

SUP MAR 13

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1195-13-71	WISC 2012716	1
8998-00-08	WISC 2012720	1
8998-00-21	WISC 2012721	1
8010-07-74	WISC 2012718	1
1195-13-72	---	---

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CITY OF SUPERIOR, TOWER AVENUE

BELKNAP STREET - 3RD STREET

STH 35

DOUGLAS

STATE PROJECT NUMBER  
1195-13-71

CITY OF SUPERIOR,

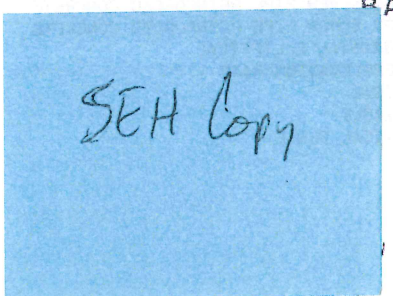
TOWER AVENUE SIDE STREETS

BANKS AVENUE ALLEY - OGDEN AVENUE ALLEY

LOCAL STREETS

DOUGLAS COUNTY

STATE PROJECT NUMBER  
8998-00-08



CITY OF SUPERIOR,

TOWER AVENUE

BELKNAP STREET - 3RD STREET

STH 35

DOUGLAS COUNTY

STATE PROJECT NUMBER  
1195-13-72

END PROJECT 1195-13-71, 1195-13-72  
& 8010-07-74  
STA 750+39.43

CITY OF SUPERIOR,

TOWER AVENUE

BELKNAP STREET - 3RD STREET

STH 35

DOUGLAS COUNTY

STATE PROJECT NUMBER  
8010-07-74

CITY OF SUPERIOR,

TOWER AVENUE

BELKNAP STREET - 3RD STREET

STH 35

DOUGLAS COUNTY

STATE PROJECT NUMBER  
8998-00-21

BEGIN PROJECT 1195-13-71, 1195-13-72  
& 8010-07-74  
STA 688+67.69  
X = 147037.425  
Y = 305490.933

LAYOUT  
SCALE 0 500 FT.

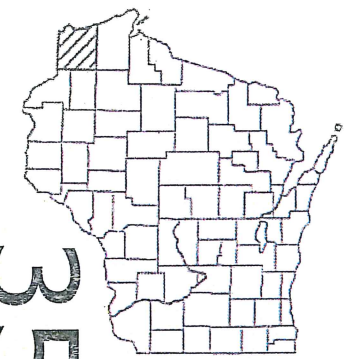
TOTAL NET LENGTH OF CENTERLINE = 1.169 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY  
COORDINATE SYSTEM (WCCS), DOUGLAS COUNTY.

ORDER OF SHEETS

- Section No. 1 Title
- Section No. 2 Typical Sections and Details
- Section No. 3 Estimate of Quantities
- Section No. 3 Miscellaneous Quantities
- Section No. 4 Right of Way Plot
- Section No. 5 Plan and Profile
- Section No. 6 Standard Detail Drawings
- Section No. 7 Sign Plates
- Section No. 8 Structure Plans
- Section No. 9 Computer Earthwork Data
- Section No. 9 Cross Sections

TOTAL SHEETS = 542



35

DESIGN DESIGNATION

- A.A.D.T. 2013 = 9553
- A.A.D.T. 2023 = 10475
- D.H.V. 2023 = 2734
- D.D. = 59/42
- T. AADT = 15.9 %
- DESIGN SPEED = 25 MPH
- ESALS = 4,674,200

CONVENTIONAL SYMBOLS

- |                                |                        |                       |  |
|--------------------------------|------------------------|-----------------------|--|
| PLAN                           | PROFILE                | GRADE LINE            |  |
| CORPORATE LIMITS               | ORIGINAL GROUND        | MARSH OR ROCK PROFILE |  |
| PROPERTY LINE                  | SPECIAL DITCH          | GRADE ELEVATION       |  |
| LOT LINE                       | CULVERT (Profile View) | UTILITIES             |  |
| LIMITED HIGHWAY EASEMENT       | ELECTRIC               | FIBER OPTIC           |  |
| EXISTING RIGHT OF WAY          | GAS                    | SANITARY SEWER        |  |
| PROPOSED OR NEW R/W LINE       | STORM SEWER            | TELEPHONE             |  |
| SLOPE INTERCEPT                | WATER                  | UTILITY PEDESTAL      |  |
| REFERENCE LINE                 | COMBUSTIBLE FLUIDS     | POWER POLE            |  |
| EXISTING CULVERT               | MARSH AREA             | TELEPHONE POLE        |  |
| PROPOSED CULVERT (Box or Pipe) | WOODED OR SHRUB AREA   |                       |  |

COUNTY: DOUGLAS

ACCEPTED FOR  
CITY of SUPERIOR  
DATE: 8/2/12

ORIGINAL PLANS PREPARED BY:  
SHORT ELLIOTT HENDRICKSON, INC



STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY  
Surveyor: WISDOT  
Designer: STEPHANE J. KING  
Project Manager: BRENDAN D. DIRKES  
Regional Examiner: DANIEL OJEWAY  
Regional Supervisor: ROBERT J. ANDERSON  
C.O. Examiner: LARRY JONES

APPROVED FOR THE DEPARTMENT  
DATE: 8/3/12 (Signature)

E

STANDARD ABBREVIATIONS

AGG	AGGREGATE	LC	LONG CHORD OF CURVE
AECPRC	APRON ENDWALL FOR CULVERT PIPE REINFORCED CONCRETE	MOR	MID POINT OF RADIUS
ASPH	ASPHALTIC	NC	NORMAL CROWN
BM	BENCH MARK	N.T.S.	NOT TO SCALE
CE	COMMERCIAL ENTRANCE	PAVT	PAVEMENT
CL OR C/L OR E	CENTER LINE	PE	PRIVATE ENTRANCE
Δ	CENTRAL ANGLE OR DELTA	PVRC	POINT OF VERTICAL REVERSE CURVE
CONC	CONCRETE	QOR	QUARTER POINT OF RADIUS
CPRC	CULVERT PIPE REINFORCED CONCRETE	R	RADIUS
CPRCHE	CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL	RES	RESIDENCE OR RESIDENTIAL
DISCH	DISCHARGE	R/W	RIGHT-OF-WAY
DWY	DRIVEWAY	RDWY	ROADWAY
EOR	END POINT OF RADIUS	R/L OR R	REFERENCE LINE
ENT	ENTRANCE	SAN	SANITARY SEWER
FE	FIELD ENTRANCE	SS	STORM SEWER
FO	FIBER OPTIC	SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
CWT	HUNDREDWEIGHT	SSPRCHE	STORM SEWER PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL
HDPE	HIGH DENSITY POLYTHENE PIPE	SE	SUPERELEVATION RATE
HYD	HYDRANT	TYP	TYPICAL
INV	INVERT	VAR	VARIABLE
IP	IRON PIPE ON PIN	VC	VERTICAL CURVE
L	LENGTH OF CURVE		

GENERAL NOTES

WHEN THE QUANTITY OF BASE AGGREGATE IS MEASURED FOR PAYMENT BY THE TON OR CUBIC YARD, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

THE LOCATION OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS IS APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

ALL UTILITIES WILL BE RELOCATED OR ADJUSTED BY THEIR OWNERS WHERE REQUIRED, MUNICIPAL WATER AND SANITARY SEWER ADJUSTMENTS WILL REQUIRE COORDINATION WITH THE CONTRACTOR.

THE ESTIMATED EXTENT OF SOIL CONTAMINATION IN THE RIGHT OF WAY, AS SHOWN IN THE PLANS IS TO BE REMOVED. THE LOCATION AND AMOUNT WILL BE DETERMINED BY THE ENGINEER.

NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

THE EXACT LOCATION OF THE EROSION CONTROL DEVICES SHALL BE DETERMINED IN THE FIELD.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE 4-INCH TOPSOILED, FERTILIZED, SEEDED, AND MULCHED OR EROSION MATTED AS SHOWN IN THE PLANS. FINISHED SEEDED SURFACE SHALL BE 1-INCH BELOW THE TOP OF ADJACENT CONCRETE.

THE EXACT LOCATION OF ALL DRIVEWAYS WILL BE DETERMINED BY THE ENGINEER.

ALL CURB AND GUTTER RADII, PAVEMENT DIMENSIONS AND STATIONS ARE SHOWN TO THE EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.

CONSTRUCT INSIDE EDGE OF SIDEWALK 1/4 INCH HIGHER THAN THE TOP OF CURB, WHEN THEY ARE ADJACENT TO EACH OTHER.

A VERTICAL SAWCUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS AND PAVEMENTS AT REMOVAL LIMITS.

TOP OF CASTING ELEVATIONS SHOWN FOR INLETS REFER TO THE NORMAL GUTTER FLOWLINE.

ALL STORM SEWER INVERTS, ELEVATIONS, PIPE LENGTHS, AND GRADES ARE COMPUTED CENTER-TO-CENTER OF STRUCTURES.

HMA PAVEMENT SHALL BE CONSTRUCTED WITH THE FOLLOWING LAYER THICKNESSES:

PAVEMENT THICKNESS	LOWER	NOM AGG SIZE	LOWER MIDDLE	NOM AGG SIZE	MIDDLE	NOM AGG SIZE	UPPER	NOM AGG SIZE
(INCH)	(INCH)	(mm)	(INCH)	(mm)	(INCH)	(mm)	(INCH)	(mm)
4	2						2	
5	3						2	
7.5	3				2.5		2	
10	3		2.5		2.5		2	

CURB RAMP TYPES ARE SHOWN ON THE PLAN AND PROFILE SHEETS.

ORDER OF TYPICAL SECTION AND DETAIL SHEETS

- GENERAL NOTES
- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- INTERSECTION DETAILS
- EROSION CONTROL
- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- PLANTING
- PERMANENT SIGNING
- LIGHTING
- LIGHTING DETAILS
- SPEAKER SYSTEM
- TRAFFIC SIGNAL PLAN
- SEQUENCE OF OPERATIONS
- PAVEMENT MARKING
- TRAFFIC CONTROL
- ALIGNMENT

UTILITY CONTACTS

CHARTER COMMUNICATIONS  
640 GARFIELD AVENUE  
DULUTH, MINNESOTA 55802  
TELEPHONE: 218.529.8042  
ATTENTION: JOHN QUADE  
EMAIL: JOUADE@CHARTERCOM.COM

CENTURYLINK  
2426 COUNTY ROAD M  
PO BOX 518  
OSCEOLA, WISCONSIN 54020  
ENGINEERING TELEPHONE: 715.294.2463  
ATTENTION: MIKE VANDENBOS  
EMAIL: MIKE.VANDENBOS@CENTURYLINK.COM

CITY OF SUPERIOR  
PUBLIC WORKS  
1316 N 14TH STREET  
SUPERIOR, WISCONSIN 54880  
TELEPHONE: 715.395.7539  
ATTENTION: JEFF GOETZMAN  
EMAIL: GOETZMAN@CI.SUPERIOR.WI.US

SUPERIOR WATER, LIGHT & POWER CO.  
2915 HILL AVENUE  
P.O. BOX 519  
SUPERIOR, WISCONSIN 54880  
TELEPHONE: 715.395.6315  
ATTENTION: KEVIN HABERMAN  
EMAIL: KHABERMAN@SWLP.COM

TELEPHONE: 715.395.6346  
ATTENTION: TROY AUNE  
EMAIL: TAUNE@SWLP.COM

TELEPHONE: 218.355.5949  
ATTENTION: TIM MELBY (WATER & GAS)  
EMAIL: TMELBY@SWLP.COM



CALL 811 OR (800)242.8511  
(877)500.9592 (EMERGENCY ONLY)  
www.DiggersHotline.com

RAILROAD CONTACTS

UNION PACIFIC RAILROAD COMPANY  
101 N WACKER DRIVE, SUITE 1920  
CHICAGO, IL 60606  
TELEPHONE: 312.777.2043  
ATTENTION: JOHN VENICE  
EMAIL: JVENICE@UP.COM

UNION PACIFIC RAILROAD COMPANY  
"CALL BEFORE YOU DIG"  
1-800-848-8715

BNSF RAILWAY COMPANY  
80 44TH AVENUE NE  
MINNEAPOLIS, MN 55421  
TELEPHONE: 763.782.3495  
ATTENTION: BENJAMIN STEINKAMP  
EMAIL: BENJAMIN.STEINKAMP@BNSF.COM

BNSF RAILWAY COMPANY  
"CALL BEFORE YOU DIG"  
1-800-533-2891

CANADIAN PACIFIC RAILWAY  
"CALL BEFORE YOU DIG"  
1-800-291-0741

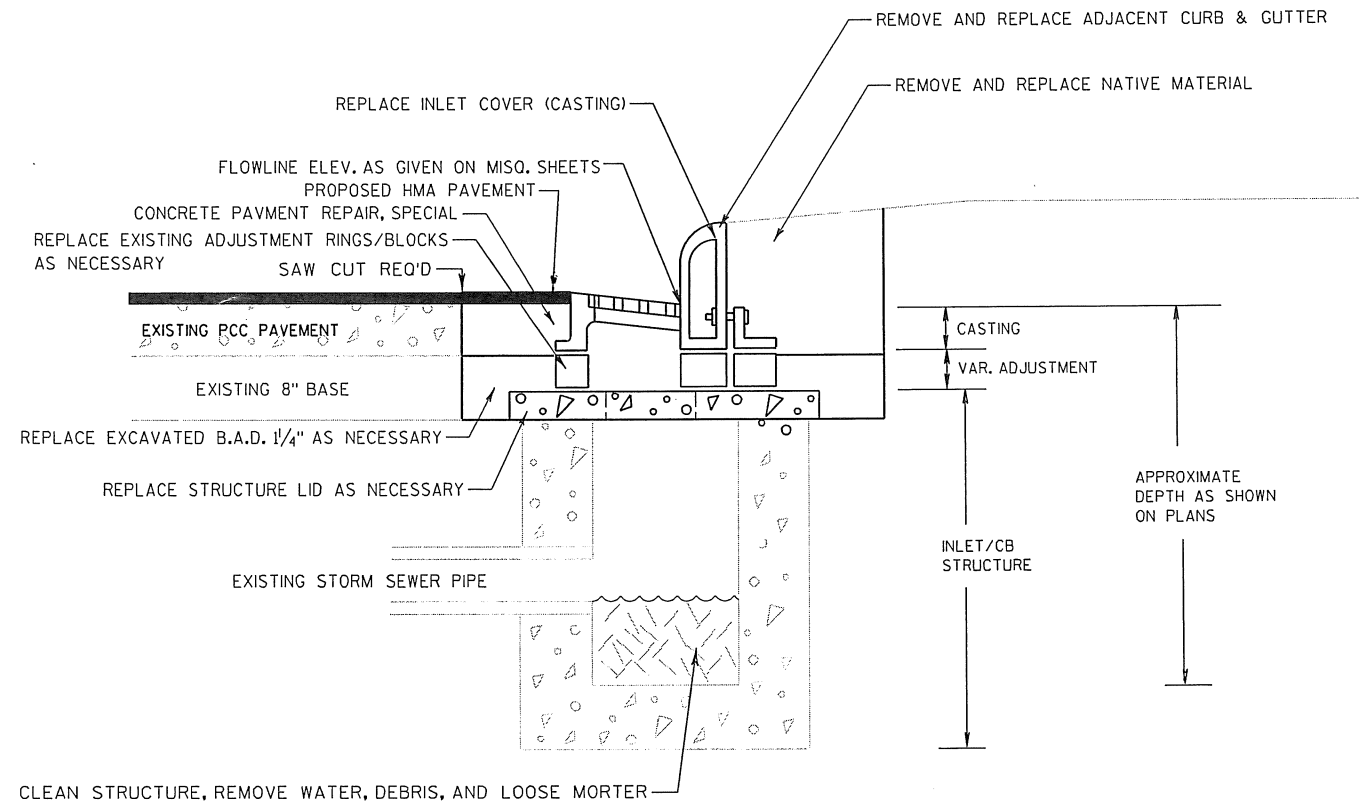
DESIGN CONTACT

TELEPHONE: 218.393.1915  
ATTENTION: SCOTT WEYANDT

SEH INC.  
421 FRENETTE DRIVE  
CHIPPEWA FALLS, WI 54729  
TELEPHONE: 715.720.6261  
ATTENTION: JARROD STARREN  
EMAIL: JSTARREN@SEHINC.COM

DNR CONTACT

STATE OF WISCONSIN  
NORTHWEST DISTRICT  
HWY 70 WEST  
P.O. BOX 309  
SPOONER, WI 54801  
TELEPHONE: 715.635.4229  
ATTENTION: AMY CRONK  
EMAIL: AMY.CRONK@WISCONSIN.GOV



CLEAN STRUCTURE, REMOVE WATER, DEBRIS, AND LOOSE MORTAR

INCIDENTAL WORK, NO SEPARATE MEASUREMENT & PAYMENT

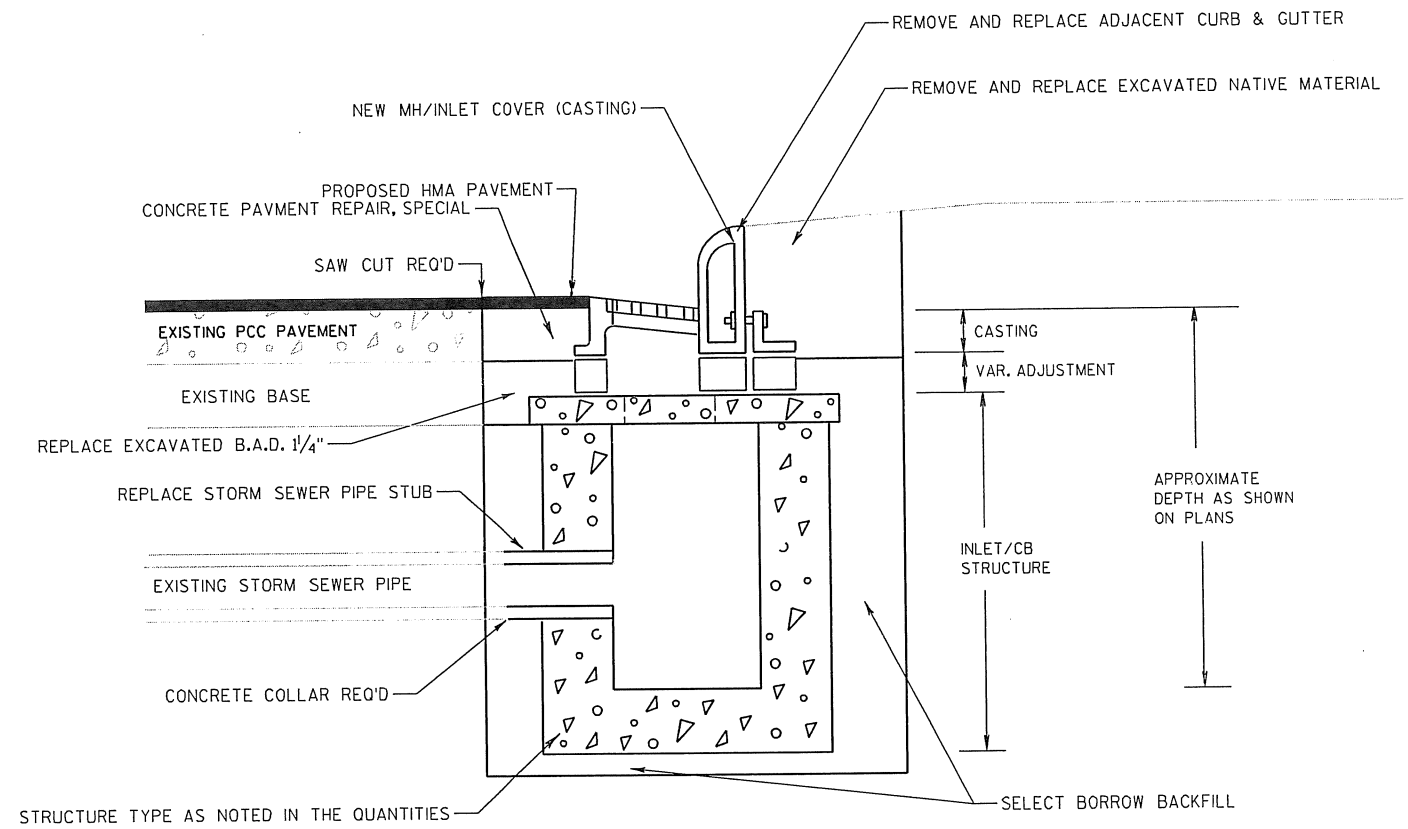
- ADJUSTMENT RINGS OR BLOCKS
- REMOVE AND REPLACE STRUCTURE LID
- STRUCTURE JOINT AND SPALL REPAIR
- REMOVE AND REPLACE NATIVE MATERIAL
- CLEAN STRUCTURE
- CASTING REMOVAL
- SAWING PAVEMENT

WORK MEASURED & PAID SEPARATELY

- INLET/ MANHOLE COVER (CASTING)
- CONCRETE PAV'T REPAIR (REMOVAL INCIDENTAL)
- REMOVE AND REPLACE CURB & GUTTER
- BASE AGG. DENSE 1/4- INCH

**ADJUST CATCH INLET/CATCH BASIN**

SEE PLANS AND QUANTITIES FOR LOCATIONS



STRUCTURE TYPE AS NOTED IN THE QUANTITIES

INCIDENTAL WORK, NO SEPARATE MEASUREMENT & PAYMENT

- ADJUSTMENT RINGS OR BLOCKS
- STORM SEWER PIPE STUB
- SELECT BORROW BACKFILL
- REMOVE AND REPLACE NATIVE MATERIAL
- CASTING AND OLD STRUCTURE REMOVAL
- SAWING PAVEMENT

WORK MEASURED & PAID SEPARATELY

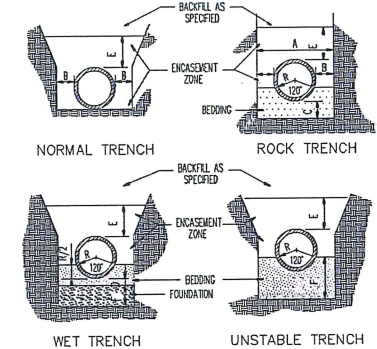
- INLET/ MANHOLE COVER (CASTING)
- CONCRETE PAV'T REPAIR (REMOVAL INCIDENTAL)
- REMOVE AND REPLACE CURB & GUTTER
- BASE AGG. DENSE 1/4- INCH
- NEW STRUCTURE
- CONCRETE COLLAR

**RECONSTRUCT INLET/CATCH BASIN**

SEE PLANS AND QUANTITIES FOR LOCATIONS

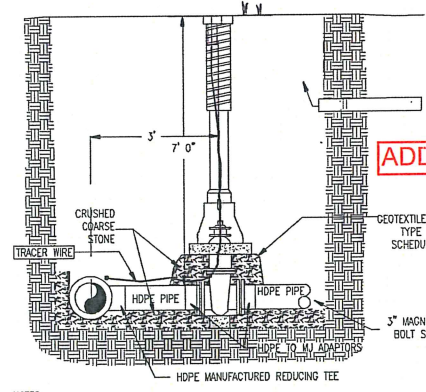
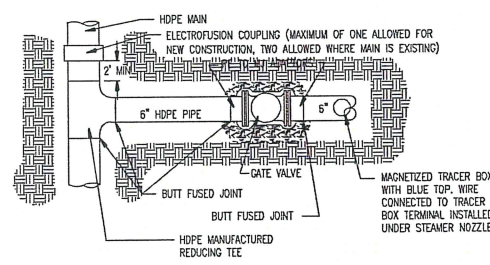


Addendum No. 1  
 ID 1195-13-71  
 Revised Sheet 31  
 March 4, 2013



1. DIMENSIONS:
- A. MAXIMUM PAY WIDTH - O.D. PIPE + 24"
  - B. MINIMUM 6"
  - C. 6" BELOW BARREL
  - D. 3" BELOW BARREL
  - E. MINIMUM 12"
  - F. DETERMINED BY THE ENGINEER
2. ENCASMENT ZONE SHALL BE EXCAVATED MATERIALS THAT ARE CLASSIFIED SUITABLE, OR GRANULAR BACKFILL MATERIAL.
3. FOUNDATION MATERIAL - 3" CRUSHED STONE FOR WET OR UNSTABLE TRENCH BOTTOM
4. BEDDING MATERIAL - CRUSHED STONE CHIPS

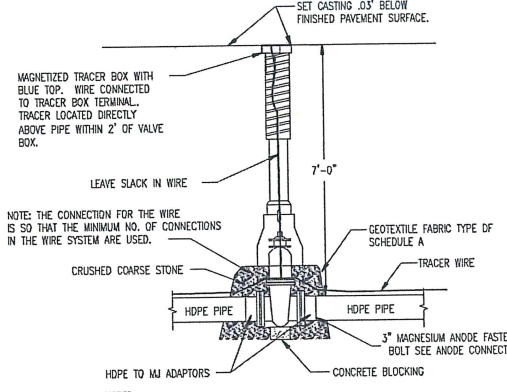
**TRENCH SECTION FOR WATERMAIN**  
NTS



- NOTES:
- VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
  - USE EPOXY COATING ON EXTERIOR OF ALL VALVES.
  - ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL FITTINGS.
  - FOR OPEN CUT PIPE INSTALLATIONS, ELECTROFUSION COUPLINGS ARE NOT ALLOWED FOR CONNECTION OF HDPE TO MJ ADAPTORS. FOR DIRECTIONAL DRILLED INSTALLATIONS, ONE ELECTROFUSION COUPLING MAY BE USED PER VALVE.

**COMMERCIAL / INDUSTRIAL WATER SERVICE CONNECTION**  
NTS

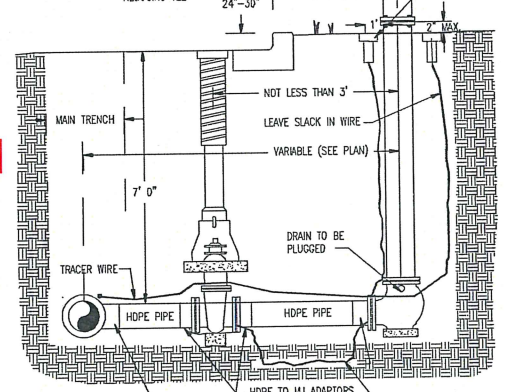
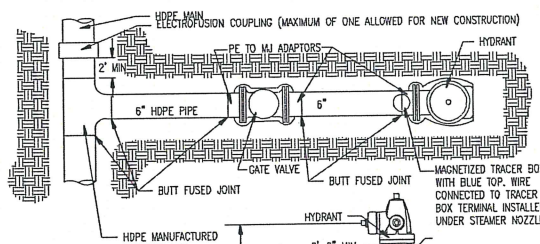
ADDED NOTE 2&4



- NOTE: THE CONNECTION FOR THE WIRE IS SO THAT THE MINIMUM NO. OF CONNECTIONS IN THE WIRE SYSTEM ARE USED.
- NOTES:
- VALVES SHALL BE CONNECTED DIRECTLY TO HDPE WITH HDPE TO MECHANICAL JOINT ADAPTORS.
  - USE EPOXY COATING ON EXTERIOR OF VALVES.
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**WATERMAIN VALVE DETAIL**  
NTS

EDITED NOTE 3

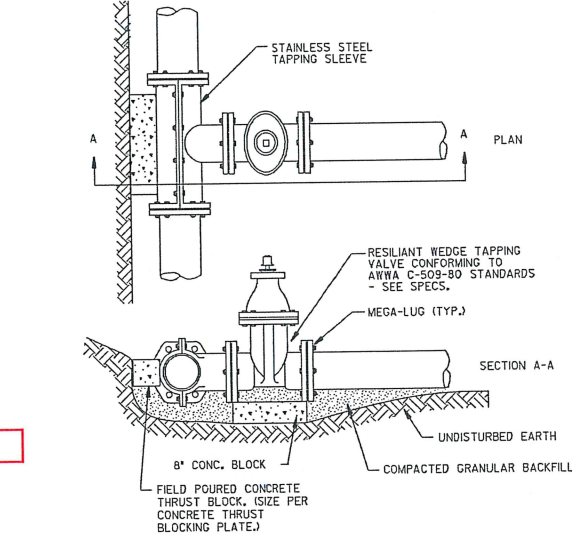


- NOTES:
- VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
  - USE EPOXY COATING ON VALVE AND HYDRANT BASE
  - ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL FITTINGS.

**FIRE HYDRANT SETTING DETAILS**  
NTS

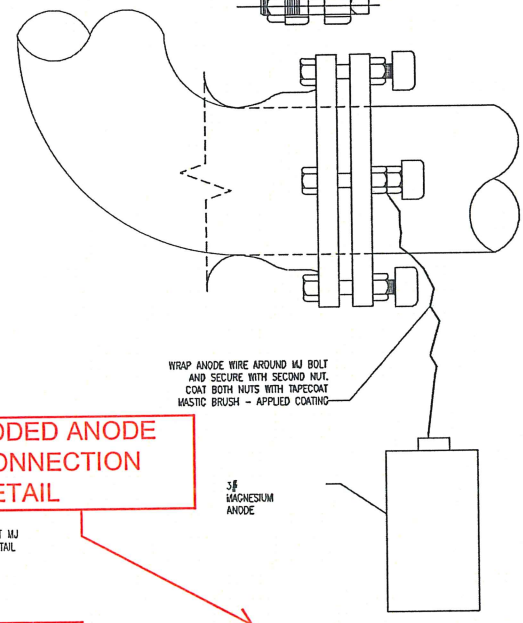
ADDED NOTE

ADDED ANODE CONNECTION DETAIL

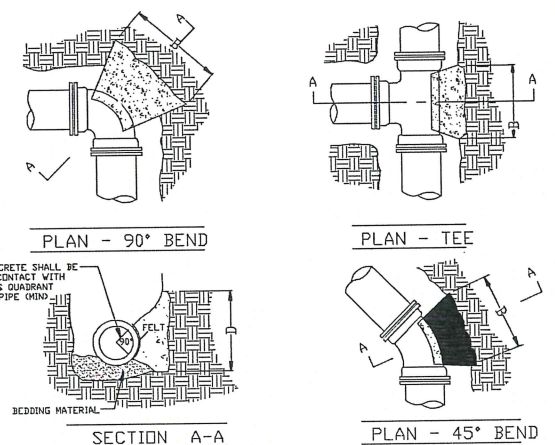


**WATER MAIN WET TAP**  
NTS

ADDED NOTE



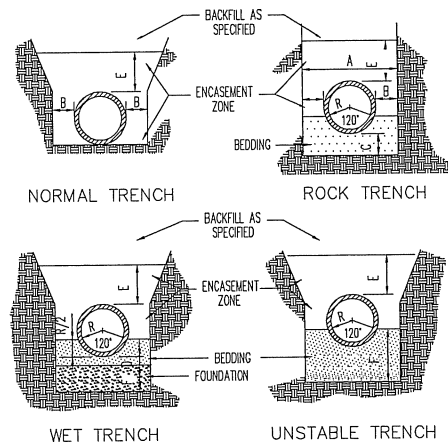
**ANODE CONNECTION DETAIL**  
NTS



BEND OR BRANCH SIZE	22 1/2° BENDS		45° BENDS		90° BENDS		TEES	
	B	D	B	D	B	D	B	D
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-3"	1'-0"
8"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-4"
12"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"	2'-0"
16"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"	3'-2"	2'-4"
20"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	4'-0"	3'-0"
24"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	5'-3"	3'-4"
30"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	6'-3"	4'-3"

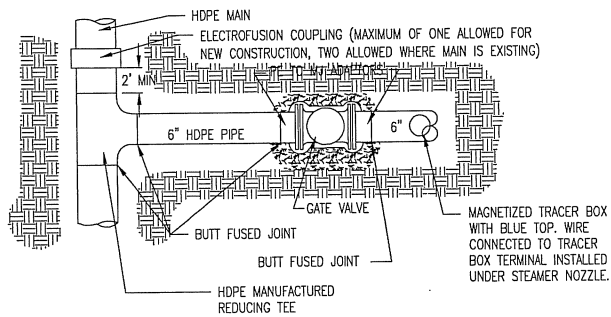
- NOTES -
- DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. AND AN EARTH RESISTANCE OF 2 TONS PER SQ. FOOT
  - BLOCKING TO BE SET AGAINST UNDISTURBED SOIL.
  - CONCRETE SHALL BE CLASS "1F" CONCRETE SHALL NOT INTERFERE WITH MECHANICAL JOINTS.

