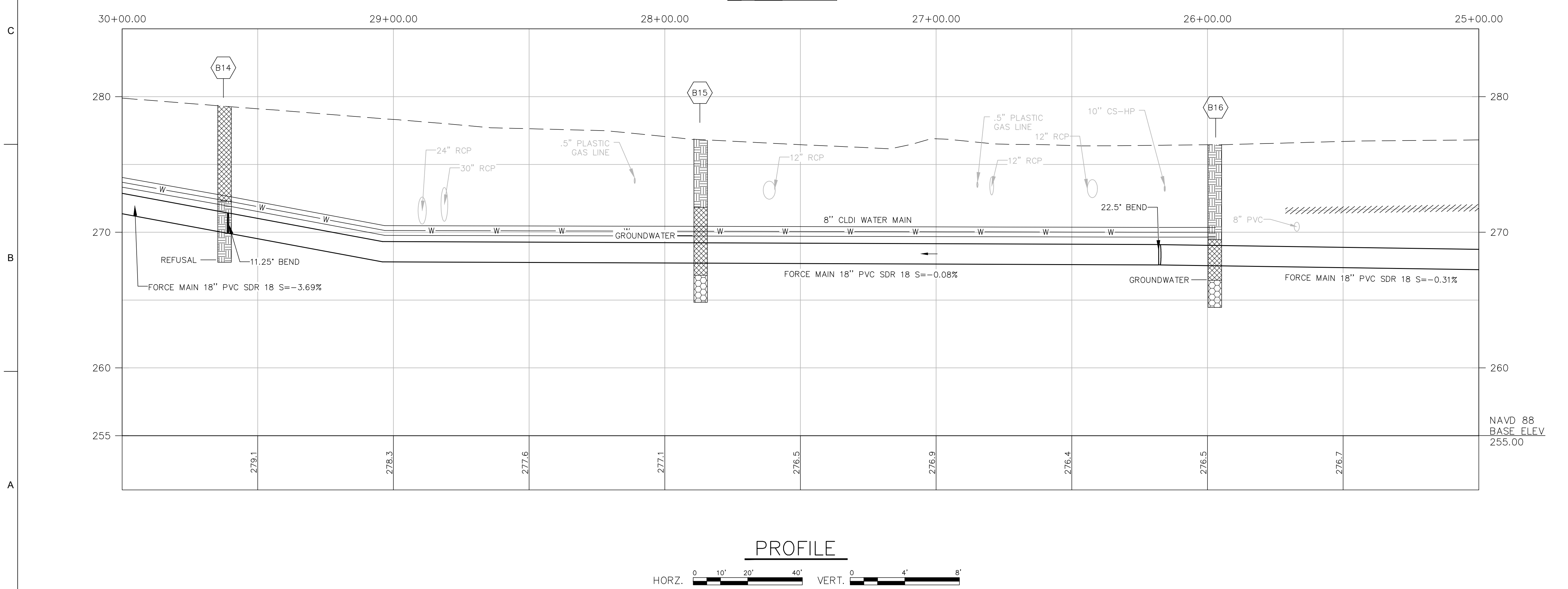
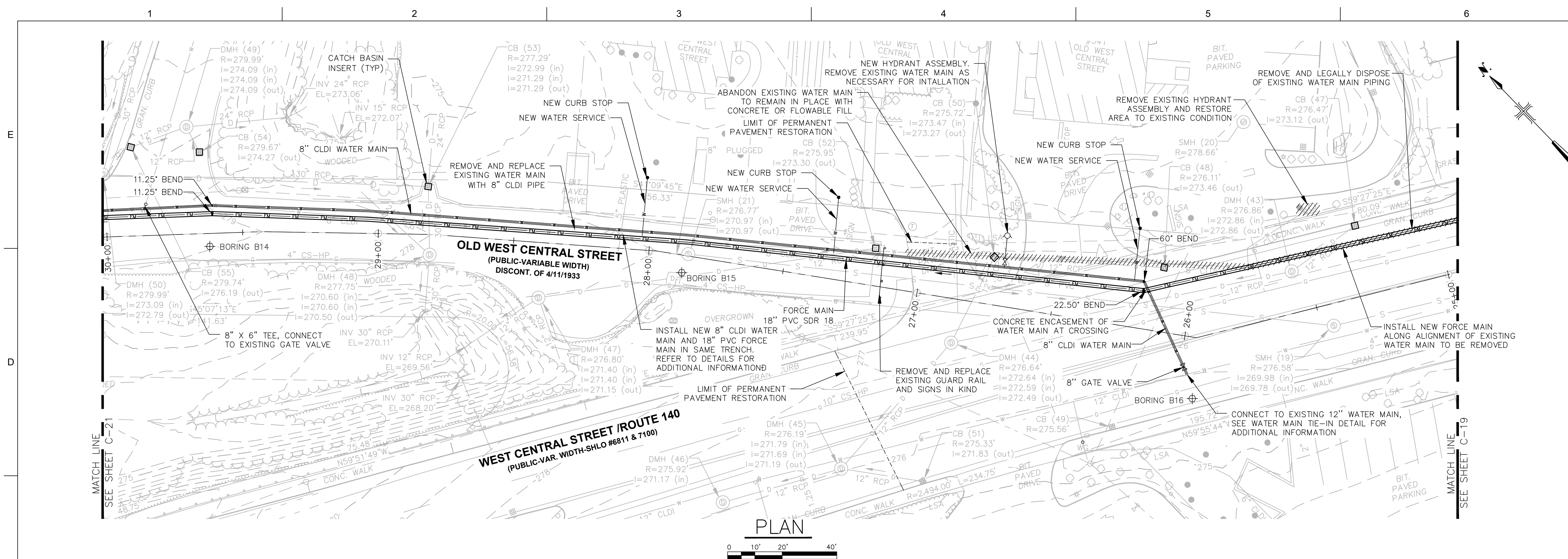
SHEET TITLE

CIVIL
PLAN AND PROFILE

SCALE: 1" = 20'

C-20

SHEET NO. 22 OF 66



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FILE NAME:	C-1 TO C-36		
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DRAWN BY:	AKR		
CHECKED BY:	SRH/AAG		

SHEET TITLE

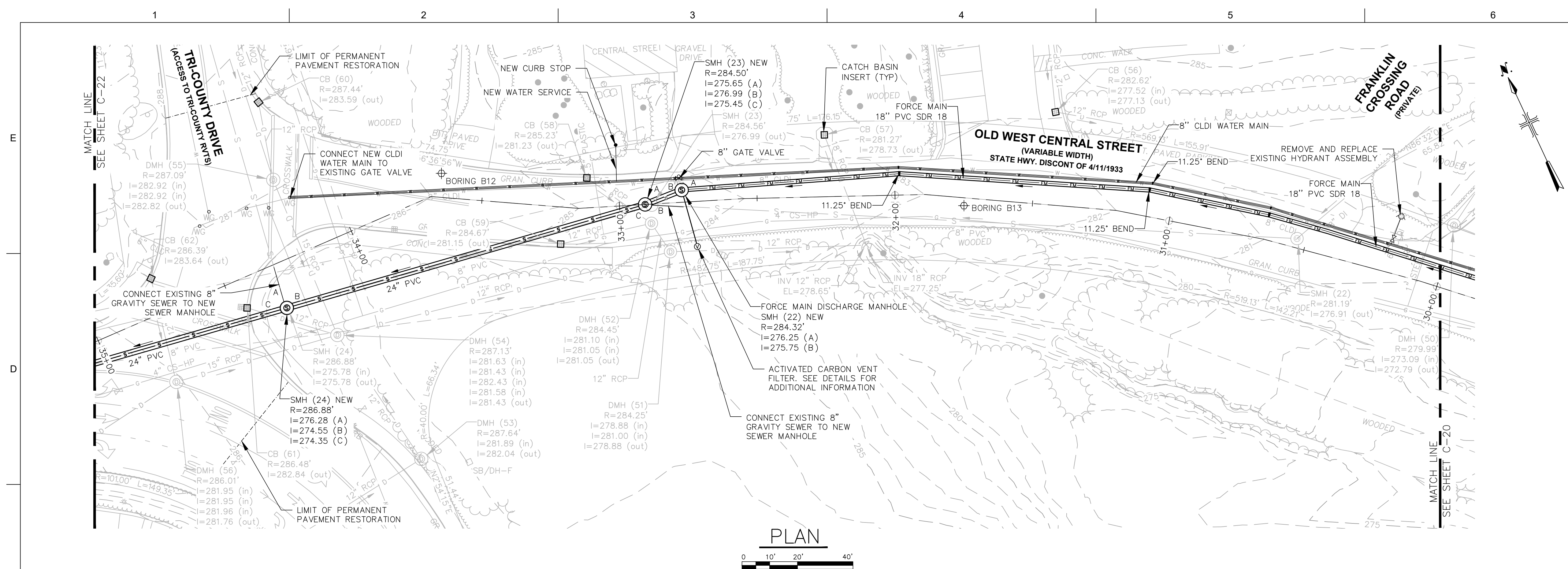
CIVIL

PLAN AND PROFILE

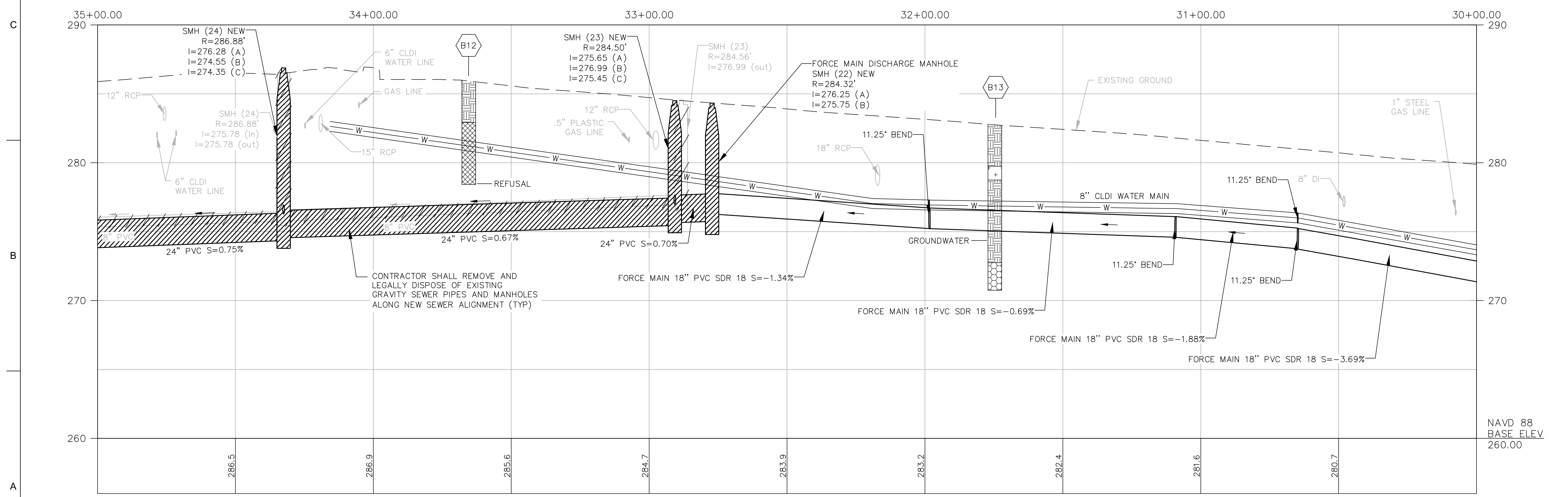
SCALE: 1" = 20'

C-21

SHEET NO. 23 OF 66



PLAN



PROFILE

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FILE NAME: C-1 TO C-36
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SHEET TITLE

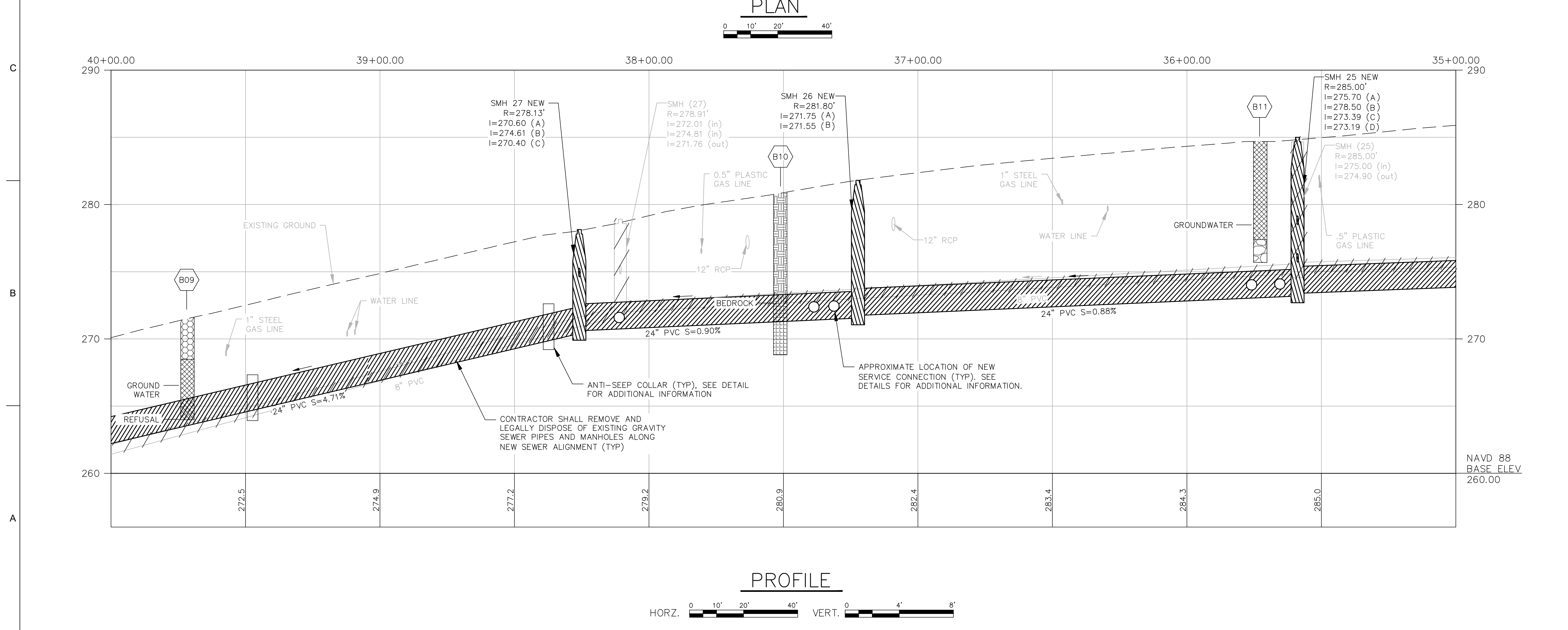
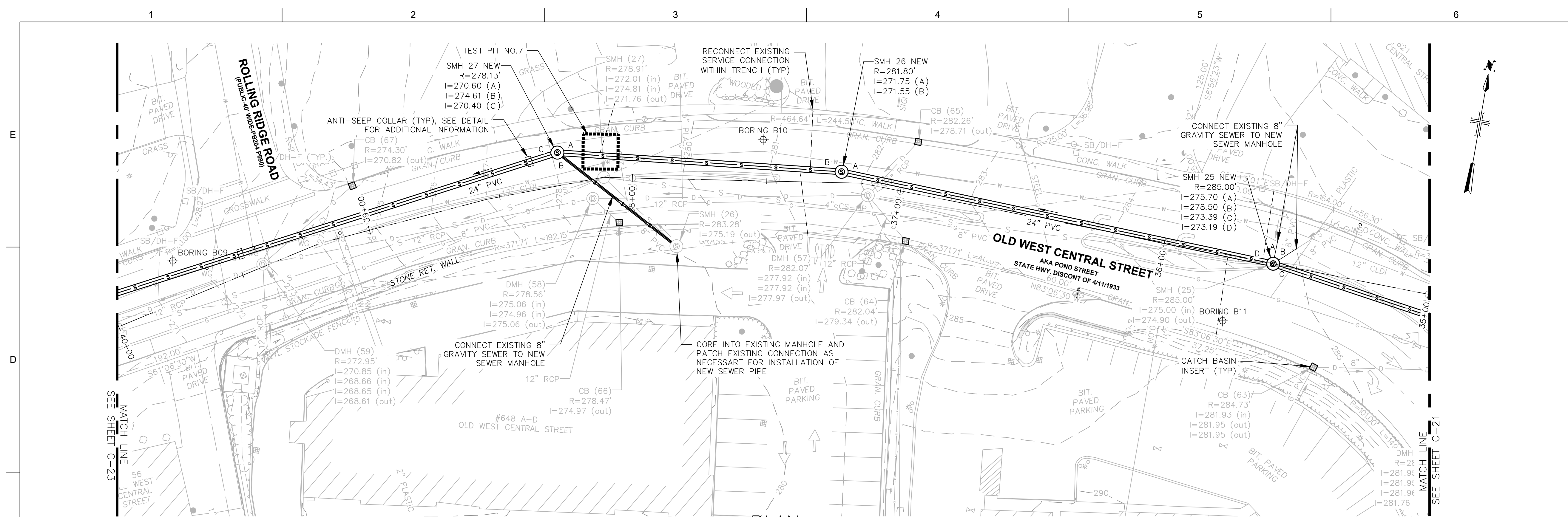
CIVIL

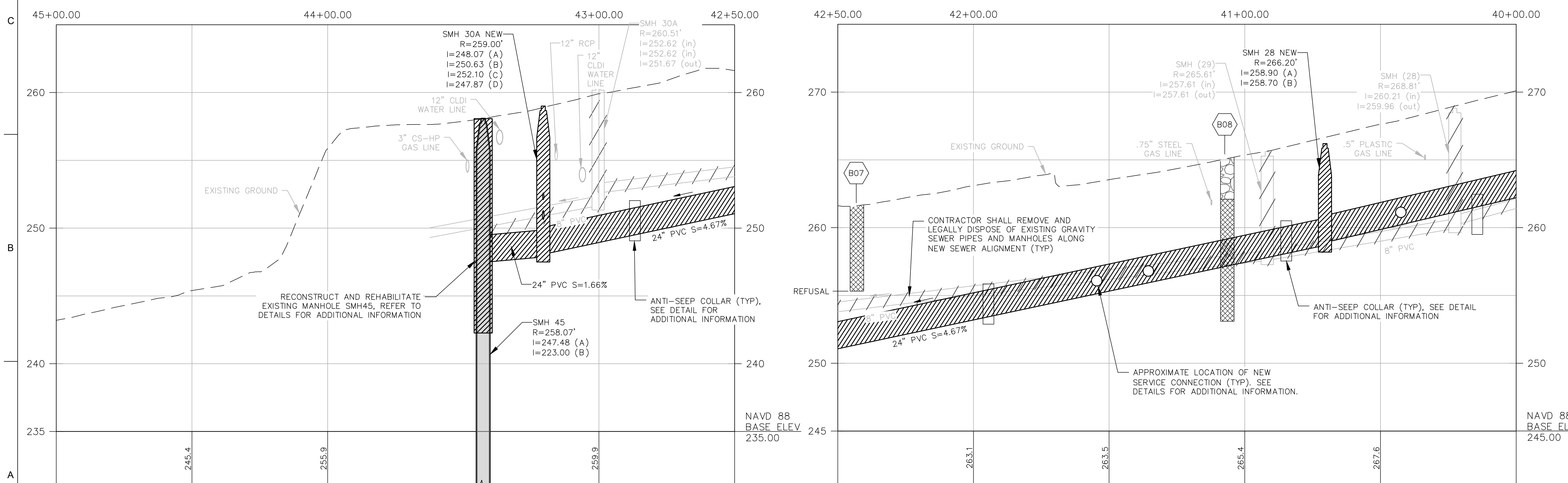
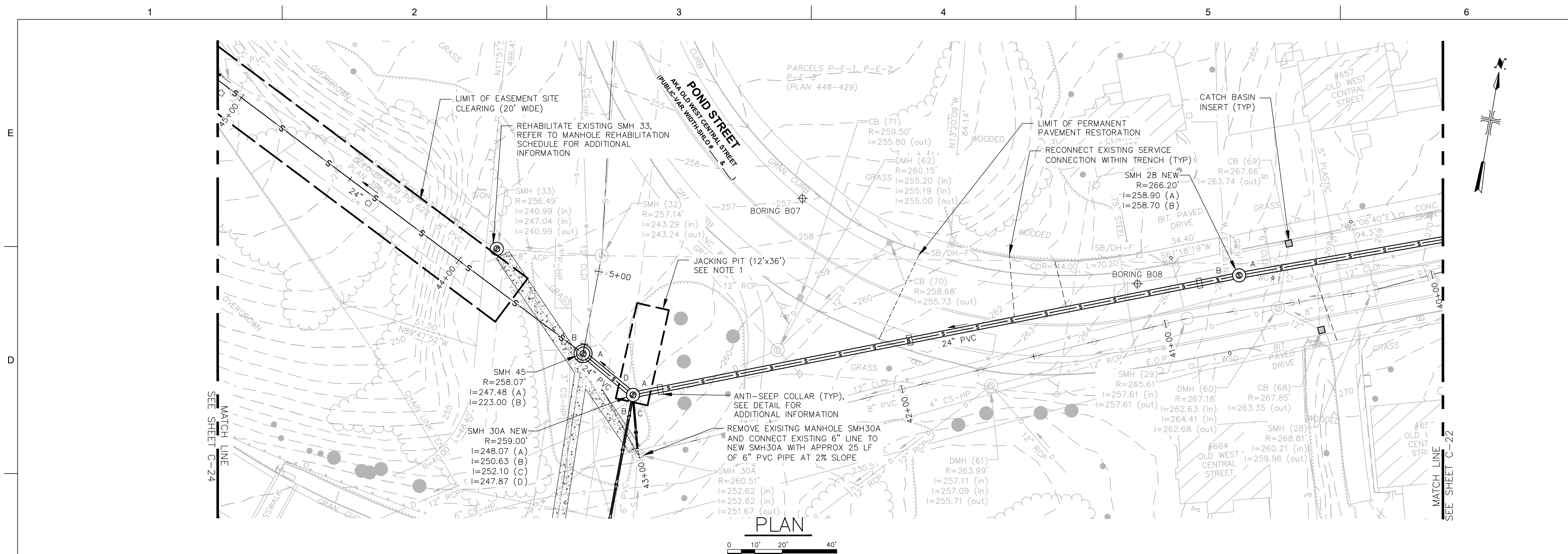
PLAN AND PROFILE

SCALE: 1" = 20'

C-22

SHEET NO. 24 OF 66





NOTES:

- REFER TO JACK AND BORE DETAILS, SPECIFICATIONS, AND APPLICABLE PERMITS FOR ADDITIONAL INFORMATION. JACK AND BORE PITS ARE SHOWN FOR PERMITTING PURPOSES ONLY; EXACT LOCATIONS AND DIMENSIONS ARE TO BE DETERMINED BY THE CONTRACTOR. CONTRACTOR SHALL PERFORM TEST PITS AT JACKING AND RECEIVING PITS AS NECESSARY TO DETERMINE SUBSURFACE CONDITIONS AND LOCATE EXISTING UTILITIES FOR COMPLETE DESIGN OF THE JACK AND BORE PITS AND PIPE INSTALLATION.

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FILE NAME: C-1 TO C-36

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SHEET TITLE

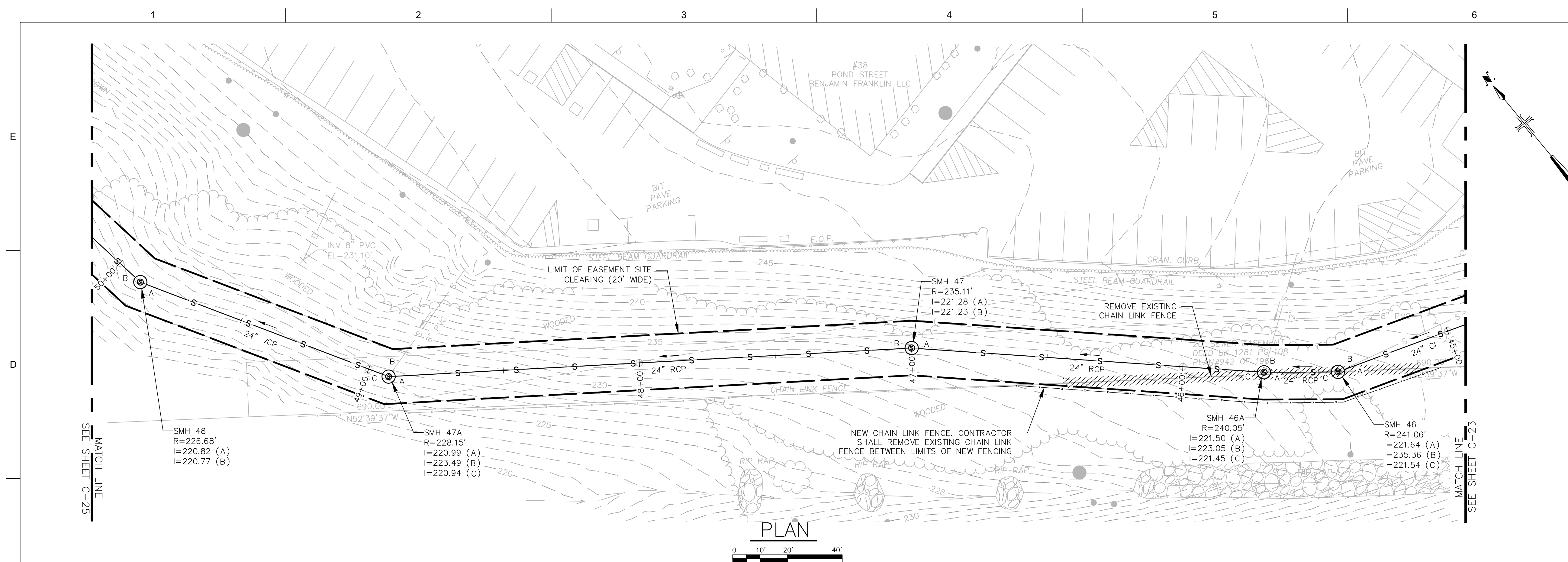
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PLAN AND PROFILE

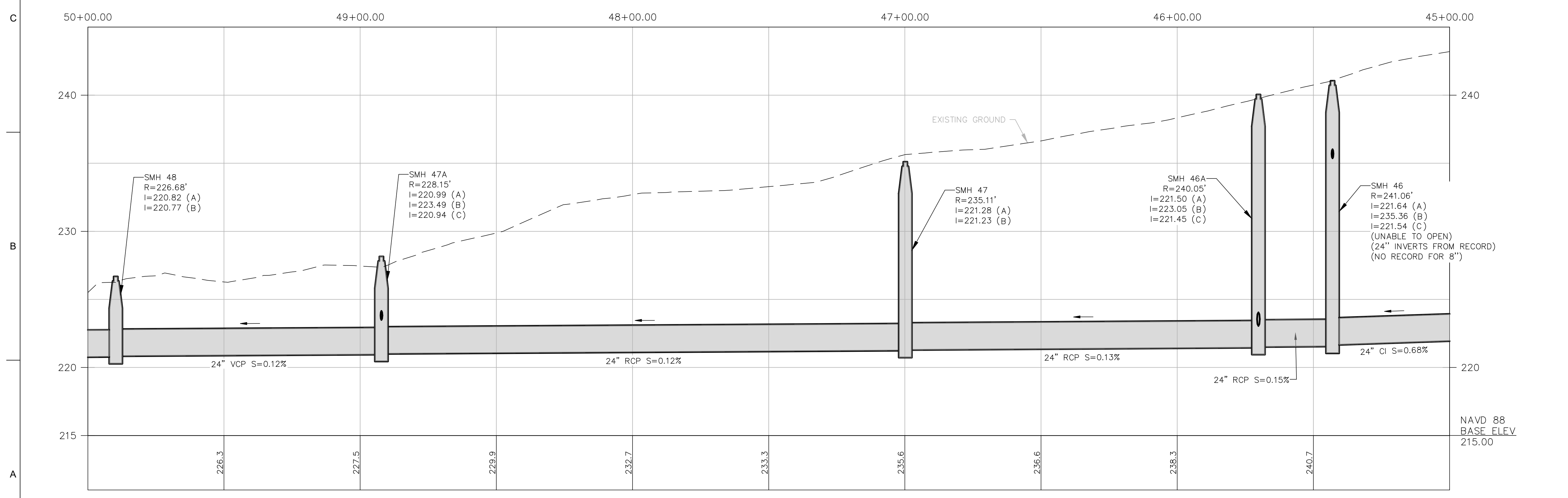
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C-24

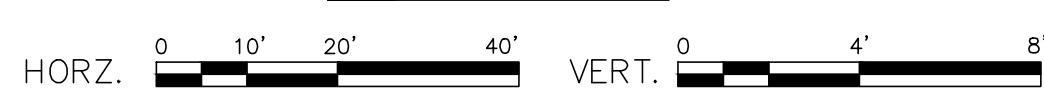
SHEET NO.: 26 OF 66



PLAN
0 10' 20' 40'



PROFILE



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SHEET TITLE

CIVIL

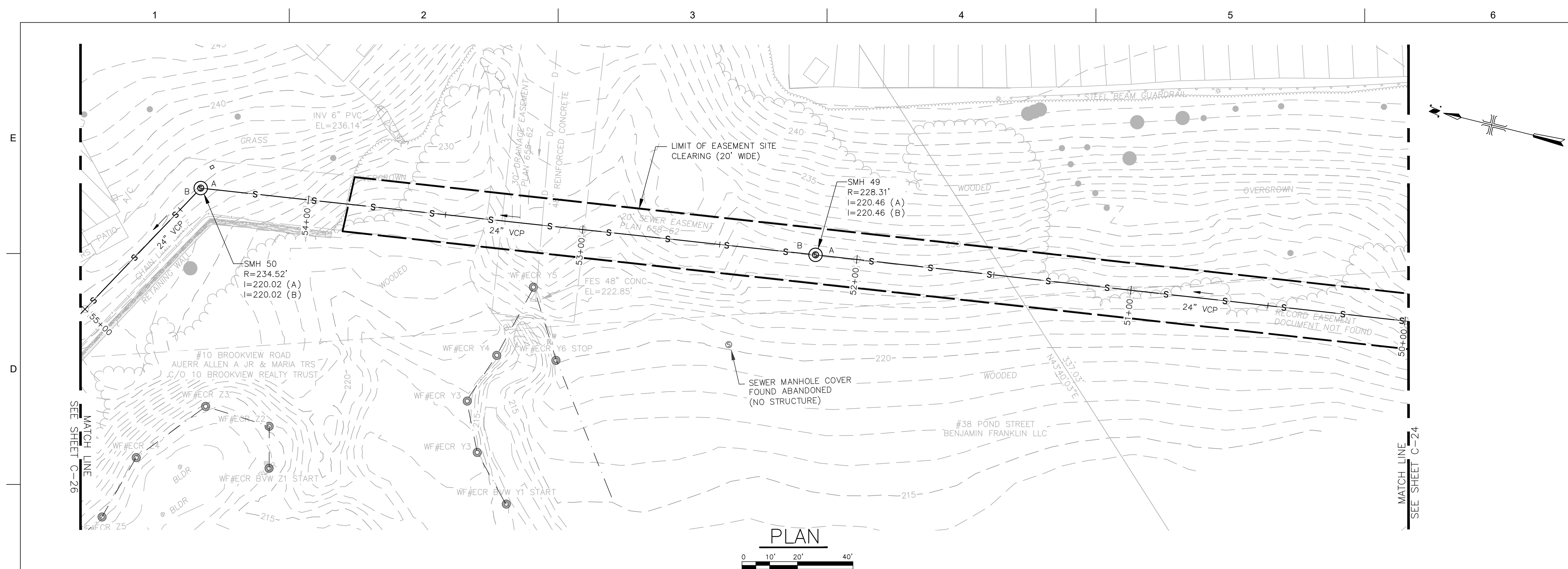
PLAN AND PROFILE

NAVD 88
BASE ELEV.
210.00

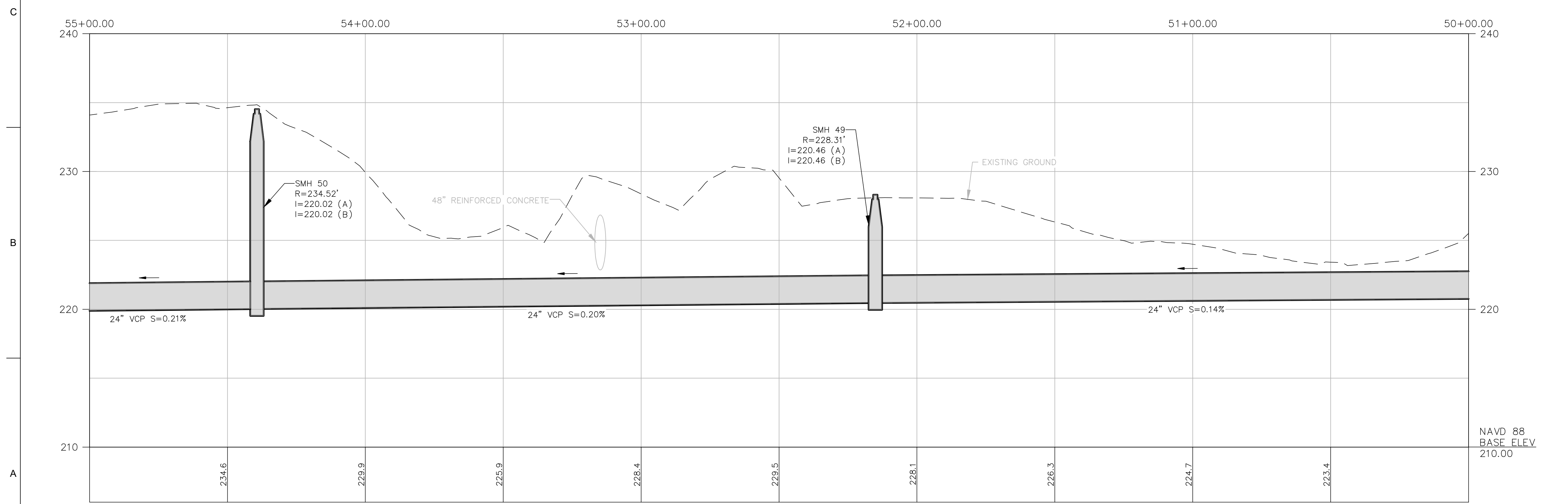
SCALE: 1" = 20'

C-25

SHEET NO.: 27 OF 66



PLAN
0 10' 20' 40'



PROFILE
HORZ. 0 10' 20' 40' VERT. 0 4' 8'



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DESIGNED BY: SPM

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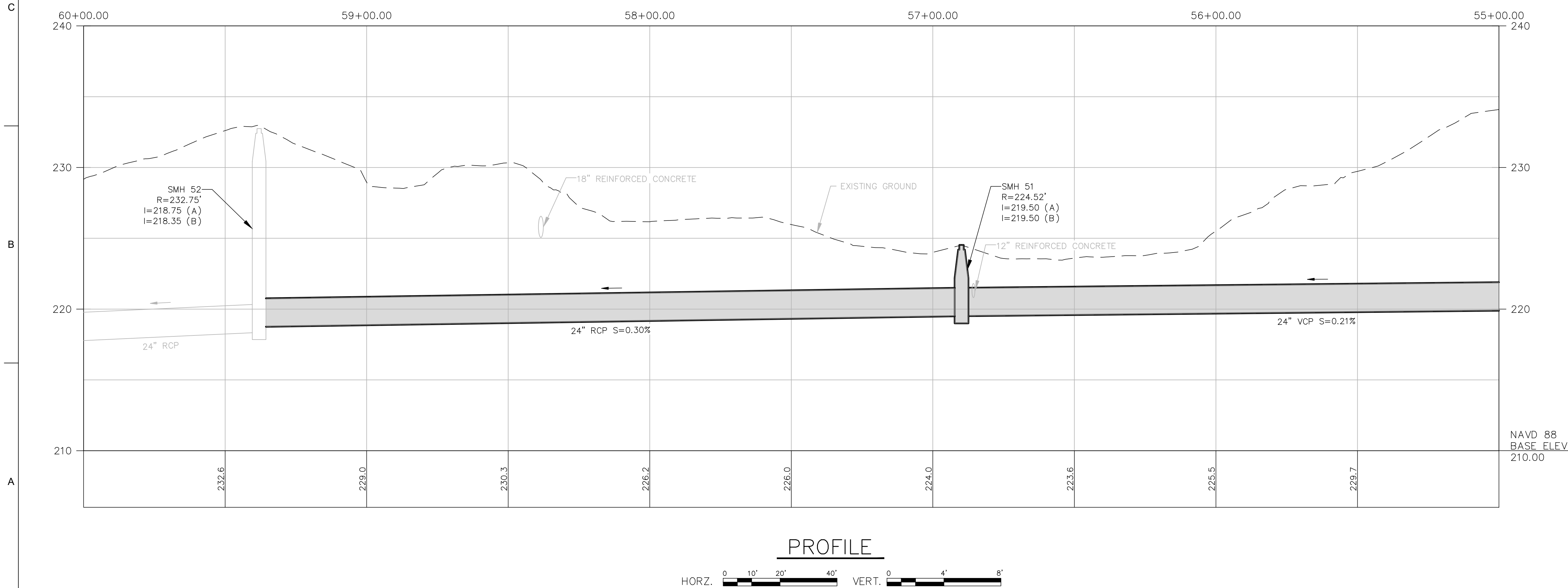
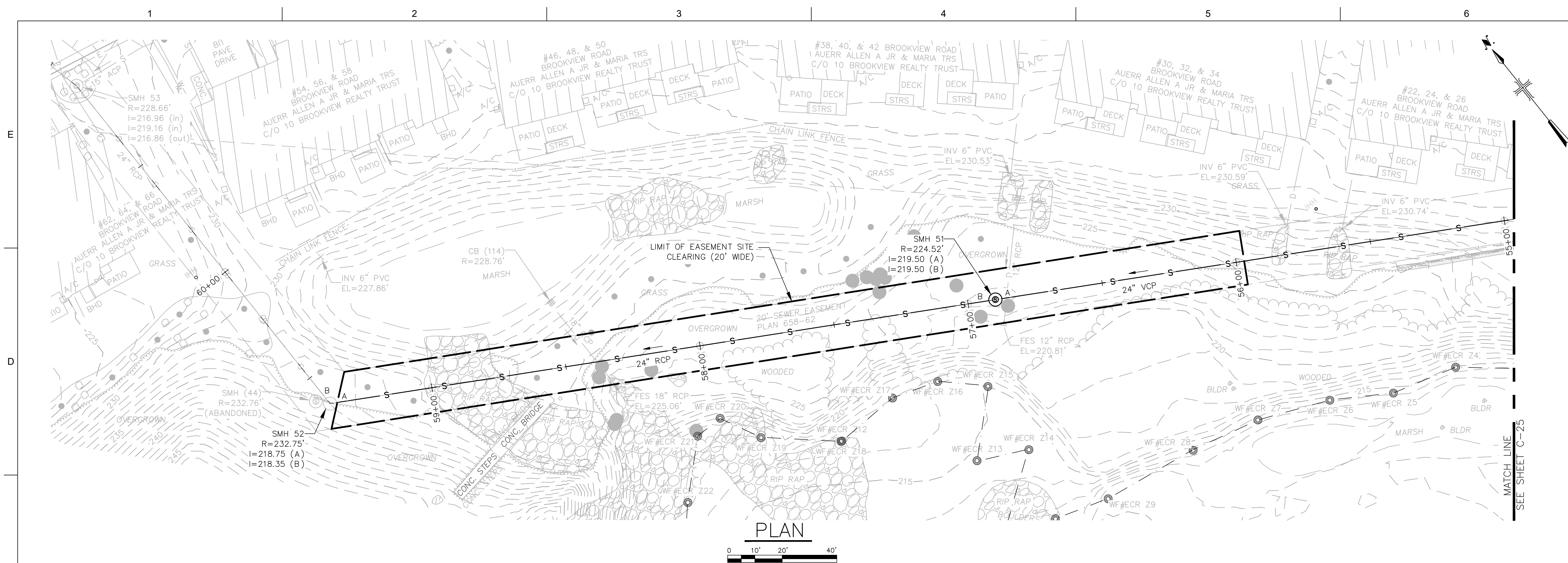
SHEET TITLE

CIVIL
PLAN AND PROFILE

SCALE: 1" = 20'

C-26

SHEET NO.: 28 OF 66





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SHEET TITLE

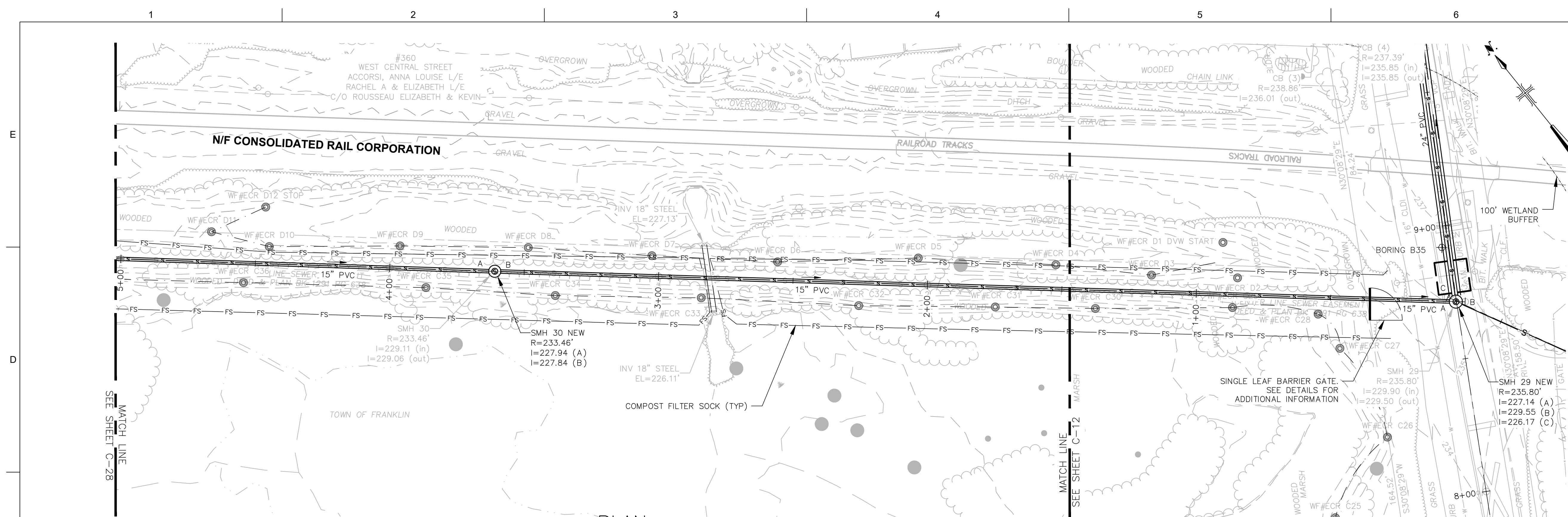
CIVIL

PLAN AND PROFILE

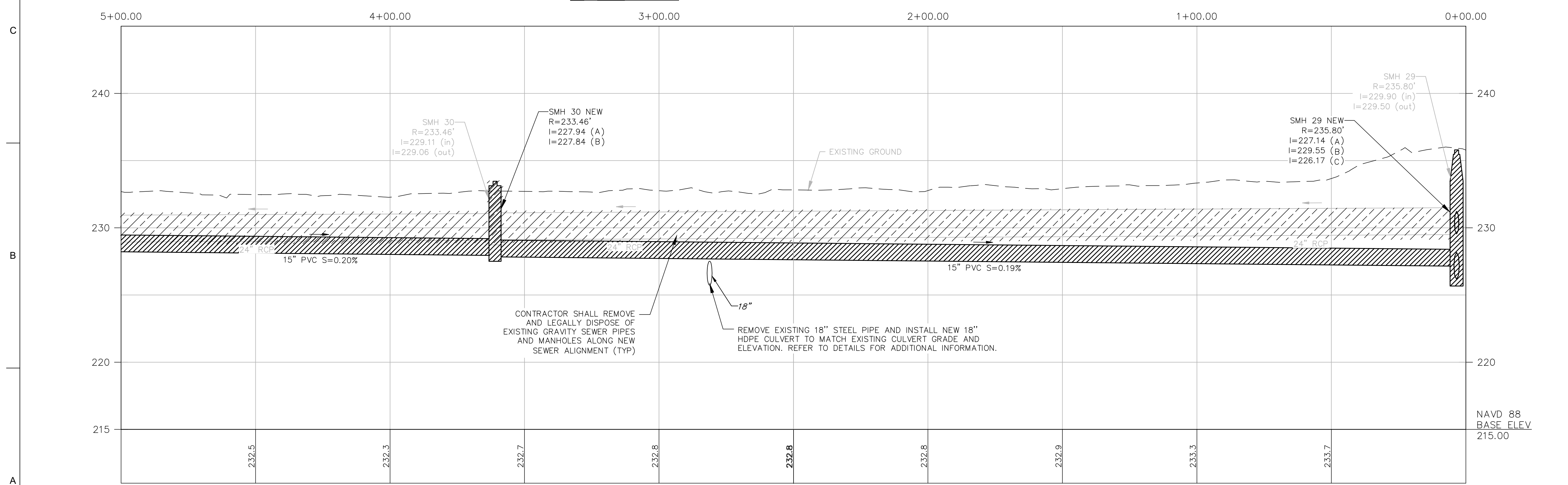
SCALE: 1" = 20'

C-27

SHEET NO.: 29 OF 66



PLAN
0 10' 20' 40'



PROFILE

HORZ. 0 10' 20' 40' VERT. 0 4' 8'

REVISIONS			
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NO.	DATE	ISSUED FOR	BY

SHEET TITLE

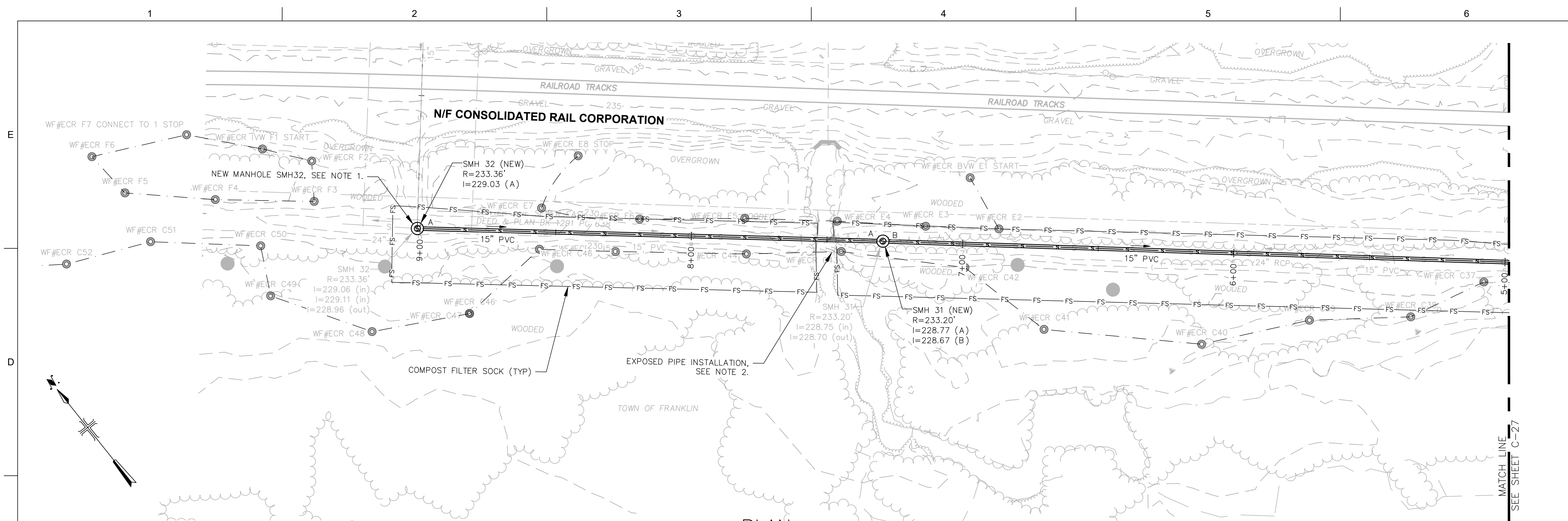
CIVIL

PLAN AND PROFILE

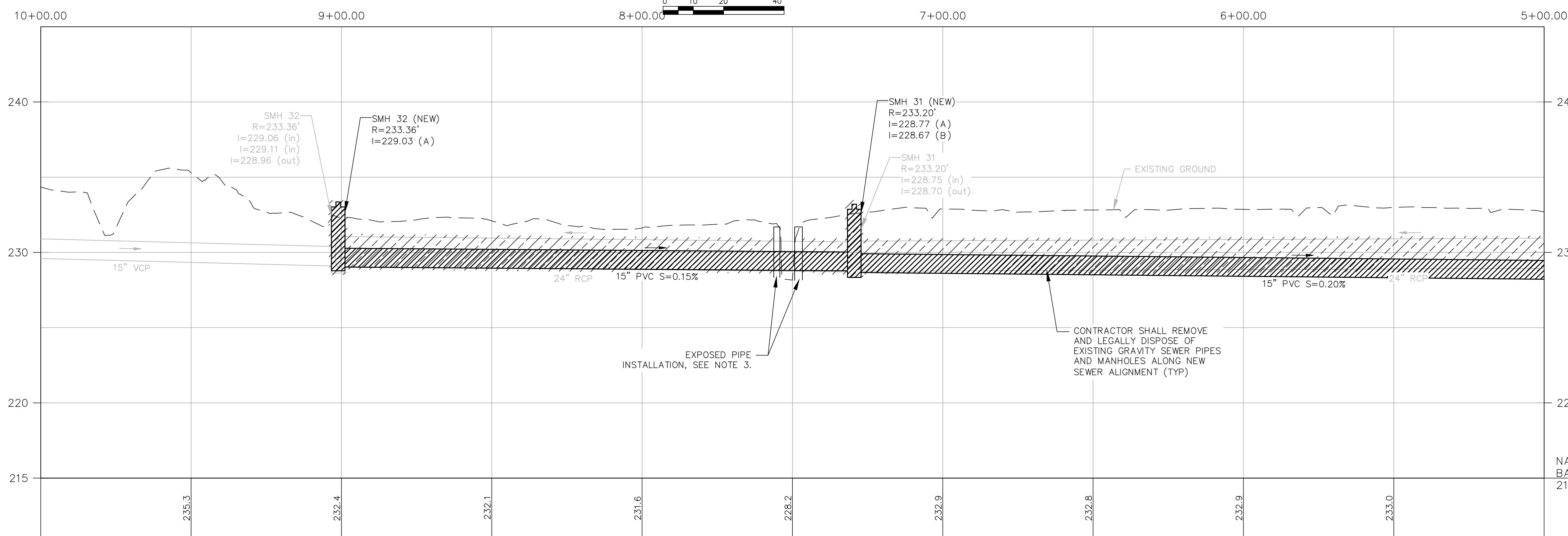
SCALE: 1" = 20'

C-28

SHEET NO. 30 OF 66



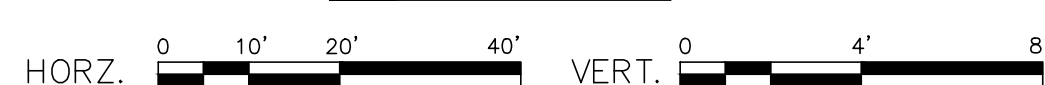
PLAN



PROFILE

NOTES:

- CONTRACTOR SHALL SURVEY THE INVERT ELEVATION OF THE EXISTING 15" INCOMING LINE AT EXISTING MANHOLE SMH32. NEW SEWER MANHOLE SMH32 SHALL HAVE AN OUTGOING INVERT ELEVATION 1" LOWER THAN THE EXISTING INCOMING INVERT. THE SLOPE OF THE NEW 15" PIPE FROM SMH32 TO SMH 31 SHALL BE 0.0015 FT/FT, AS SHOWN ON THE CONTRACT DRAWINGS.
- CONTRACTOR SHALL REMOVE EXISTING RETAINING WALLS AND EXPOSED PIPE AND INSTALL NEW RETAINING WALL AND 18" GRAVITY SEWER. SEE DETAILS FOR ADDITIONAL INFORMATION.