**THRUST BLOCKING FOR WATERMAIN**  
NTS



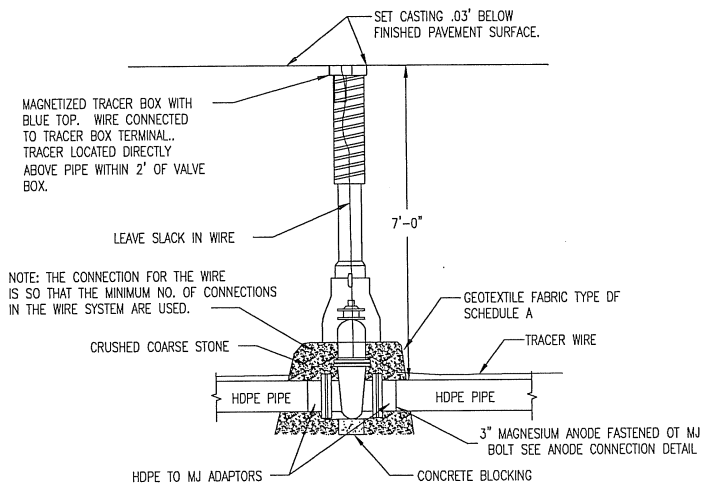
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 B. MINIMUM - 6"  
 C. 6" BELOW BARREL  
 D. 3" BELOW BARREL  
 E. MINIMUM 12"  
 F. DETERMINED BY THE ENGINEER
2. ENCASEMENT ZONE SHALL BE EXCAVATED MATERIALS THAT ARE CLASSIFIED SUITABLE, OR GRANULAR BACKFILL MATERIAL.
3. FOUNDATION MATERIAL - 3" CRUSHED STONE FOR WET OR UNSTABLE TRENCH BOTTOM.
4. BEDDING MATERIAL - CRUSHED STONE CHIPS

**TRENCH SECTION FOR WATERMAIN**  
NTS



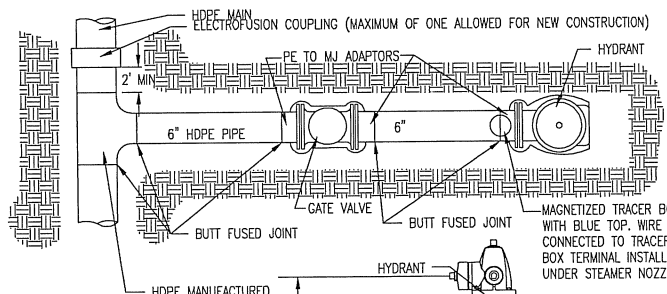
- NOTES:
- VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
  - USE EPOXY COATING ON EXTERIOR OF ALL VALVES.
  - ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL WITH 6 OUNCE ZINC ANODE CAPS CONFORMING TO ASTM B-418 FOR ALL MECHANICAL FITTINGS.
  - FOR OPEN CUT PIPE INSTALLATIONS, ELECTROFUSION COUPLINGS ARE NOT ALLOWED FOR CONNECTION OF HDPE TO MJ ADAPTORS. FOR DIRECTIONAL DRILLED INSTALLATIONS, ONE ELECTROFUSION COUPLING MAY BE USED PER VALVE.

**COMMERCIAL / INDUSTRIAL WATER SERVICE CONNECTION**  
NTS



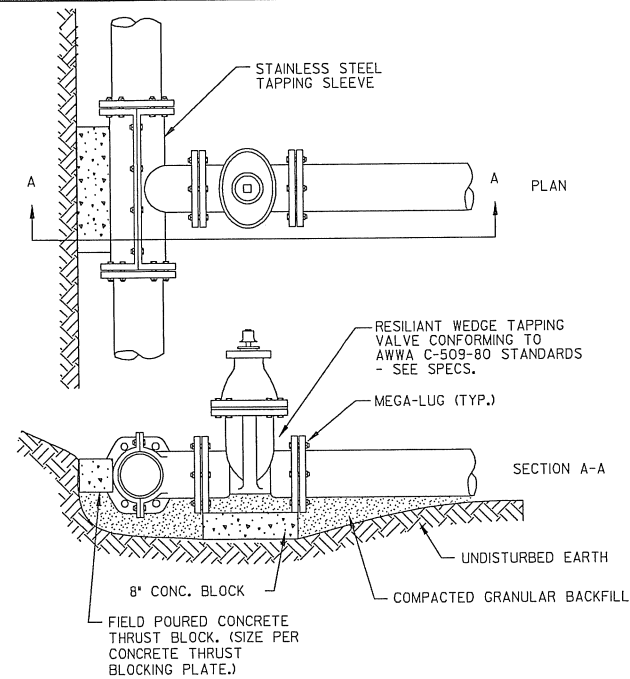
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**WATERMAIN VALVE DETAIL**  
NTS

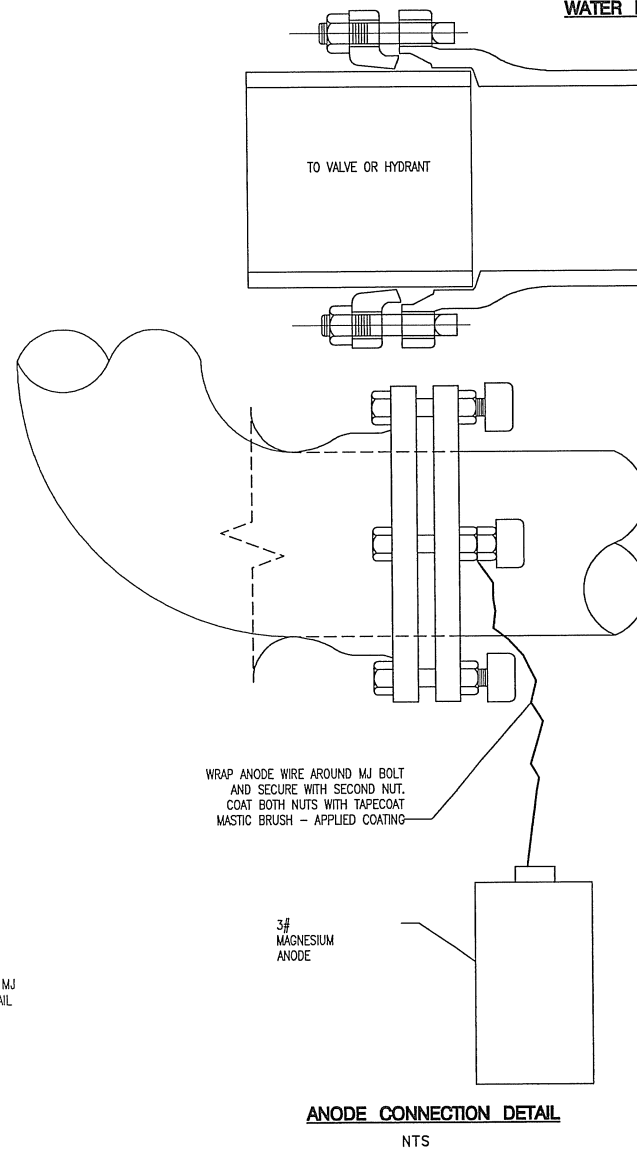


- NOTES:
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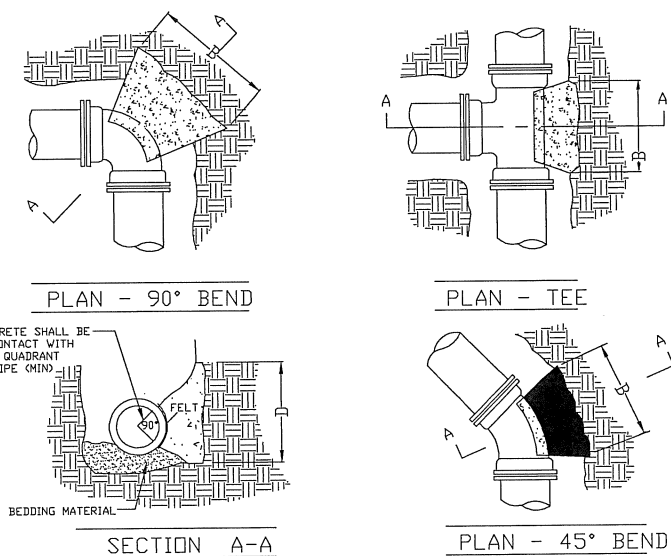
**FIRE HYDRANT SETTING DETAILS**  
NTS



**WATER MAIN WET TAP**  
NTS



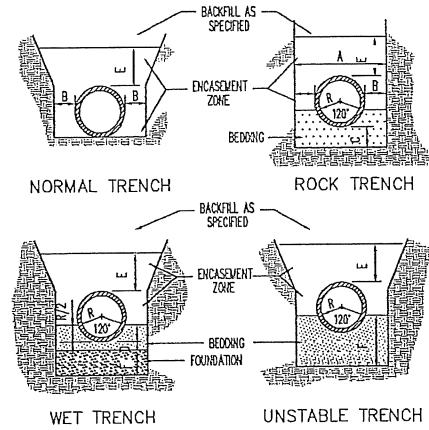
**ANODE CONNECTION DETAIL**  
NTS



BEND OR BRANCH SIZE	BLOCKING DIMENSIONS							
	22 1/2° BENDS		45° BENDS		90° BENDS		TEES	
	B	D	B	D	B	D	B	D
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"	1'-3"	1'-0"
8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"	1'-6"	1'-4"
12"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"	2'-0"
16"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	3'-2"	3'-2"	2'-4"
20"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	4'-0"	3'-0"
24"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	5'-3"	3'-4"
30"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	6'-3"	4'-3"

- NOTES -
- DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. AND AN EARTH RESISTANCE OF 2 TONS PER SQ. FOOT
  - BLOCKING TO BE SET AGAINST UNDISTURBED SOIL.
  - CONCRETE SHALL BE CLASS '1F' CONCRETE SHALL NOT INTERFERE WITH MECHANICAL JOINTS.

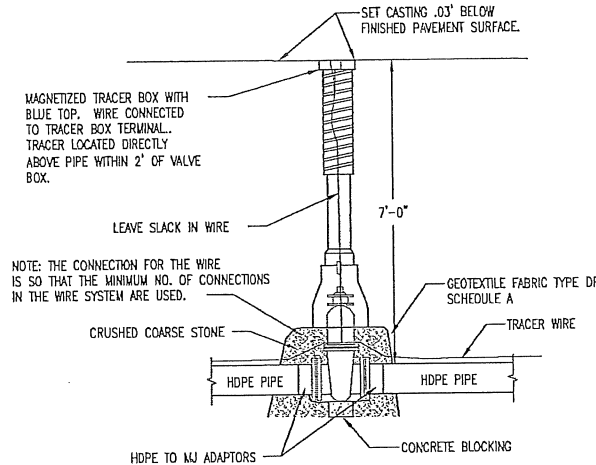
**THRUST BLOCKING FOR WATERMAIN**  
NTS



1. DIMENSIONS:
- A. MAXIMUM PAY WIDTH - O.D. PIPE +24"
  - B. MINIMUM - 6"
  - C. 6" BELOW BARREL
  - D. 3" BELOW BARREL
  - E. MINIMUM 12"
  - F. DETERMINED BY THE ENGINEER
2. ENCASUREMENT ZONE SHALL BE EXCAVATED MATERIALS THAT ARE CLASSIFIED SUITABLE, OR GRANULAR BACKFILL MATERIAL.
3. FOUNDATION MATERIAL - 3" CRUSHED STONE FOR WET OR UNSTABLE TRENCH BOTTOM.
4. BEDDING MATERIAL - CRUSHED STONE CHIPS

TRENCH SECTION FOR WATERMAIN

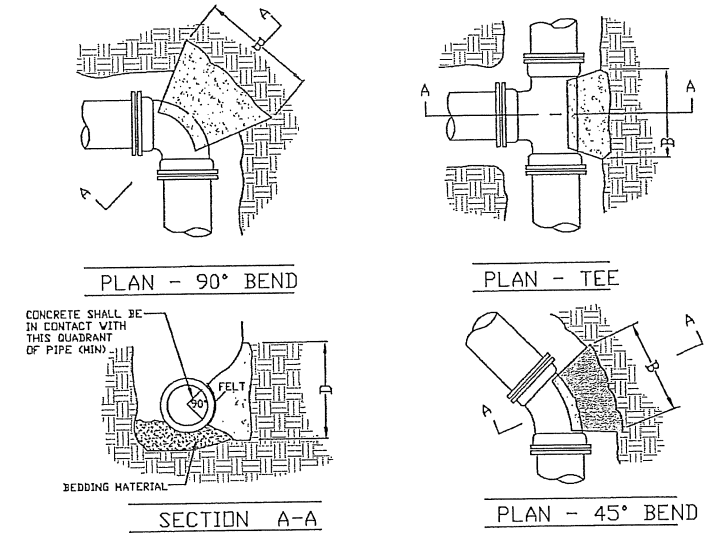
NTS



- NOTE: THE CONNECTION FOR THE WIRE IS SO THAT THE MINIMUM NO. OF CONNECTIONS IN THE WIRE SYSTEM ARE USED.
- NOTES:
1. VALVES SHALL BE CONNECTED DIRECTLY TO HDPE WITH HDPE TO MECHANICAL JOINT ADAPTORS.
  2. USE EPOXY COATING ON EXTERIOR OF VALVES.
  3. ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL.
  4. FOR OPEN CUT PIPE INSTALLATIONS, ELECTROFUSION COUPLINGS ARE NOT ALLOWED FOR CONNECTION OF HDPE TO MJ ADAPTORS. FOR DIRECTIONAL DRILLED INSTALLATIONS, ONE ELECTROFUSION COUPLING MAY BE USED PER VALVE.

WATERMAIN VALVE DETAIL

NTS



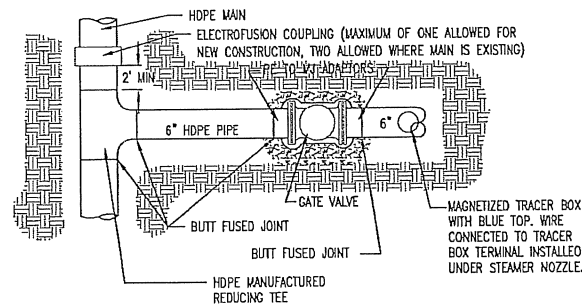
BEND OR BRANCH SIZE	BLOCKING DIMENSIONS							
	22 1/2° BENDS		45° BENDS		90° BENDS		TEES	
	B	D	B	D	B	D	B	D
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"	1'-3"	1'-0"
8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-6"	1'-6"	1'-4"
12"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"	2'-3"	2'-0"
16"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"	3'-2"	2'-4"
20"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"	4'-0"	3'-0"
24"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"	5'-3"	3'-4"
30"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"	6'-3"	4'-3"

- NOTES -

1. DIMENSIONS IN TABLE ARE BASED ON A WATER PRESSURE OF 150 P.S.I. AND AN EARTH RESISTANCE OF 2 TONS PER SQ. FOOT
2. BLOCKING TO BE SET AGAINST UNDISTURBED SOIL.
3. CONCRETE SHALL BE CLASS 'IF' CONCRETE SHALL NOT INTERFERE WITH MECHANICAL JOINTS.

THRUST BLOCKING FOR WATERMAIN

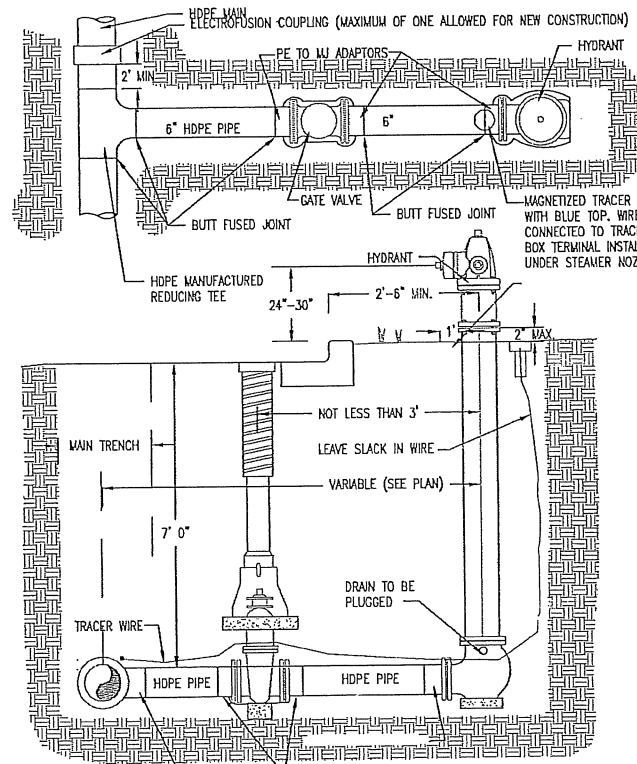
NTS



- NOTES:
1. VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
  2. ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL.

COMMERCIAL / INDUSTRIAL WATER SERVICE CONNECTION

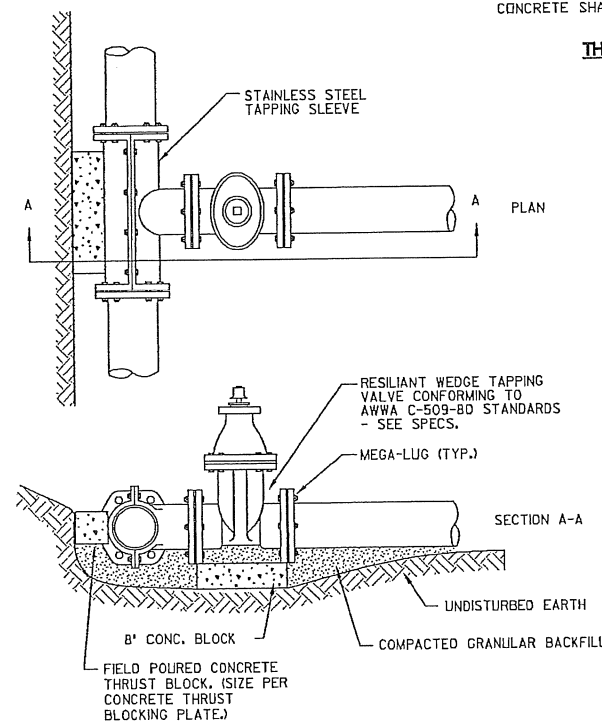
NTS



- NOTES:
1. VALVES SHALL BE CONNECTED DIRECTLY TO MECHANICAL JOINT ADAPTORS.
  2. USE EPOXY COATING ON VALVE AND HYDRANT BASE
  3. ALL BOLTS AND NUTS SHALL BE STAINLESS STEEL.

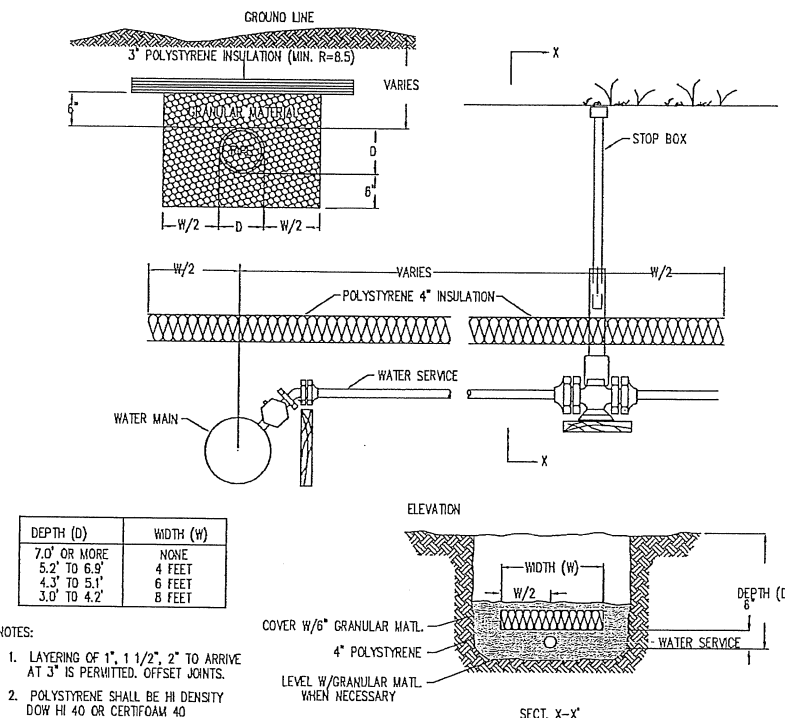
FIRE HYDRANT SETTING DETAILS

NTS

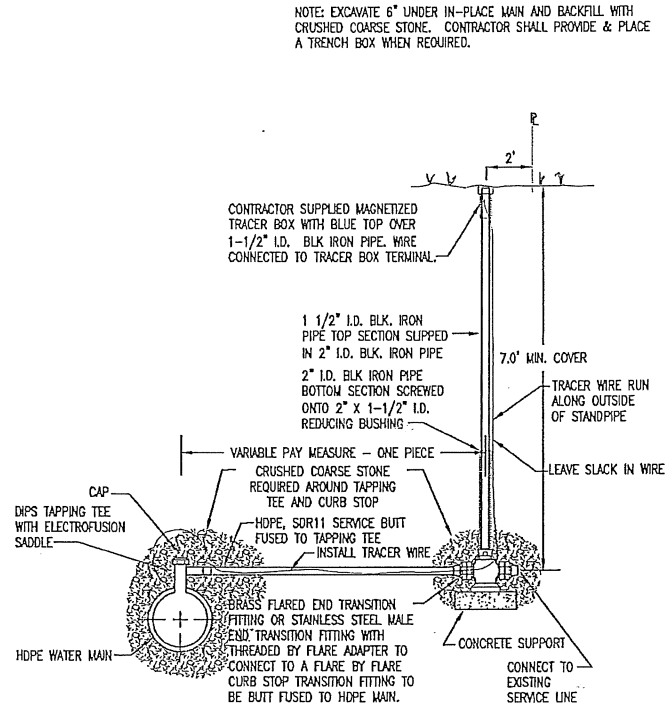


WATER MAIN WET TAP

NTS



**WATERMAIN & SERVICE INSULATION DETAIL**  
NTS

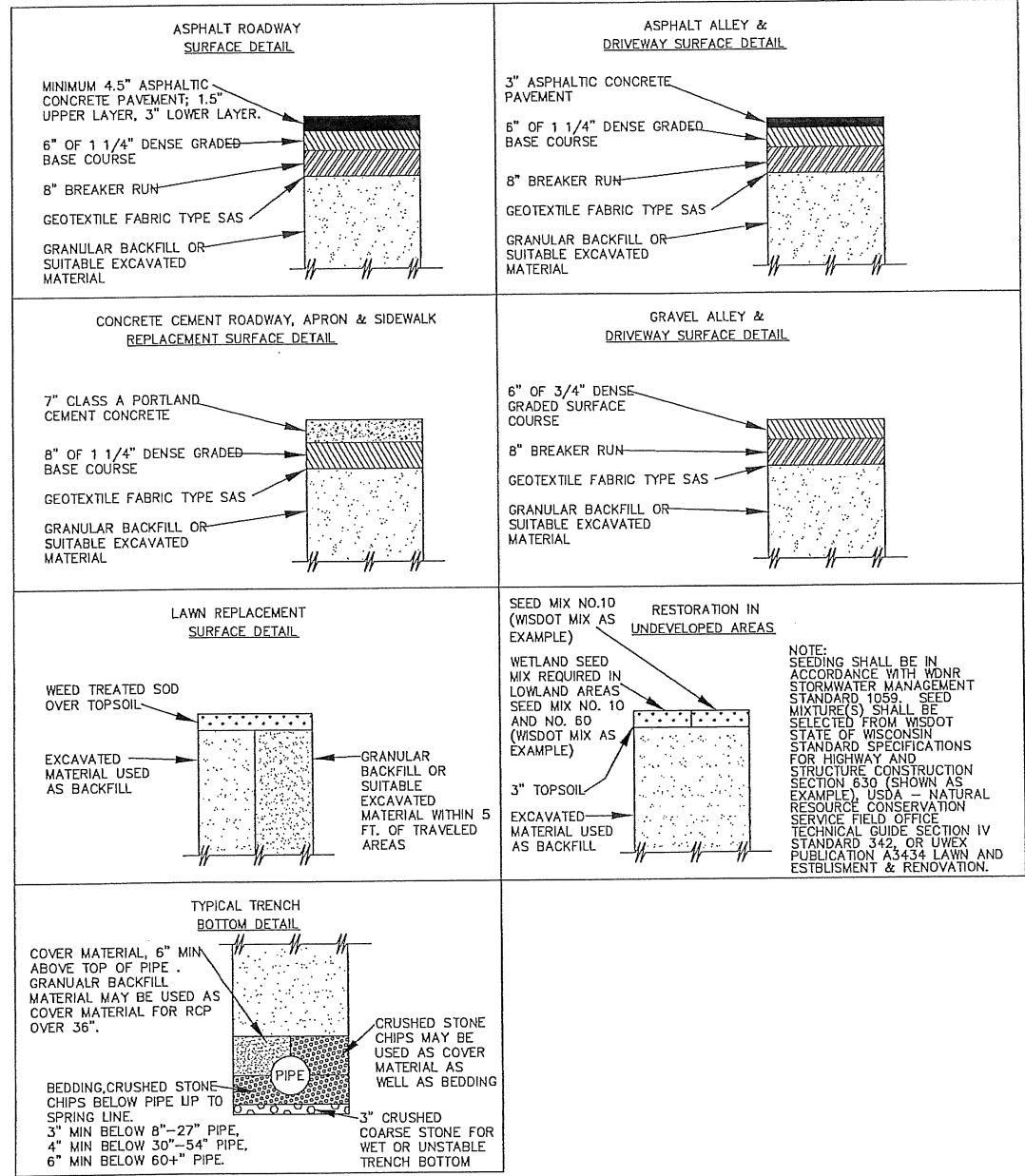


NOTE: SERVICE TO BE AIR TESTED PRIOR TO TAPPING MAIN

THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT OR COMPRESSION TYPE CONNECTORS. WIRE NUTS OR CLIP TYPE CONNECTOR SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

**TYPICAL HDPE WATER SERVICE - 3/4", 1", 1-1/4", AND 2"**  
NTS

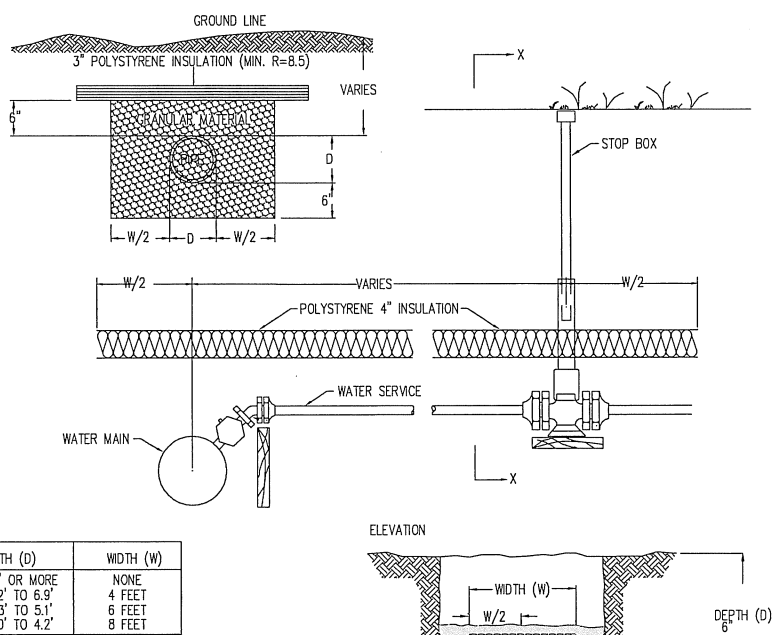
NOTE: EXCAVATE 6" UNDER IN-PLACE MAIN AND BACKFILL WITH CRUSHED COARSE STONE. CONTRACTOR SHALL PROVIDE & PLACE A TRENCH BOX WHEN REQUIRED.



**RESURFACING DETAILS & TRENCH BOTTOM DETAIL**  
NTS

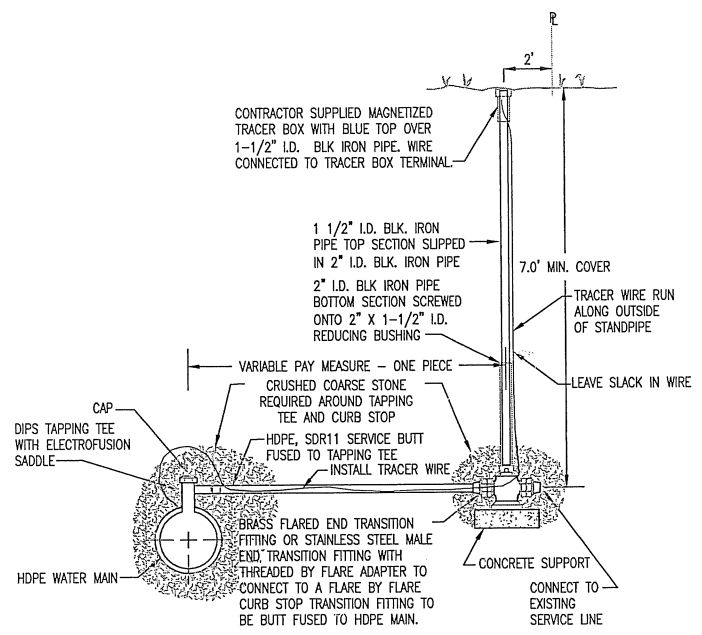


NOTE: EXCAVATE 6" UNDER IN-PLACE MAIN AND BACKFILL WITH CRUSHED COARSE STONE. CONTRACTOR SHALL PROVIDE & PLACE A TRENCH BOX WHEN REQUIRED.



- NOTES:
- LAYERING OF 1", 1 1/2", 2" TO ARRIVE AT 3" IS PERMITTED. OFFSET JOINTS.
  - POLYSTYRENE SHALL BE HI DENSITY DOW HI 40 OR CERTIFOAM 40

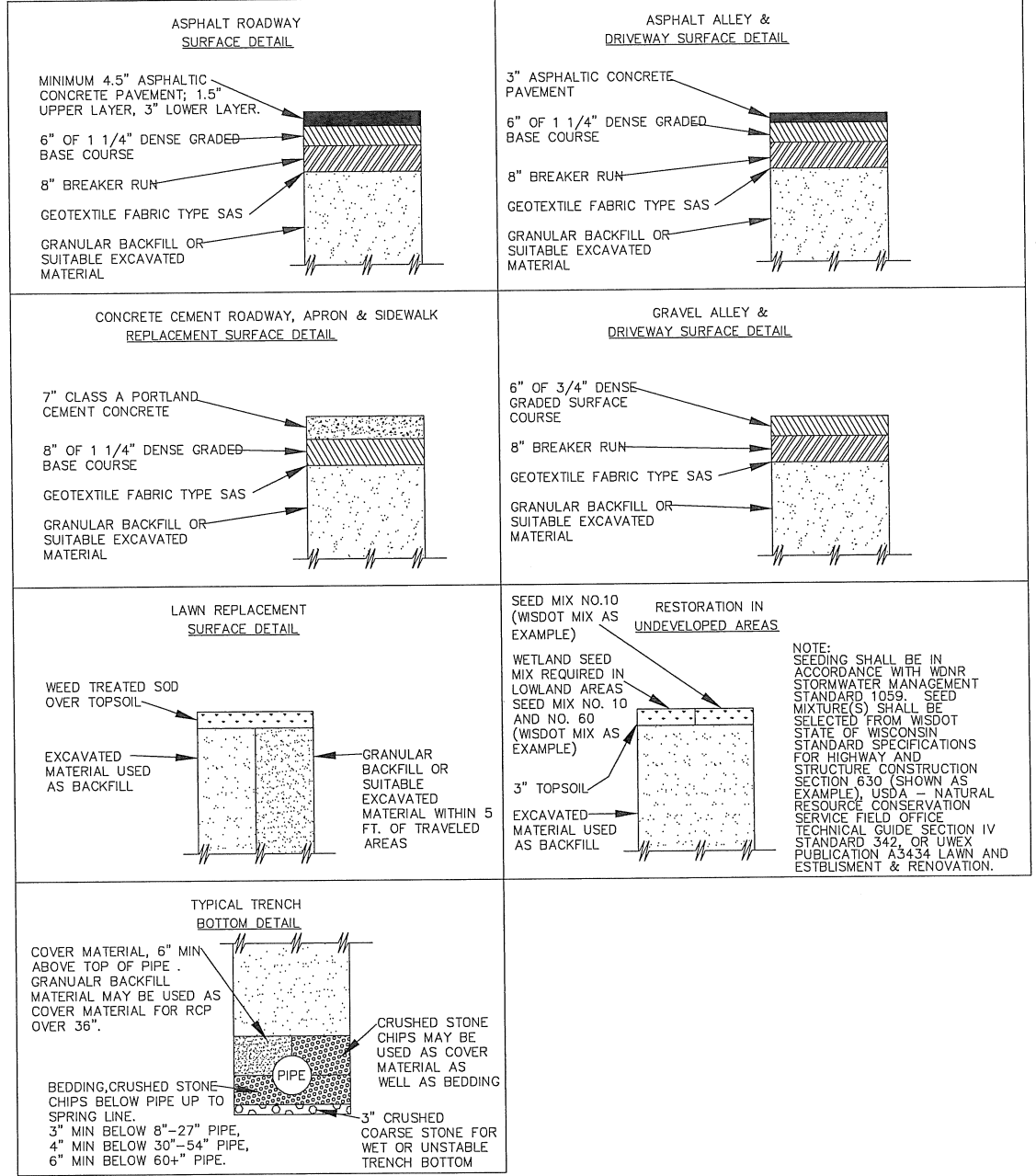
**WATERMAIN & SERVICE INSULATION DETAIL**  
NTS



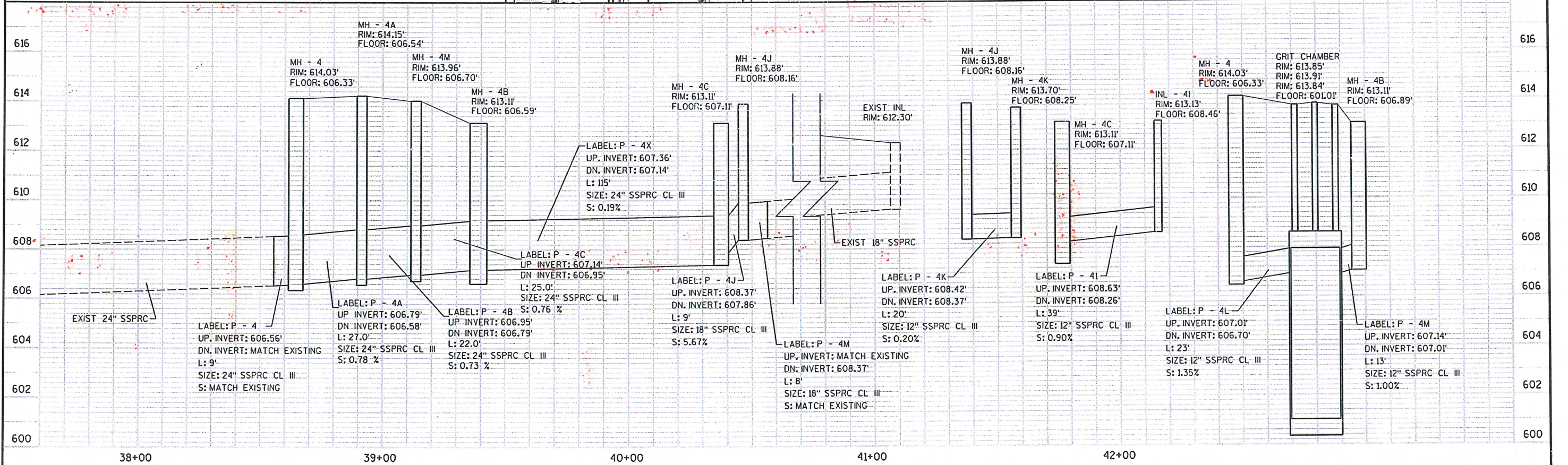
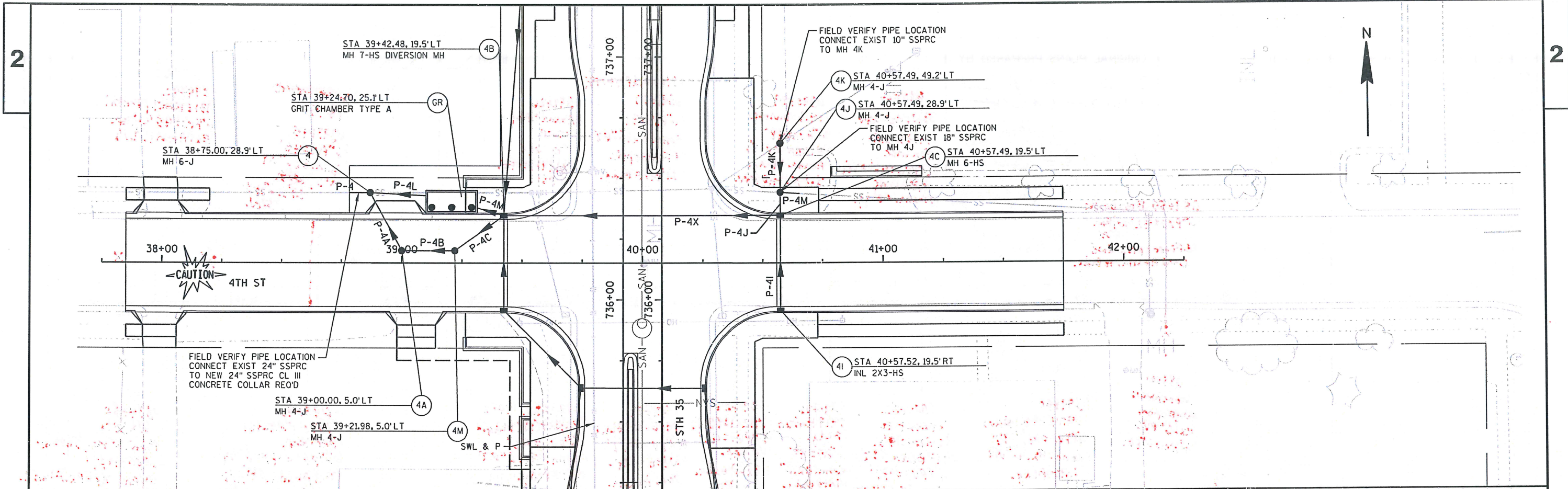
NOTE: SERVICE TO BE AIR TESTED PRIOR TO TAPPING MAIN

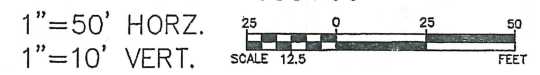
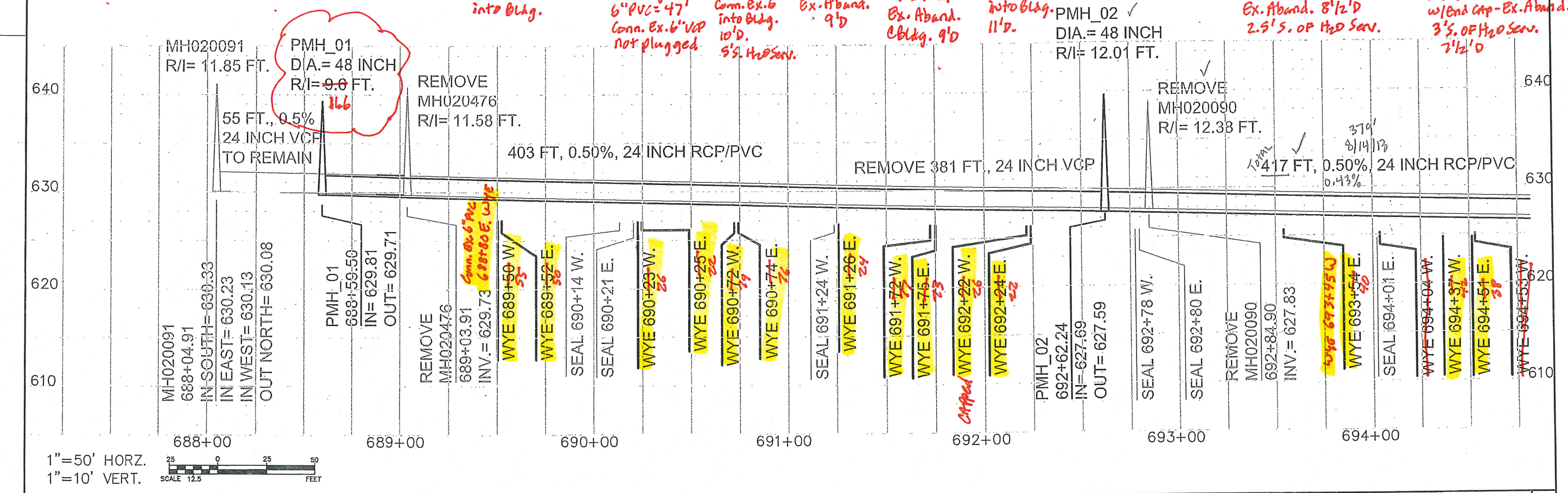
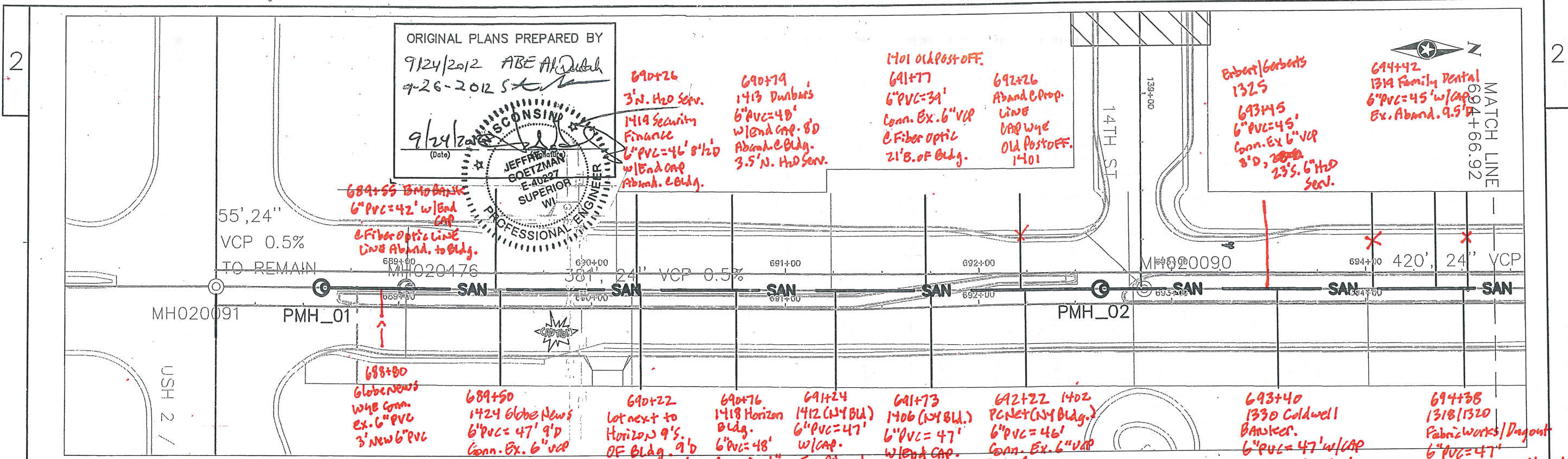
THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT OR COMPRESSION TYPE CONNECTORS. WIRE NUTS OR CLIP TYPE CONNECTOR SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

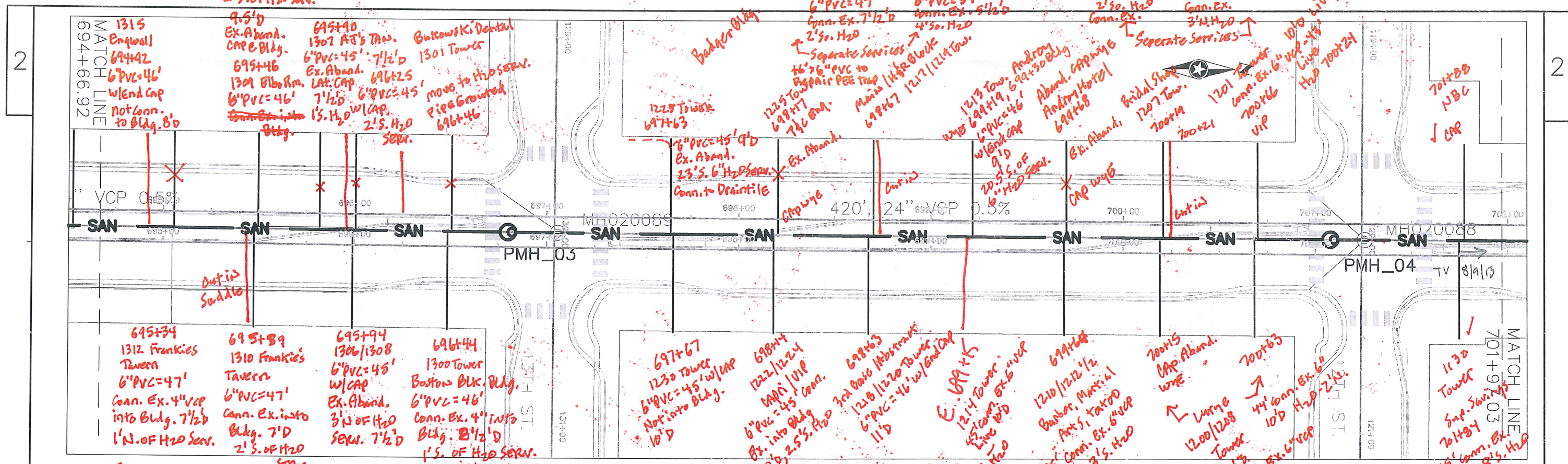
**TYPICAL HDPE WATER SERVICE - 3/4", 1", 1-1/4", AND 2"**  
NTS



**RESURFACING DETAILS & TRENCH BOTTOM DETAIL**  
NTS

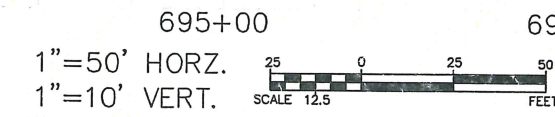
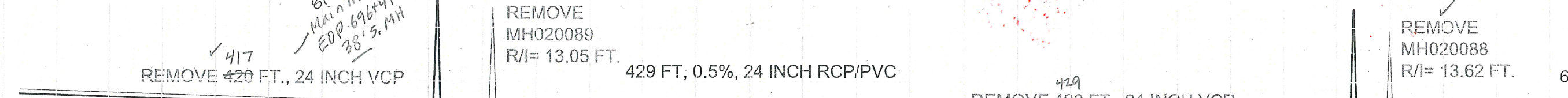






PMH\_03  
DIA= 48 INCH  
R/I= 12.69 FT.

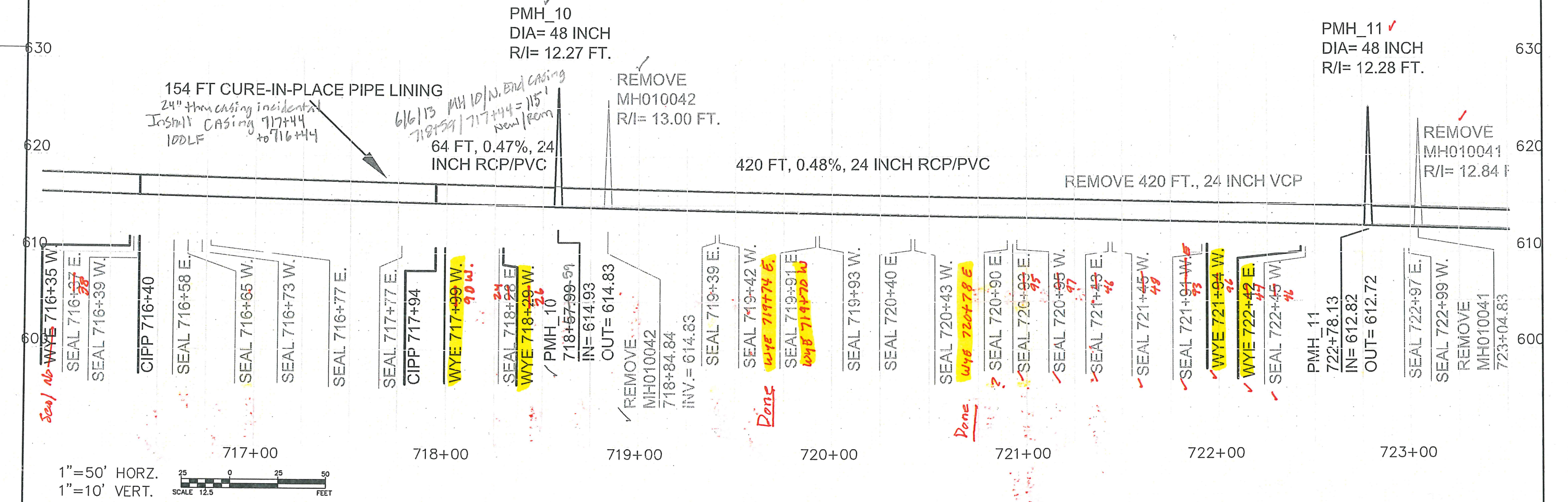
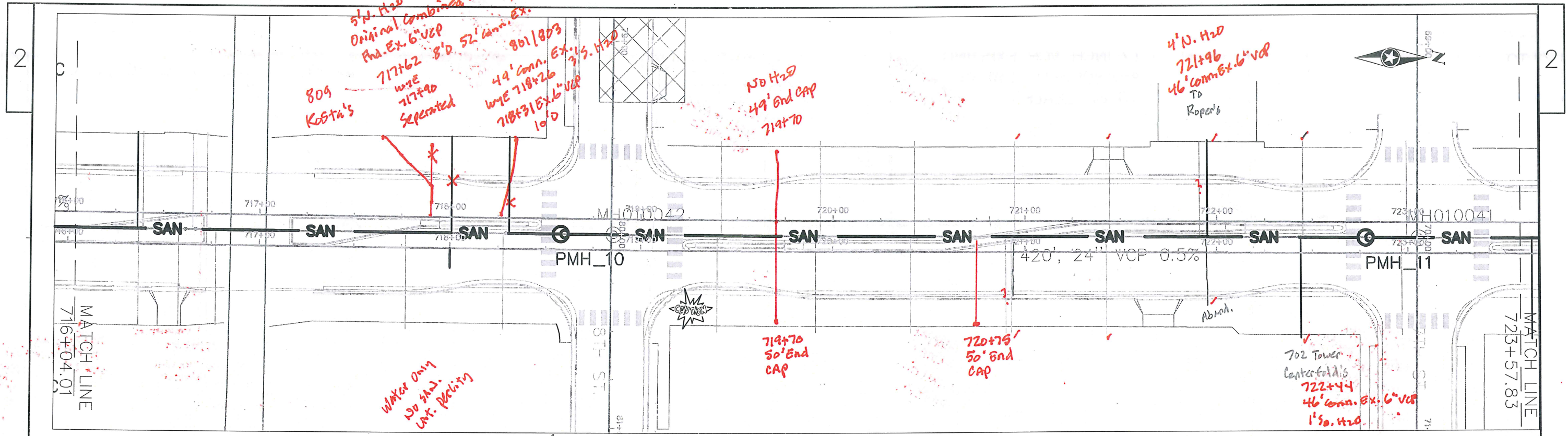
PMH\_04  
DIA= 48 INCH  
R/I= 13.48 FT.  
701+08

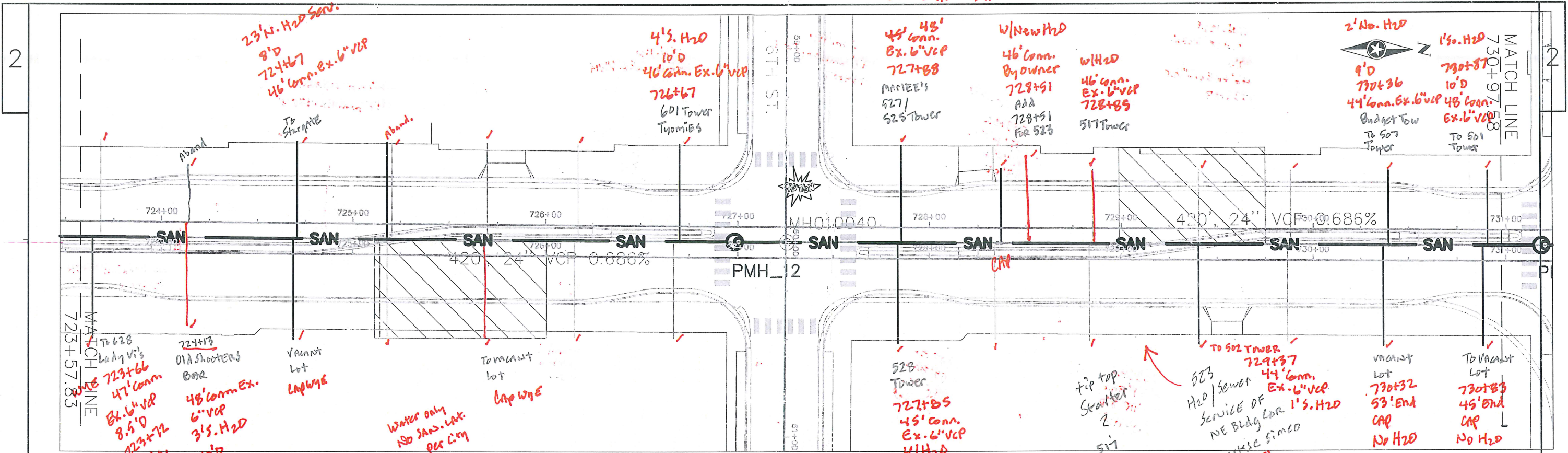


218-349-5972 Tyler



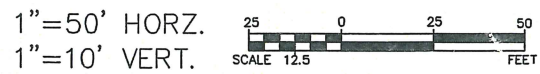
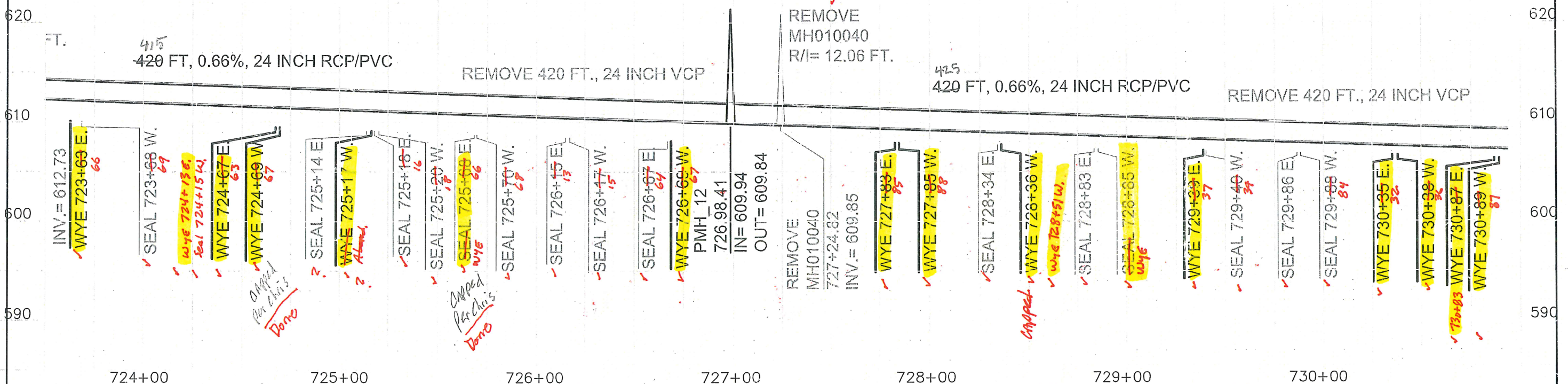




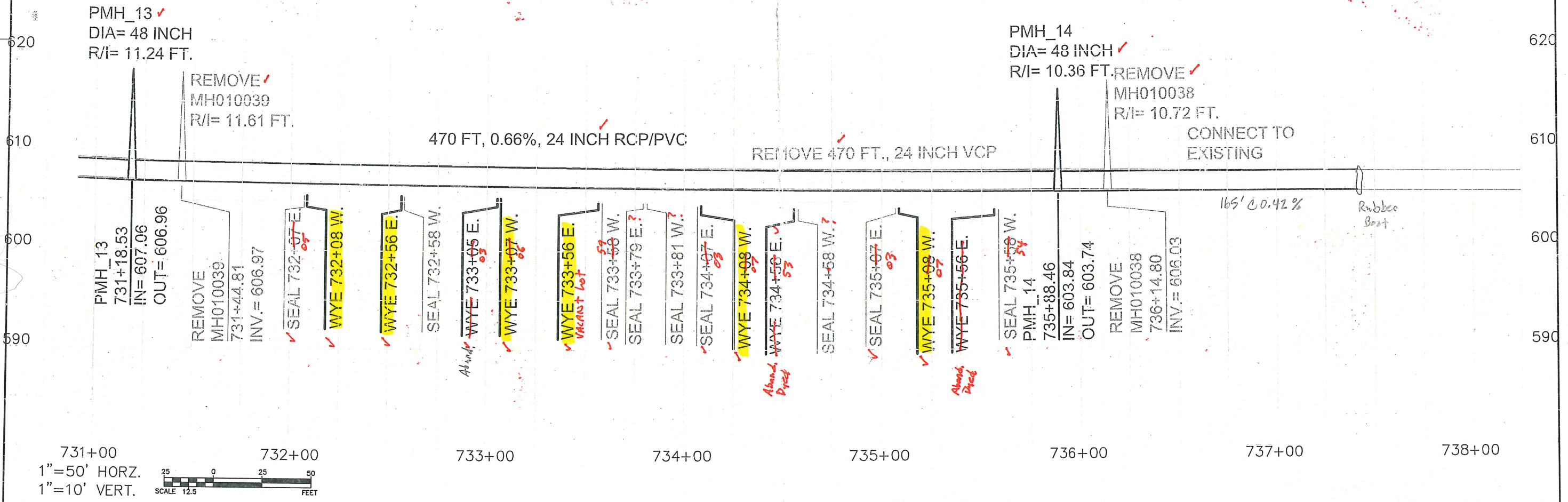
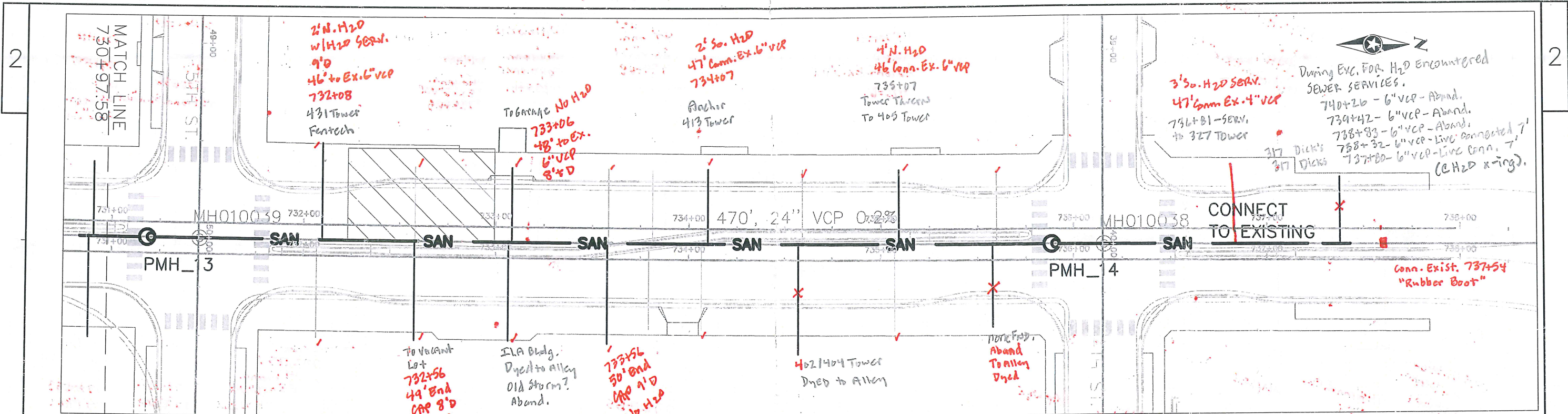


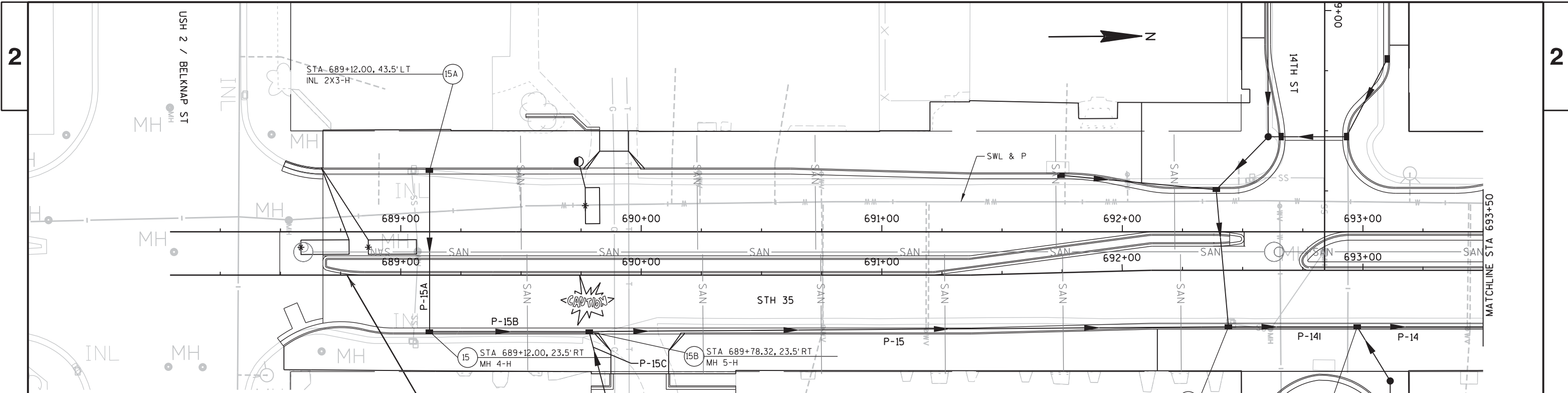
PMH\_12 ✓  
 DIA= 48 INCH  
 R/I= 11.56 FT.

REMOVE  
 MH010040  
 R/I= 12.06 FT.





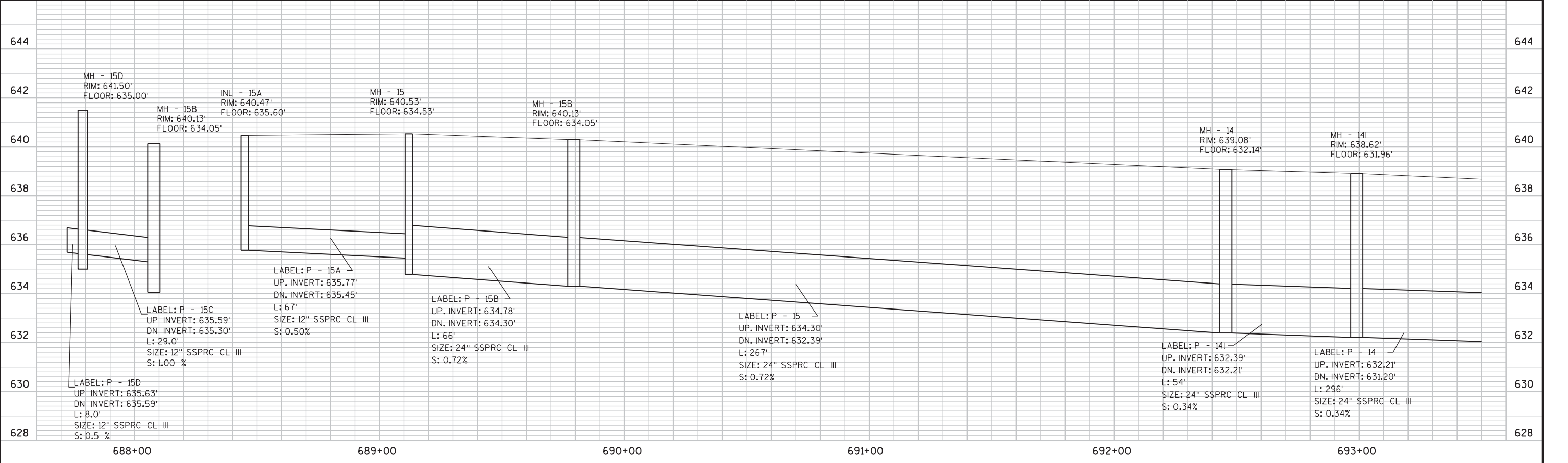


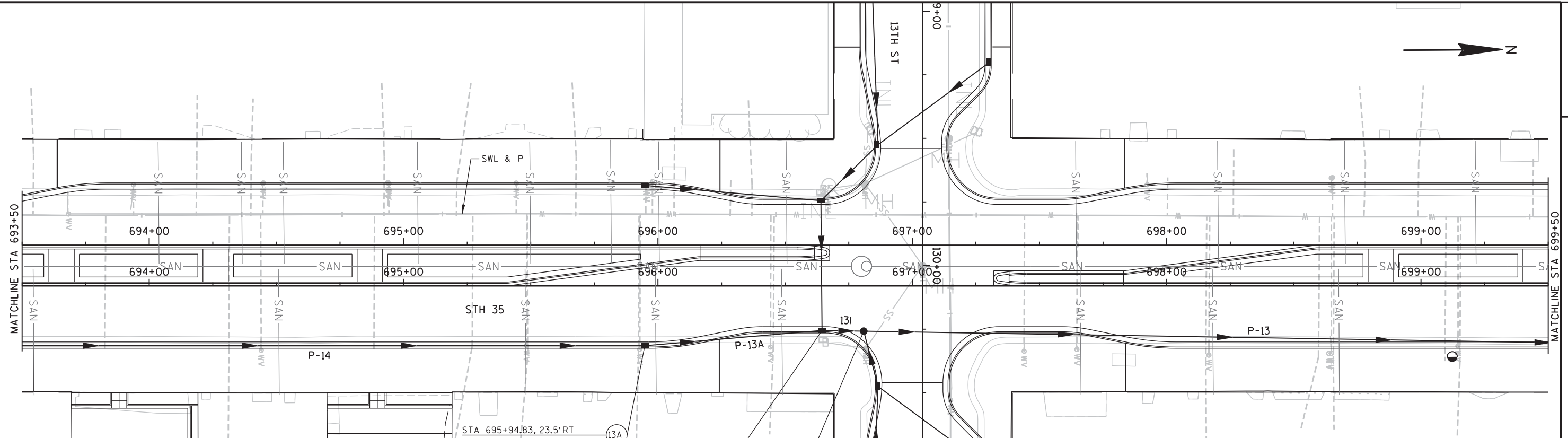


**BENCHMARK TABLE**

NO	STATION	DESCRIPTION	ELEV
130	688+47.91, 189.3' RT	SW BOLT ON LIGHT POLE BELKNAP ST & STH 35	642.11
120	693+15.42, 97.6' RT	SW BOLT ON LIGHT POLE 14TH ST & STH 35	639.71