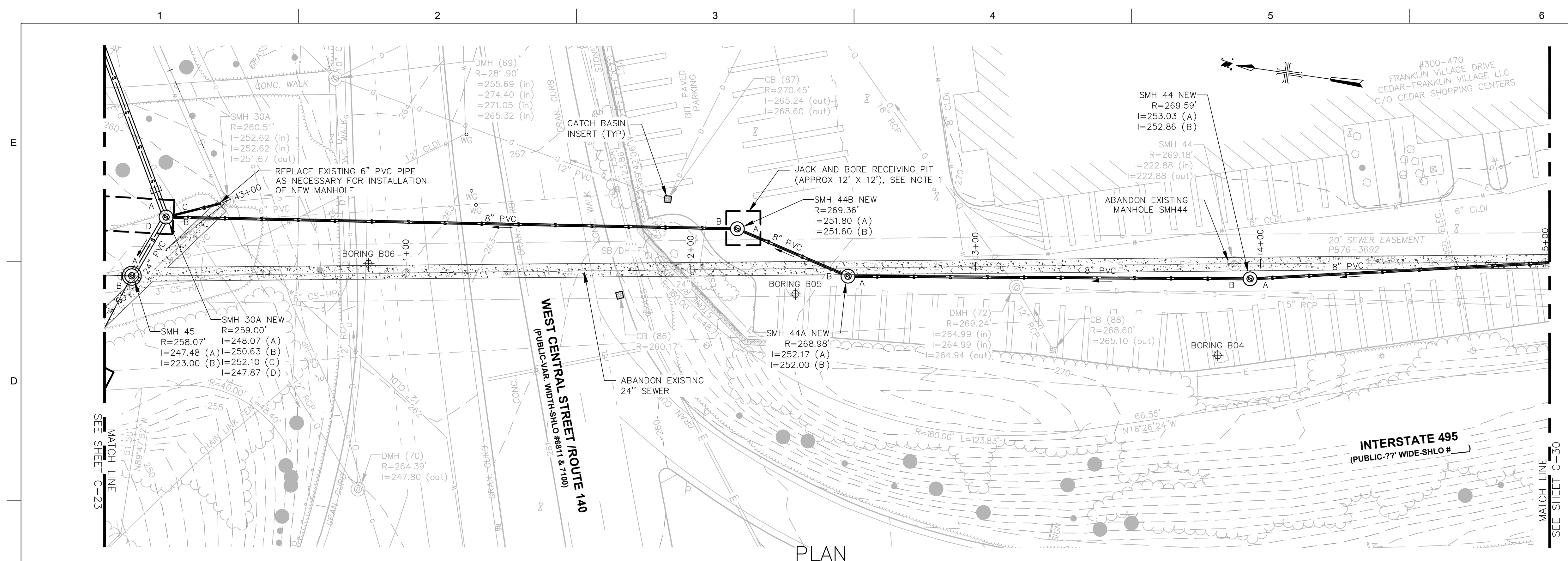
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FILE NAME: C-1 TO C-36			
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SHEET TITLE			

CIVIL
PLAN AND PROFILE

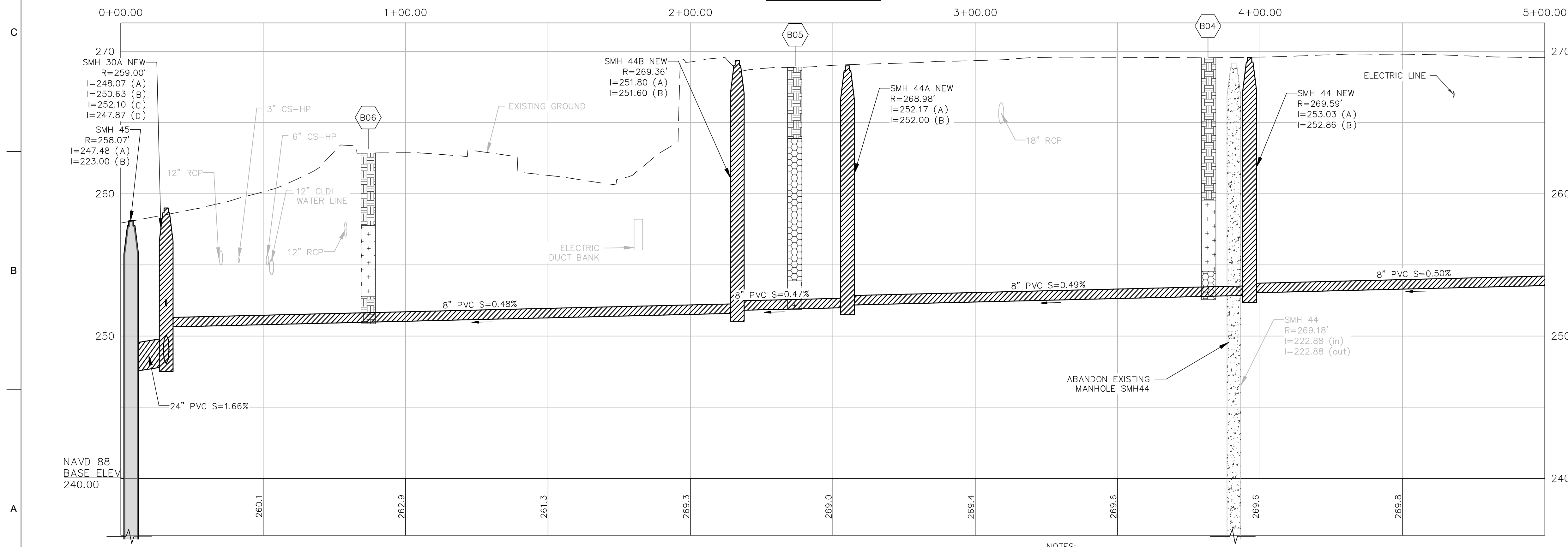
SCALE: 1" = 20'

C-29

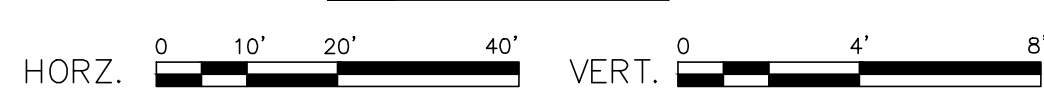
SHEET NO.: 31 OF 66



PLAN
0 10' 20' 40'



PROFILE



- NOTES:
- REFER TO JACK AND BORE DETAILS, SPECIFICATIONS, AND APPLICABLE PERMITS FOR ADDITIONAL INFORMATION. JACK AND BORE PITS ARE SHOWN FOR PERMITTING PURPOSES ONLY; EXACT LOCATIONS AND DIMENSIONS ARE TO BE DETERMINED BY THE CONTRACTOR. CONTRACTOR SHALL PERFORM TEST PITS AT JACKING AND RECEIVING PITS AS NECESSARY TO DETERMINE SUBSURFACE CONDITIONS AND LOCATE EXISTING UTILITIES FOR COMPLETE DESIGN OF THE JACK AND BORE PITS AND PIPE INSTALLATION.
 - GRAVITY SEWER TO BE ABANDONED IS NOT SHOWN IN PROFILE DUE TO ITS DEPTH. SEWER MANHOLES SMH43 AND SMH 44 AND EXISTING 24" GRAVITY SEWER FROM SMH43 TO SMH45 (APPROX. 800 LF) TO BE ABANDONED IN PLACE WITH CONCRETE OR FLOWABLE FILL. REFER TO PIPE AND MANHOLE ABANDONMENT DETAILS FOR ADDITIONAL INFORMATION.

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SHEET TITLE

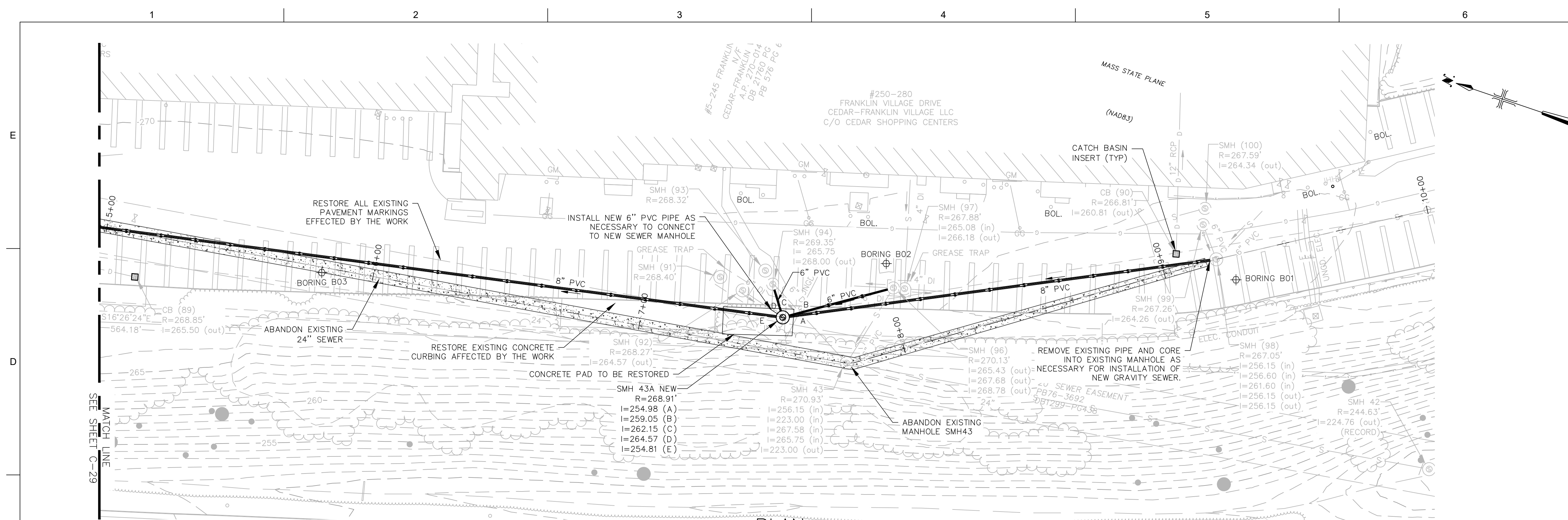
CIVIL

PLAN AND PROFILE

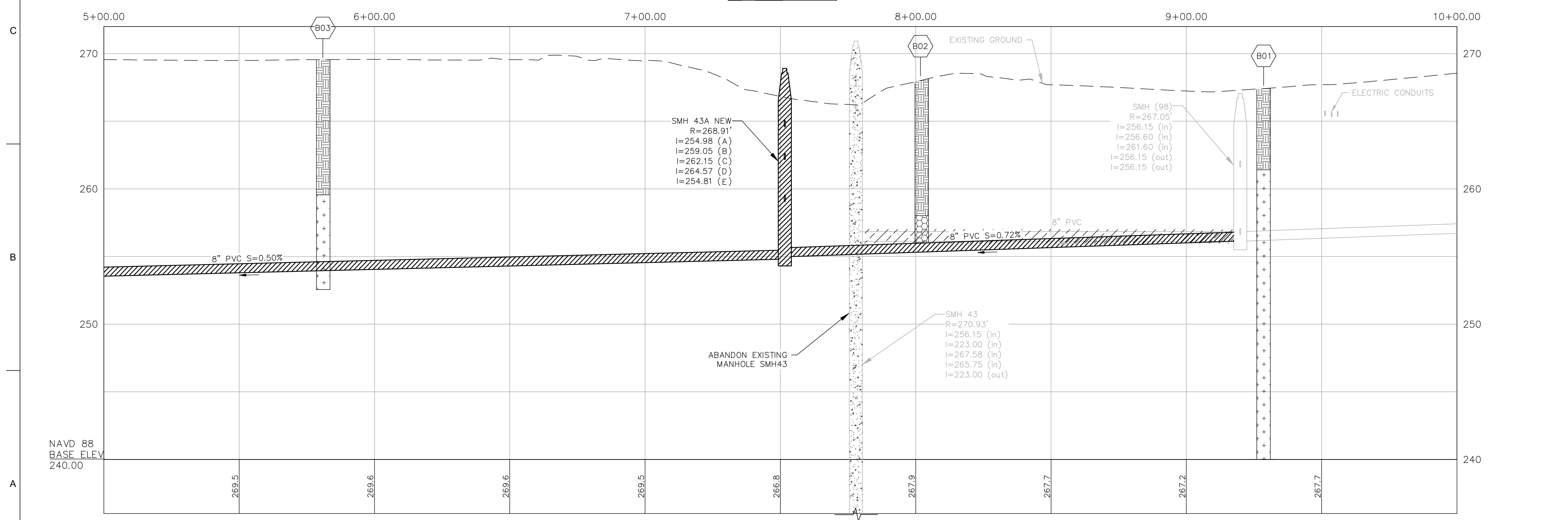
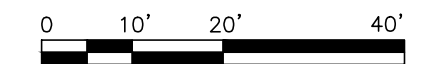
SCALE: 1" = 20'

C-30

SHEET NO. 32 OF 66



PLAN



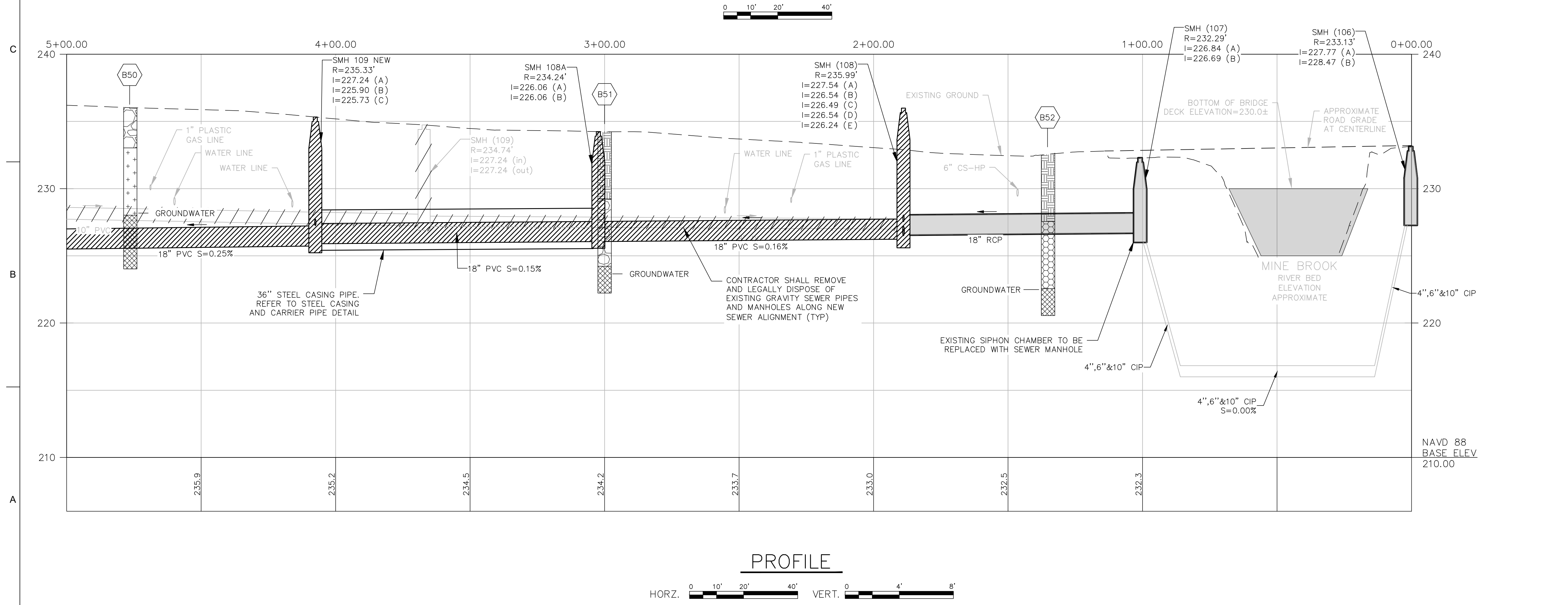
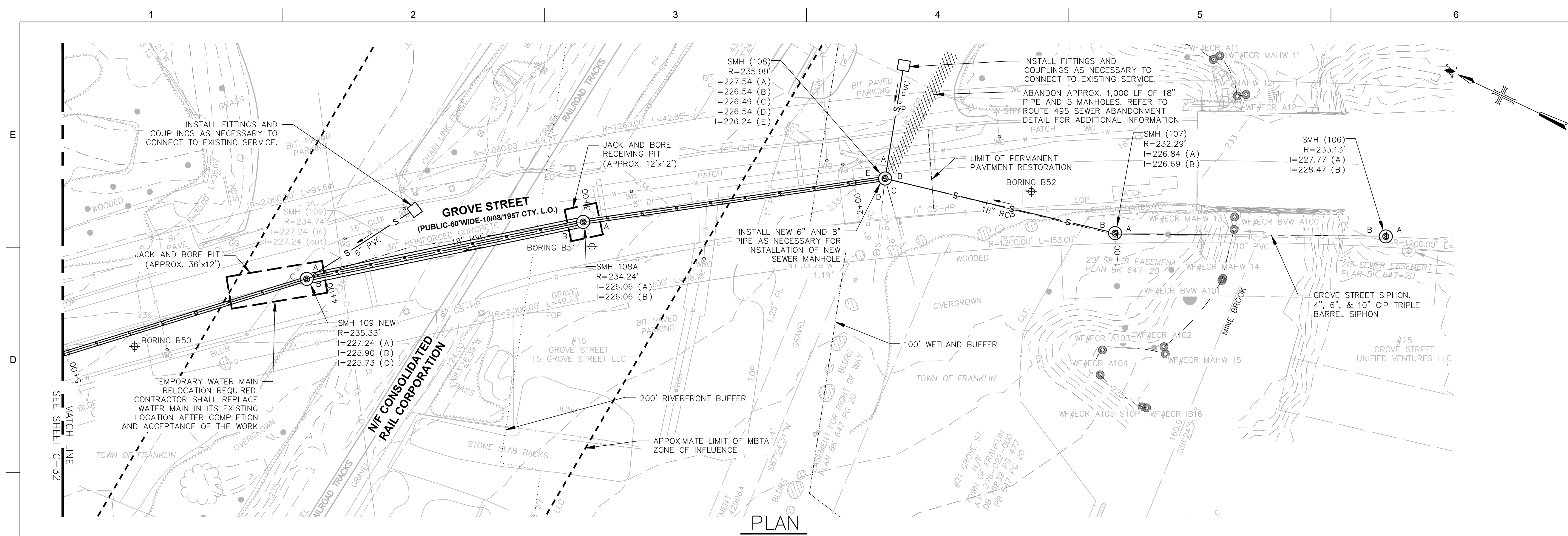
PROFILE



NOTES:

- GRAVITY SEWER TO BE ABANDONED IS NOT SHOWN IN PROFILE DUE TO ITS DEPTH. SEWER MANHOLES SMH43 AND SMH 44 AND EXISTING 24" GRAVITY SEWER FROM SMH43 TO SMH45 (APPROX. 800 LF) TO BE ABANDONED IN PLACE WITH CONCRETE OR FLOWABLE FILL. REFER TO PIPE AND MANHOLE ABANDONMENT DETAILS FOR ADDITIONAL INFORMATION.

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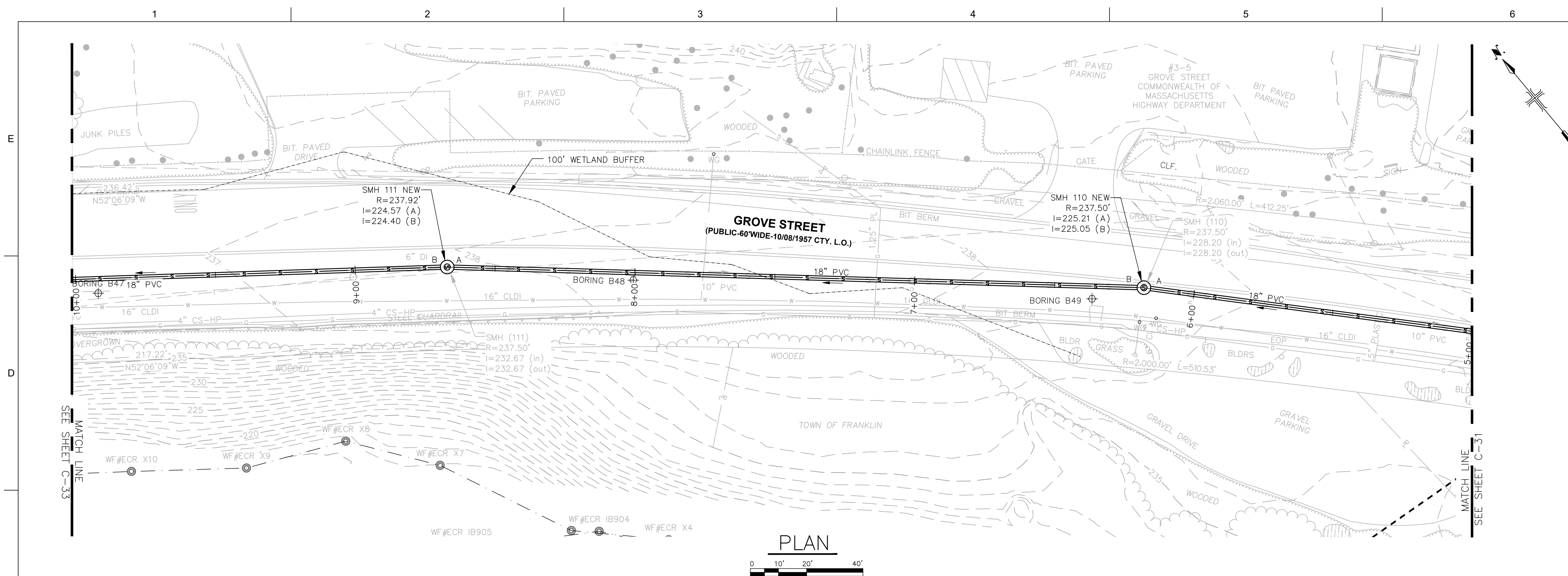
CIVIL

PLAN AND PROFILE

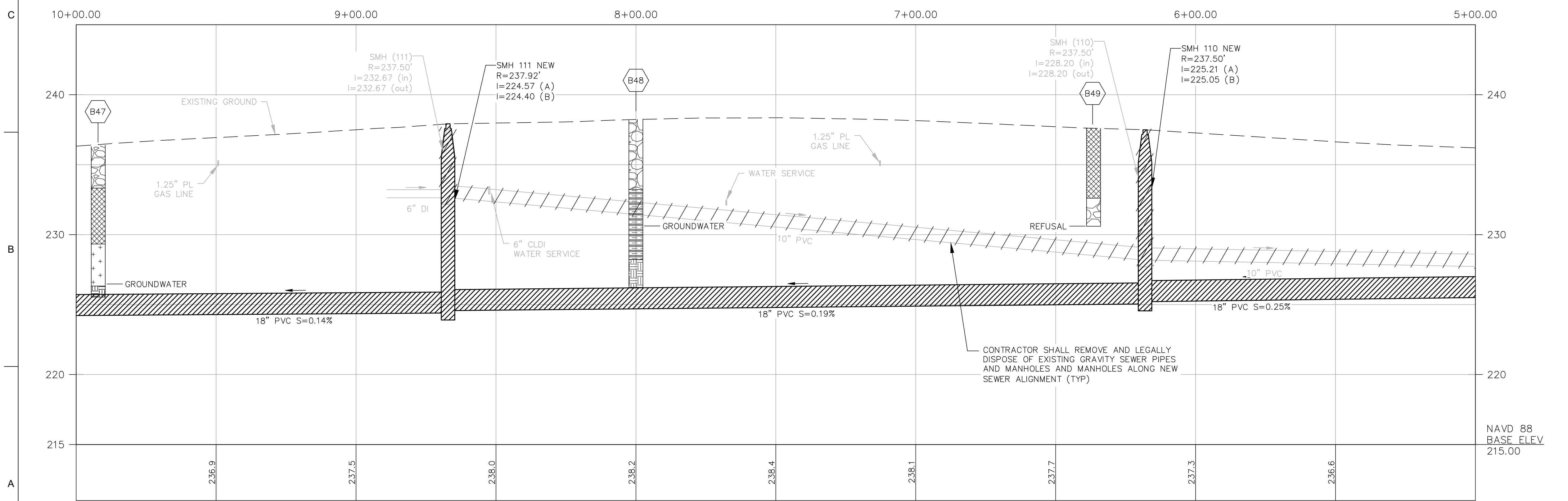
SCALE: 1" = 20'

C-32

SHEET NO.: 34 OF 66



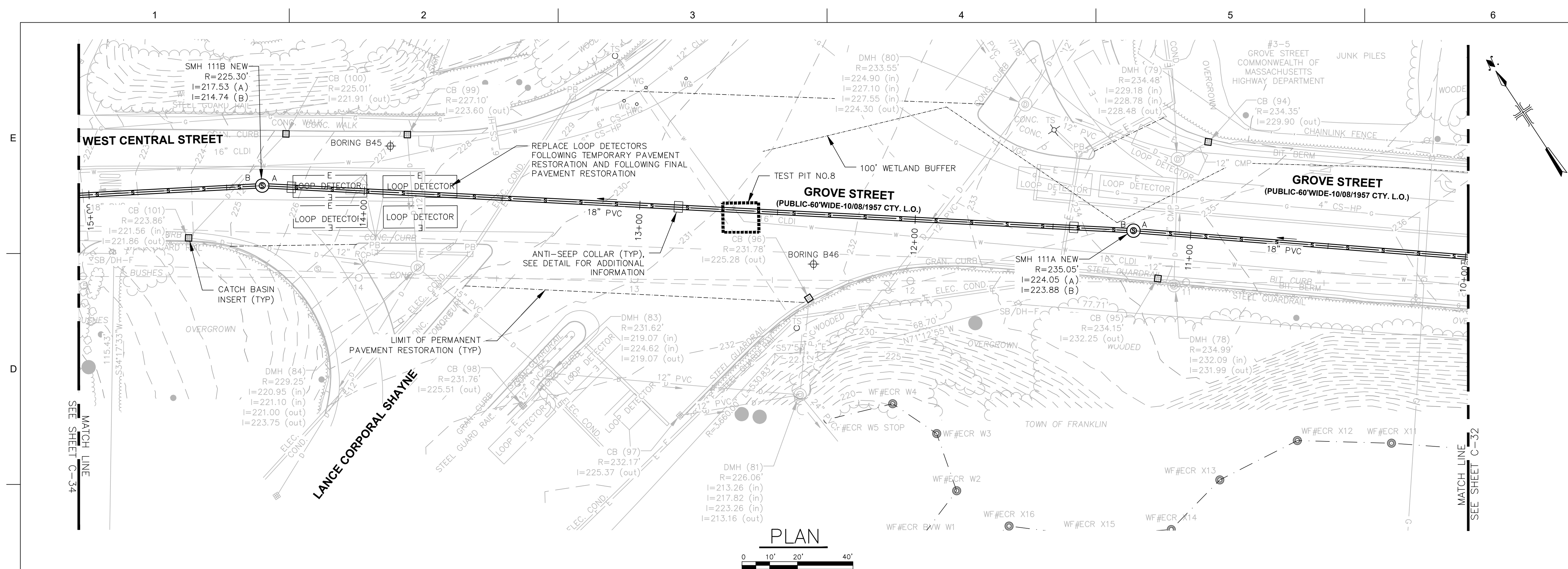
PLAN
0 10' 20' 40'



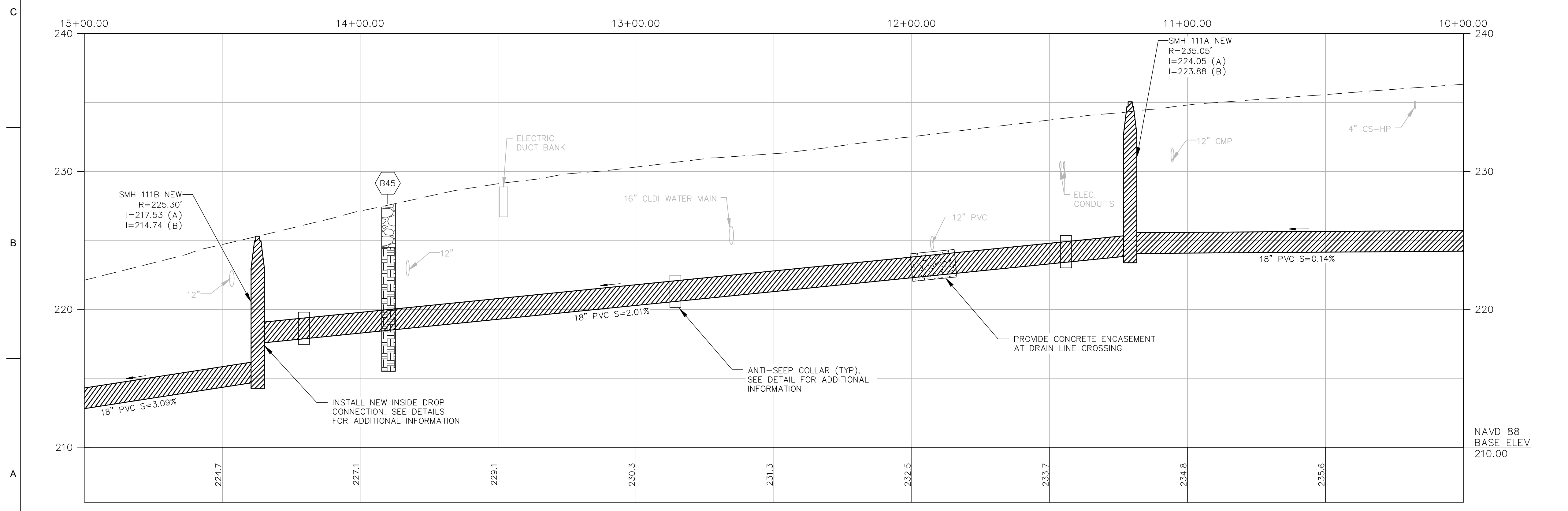
PROFILE

HORIZ. 0 10' 20' 40' VERT. 0 4' 8'

NO.	DATE	ISSUED FOR	BY



PLAN
0 10' 20' 40'



PROFILE
HORZ. 0 10' 20' 40' VERT. 0 4' 8'

User:KRA601 Spec:AUS-NCSMOD File:C:\USERS\KRA601\ACCD\CS\ARCADIS\AUS-30065216-BSI REPLACEMENT AND PUMP STATION DESIGN\PROJECT FILES\01 - WIP\CIVIL\C-1 TO C-36.DWG Scale:1:1 SavedDate:6/29/2022 Time:20:09 Plot Date: K, R, Arjun Kumar, 6/30/2022, 11:40 ; Layout:C-33



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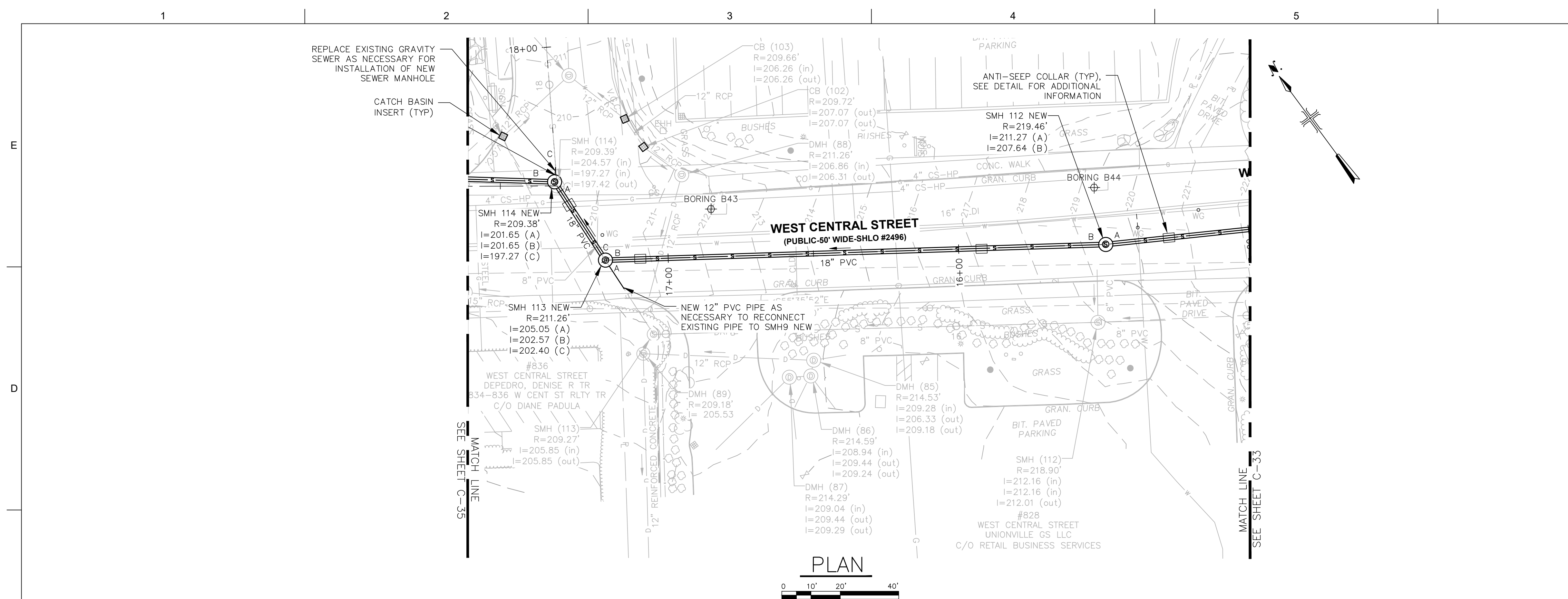
CIVIL

PLAN AND PROFILE

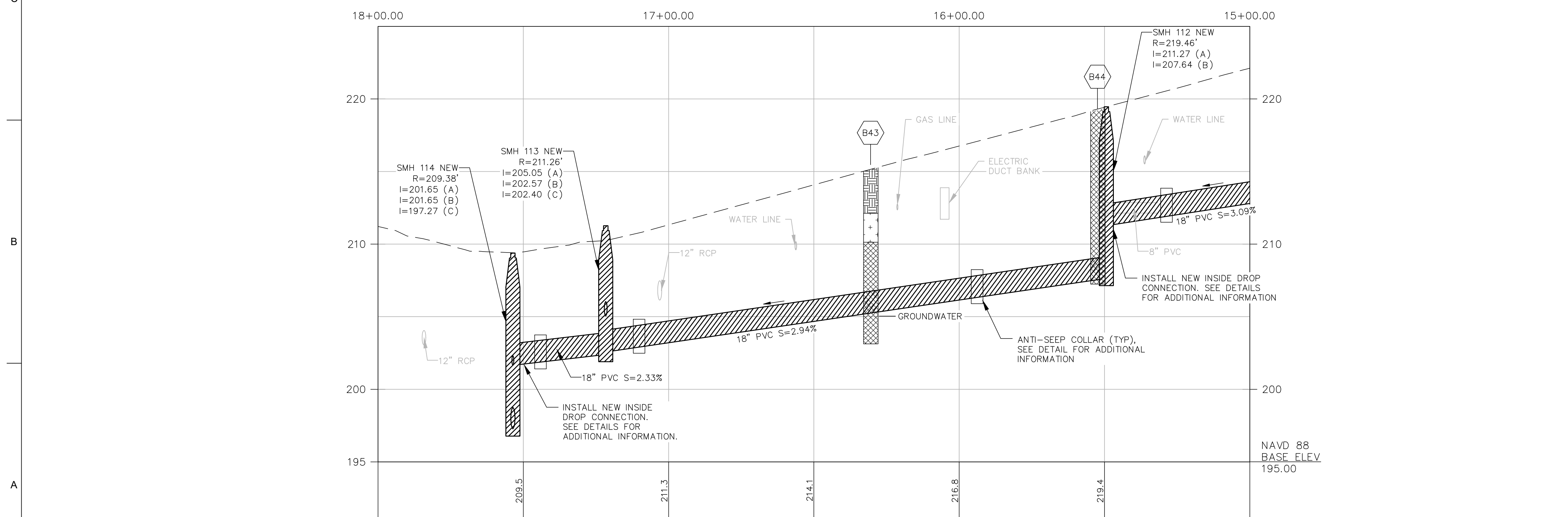
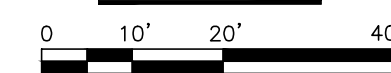
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C-34

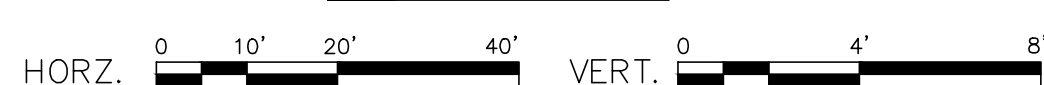
SHEET NO.: 36 OF 66

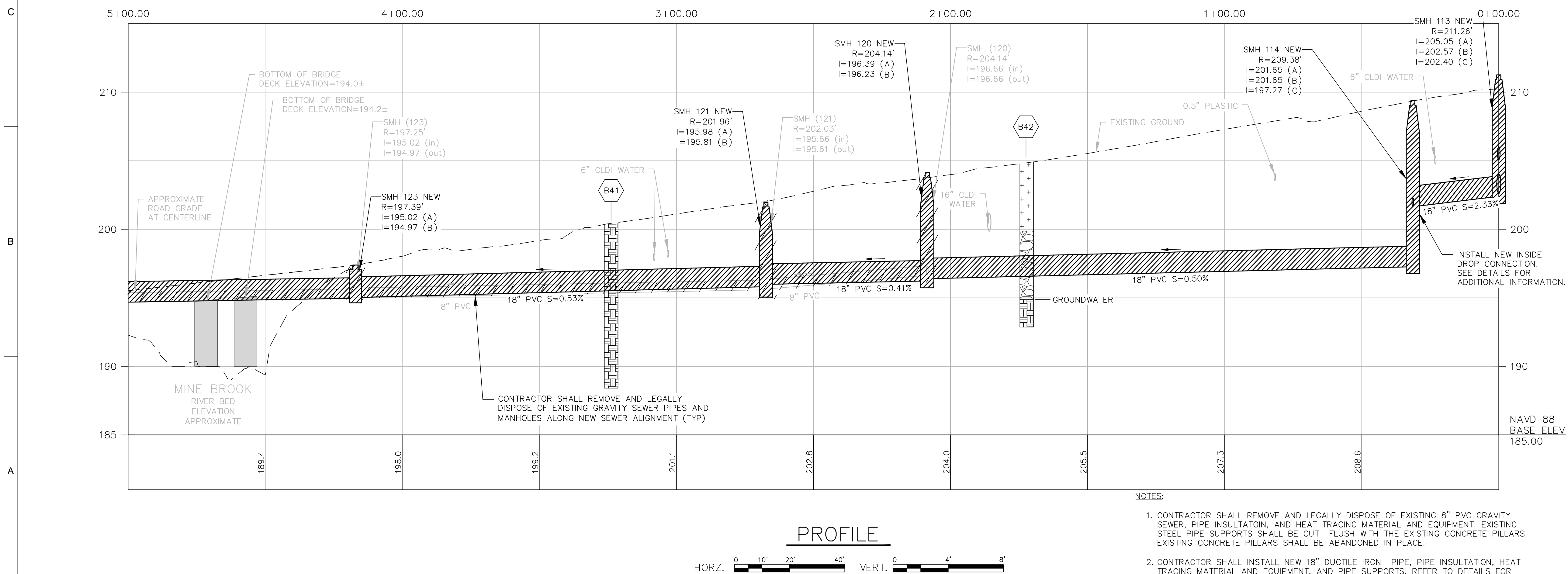
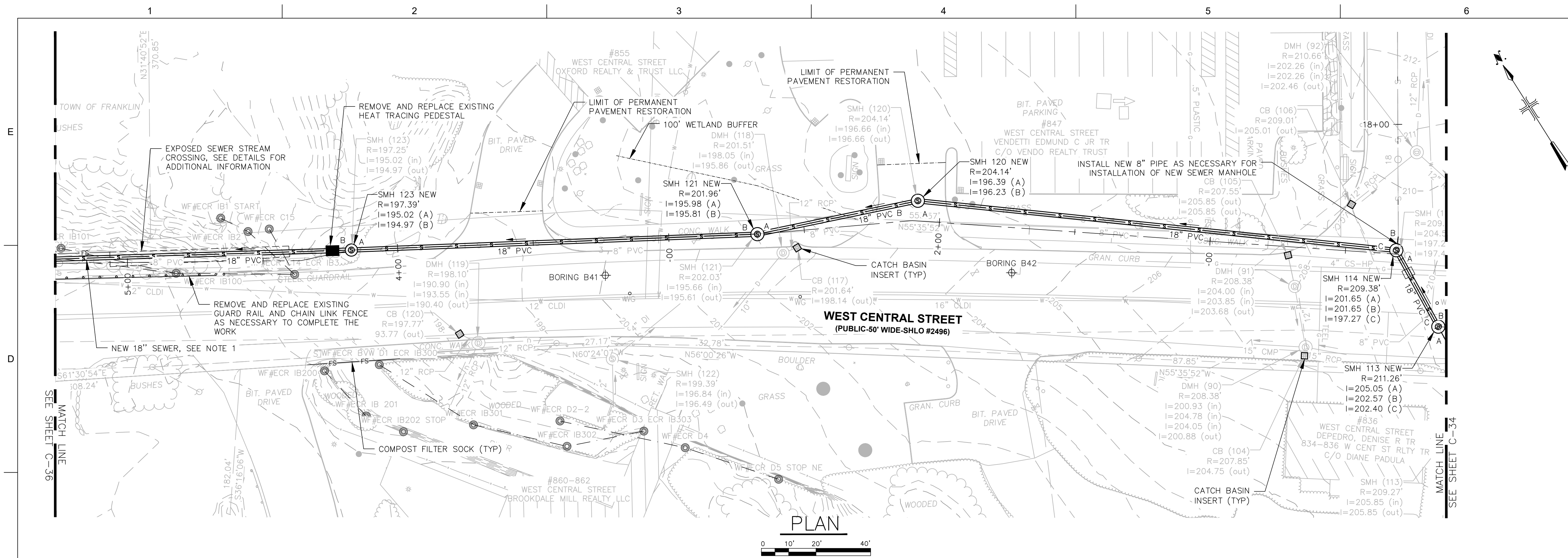


PLAN



PROFILE





NOTES:

- CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF EXISTING 8" PVC GRAVITY SEWER, PIPE INSULATION, AND HEAT TRACING MATERIAL AND EQUIPMENT. EXISTING STEEL PIPE SUPPORTS SHALL BE CUT FLUSH WITH THE EXISTING CONCRETE PILLARS. EXISTING CONCRETE PILLARS SHALL BE ABANDONED IN PLACE.
- CONTRACTOR SHALL INSTALL NEW 18" DUCTILE IRON PIPE, PIPE INSULATION, HEAT TRACING MATERIAL AND EQUIPMENT, AND PIPE SUPPORTS. REFER TO DETAILS FOR ADDITIONAL INFORMATION.

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DRAWN BY: AKR

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SHEET TITLE

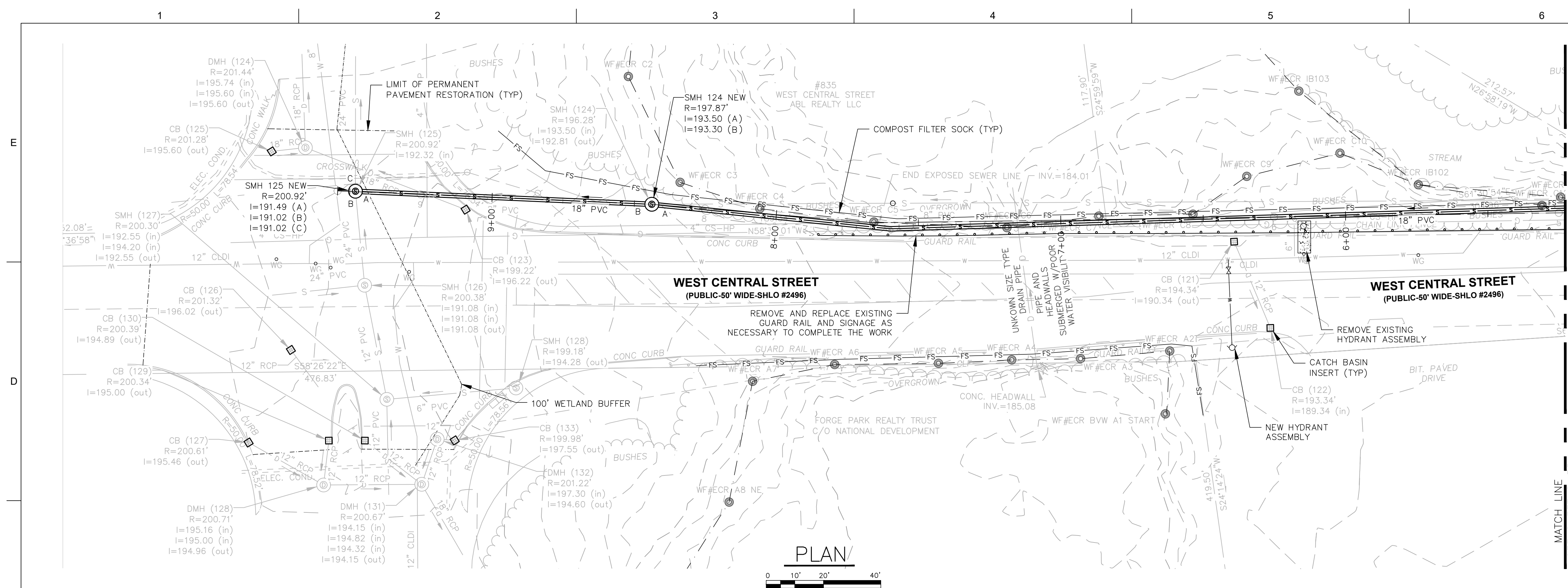
CIVIL

PLAN AND PROFILE

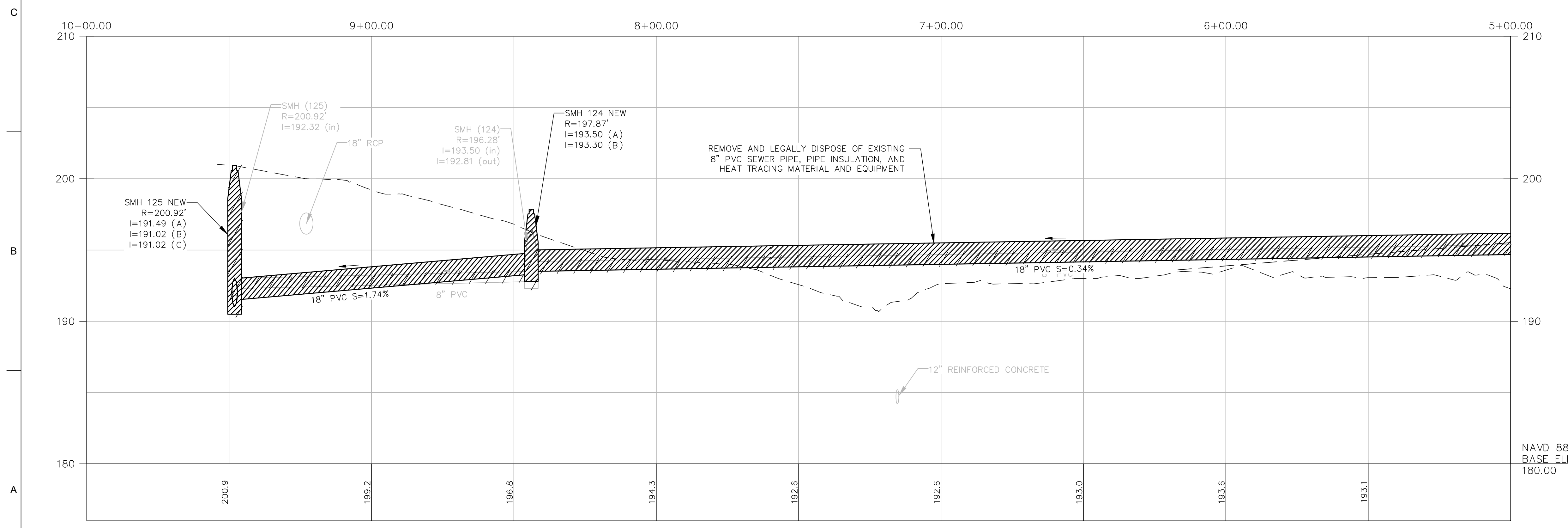
SCALE: 1" = 20'

C-36

SHEET NO.: 38 OF 66



PLAN
0 10' 20' 40'



PROFILE



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FILE NAME: C-37

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

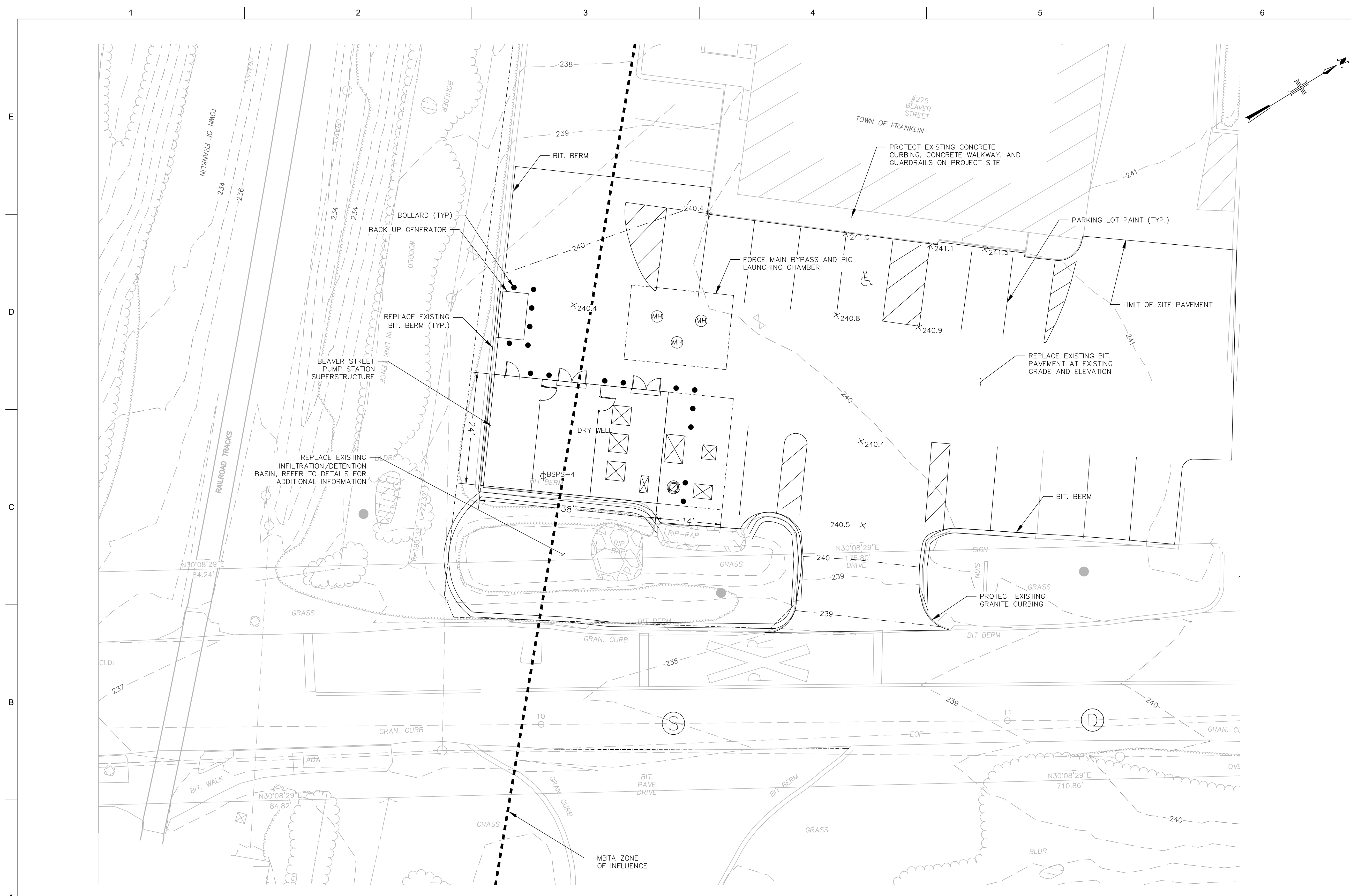
CIVIL

PUMP STATION SITE
PLAN

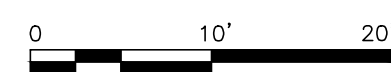
SCALE: 1" = 10'

C-37

SHEET NO.: 39 OF 66



PUMP STATION SITE PLAN



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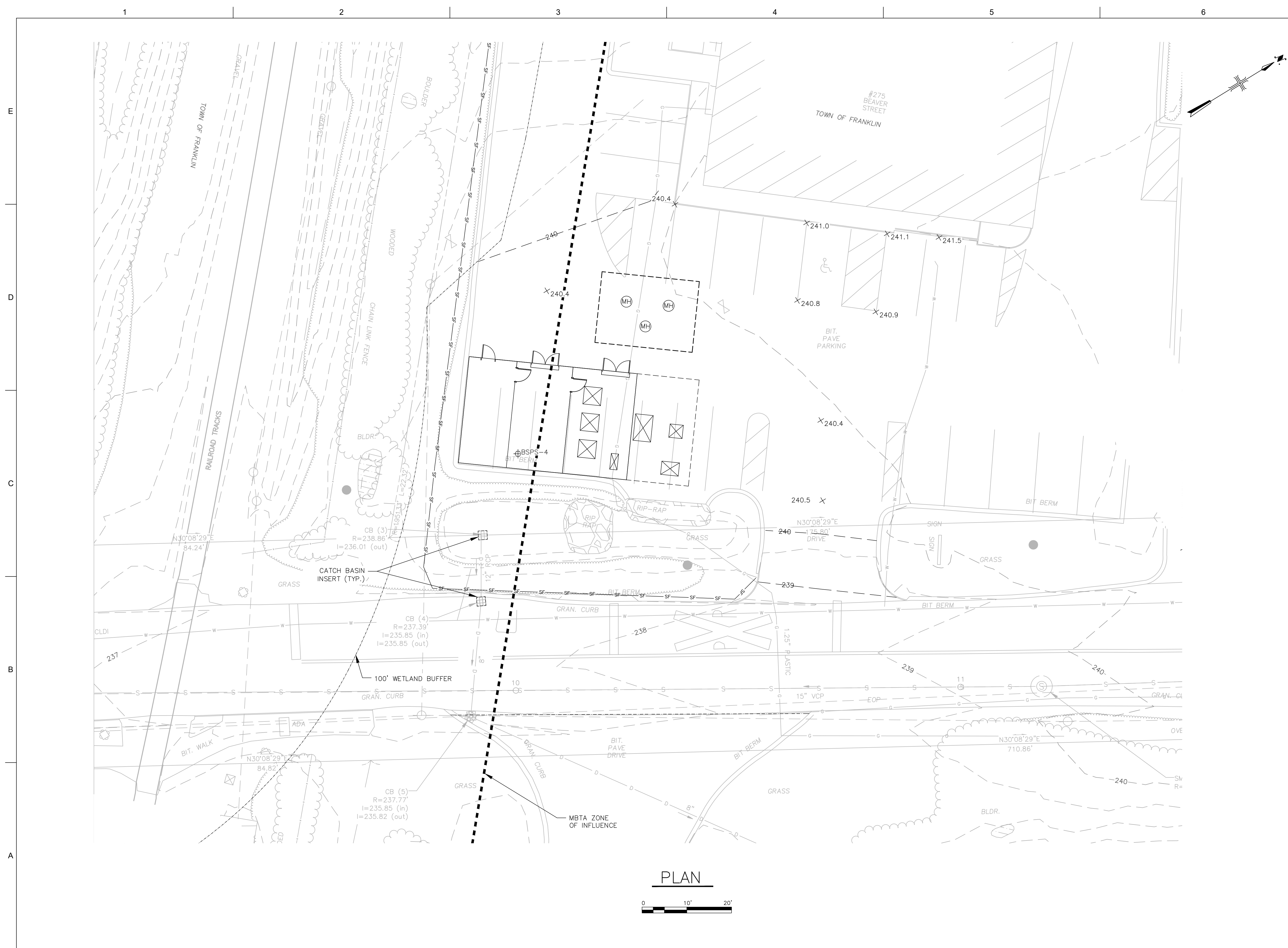
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FILE NAME:	C-38		
DESIGNED BY:	SPM		
DRAWN BY:	AKR		
CHECKED BY:	SRH/AAG		

SHEET TITLE
CIVIL

PUMP STATION
GRADING, EROSION
CONTROL, AND
LANDSCAPING PLAN

SCALE: 1" = 10'

C-38
SHEET NO.: 40 OF 66

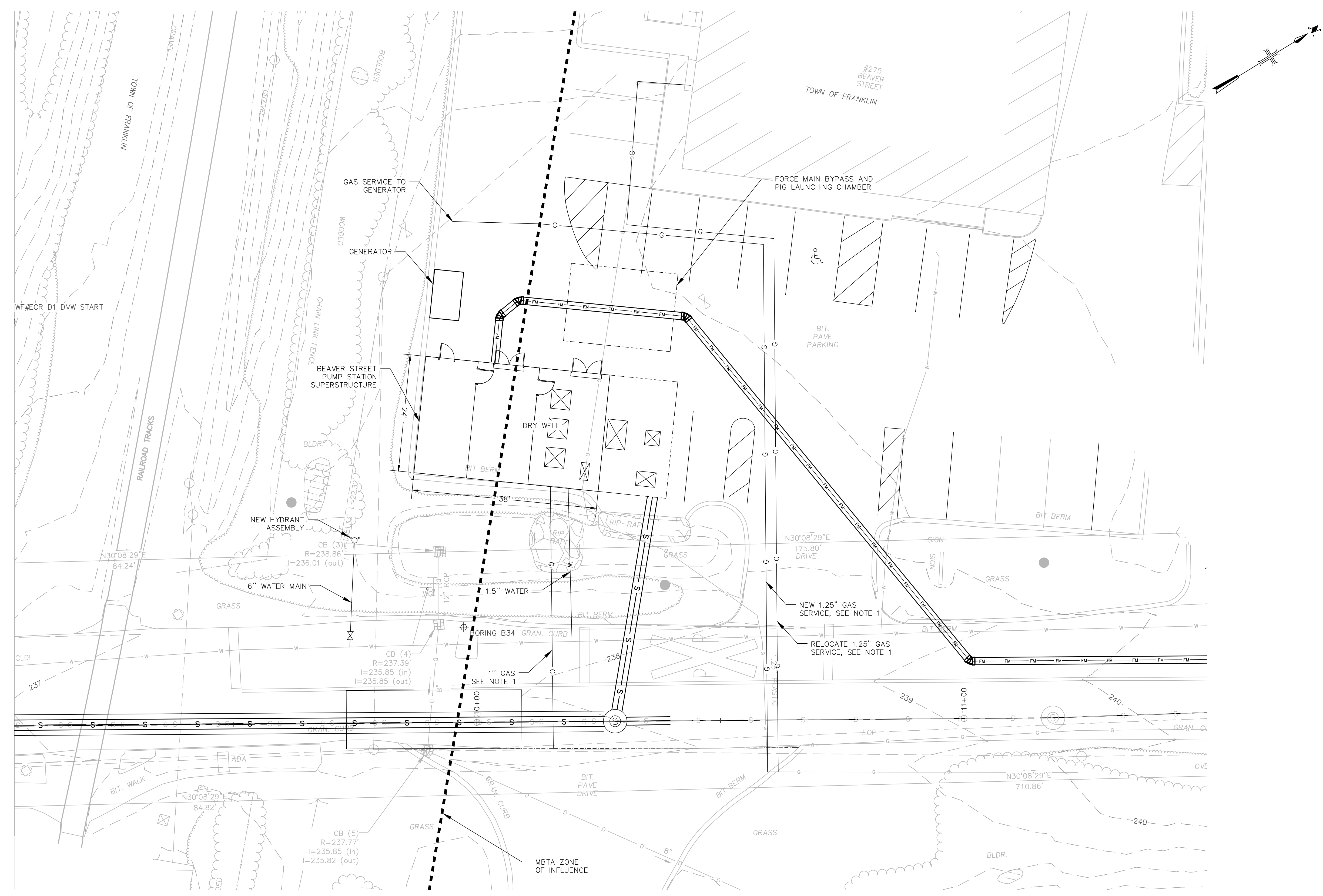


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CONSULTANTS

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SEALS

FRANKLIN, MASSACHUSETTS
TOWN OF FRANKLIN DPW

BSI REPLACEMENT
AND PUMP STATION
DESIGN

CLIENT PROJ. NO. ?