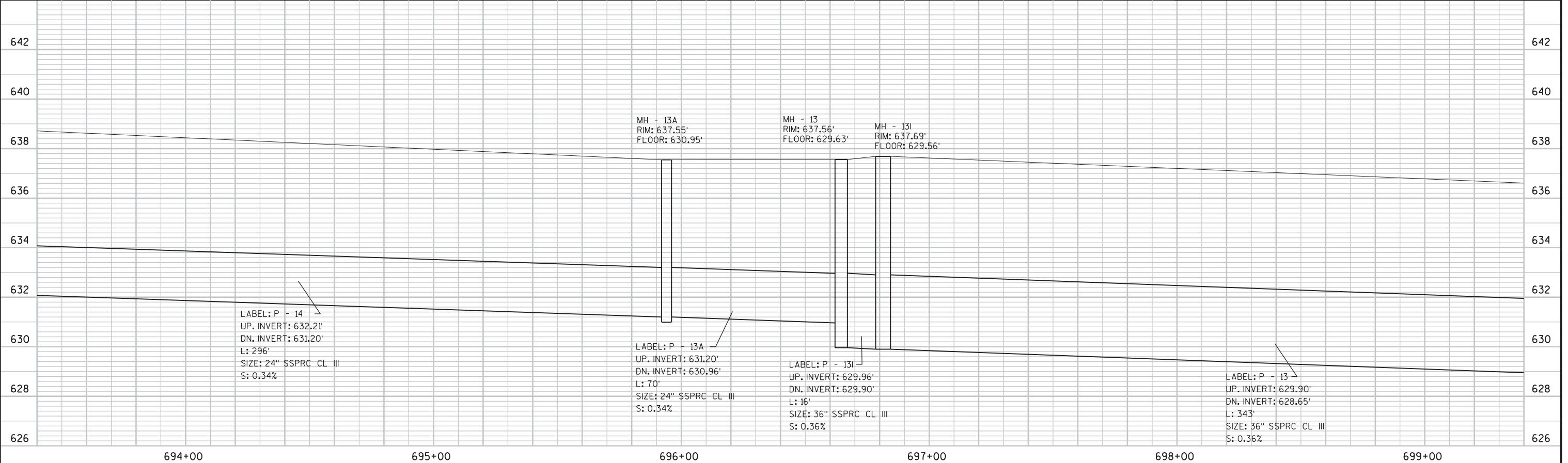
**BEGIN PROJECT  
STA 688+67.69**

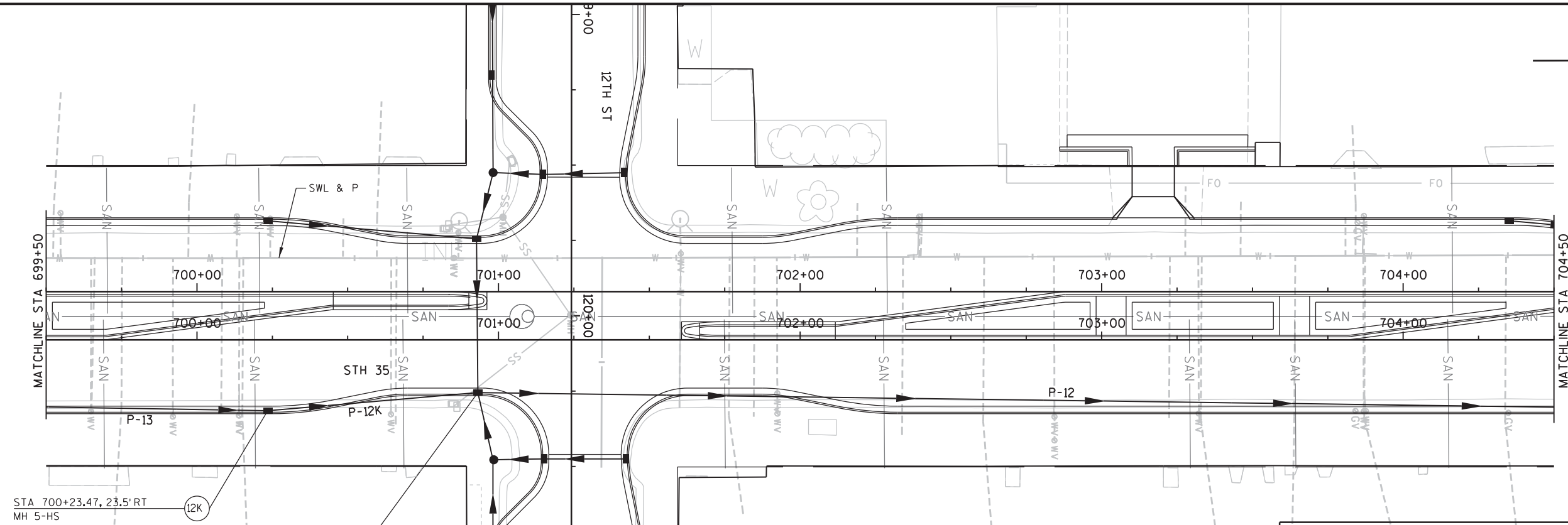




**BENCHMARK TABLE**

NO	STATION	DESCRIPTION	ELEV
100	700+98.22, 121.6' RT	NW BOLT ON LIGHT POLE 12TH ST & STH 35	637.33

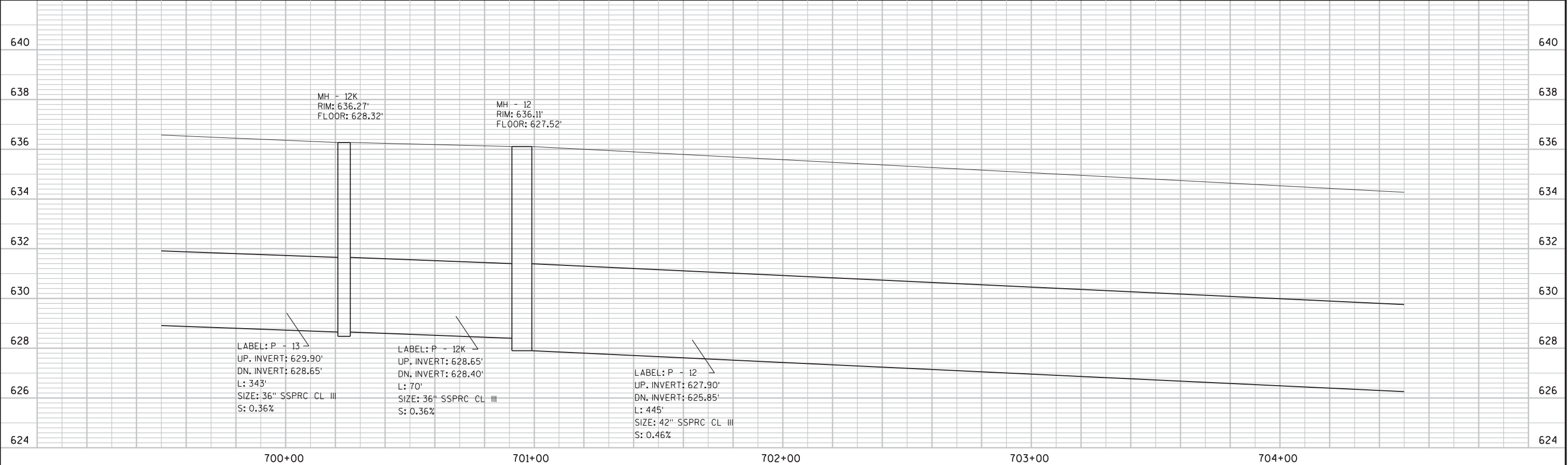


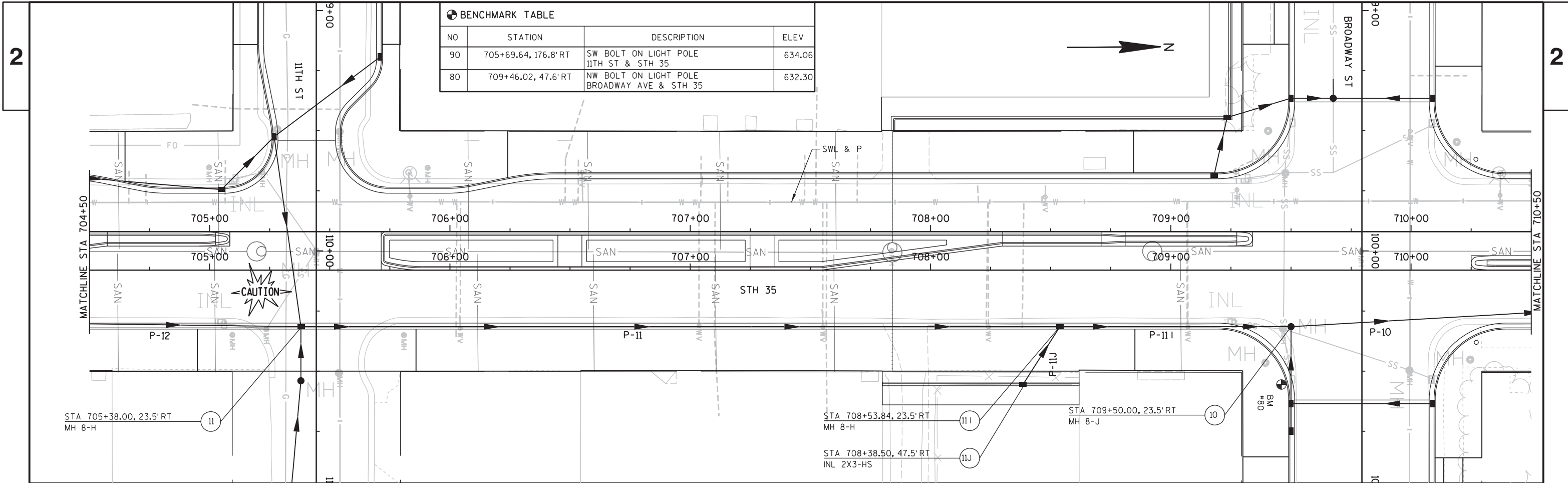


STA 700+23.47, 23.5' RT  
MH 5-HS

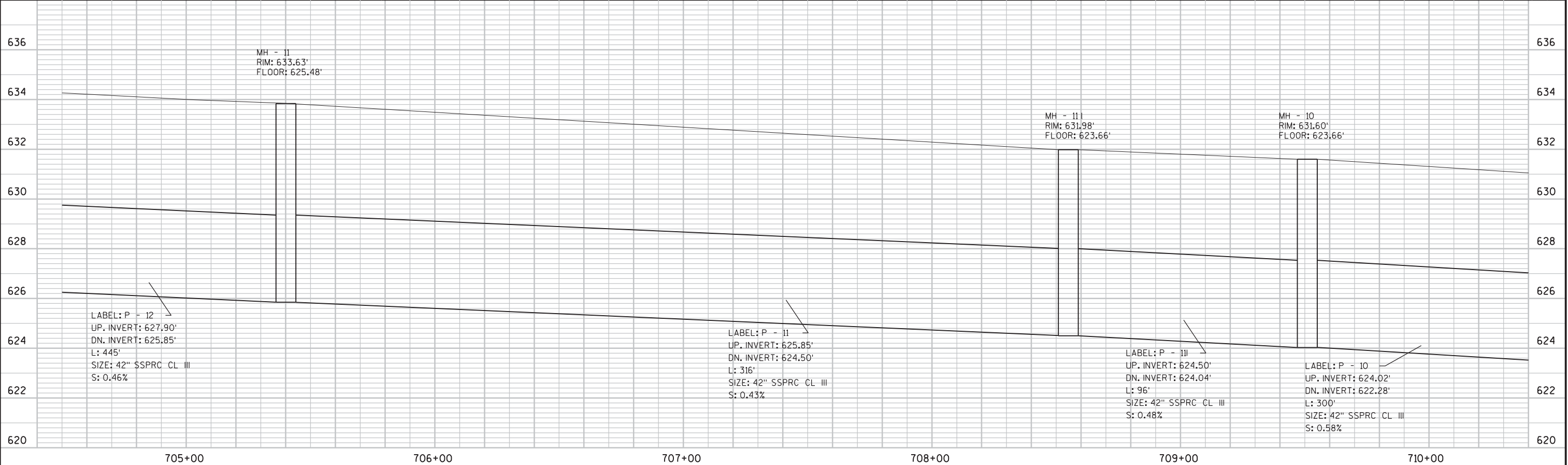
STA 700+93.17, 17.5' RT  
MH 8-H

BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
100	700+98.22, 121.6' RT	NW BOLT ON LIGHT POLE 12TH ST & STH 35	637.33





BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
90	705+69.64, 176.8' RT	SW BOLT ON LIGHT POLE 11TH ST & STH 35	634.06
80	709+46.02, 47.6' RT	NW BOLT ON LIGHT POLE BROADWAY AVE & STH 35	632.30



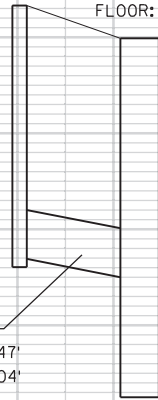
636  
634  
632  
630  
628  
626  
624  
622  
620  
618

636  
634  
632  
630  
628  
626  
624  
622  
620  
618

INL - 11J  
RIM: 632.75'  
FLOOR: 627.30'

MH - 11I  
RIM: 631.98'  
FLOOR: 623.66'

LABEL: P - 11J  
UP. INVERT: 627.47'  
DN. INVERT: 627.04'  
L: 29'  
SIZE: 12" SSPRC CL III  
S: 1.50%



628  
626  
624  
622  
620  
618  
616  
614  
612

628  
626  
624  
622  
620  
618  
616  
614  
612

**BENCHMARK TABLE**

NO	STATION	DESCRIPTION	ELEV
50	714+17.62, 172.8'LT	SPIKE IN POWER POLE WINTER ST	630.73

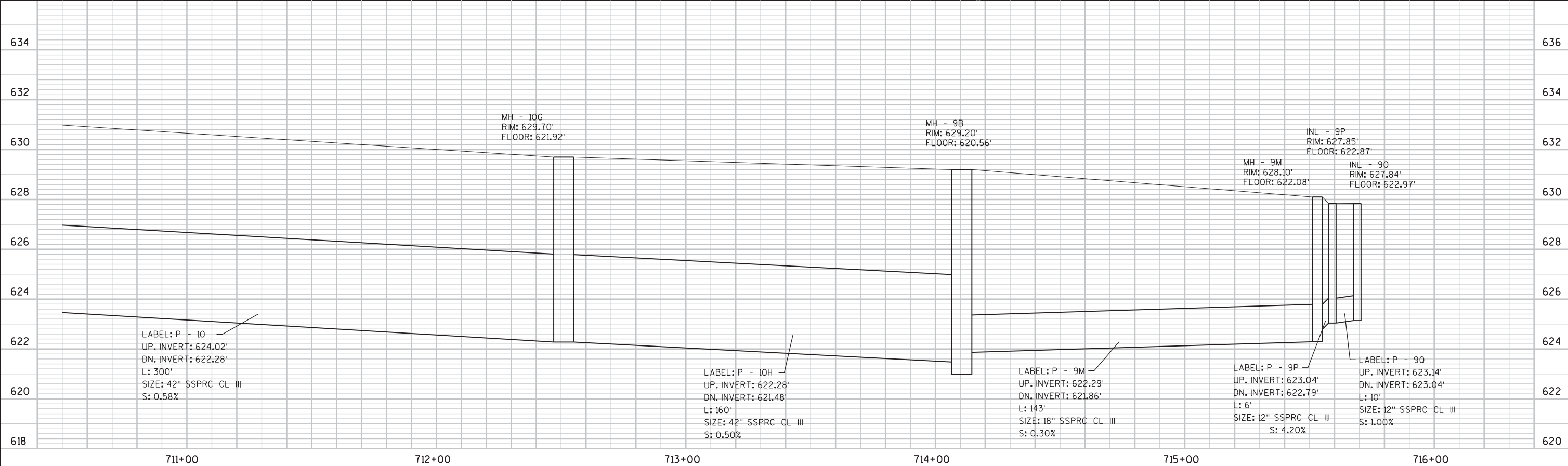
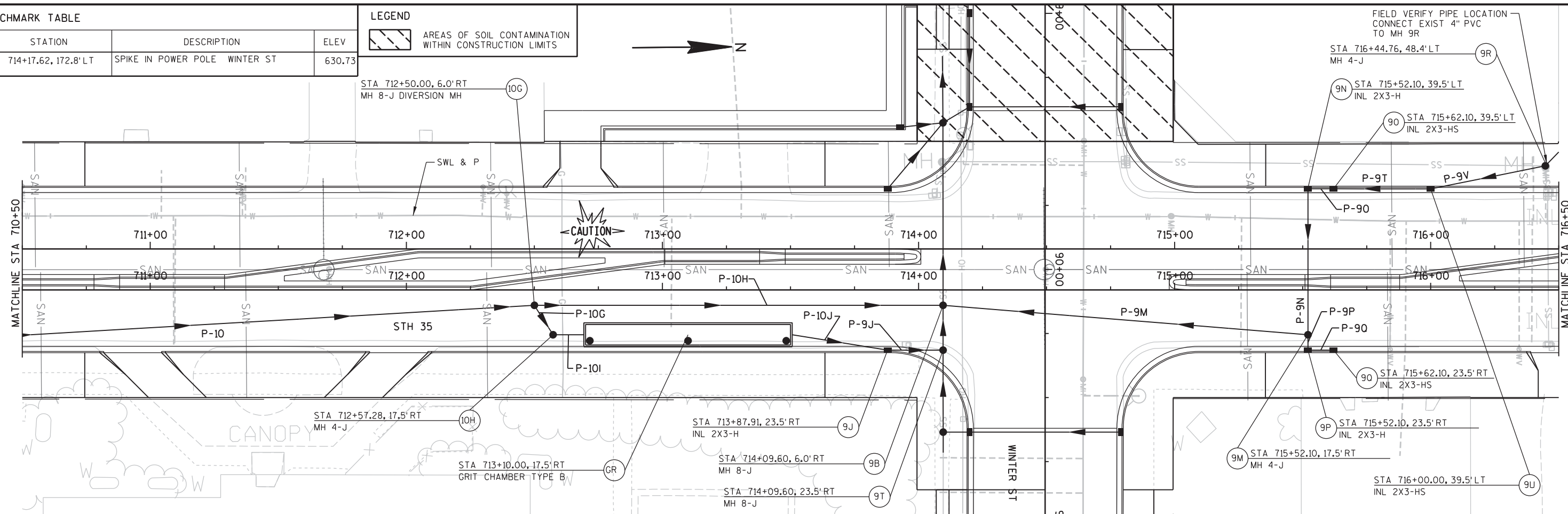
**LEGEND**

 AREAS OF SOIL CONTAMINATION WITHIN CONSTRUCTION LIMITS



2

2



PROJECT NO: 1195-13-71

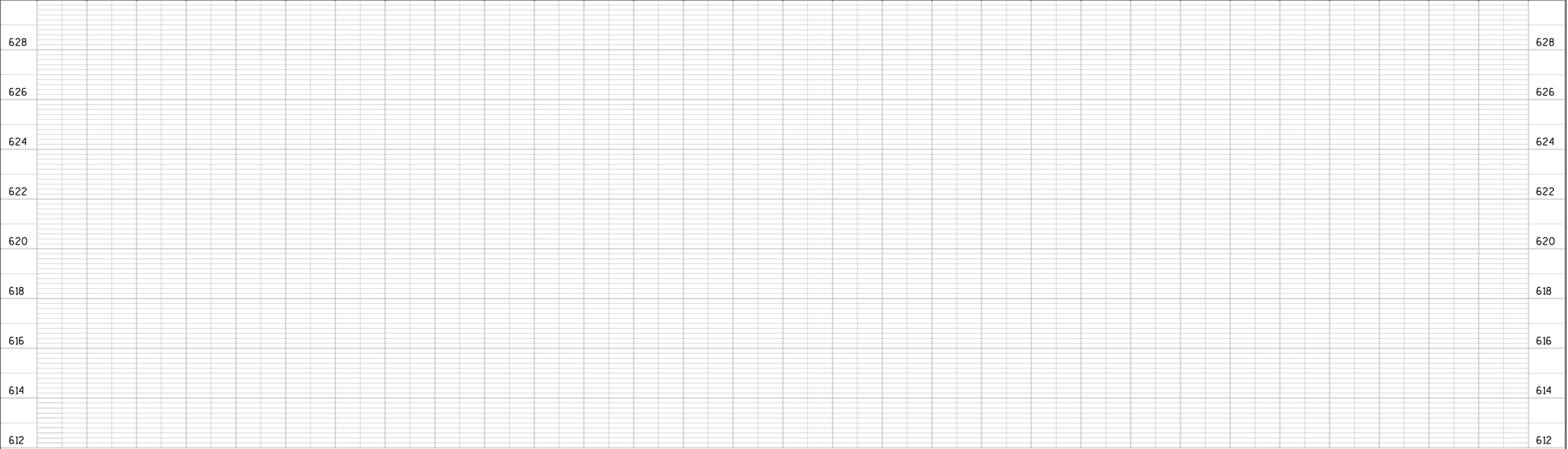
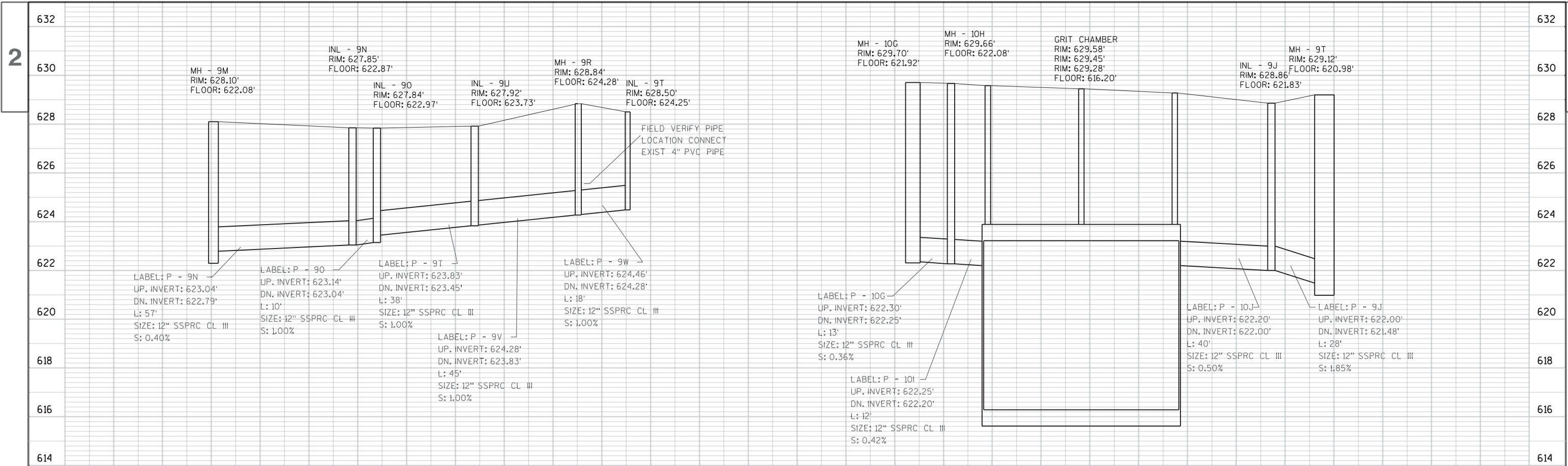
HWY: STH 35 - TOWER AVE

COUNTY: DOUGLAS

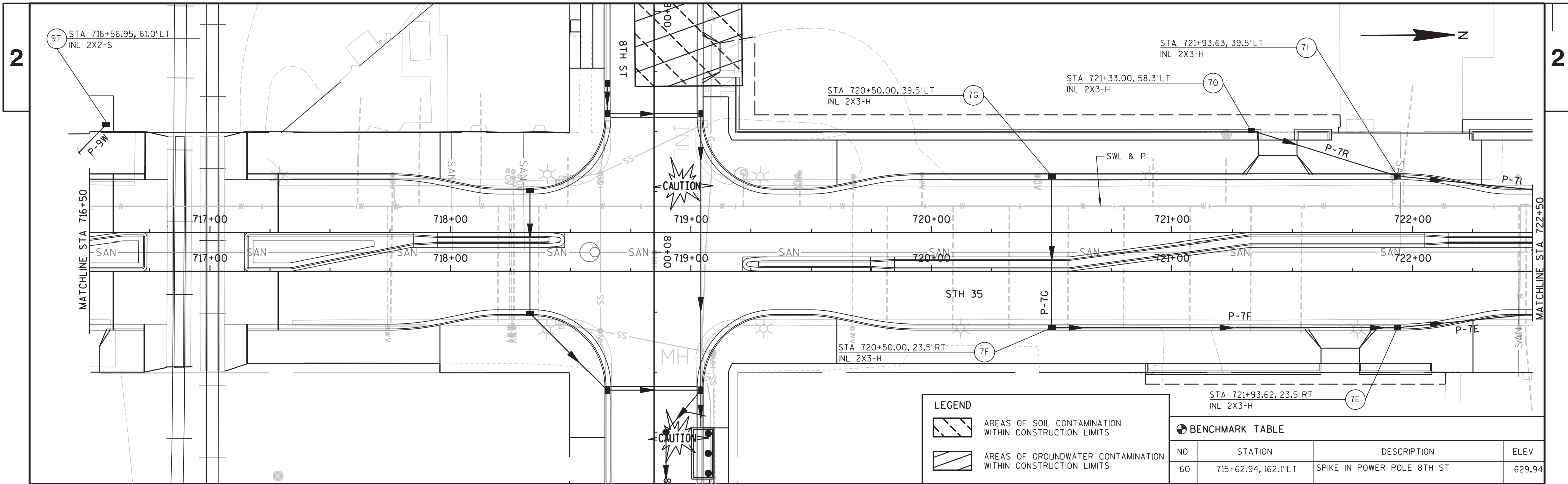
STORM SEWER

SHEET

E





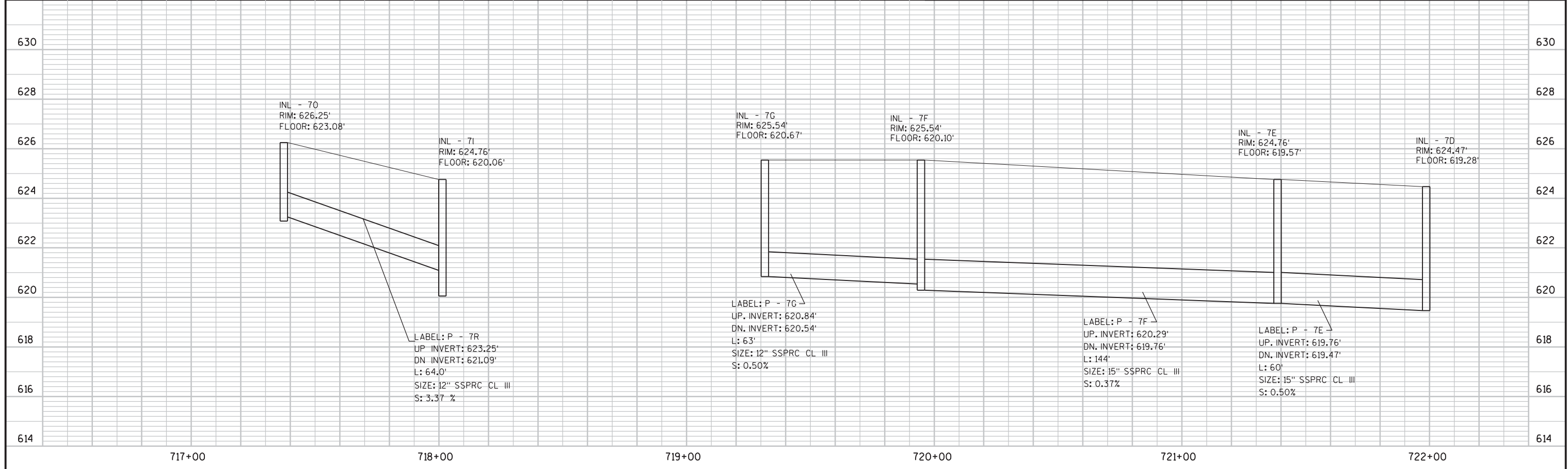


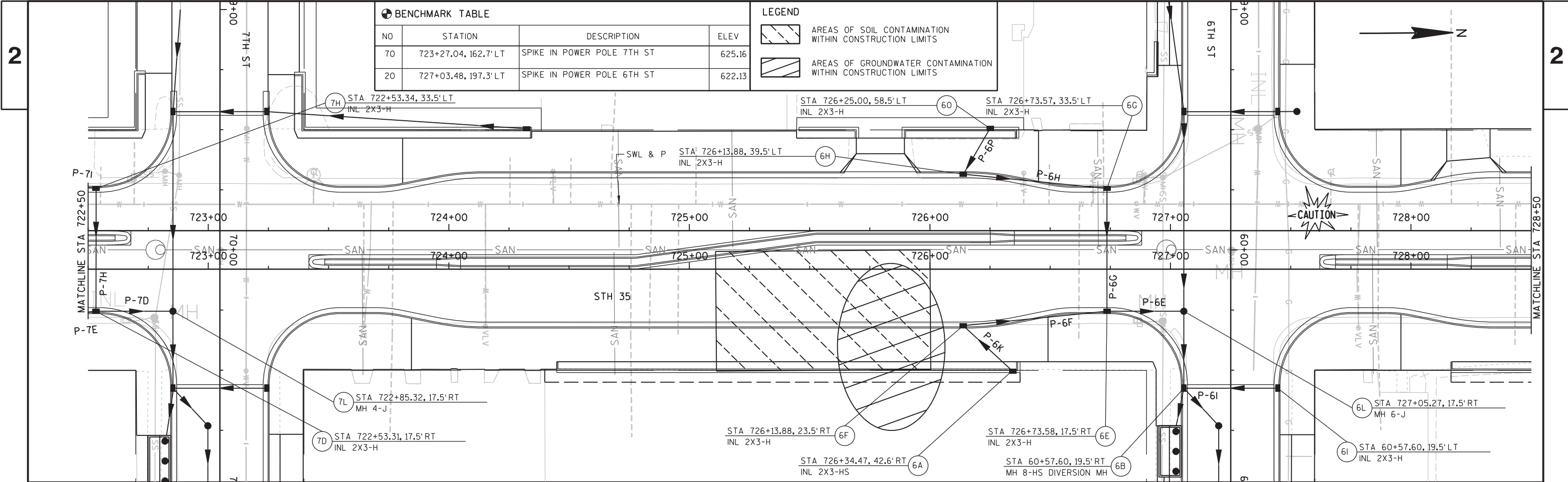
**LEGEND**

- Areas of soil contamination within construction limits
- Areas of groundwater contamination within construction limits

**BENCHMARK TABLE**

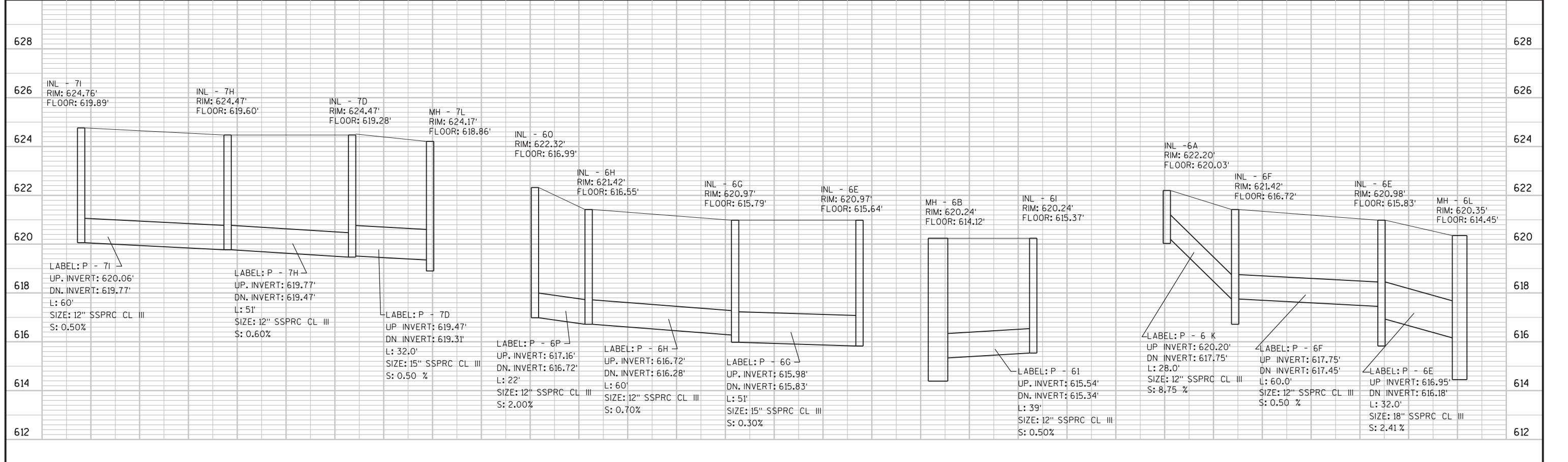
NO	STATION	DESCRIPTION	ELEV
60	715+62.94, 162.1' LT	SPIKE IN POWER POLE 8TH ST	629.94

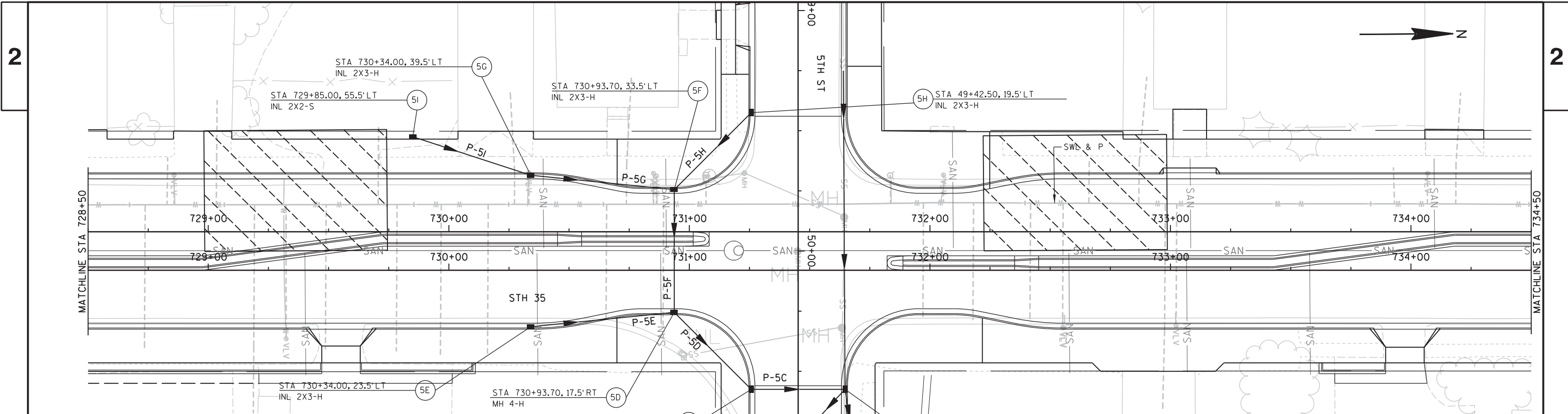




BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
70	723+27.04, 162.7'LT	SPIKE IN POWER POLE 7TH ST	625.16
20	727+03.48, 197.3'LT	SPIKE IN POWER POLE 6TH ST	622.13

LEGEND	
	AREAS OF SOIL CONTAMINATION WITHIN CONSTRUCTION LIMITS
	AREAS OF GROUNDWATER CONTAMINATION WITHIN CONSTRUCTION LIMITS



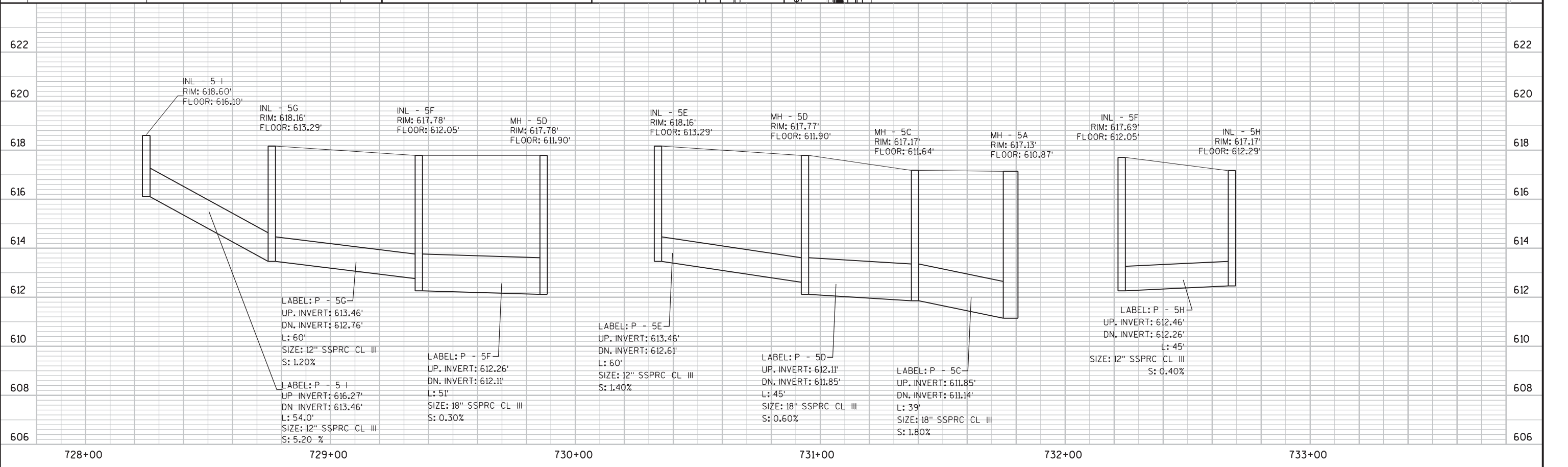


**BENCHMARK TABLE**

NO	STATION	DESCRIPTION	ELEV
30	731+23.02, 198.3'LT	SPIKE IN POWER POLE 5TH ST	618.09

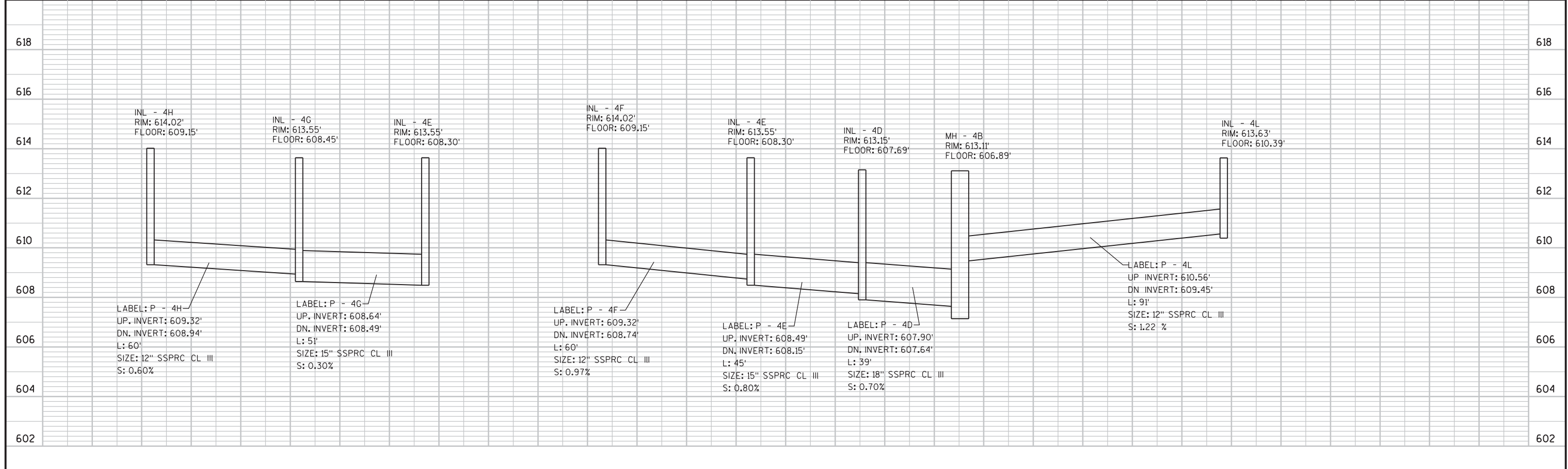
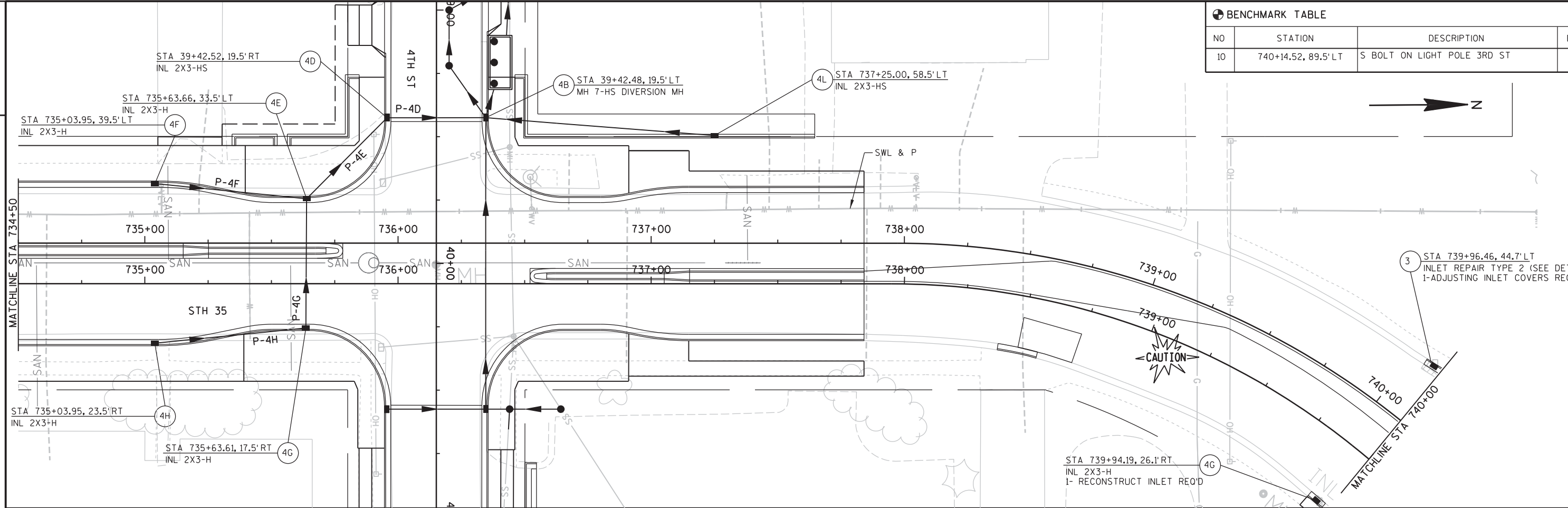
**LEGEND**

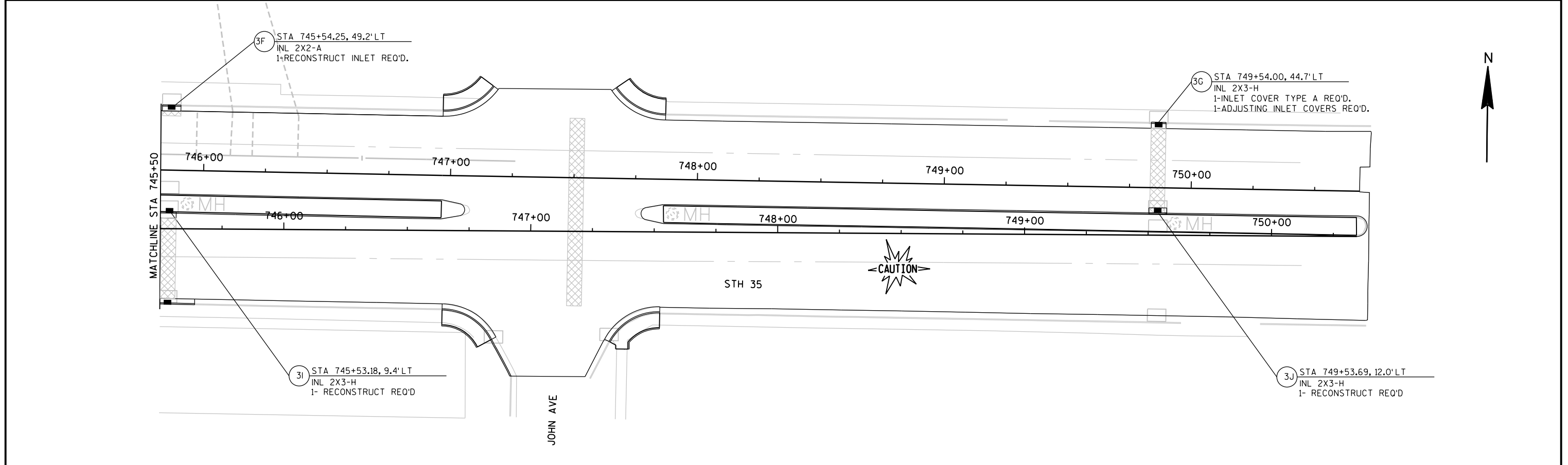
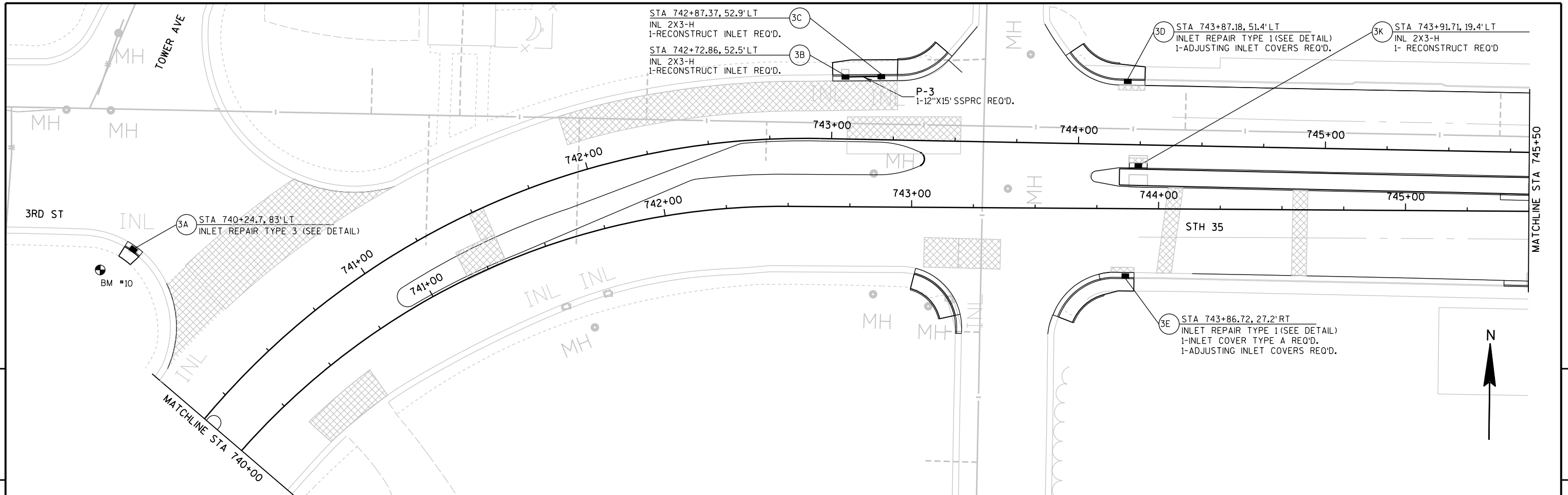
AREAS OF SOIL CONTAMINATION WITHIN CONSTRUCTION LIMITS



PROJECT NO: 1195-13-71	HWY: STH 35 - TOWER AVE	COUNTY: DOUGLAS	STORM SEWER	SHEET	<b>E</b>
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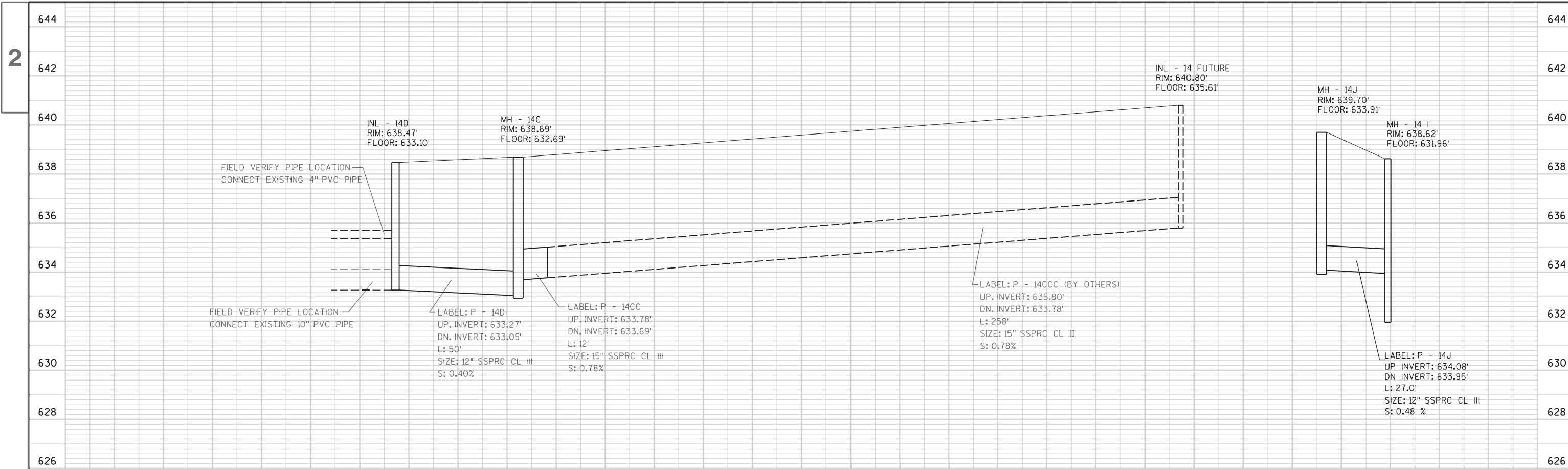
BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
10	740+14.52, 89.5' LT	S BOLT ON LIGHT POLE 3RD ST	613.63

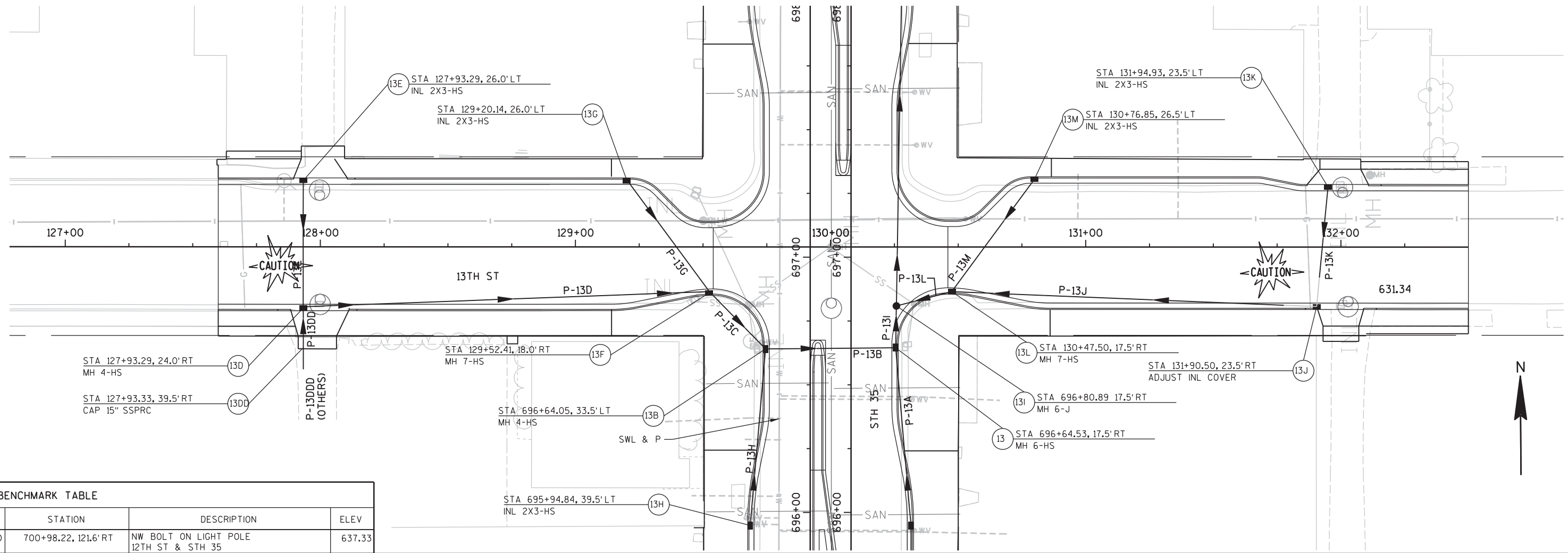




PROJECT NO: 1195-13-71	HWY: STH 35 - TOWER AVE	COUNTY: DOUGLAS	STORM SEWER
SHEET			<b>E</b>

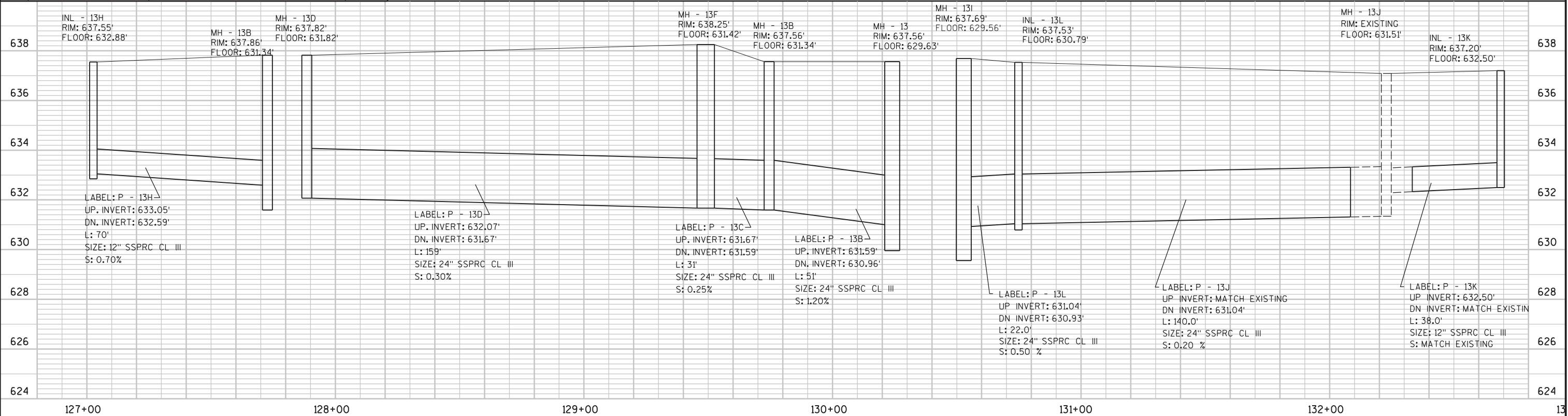




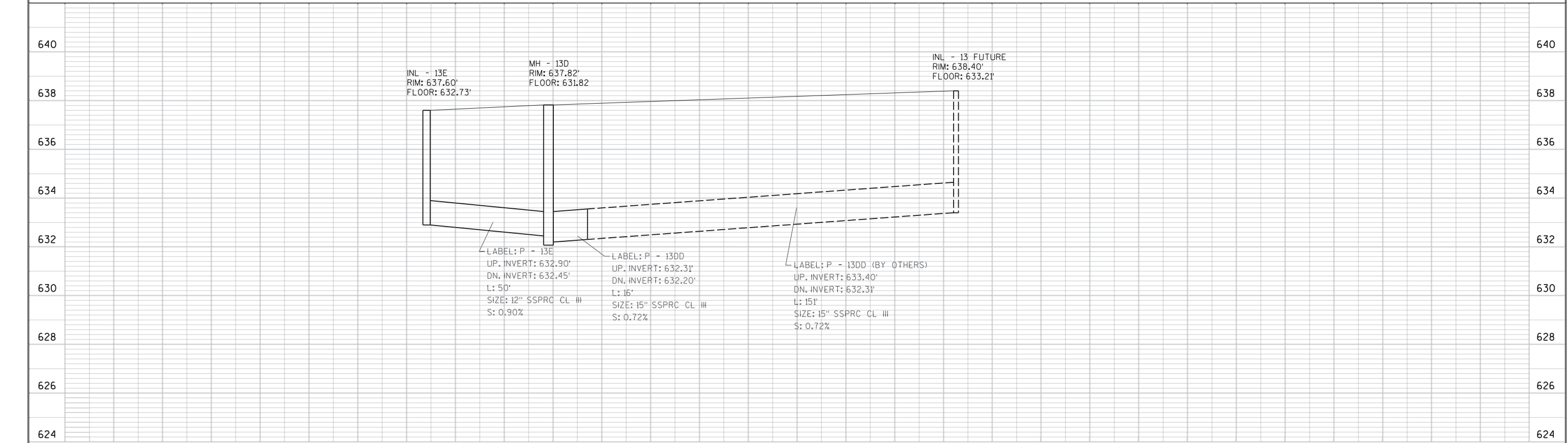
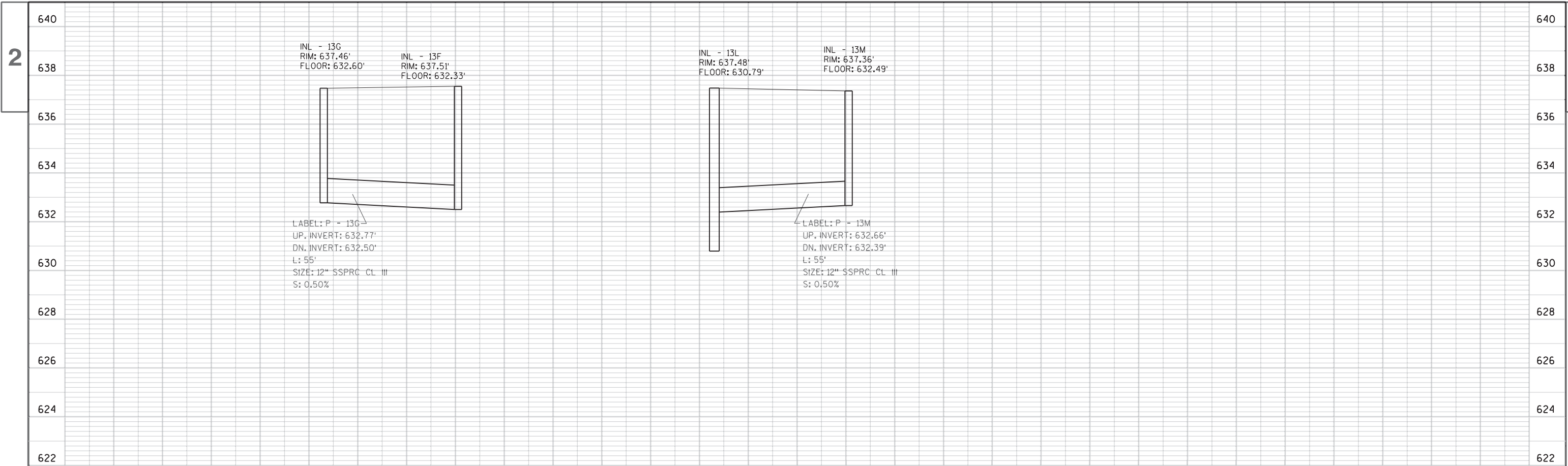