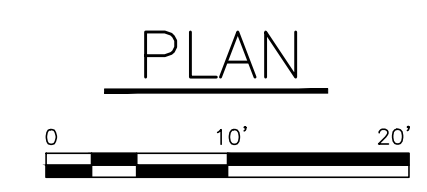
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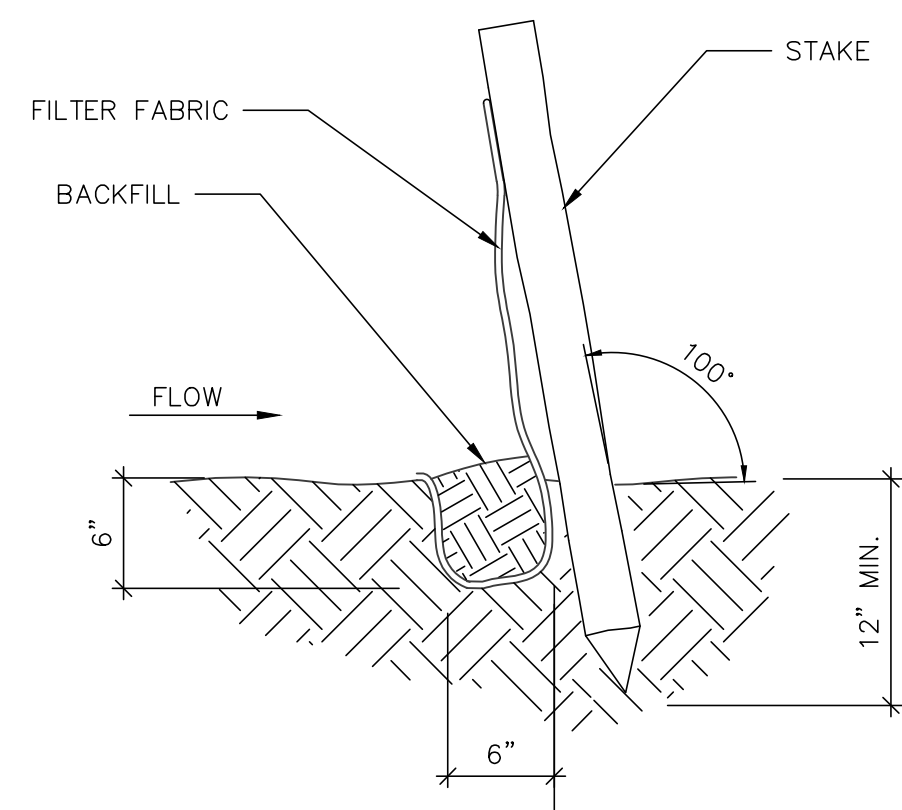
SHEET TITLE
CIVIL
PUMP STATION UTILITY PLAN

SCALE: 1" = 10'

C-39
SHEET NO.: 41 OF 66



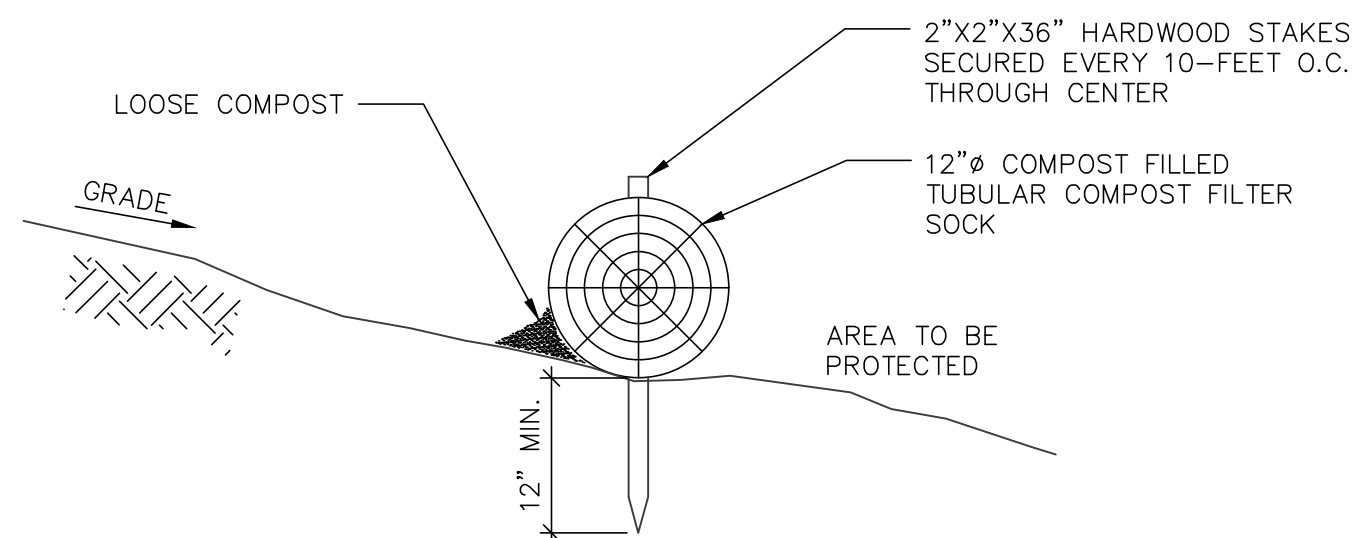
- NOTES:
- CONTRACTOR SHALL COORDINATE LOCATION, SIZES, DEPTHS, BACKFILL REQUIREMENTS, CONNECTIONS, AND ALL OTHER REQUIREMENTS FOR INSTALLATION OF NEW GAS SERVICE AND RELOCATION OF EXISTING GAS SERVICE WITH EVERSOURCE.



1 SILT FENCE INSTALLATION DETAIL
C-40 SCALE: NTS

STANDARD PROCEDURES FOR THE INSTALLATION OF SILT FENCE:

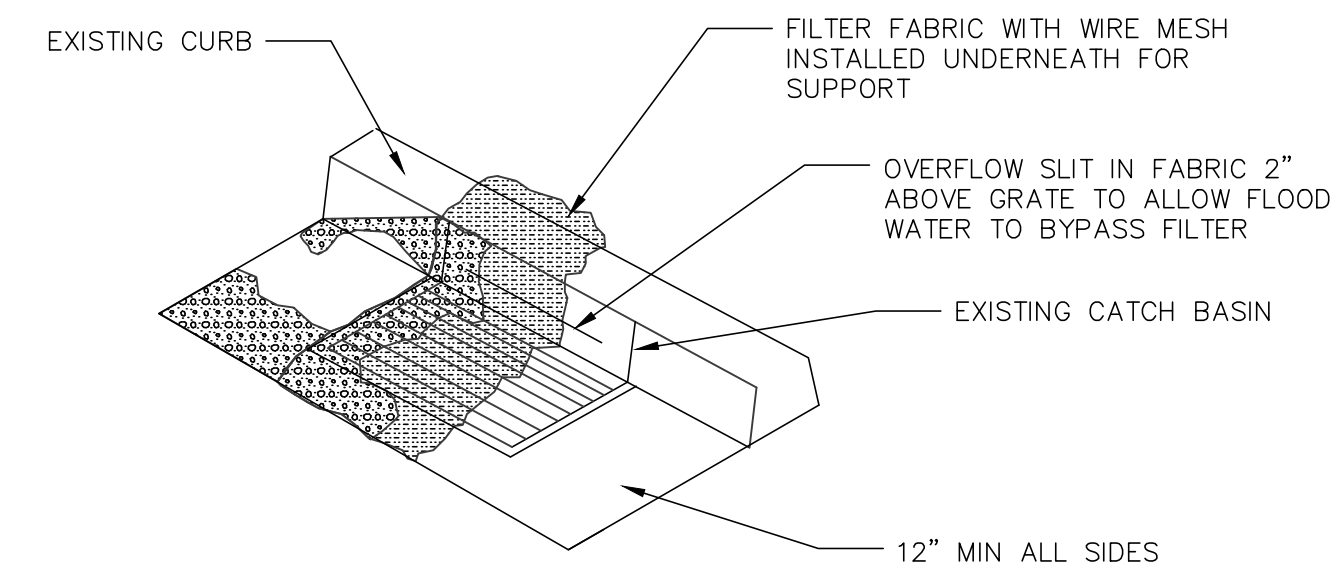
1. THE SILT FENCE SHALL BE PLACED AS NECESSARY AT LOCATIONS AS DIRECTED BY THE ENGINEER OR BY TOWN AGENCIES HAVING JURISDICTION TO CONTROL THE MOVEMENT OF SEDIMENT. ALL SILT FENCE SHALL BE PLACED WITHIN THE EASEMENT.
2. AT THE TIME OF INSTALLATION, THE SILT FENCE SHALL BE REJECTED IF IT HAS DEFECTS, RIPS, HOLES, FLAWS, DETERIORATION OR DAMAGE INCURRED DURING MANUFACTURE, TRANSPORTATION, OR STORAGE.
3. SILT FENCE SHALL BE INSTALLED FAR ENOUGH UP THE SLOPE SO THAT THE BOTTOM OF THE FENCE END IS HIGHER THAN THE TOP OF THE LOWEST PORTION OF THE FENCE.
4. MINIMUM LENGTH OF SILT FENCE IS 15 LF.
5. MAXIMUM POST SPACING IS 10 LF.
6. JOINTS ONLY AT SUPPORT POST WITH MINIMUM 6" OVERLAP AND SECURELY SEALED.
7. SEDIMENTATION DEPOSITS SHALL BE REMOVED WHEN IT REACHES ONE HALF THE HEIGHT OF THE SILT FENCE.
8. SILT FENCE SHALL NOT BE USED IN A WATER COURSE.
9. UPON ESTABLISHMENT OF GROUND COVER ON DISTURBED AREAS AND WHEN DIRECTED BY THE ENGINEER, FENCE WILL BE REMOVED AND ANY SEDIMENTATION WILL BE THINLY SPREAD UPON EXISTING GROUND OVER.
10. SILT FENCE SHALL BE INSPECTED BY CONTRACTOR WEEKLY AND FOLLOWING EACH STORM EVENT.



2 TUBULAR COMPOST FILTER SOCK DETAIL
C-40 SCALE: NTS

NOTES:

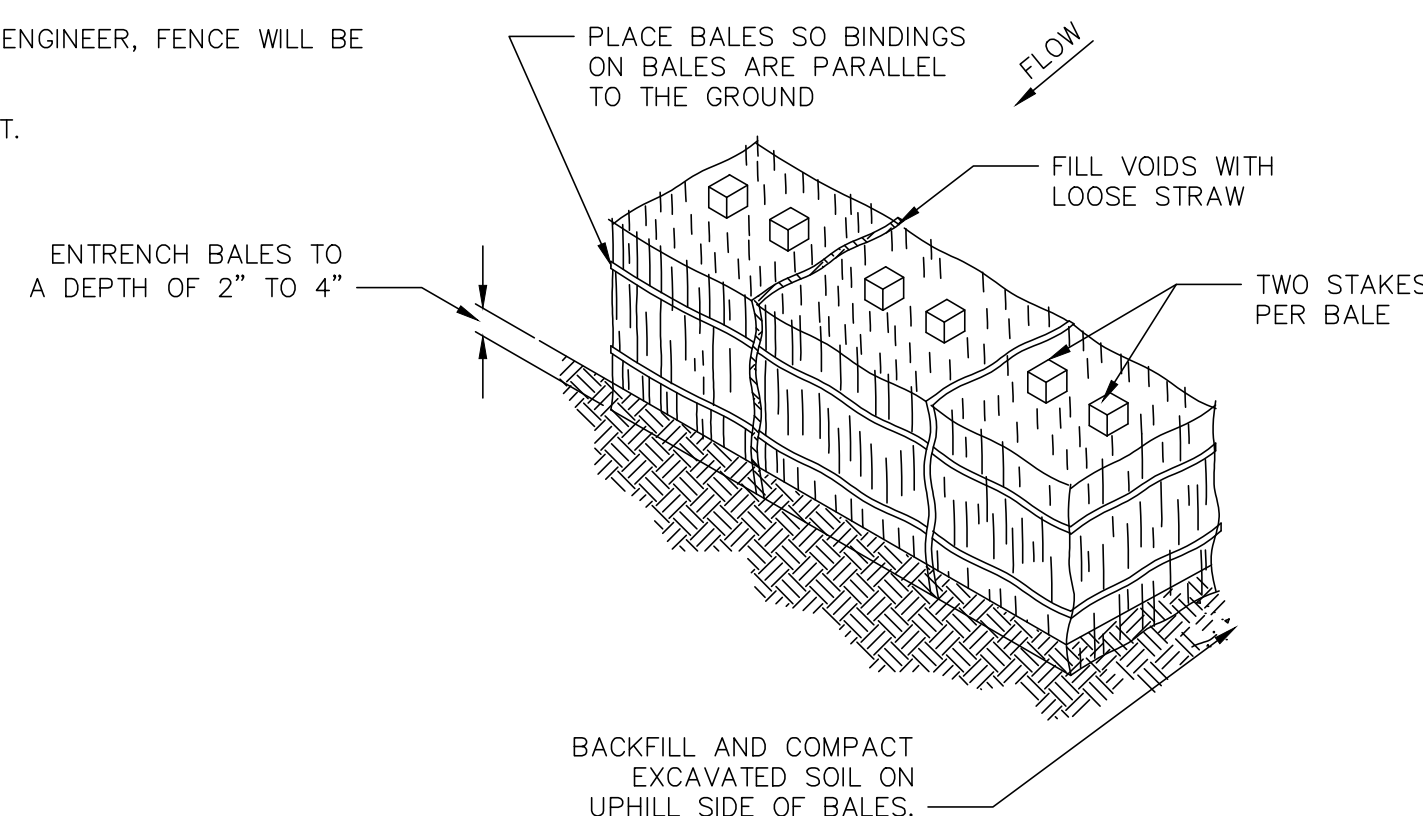
1. TUBULAR COMPOST FILTER SOCK SHALL BE 100% BIODEGRADABLE



3 CATCH BASIN INSERT DETAIL
C-40 SCALE: NTS

NOTES:

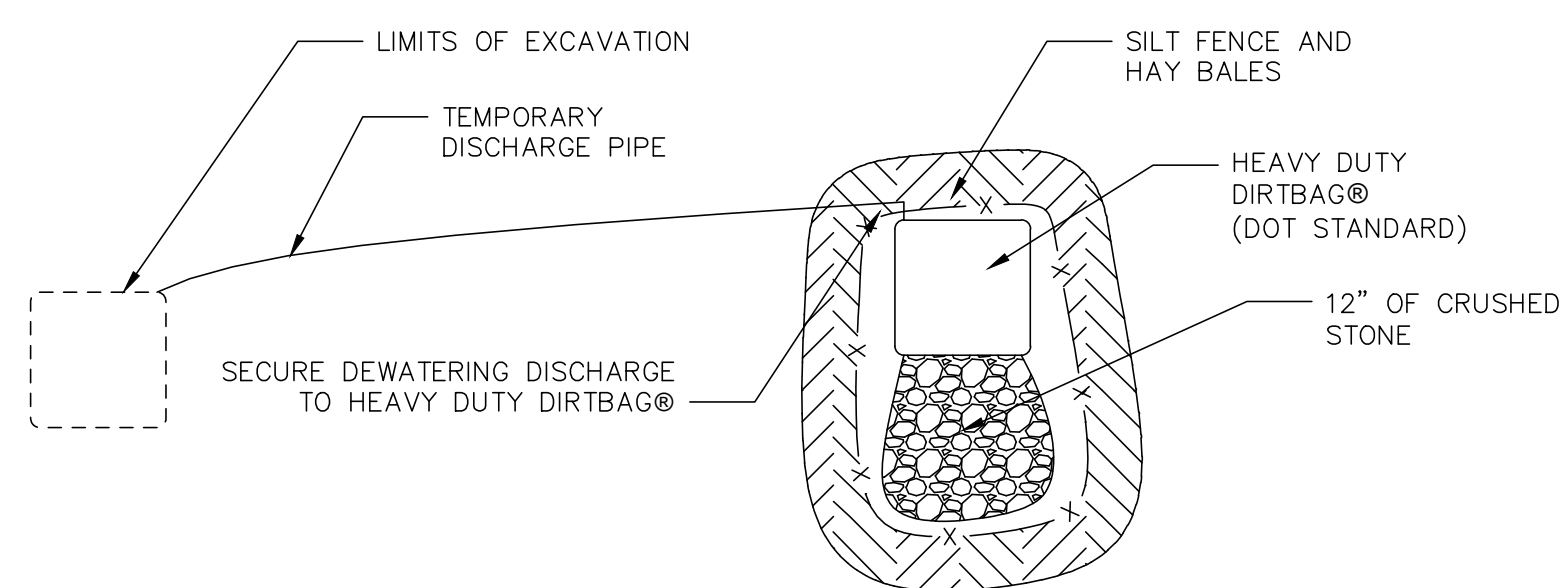
1. FILTER FABRIC AND WIRE MESH WITH 1/2" OPENINGS WILL BE PLACED OVER CURB INLET OPENING AND UNDER GRATE SO THAT AT LEAST 12 INCHES OF FABRIC AND WIRE MESH EXTENDS BEYOND ALL EDGES OF THE EXISTING CATCH BASIN.
2. CONTRACTOR TO CLEAN FILTER FABRIC AND STONE AFTER EVERY STORM OR WHEN INLET BECOMES CLOGGED.
3. FILTER FABRIC AND WIRE MESH TO BE INSTALLED IN SIMILAR FASHION FOR INLETS WITHOUT CURB OPENING OR WITHOUT GRATE.
4. THE INLET FILTER WILL BE INSTALLED PRIOR TO ANY EXCAVATION AND WILL REMAIN UNTIL TEMPORARY PAVEMENT IS COMPLETED.
5. OVERFLOW OPENING SHALL SAFELY PASS FLOWS GREATER THAN THE 1 YEAR, 24 HOUR STORM.
6. INSTALL SILT SACK IN ALL CATCH BASINS WITHOUT A VERTICAL OPENING.
7. NOT ALL CATCH BASIN INSERTS ARE SHOWN ON THE PLANS. CONTRACTOR SHALL INSTALL CATCH BASIN INSERTS AS SHOWN ON THE PLANS, AT ALL CATCH BASINS ALONG THE PROJECT ROUTE WHERE THERE IS EXCAVATION ACTIVITY, IN COMPLIANCE WITH ALL APPLICABLE PERMITS, AND AS DIRECTED BY THE ENGINEER.



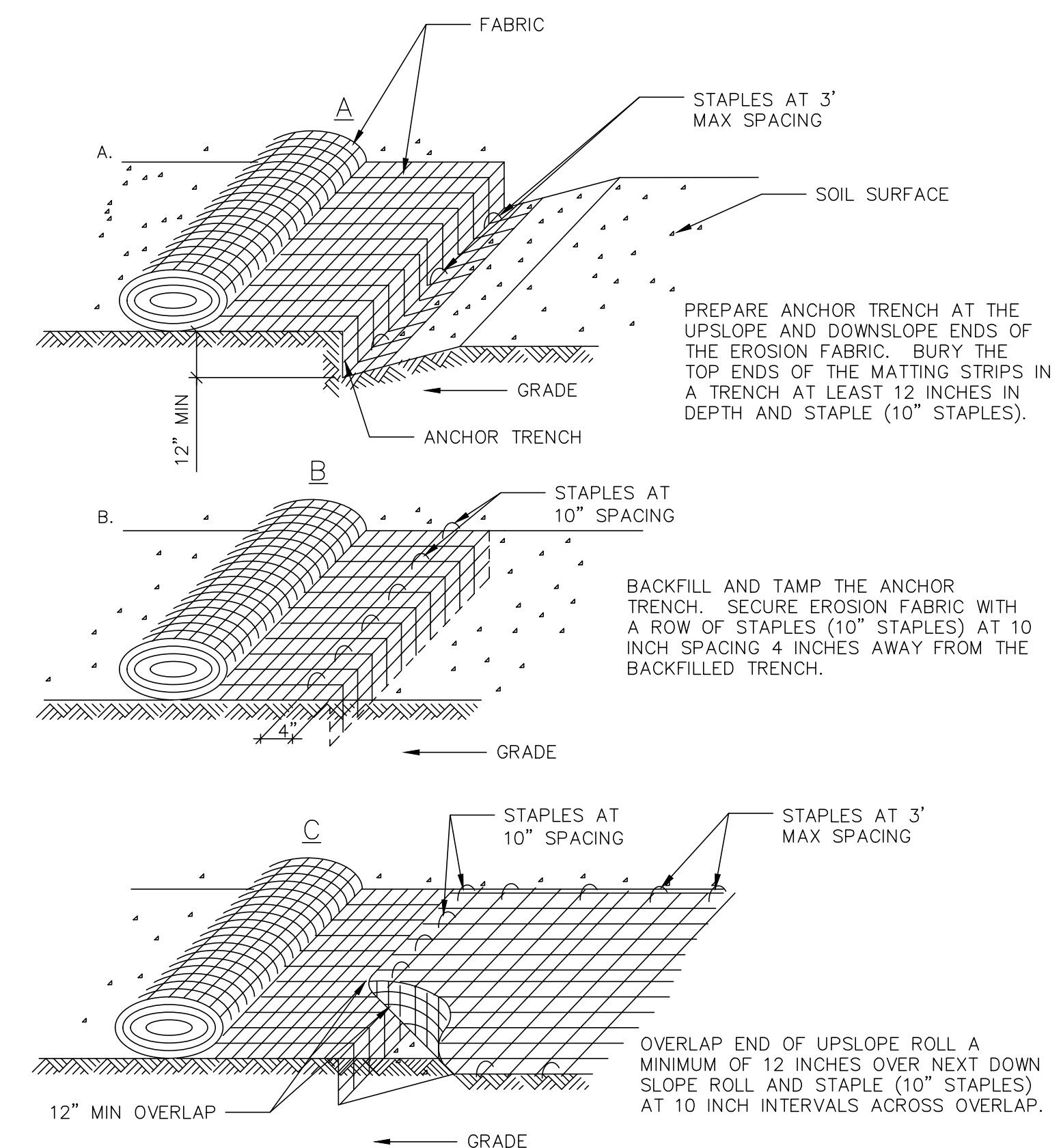
5 HAY BALE INSTALLATION DETAIL
C-40 SCALE: NTS

STANDARD PROCEDURES FOR THE INSTALLATION OF HAY BALES:

1. THE HAY BALES SHALL BE PLACED AS NECESSARY WHERE SHOWN ON THE CONTRACT DRAWINGS AND AS DIRECTED BY THE ENGINEER OR BY TOWN AGENCIES HAVING JURISDICTION TO CONTROL THE MOVEMENT OF SEDIMENT. ALL HAY BALES SHALL BE PLACED WITHIN THE EASEMENT.
2. BALES SHOULD BE ENTRENCHED 2 TO 4 INCHES AND TIGHTLY BUTTED TOGETHER. BALES CAN BE SUCCESSFULLY PLACED WITHOUT A TRENCH IF GOOD GROUND CONTACT IS MADE. REMOVE HEAVY BRUSH AND FILL ALL VOIDS WITH LOOSE STRAW.
3. HAY BALES SHALL BE INSTALLED FAR ENOUGH UP THE SLOPE SO THAT THE BOTTOM OF THE HAY BALES' END IS HIGHER THAN THE TOP OF THE LOWEST PORTION OF THE HAY BALES.
4. WHEN SEDIMENTATION DEPOSITS REACH WITHIN 3" OF THE TOP OF BALES, REMOVE SEDIMENTATION OR ADD ADDITIONAL BALES DIRECTLY BEHIND FIRST ROW OF BALES AS DIRECTED BY ENGINEER.
5. UPON ESTABLISHMENT OF GROUND COVER ON DISTURBED AREAS AND WHEN DIRECTED BY THE ENGINEER, HAY BALES WILL BE REMOVED AND USED AS MULCH. ANY SEDIMENTATION WILL BE THINLY SPREAD UPON ESTABLISHED GROUND COVER.
6. HAY BALES SHALL BE INSPECTED BY CONTRACTOR WEEKLY AND FOLLOWING EACH STORM EVENT.



4 DEWATERING AND SURFACE WATER BYPASS DETAIL
C-40 SCALE: NTS



6 EROSION CONTROL BLANKET
C-40 SCALE: NTS



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SHEET TITLE

CIVIL

EROSION AND
SEDIMENT CONTROL
DETAILS

SCALE: NTS

C-40

SHEET NO.: 42 OF 66

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SHEET TITLE

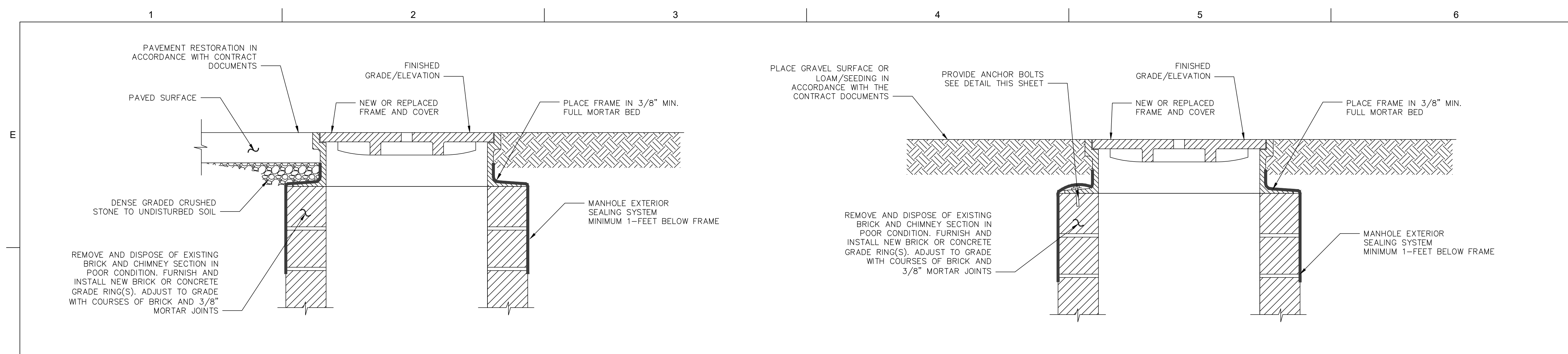
CIVIL

MANHOLE FRAME AND COVER DETAILS

SCALE: NTS

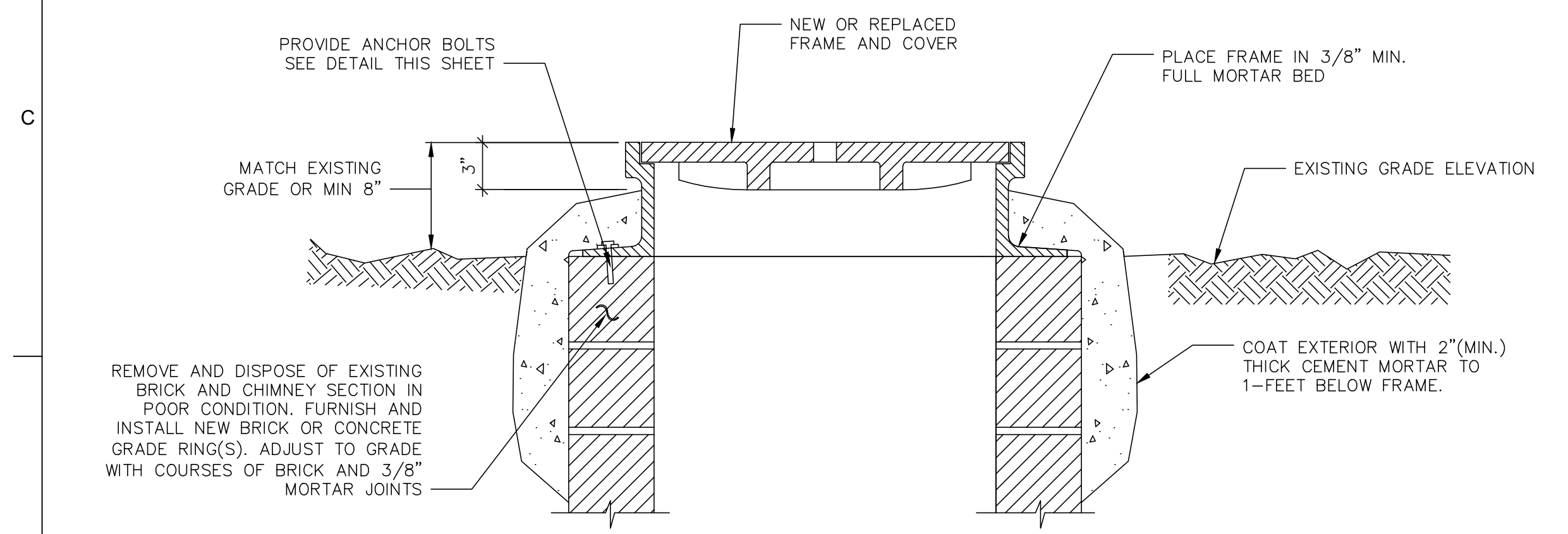
C-41

SHEET NO.: 43 OF 66

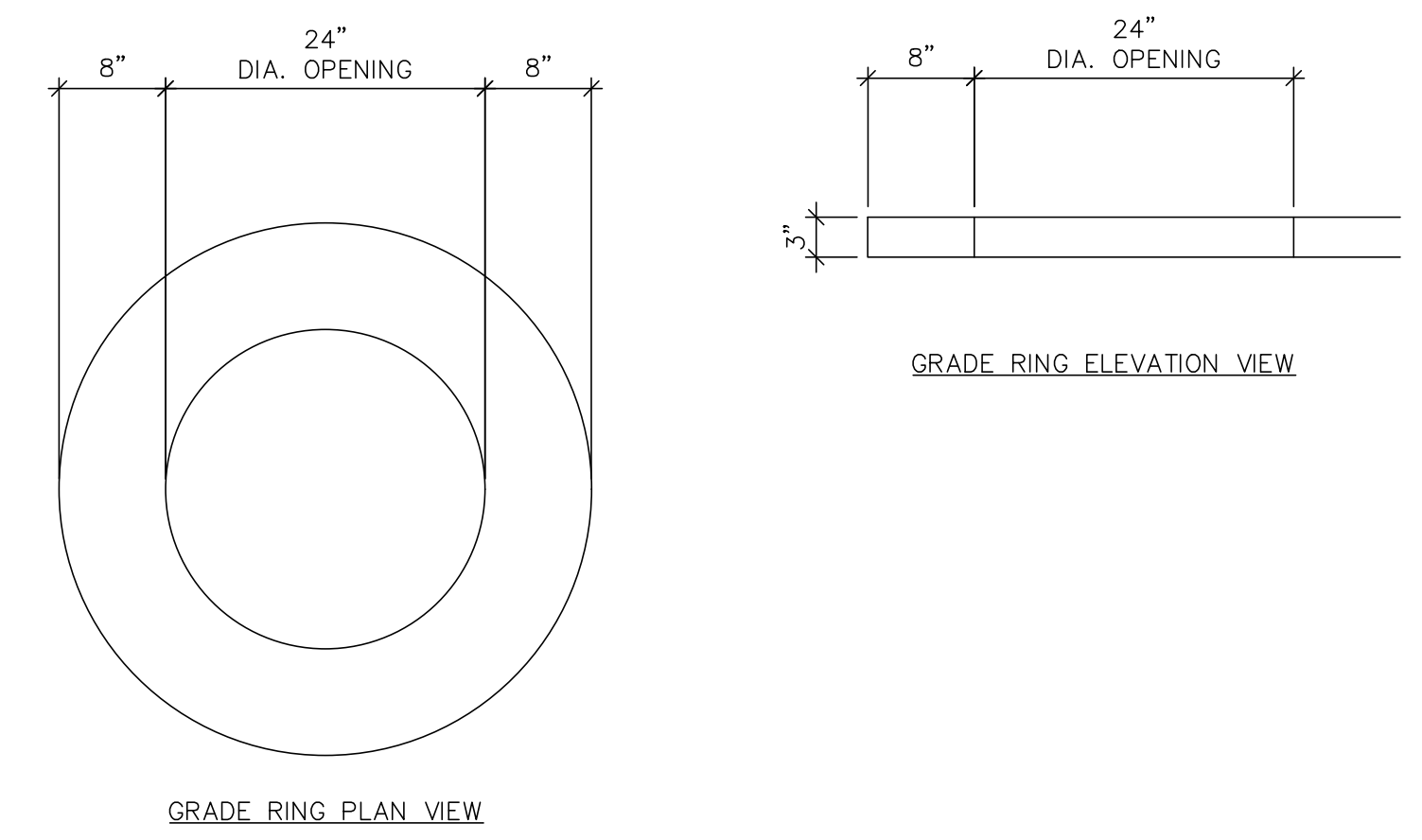


1 MANHOLE FRAME AND COVER INSTALLATION (PAVED AREAS)
C-41 SCALE: NTS

2 MANHOLE FRAME AND COVER INSTALLATION (GRAVEL ROAD/GRASS AREAS)
C-41 SCALE: NTS



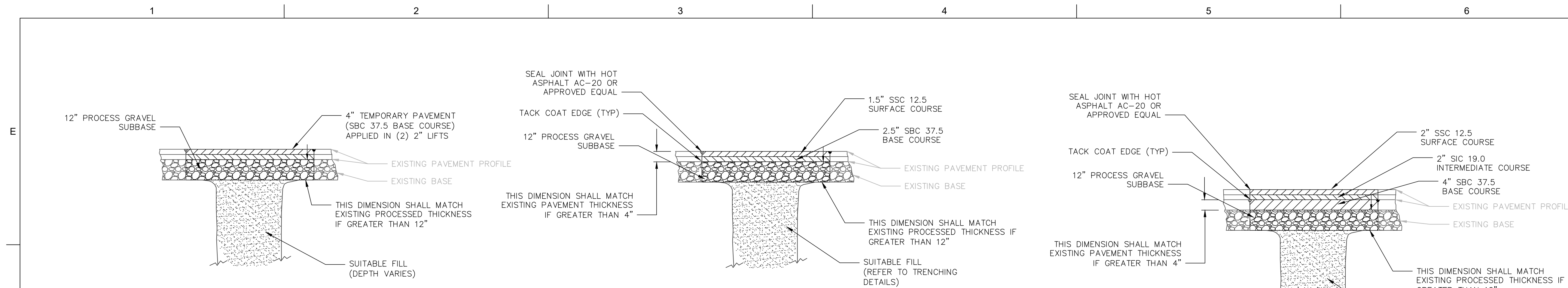
3 MANHOLE FRAME AND COVER INSTALLATION (WOODLAND AND UNIMPROVED AREAS)
C-41 SCALE: NTS



5 MANHOLE GRADE RING
C-41 SCALE: NTS

- NOTES:
1. REINFORCING STEEL WELDED WIRE FABRIC CONFORMS TO LATEST ASTM SPECIFICATION A185.
 2. REINFORCING STEEL DEFORMED BARS CONFORM TO LATEST ASTM SPECIFICATION A615.
 3. CONCRETE COMPRESSIVE STRENGTH - 4,000 PSI AT 28 DAYS.
 4. MANHOLE DESIGN SPECIFICATION CONFORMS TO LATEST ASTM DESIGNATION C478.
 5. CONTRACTOR SHALL USE HYDROPHYLIC SEALANT BETWEEN CONCRETE GRADE RINGS

4 ANCHOR BOLT FOR SEWER MANHOLE FRAMES IN UNPAVED AREAS
C-41 SCALE: NTS

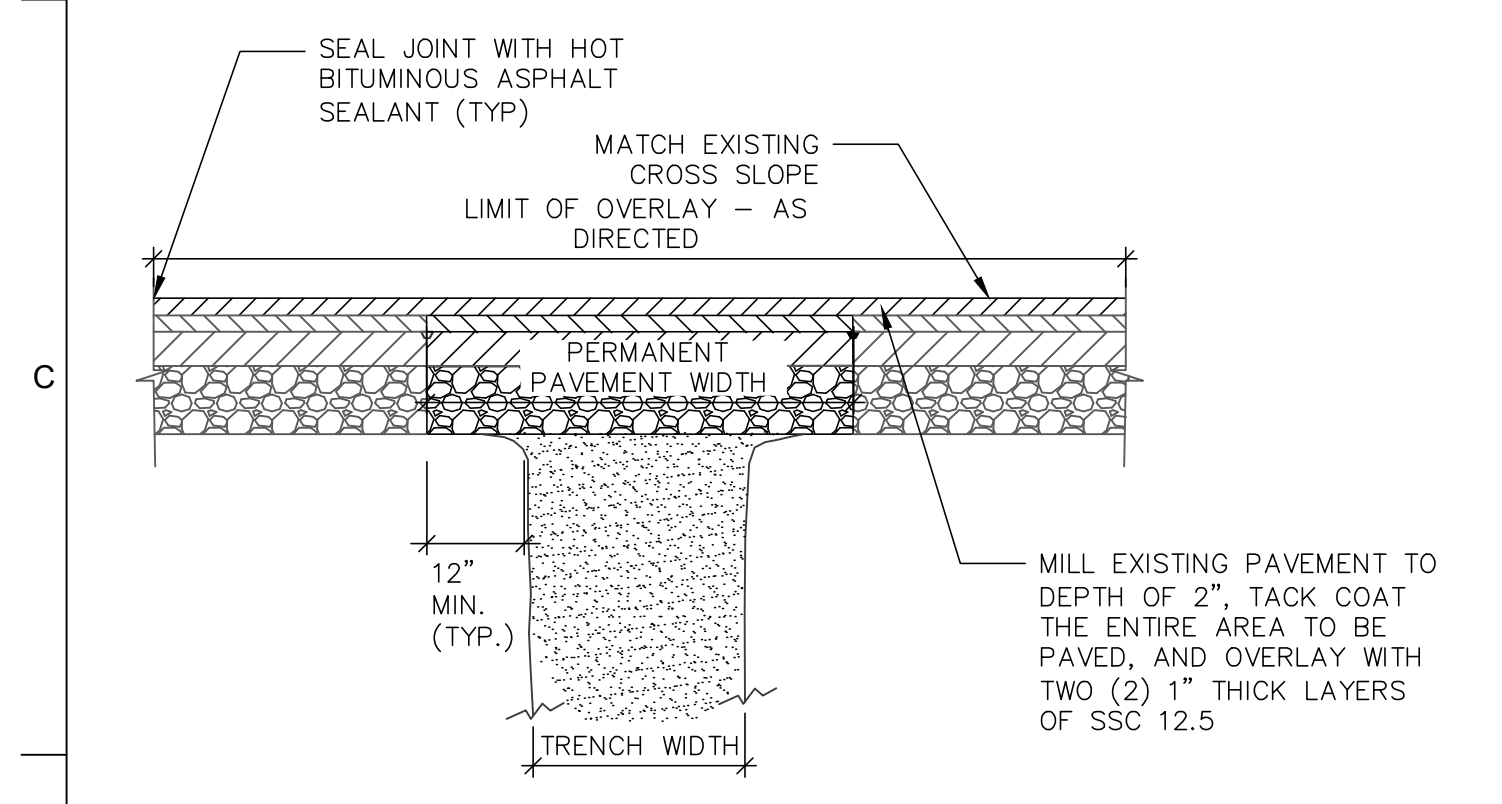


1 TEMPORARY PAVEMENT REPAIR
C-42 SCALE: NTS

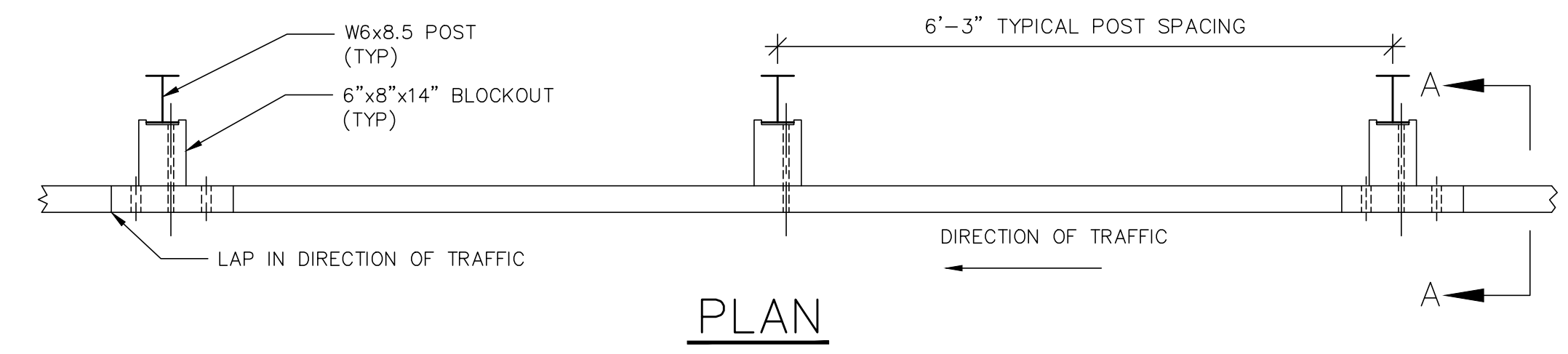
2 PERMANENT PAVEMENT REPAIR (RESIDENTIAL TOWN ROADS, DRIVEWAYS, AND PARKING AREAS)
C-42 SCALE: NTS

3 PERMANENT PAVEMENT REPAIR (STATE ROADS)
C-42 SCALE: NTS

- PAVEMENT NOTES:**
- PAVEMENT SHALL BE IN ACCORDANCE WITH MASSDOT STANDARDS AND SPECIFICATIONS.
 - WHERE EXISTING SUBBASE AND PAVEMENT DEPTH(S) ARE GREATER THAN WHAT IS SHOWN IN THE DETAILS ABOVE, SUBBASE AND PAVEMENT SHALL MATCH THE EXISTING PAVEMENT.
 - PROCESS GRAVEL BASE COURSE SHALL CONFORM TO MASSDOT STANDARD M1.03.1. THE GRAVEL SHALL BE COMPACTED IN TWO LIFTS TO 95% OF THE MAXIMUM DRY DENSITY. THE FIRST LIFT SHALL BE 8" IN DEPTH AND THE SECOND SHALL BE 4" IN DEPTH.
 - THE ENTIRE AREA TO BE PAVED, INCLUDING THE EDGES, SHALL BE SWEEPED PRIOR TACK COAT AND PAVING.
 - PERMANENT PAVEMENT SHALL BE COMPLETED AFTER TEMPORARY PAVEMENT HAS SETTLED OVER A FULL FREEZE/THAW SEASON.
 - ALL PAVEMENT MARKINGS REMOVED OR DAMAGED TO BE RESTORED FOLLOWING TEMPORARY AND PERMANENT PAVEMENT RESTORATION.
 - WHERE LOOPS DETECTORS ARE DAMAGED BY TRENCHING OR PAVING WORK, LOOP DETECTORS TO BE REPAIRED/REPLACED FOLLOWING TEMPORARY PAVEMENT RESTORATION AND FOLLOWING FINAL PAVEMENT RESTORATION.

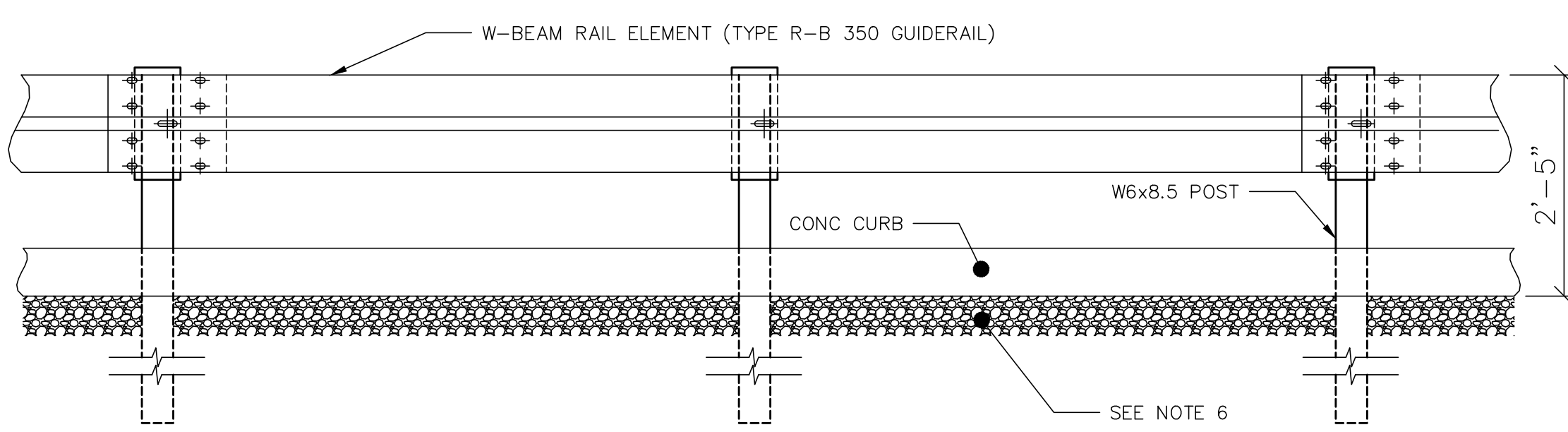


4 MILL AND OVERLAY DETAIL
C-42 SCALE: NTS

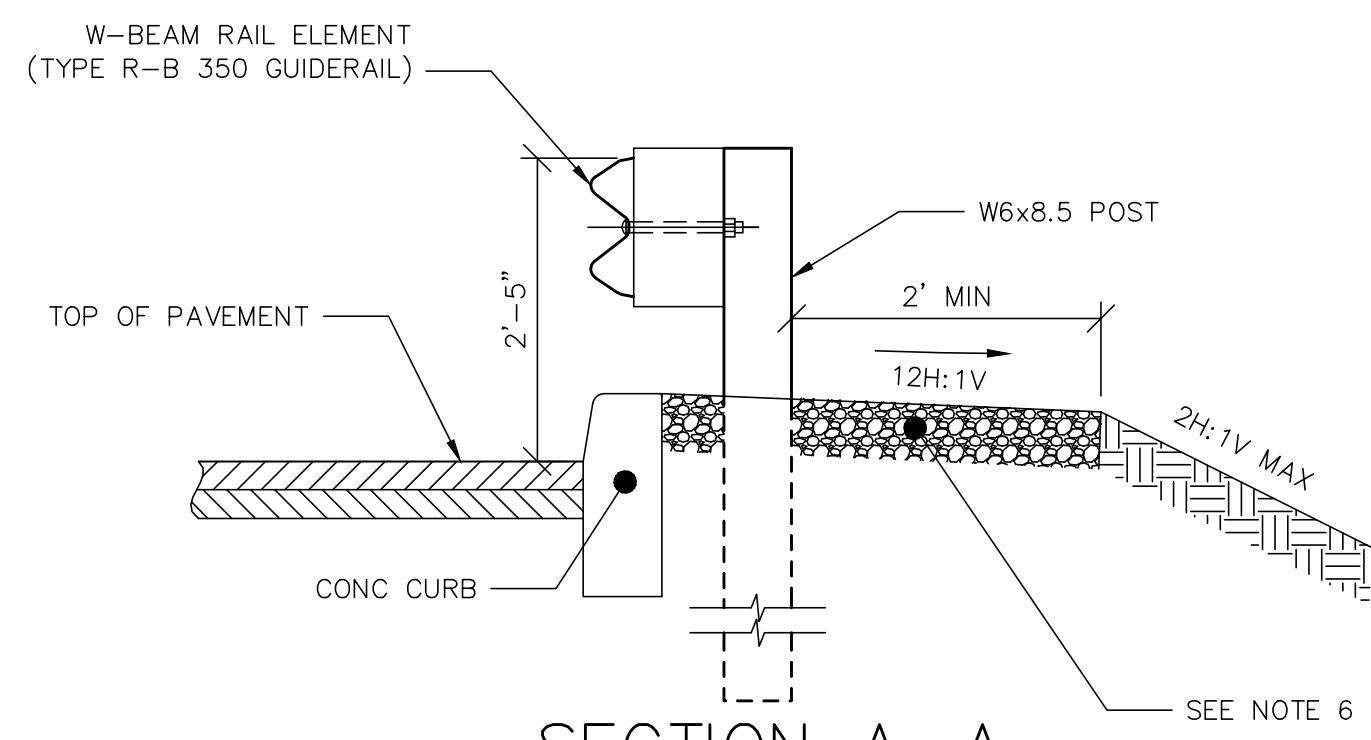


PLAN

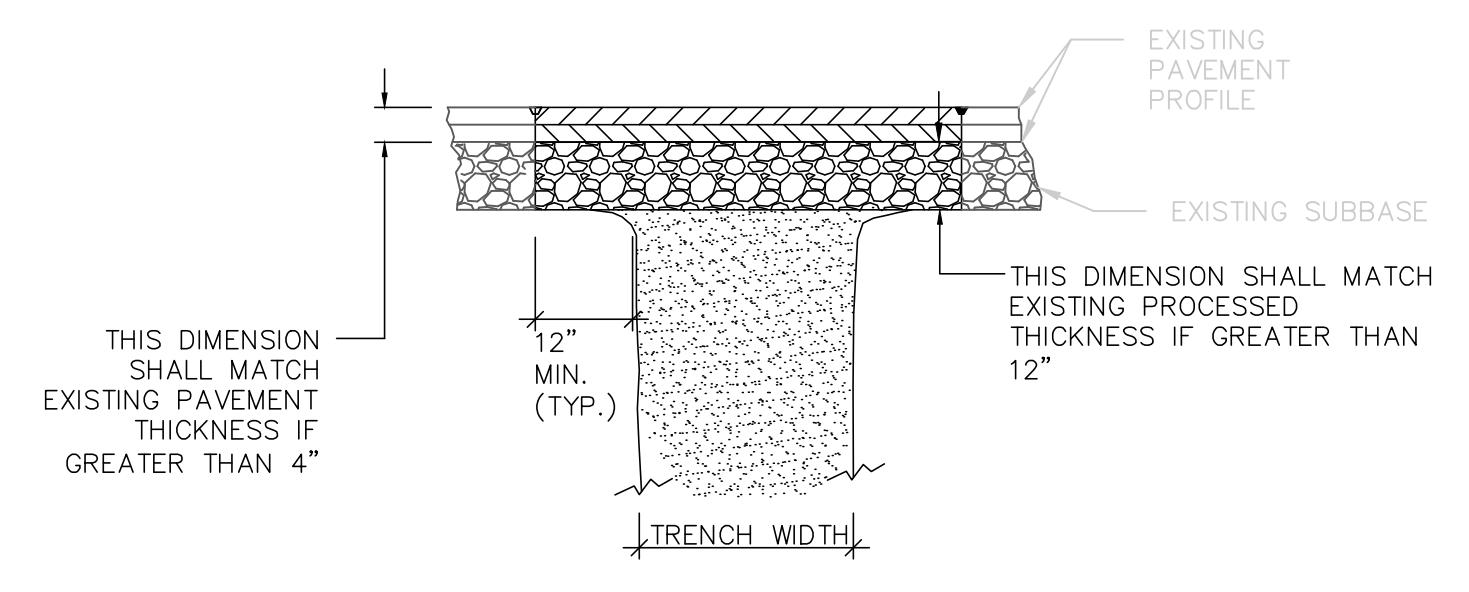
- NOTES:**
- INSTALLATION OF GUARDRAIL SHALL CONFORM TO MASSDOT REQUIREMENTS.
 - MAXIMUM DESIGN DEFLECTION FOR R-B 350 GUIDERAIL AT THE STANDARD POST SPACING OF 6'-3" IS 4'-3". DEFLECTION REQUIREMENT IS MEASURED FROM THE BACK OF THE POST TO THE FACE OF OBJECT.
 - FOR CURVES WITH RADII OF 150' OR LESS, ALL RAIL ELEMENTS SHALL BE SHOP FABRICATED TO THE PROPER RADIUS AND GALVANIZED AFTER FABRICATION.
 - RAIL HEIGHT AND CURBING SHALL BE MEASURED FROM THE TOP OF PAVEMENT. THE RAIL ELEMENT SHALL BE PLACED A MAXIMUM OF 9" BEHIND THE FACE OF CURB.
 - AS DIRECTED BY THE ENGINEER AND WHERE PAVEMENT FOR RAILING IS NOT BEING INSTALLED, A MIN 6" DEPTH OF PROCESSED AGGREGATE SHALL BE INSTALLED FROM THE PAVEMENT EDGE OR BACK OF CURB TO A MIN OF 2' BEHIND THE GUIDE RAIL POST AND COMPACTED IN 6" LIFTS