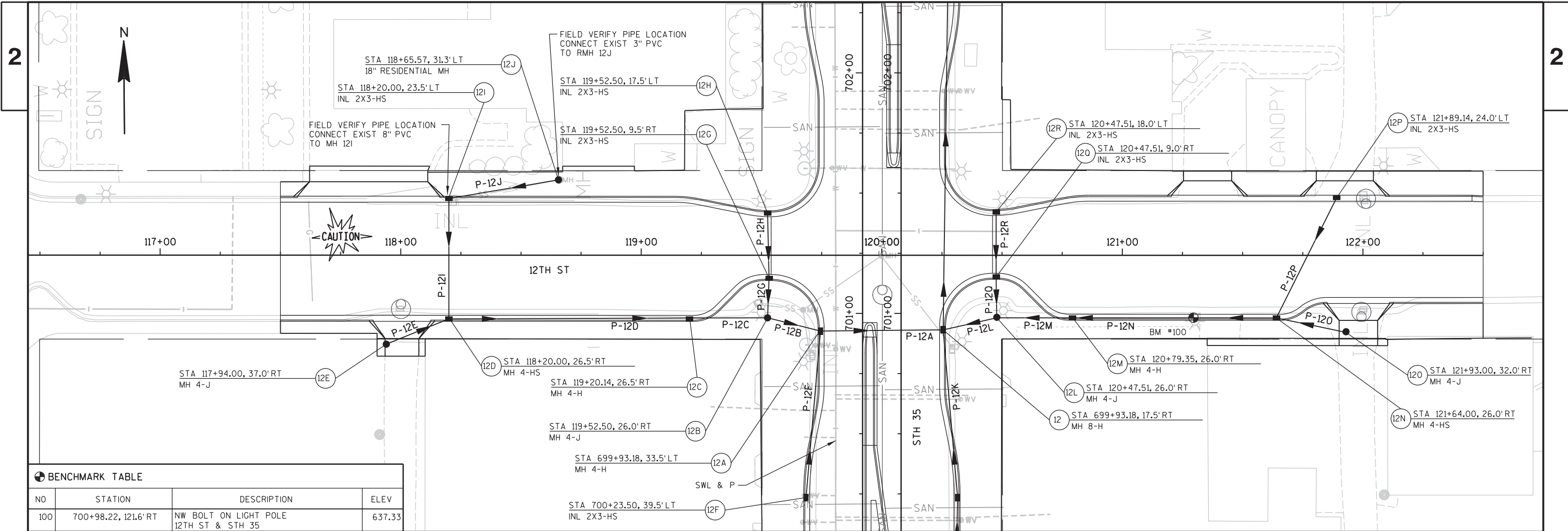
BENCHMARK TABLE

NO	STATION	DESCRIPTION	ELEV
100	700+98.22, 121.6' RT	NW BOLT ON LIGHT POLE 12TH ST & STH 35	637.33



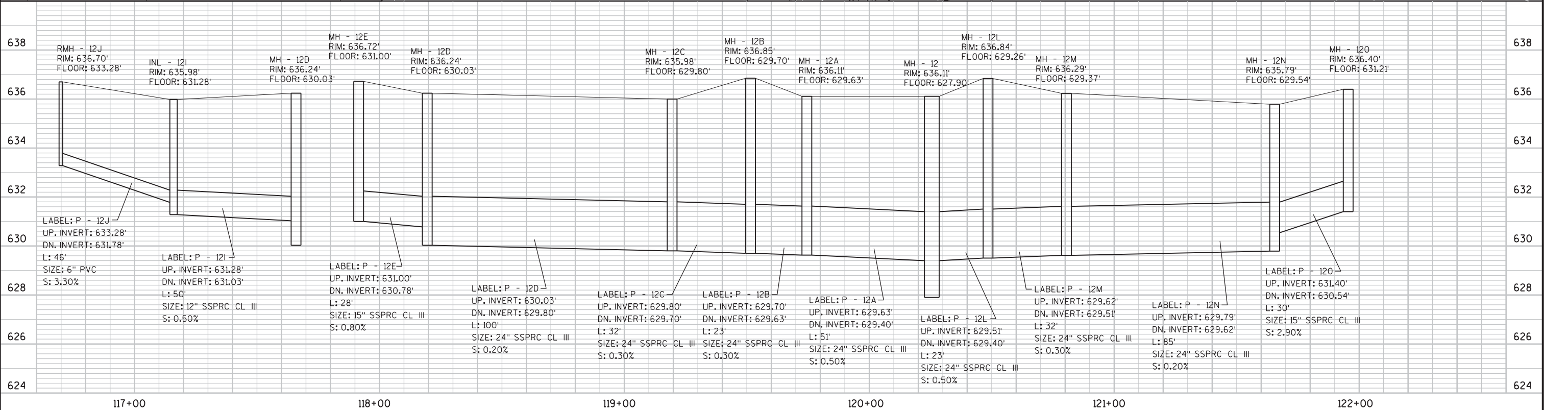






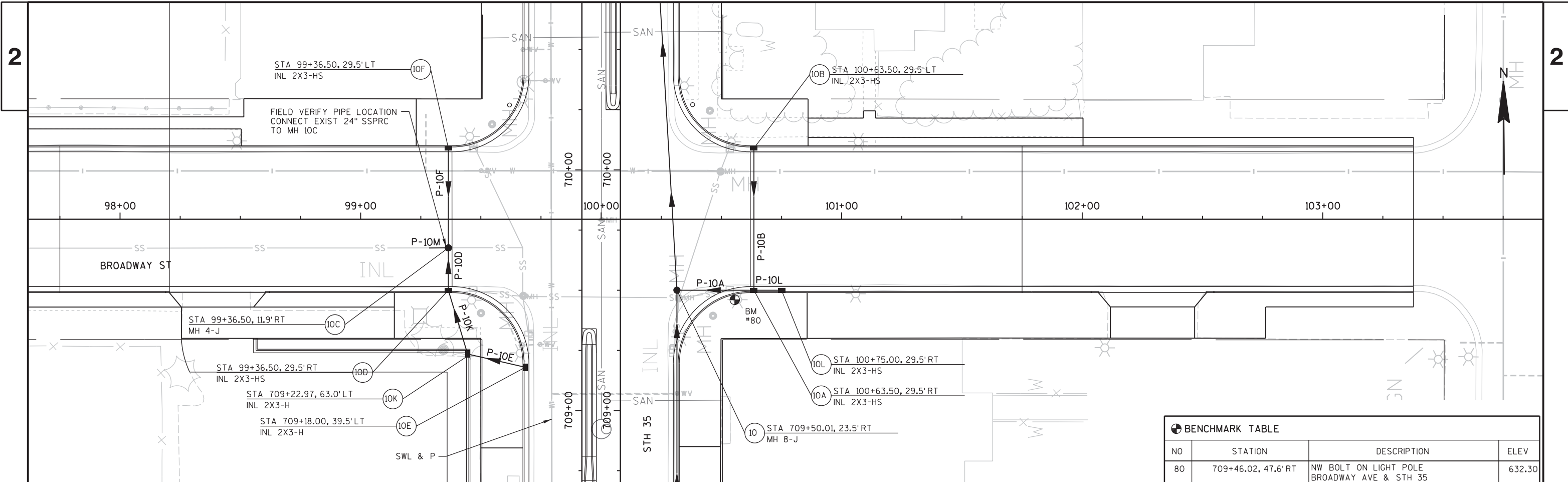
BENCHMARK TABLE

NO	STATION	DESCRIPTION	ELEV
100	700+98.22, 121.6' RT	NW BOLT ON LIGHT POLE 12TH ST & STH 35	637.33

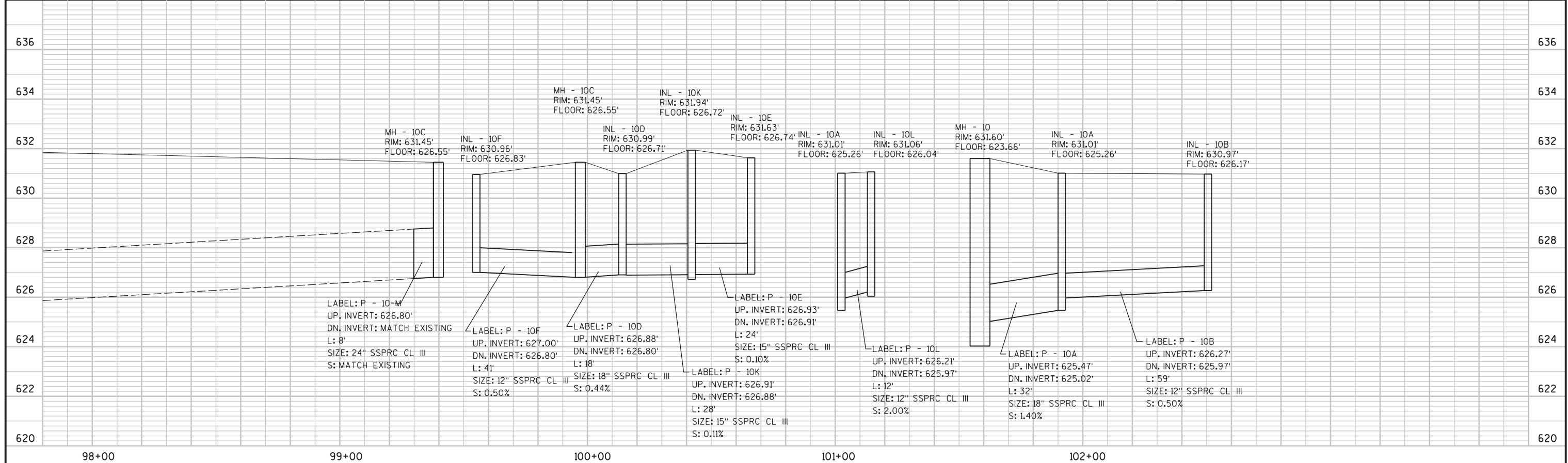




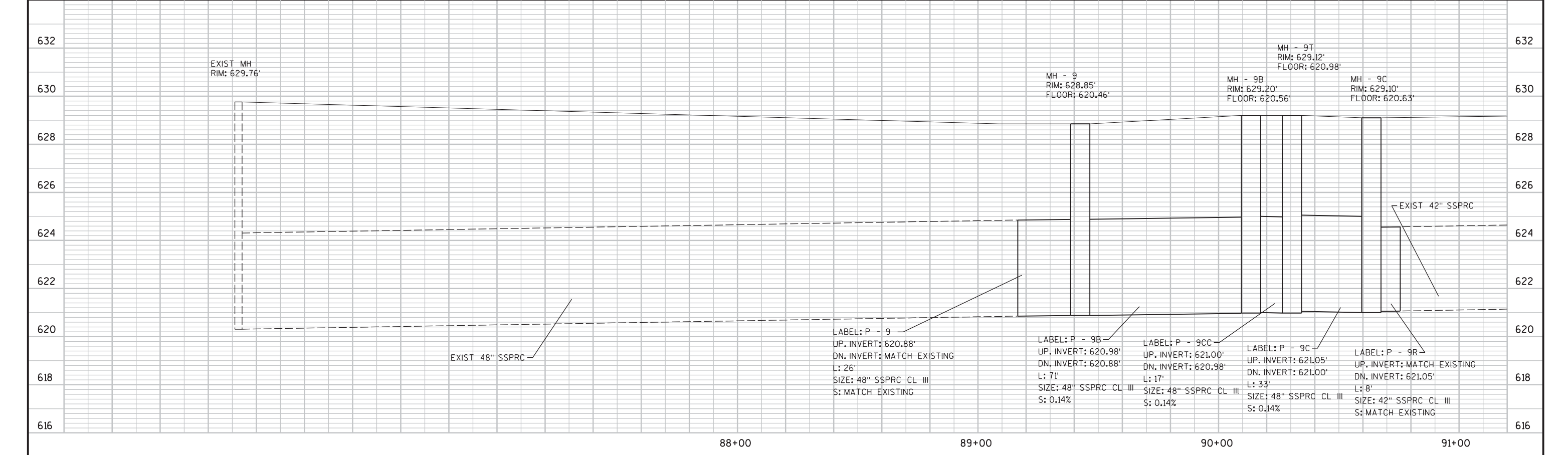
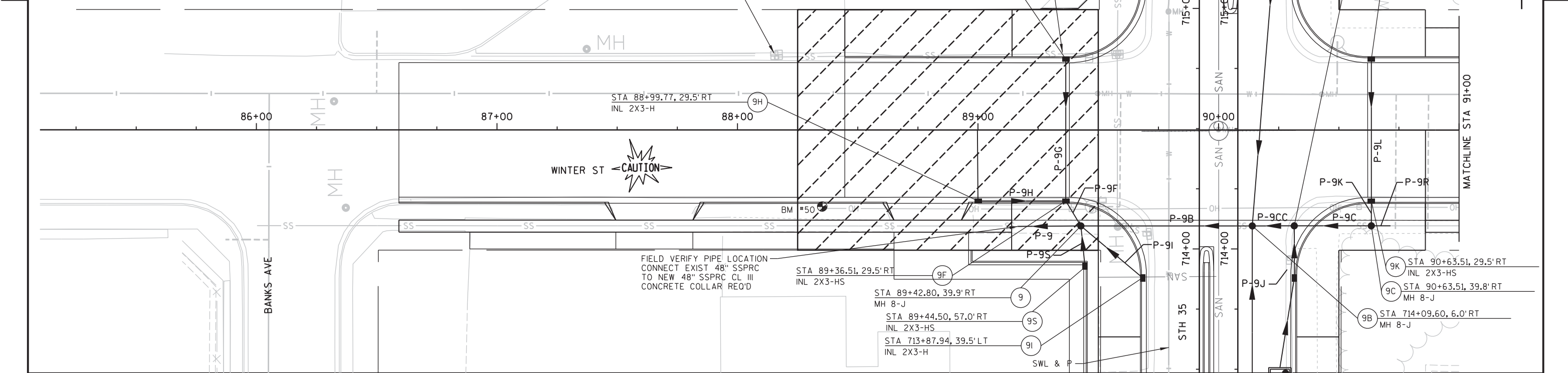


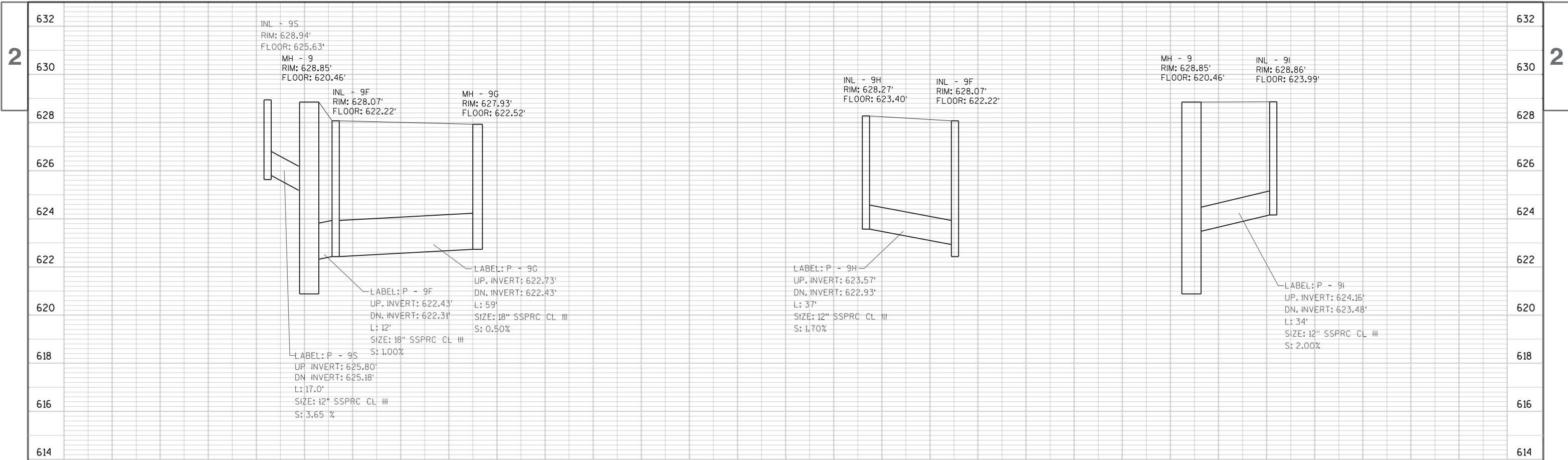


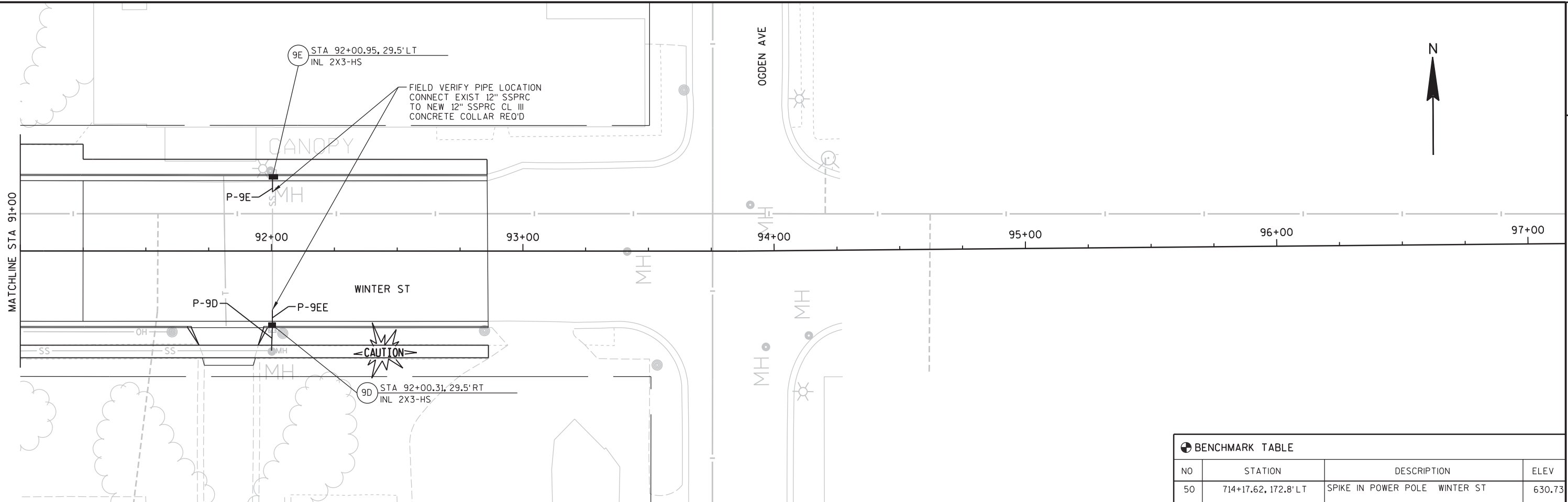
BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
80	709+46.02, 47.6' RT	NW BOLT ON LIGHT POLE BROADWAY AVE & STH 35	632.30



BENCHMARK TABLE				LEGEND	
NO	STATION	DESCRIPTION	ELEV	AREAS OF SOIL CONTAMINATION WITHIN CONSTRUCTION LIMITS	
50	714+17.62, 172.8' LT	SPIKE IN POWER POLE WINTER ST	630.73		



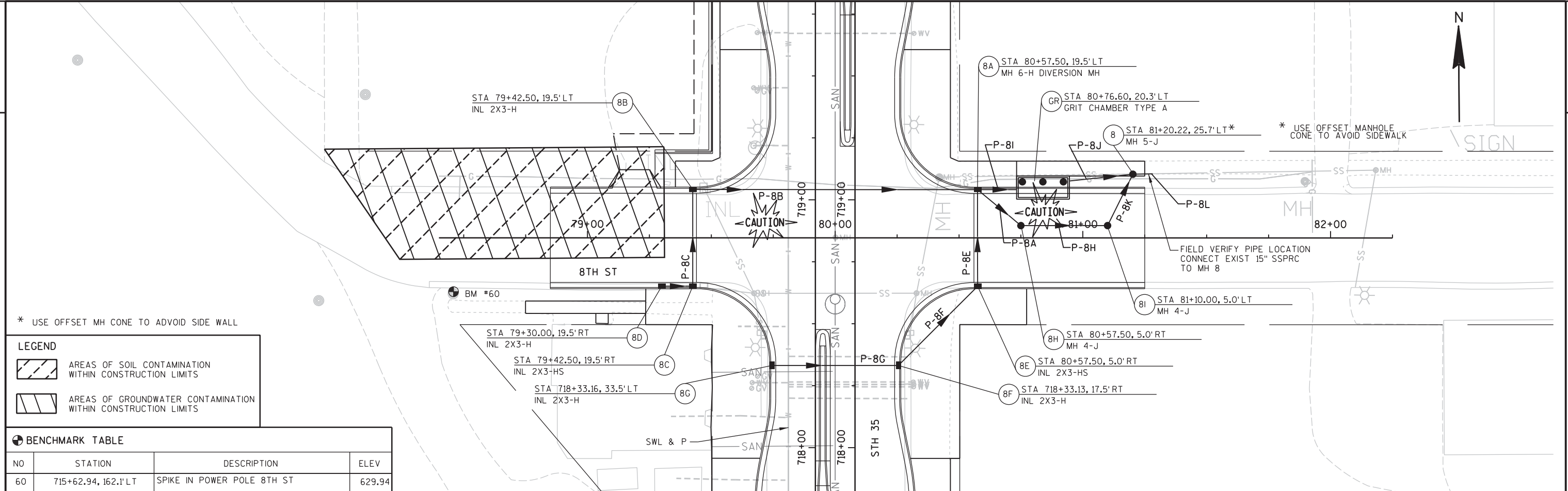




BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
50	714+17.62, 172.8' LT	SPIKE IN POWER POLE WINTER ST	630.73







\* USE OFFSET MH CONE TO AVOID SIDE WALL

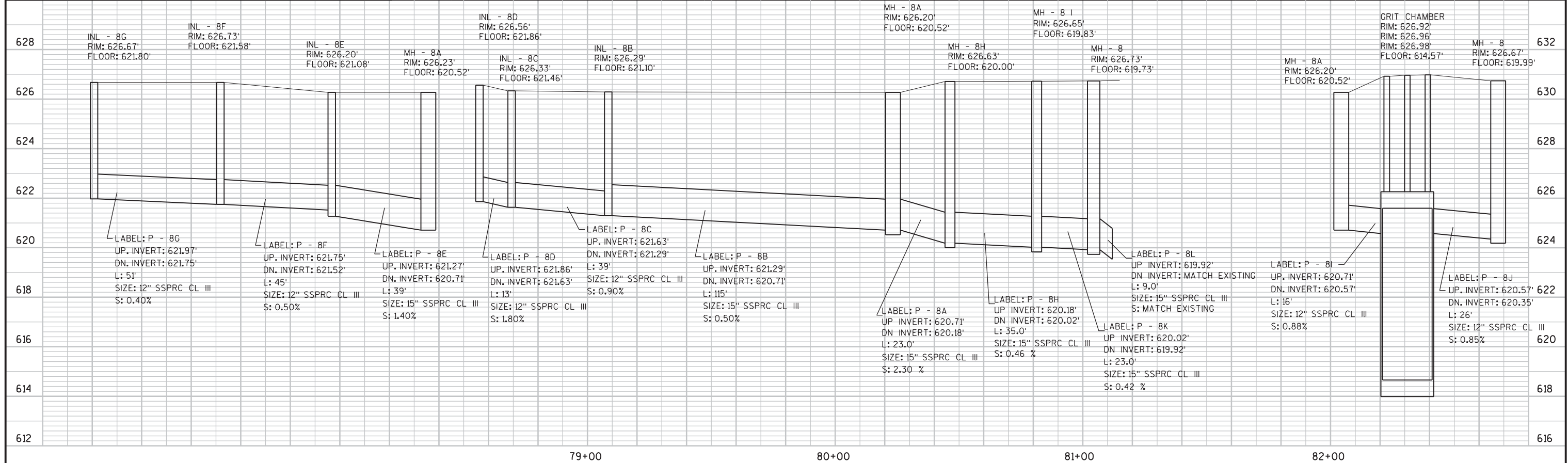
**LEGEND**

AREAS OF SOIL CONTAMINATION WITHIN CONSTRUCTION LIMITS

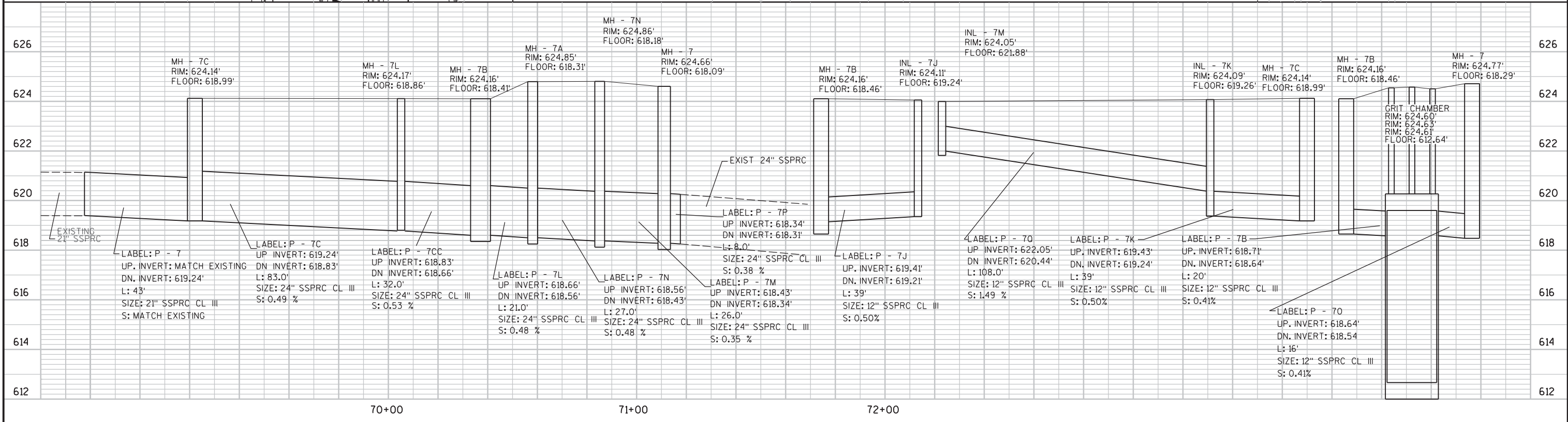
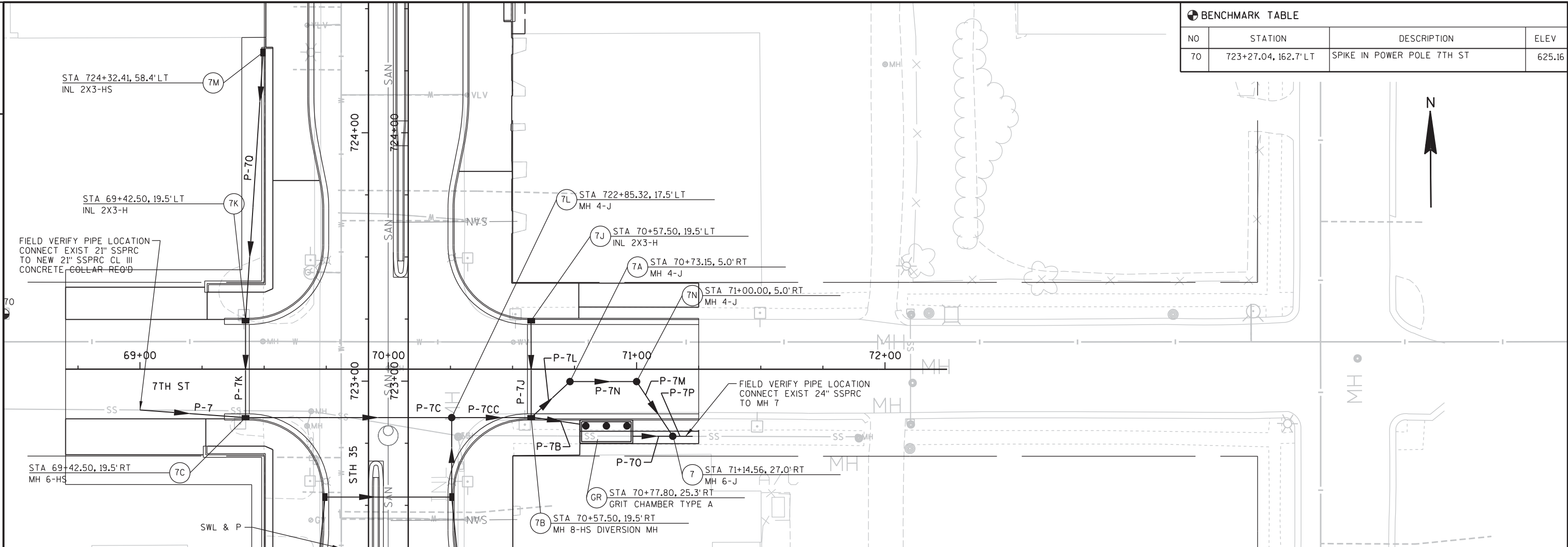
AREAS OF GROUNDWATER CONTAMINATION WITHIN CONSTRUCTION LIMITS

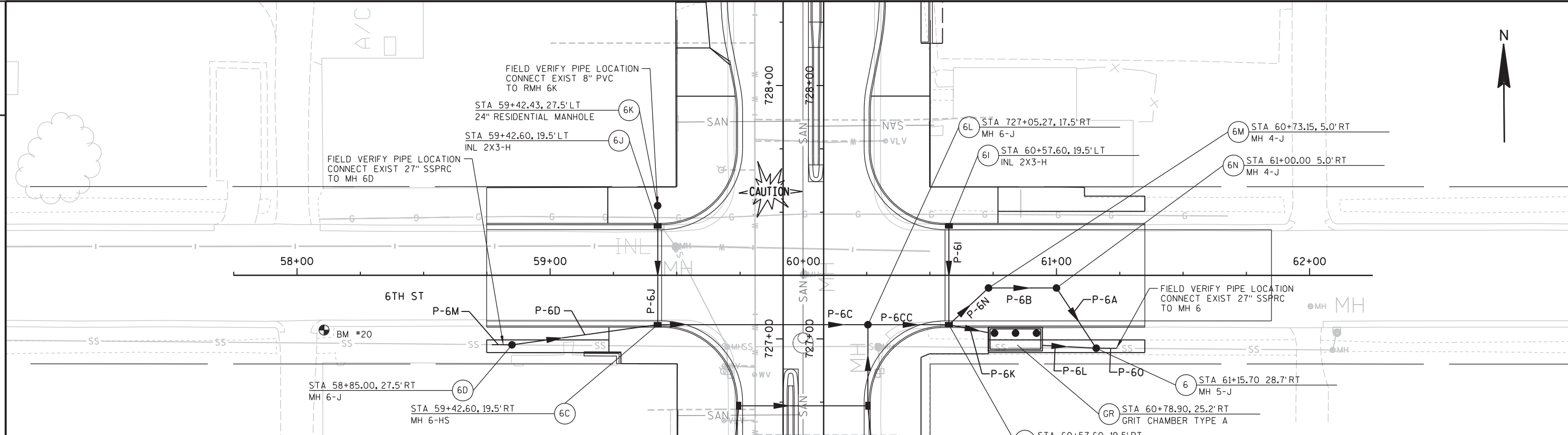
**BENCHMARK TABLE**

NO	STATION	DESCRIPTION	ELEV
60	715+62.94, 162.1'LT	SPIKE IN POWER POLE 8TH ST	629.94

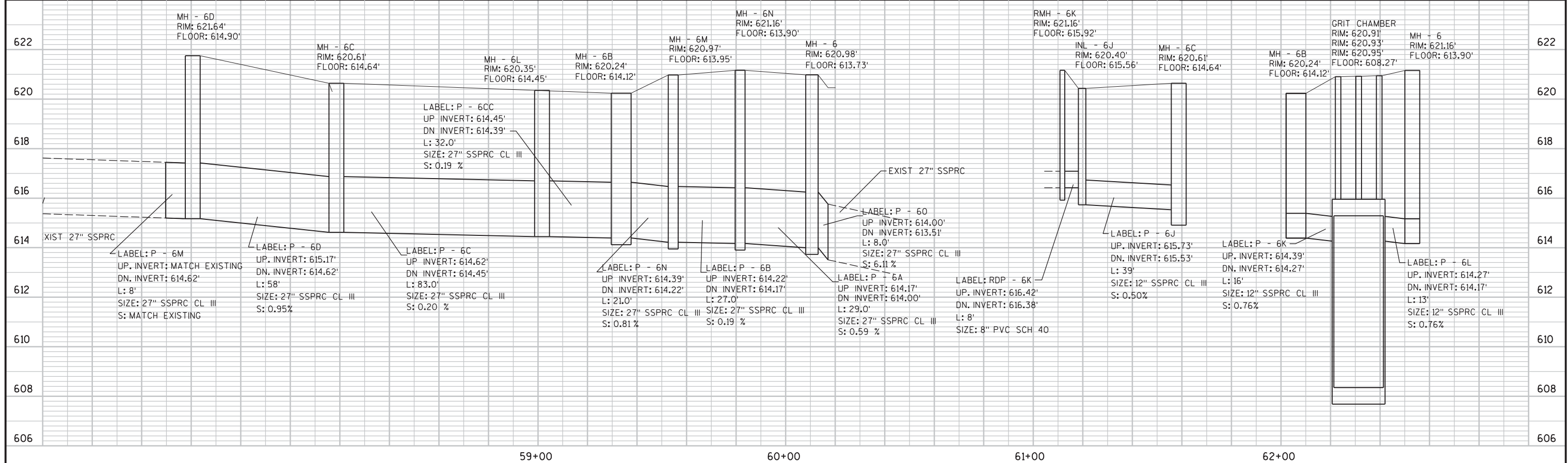


BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
70	723+27.04, 162.7' LT	SPIKE IN POWER POLE 7TH ST	625.16

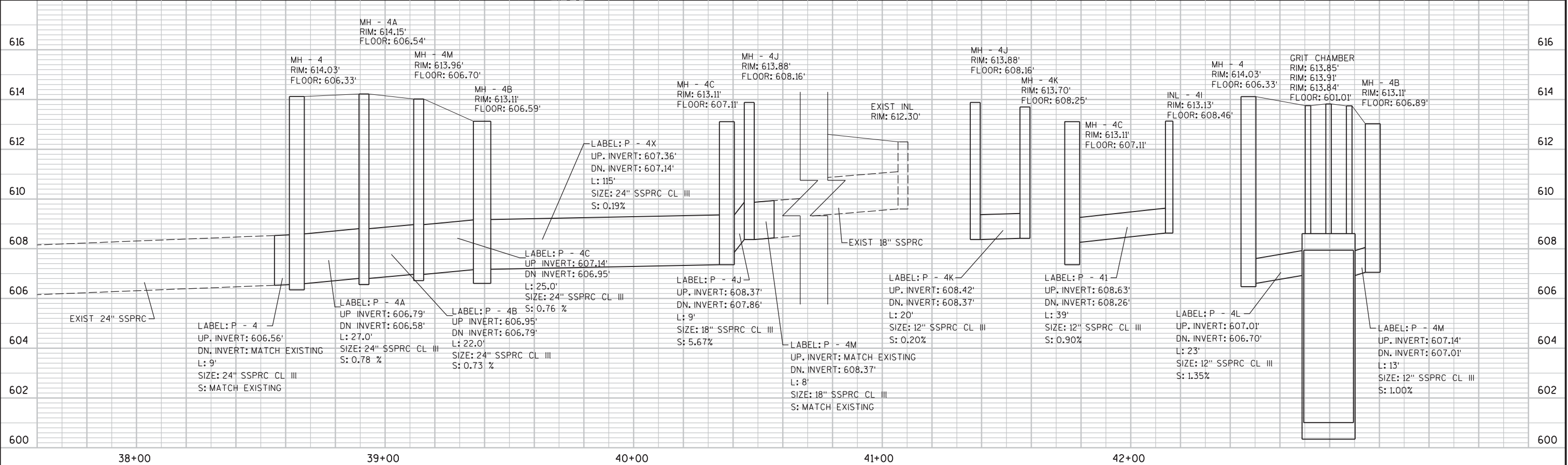
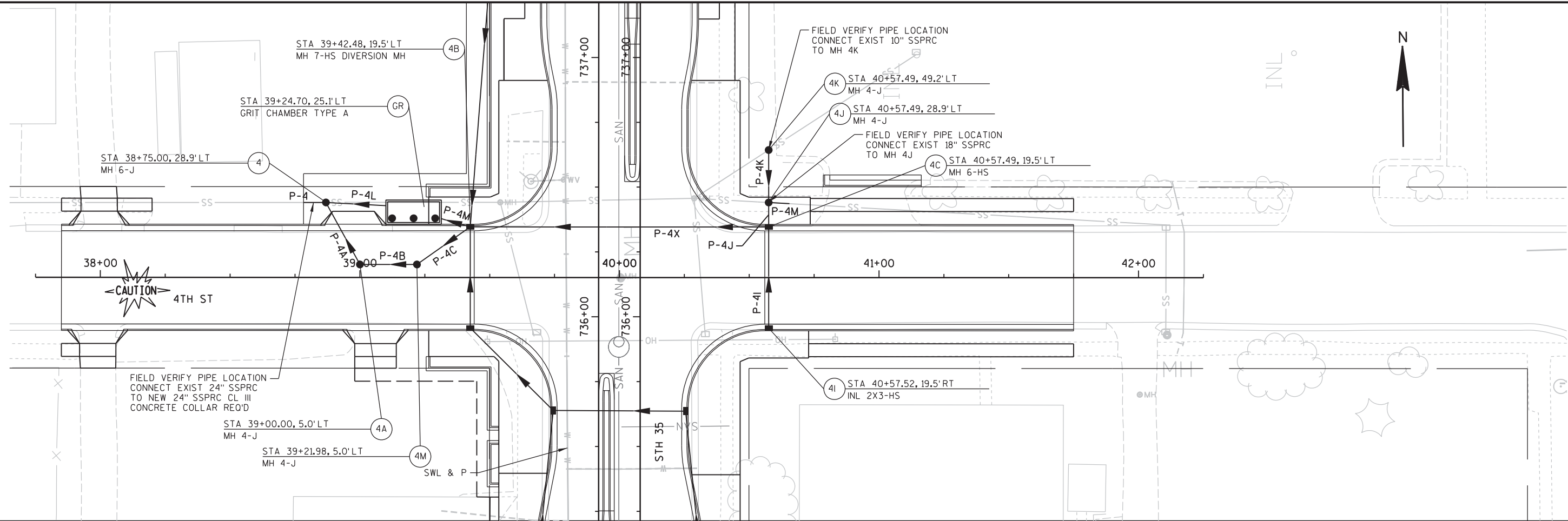