ELEVATION



SECTION A-A



5 PERMANENT PAVEMENT REPAIR (INDUSTRIAL AND COMMERCIAL TOWN ROADS)
C-42 SCALE: NTS

6 GUIDERAIL - METAL BEAM RAIL
C-42 SCALE: NTS

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DRAWN BY:	AKR
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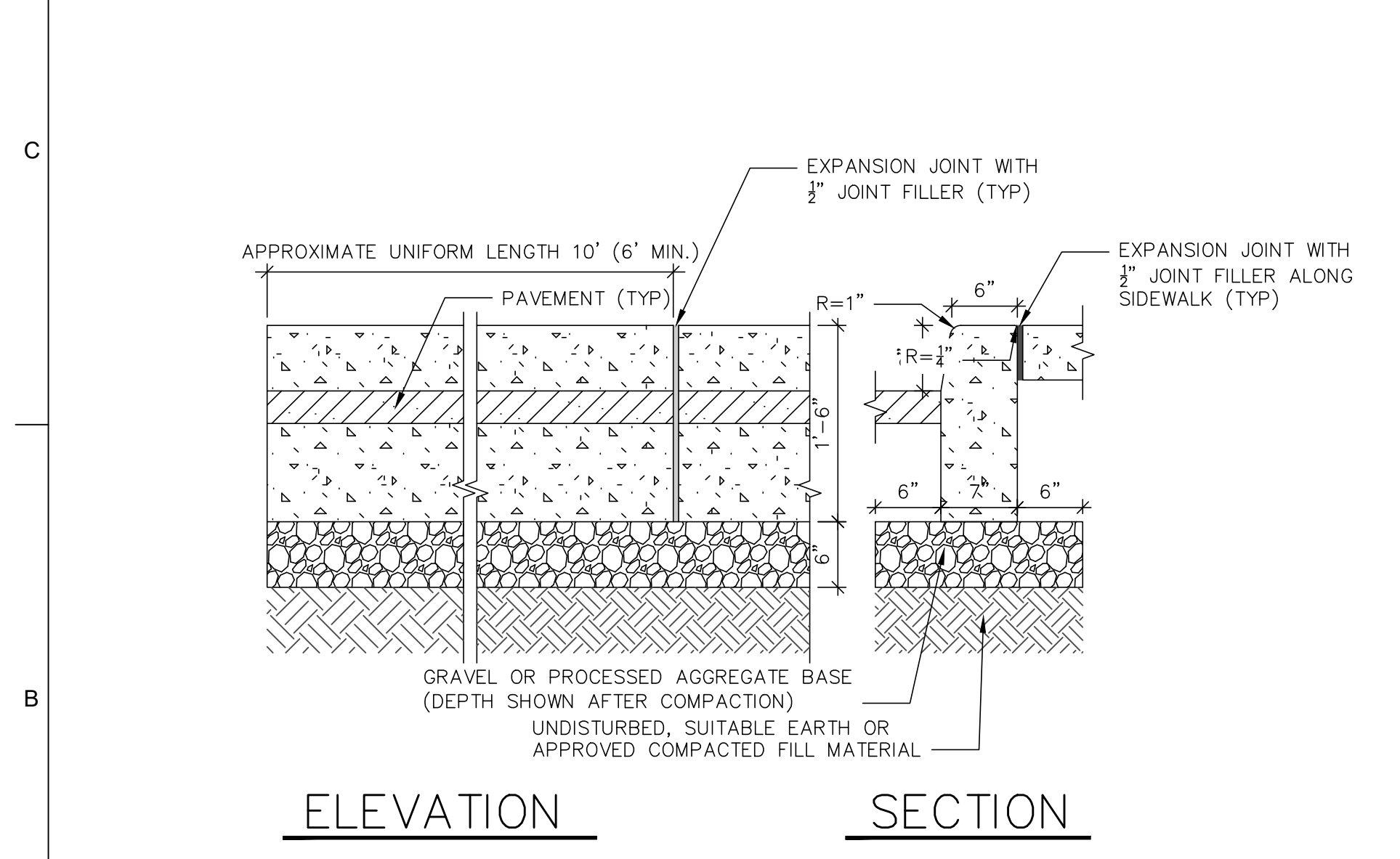
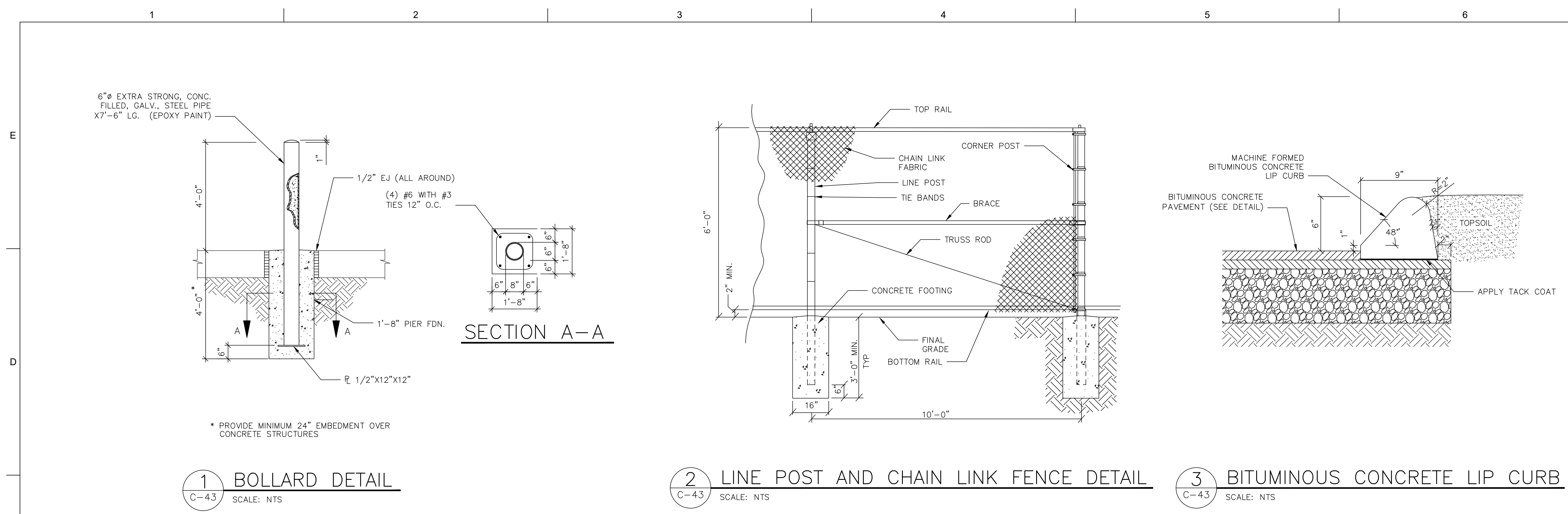
CIVIL

PAVEMENT,
ROADWAY, AND SITE
DETAILS - 2

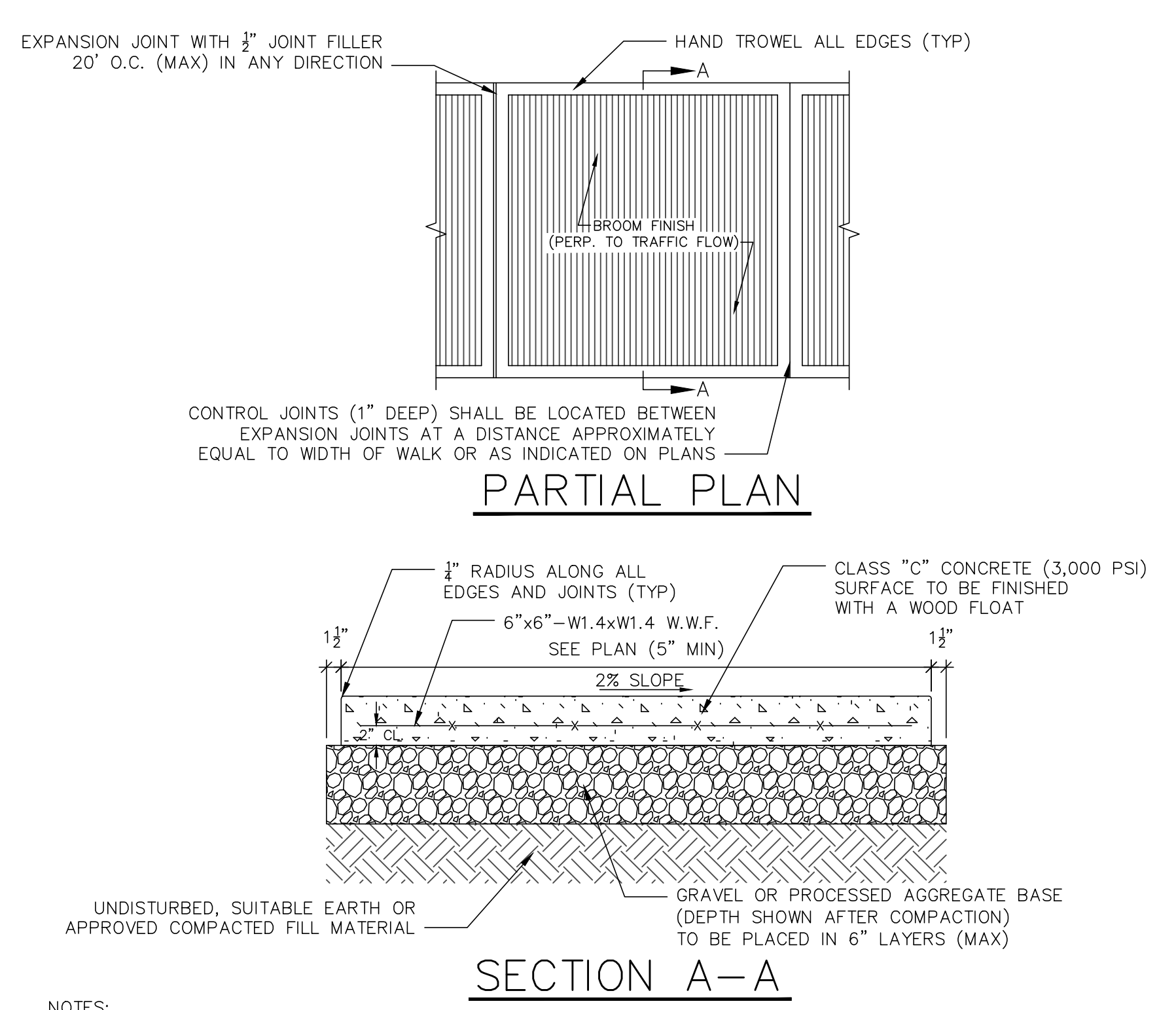
SCALE: NTS

C-43

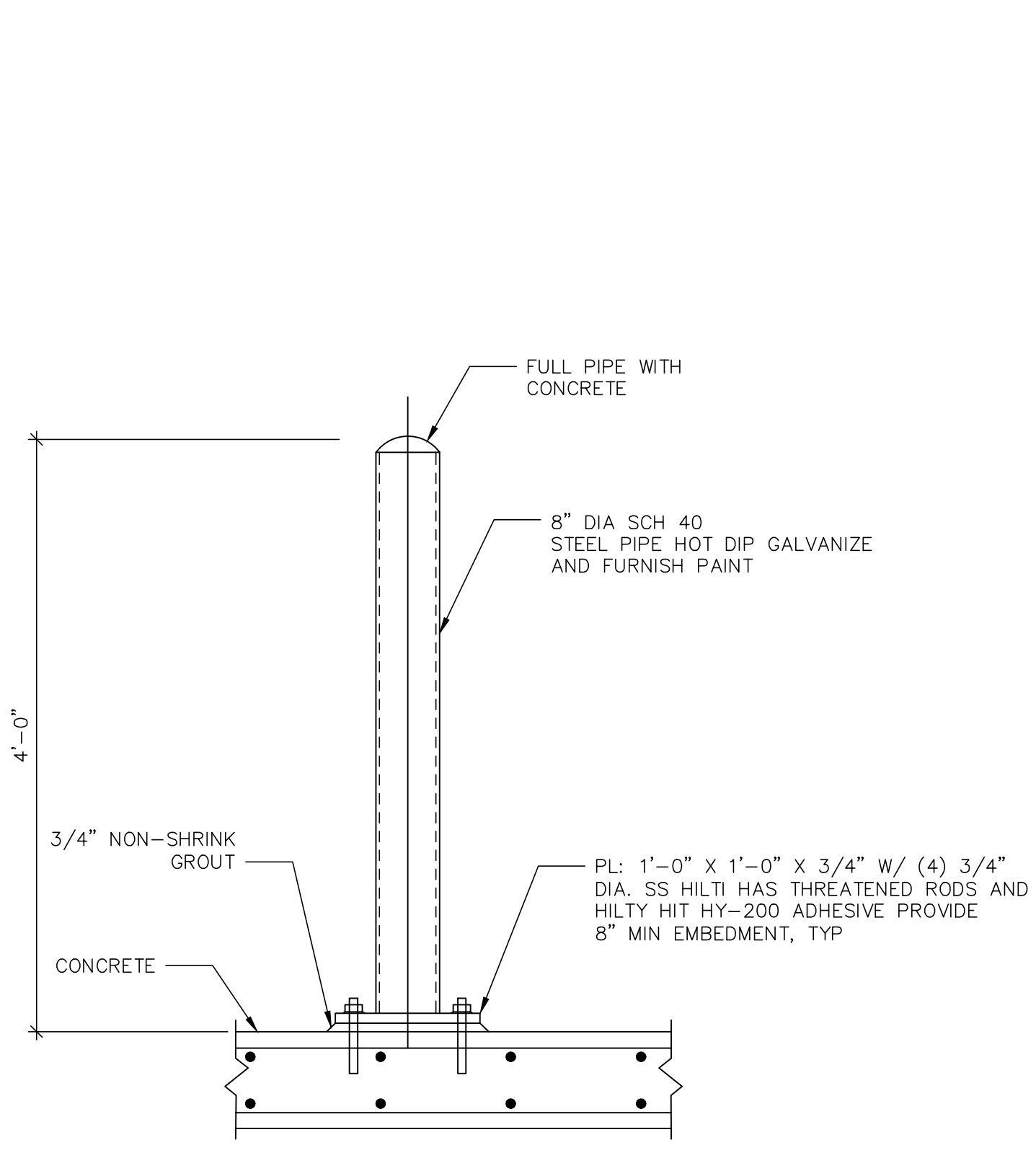
SHEET NO.: 45 OF 66



- NOTES:
1. CONCRETE FOR CAST-IN-PLACE CURB (CURBING) SHALL BE CLASS "C" CONCRETE (3,000 PSI).
 2. BASE SHALL BE KEPT THOROUGHLY WET DURING COMPACTION AND SHALL BE DAMP WHEN CONCRETE IS POURED (NO POOLS ALLOWED).
 3. ADDITIONAL EXPANSION JOINTS TO BE PROVIDED WHERE THE CURBING JOINS ANY RIGID STRUCTURES INCLUDING, BUT NOT LIMITED TO, BUILDINGS, WALLS, WALKS, APRONS, PADS, OTHER CURBING, ETC.
 4. EXPANSION JOINT FILLER SHALL BE PREFORMED BITUMINOUS CELLULAR (FIBER) TYPE PER AASHTO M 213 REQUIREMENTS.
 5. CONTRACTOR SHALL REMOVE UNSUITABLE MATERIAL AND REPLACE WITH FILL MATERIAL APPROVED BY ENGINEER AT NO ADDITIONAL COST TO THE OWNER.



- NOTES:
1. CONCRETE SIDEWALK (WALK) SHALL BE 6" THICK AT DRIVEWAYS.
 2. BASE SHALL BE KEPT THOROUGHLY WET DURING COMPACTION AND SHALL BE DAMP WHEN CONCRETE IS POURED (NO POOLS ALLOWED).
 3. ADDITIONAL EXPANSION JOINTS TO BE PROVIDED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURES INCLUDING, BUT NOT LIMITED TO, CURBS, BUILDINGS, WALLS, APRONS, PADS, OTHER SIDEWALKS, ETC.
 4. EXPANSION JOINT FILLER SHALL BE PREFORMED BITUMINOUS CELLULAR (FIBER) TYPE PER AASHTO M 213 REQUIREMENTS.
 5. CONTRACTOR SHALL REMOVE UNSUITABLE MATERIAL AND REPLACE WITH FILL MATERIAL APPROVED BY ENGINEER AT NO ADDITIONAL COST TO THE OWNER.



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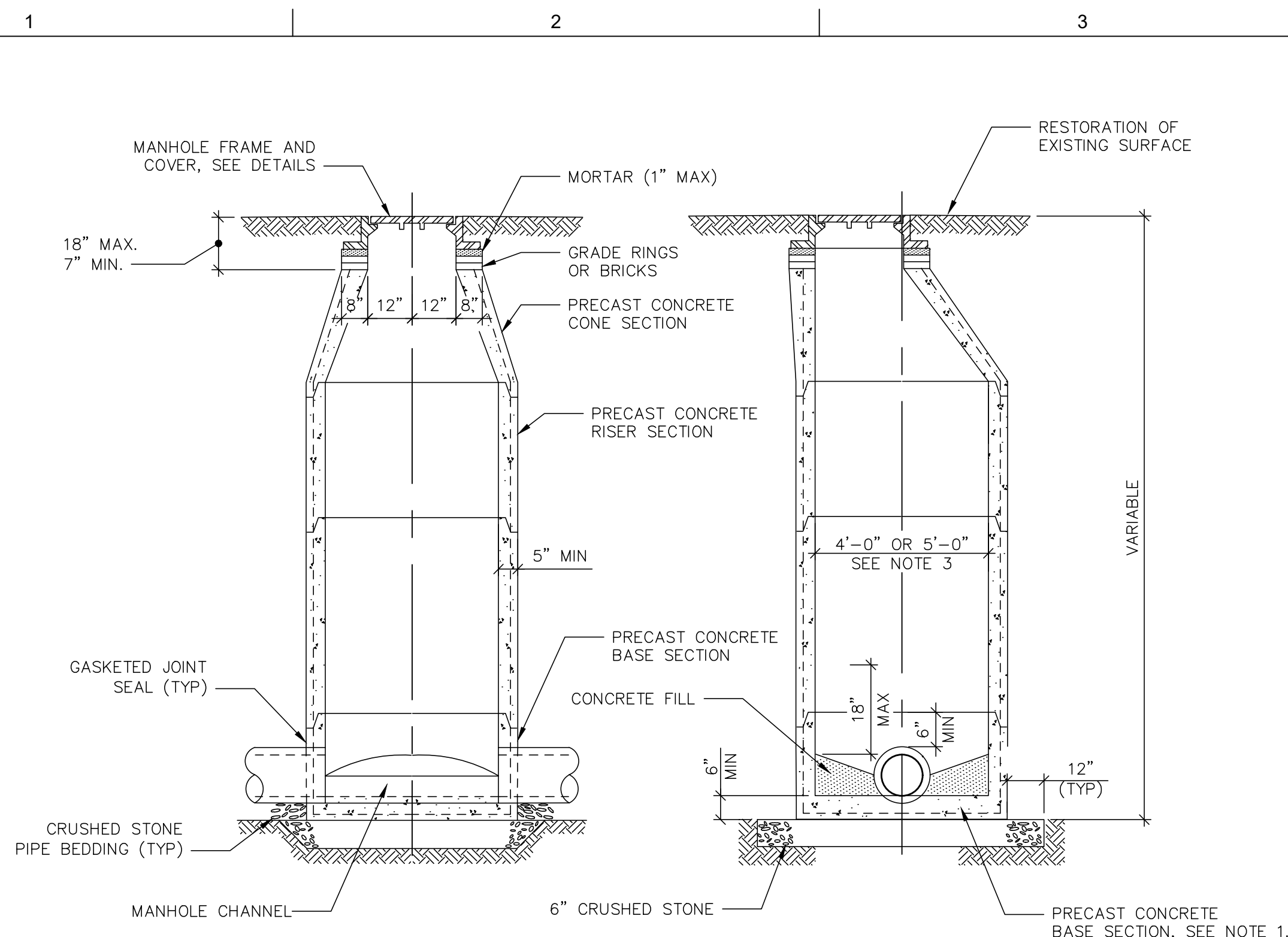
CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL
MANHOLE DETAILS

SCALE: NTS

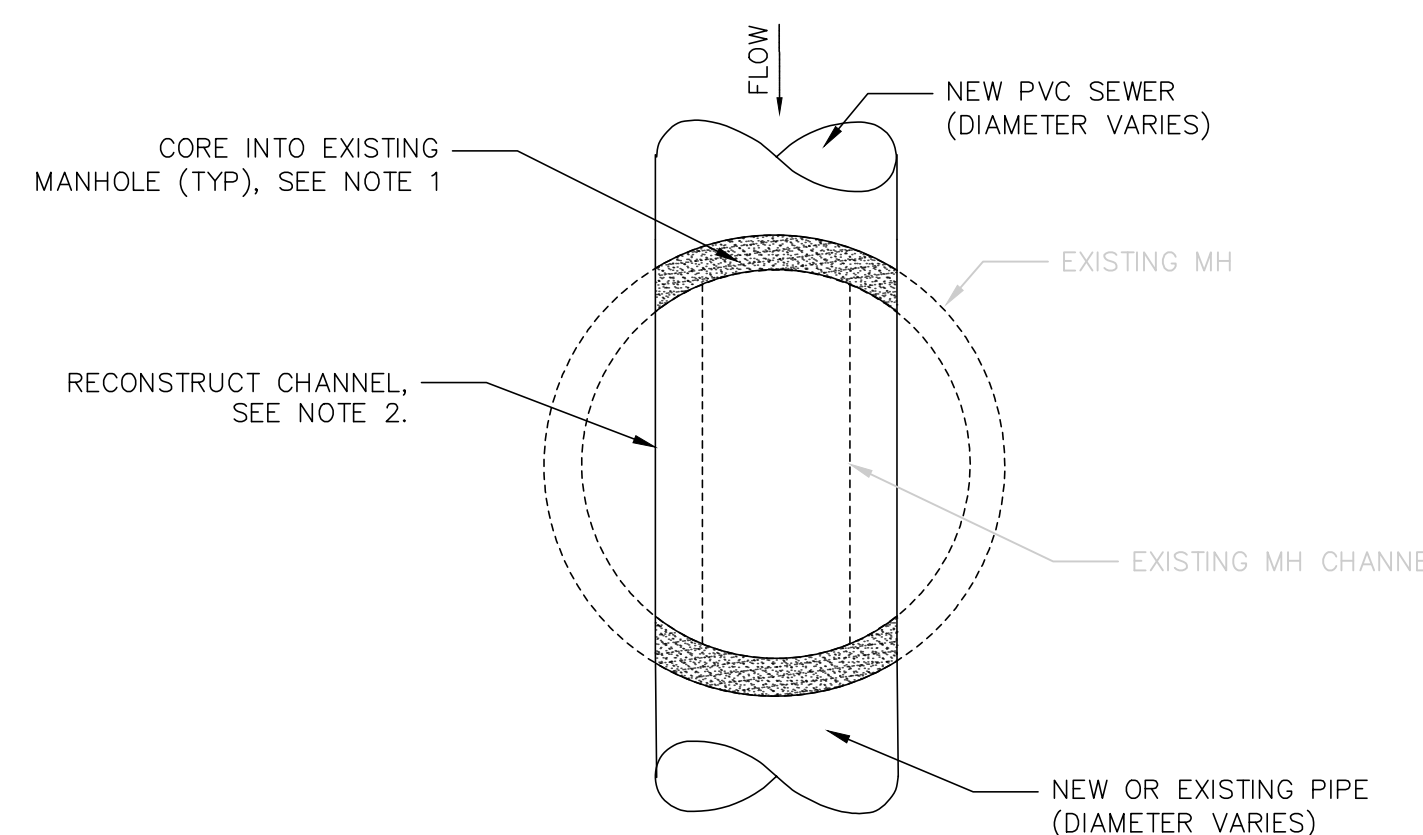
C-44
SHEET NO.: 46 OF 66



1 NEW PRECAST SANITARY SEWER MANHOLE
C-44 SCALE: NTS

NOTES:

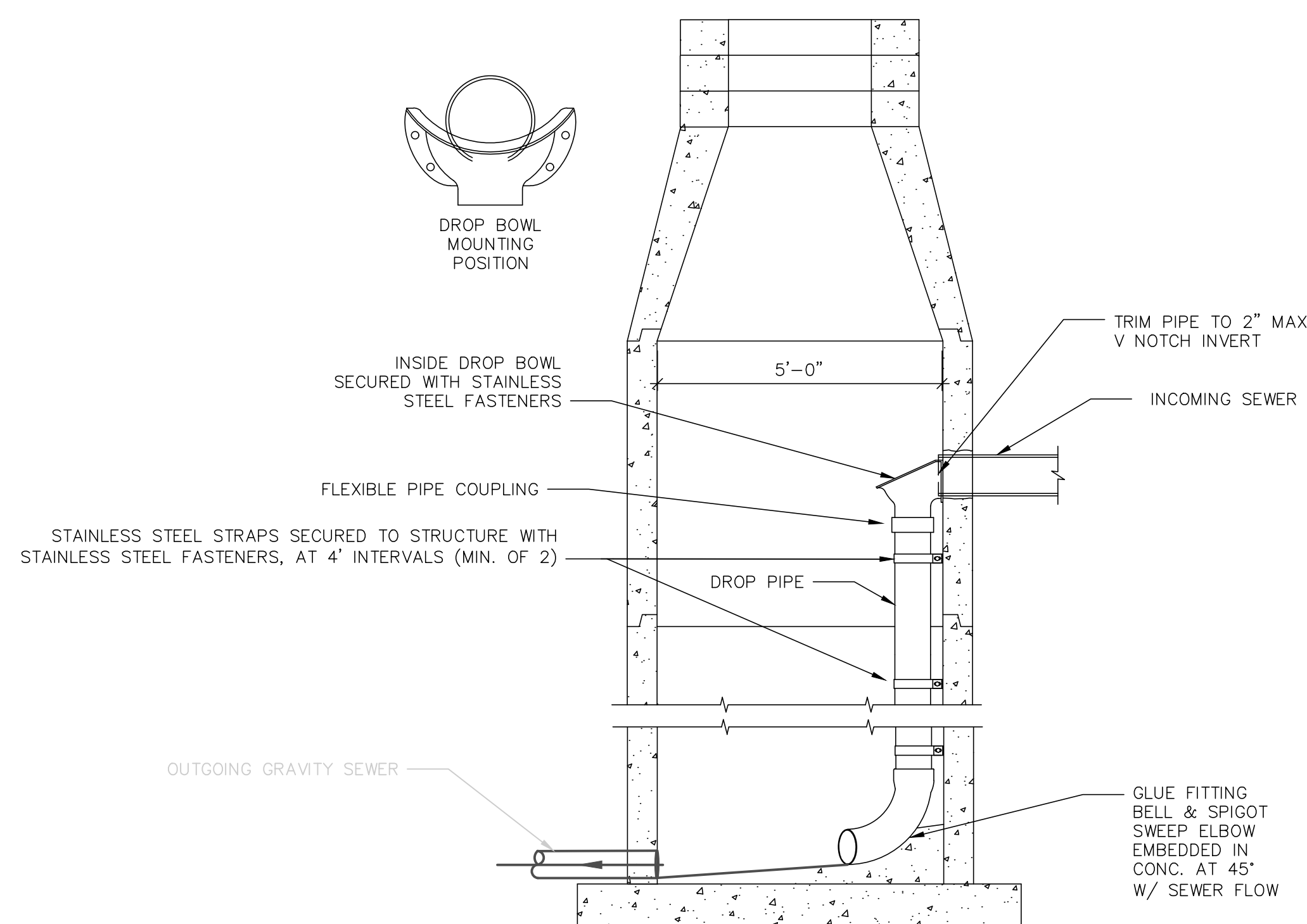
- CONTRACTOR SHALL DESIGN AND SUBMIT FOR APPROVAL MANHOLE ANTI-FLOTATION FOR ASSUMED GROUNDWATER LEVEL AT GRADE.
- MANHOLE CHANNEL SHALL BE SLOPED 2.5% FROM THE INCOMING PIPE TO THE OUTGOING PIPE. WHERE THE SLOPE OF THE INCOMING MAIN LINE PIPE IS GREATER THAN 2.5% MATCH THE SLOPE THROUGH THE MANHOLE.
- NEW SANITARY SEWER MANHOLES WITH INSIDE DROP BOWLS SHALL BE 5'-0" IN DIAMETER. REFER TO MANHOLE SCHEDULE FOR ALL OTHER MANHOLE DIAMETERS.
- WHERE MANHOLES RECEIVE INCOMING BRANCH SEWERS, CONSTRUCT MANHOLE CHANNEL WITH A SMOOTH CURVE OF AS LARGE OF A RADIUS AS SIZE OF THE MANHOLE WILL PERMIT.



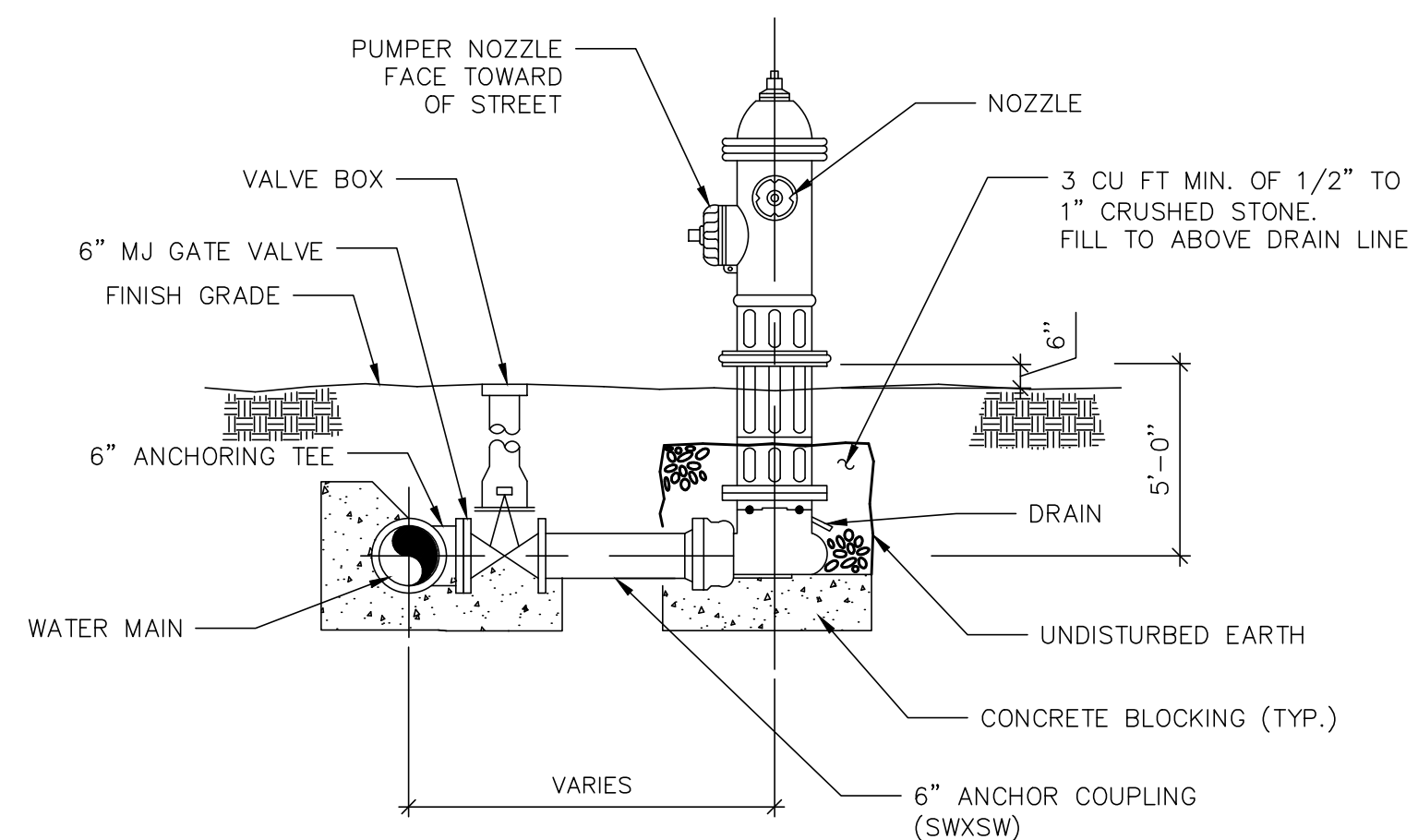
2 RECONSTRUCTION OF EXISTING MANHOLE SERVICE CONNECTION DETAIL
C-44 SCALE: NTS

NOTES:

- CORE INTO EXISTING MANHOLE A MINIMUM OF 2" LARGER THAN THE O.D. OF THE NEW GRAVITY SEWER WITHOUT DAMAGE TO THE EXISTING BENCH, CHANNEL, OR STRUCTURE. PIPE CONNECTION THROUGH MANHOLE WALL SHALL BE MADE WITH WATERSTOP GROUTING RINGS, AS MANUFACTURED BY PRESS-SEAL CORPORATION, OR EQUAL, AND NON-SHRINK GROUT.
- DEMOLISH EXISTING CHANNEL AND BENCH, AS NECESSARY TO REMOVE ANY LOOSE OR DEFECTIVE BRICKS AND MORTAR AND WIDEN MANHOLE CHANNEL TO MATCH THE DIAMETER OF THE OUTGOING GRAVITY SEWER. RECONSTRUCT BENCH AND CHANNEL WITH APPROVED SEWER BRICKS AND MORTAR. NEW MANHOLE INVERT ELEVATION SHALL MATCH EXISTING INVERT ELEVATION. NEW MANHOLE BENCH SHALL BE PITCHED TOWARD THE MANHOLE INVERT. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

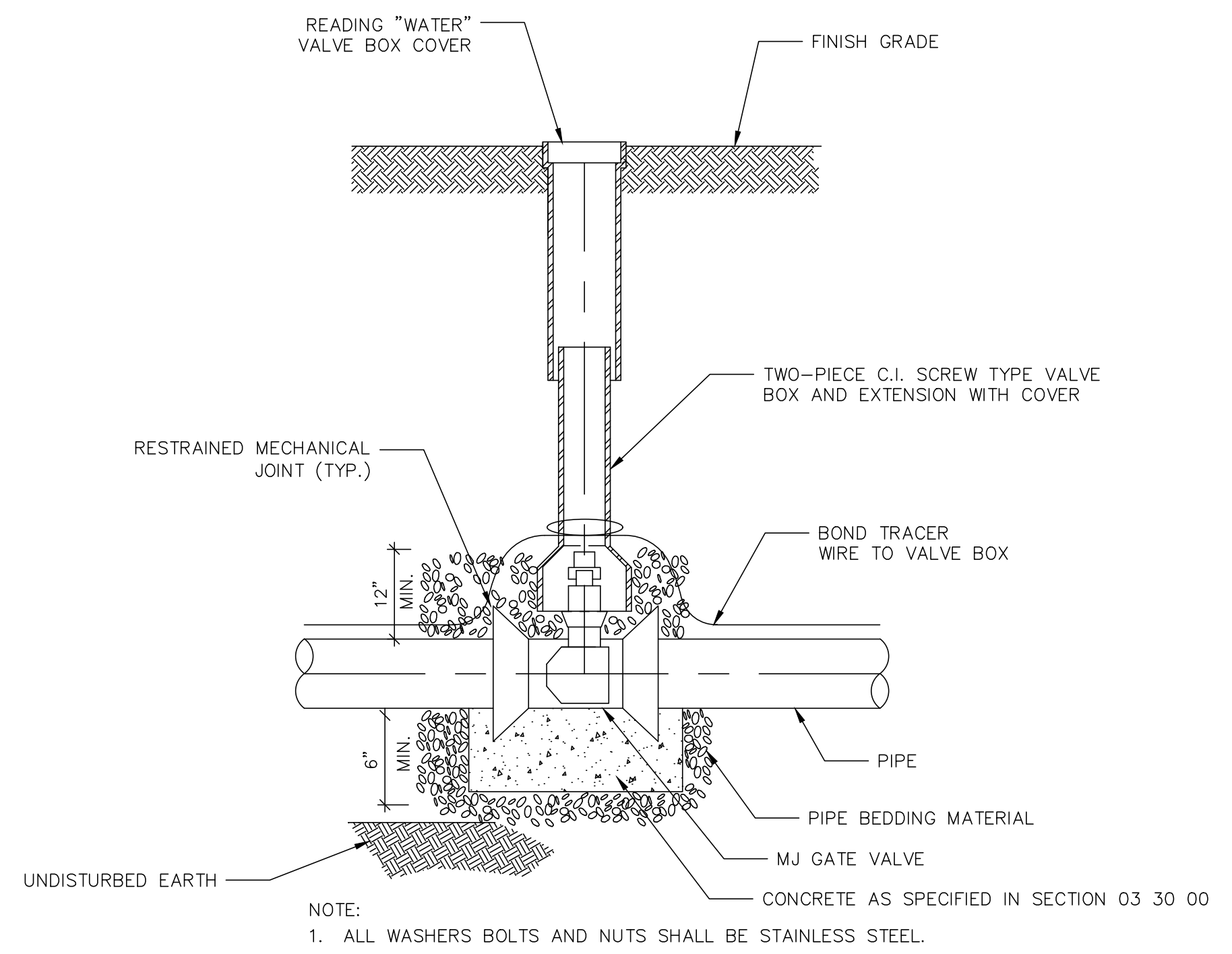


3 INSIDE DROP CONNECTION
C-44 SCALE: NTS

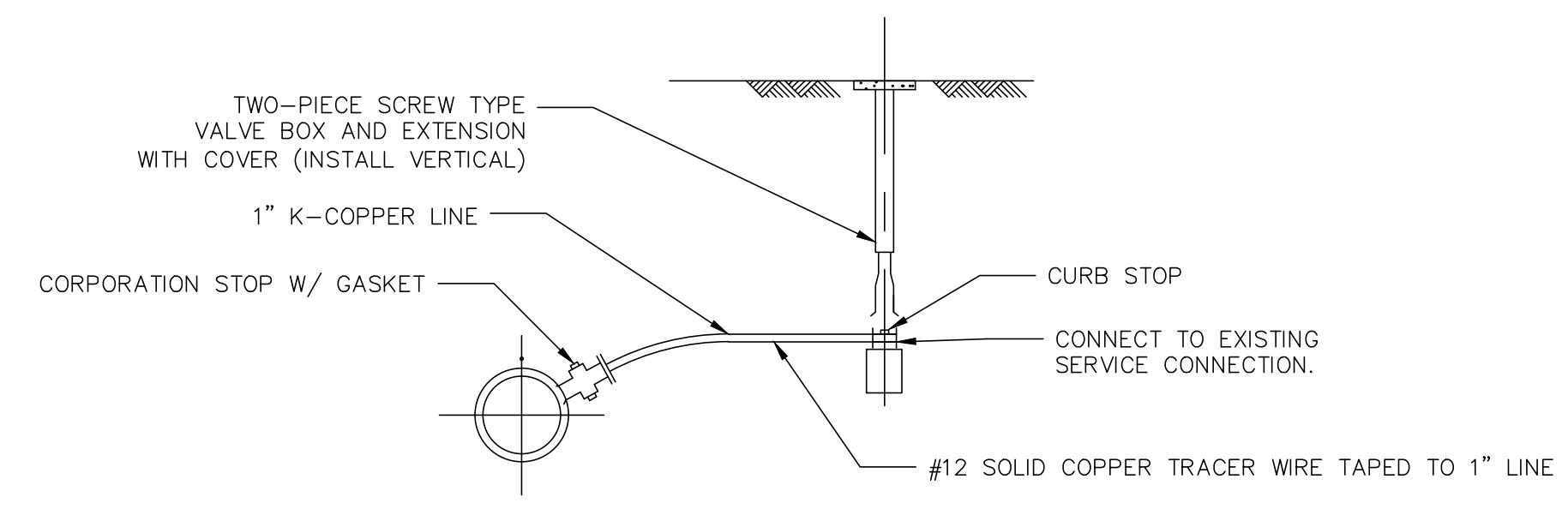


- NOTES:**
1. ALL FITTINGS, VALVES AND HYDRANTS SHALL HAVE RESTRAINED MECHANICAL JOINTS.
 2. HYDRANT PIPING SHALL BE 6" CLASS 52 DUCTILE IRON PIPE.
 3. ALL BLOCKING SHALL BE CONCRETE AS SPECIFIED IN SECTION 03 30 00.
 4. RESTRAINED MECHANICAL JOINTS SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE MAINLINE TEE.

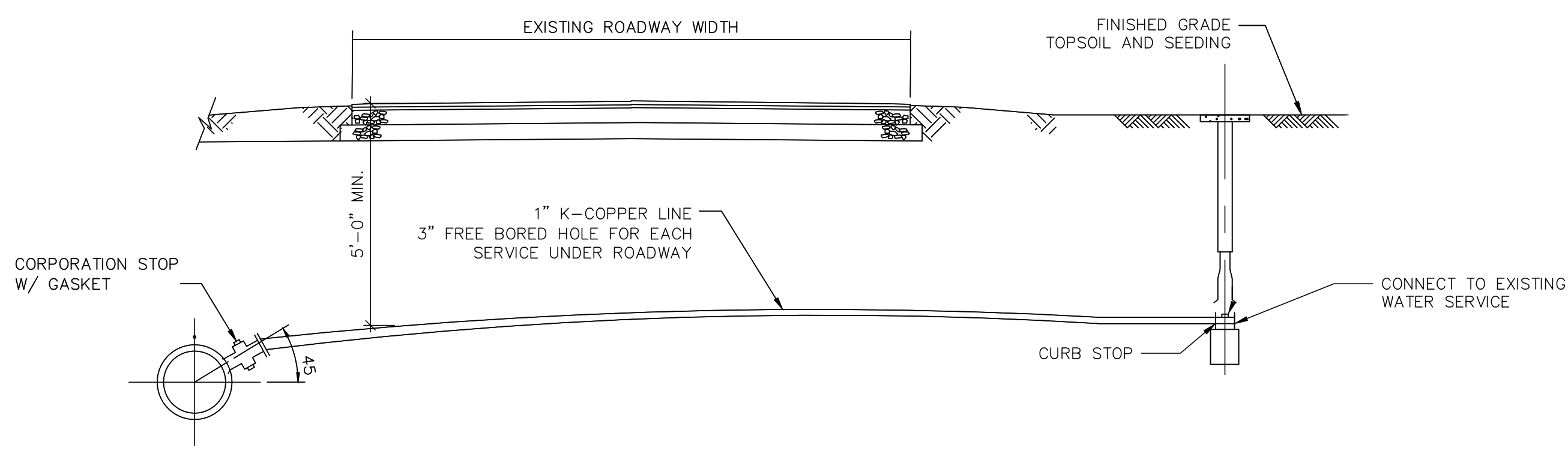
1 FIRE HYDRANT DETAIL
C-45 SCALE: NTS



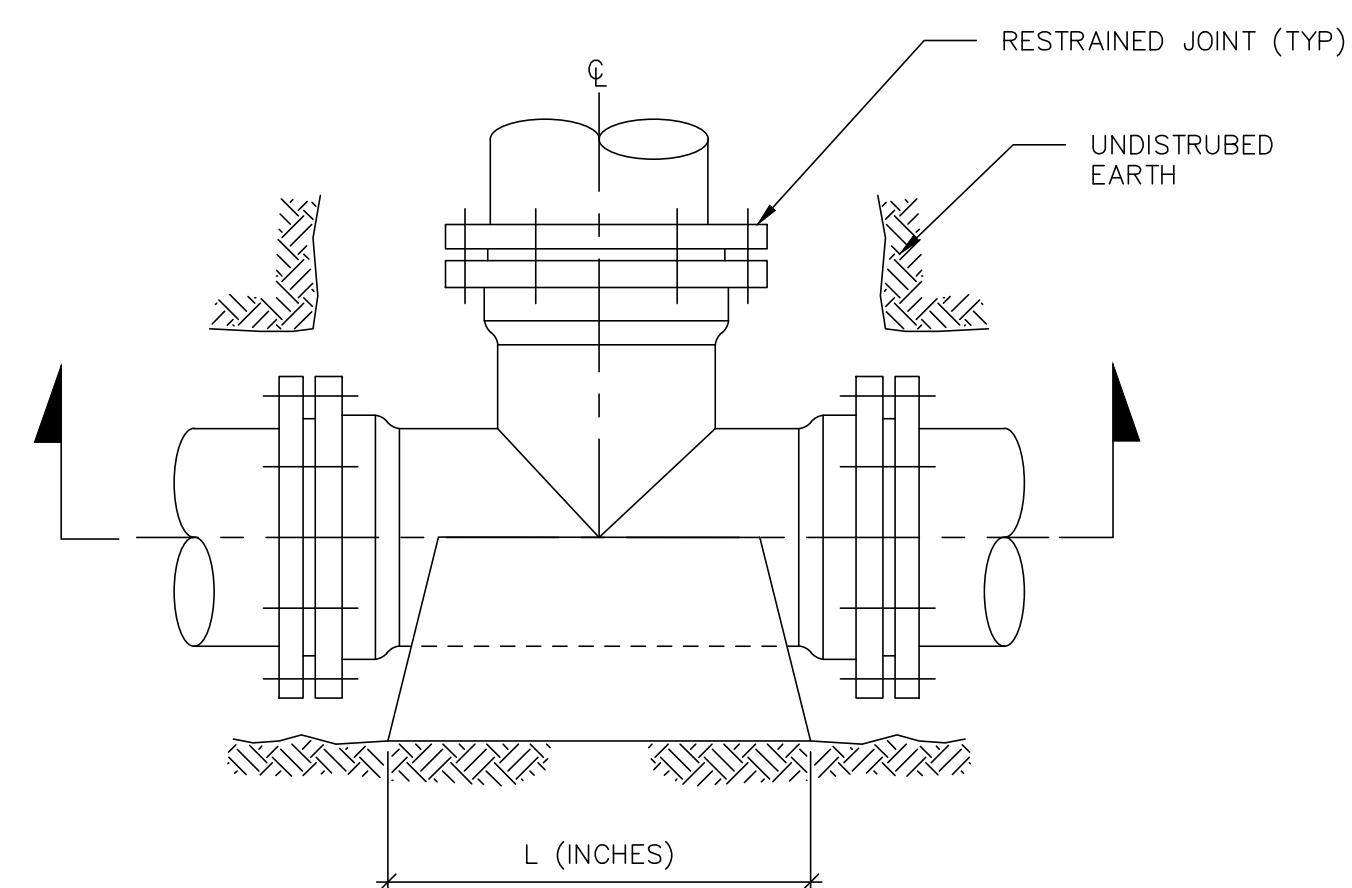
**2 TYPICAL BURIED VALVE AND
INLINE ISOLATION VALVE DETAIL**
C-45 SCALE: NTS



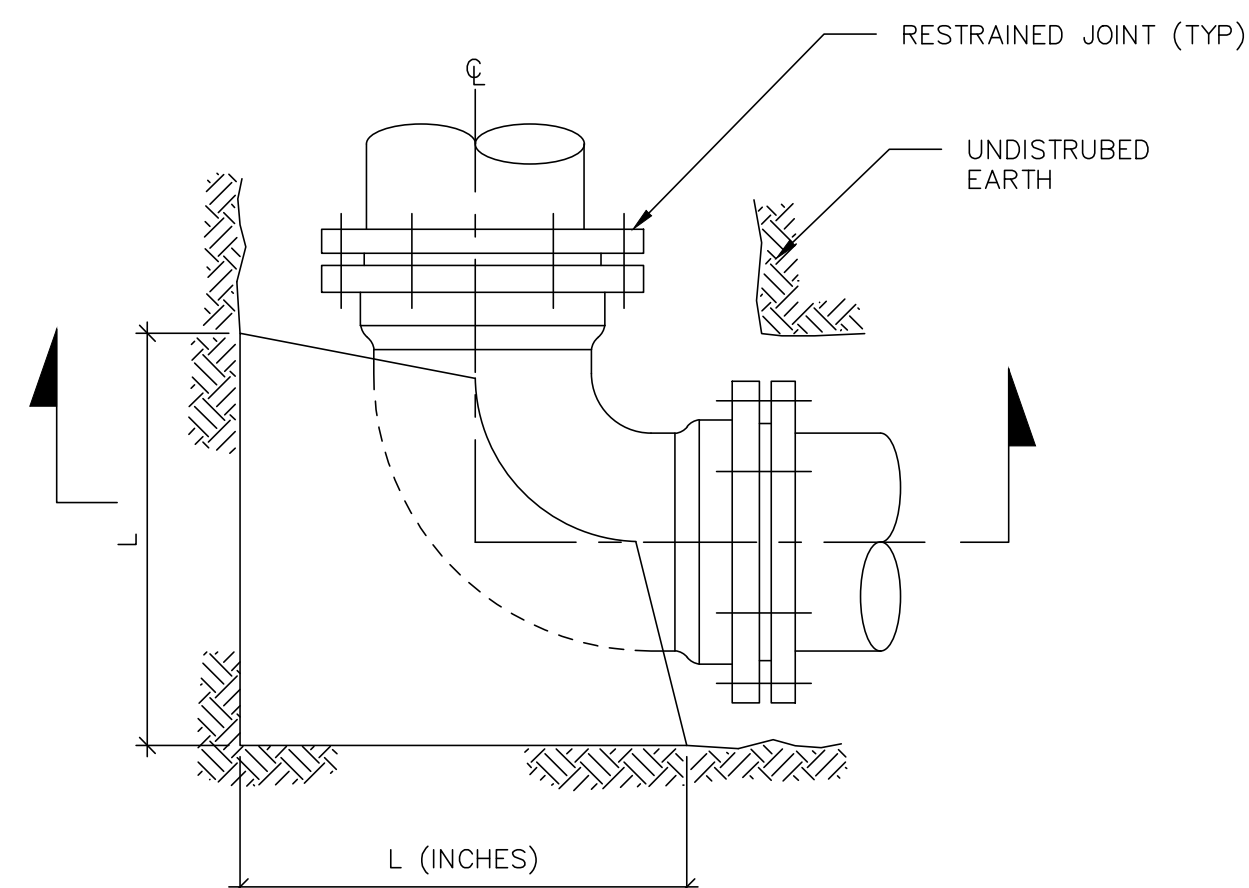
**3 TYPICAL NEARSIDE WATER
SERVICE CONNECTION DETAIL**
C-45 SCALE: NTS



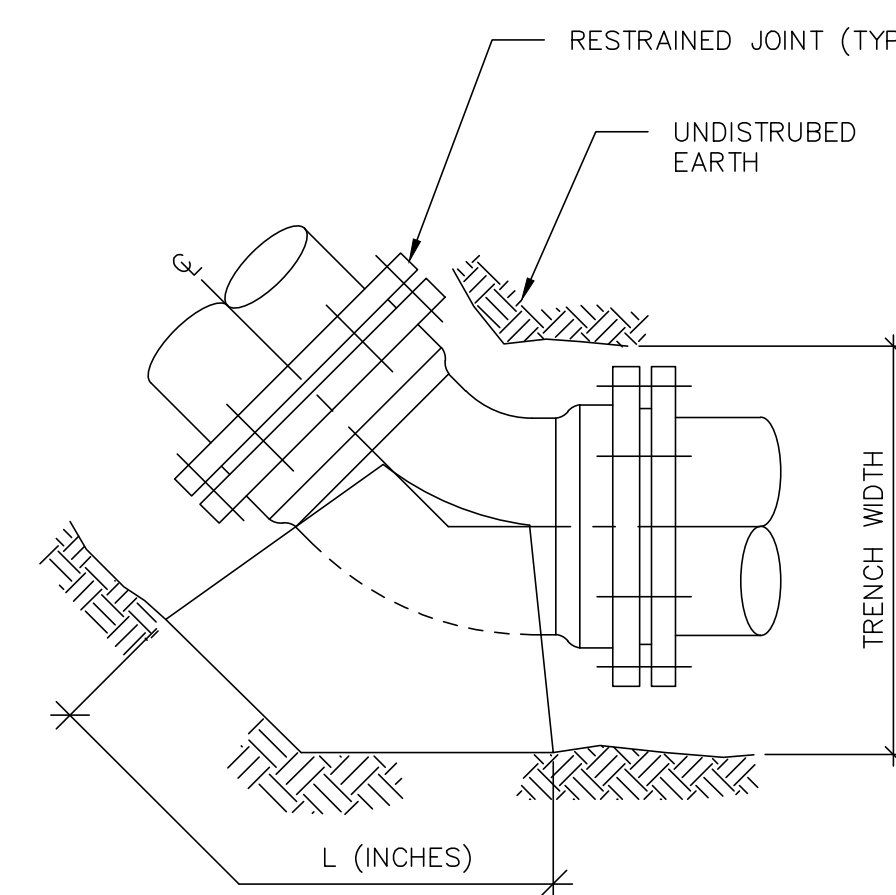
**4 TYPICAL FAR SIDE WATER
SERVICE CONNECTION DETAIL**
C-45 SCALE: NTS



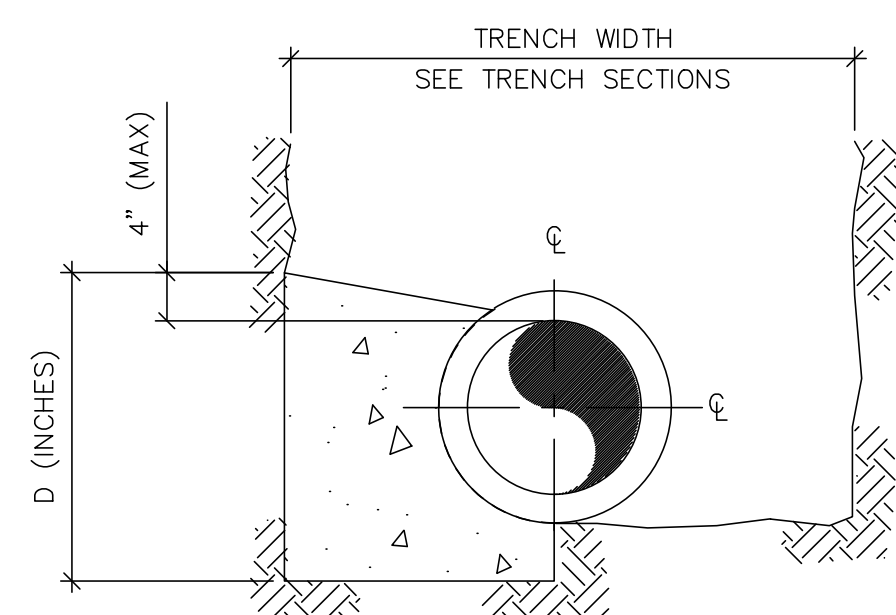
1 PLAN TEES
C-46 SCALE: NTS



2 PLAN 90° BENDS
C-46 SCALE: NTS



3 PLAN (BENDS LESS THAN 90°)
C-46 SCALE: NTS



4 SECTION
C-46 SCALE: NTS

SIZE OF PIPE	DEGREE OF BEND									
	11 1/4°		22 1/2°		45°		90°		TEE	
	L	D	L	D	L	D	L	D	L	D
4"	5	4	9	5	14	5	14	5	18	12
6"	8	6	12	7	20	8	18	9	24	20
8"-12"	8	14	12	14	20	14	18	14	24	20
15"-18"	12	20	18	20	32	20	32	20	36	32

NOTES:

- ALL DIMENSIONS ARE IN INCHES.
- THRUST BLOCKS SHALL BE POURED WITH FULL CONTACT WITH UNDISTURBED SOIL.
- PROVIDE HEAVY TAR PAPER BETWEEN THRUST BLOCKS AND PIPE.
- RESTRAIN ONE (1) PIPE JOINT DOWNSTREAM OF EVERY BEND.

**CONCRETE THRUST BLOCK DETAIL
FOR HORIZONTAL AND VERTICAL BENDS**

SCALE: NTS

E

D

C

B

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FILE NAME: C-47 TO C-48
DESIGNED BY: SPM
DRAWN BY: AKR
CHECKED BY: SRH/AAG

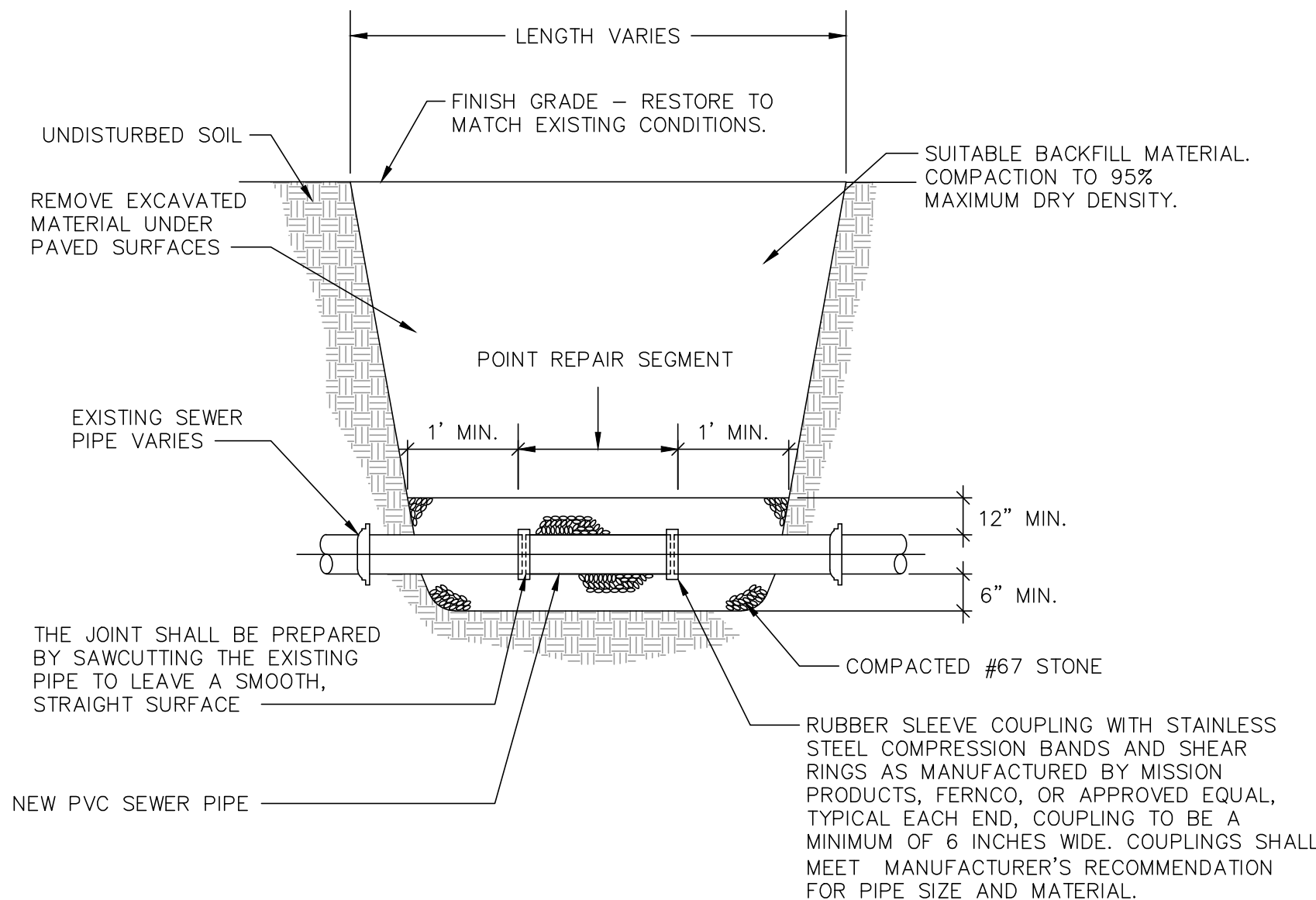
SHEET TITLE

CIVIL
GRAVITY SEWER
PIPELINE DETAILS-1

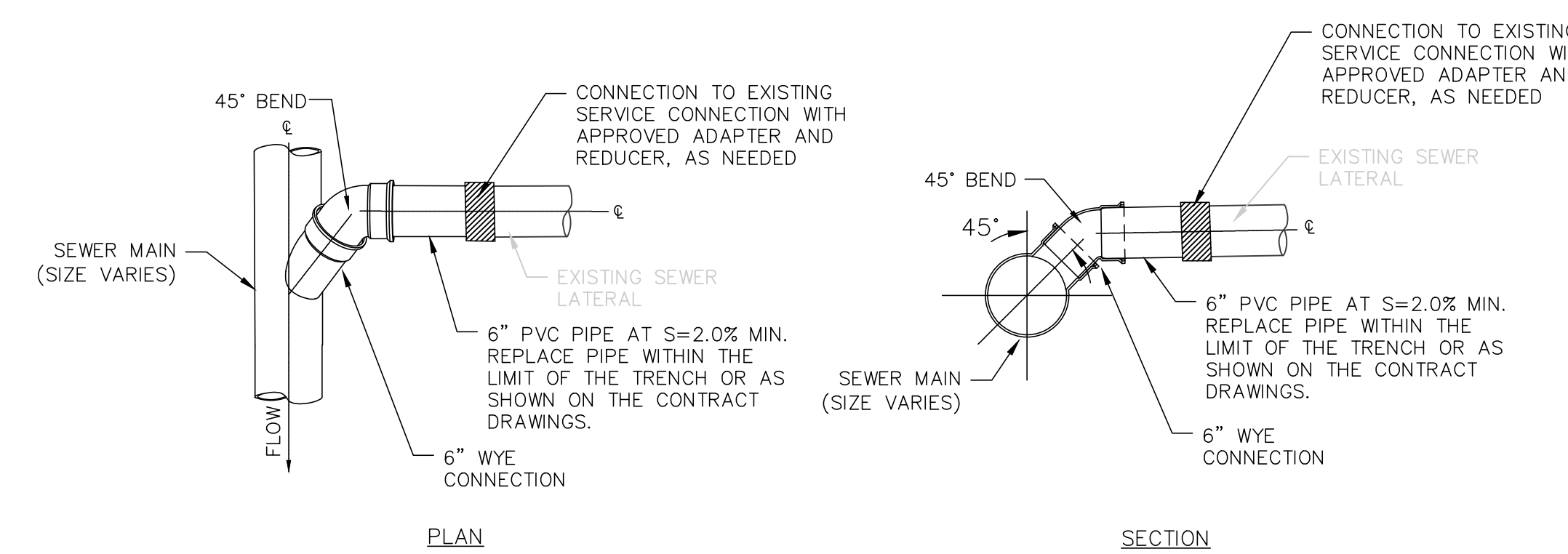
SCALE: NTS

C-47

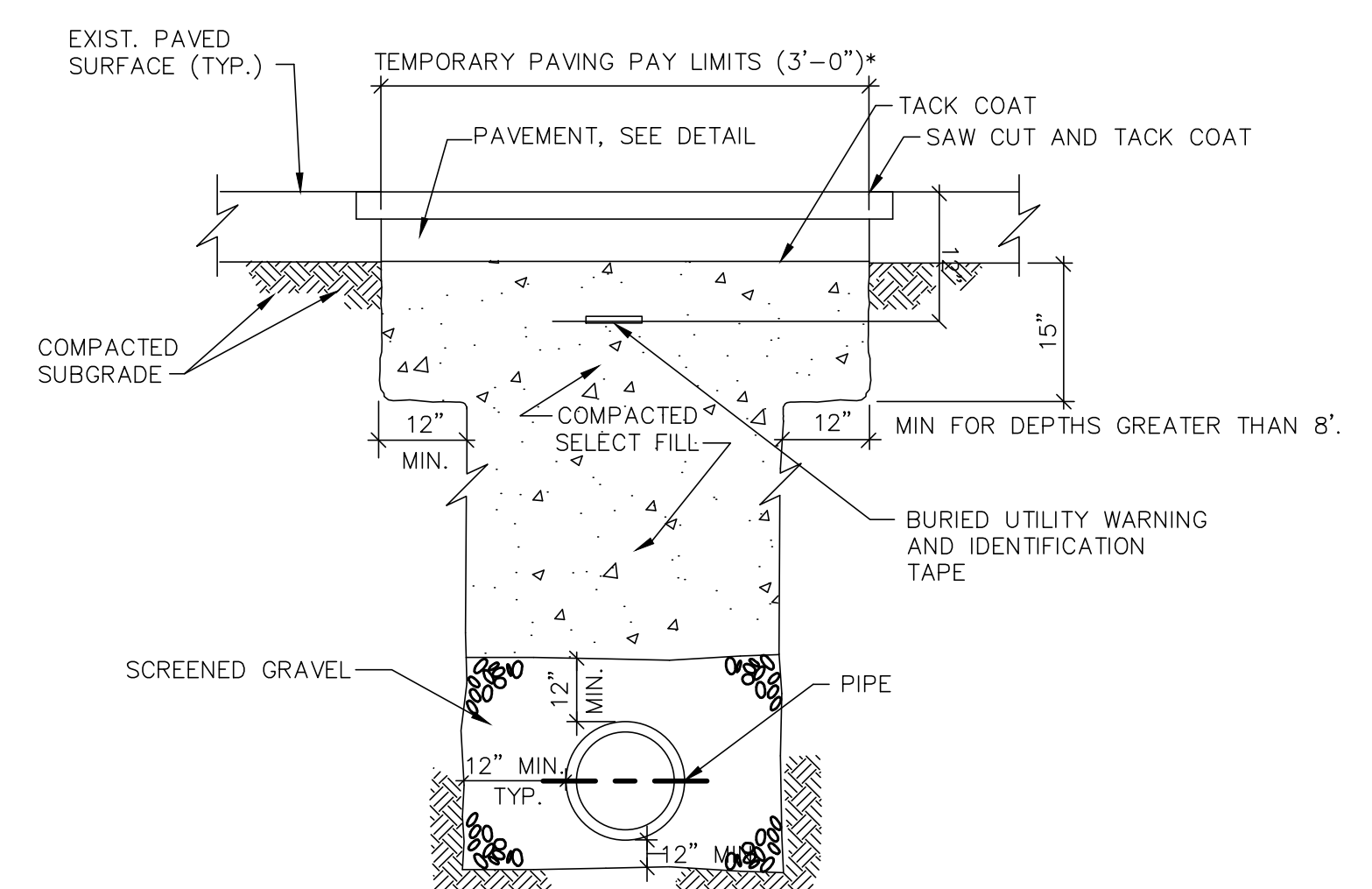
SHEET NO.: 49 OF 66



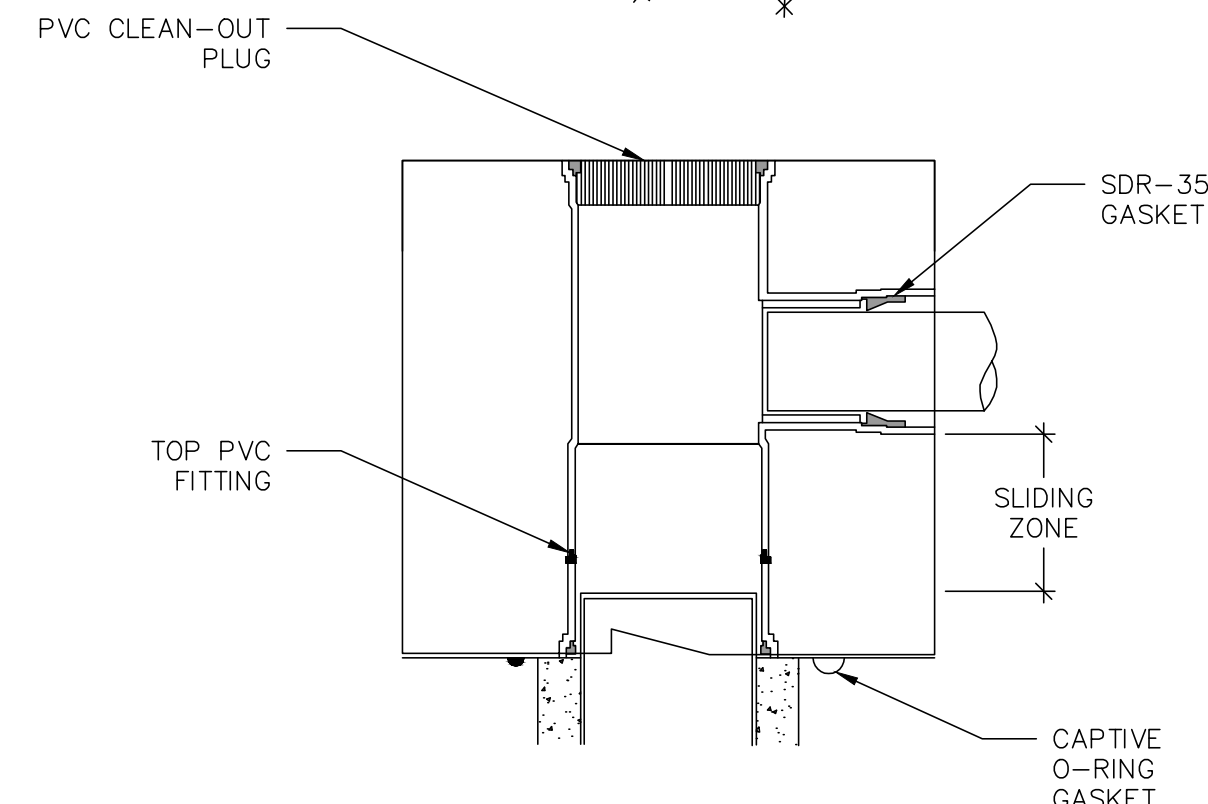
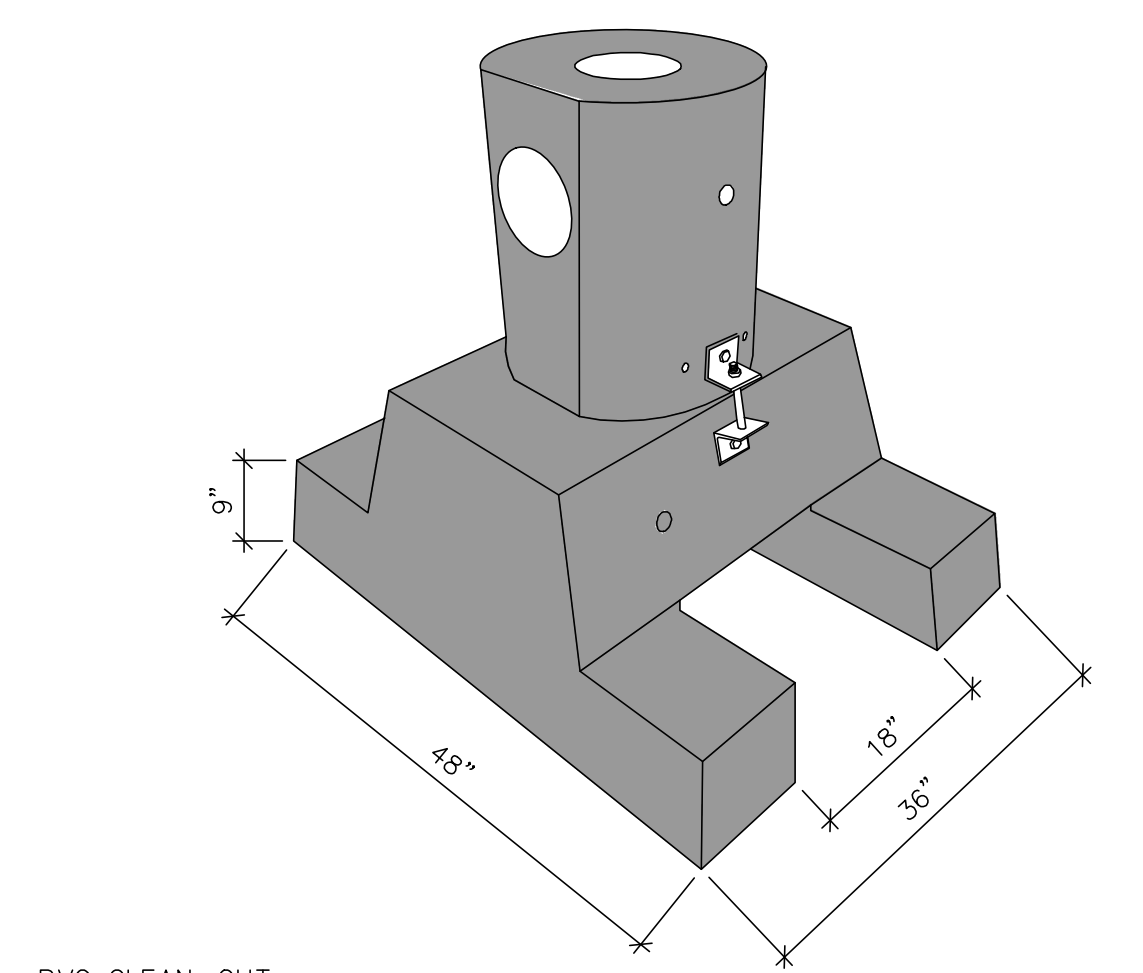
1 STANDARD TYPICAL SEWER POINT REPAIR
C-47 SCALE: NTS



2 SEWER LATERAL CONNECTION DETAIL
C-47 SCALE: NTS

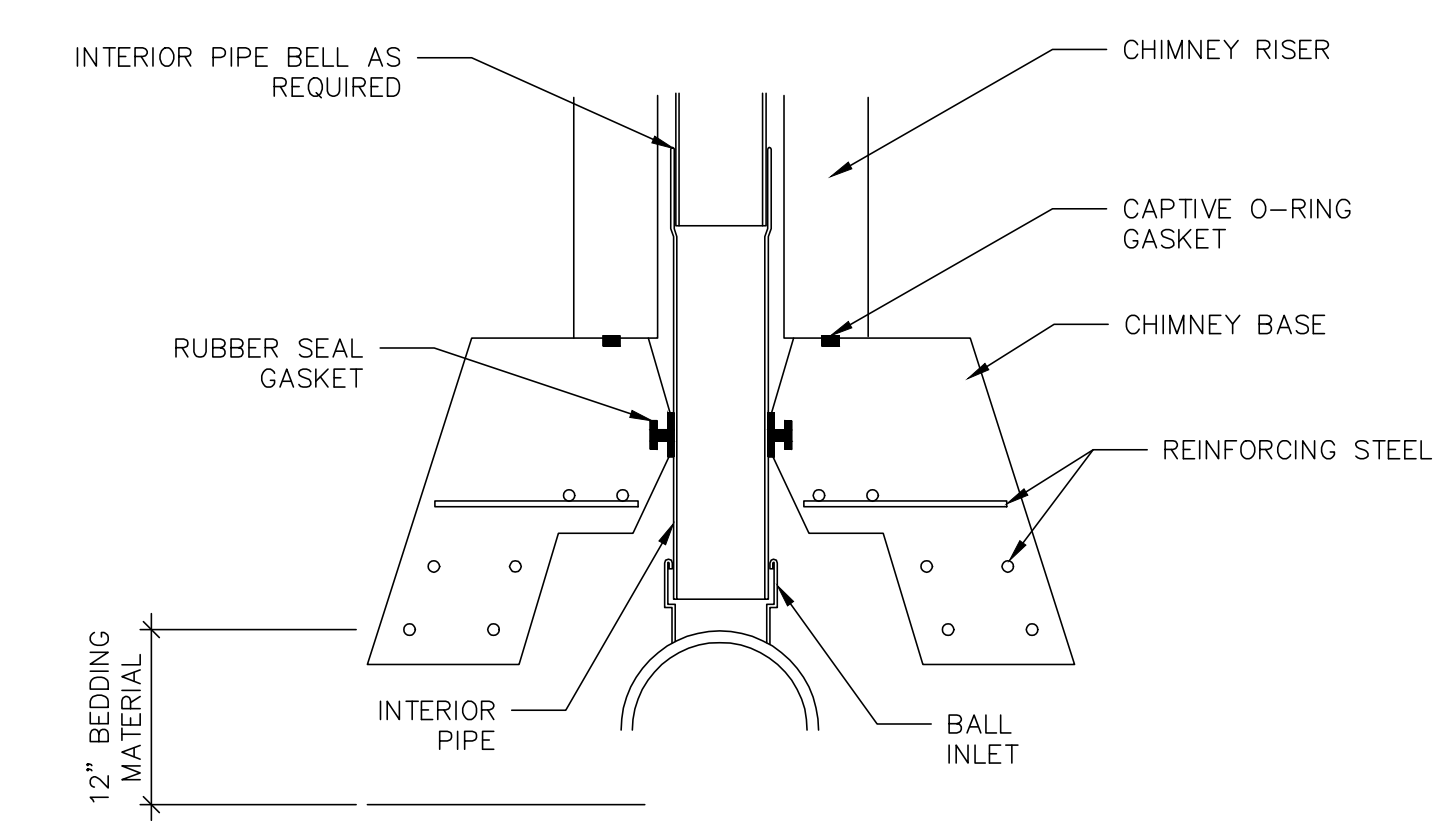
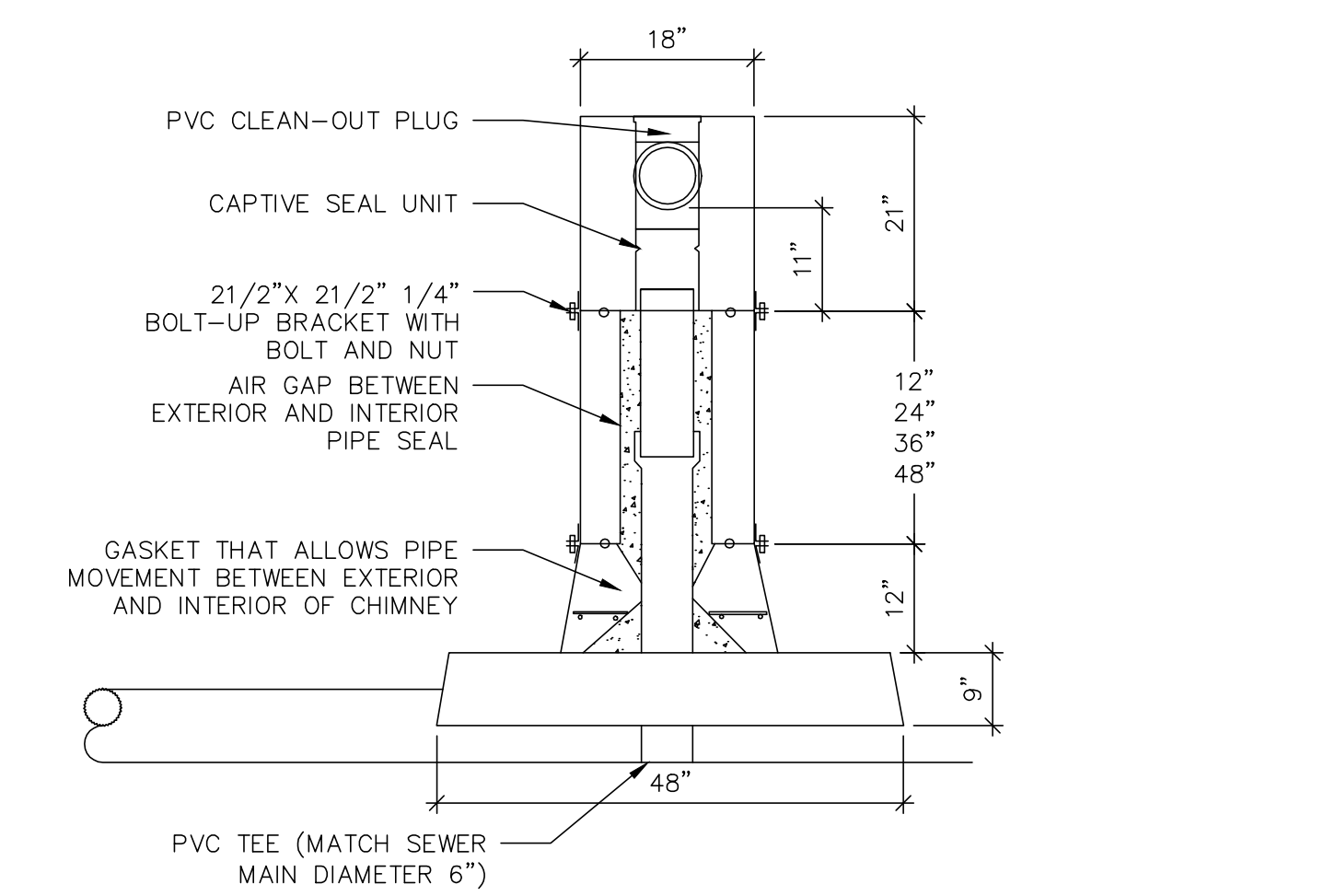


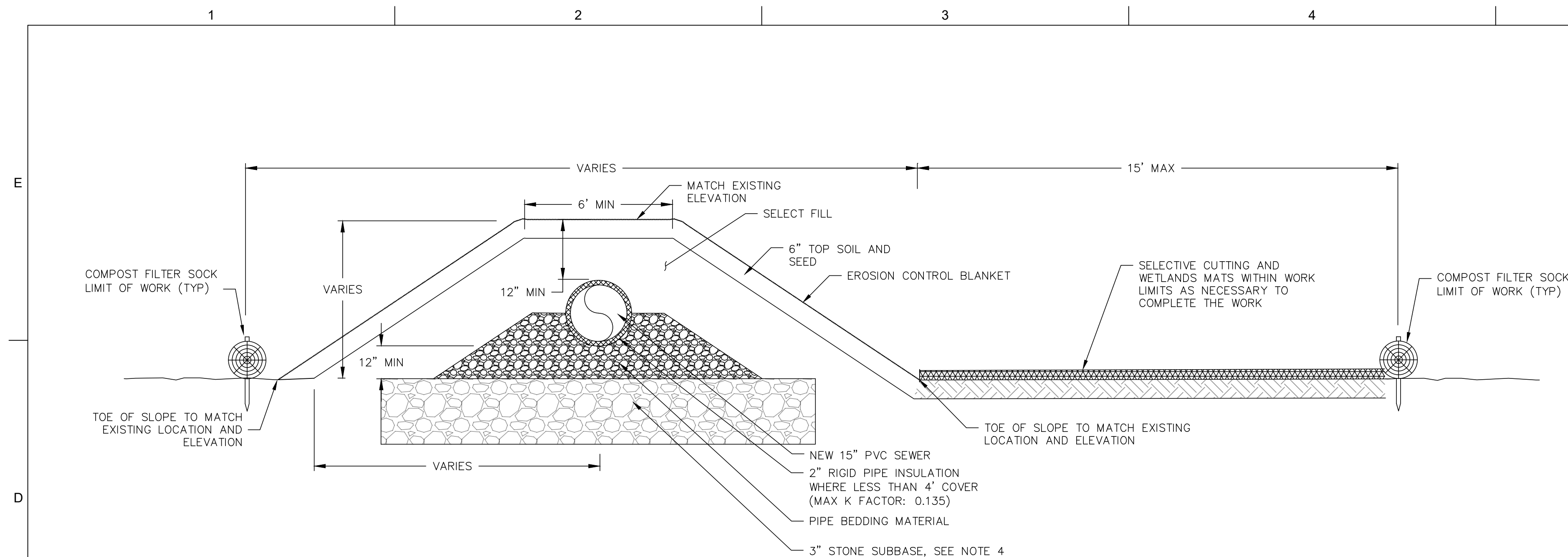
3 TYPICAL TRENCH DETAIL FOR PIPE INSTALLATION
C-47 SCALE: NTS



DESIGN NOTES:
1. CONCRETE - 5000 PSI, 28 DAYS
2. REINFORCING STEEL CONFORMS TO LATEST ASTM A615
3. H=20 DESIGN LOADING PER AASHTO HS-20-44
4. FILL VOID UNDER BRIDGE SECTION WITH CRUSHED STONE TO HEIGHT AND DEPTH NOTED ABOVE

4 SANITARY SEWER CHIMNEY DETAIL
C-47 SCALE: NTS

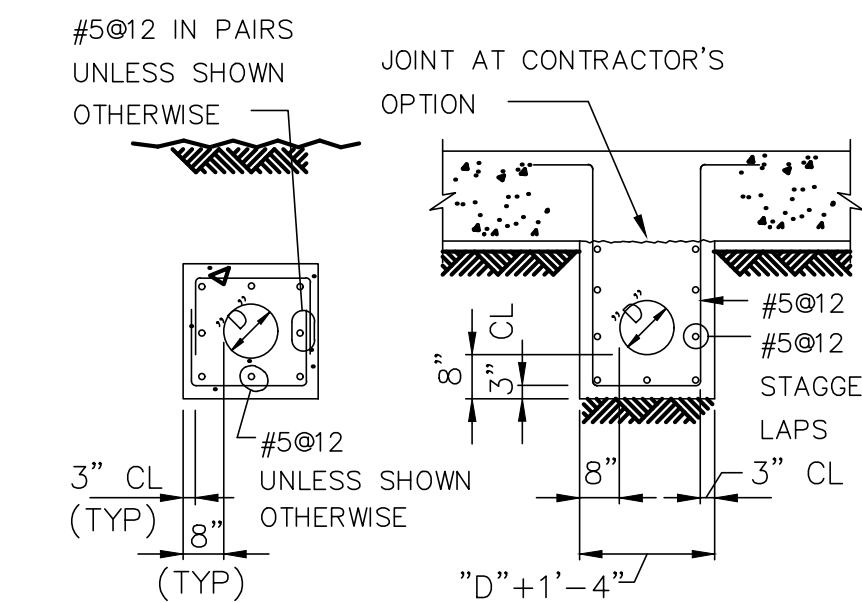




1
C-48
INSULATED AND MOUNDED PIPE INSTALLATION
(MANHOLE SMH 29 TO SMH 32)
SCALE: NTS

NOTES:

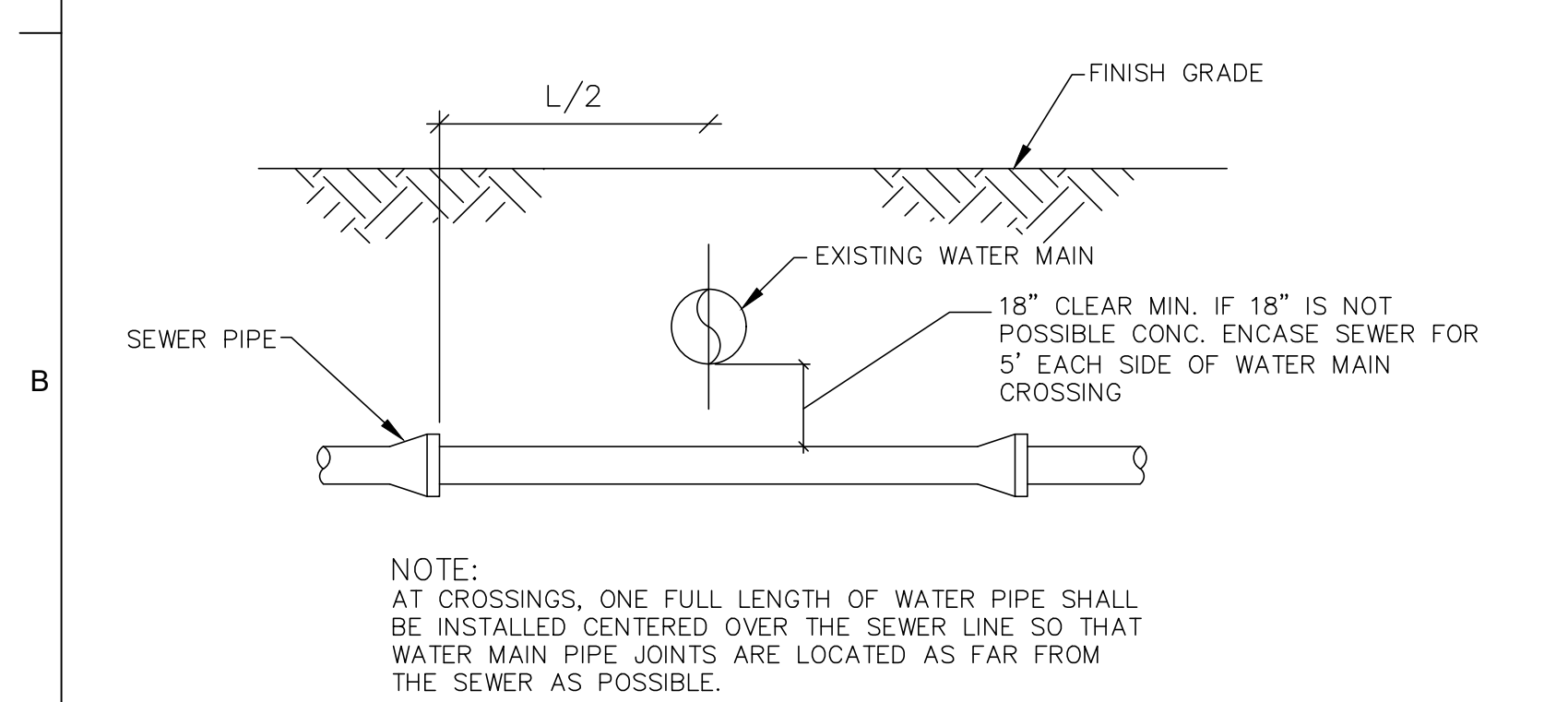
- SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED PLAN, INCLUDING BUT NOT LIMITED TO: A CONSTRUCTION SEQUENCING PLAN AND SCHEDULE, LIMITS OF COMPOST FILTER SOCKS, LIMITS OF SELECTIVE CUTTING, METHOD OF INSTALLATION AND LIMITS OF WETLANDS MATS, TEMPORARY BYPASS PLAN FOR ALL PHASES OF WORK, DEWATERING PLAN, AND SEDIMENTATION AND EROSION CONTROL PLAN.
- REMOVE EXISTING PIPE, SOIL, DEBRIS, BRUSH, TREES, AND ALL OTHER MATERIAL AS NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE PLANS. ALL MATERIAL TO BE REMOVED AND DISPOSED OF OFF SITE.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES. DISTURBED AREAS WITHIN THE LIMITS OF DELINEATED WETLANDS TO BE SEEDED WITH AND APPROVED WETLANDS SEED MIX.
- INSTALL 3" STONE TO DEPTH OF 18" MINIMUM, OR AS NECESSARY TO PROVIDE SUFFICIENT SUBBASE TO PREVENT PIPE SETTLEMENT.



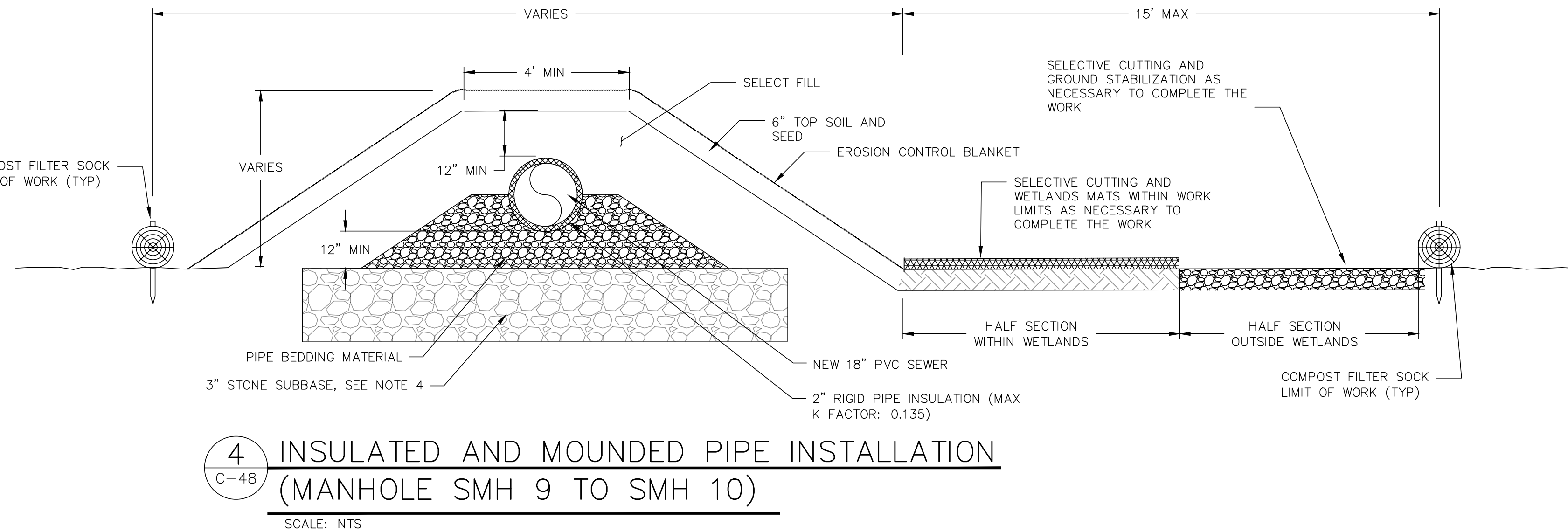
NOTES:

- FOR PIPE SIZE "D" AND ELEVATION SEE SITE DRAWINGS.
- ALL PIPES LOCATED BENEATH BASE SLABS SHALL BE ENCASED IN CONCRETE. UON. EXTEND ENCASEMENT 3'-0" (MIN) BEYOND STRUCTURE.

2
C-48
PIPE ENCASEMENT DETAILS
SCALE: NTS



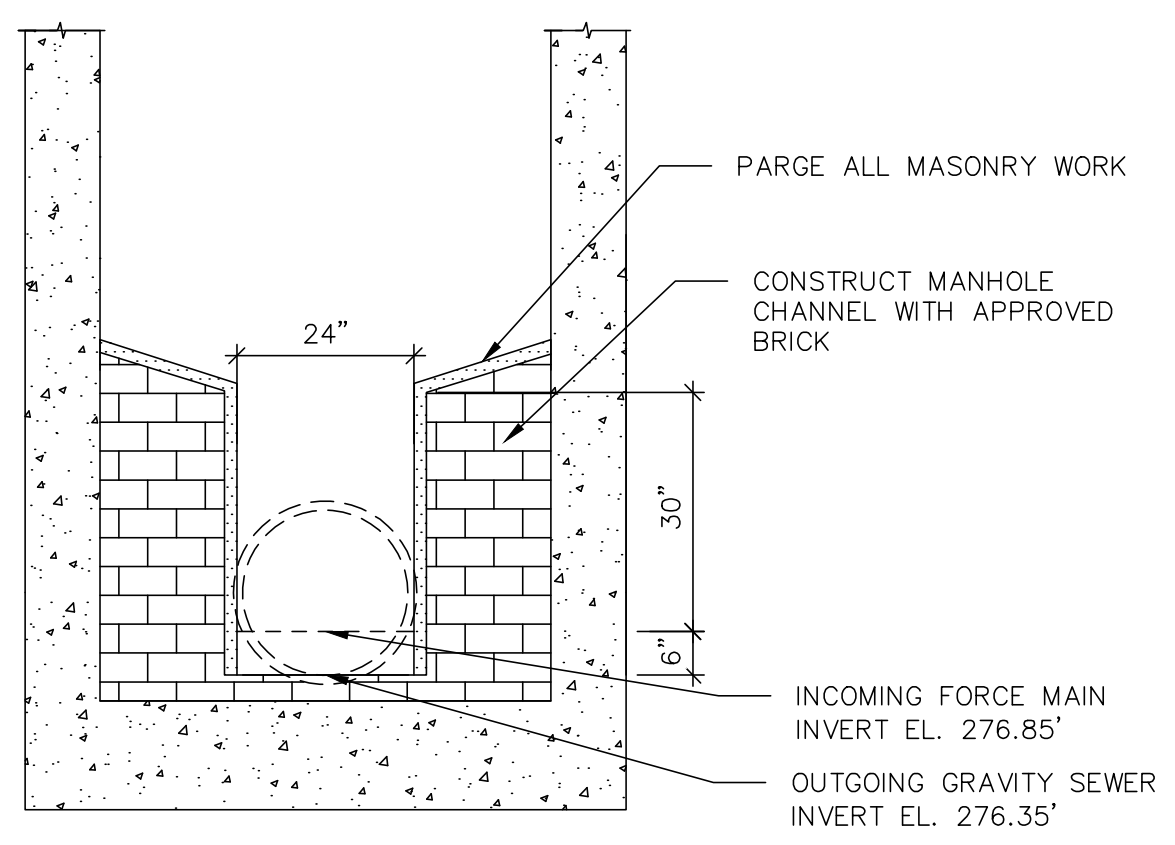
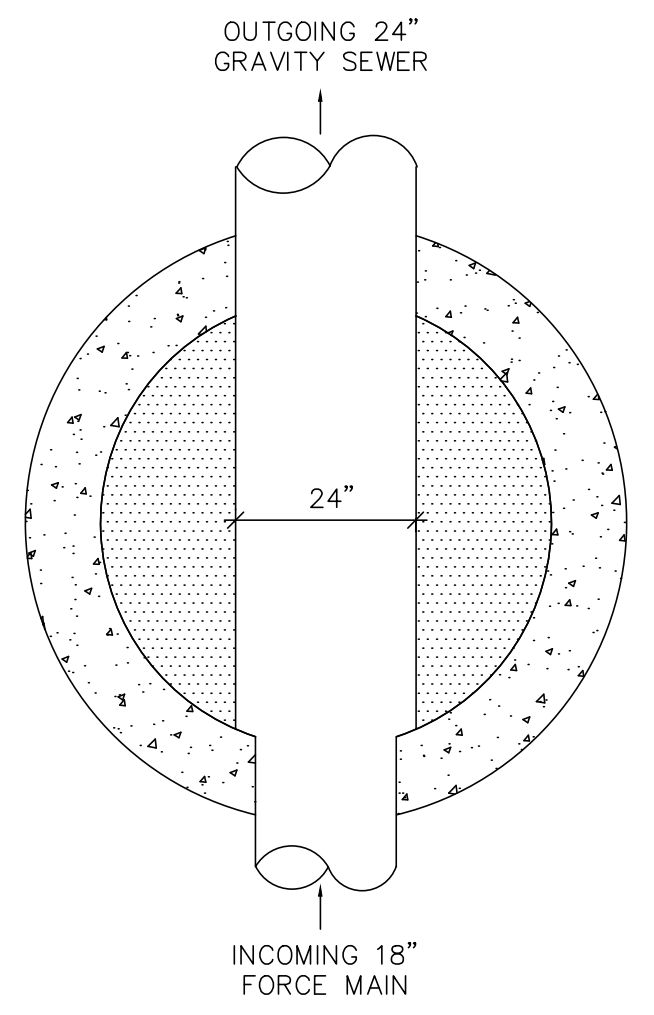
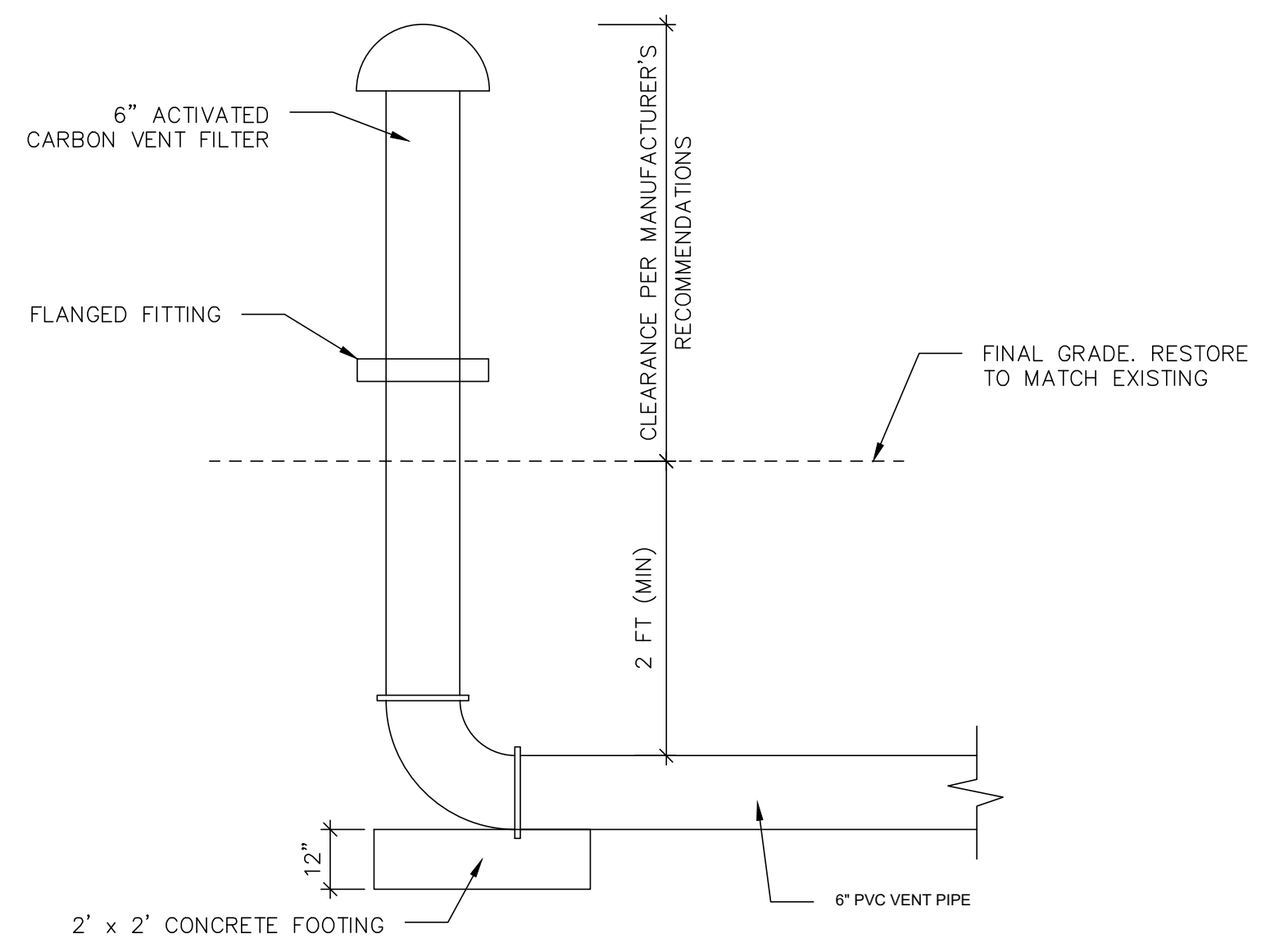
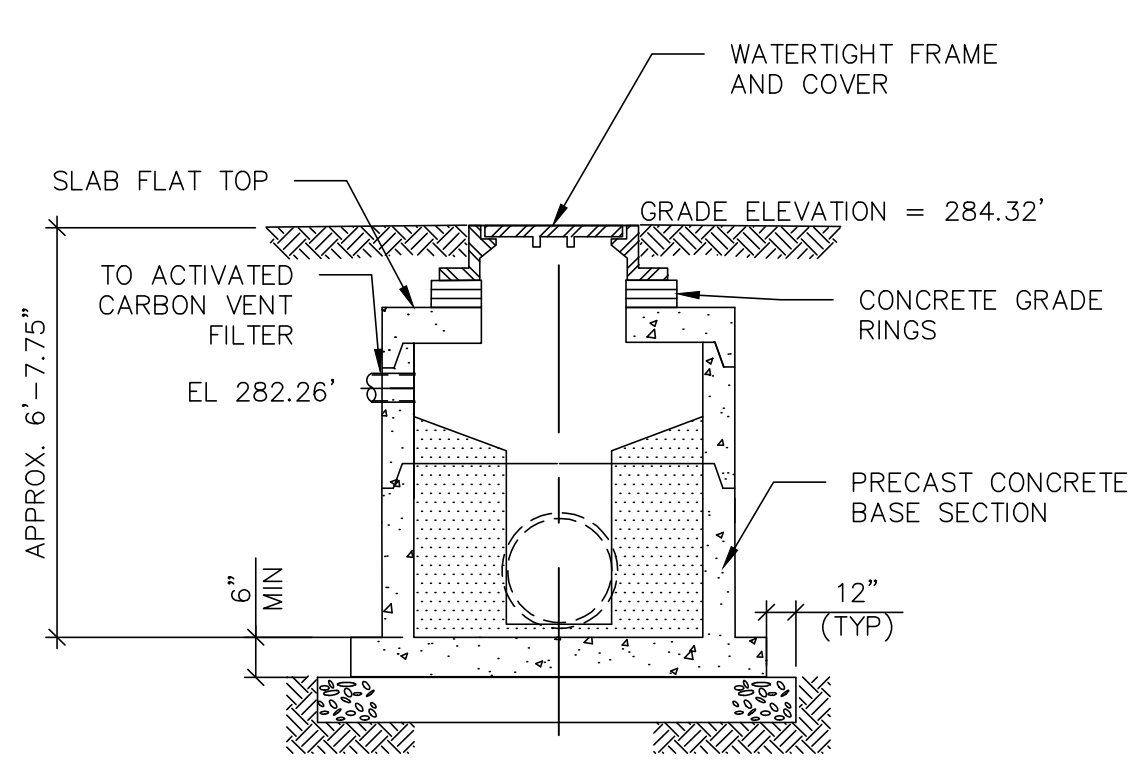
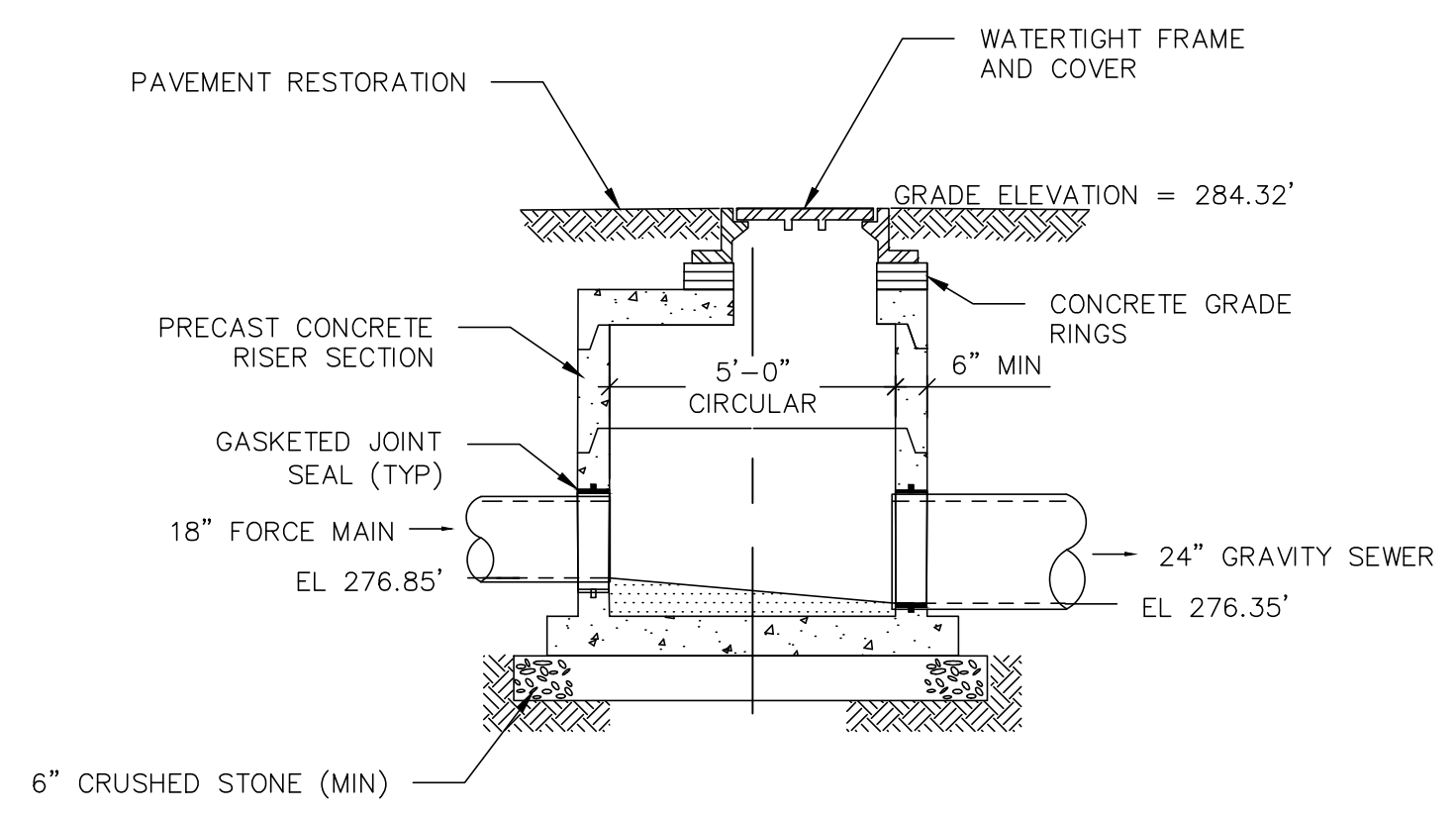
3
C-48
CROSSING INSTALLATION DETAIL SECTION
WATER / SEWER CROSSING DETAIL
SCALE: NTS



4
C-48
INSULATED AND MOUNDED PIPE INSTALLATION
(MANHOLE SMH 9 TO SMH 10)
SCALE: NTS

NOTES:

- SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED PLAN, INCLUDING BUT NOT LIMITED TO: A CONSTRUCTION SEQUENCING PLAN AND SCHEDULE, LIMITS OF COMPOST FILTER SOCKS, LIMITS OF SELECTIVE CUTTING, METHOD AND LIMITS OF GROUND STABILIZATION, LIMITS OF WETLANDS MATS, TEMPORARY BYPASS PLAN FOR ALL PHASES OF WORK, DEWATERING PLAN, AND SEDIMENTATION AND EROSION CONTROL PLAN.
- REMOVE EXISTING PIPE, SOIL, DEBRIS, BRUSH, TREES, AND ALL OTHER MATERIAL AS NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE PLANS. ALL MATERIAL TO BE REMOVED AND DISPOSED OF OFF SITE.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES. DISTURBED AREAS WITHIN THE LIMITS OF DELINEATED WETLANDS TO BE SEEDED WITH AND APPROVED WETLANDS SEED MIX. DISTURBED AREAS OUTSIDE OF THE DELINEATED WETLANDS TO BE SEEDED WITH AN APPROVED WOODLAND SEED MIX.



1 FORCE MAIN DISCHARGE MANHOLE
C-49 SCALE: NTS

- NOTES:
1. CONTRACTOR SHALL DESIGN AND SUBMIT FOR APPROVAL MANHOLE ANTI-FLOATATION FOR ASSUMED GROUNDWATER LEVEL AT GRADE.

2 ACTIVATED CARBON VENT FILTER
C-49 SCALE: NTS

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CONSULTANTS

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SEALS

FRANKLIN, MASSACHUSETTS
TOWN OF FRANKLIN DPW

BSI REPLACEMENT
AND PUMP STATION
DESIGN

CLIENT PROJ. NO. ?