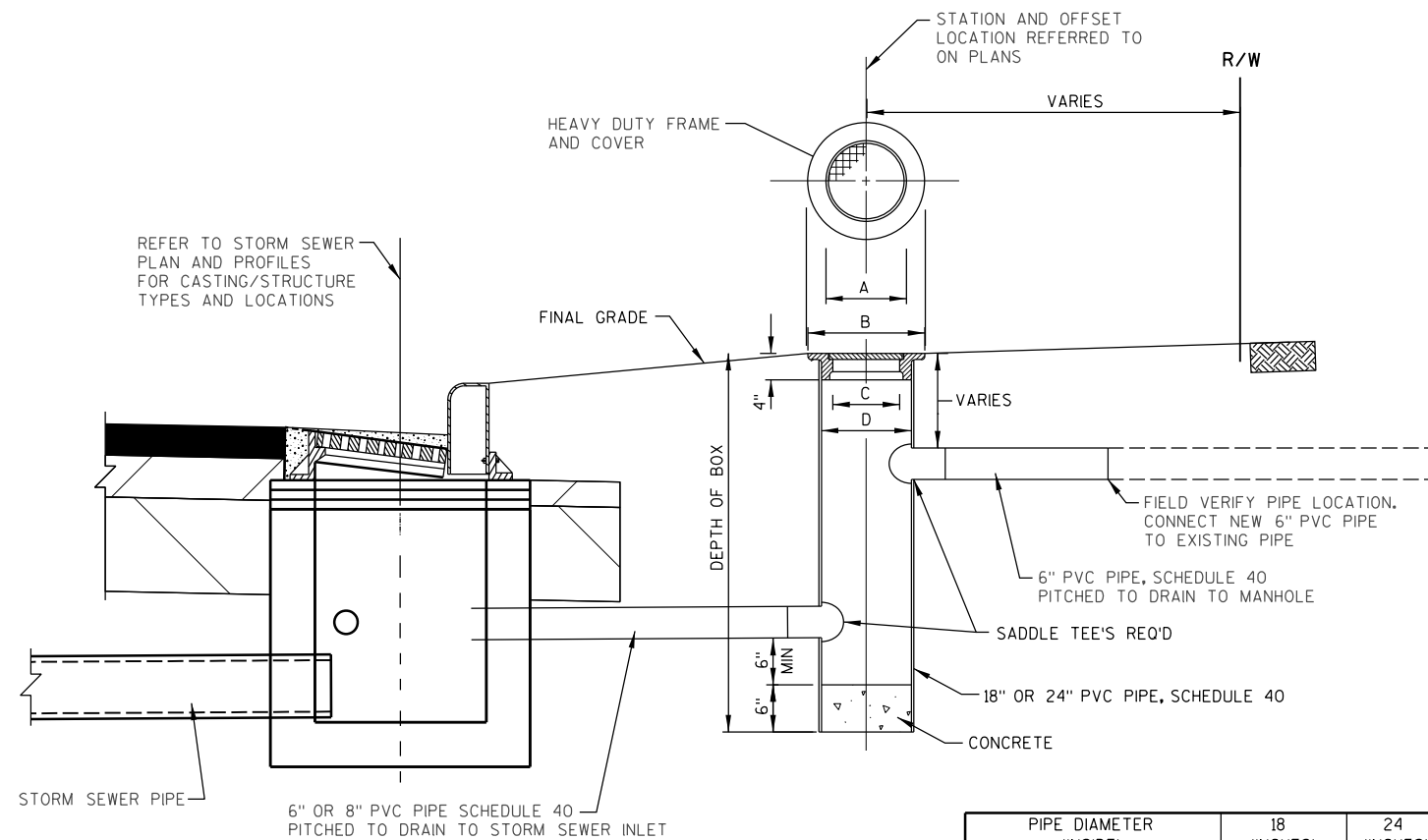


BENCHMARK TABLE			
NO	STATION	DESCRIPTION	ELEV
20	727+03.48, 197.3'LT	SPIKE IN POWER POLE 6TH ST	622.13





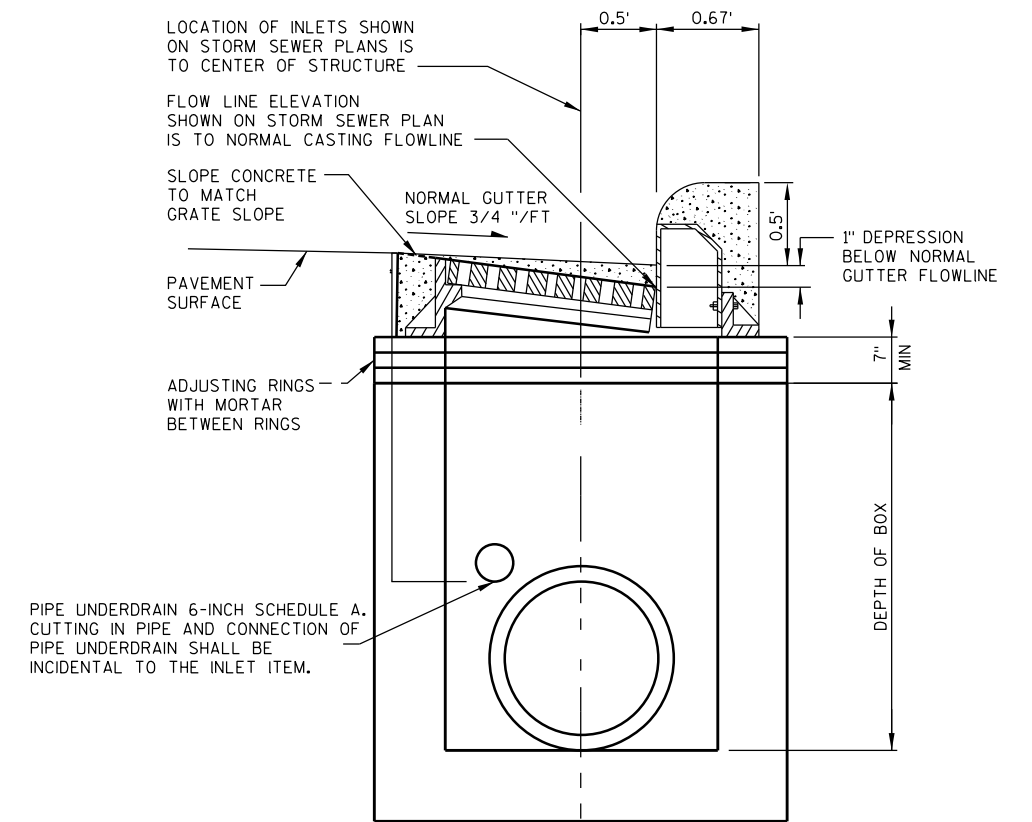




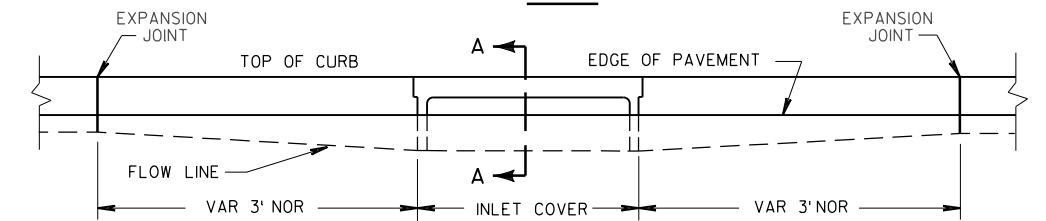
**RESIDENTIAL MANHOLE**  
N.T.S.

\* THE ACTUAL WEIGHT OF THE MANHOLE FRAME AND COVER MAY VARY WITHIN 5% PLUS OR MINUS OF THE WEIGHT SHOWN

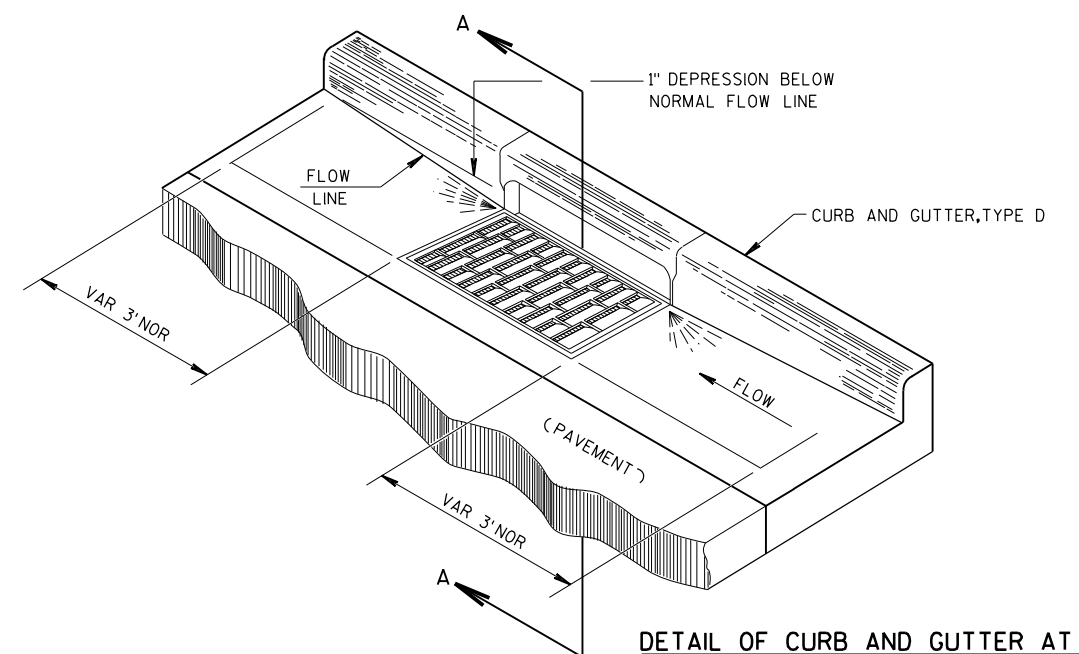
PIPE DIAMETER (INSIDE)	18 (INCHES)	24 (INCHES)
A COVER	16 <sup>1</sup> / <sub>4</sub>	22 <sup>1</sup> / <sub>4</sub>
B FRAME	20 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>2</sub>
C FRAME	14 <sup>1</sup> / <sub>2</sub>	20 <sup>1</sup> / <sub>2</sub>
D FRAME	17 <sup>1</sup> / <sub>2</sub>	23 <sup>1</sup> / <sub>2</sub>
FRAME AND COVER *(LBS)	110	155



**SECTION A-A INLET**

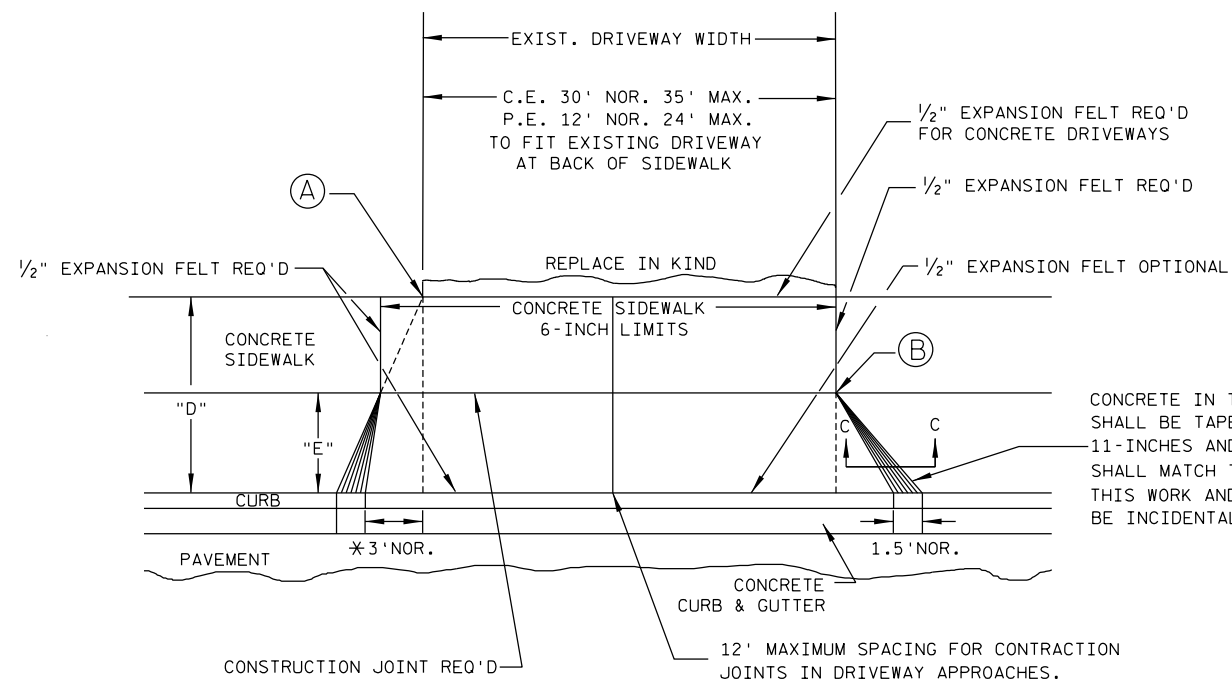


**ELEVATION**



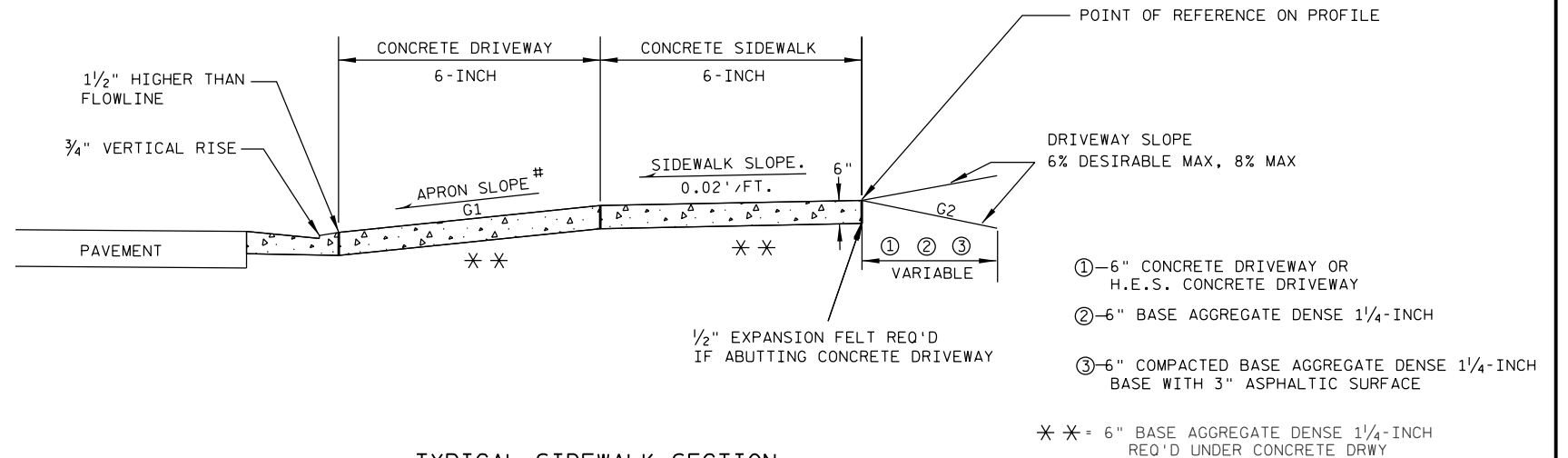
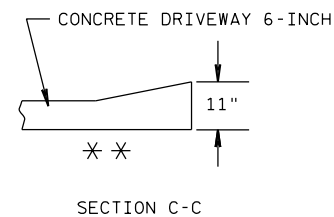
**DETAIL OF CURB AND GUTTER AT INLETS**

### DRIVEWAY ENTRANCE DETAIL WITH SIDEWALK, CURB & GUTTER



PLAN VIEW

- Ⓐ WHEN "D" IS 13' OR LESS, ALIGN TAPER WITH BACK OF SIDEWALK
- Ⓑ WHEN "D" IS GREATER THAN 13', ALIGN TAPER WITH FRONT OF SIDEWALK
- \* WHEN "E" = 0 MAKE CURB TAPER 5'

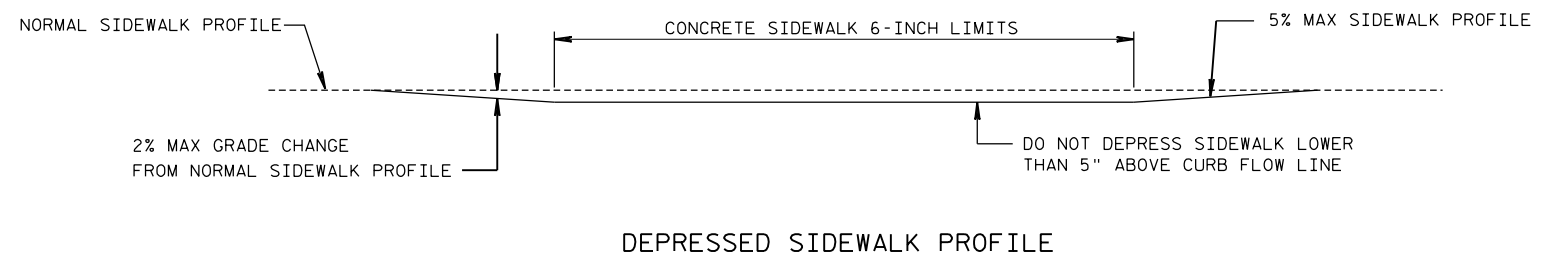


TYPICAL SIDEWALK SECTION

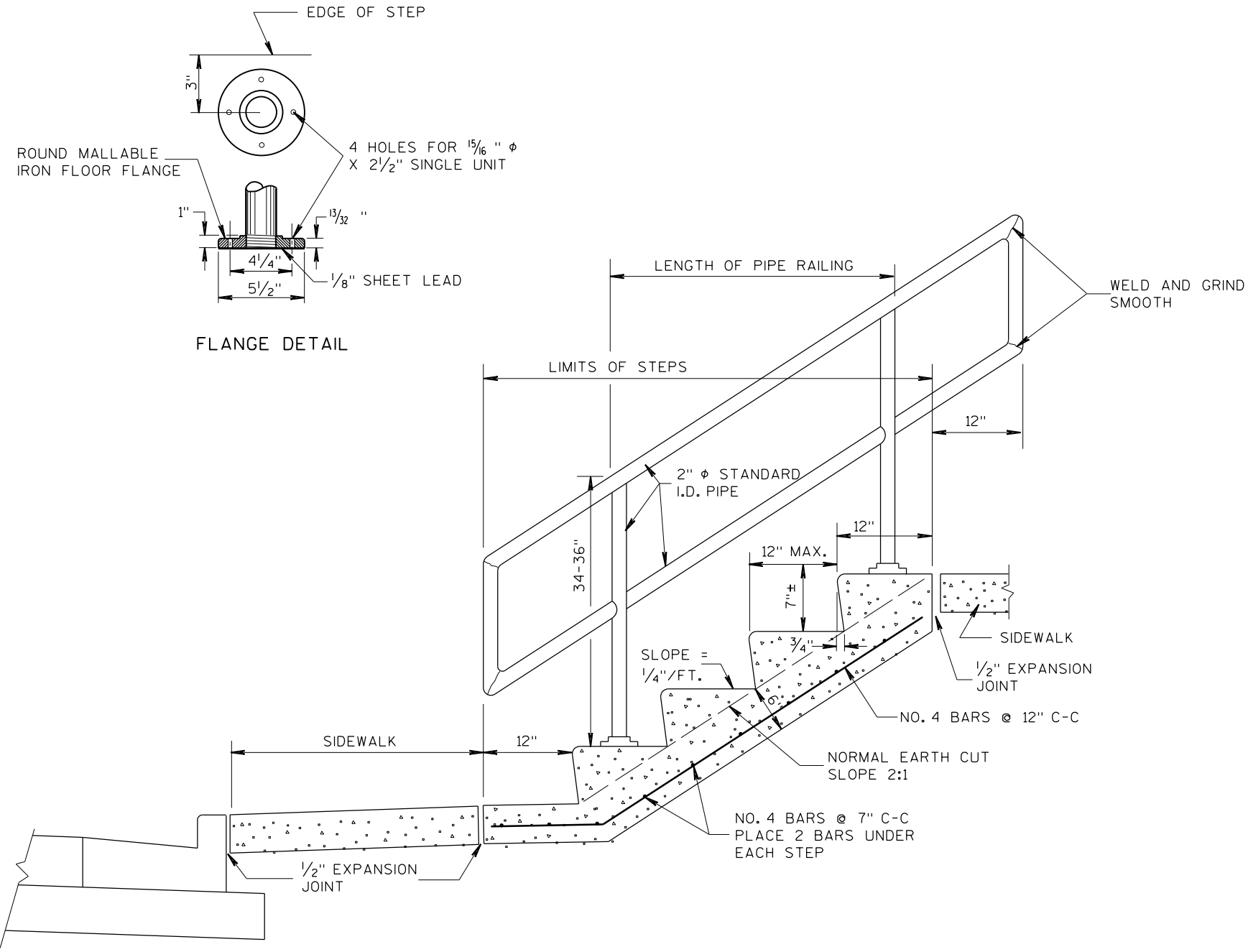
#

TERRACE WIDTH	APRON SLOPE (G1)		
	MIN %	DESIRABLE %	MAX %
3 FT	5.0	6.0	8.0
4 FT	5.0	6.0	8.0
5 FT	4.0	6.0	8.0
6 FT	4.0	6.0	8.0
7 FT	3.5	6.0	8.0
8 FT	3.0	6.0	8.0

NOTE: ALGEBRAIC DIFFERENCE BETWEEN TANGENT GRADES G1 & G2 TO NOT EXCEED 15%  
DEPRESS SIDEWALK PROFILE IF DRIVEWAY APRON EXCEEDS MAX SLOPE



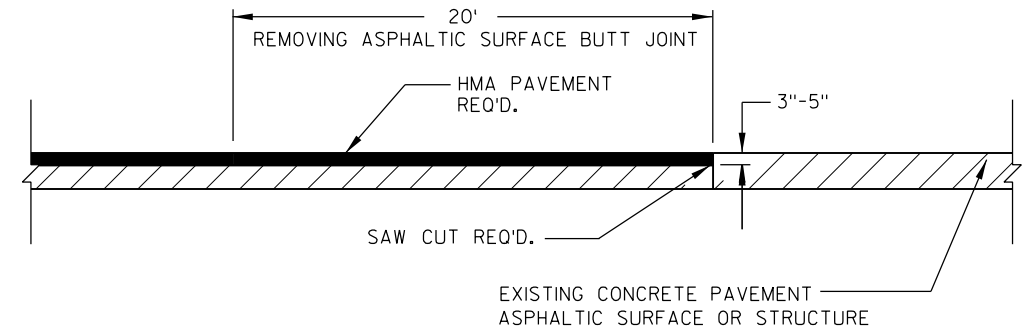
DEPRESSED SIDEWALK PROFILE



FLANGE DETAIL

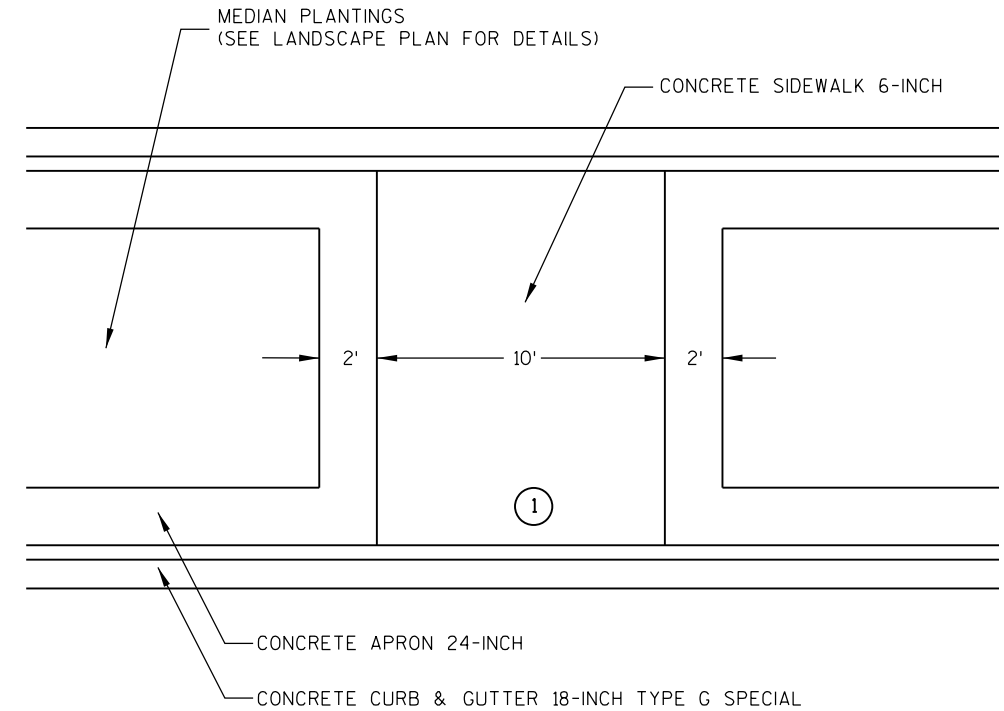
CONCRETE STEPS DETAIL

NOTE:  
 THE EXACT LOCATION, WIDTHS, & NUMBER OF STEPS TO BE DETERMINED BY THE ENGINEER IN THE FIELD.  
 STEEL REINFORCEMENT AND PIPE RAILING NOT REQUIRED ON STEPS WITH 2 RISERS OR LESS.  
 MINIMUM WIDTH OF STEP EQUALS 4 FEET.  
 RAILING TO BE PLACED ON LEFT ASCENDING SIDE OF STEPS ONLY.



DETAIL OF BUTTED JOINT

\* EXACT DIMENSIONS TO BE DETERMINED BY ENGINEER IN THE FIELD.

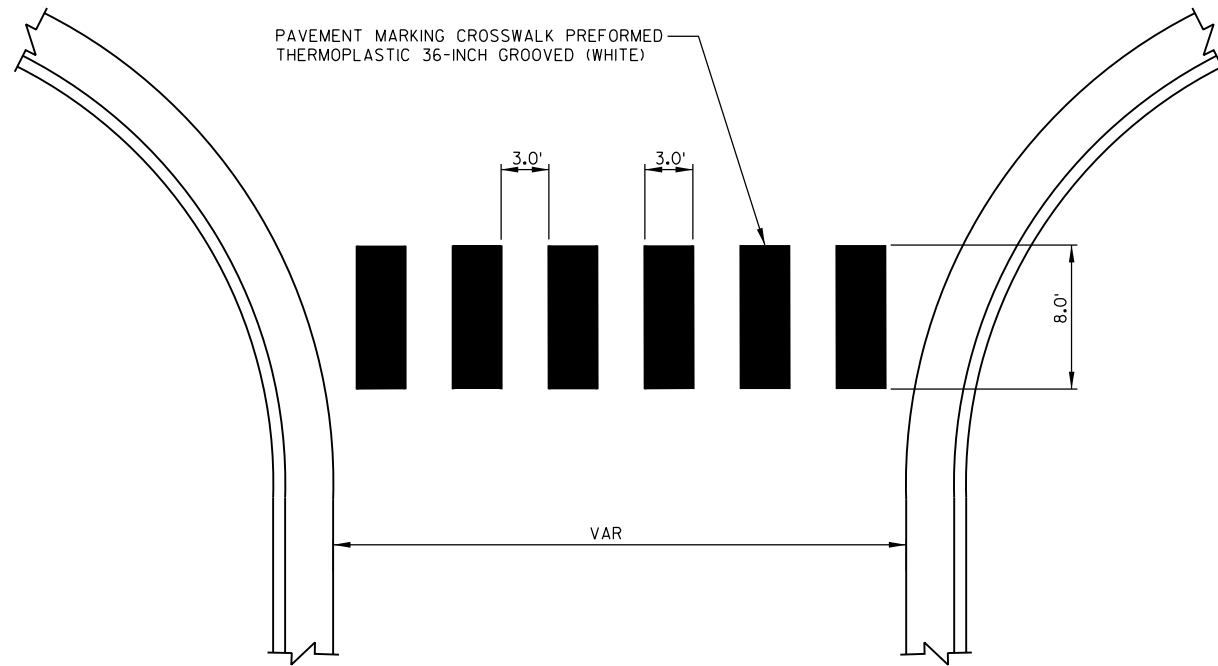


MID-BLOCK MEDIAN OPENINGS

(SEE LANDSCAPING PLANS)  
 CROSSING IS CONCRETE SIDEWALK 6-INCH

① STATION 693+04.6  
 DEPRESS CURB HEAD TO PROVIDE FLUSH OPENING THROUGH MEDIAN  
 CURB HEAD NOT DEPRESSED AT ALL OTHER MEDIAN CROSSING LOCATIONS, CONCRETE SIDEWALK LOCATED AT TOP OF CURB





PAVEMENT MARKING CROSSWALK PREFORMED THERMOPLASTIC 36-INCH GROOVED (WHITE)

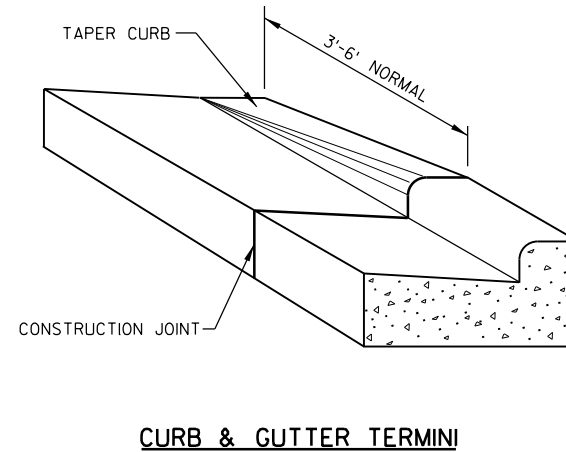
**PAVEMENT MARKING CROSSWALK DETAIL**

- ① PAINTED AREAS TO BE CENTERED ON CENTERLINE AND LANE LINES.
- ② A MINIMUM OF 1.5 FEET CLEAR DISTANCE SHALL BE LEFT ADJACENT TO THE CURB. IF THE LAST PAINTED AREA FALLS INTO THIS DISTANCE, IT MUST BE OMITTED.
- ③ THE BLOCKS SHALL BE PLACED SO THAT THEY ARE NOT LOCATED IN THE WHEEL PATH OF THE VEHICLES.

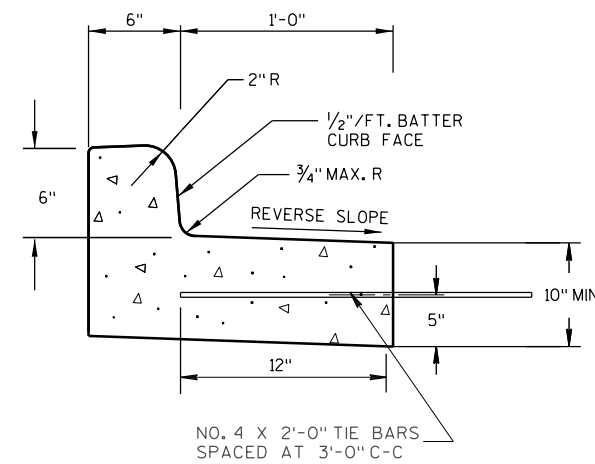
**RUNOFF COEFFICIENT TABLE**

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = 20.96 ACRES  
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 18.17 ACRES

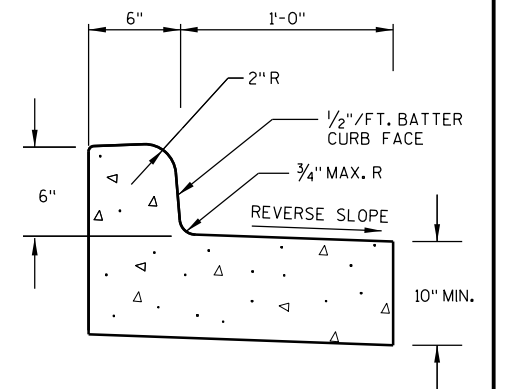


**CURB & GUTTER TERMINI**



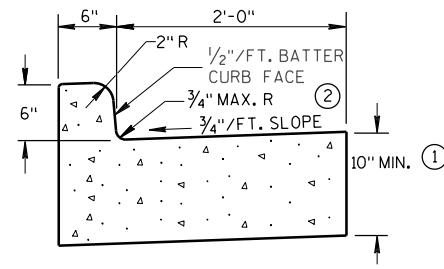
**CONCRETE CURB & GUTTER  
18" TYPE A SPECIAL**

THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.



**CONCRETE CURB & GUTTER  
18" TYPE D SPECIAL**

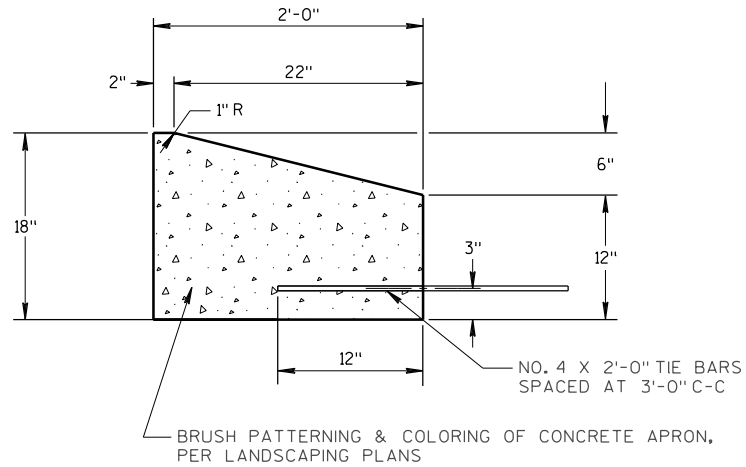
THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.



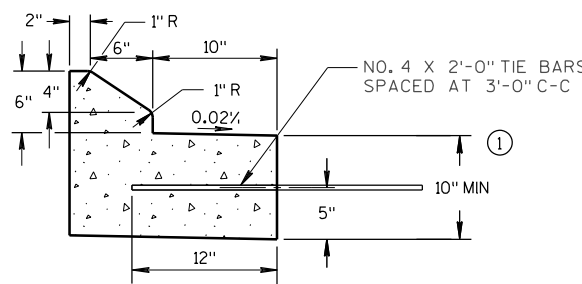
**CONCRETE CURB & GUTTER 30-INCH TYPE D SPECIAL**

**NOTES:**

- ① THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 10" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ② REVERSE SLOPE IN MEDIAN LOCATIONS.