REVISIONS			
NO.	DATE	ISSUED FOR	BY

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DATE: JUNE 2022

PROJECT NO.: 30065216

FILE NAME: C-49

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL

CIVIL DETAILS

SCALE: NTS

C-49

SHEET NO.: 51 OF 66

NO.	DATE	ISSUED FOR	BY

NO.	DATE	ISSUED FOR	BY
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DATE:	JUNE 2022		
PROJECT NO.:	30065216		
FILE NAME:	C-50 TO C-51		
DESIGNED BY:	SPM		
DRAWN BY:	AKR		
CHECKED BY:	SRH/AAG		

SHEET TITLE

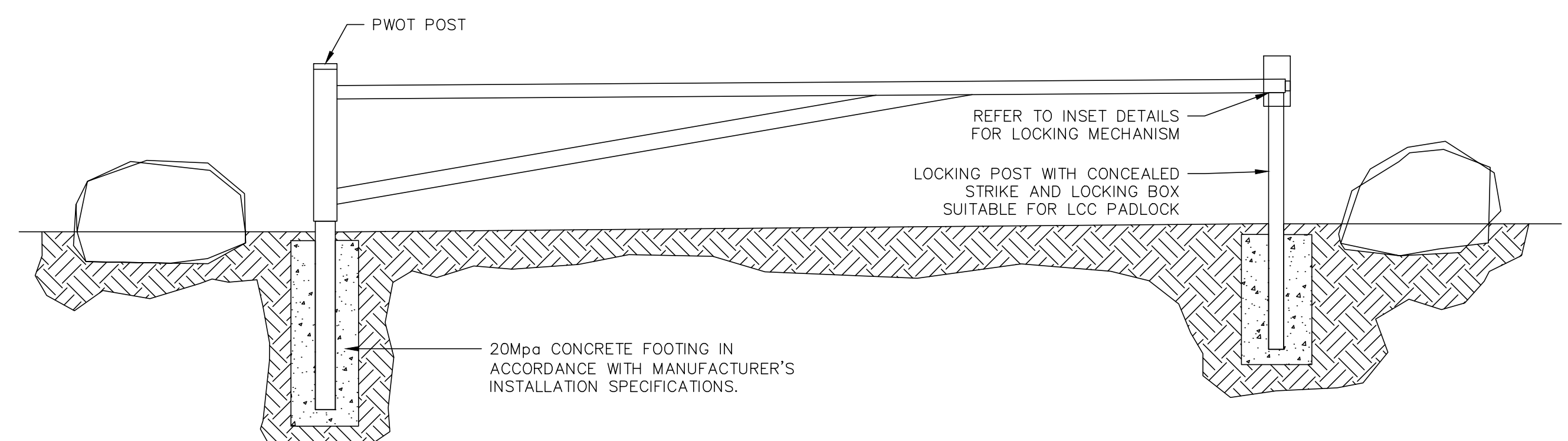
CIVIL

CIVIL DETAILS

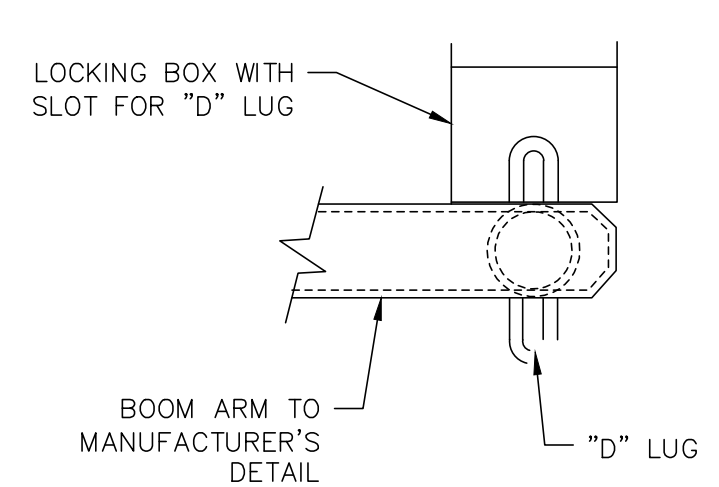
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C-50

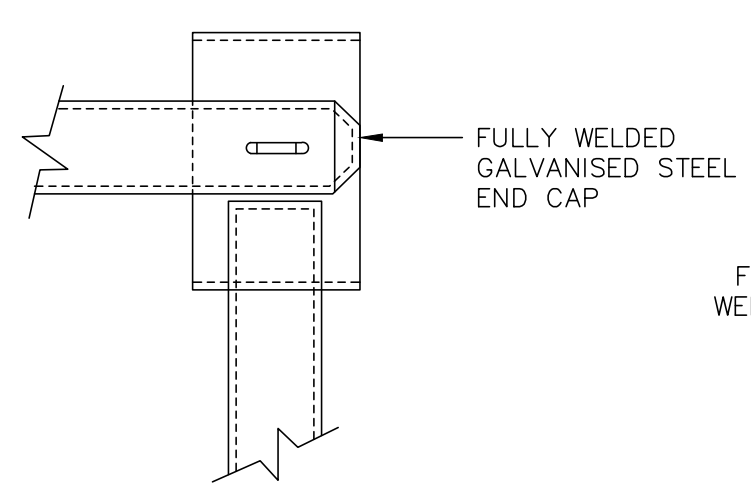
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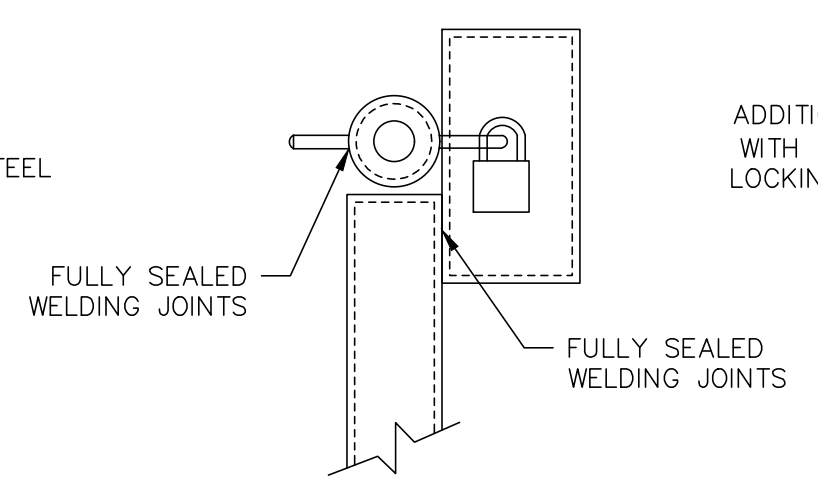
BOOMGATE DETAIL
N.T.S



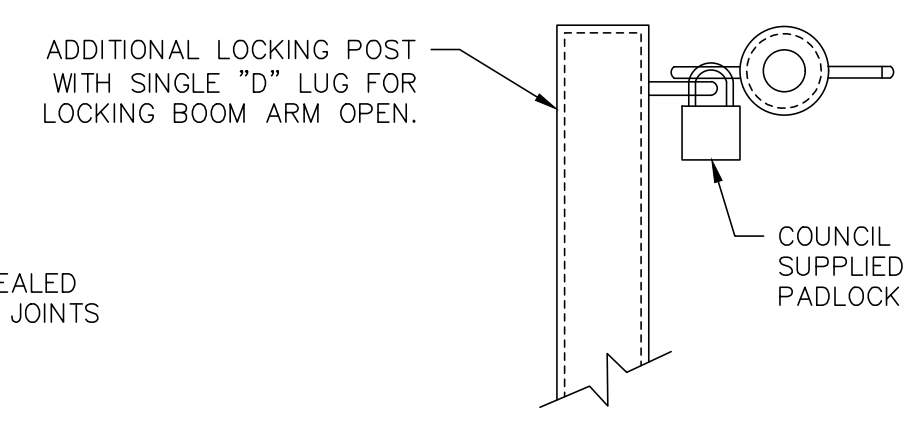
PLAN VIEW
N.T.S



ELEVATION
N.T.S



SIDE VIEW
N.T.S



LOCKING POST
N.T.S

1 BOOM GATE
C-50 SCALE: NTS

1 2 3 4 5 6

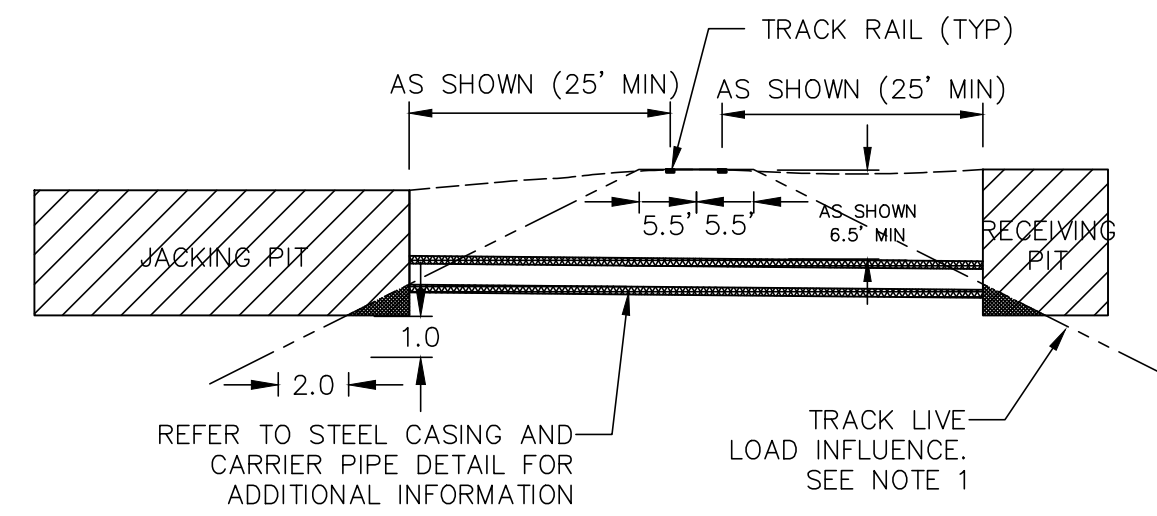
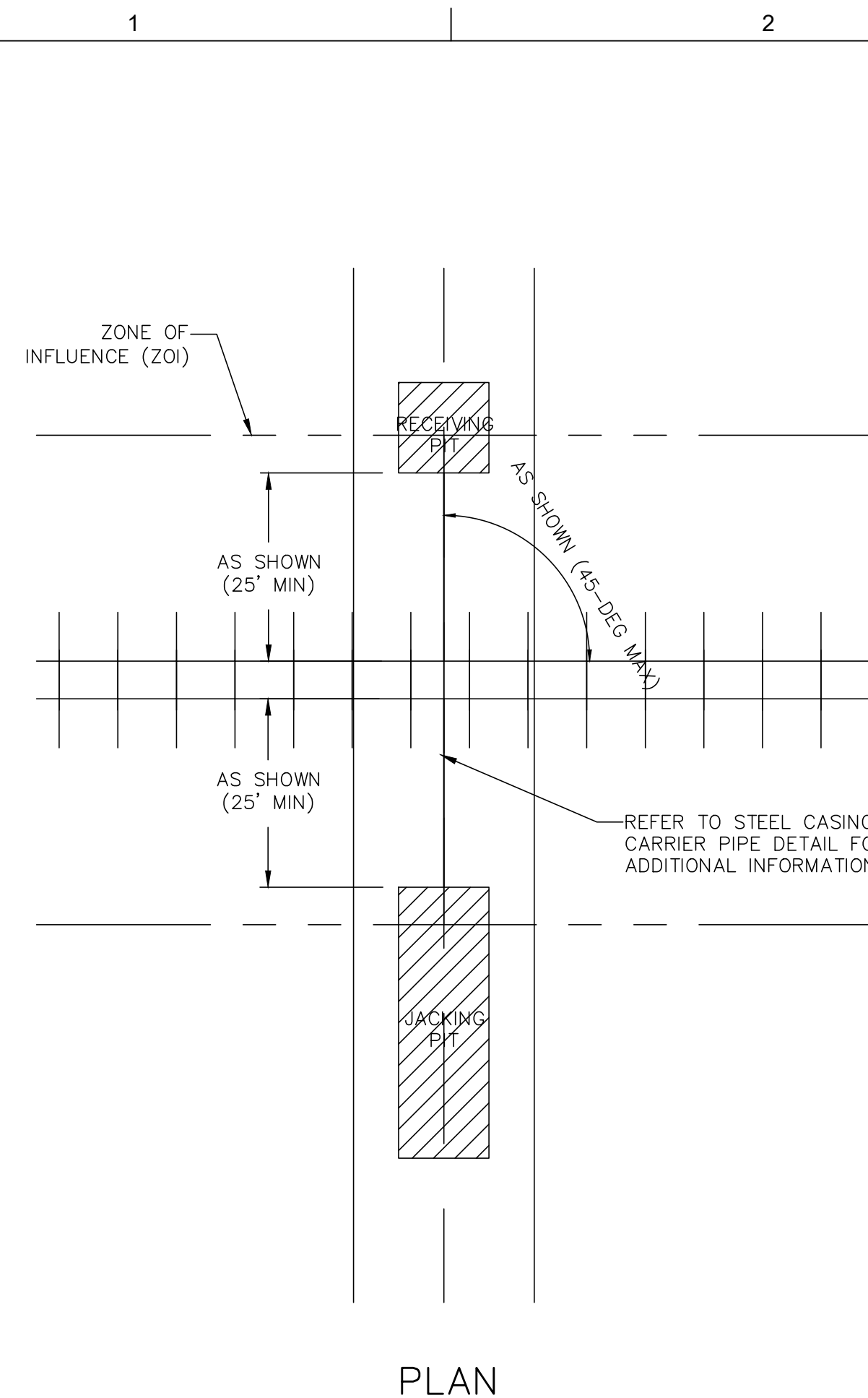
E

D

C

B

A



- NOTES:**
- CONTRACTOR SHALL SUBMIT DESIGN AND DETAILS OF THE JACKING PIT AND RECEIVING PIT COMPLETE WITH COMPUTATIONS PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS FOR APPROVAL BY THE MBTA.
 - JACK AND BORE PITS ARE SHOWN ON THE PLANS ARE FOR PERMITTING PURPOSES ONLY. EXACT LOCATIONS AND DIMENSIONS ARE TO BE DETERMINED BY THE CONTRACTOR. CONTRACTOR SHALL PERFORM TEST PITS AT JACKING AND RECEIVING PITS AS NECESSARY TO DETERMINE SUBSURFACE CONDITIONS FOR COMPLETE DESIGN OF THE JACK AND BORE PITS AND PIPE INSTALLATION.
 - JACK AND BORE PIPE INSTALLATION ACROSS WEST CENTRAL STREET (ROUTE 140) DOES NOT FALL UNDER THE JURISDICTION OF MBTA, HOWEVER ALL OTHER DESIGN, PLANNING, PERMITTING, AND NOTIFICATION REQUIREMENTS STILL APPLY. WEST CENTRAL STREET FALLS UNDER THE JURISDICTION OF MADOT; CONTRACTOR SHALL FOLLOW ALL MADOT REQUIREMENTS AND ALL OTHER AUTHORITIES HAVING JURISDICTION.

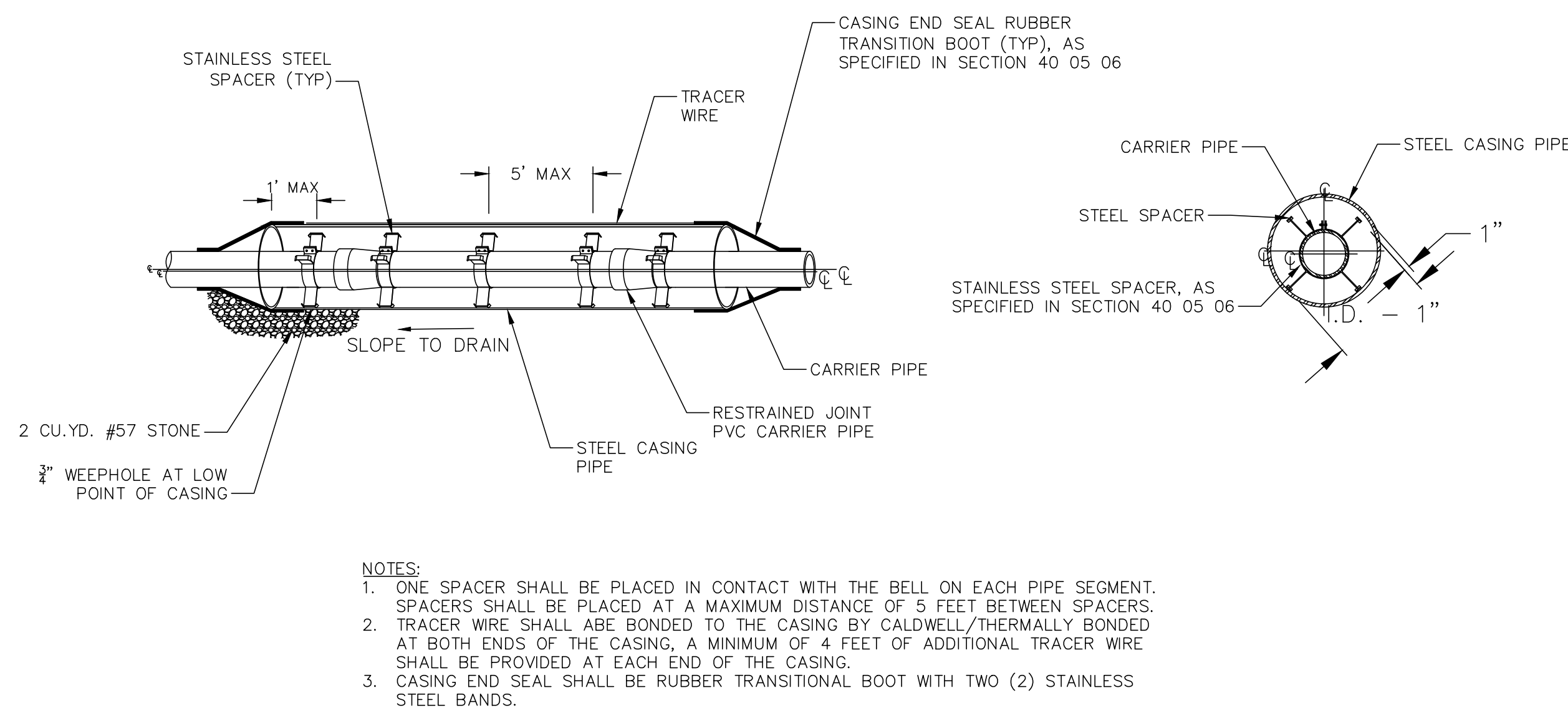
PROFILE

SITE LOCATION	SHEET NO.	APPROX LENGTH OF PIPE INSTALLATION	CASING PIPE DIAMETER (1)	CARRIER PIPE DIAMETER
FISCHER STREET	C-5	95 LINEAR FEET	36-INCH	18-INCH
BEAVER STREET	C-13	120 LINEAR FEET	42-INCH	24-INCH
GROVE STREET	C-31	100 LINEAR FEET	36-INCH	18-INCH
WEST CENTRAL STREET (ROUTE 140)	C-23/C-29	195 LINEAR FEET	16-INCH	8-INCH

(1) CASING PIPE DIAMETERS ARE MINIMUMS AND MAY BE INCREASED AS NECESSARY BASED ON FIELD CONDITIONS. MINIMUM CLEARANCE FROM THE TOP OF CASING PIPE TO TRACKS SHALL NOT EXCEED MINIMUM SEPARATION AS DESCRIBED IN THE PIPELINE OCCUPANCY SPECIFICATIONS FOR THE MBTA RAILROAD OPERATIONS DIRECTORATE.

1 JACK AND BORE PIPE INSTALLATION

C-51 SCALE: NTS



- NOTES:**
- ONE SPACER SHALL BE PLACED IN CONTACT WITH THE BELL ON EACH PIPE SEGMENT. SPACERS SHALL BE PLACED AT A MAXIMUM DISTANCE OF 5 FEET BETWEEN SPACERS.
 - TRACER WIRE SHALL BE BONDED TO THE CASING BY CALDWELL/THERMALLY BONDED AT BOTH ENDS OF THE CASING, A MINIMUM OF 4 FEET OF ADDITIONAL TRACER WIRE SHALL BE PROVIDED AT EACH END OF THE CASING.
 - CASING END SEAL SHALL BE RUBBER TRANSITIONAL BOOT WITH TWO (2) STAINLESS STEEL BANDS.

2 STEEL CASING PIPE AND CARRIER PIPE

C-51 SCALE: NTS

- MBTA NOTES:**
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND ABIDING ALL REQUIRED MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (MBTA) AND COMMUTER RAIL OPERATOR PERMITS, LICENSES, AND TRAINING REQUIREMENTS FOR ALL WORK SHOWN ON THE CONTRACT DRAWINGS UNDER THE JURISDICTION OF MBTA AND COMMUTER RAIL OPERATOR.
 - PRE-CONSTRUCTION SURVEY: CONTRACTOR SHALL RETAIN THE SERVICES OF A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS WITH EXPERIENCE IN PERFORMING CONDITION ASSESSMENT SURVEYS TO COMPLETE THE PRE-CONSTRUCTION SURVEY AND PREPARE A SURVEY REPORT. THE PRE-CONSTRUCTION SURVEY SHALL DOCUMENT ALL ASPECTS OF EACH ASSET'S CONDITION THROUGH OBSERVATIONS, FIELD MEASUREMENTS, SKETCHES, PHOTOGRAPHS, VIDEO, LIDAR AND/OR ANY OTHER METHODS OF DATA COLLECTION AS DETERMINED TO BE APPROPRIATE. THE PRE-CONSTRUCTION SURVEY SHALL BE PERFORMED SUCH THAT IT CAN BE REPRODUCED AND COMPARED TO A POST-CONSTRUCTION SURVEY. A PRE-CONSTRUCTION SURVEY PLAN, INCLUDING THE LIMITS OF DATA COLLECTION AND DATA COLLECTION METHODOLOGIES SHALL BE SUBMITTED TO THE MBTA'S CAPITAL DELIVERY PROJECT OFFICE (COLLECTIVELY REFERRED TO HEREIN AS "PROJECT OFFICE") FOR APPROVAL IN ADVANCE OF INITIATING A SURVEY. SCHEDULING OF PRE-CONSTRUCTION SURVEYS SHALL BE COORDINATED WITH THE PROJECT OFFICE AND SHALL BE PERFORMED UNDER THE OBSERVATION OF AN MBTA ENGINEER. THE PRE-CONSTRUCTION SURVEY SHALL ALSO CONSIST OF THE COLLECTION OF DATA INCLUDING UNDERLYING SOIL CONDITIONS AND ASSET INFORMATION SUCH AS AGE, FOUNDATION TYPE, AND STRUCTURAL FRAMING TYPE. UNDERLYING SOIL CONDITIONS SHALL BE COLLECTED FROM AVAILABLE EXISTING BORING DATA OR THROUGH THE PERFORMANCE OF ADDITIONAL SOIL BORING INVESTIGATION. EXISTING BORING DATA IS AVAILABLE AS AN ATTACHMENT TO THE CONTRACT SPECIFICATIONS. ASSET INFORMATION SHALL BE COLLECTED BY REQUESTING AS-BUILT DRAWINGS FROM THE MBTA'S DOCUMENT CONTROL DEPARTMENT (RXCROTEAU@MBTA.COM). A PRE-CONSTRUCTION SURVEY REPORT SHALL BE GENERATED WHICH COMPILES ALL DOCUMENTATION COLLECTED. THE REPORT SHALL BE SUBMITTED TO THE PROJECT OFFICE FOR REVIEW AND MUST BE APPROVED PRIOR TO THE BEGINNING OF WORK.
 - INSTRUMENTATION AND MONITORING PLAN - AN INSTRUMENTATION AND MONITORING PLAN SHALL BE DESIGNED BASED ON THE PRECONSTRUCTION SURVEY, THE SOIL INVESTIGATION REPORT, ASSET CHARACTERISTICS, AND THE PROPOSED WORK. INSTRUMENTATION MAY INCLUDE INCLINOMETERS, EXTENSOMETERS, PIEZOMETERS, SEISMOGRAPHS, GEOPHONES, ACCELEROMETERS, TILT BEAMS, OBSERVATION WELLS, CRACK GAUGES, TOTAL STATION SURVEYS, NOISE MONITORS, OR OTHER DEVICE TYPES AS DETERMINED TO BE APPROPRIATE AND APPROVED BY THE MBTA. WHERE DEWATERING MAY CAUSE CHANGES IN THE GROUND WATER LEVEL ADJACENT TO MBTA ASSETS, THE EFFECTS OF SUCH CHANGES SHALL BE INVESTIGATED, PROVISIONS SHALL BE MADE TO PREVENT NEGATIVE IMPACTS, AND GROUNDWATER LEVELS SHALL BE MONITORED AND REPORTED. WHERE WORK HAS THE POTENTIAL TO IMPACT TRACK STRUCTURE, THE APPLICABLE TRACK DEPARTMENT (COMMUTER RAIL/TRANSIT) SHALL BE CONSULTED WITH DURING THE DEVELOPMENT OF THE INSTRUMENTATION AND MONITORING PLAN. THE INSTRUMENTATION AND MONITORING PLAN SHALL BE PREPARED BY A LICENSED ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS AND SUBMITTED TO THE PROJECT OFFICE FOR REVIEW AND APPROVAL PRIOR TO THE BEGINNING OF WORK. ALL INSTRUMENTATION AND MONITORING PLANS SHALL INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING COMPONENTS:
 - NARRATIVE INCLUDING PROJECT DESCRIPTION, DESCRIPTION OF ADJACENT ASSETS, SEQUENCE OF WORK, AND WORK METHODOLOGIES.
 - DESCRIPTION OF UNDERLYING SOIL CONDITIONS, SOIL PROFILE, AND SOIL BORING DATA.
 - FINDINGS OF THE PRE-CONSTRUCTION SURVEY REPORT.
 - PLANS AND SECTIONS TO SCALE DETAILING THE PROXIMITY OF THE PROPOSED WORK TO EXISTING ASSETS AND PROPOSED LOCATIONS OF INSTRUMENTATION.
 - TECHNICAL DATA FOR PROPOSED INSTRUMENTATION INCLUDING TOLERANCES, RANGES, CALIBRATION REQUIREMENTS, DIMENSIONS, OUTPUTS, POWER REQUIREMENTS, OPERATING TEMPERATURES, ETC. ALL INSTRUMENTATION LOCATED IN VIEW OF MBTA CUSTOMERS, PERSONNEL, OR THE GENERAL PUBLIC SHALL BE CLEARLY LABELED WITH CONTACT INFORMATION OF THE MONITORING CONTRACTOR.
 - DEPLOYMENT PLAN, INCLUDING MOUNTING DETAILS WHEN FIXING EQUIPMENT TO EXISTING STRUCTURES. SURVEY MONITORING POINTS SHALL BE SECURELY ESTABLISHED OR MARKED USING NAILS, PAINT, KEEL CRAYON, OR OTHER APPROVED METHODS. IF TEMPORARY POWER MUST BE PROVIDED VIA MBTA FACILITIES, AN ELECTRICAL PLAN SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE MBTA ELECTRICAL INSPECTOR.
 - MONITORING PLAN, INCLUDING SCHEDULE, FREQUENCY, AND THRESHOLD & LIMITING CRITERIA FOR EACH PIECE OF EQUIPMENT OR MONITORING POINT. MONITORING SHALL BE SCHEDULED SUCH THAT SUFFICIENT BASELINE DATA CAN BE COLLECTED PRIOR TO THE START OF THE WORK. THRESHOLD AND LIMITING CRITERIA SHALL BE ESTABLISHED ON AN ASSET-BY-ASSET BASIS, TAKING INTO CONSIDERATION DATA COLLECTED THROUGH THE PRECONSTRUCTION SURVEY, SOILS INVESTIGATIONS, AND EXISTING PLAN REVIEW; AS WELL AS THE PROPOSED WORK AND ITS PROXIMITY TO EXISTING ASSETS. THRESHOLD AND LIMITING VALUES SHALL BE SET SUCH THAT THEY IDENTIFY UNEXPECTED BEHAVIOR, WHICH COULD BE AN INDICATION OF POOR PERFORMANCE OR THE DEVELOPMENT OF AN UNIDENTIFIED FAILURE MODE AND ALLOW FOR INTERVENTION PRIOR TO UNACCEPTABLE MOVEMENTS, DAMAGE, OR FAILURE. IN AREAS WHERE ACCESS TO THE MONITORING LOCATION REQUIRES FREQUENT MBTA RESOURCES, SUCH AS FLAGGING, REMOTE OR AUTOMATED MONITORING METHODS SHALL BE REQUIRED. IN LOCATIONS WHERE THE WORK HAS THE POTENTIAL TO AFFECT THE SAFETY OF MBTA CUSTOMERS, EMPLOYEES, AND OR OPERATIONS DURING REVENUE HOURS, REAL-TIME MONITORING SHALL BE REQUIRED.
 - PROPOSED MITIGATION PLAN IN THE EVENT THAT EITHER THRESHOLD OR LIMITING VALUES ARE EXCEEDED. AT A MINIMUM, THE FOLLOWING REQUIREMENTS SHALL BE INCLUDED:
 - SHOULD EITHER A THRESHOLD OR LIMITING VALUE BE EXCEEDED, THE PROJECT OFFICE SHALL BE NOTIFIED BY PHONE IMMEDIATELY AND THE ENGINEER OF RECORD SHALL PREPARE A DRAFT MONITORING EXCEEDANCE FINDINGS MEMO WHICH INCLUDES THE FOLLOWING CONTENT:
 - DATE AND TIME OF THE EXCEEDANCE(S);
 - LOCATION AND DESCRIPTION OF THE INSTRUMENTATION WHICH MEASURED THE EXCEEDANCE(S);
 - DESCRIPTION OF THE ASSET TO WHICH THE EQUIPMENT MEASURING THE EXCEEDANCE(S) IS MONITORING AND ITS RELATION TO MBTA OPERATIONS;
 - MEASURED VALUE(S) COMPARED TO THRESHOLD AND LIMITING VALUES;
 - DESCRIPTION OF THE WORK IN THE VICINITY OF THE EXCEEDANCE(S) WHICH OCCURRED IN THE WEEKS, DAYS, AND HOURS LEADING UP TO THE EXCEEDANCE(S);
 - DESCRIPTION OF THE SITE CONDITIONS IN THE VICINITY OF THE EXCEEDANCE(S);
 - THE PROJECT'S INSTRUMENTATION AND MONITORING PLAN AS AN ATTACHMENT. THE ENGINEER OF RECORD SHALL COMPLETE ALL NECESSARY INVESTIGATIONS AND ASSESSMENTS AS SOON AS POSSIBLE AND SUBMIT TO THE PROJECT OFFICE A FINAL MONITORING EXCEEDANCE FINDINGS MEMO INCLUDING THE FOLLOWING ADDITIONAL CONTENT:
 - FINDINGS OF RESPONSE INVESTIGATIONS AND ASSESSMENTS;
 - LIKELY CAUSES OF THE EXCEEDANCE(S);
 - STEPS TO BE TAKEN BY THE PROJECT TO MITIGATE THE EXCEEDANCE(S);
 - STEPS TO BE TAKEN BY THE PROJECT SHOULD LIMITING VALUES, OR CONTINUED EXCEEDANCE(S) BEYOND THE LIMITING VALUES BE REALIZED; AND
 - PROPOSED IMPROVEMENTS TO THE MONITORING PLAN.
 - SHOULD A LIMITING VALUE BE EXCEEDED, THE PROJECT SHALL IMMEDIATELY CEASE ALL WORK AND IMPLEMENT THE ACCEPTED PLAN FOR ARRESTING FURTHER EXCEEDANCES.
 - EMERGENCY CONTACT LIST AND PROPOSED COMMUNICATION PLAN. AT LEAST TWO MBTA EMPLOYEES FROM THE PROJECT OFFICE SHALL BE INCLUDED IN THE EMERGENCY CONTACT LIST. IT SHALL BE THE PROJECT OFFICE'S RESPONSIBILITY TO IMMEDIATELY COMMUNICATE EXCEEDANCES OF THRESHOLD VALUES, LIMITING VALUES, AND/OR OTHER UNSAFE CONDITIONS TO A PREDETERMINED LIST OF MBTA STAKEHOLDER DEPARTMENT CONTACTS. THE INITIAL COMMUNICATION TO MBTA STAKEHOLDERS SHALL INCLUDE A DESCRIPTION OF THE EXCEEDANCE (I.E. TIME, LOCATION/SERVICE LINE, MEASURED VALUES COMPARED TO LIMITING AND THRESHOLD VALUES) AND THE STEPS BEING TAKEN BY THE PROJECT TO RESPOND. THIS SHALL BE FOLLOWED WITH DISTRIBUTION OF THE ENGINEER OF RECORD'S MONITORING EXCEEDANCE FINDINGS MEMOS AS SOON AS THEY BECOME AVAILABLE.
 - POST CONSTRUCTION SURVEY - AFTER THE COMPLETION OF WORK WHICH HAS THE POTENTIAL TO IMPACT MBTA-OWNED INFRASTRUCTURE AND/OR OPERATIONS, A POST-CONSTRUCTION SURVEY SHALL BE COMPLETED BY THE SAME FIRM WHO PERFORMED THE PRE-CONSTRUCTION SURVEY. THE POST-CONSTRUCTION SURVEY SHALL RECREATE ALL MEASUREMENTS AND DOCUMENTATION ESTABLISHED IN THE PRE-CONSTRUCTION SURVEY AND SHALL INCLUDE A COMPARATIVE ANALYSIS. ANY DISCREPANCIES FOUND AND/OR DAMAGES NOT PREVIOUSLY DOCUMENTED SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE PROJECT OFFICE. SUCH INSTANCES WILL REQUIRE A ROOT CAUSE ANALYSES AND MAY REQUIRE ADDITIONAL MONITORING. ANY DAMAGES FOUND TO BE THE RESULT OF THE WORK SHALL BE REPAIRED BY, AND AT THE SOLE COST, OF THE CONTRACTOR TO THE SATISFACTION OF THE PROJECT OFFICE. THE POST-CONSTRUCTION SURVEY REPORT SHALL BE PREPARED BY A LICENSED ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS SUBMITTED TO THE PROJECT OFFICE FOR REVIEW AND APPROVAL PRIOR TO PROJECT CLOSE-OUT.
 - CONTRACTOR TO SUBMIT MBTA LICENSE FOR ENTRY IN ACCORDANCE WITH SECTION 1.02 OF THE PIPELINE OCCUPANCY SPECIFICATIONS FOR THE MBTA RAILROAD OPERATIONS DIRECTORATE.
 - CONTRACTOR SHALL SUBMIT FOURTEEN (14) DAYS ADVANCE WRITTEN NOTICE PRIOR TO THE START OF ALL ASPECTS OF THE WORK TO MBTA, COMMUTER RAIL OPERATOR, OWNER AND ENGINEER. WORK SHALL BE PERFORMED 24 HOURS PER DAY AND 7 DAYS PER WEEK, WHEN REQUIRED BY MBTA OR MBTA COMMUTER RAIL OPERATOR.
 - CONTRACTOR SHALL COORDINATE WORK IN ACCORDANCE WITH SECTION 1.04 OF THE PIPELINE OCCUPANCY SPECIFICATIONS FOR THE MBTA RAILROAD OPERATIONS DIRECTORATE.
 - CONTRACTOR TO EXECUTE THE MBTA PIPELINE OCCUPANCY AGREEMENT IN ACCORDANCE WITH SECTION 2.01 OF THE PIPELINE OCCUPANCY SPECIFICATIONS FOR THE MBTA RAILROAD OPERATIONS DIRECTORATE.
 - CONTRACTOR SHALL COMPLY WITH THE PIPELINE OCCUPANCY SPECIFICATIONS FOR THE MBTA RAILROAD OPERATIONS DIRECTORATE FOR USE OF TEMPORARY FACILITIES ON SITE, INCLUDING BUT NOT LIMITED TO SANITARY FACILITIES, LIGHTING AND POWER, TEMPORARY WATER, TEMPORARY TRAFFIC CONTROLS, TEMPORARY WORK AND STORAGE AREAS, POLLUTION ABATEMENT CONTROLS, AND VERMIN CONTROL. CONTRACTOR SHALL COMPLY WITH ALL OTHER REQUIREMENTS IN THE MBTA RAIL OPERATIONS DIRECTORATE INCLUDING, BUT NOT LIMITED TO, RUBBISH AND DEBRIS REMOVAL, GROUND STABILIZATION DURING WORK, GEOTECHNICAL MONITORING, DEWATERING OPERATIONS, AND DRAINAGE OF STORMWATER WHILE WORKING ON THE SITE.



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CONSULTANTS

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SEALS

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TOWN OF FRANKLIN DPW

BSI REPLACEMENT
AND PUMP STATION
DESIGN

CLIENT PROJ. NO. ?

REVISIONS

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DATE: JUNE 2022

PROJECT NO.: 30065216

FILE NAME: C-50 TO C-51

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

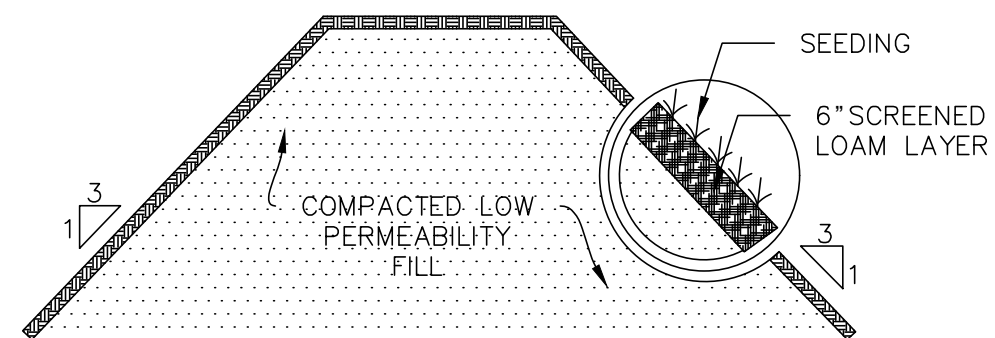
CIVIL

CIVIL DETAILS

SCALE: NTS

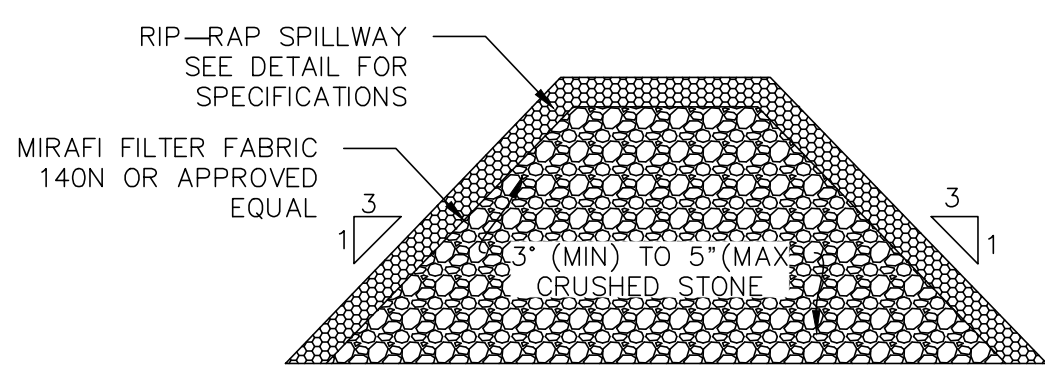
C-51

SHEET NO.: 53 OF 66

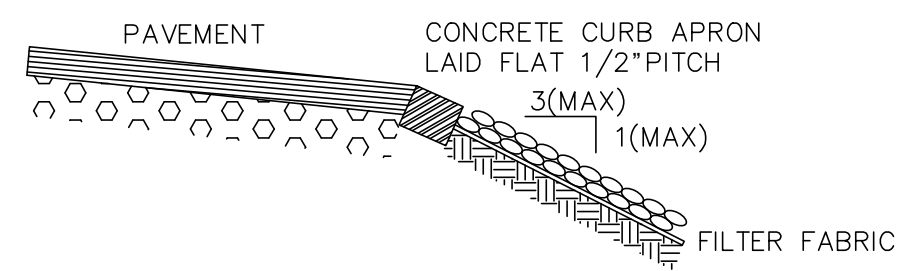


- NOTES:**
1. ALL WORK TO BE STAKED AND INSPECTED BY THE DESIGN ENGINEER.
 2. AREA UNDER THE EMBANKMENT AND ANY STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
 3. COMPACTED LOW PERMEABILITY FILL MATERIAL SHALL BE WELL GRADED, SILTY, GRAVELLY SAND AND SHALL BE FREE OF STONES GREATER THAN 6" IN DIAMETER, ORGANIC MATTER, CONSTRUCTION DEBRIS, SNOW OR FROZEN SOIL. MATERIALS SHALL BE PLACED IN LAYERS NOT EXCEEDING 8" IN THICKNESS, AND SHALL BE COMPACTED.
 4. S.C.S. APPROVED SEED MIX TO BE SPREAD AS SOON AS IS PRACTICAL TO MINIMIZE EROSION.

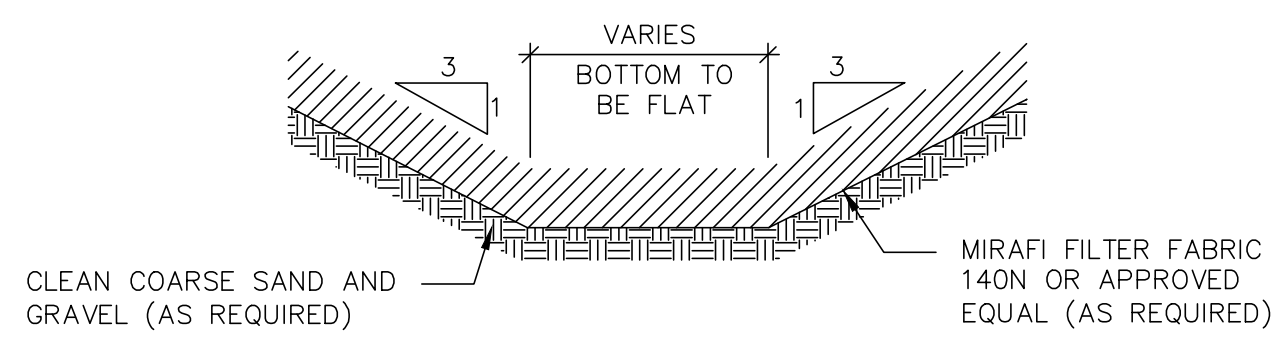
1 EARTH BERM
C-52 SCALE: NTS



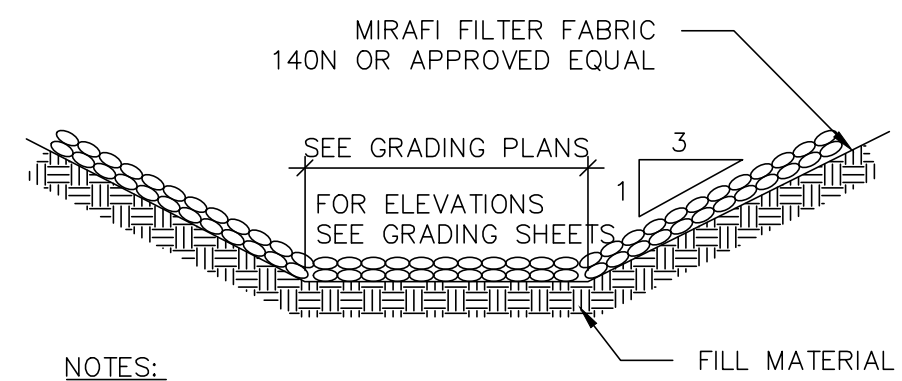
4 RIP RAP SPILLWAY/STONE CHECK DAM DETAIL
C-52 SCALE: NTS



5 RIP RAP WATERWAY OFF PAVEMENT
C-52 SCALE: NTS

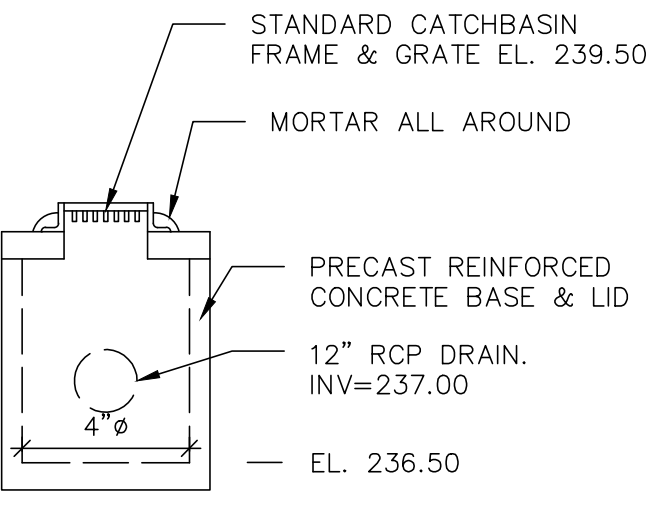
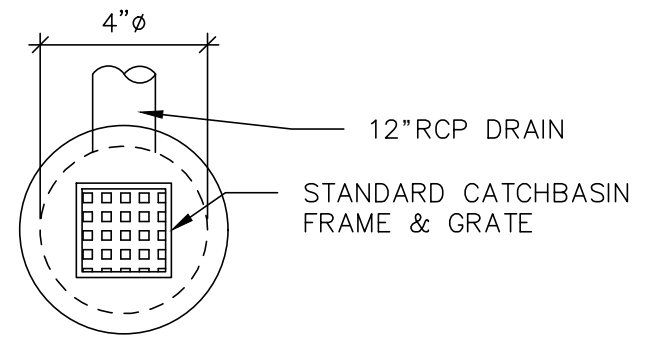


6 CROSS SECTION SEDIMENT FOREBAY & INFILTRATION POND BOTTOM
C-52 SCALE: NTS

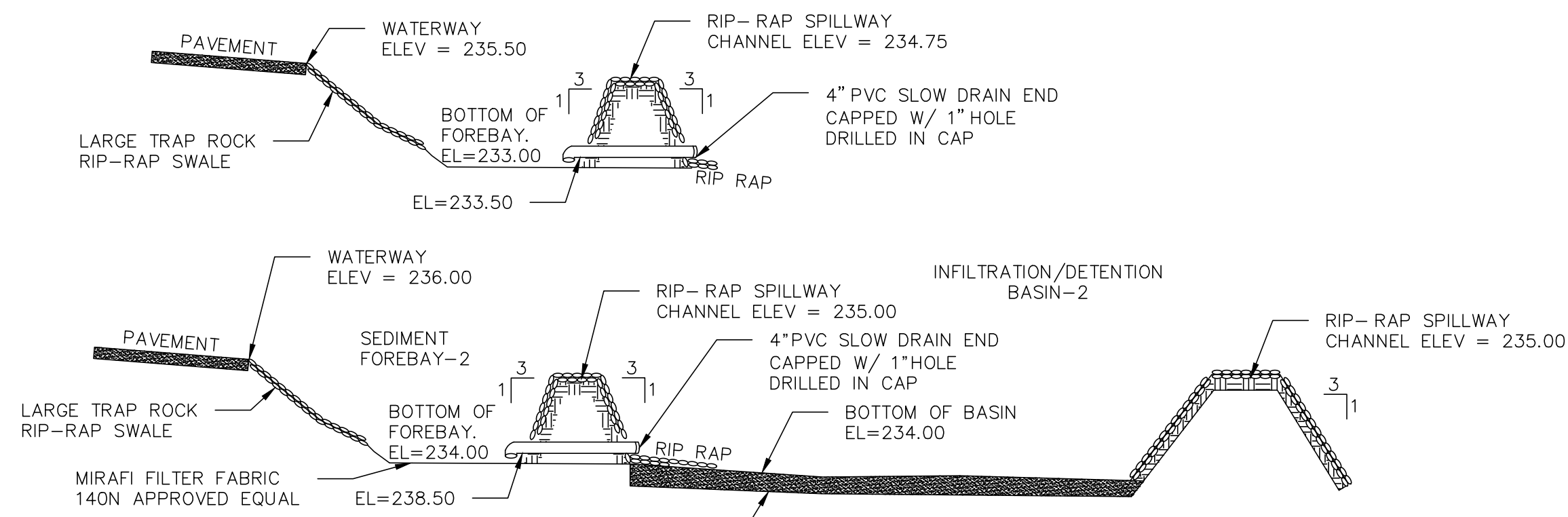


- NOTES:**
1. INSTALL FILTER MATERIAL BENEATH RIP RAP.
 2. RIP RAP SHALL BE PER MHD SPEC M2.02.3 MINIMUM WEIGHT OF STONE = 50 LBS.; MAXIMUM WEIGHT = 125 LBS.
 3. MINIMUM DEPTH OF RIP-RAP TO BE 12\".
 4. FILL MATERIAL SHALL BE AS NOTED IN EARTH BERM DETAIL.

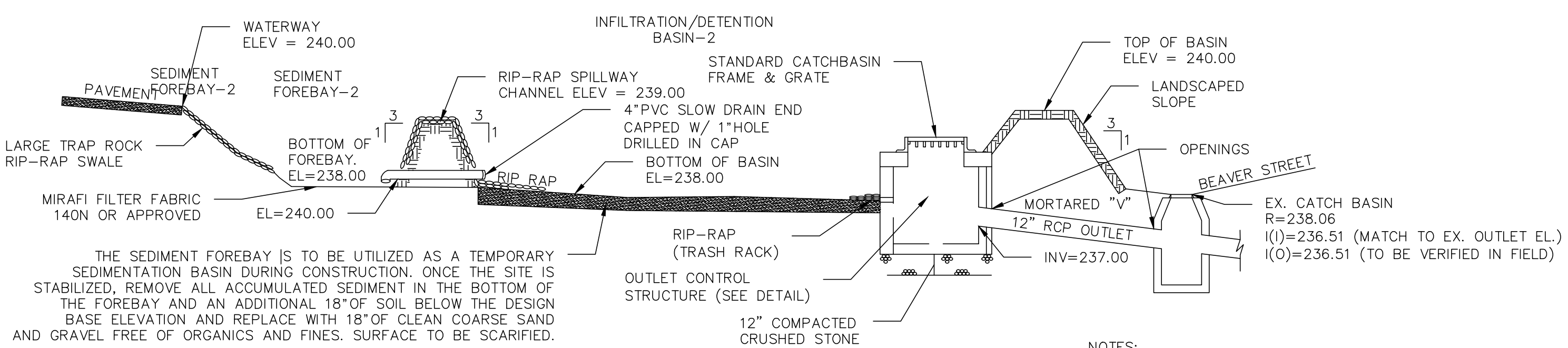
2 RIP-RAP SPILWAY/SWALE DETAIL
C-52 SCALE: NTS



3 OUTLET CONTROL STRUCTURE
C-52 SCALE: NTS



- NOTES:**
1. AREA BENEATH THE BASIN TO BE STRIPPED OF TOPSOIL AND SUBSOIL. REFER TO TEST PIT NOTED FOR ADDITIONAL INFORMATION.
 2. BASIN TO BE REVIEWED BY ENGINEER TO ENSURE CONSTRUCTION IN COMPLIANCE WITH THE DESIGN PLANS.



- NOTES:**
1. AREA BENEATH THE BASIN TO BE STRIPPED OF TOPSOIL AND SUBSOIL. REFER TO TEST PIT NOTED FOR ADDITIONAL INFORMATION.
 2. BASIN TO BE REVIEWED BY ENGINEER TO ENSURE CONSTRUCTION IN COMPLIANCE WITH THE DESIGN PLANS.

7 INFILTRATION/DETENTION BASIN DETAILS
C-52 SCALE: NTS

- NOTES:**
1. ALL CONSTRUCTION TO BE PERFORMED UNDER STRICT SUPERVISION OF THE DESIGN ENGINEER.
 2. THE DETENTION/RETENTION POND SHALL BE CONSTRUCTED OF CLEAN DENSE MATERIAL (FILL) FREE OF STUMPS, LUMBER, LARGE BOULDERS OR CONSTRUCTION WASTE OF ANY KIND.
 3. THE RIPRAP SHALL BE PLACED ON 3-5" CRUSHED STONE.
 4. THE SURFACE OF THE RIPRAP SHALL BE AS SMOOTH AS POSSIBLE ALL SLOPES TO BE LOAMED AND SEED EXCEPT WHERE SPECIFIED OTHERWISE.
 5. RIPRAP & STONE FOR PIPE ENDS TO MEET MASS. D.P.W. SPECIFICATIONS M2.02.3.
 6. THE BASIN SIDE SLOPE & BOTTOM SHALL BE PROVIDED WITH SIX INCHES OF LOAM/SEED AND SAND MIXTURE AT THE RATE OF TWO POUNDS RED TOP, FIFTEEN POUNDS CREEPING RED FESCUE AND TWENTY POUNDS TALL FESCUE PER ACRE AT NO TIME SHALL A SEED MIX CONSIST OF MORE THAN TEN PERCENT ANNUAL RYES.
 7. THE SEDIMENT FOREBAY IS TO BE UTILIZED AS A TEMPORARY SEDIMENTATION BASIN DURING CONSTRUCTION. ONCE THE SITE IS STABILIZED, REMOVE ALL ACCUMULATED SEDIMENT IN THE BOTTOM OF THE FOREBAY AND AN ADDITIONAL 18" OF SOIL BELOW THE DESIGN BASE ELEVATION AND REPLACE WITH 18" OF CLEAN COARSE SAND AND GRAVEL FREE OF ORGANICS AND FINES. SURFACE TO BE SCARIFIED.

REVISIONS			
NO.	DATE	ISSUED FOR	BY

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DATE:	JUNE 2022
PROJECT NO.:	30065216
FILE NAME:	C-52
DESIGNED BY:	SPM
DRAWN BY:	AKR
CHECKED BY:	SRH/AAG

SHEET TITLE

CIVIL
CIVIL DETAILS

SCALE: NTS

C-52
SHEET NO.: 54 OF 66

CLIENT PROJ. NO. ?

REVISIONS	

NO.	DATE	ISSUED FOR	BY

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DATE: JUNE 2022

PROJECT NO.: 30065216

FILE NAME: C-53

DESIGNED BY: SPM

DRAWN BY: AKR

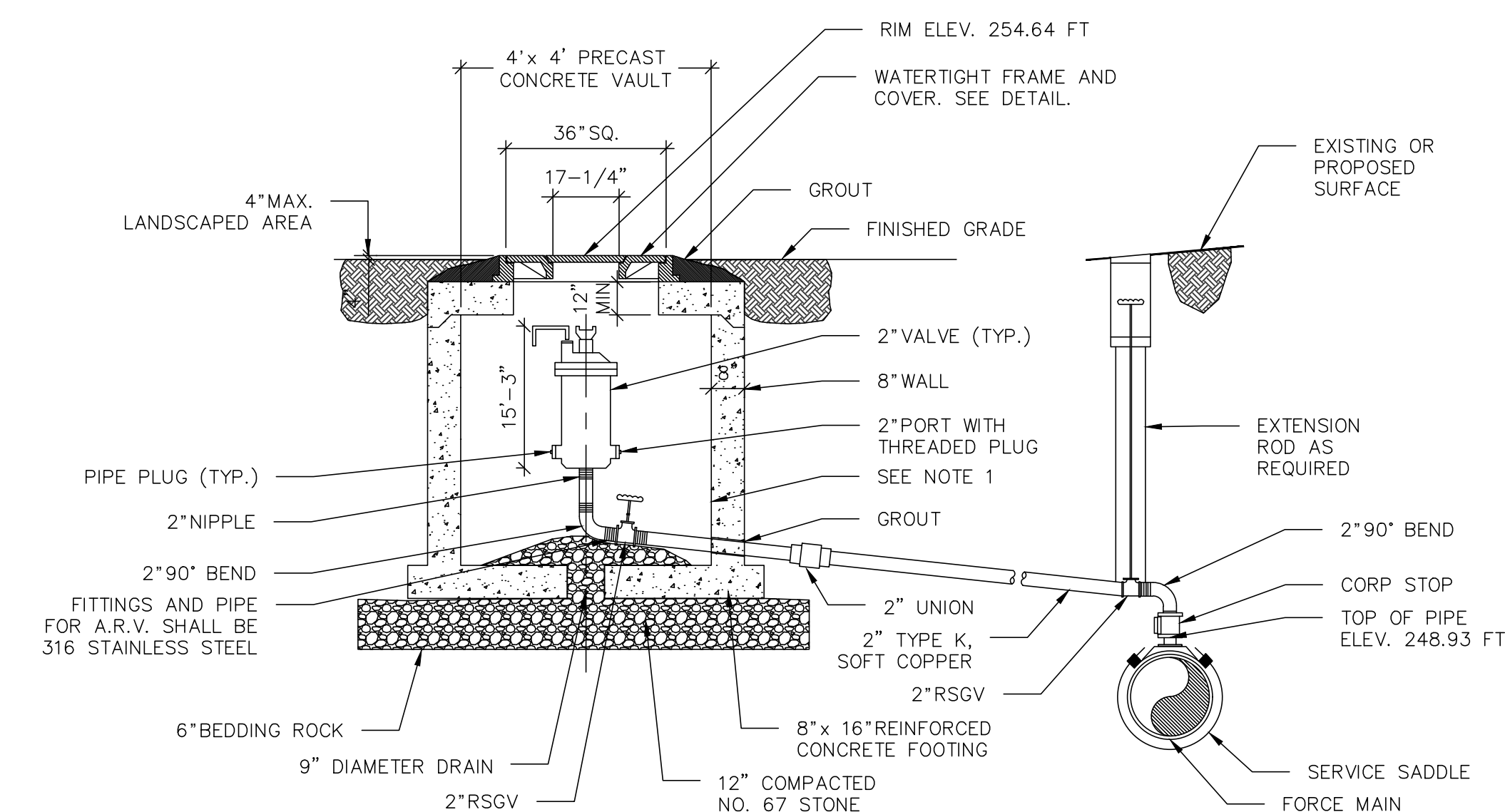
CHECKED BY: SRH/AAG

SHEET TITLE
CIVIL
CIVIL DETAILS

SCALE: NTS

C-53

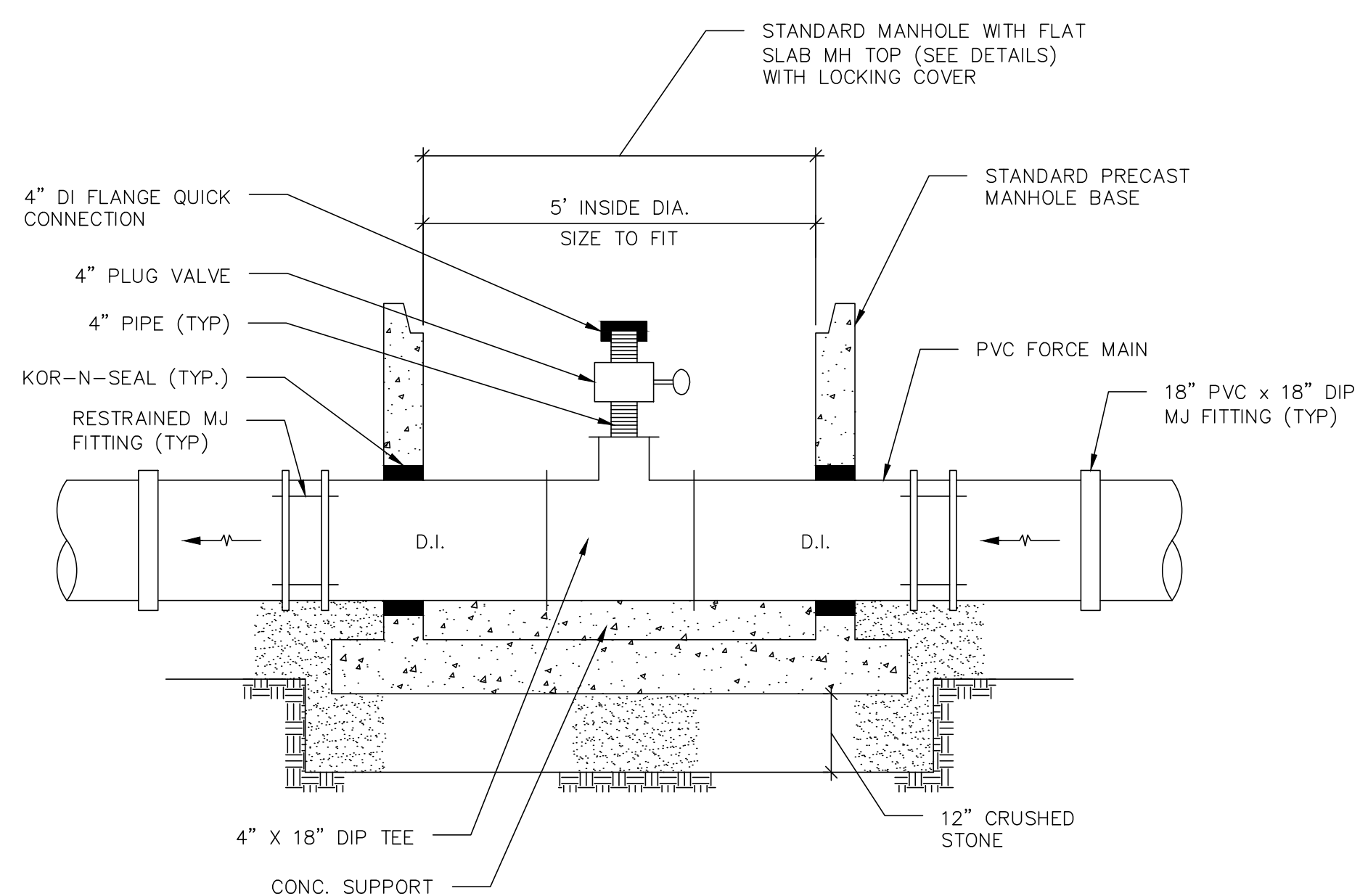
SHEET NO.: 55 OF 66



2 OFFSET AIR RELEASE VALVE
C-53 SCALE: NTS

NOTES:

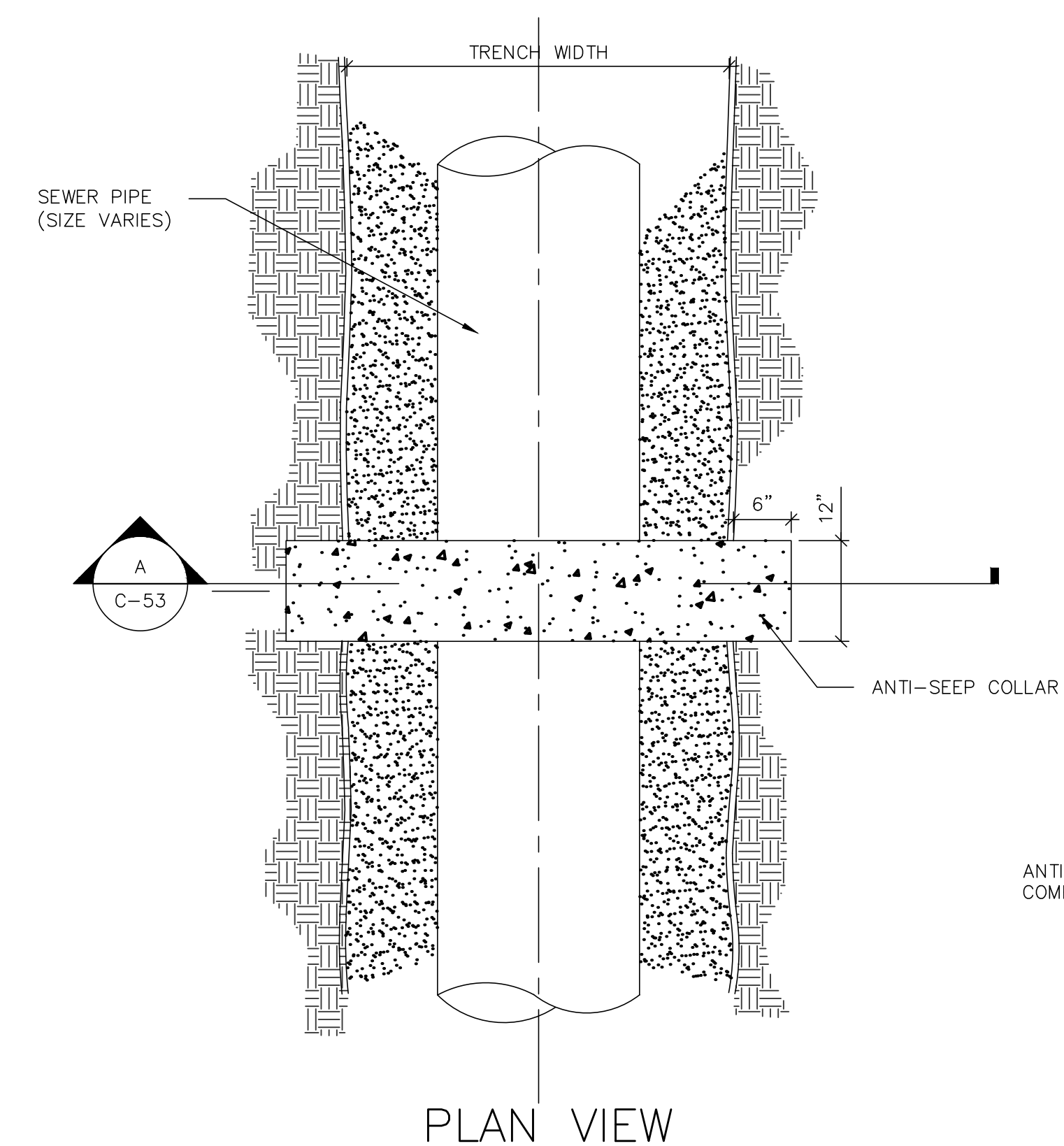
- ARV VAULT WALLS TO BE COATED INSIDE AND OUTSIDE WITH 16 MIL. THICK APPROVED EPOXY COATING.



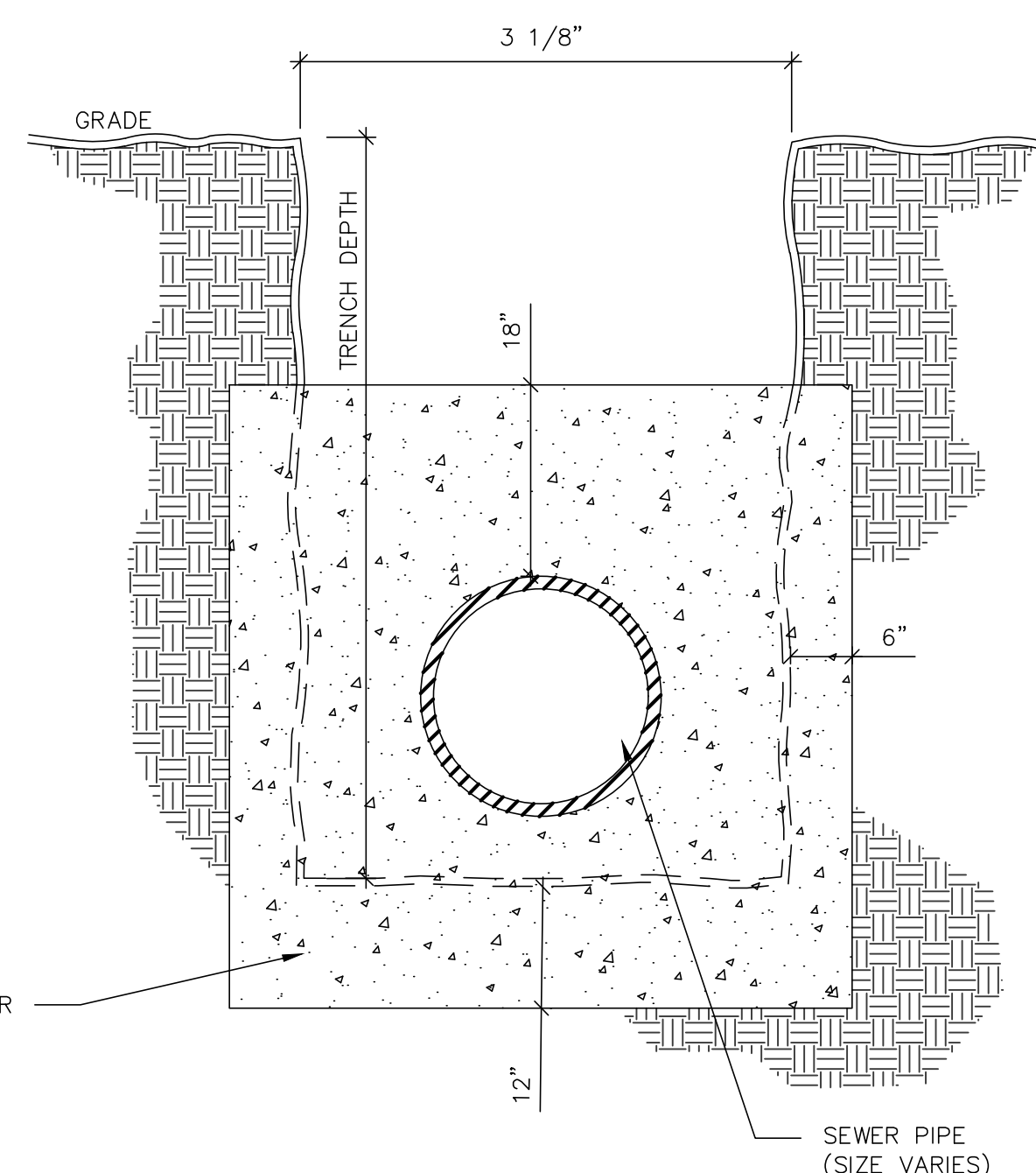
NOTES:

- CONTRACTOR SHALL DESIGN AND SUBMIT FOR APPROVAL MANHOLE ANTI-FLOTATION FOR ASSUMED GROUNDWATER LEVEL AT GRADE.

3 FORCE MAIN CLEANOUT MANHOLE
C-53 SCALE: NTS

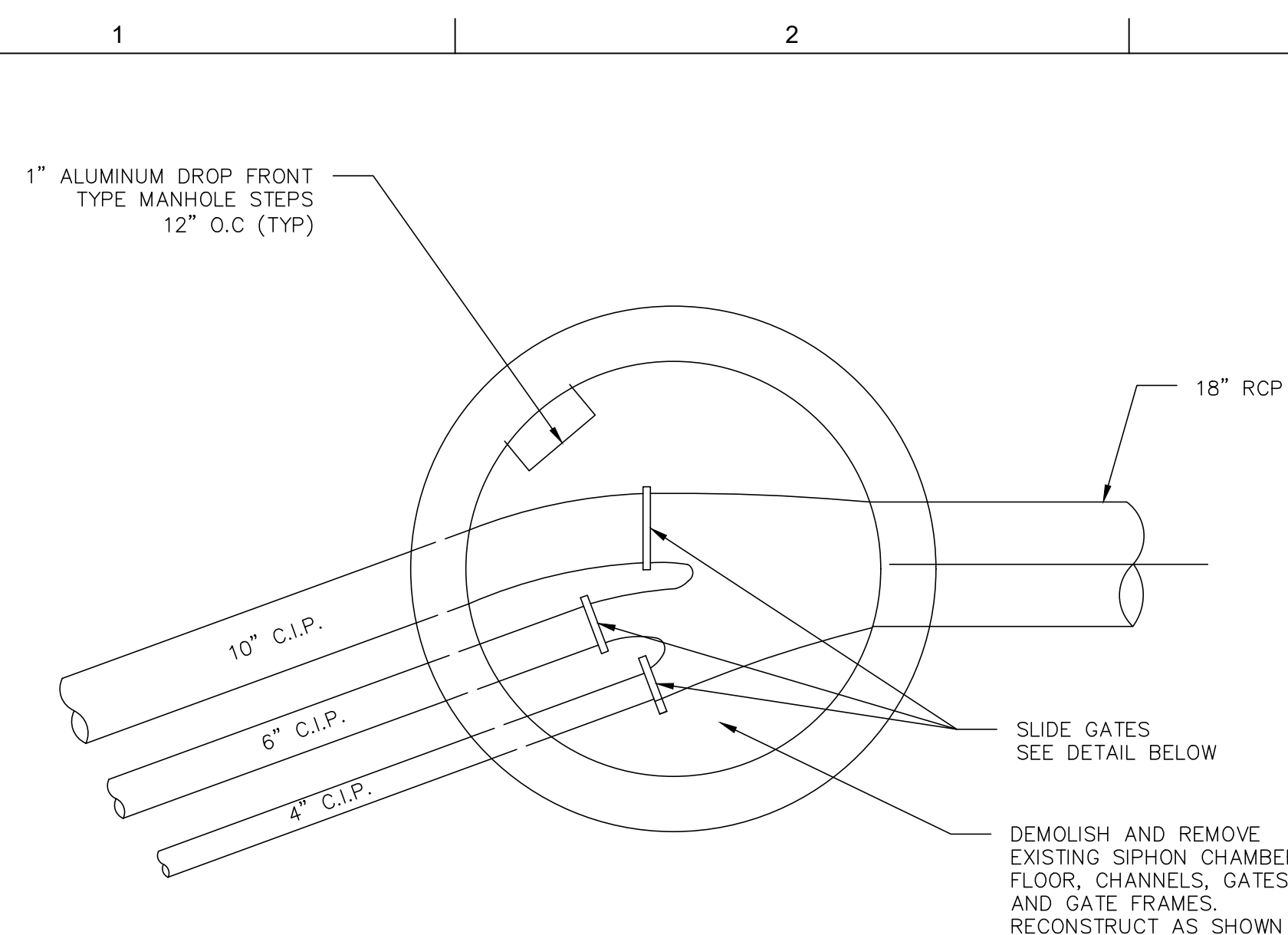


1 ANTI-SEEP COLLAR
C-53 SCALE: NTS

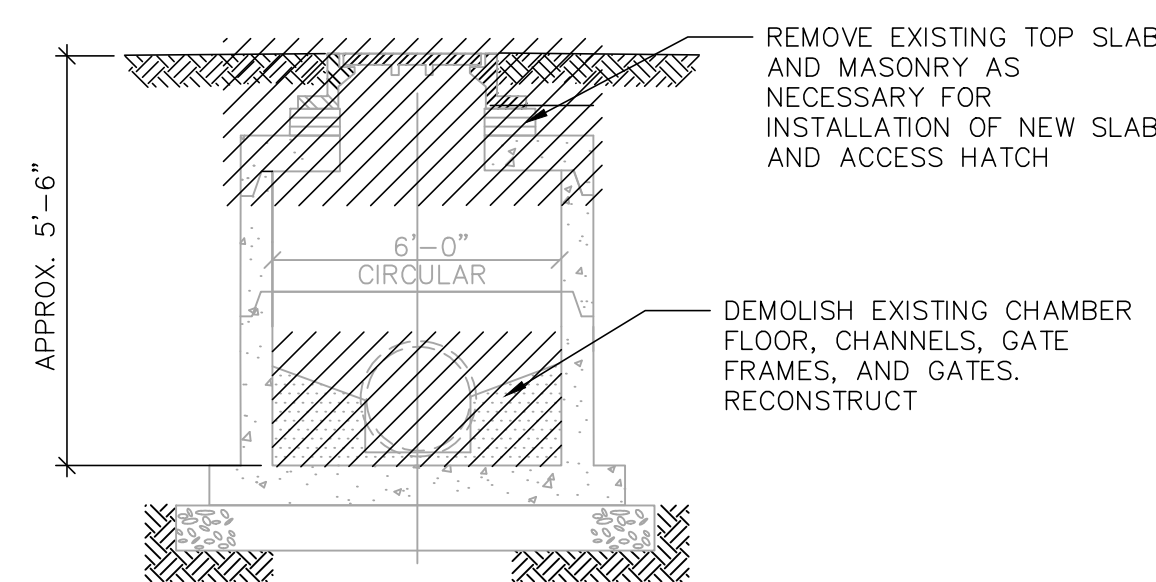


SECTION A-A

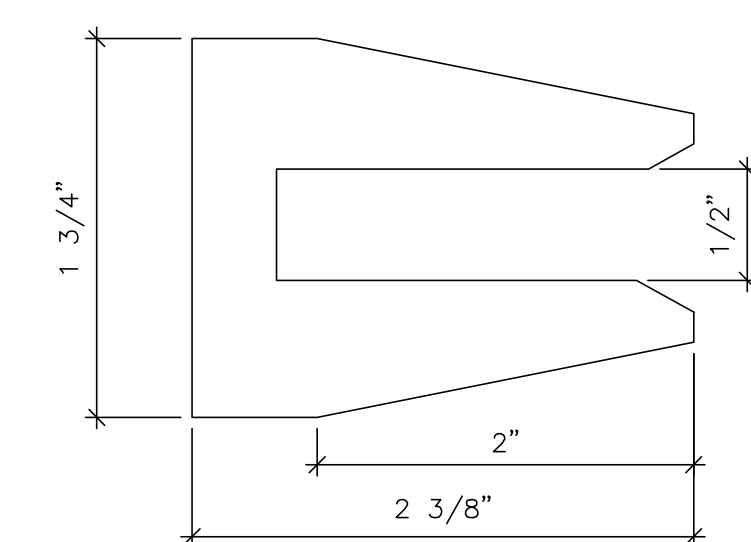
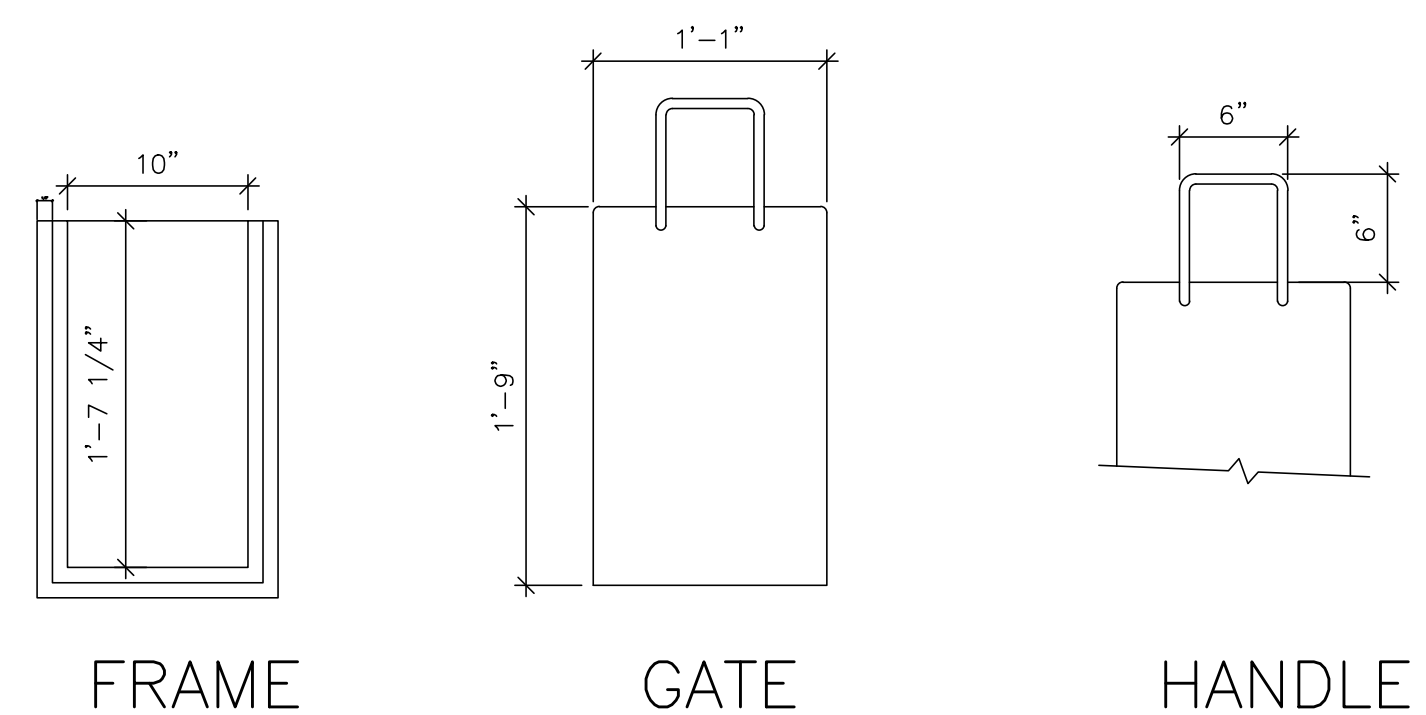
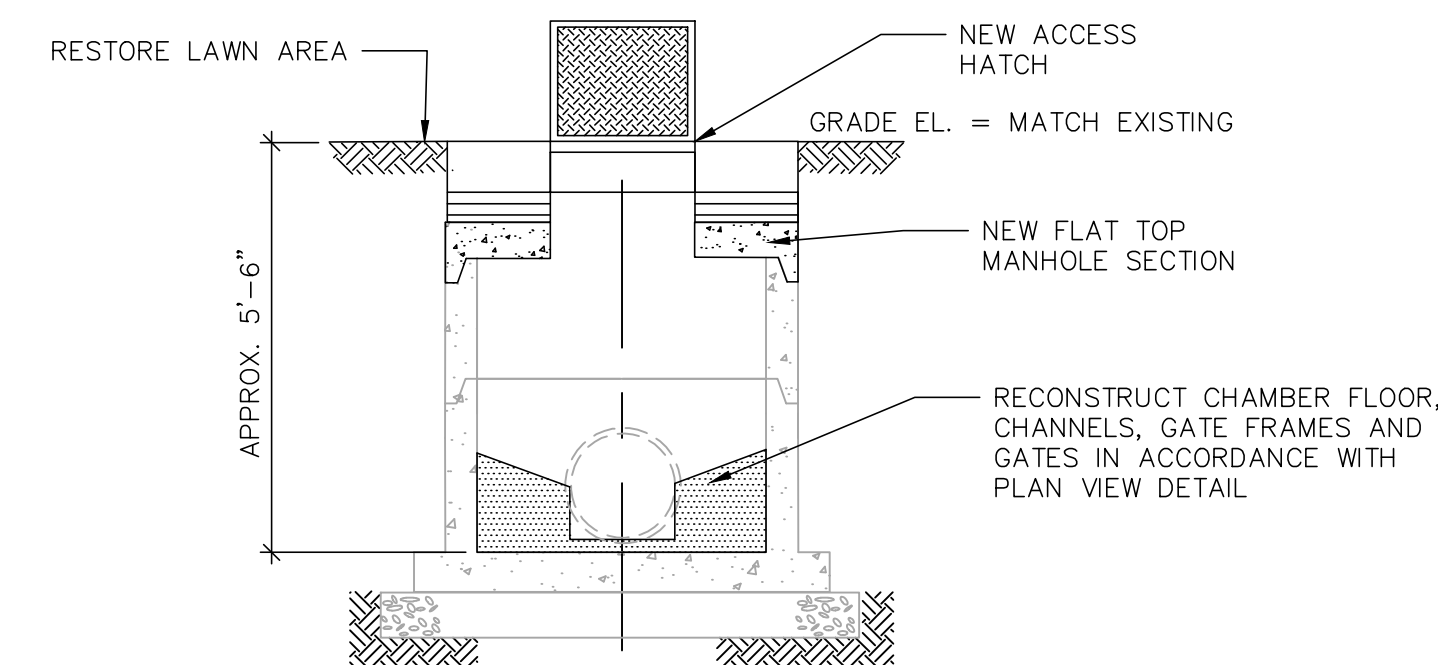
NO.	DATE	ISSUED FOR	BY



1 INLET & OUTLET SIPHON STRUCTURE
C-54 SCALE: NTS



2 SIPHON CHAMBER INLET AND OUTLET RECONSTRUCTION
C-54 SCALE: NTS



3 SLIDE GATE DETAILS
C-54 SCALE: NTS



LEGAL ENTITY:
ARCADIS U.S., INC.

CONSULTANTS

90% SUBMITTAL - DO NOT USE FOR CONSTRUCTION

SEALS

FRANKLIN, MASSACHUSETTS
TOWN OF FRANKLIN DPW

BSI REPLACEMENT
AND PUMP STATION
DESIGN

CLIENT PROJ. NO. ?

REVISIONS

NO.	DATE	ISSUED FOR	BY
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DATE: JUNE 2022

PROJECT NO.: 30065216

FILE NAME: C-56

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL

PIPELINE SCHEDULES

SCALE: NTS

C-56

SHEET NO.: 58 OF 66

UPSTREAM MANHOLE ID	DOWNSTREAM MANHOLE ID	STREET/LOCATION	APPROX. LENGTH (LF) ⁽¹⁾	PIPE DIAMETER (in)	MATERIAL	NO. OF SERVICES ⁽²⁾	COMMENTS	SHEET NO.
SMH 1	SMH 1A	COTTAGE STREET	171	16	CIP	0		C-1
SMH 1A	SMH 2	COTTAGE STREET	26	16	CIP	0		C-1
SMH 2	SMH 3	COTTAGE STREET	195	16	CIP	1		C-1
SMH 3	SMH 4	COTTAGE STREET	212	16	CIP	1		C-1/C-2
SMH 4	SMH 5	SAXON ST EASEMENT	150	16	CIP	0		C-2/C-3
SMH 5	SMH 6	#259 COTTAGE STREET	150	16	CIP	0	CROSSING MBTA TRACKS, REFER TO SITE SPECIFIC BYPASS PLAN AND MBTA REQUIREMENTS	C-3
SMH 7	SMH 8 NEW	#259 COTTAGE STREET	30	16	CIP	0		C-3
SMH 11	SMH 11A NEW	FISCHER STREET	37	16	CIP	0		C-5
SMH 12 NEW	SMH 13	FISHER STREET	193	18	CIP	0		C-5/C-6
SMH 13	SMH 14	FISHER STREET	189	18	CIP	3		C-6
SMH 14	SMH 15	FISHER STREET	193	18	CIP	2		C-6
SMH 15	SMH 16	HAYWARD STREET	175	18	CIP	2		C-7
SMH 16	SMH 17	HAYWARD STREET	176	18	CIP	6		C-7
SMH 17	SMH 18	HAYWARD STREET	183	18	CIP	5		C-7/C-8
SMH 18	SMH 19	HAYWARD STREET	187	18	CIP	4		C-8
SMH 19	SMH 20	HAYWARD STREET	183	18	CIP	3		C-8
SMH 20	SMH 21	HAYWARD STREET	185	18	CIP	0	CIPPL THICKNESS SHALL BE 2.0 MM THICKER THAN AS REQUIRED BY DESIGN REQUIREMENTS	C-8/C-9
SMH 21	SMH 22	HAYWARD STREET	188	18	CIP	0	CIPPL THICKNESS SHALL BE 2.0 MM THICKER THAN AS REQUIRED BY DESIGN REQUIREMENTS	C-9
SMH 22	SMH 23	HAYWARD STREET	245	18	CIP	0		C-9/C-10
SMH 23	SMH 24	HAYWARD STREET EASEMENT	174	18	CIP	1		C-10
SMH 24	SMH 25	HAYWARD STREET EASEMENT	166	20	CIP	0	CROSSING MBTA TRACKS, REFER TO SITE SPECIFIC BYPASS PLAN AND MBTA REQUIREMENTS	C-10
SMH 25	SMH 26	HAYWARD STREET EASEMENT	161	20	CIP	0		C-11
SMH 26	SMH 27	HAYWARD STREET EASEMENT	128	20	CIP	0		C-11
SMH 27	SMH 28	HAYWARD STREET EASEMENT	192	20	CIP	0		C-11
SMH 28	SMH 29	HAYWARD STREET EASEMENT	321	20	CIP	1		C-11/C-12
SMH 45	SMH 46	POND ST EASEMENT	203	24	CIP	0		C-23/C-24
SMH 46	SMH 46A	POND ST EASEMENT	29	24	RCP	0		C-24
SMH 46A	SMH 47	POND ST EASEMENT	130	24	RCP	0		C-24
SMH 47	SMH 47A	POND ST EASEMENT	194	24	RCP	0		C-24
SMH 47A	SMH 48	POND ST EASEMENT	95	24	VCP	0		C-24
SMH 48	SMH 49	POND ST EASEMENT	225	24	VCP	0		C-25
SMH 49	SMH 50	POND ST EASEMENT	224	24	VCP	0		C-25
SMH 50	SMH 51	POND ST EASEMENT	246	24	VCP	0		C-25/C-26
SMH 51	SMH 52	POND ST EASEMENT	247	24	VCP	0		C-26
SMH 107	SMH 108	GROVE STREET	87	18	RCP	0		C-31
SMH 315	SMH 316	GROVE STREET/RT 495 EASEMENT	390	18	PVC			
SMH 316	SMH 317	GROVE STREET/RT 495 EASEMENT	60	18	PVC			
SMH 317	SMH 319	GROVE STREET/RT 495 EASEMENT	470	18	PVC			

(1) PIPE LENGTHS ARE APPROXIMATE. REFER TO CIVIL SHEETS FOR ACTUAL PIPE LENGTHS.
(2) ALL SERVICES TO BE REINSTATED FOLLOWING CIPPL AND REHABILITATED WITH CURED-IN-PLACE LATERAL LINER

PIPELINE SCHEDULE A: CURED-IN-PLACE PIPE LINING OF EXISTING SEWERS

UPSTREAM MANHOLE ID	DOWNSTREAM MANHOLE ID	STREET/LOCATION	APPROX. LENGTH (LF) ⁽¹⁾	PIPE DIAMETER (in)	MATERIAL	EXISTING PIPE TO BE REMOVED	NO. OF SERVICES	COMMENTS	SHEET NO.
SMH6 NEW	SMH6A NEW	#259 COTTAGE STREET	90	18	PVC (SDR 35)		0		C-3
SMH6A NEW	SMH6B NEW	#259 COTTAGE STREET	120	18	PVC (SDR 35)		0		C-3
SMH6B NEW	SMH 8 NEW	#259 COTTAGE STREET	90	18	PVC (SDR 35)		0		C-3
SMH 8 NEW	SMH 9 NEW	SEWER EASEMENT PB76-3693 DB1316-PG191-195	280	18	PVC (SDR 35)	X	0	INSULATED AND MOUNDED SEWER, REFER TO DETAILS FOR ADDITIONAL INFORMATION	C-3/C-4
SMH 9 NEW	SMH 10 NEW	SEWER EASEMENT PB76-3693 DB1316-PG191-195	289	18	PVC (SDR 35)		0	INSULATED AND MOUNDED SEWER, REFER TO DETAILS FOR ADDITIONAL INFORMATION	C-4/C-5
SMH 10 NEW	SMH 11B NEW	#260 FISCHER STREET PARKING LOT	186	18	PVC (SDR 35)		0	JACK AND BORE PIPE INSTALLATION AND OPEN CUT PIPE INSTALLATION, REFER TO DETAILS, SPECIFICATIONS, AND MBTA REQUIREMENTS FOR ADDITIONAL INFORMATION	C-5
SMH 11B NEW	SMH 11A NEW	FISHER STREET	34	18	PVC (SDR 35)				C-5
SMH 11A NEW	SMH 12 NEW	FISHER STREET	154	18	PVC (SDR 35)		1		C-5
FISCHER STREET MH	SMH 10 NEW	#260 FISCHER STREET PARKING LOT	150	8	PVC (SDR 35)	X	0		C-5
SMH 29 NEW	SMH 29A NEW	BEAVER STREET	158	24	PVC (SDR 35)		0	JACK AND BORE PIPE INSTALLATION, REFER TO DETAILS, SPECIFICATIONS, AND MBTA REQUIREMENTS FOR ADDITIONAL INFORMATION	C-13
SMH 29A NEW	BSPS WET WELL	BEAVER STREET	48	24	PVC (SDR 35)		0		C-13
SMH22 NEW	SMH 23 NEW	OLD WEST CENTRAL STREET	16	24	PVC (SDR 26)		0		C-21
SMH 23 NEW	SMH 24 NEW	OLD WEST CENTRAL STREET	135	24	PVC (SDR 26)	X	1		C-21
SMH 24 NEW	SMH 25 NEW	OLD WEST CENTRAL STREET	135	24	PVC (SDR 26)	X	0		C-21/C-22
SMH 25 NEW	SMH 27 NEW	OLD WEST CENTRAL STREET	251	24	PVC (SDR 26)	X	4		C-22
SMH 27 NEW	SMH 28 NEW	OLD WEST CENTRAL STREET	216	24	PVC (SDR 26)	X	1		C-22/C-23
SMH 28 NEW	SMH 29 NEW	OLD WEST CENTRAL STREET	70	24	PVC (SDR 26)	X	1		C-23
SMH 29 NEW	SMH 30A NEW	OLD WEST CENTRAL STREET	210	24	PVC (SDR 26)	X	2		C-23
SMH 30A NEW	SMH 45	OLD WEST CENTRAL STREET	45	24	PVC (SDR 26)	X	0		C-23
SMH32 NEW	SMH 31 NEW	BEAVER STREET EASEMENT	172	15	PVC (SDR 35)	X	0	INSULATED AND MOUNDED SEWER, REFER TO DETAILS FOR ADDITIONAL INFORMATION	C-28
SNW 31 NEW	SMH 30 NEW	BEAVER STREET EASEMENT	372	15	PVC (SDR 35)	X	0	INSULATED AND MOUNDED SEWER, REFER TO DETAILS FOR ADDITIONAL INFORMATION	C-27/C-28
SMH 30 NEW	SMH 29 NEW	BEAVER STREET EASEMENT	359	15	PVC (SDR 35)	X	0	INSULATED AND MOUNDED SEWER, REFER TO DETAILS FOR ADDITIONAL INFORMATION	C-27
SMH 98	SMH43A NEW	FRANKLIN VILLAGE PLAZA	161	8	PVC (SDR 35)	X	0		C-30
SMH43A NEW	SMH44 NEW	FRANKLIN VILLAGE PLAZA	360	8	PVC (SDR 35)		0		C-29/C-30
SMH44 NEW	SMH44A NEW	FRANKLIN VILLAGE PLAZA	142	8	PVC (SDR 35)		0		C-29
SMH44A NEW	SMH44B NEW	FRANKLIN VILLAGE PLAZA	61	8	PVC (SDR 35)		0		C-29
SMH44B NEW	SMH 30A NEW	WEST CENTRAL STREET/RT 140	163	8	PVC (SDR 35)		0	JACK AND BORE PIPE INSTALLATION, REFER TO DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION	C-29
SMH 108 NEW	SMH 108 A NEW	GROVE STREET	114	18	PVC (SDR 35)	X	0		C-31
SMH 108 A NEW	SMH 109 NEW	GROVE STREET	107	18	PVC (SDR 35)	X	0	JACK AND BORE PIPE INSTALLATION, REFER TO DETAILS, SPECIFICATIONS, AND MBTA REQUIREMENTS FOR ADDITIONAL INFORMATION	C-31
SMH 109 NEW	SMH 110 NEW	GROVE STREET	214	18	PVC (SDR 35)	X	0		C-31/C-32
SMH 110 NEW	SMH 111 NEW	GROVE STREET	250	18	PVC (SDR 35)	X	0		C-32
SMH 111 NEW	SMH 111A NEW	GROVE STREET	255	18	PVC (SDR 35)		0		C-32/C-33
SMH 111A NEW	SMH 111B NEW	WEST CENTRAL STREET	317	18	PVC (SDR 35)		0	CROSSING GROVE STREET AND RT 140 INTERSECTION	C-33
SMH 111B NEW	SMH 112 NEW	WEST CENTRAL STREET	117	18	PVC (SDR 35)		0		C-33/C-34
SMH 112 NEW	SMH 113 NEW	WEST CENTRAL STREET	172	18	PVC (SDR 35)		0		C-34
SMH 113 NEW	SMH 114 NEW	WEST CENTRAL STREET	31	18	PVC (SDR 35)	X	0		C-34
SMH 114 NEW	SMH 120 NEW	WEST CENTRAL STREET	180	18	PVC (SDR 35)	X	0		C-35
SMH 120 NEW	SMH 121 NEW	WEST CENTRAL STREET	58	18	PVC (SDR 35)	X	0		C-35
SMH 121 NEW	SMH 123 NEW	WEST CENTRAL STREET	150	18	PVC (SDR 35)	X	0		C-35
SMH 123 NEW	SMH 124 NEW	WEST CENTRAL STREET	430	18	PVC (SDR 35)	X	0	SUSPENDED, ABOVE GRADE SEWER, REFER TO DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.	C-35/C-36
SMH 124 NEW	SMH 125 NEW	WEST CENTRAL STREET	104	18	PVC (SDR 35)	X	0		C-36

(1) PIPE LENGTHS ARE APPROXIMATE. REFER TO CIVIL SHEETS FOR ACTUAL PIPE LENGTHS.

PIPELINE SCHEDULE B: INSTALLATION OF NEW SEWER PIPES

NO.	DATE	ISSUED FOR	BY

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 DATE: JUNE 2022
 PROJECT NO.: 30065216
 FILE NAME: C-57
 DESIGNED BY: SPM
 DRAWN BY: AKR
 CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL
 CIVIL DETAILS

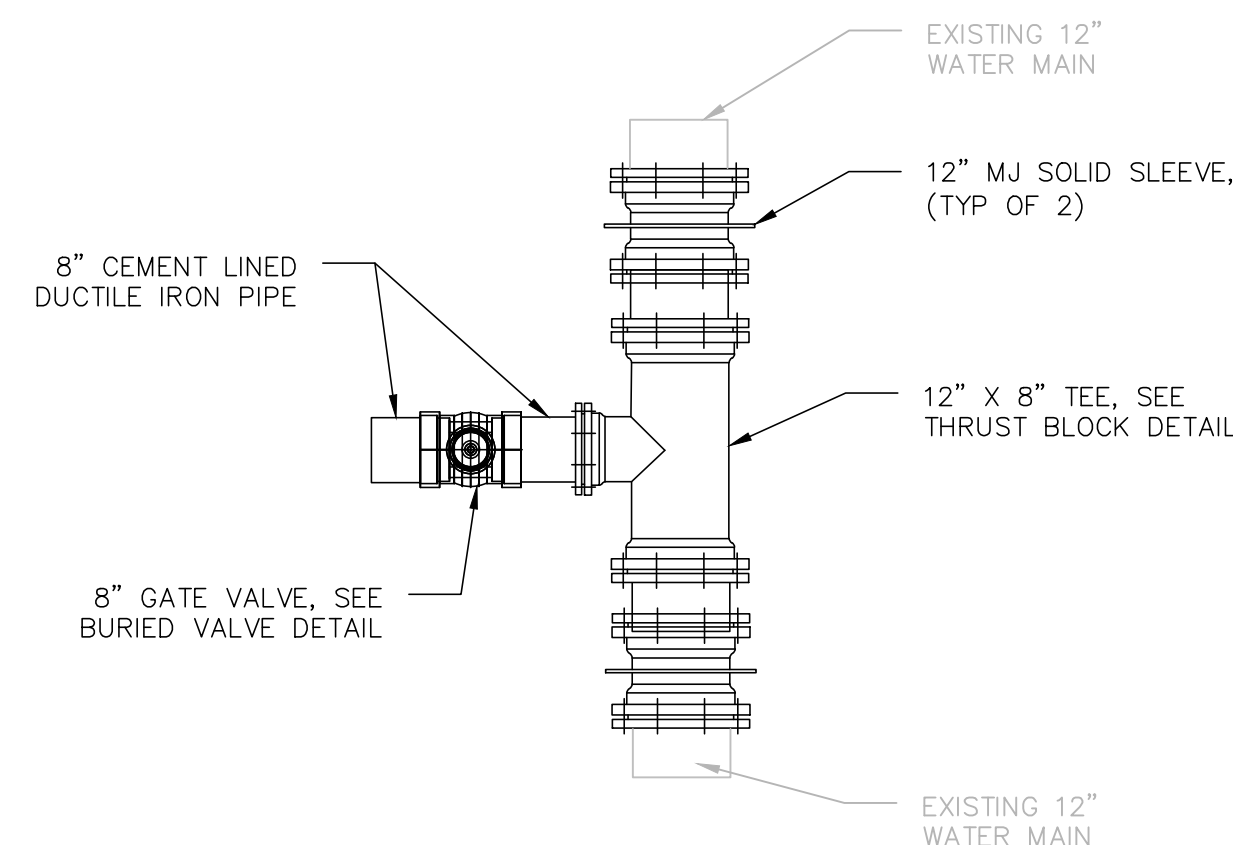
SCALE: NTS

C-57

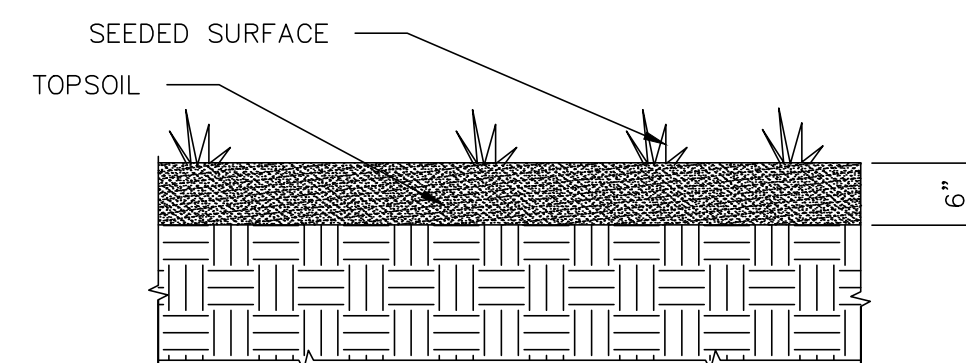
SHEET NO.: 59 OF 66

1 2 3 4 5 6

E



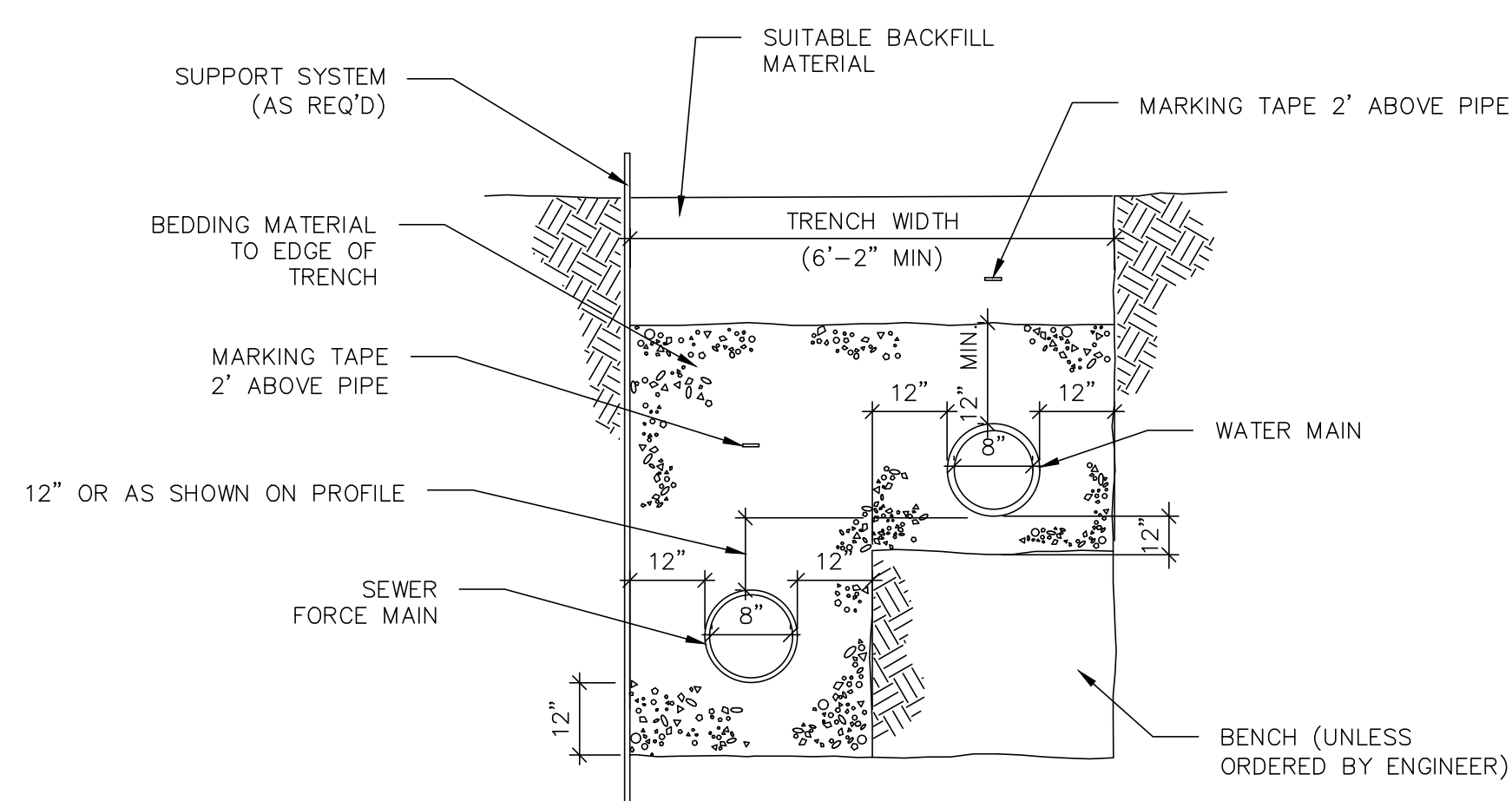
1 WATER MAIN TIE-IN
 C-57 SCALE: NTS



2 RESTORATION—ANY LANDSCAPED AREAS (FULL WIDTH) DISTURBED BY WORK
 C-57 SCALE: NTS

D

C



NOTES:
 1. BEDDING AND BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY.

3 FORCE MAIN AND WATER MAIN IN SAME TRENCH
 C-57 SCALE: NTS

B

A

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NO.	DATE	ISSUED FOR	BY

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DATE:	JUNE 2022		
PROJECT NO.:	30065216		
FILE NAME:	C-58		
DESIGNED BY:	SPM		
DRAWN BY:	AKR		
CHECKED BY:	SRH/AAG		

SHEET TITLE

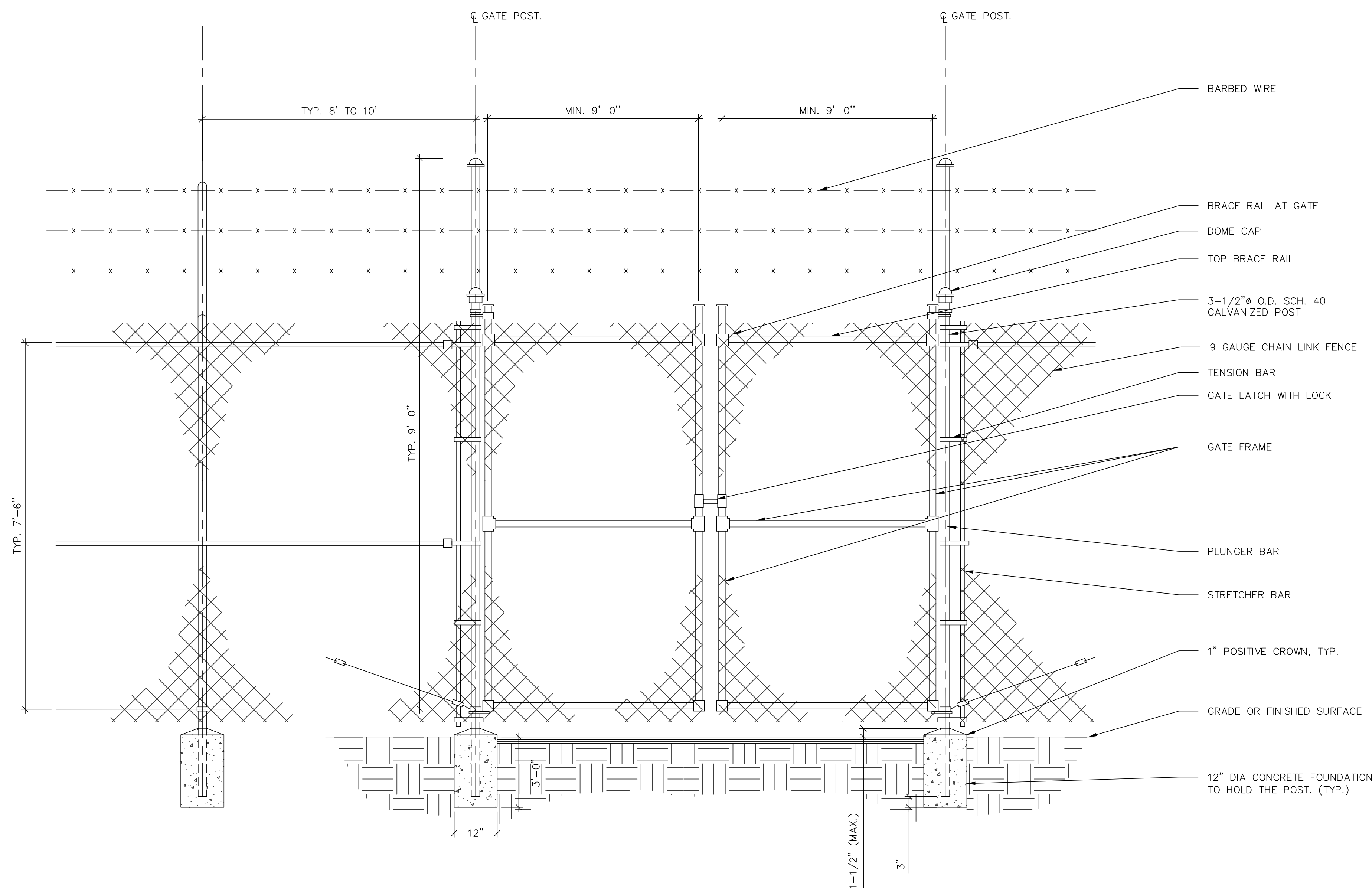
CIVIL

CIVIL DETAILS

SCALE: NTS

C-58

SHEET NO.: 60 OF 66



1 CHAIN LINK FENCE – DOUBLE LEAF GATE
C-58 SCALE: NTS

NOTE:

- ALL FENCE POSTS TO BE GALVANIZED 3-1/2" O.D. SCHEDULE 40 ASTM A53 GRADE B METAL POSTS, MAX. 6'-0" O.C., UNLESS NOTED OTHERWISE.

1 2 3 4 5 6

E

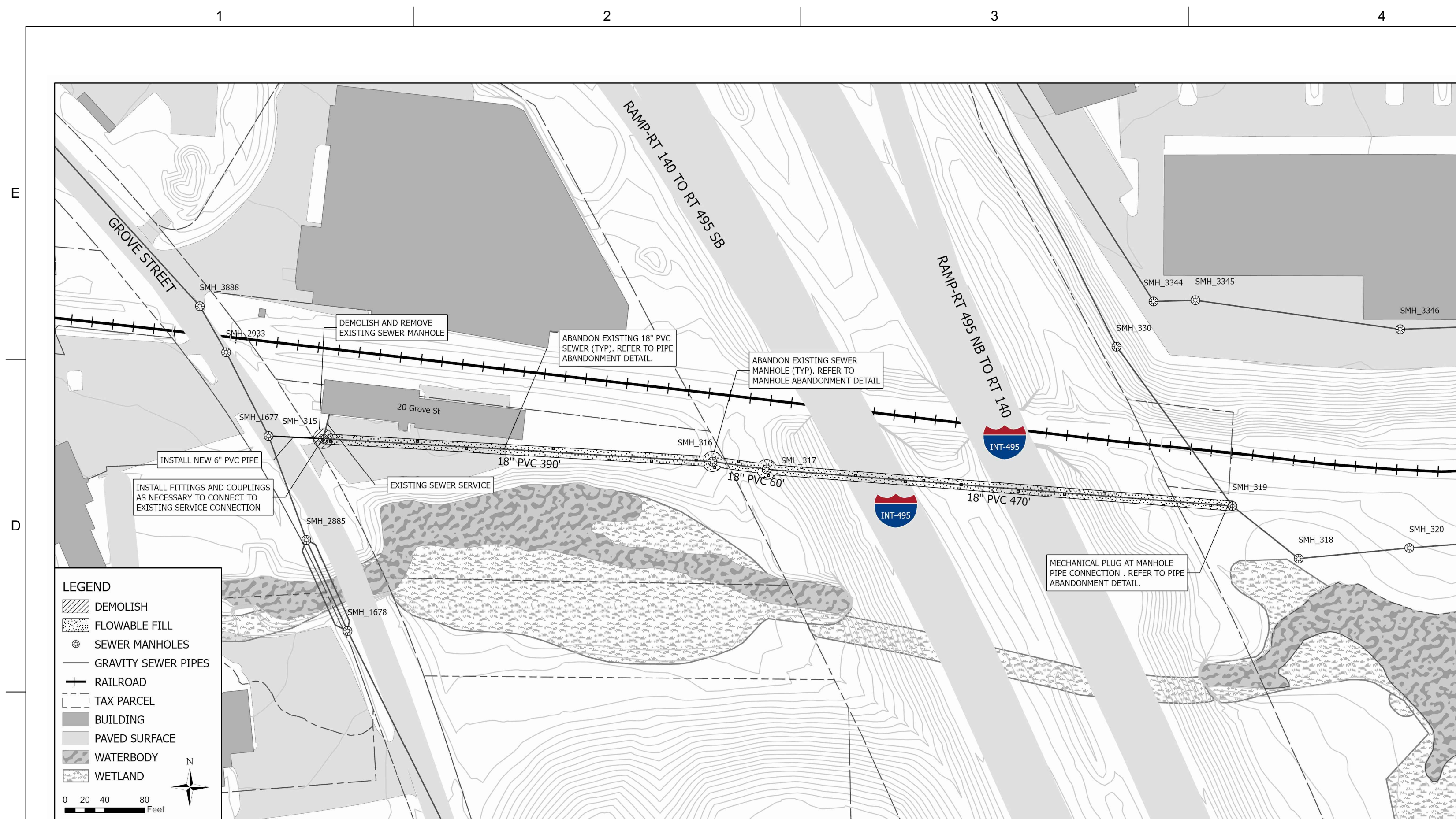
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C

B

A

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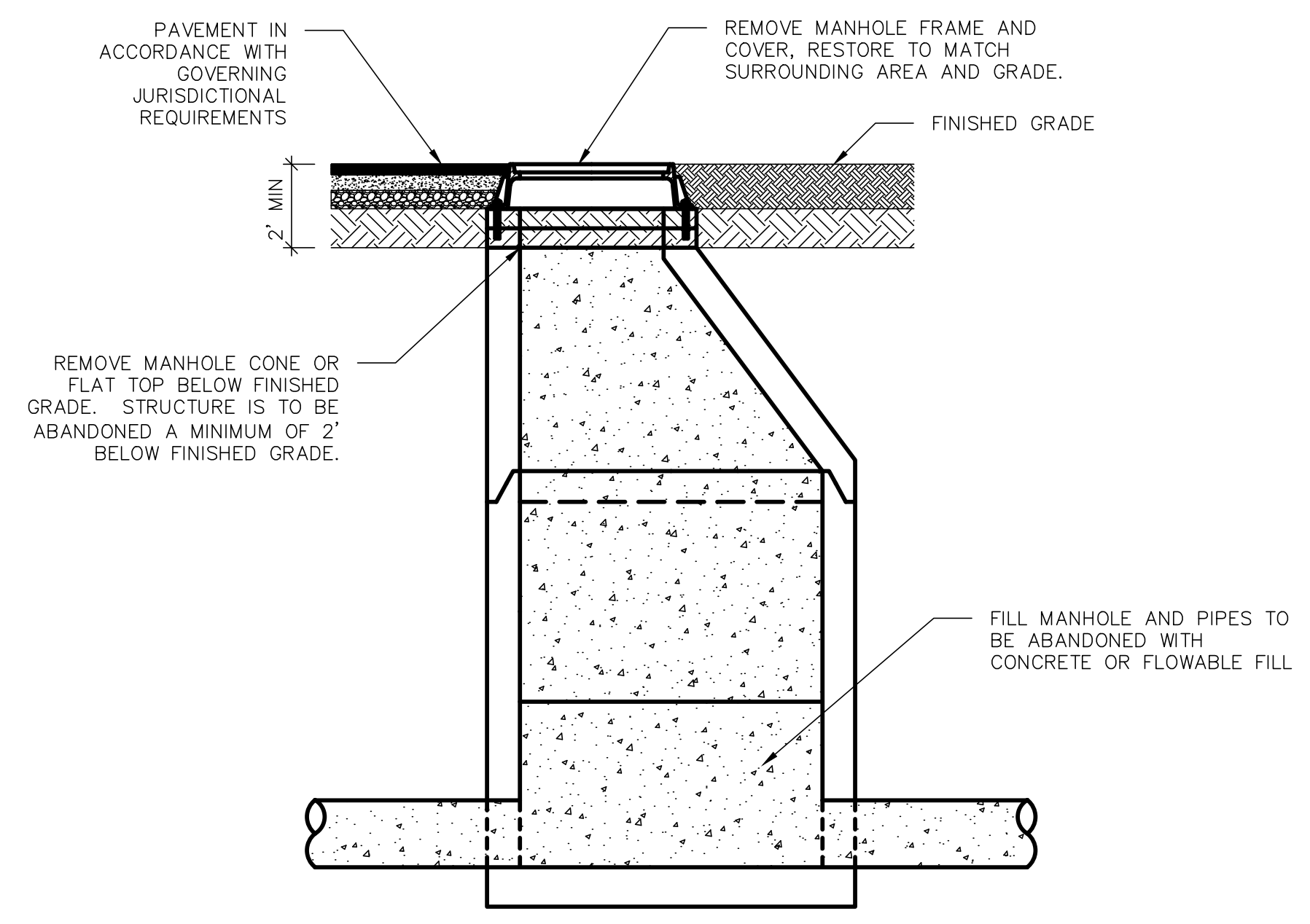


1 GROVE STREET AND ROUTE 495 CROSSING SEWER MANHOLE AND PIPE ABANDONMENT
C-59

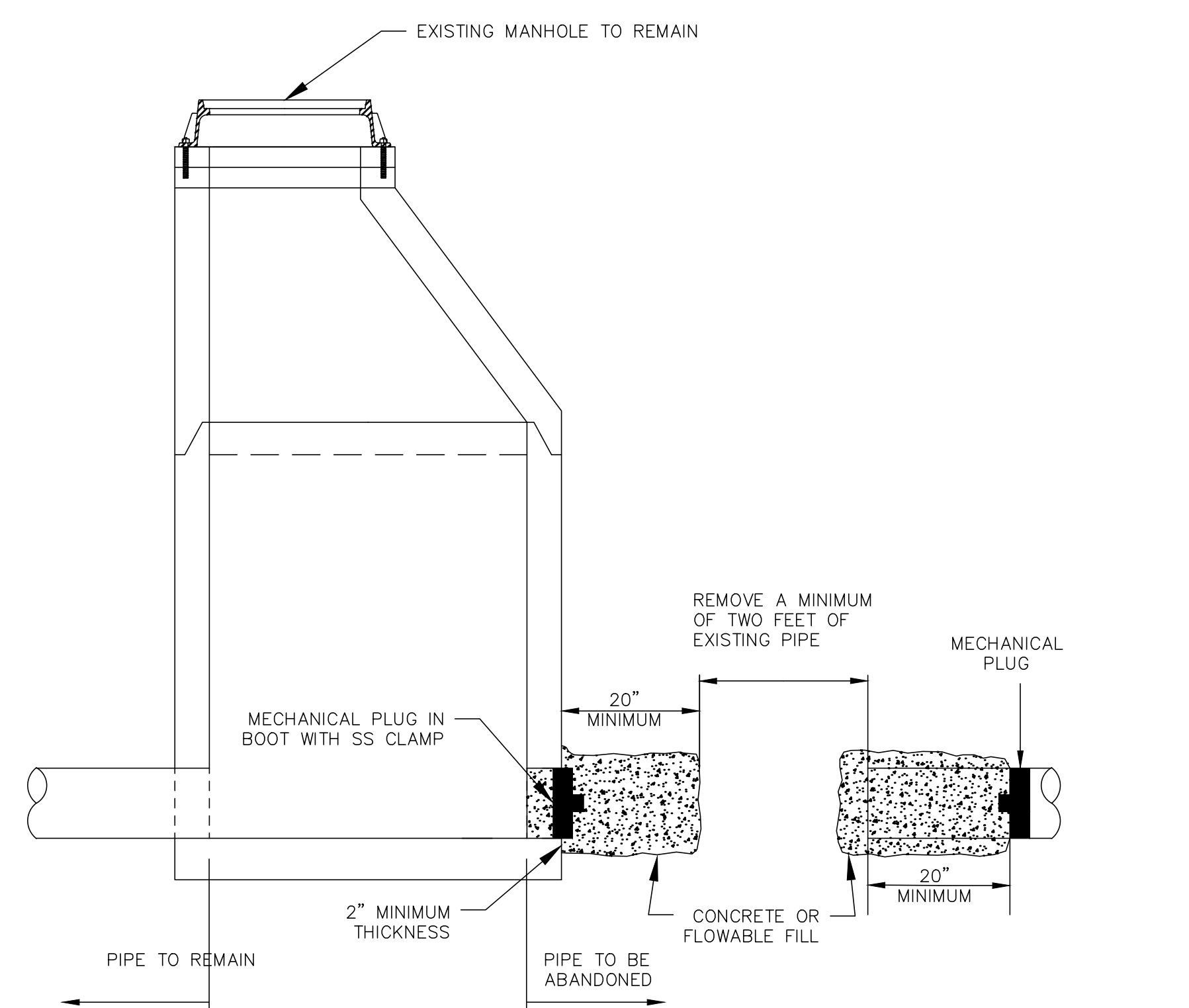
SMH NO.	SMH NO.	STREET/LOCATION	APPROX. LENGTH (L _E) ⁽¹⁾	PIPE DIAMETER (in)	MATERIAL	COMMENTS	SHEET NO.
SMH 6	SMH 7	#259 COTTAGE STREET	167	16	CIP	UNDER # 259 COTTAGE STREET BUILDING	C-3
SMH 10 NEW	SMH 10	#260 FISCHER STREET PARKING LOT	18	16	CIP		C-5
SMH 10	SMH 11	FISCHER STREET	169	16	CIP	CROSSING MBTA TRACKS, REFER TO MBTA REQUIREMENTS	C-5
SMH 43	SMH 44	FRANKLIN VILLAGE PLAZA	385	24	CIP		C-29/C-30
SMH 44	SMH 45	FRANKLIN VILLAGE PLAZA	333	24	CIP		C-29
SMH 98	SMH 43	FRANKLIN VILLAGE PLAZA	142	8	PVC		C-30
SMH108A NEW	SMH 109 NEW	GROVE STREET	110	10	PVC	REMOVE PIPE AS NECESSARY FOR JACK AND BORE OPERATION. PIPE TO REMAIN SHALL BE ABANDONED IN PLACE	
SMH 315	SMH 316	GROVE STREET/RT 495 EASEMENT	390	18	PVC	REFER TO GROVE STREET AND ROUTE 495 CROSSING SEWER MANHOLE AND PIPE ABANDONMENT	DETAILS
SMH 316	SMH 317	GROVE STREET/RT 495 EASEMENT	60	18	PVC	REFER TO GROVE STREET AND ROUTE 495 CROSSING SEWER MANHOLE AND PIPE ABANDONMENT	DETAILS
SMH 317	SMH 319	GROVE STREET/RT 495 EASEMENT	470	18	PVC	REFER TO GROVE STREET AND ROUTE 495 CROSSING SEWER MANHOLE AND PIPE ABANDONMENT	DETAILS
SMH 29 NEW	SNH29A NEW	BEAVER STREET	156	15	PVC	CROSSING MBTA TRACKS, REFER TO MBTA REQUIREMENTS	C-13
WATER MAIN		BEAVER STREET	450	6"/8"	CIP	REMOVE EXISTING WATER MAIN PIPING AS NECESSARY FOR INSTALLATION OF NEW FORCE MAIN AND AIR RELEASE VALVE PIPING	C-13/C-14
WATER MAIN		WEST CENTRAL STREET/RT 140	130	8"	CIP	REMOVE EXISTING WATER MAIN PIPING AS NECESSARY FOR INSTALLATION OF NEW FORCE MAIN	C-20

(1) PIPE LENGTHS ARE APPROXIMATE. REFER TO CIVIL SHEETS FOR ACTUAL PIPE LENGTHS.

3 PIPELINE SCHEDULE C: PIPELINE ABANDONMENT
C-59 SCALE: NTS



2 SANITARY SEWER MANHOLE ABANDONMENT
C-59 SCALE: NTS



NOTES:
1. FOR PIPES 18" AND LARGER, PROVIDE A MASONRY BULKHEAD IN LIEU OF MECHANICAL PLUGS.

4 SANITARY SEWER PIPE ABANDONMENT
C-59 SCALE: NTS



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SEALS

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TOWN OF FRANKLIN DPW

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DATE: JUNE 2022

PROJECT NO.: 30065216

FILE NAME: C-60

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL

MANHOLE SMH 45
RECONSTRUCTION AND
VORTEX FLOW INSERT
DETAILS

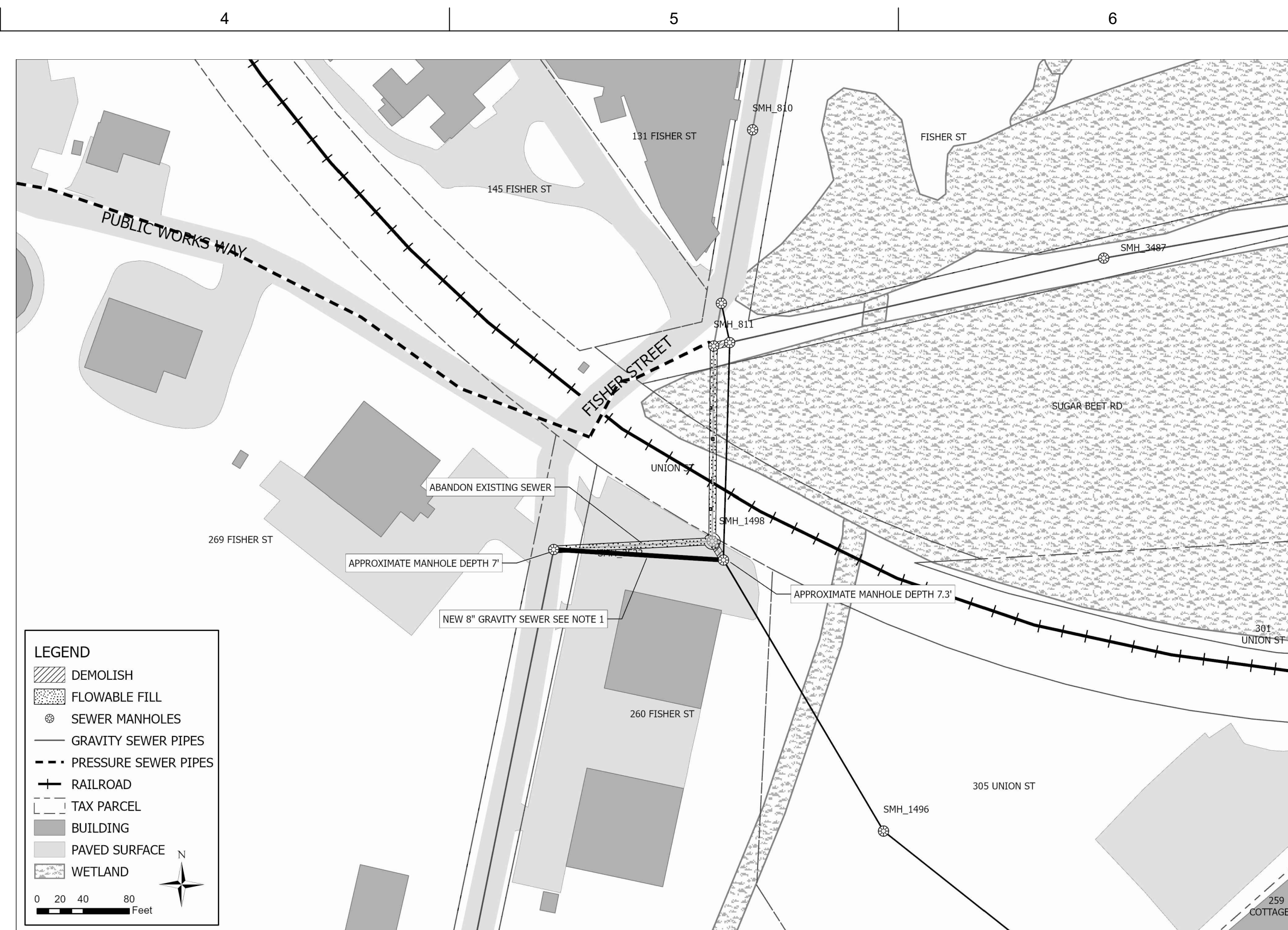
SCALE: NTS

C-60

SHEET NO.: 62 OF 66

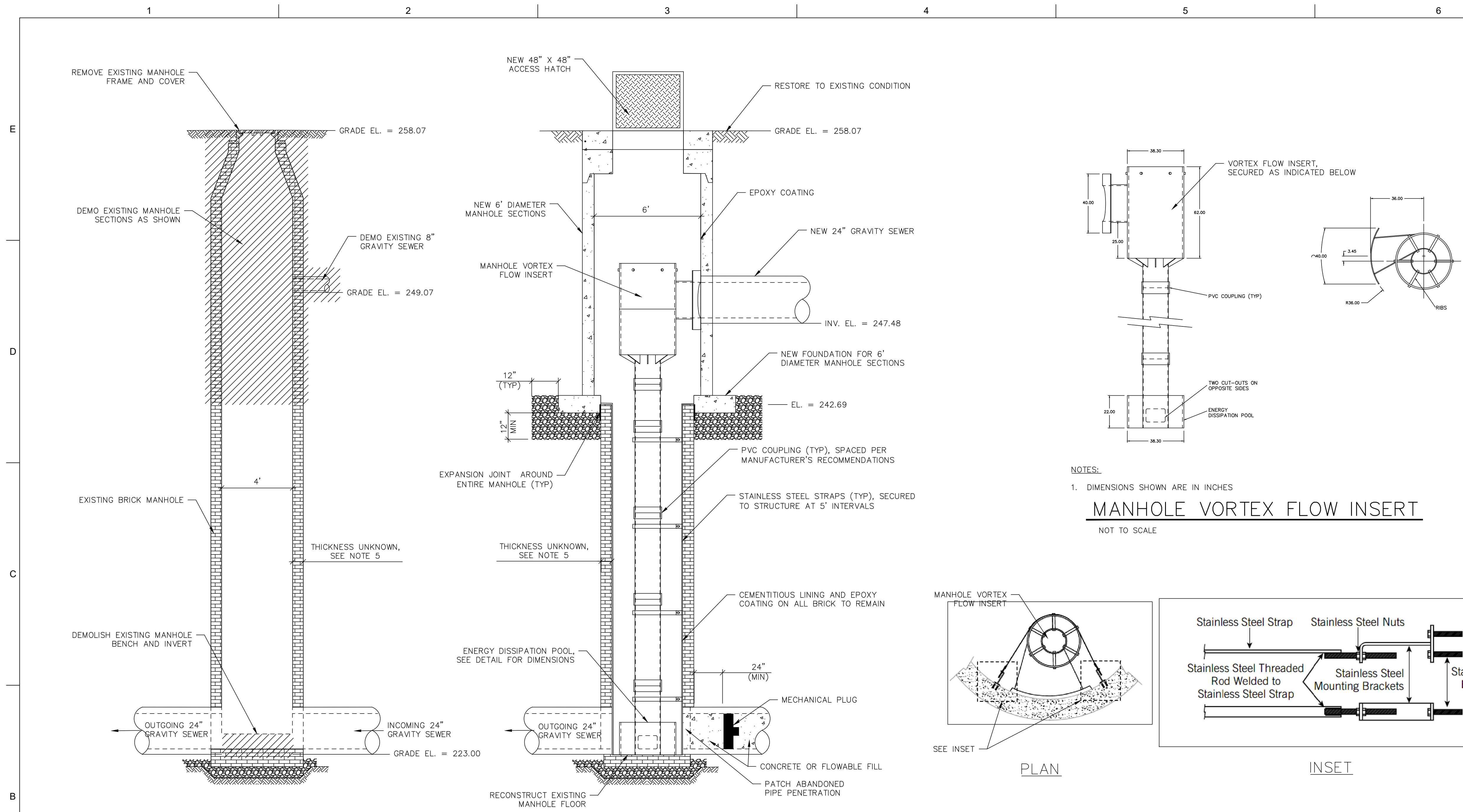


1
POND STREET EASEMENT – 12" DIAMETER
ASBESTOS CEMENT SEWER POINT REPAIR
SCALE: NTS



2
FISCHER STREET EASEMENT – 8" DIAMETER PIPE REPLACEMENT
SCALE: NTS

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FILE NAME: C-61			
DESIGNED BY: SPM			
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SEWER MANHOLE SMH 45 EXISTING
CONDITION AND DEMOLITION
NOT TO SCALE

RECONSTRUCTION OF EXISTING
SEWER MANHOLE SMH 45
NOT TO SCALE

MANHOLE VORTEX FLOW INSERT ANCHORING
NOT TO SCALE

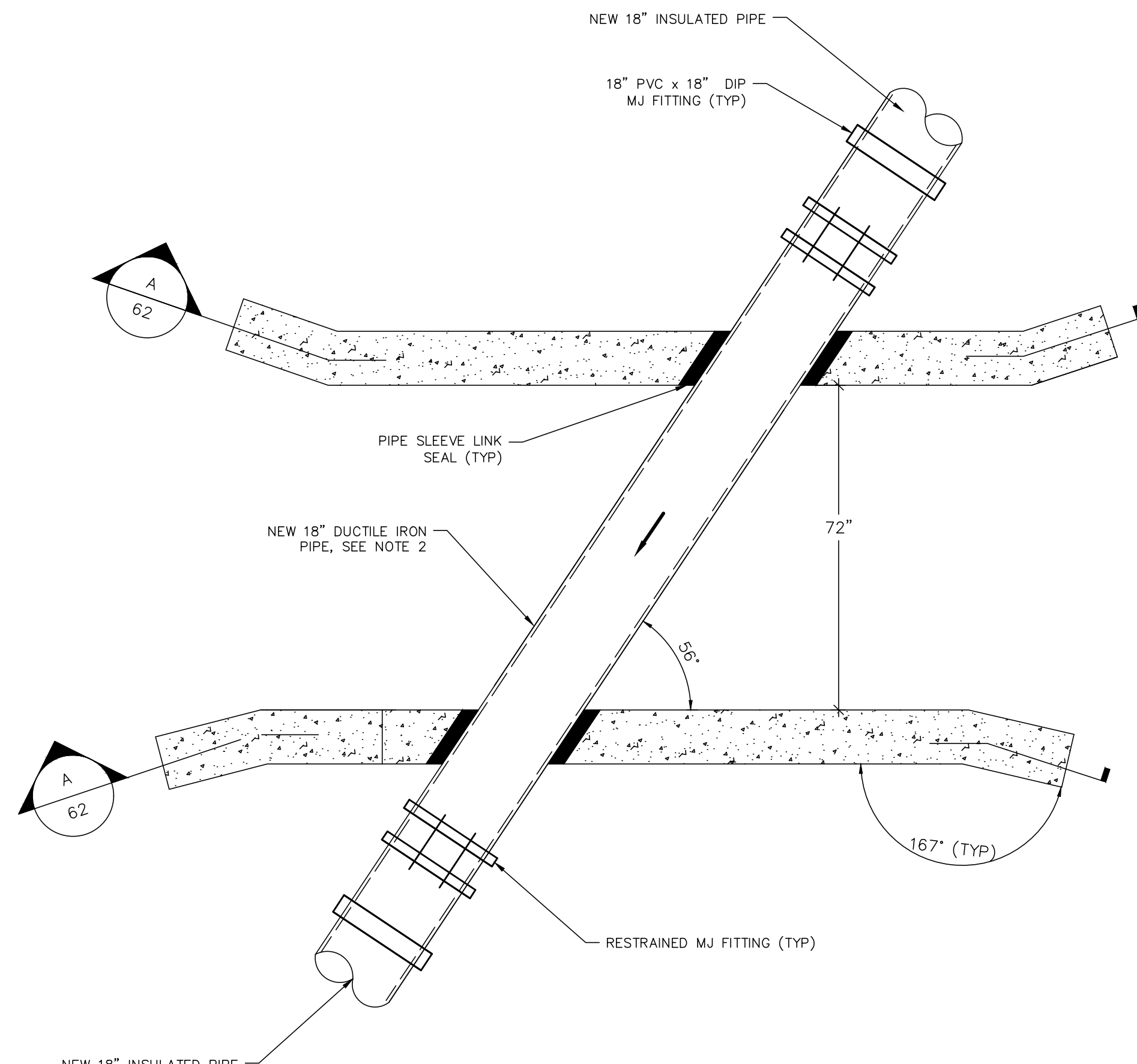
SEWER MANHOLE SMH 45 RECONSTRUCTION AND VORTEX FLOW INSERT INSTALLATION
NOT TO SCALE

- NOTES:
- ALL WORK TO EXISTING SEWER MANHOLE SMH 45 SHALL BE COMPLETED AFTER INSTALLATION OF CIPPL FROM SMH 45 TO SMH 46.
 - CONTRACTOR SHALL PROVIDE TEMPORARY FLOW BYPASS DURING RECONSTRUCTION OF EXISTING MANHOLE FLOOR.
 - NEW MANHOLE FLOOR SHALL BE CONSTRUCTED WITH FLAT AND LEVEL BOTTOM WHERE THE ENERGY DISSIPATION POOL SITS. ELEVATION OF FLOOR SHALL BE AS NECESSARY TO PROMOTE POSITIVE FLOW TOWARDS THE OUTGOING GRAVITY SEWER. MANHOLE FLOOR AROUND ENERGY DISSIPATION POOL SHALL BE PITCHED TOWARD OUTGOING PIPE.
 - THE THICKNESS OF THE EXISTING BRICK WALLS IS UNKNOWN. CONTRACTOR SHALL DETERMINE THICKNESS OF BRICK WALLS AND EXTERIOR CIRCUMFERENCE OF EXISTING MANHOLE AND DESIGN THE NEW FOUNDATION FOR 6" DIAMETER MANHOLE BARRELS SUCH THAT LOADS ARE DISTRIBUTED TO SOILS AND DOES NOT DISTRIBUTE LOADS TO THE EXISTING BRICK MANHOLE STRUCTURE. CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS FOR REVIEW SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS.



EXISTING EXPOSED PIPE RETAINING WALL TO BE DEMOLISHED

NOT TO SCALE



PLAN

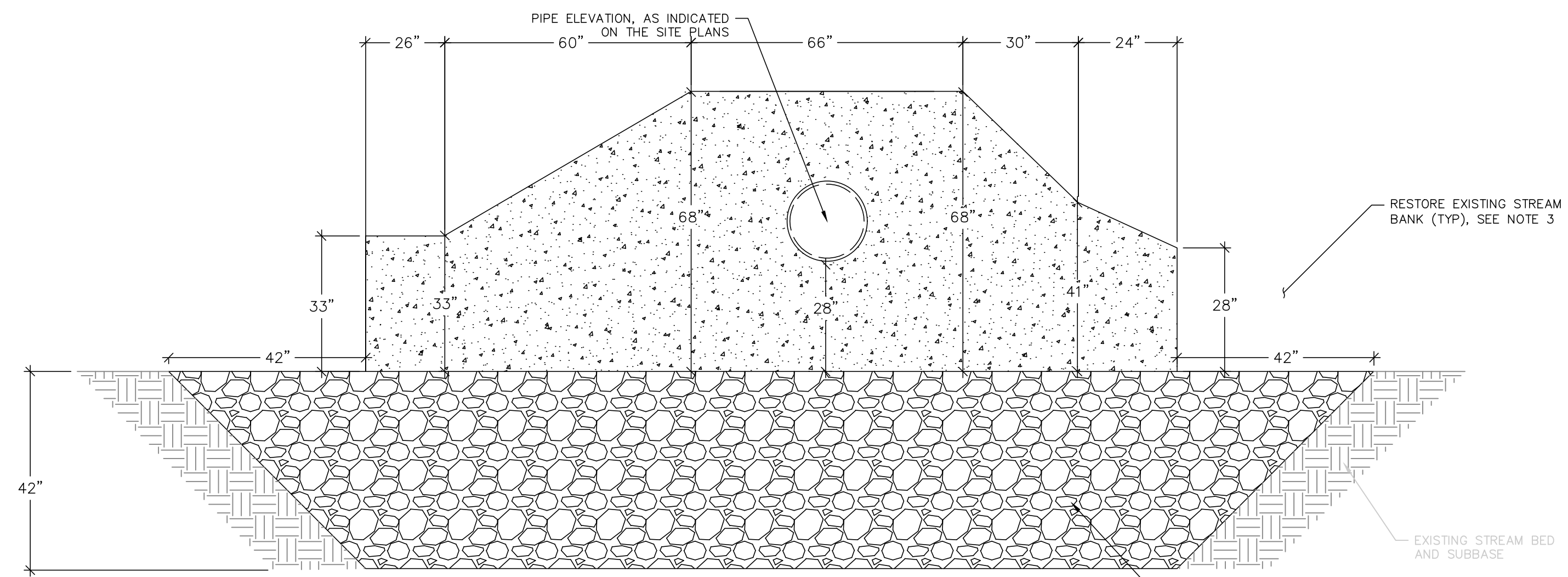
NOT TO SCALE

EXPOSED PIPE RETAINING WALL REPLACEMENT: APPROX. STA 14+80 TO STA 14+88

NOT TO SCALE

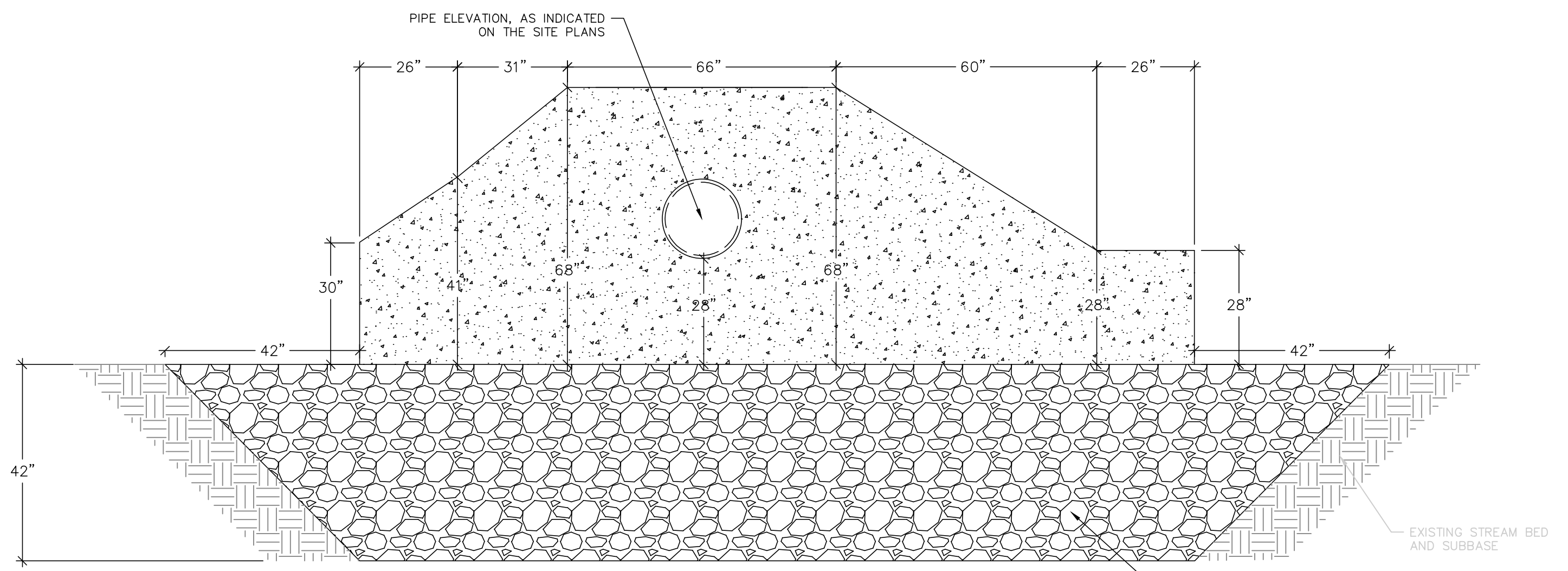
NOTES:

- REFER TO SHEET C-4 AND TYPICAL EXPOSED PIPE SUPPORT RETAINING WALL REPLACEMENT DETAIL FOR ADDITIONAL INFORMATION.
- EXPOSED DUCTILE IRON PIPE SHALL BE COATED WITH 15 MIL EPOXY AND TWO (2) COATS UV RESISTANT URETHANE AT 15 MIL PER COAT.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS, INCLUDING STREAM BANK TO EXISTING GRADE, SEED WITH APPROVED WETLANDS SEED MIX AND PROTECTS AS NECESSARY UNTIL BANK STABILIZATION HAS BEEN ESTABLISHED.
- LIMIT AND DEPTH OF STREAM BED RESTORATION MAY VARY DEPENDING ON DISTURBED AREA AND EXISTING SUBBASE MATERIAL.



A SECTION

C-62 NOT TO SCALE



B SECTION

C-62 NOT TO SCALE



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FILE NAME: C-62

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL

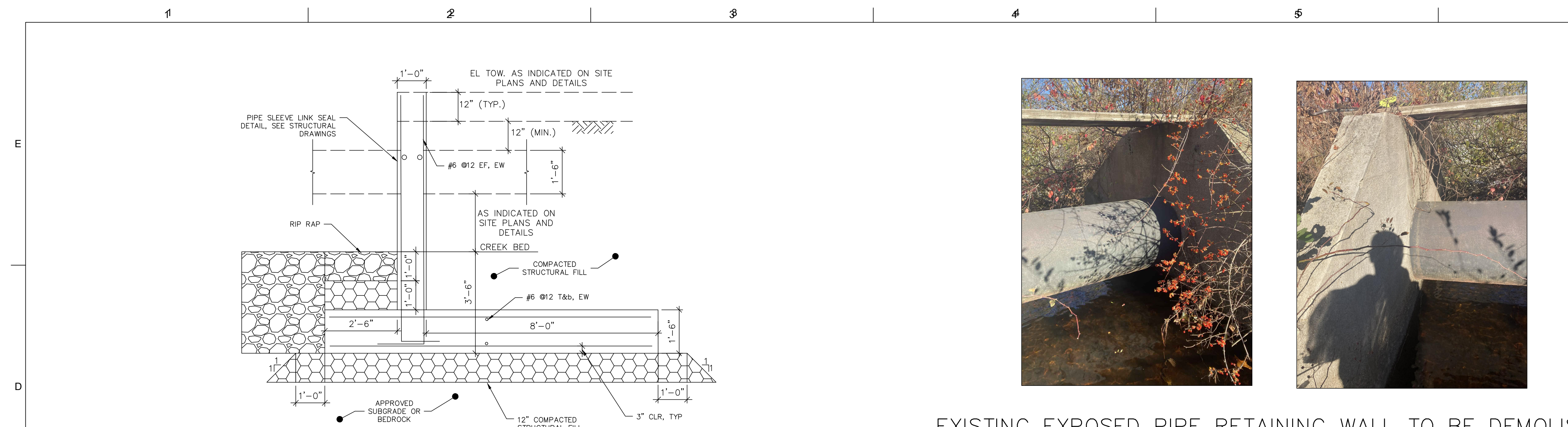
EXPOSED PIPE
SUPPORT RETAINING
WALL REPLACEMENT
DETAILS

SCALE: NTS

C-62

SHEET NO.: 64 OF 66

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PROJECT NO.:		30065216	
FILE NAME:		C-63	
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CHECKED BY:		SRH/AAG	



EXISTING EXPOSED PIPE RETAINING WALL TO BE DEMOLISHED

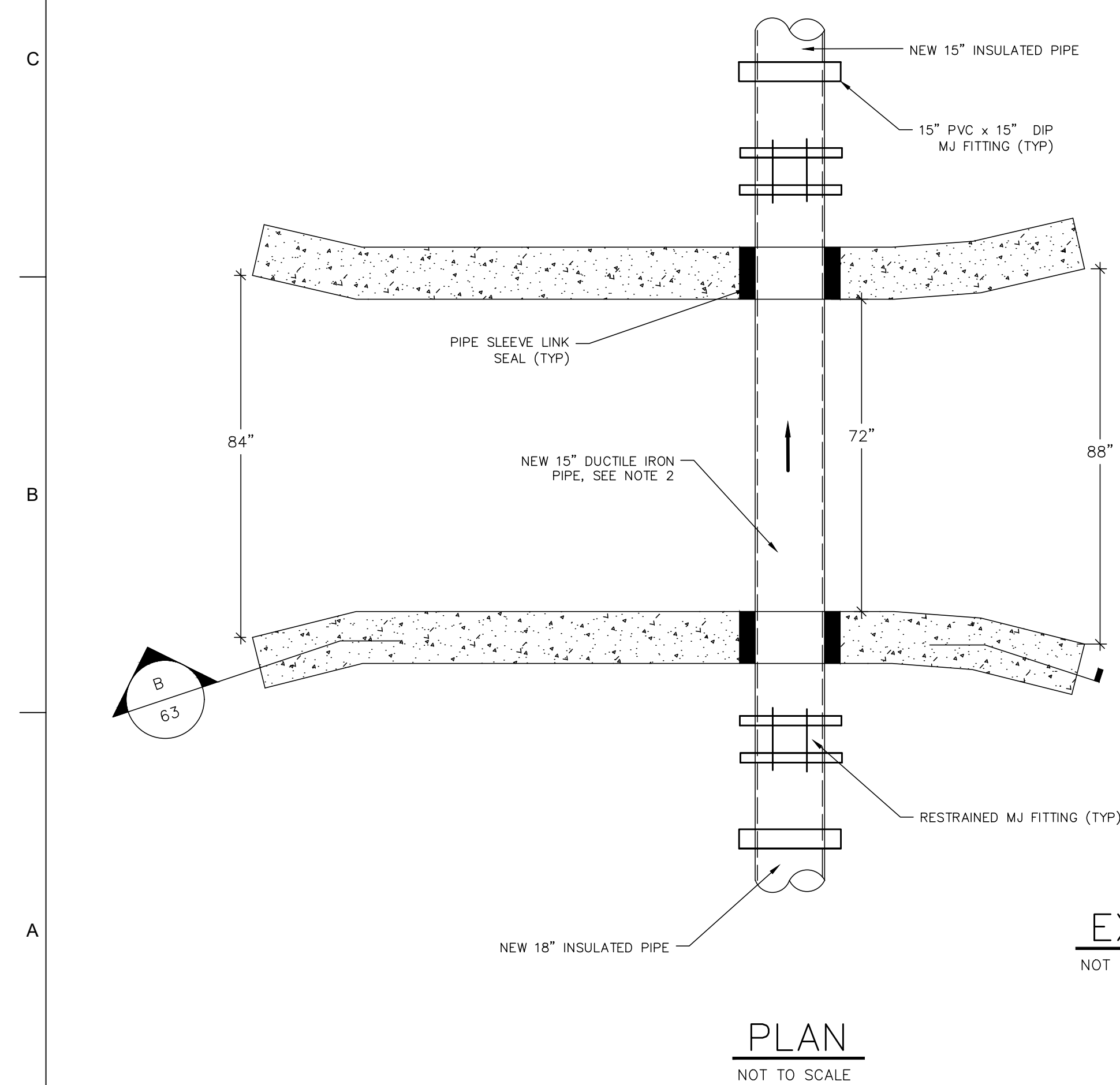
NOT TO SCALE

1 TYPICAL EXPOSED PIPE SUPPORT RETAINING WALL REPLACEMENT

C-63 SCALE: 1/2" = 1'-0"

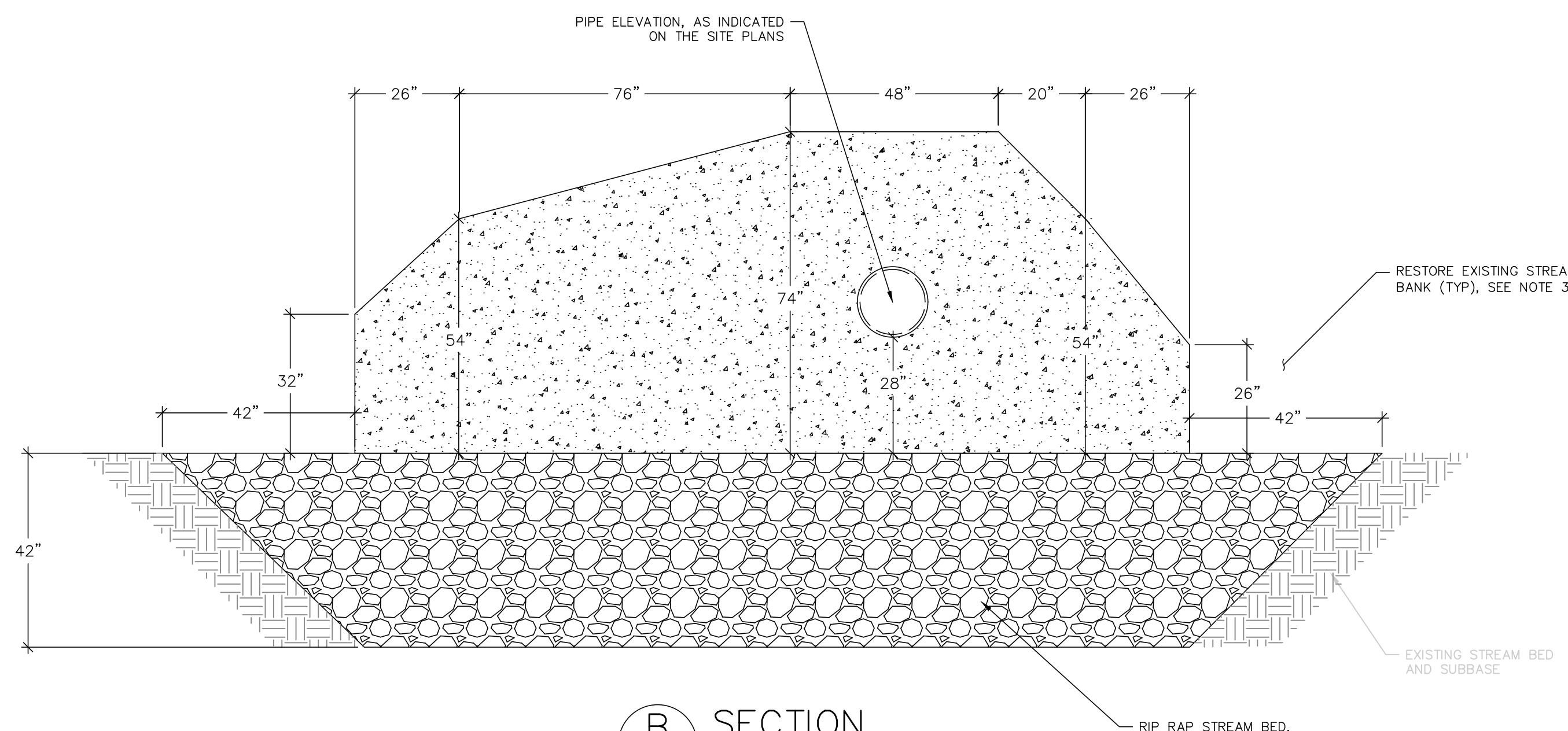
NOTES:

- IF DELETERIOUS MATERIAL IS PRESENT DURING EXCAVATION, OVEREXCAVATE TO APPROVED SUBGRADE AND REPLACE WITH STRUCTURAL FILL.
- WHERE BEDROCK IS ENCOUNTERED, BOTTOM OF FOUNDATION MAY BE PLACED DIRECTLY ON BEDROCK. IF BEDROCK EXCAVATION IS REQUIRED NOTIFY ENGINEER BEFORE REMOVAL.
- THE FOLLOWING DETAIL IS BASED ON EXISTING SURVEYS AND IS FOR BID PURPOSES. VERIFY ELEVATIONS IN FIELD.
- APPLY A EPOXY/POLYURETHANE COATING TO PIPE AT ALL EXPOSED PIPE LOCATIONS.



PLAN

NOT TO SCALE



SECTION B

C-63 NOT TO SCALE

EXPOSED PIPE RETAINING WALL REPLACEMENT: APPROX. STA 7+54 TO STA 7+48

NOT TO SCALE

NOTES:

- REFER TO SHEET C-28 AND TYPICAL EXPOSED PIPE SUPPORT RETAINING WALL REPLACEMENT DETAIL FOR ADDITIONAL INFORMATION.
- EXPOSED DUCTILE IRON PIPE SHALL BE COATED WITH 15 MIL EPOXY AND TWO (2) COATS UV RESISTANT URETHANE AT 15 MIL PER COAT.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS, INCLUDING STREAM BANK TO EXISTING GRADE, SEED WITH APPROVED WETLANDS SEED MIX AND PROTECTS AS NECESSARY UNTIL BANK STABILIZATION HAS BEEN ESTABLISHED.
- LIMIT AND DEPTH OF STREAM BED RESTORATION MAY VARY DEPENDING ON DISTURBED AREA AND EXISTING SUBBASE MATERIAL.

1 2 3 4 5 6



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FILE NAME: C-64

DESIGNED BY: SPM

DRAWN BY: AKR

CHECKED BY: SRH/AAG

SHEET TITLE

CIVIL

EXPOSED PIPE
SMH123 NEW TO SMH
124 NEW DEMOLITION

SCALE: NTS

C-64

SHEET NO.: 66 OF 66

E

D

C

B

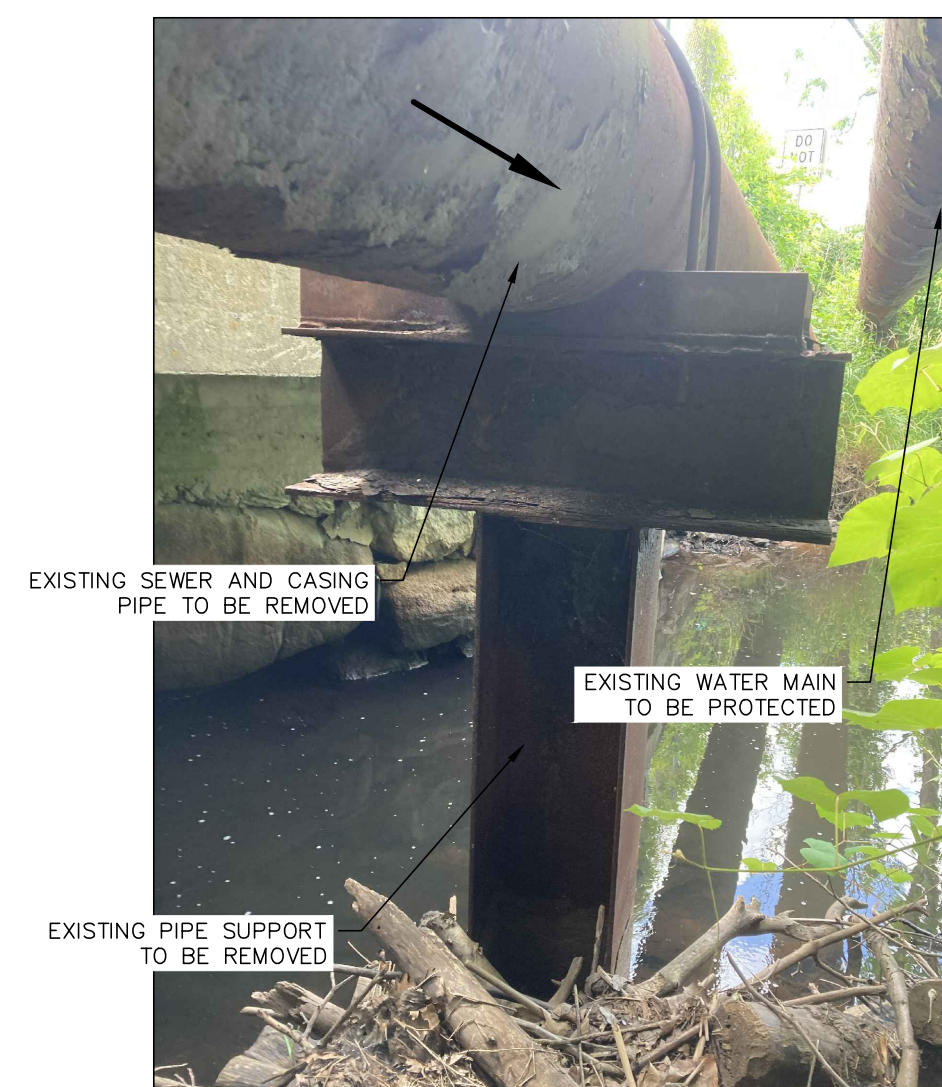
A



EXISTING HEAT TRACING
PEDESTAL
(APPROX. STA 04+25)



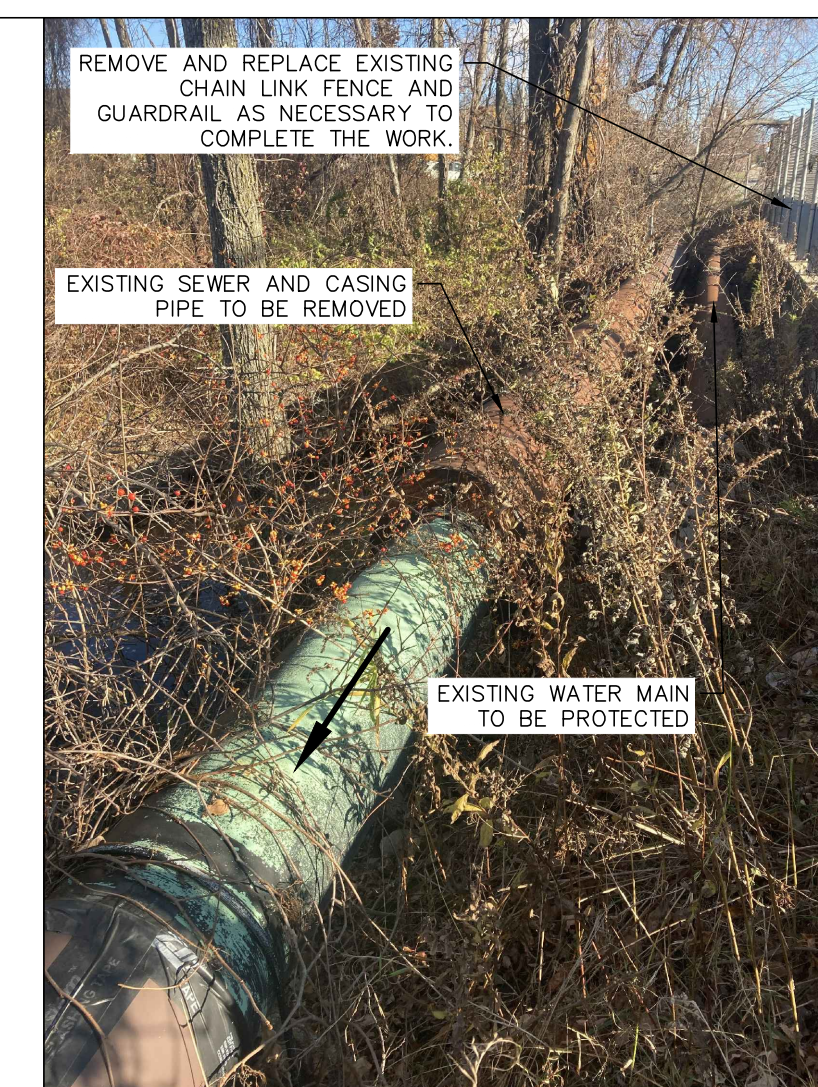
EXISTING WATER AND
SEWER MAINS
(APPROX. STA 04+35)



EXISTING WATER AND
SEWER MAINS
(APPROX. STA 04+40)



EXISTING SEWER MAIN SUPPORT
(APPROX. STA 04+84)



EXISTING WATER AND
SEWER MAINS
(APPROX. STA 05+00)



EXISTING SEWER MAIN
(APPROX. STA 05+00)



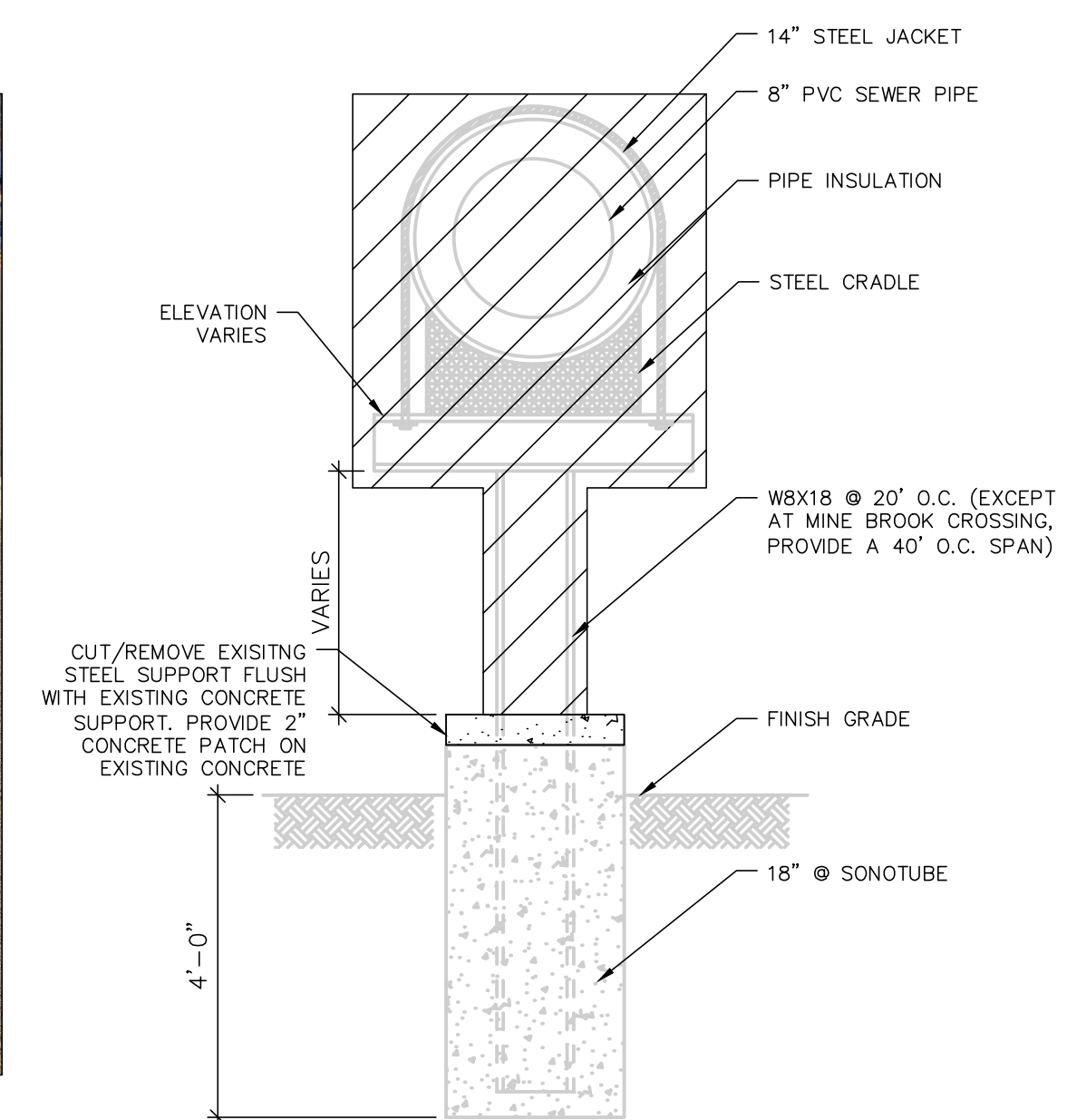
EXISTING SEWER MAIN
(APPROX. STA 05+75)



EXISTING SEWER MAIN
(APPROX. STA 05+75)



EXISTING SEWER MAIN
(APPROX. STA 07+30)



EXISTING EXPOSED SEWER AND PIPE
SUPPORT DEMOLITION TYPICAL DETAIL
NOT TO SCALE

**DEMOLITION OF EXISTING EXPOSED GRAVITY SEWER AND PIPE SUPPORTS
(SMH 123 NEW TO SMH 124 NEW)**

NOT TO SCALE

NOTES:

- EXISTING GRAVITY SEWER FROM SMH 123 NEW TO SMH 124 NEW IS ABOVE GRADE FROM APPROXIMATELY STA 04+25 TO STA 08+00.
- PIPE SUPPORTS VARY IN HEIGHT AND CONDITION. IMAGES SHOWN ABOVE ARE MEANT TO PROVIDE A VISUAL REPRESENTATION OF VARIOUS PIPE SUPPORTS ALONG THE SEWER ALIGNMENT. NOT ALL PIPE SUPPORTS ARE SHOWN. THERE ARE AN ESTIMATED TWENTY (20) PIPE SUPPORTS IN TOTAL.
- CONTRACTOR SHALL PROTECT EXISTING WATER MAIN AND ALL OTHER UTILITIES DURING ALL CONSTRUCTION ACTIVITIES.
- CONTRACTOR SHALL REMOVE AND REPLACE EXISTING GUARDRAIL, FENCING, AND SIGNS AS NECESSARY TO COMPLETE THE DEMOLITION AND INSTALLATION OF NEW GRAVITY SEWER AT THE MINE BROOK CULVERT CROSSING (APPROX. STA 04+25 TO APPROX STA 04+95). ALL OTHER GUARDRAILS, FENCES, SIGNS, AND OTHER SITE FEATURES ALONG THE SEWER ALIGNMENT FROM SMH123 NEW TO SMH124 NEW SHALL BE REPLACED IN KIND.