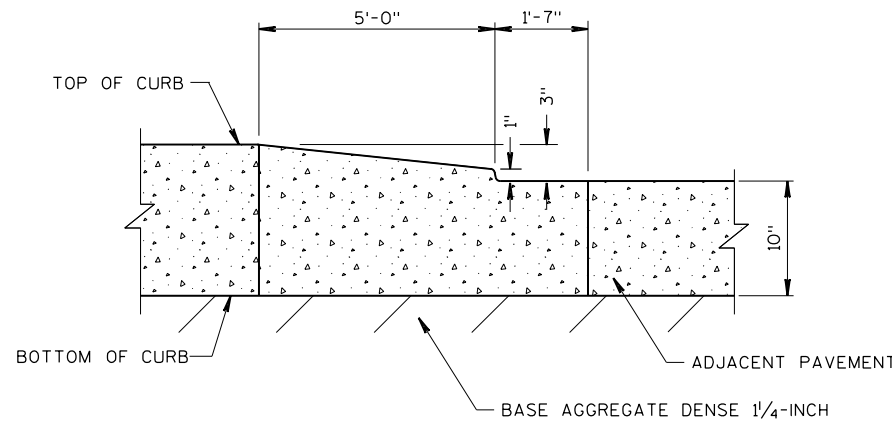
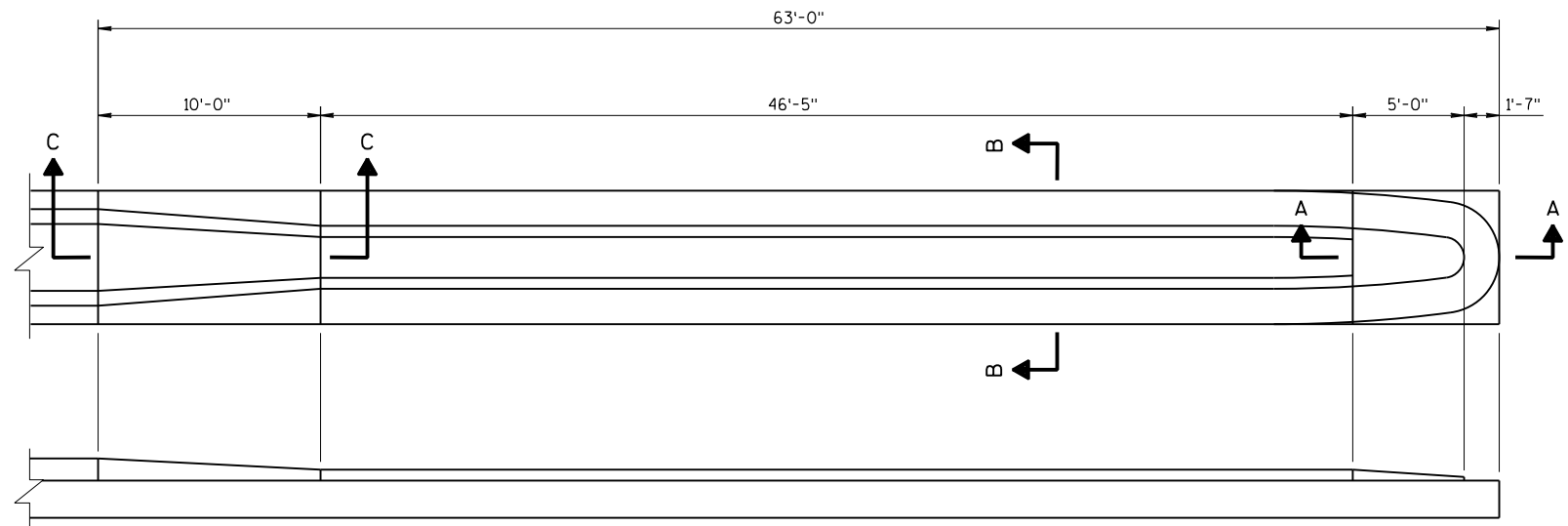
**CONCRETE APRON 24-INCH**



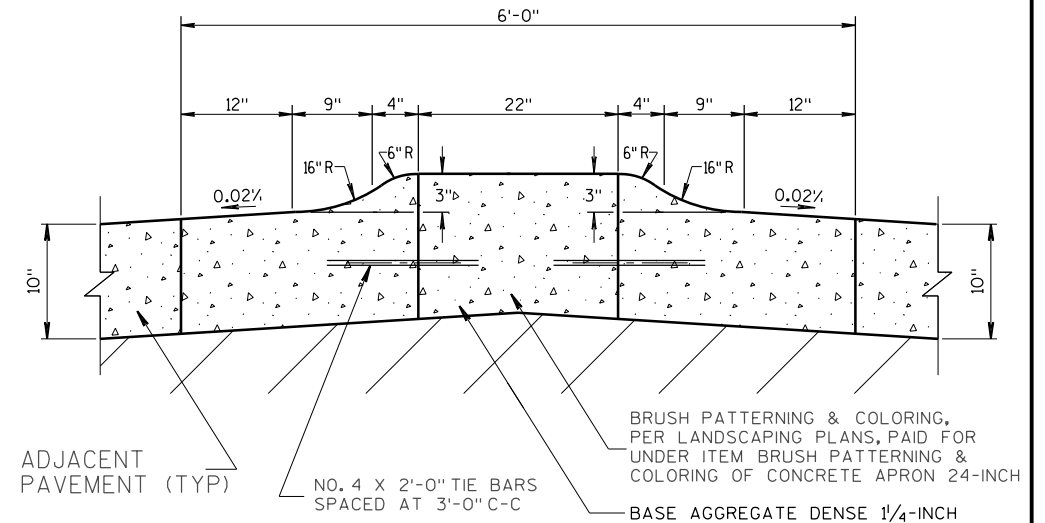
**CONCRETE CURB & GUTTER 18-INCH TYPE G SPECIAL**

**NOTES:**

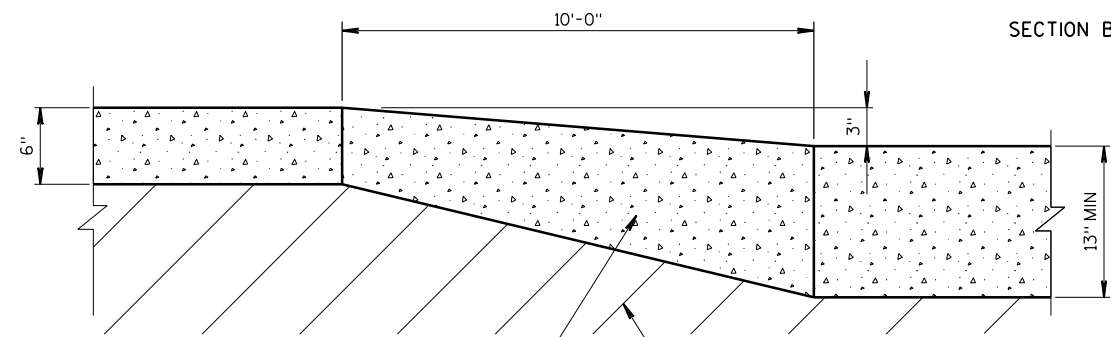
- ① THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 10" MINIMUM GUTTER THICKNESS IS MAINTAINED.



SECTION A-A



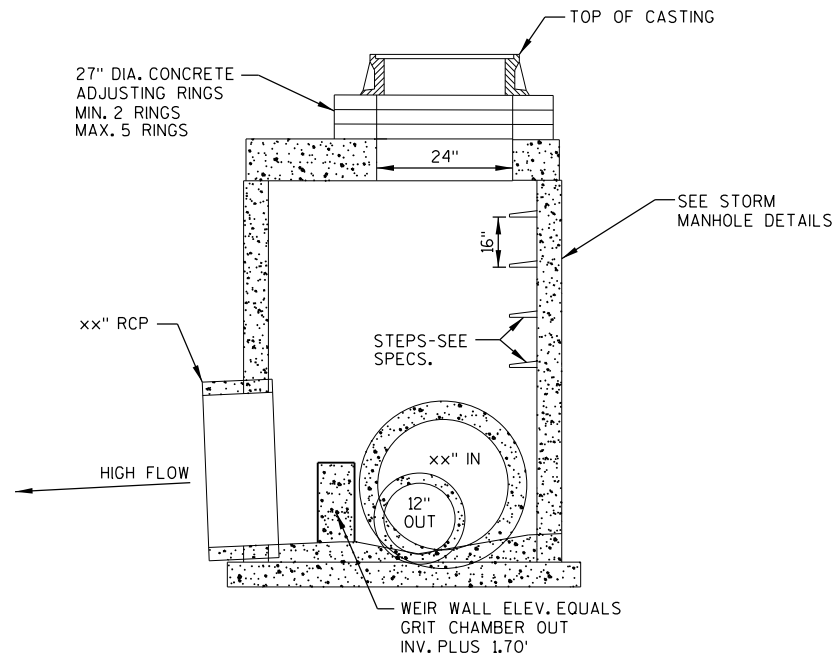
SECTION B-B



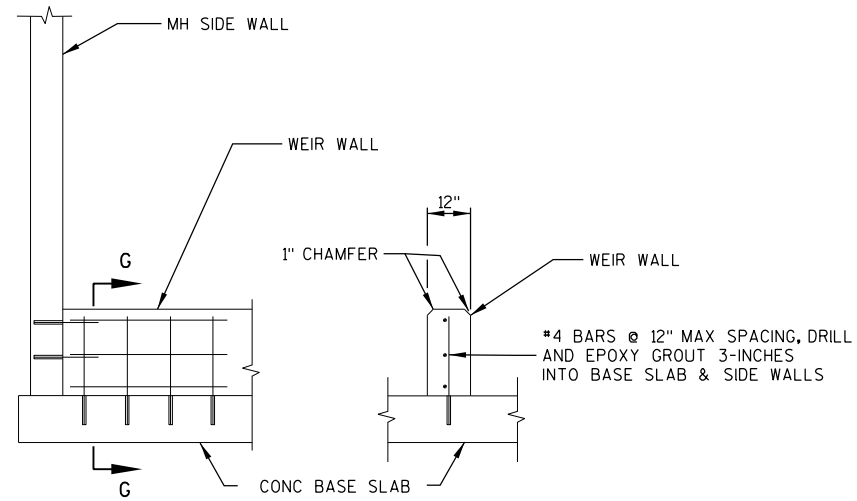
SECTION C-C

**CONCRETE CURB MEDIAN 3-INCH SLOPED**





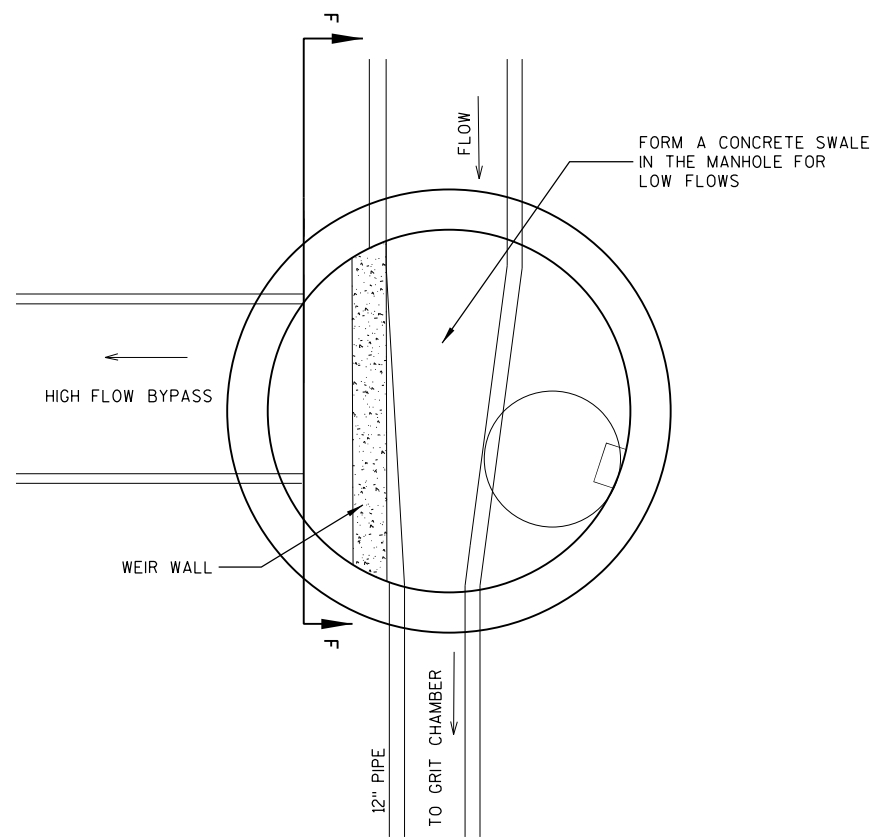
FRONT VIEW



SECTION F - F

SECTION G - G

CONCRETE WEIR WALL



TOP VIEW

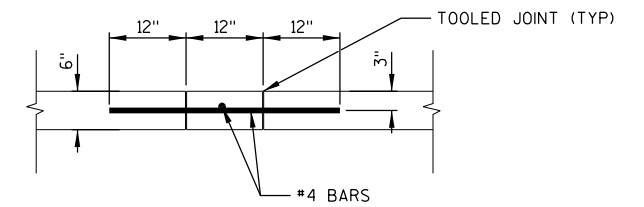
DIVERSION MANHOLE DETAILS

NOTES:

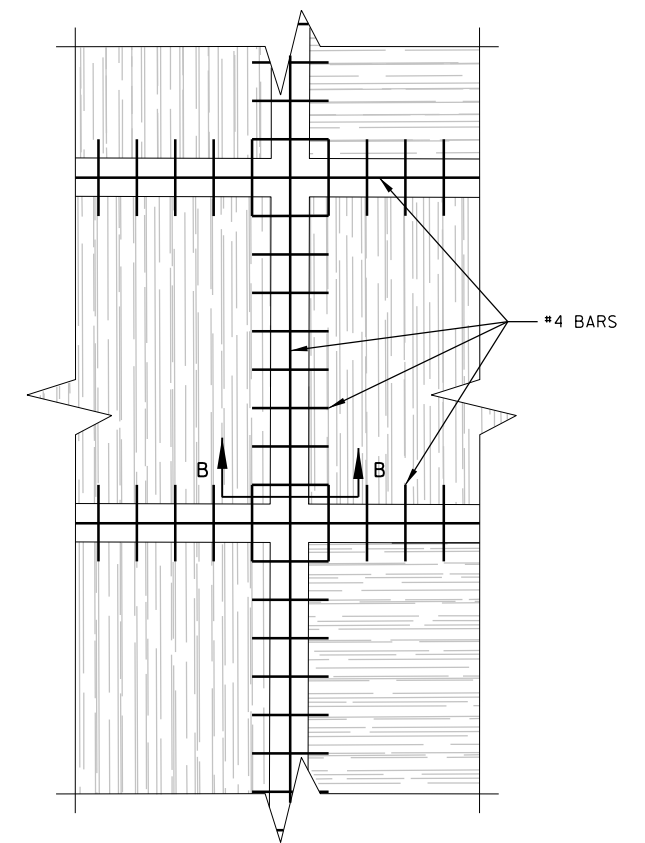
- ① CORE-DRILL OR SAW-CUT ALL OPENINGS FOR SMOOTH SURFACES AND SHARP LINES

REINFORCEMENT NOTES:

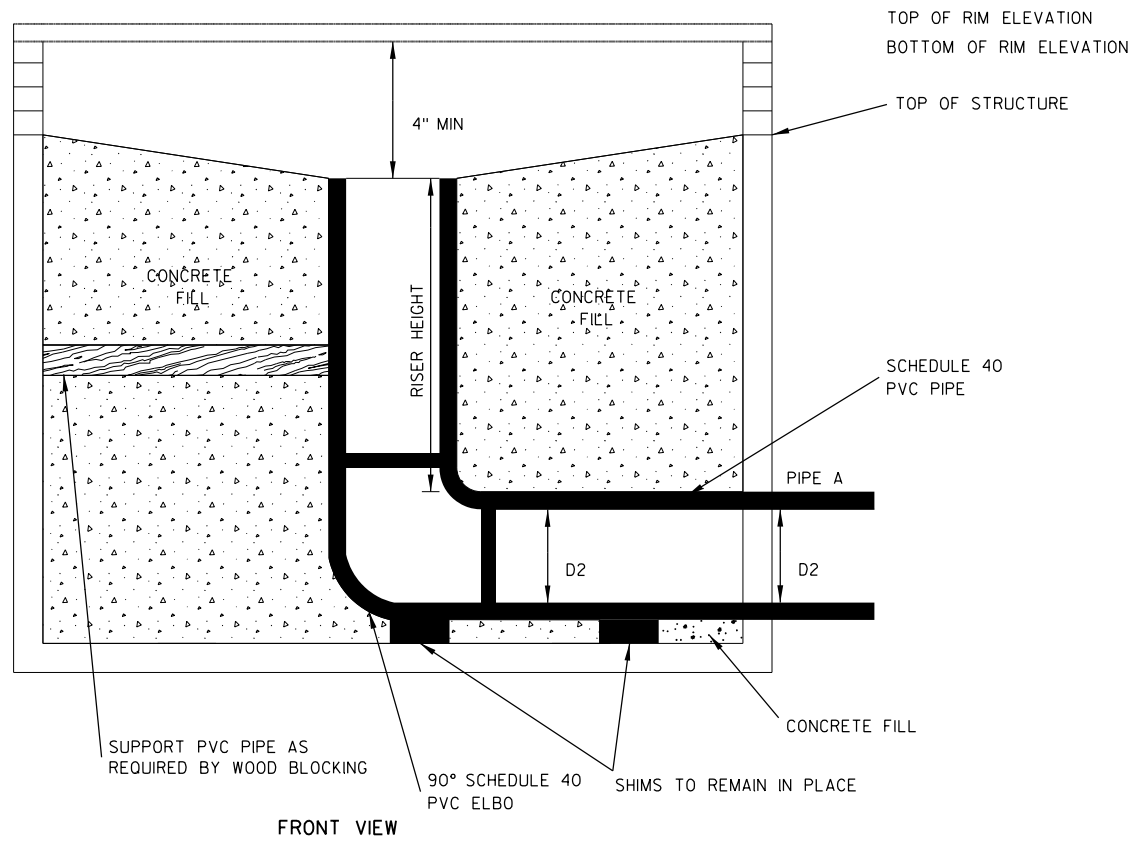
- ① SUBMIT SHOP DRAWING TO ENGINEER FOR REVIEW.
- ② MIN CONC COVER 1-1/2" FOR ALL BARS
- ③ SIDE WALLS REQUIRE #4 BARS 12" C.C. BOTH DIRECTIONS
- ④ BASE SLAB REQUIRE #4 BARS 6" C.C. BOTH DIRECTIONS
- ⑤ TOP SLAB REQUIRE #4 BARS 6" C.C. BOTH DIRECTIONS
- ⑥ BEND AND TIE ALL CORNERS



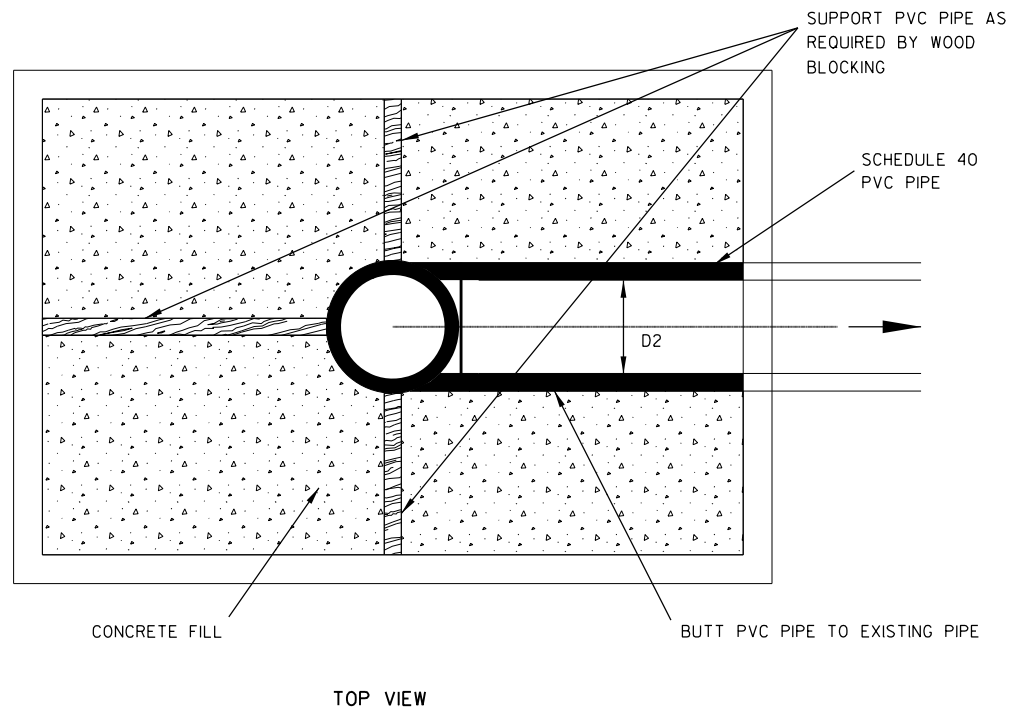
SECTION B - B



SIDEWALK TIES

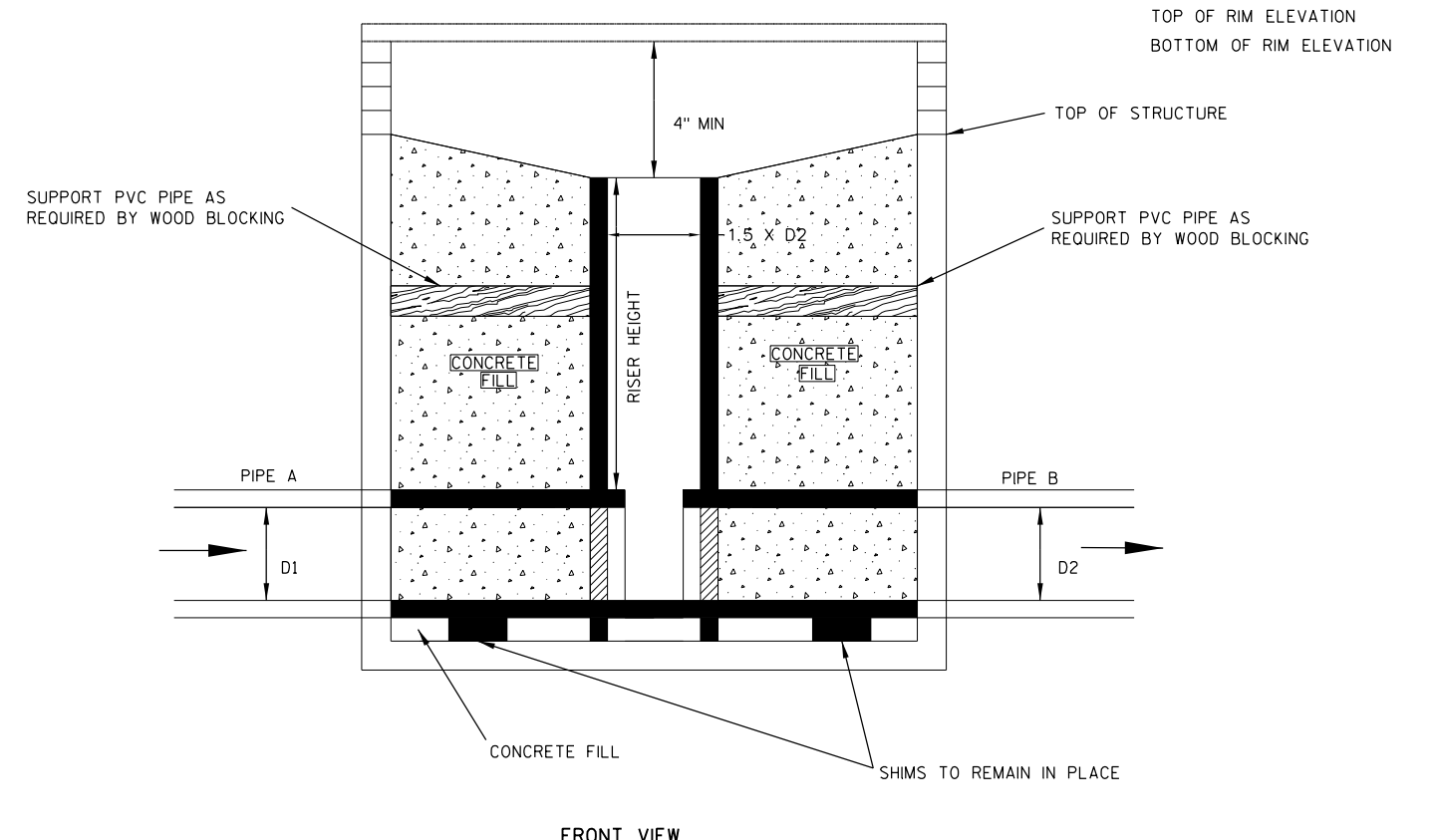


FRONT VIEW

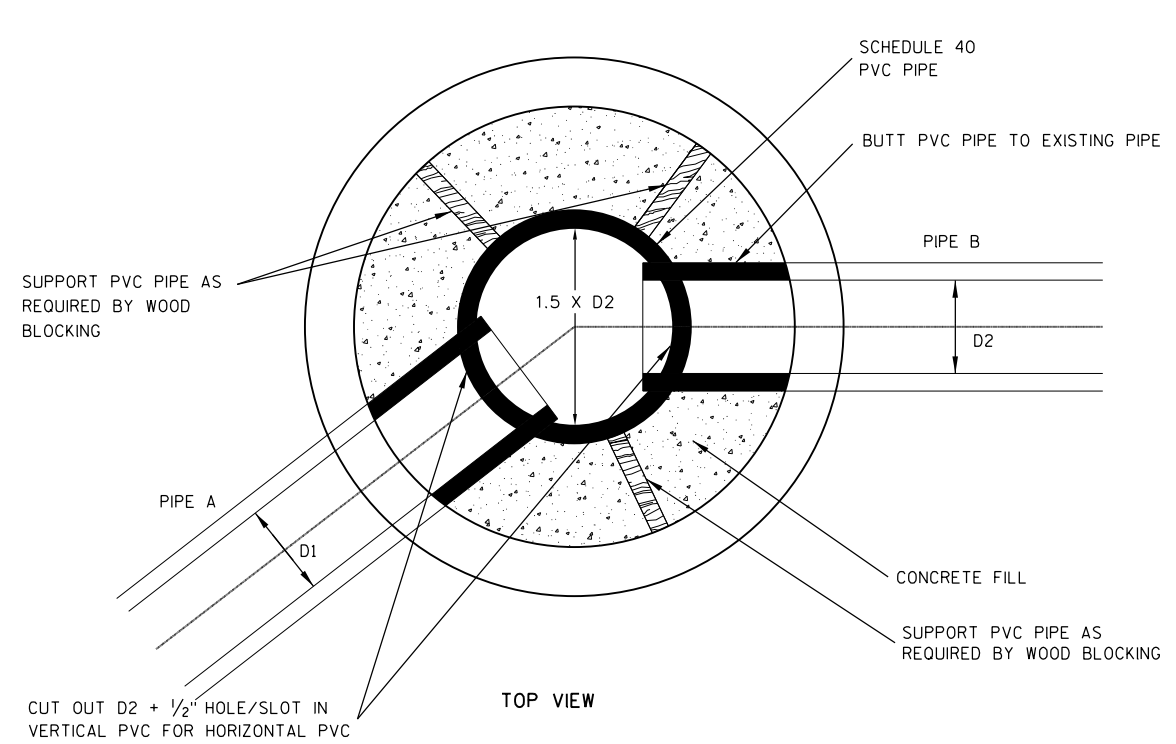


TOP VIEW

**INLET REPAIR TYPE 1**  
SINGLE OUT INLET DETAIL

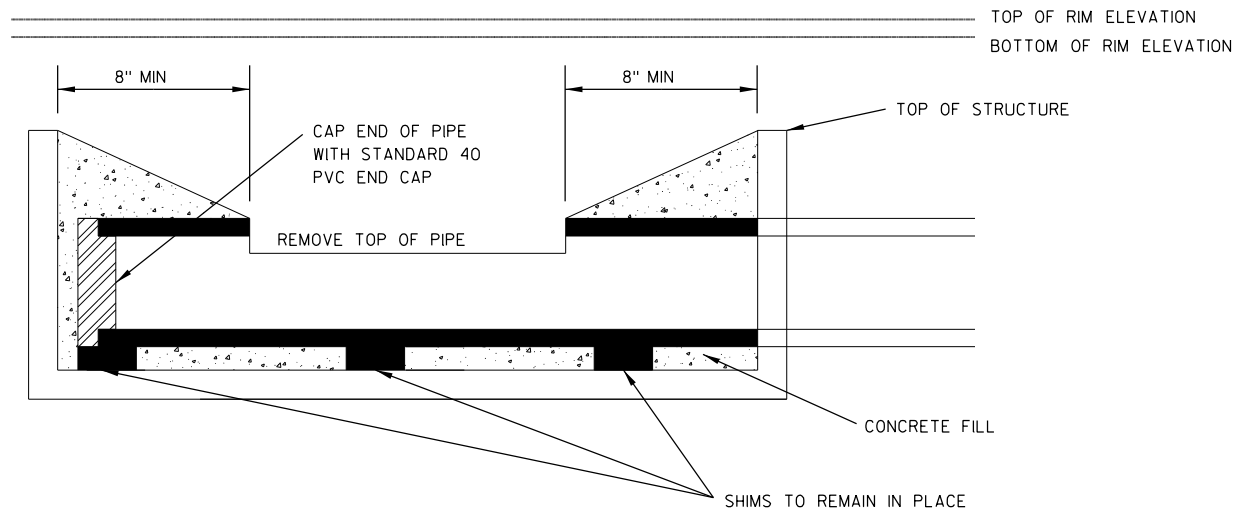


FRONT VIEW

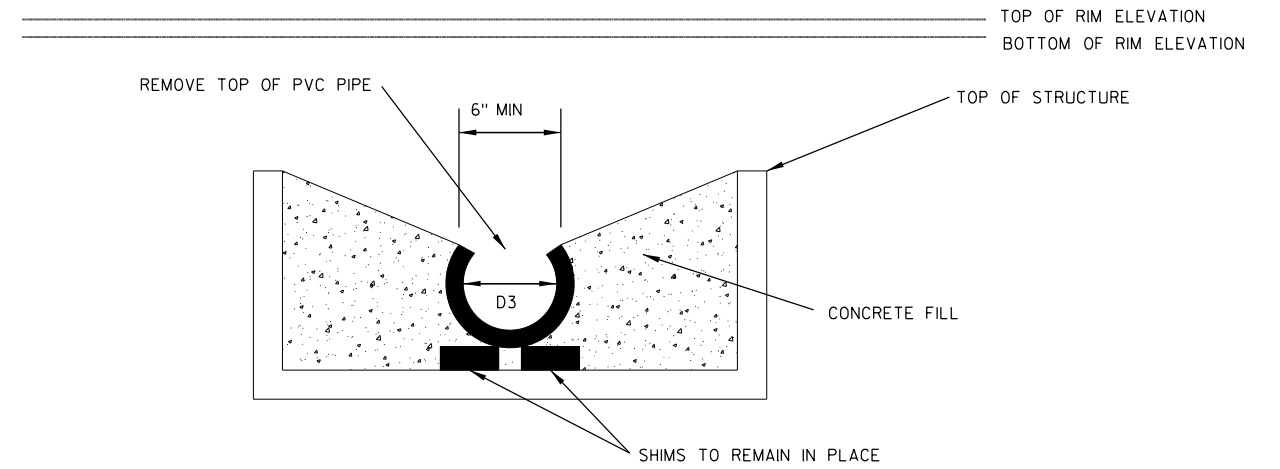


TOP VIEW

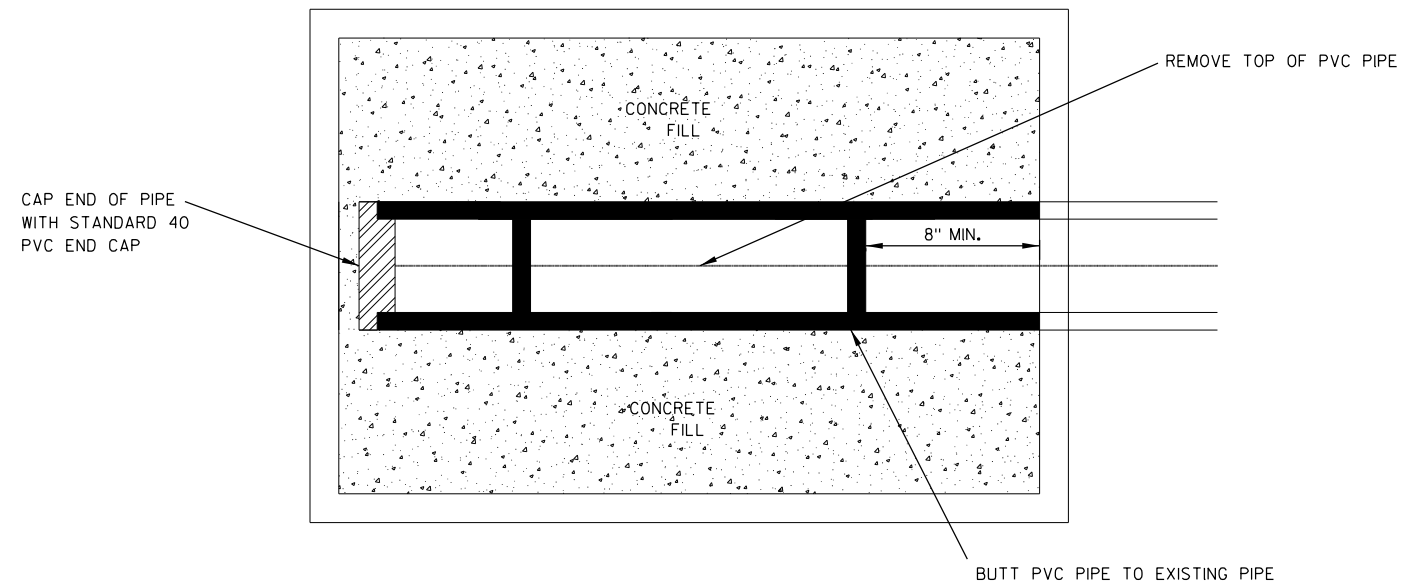
**INLET REPAIR TYPE 2**  
MULTIPLE OUT INLET DETAIL



FRONT VIEW

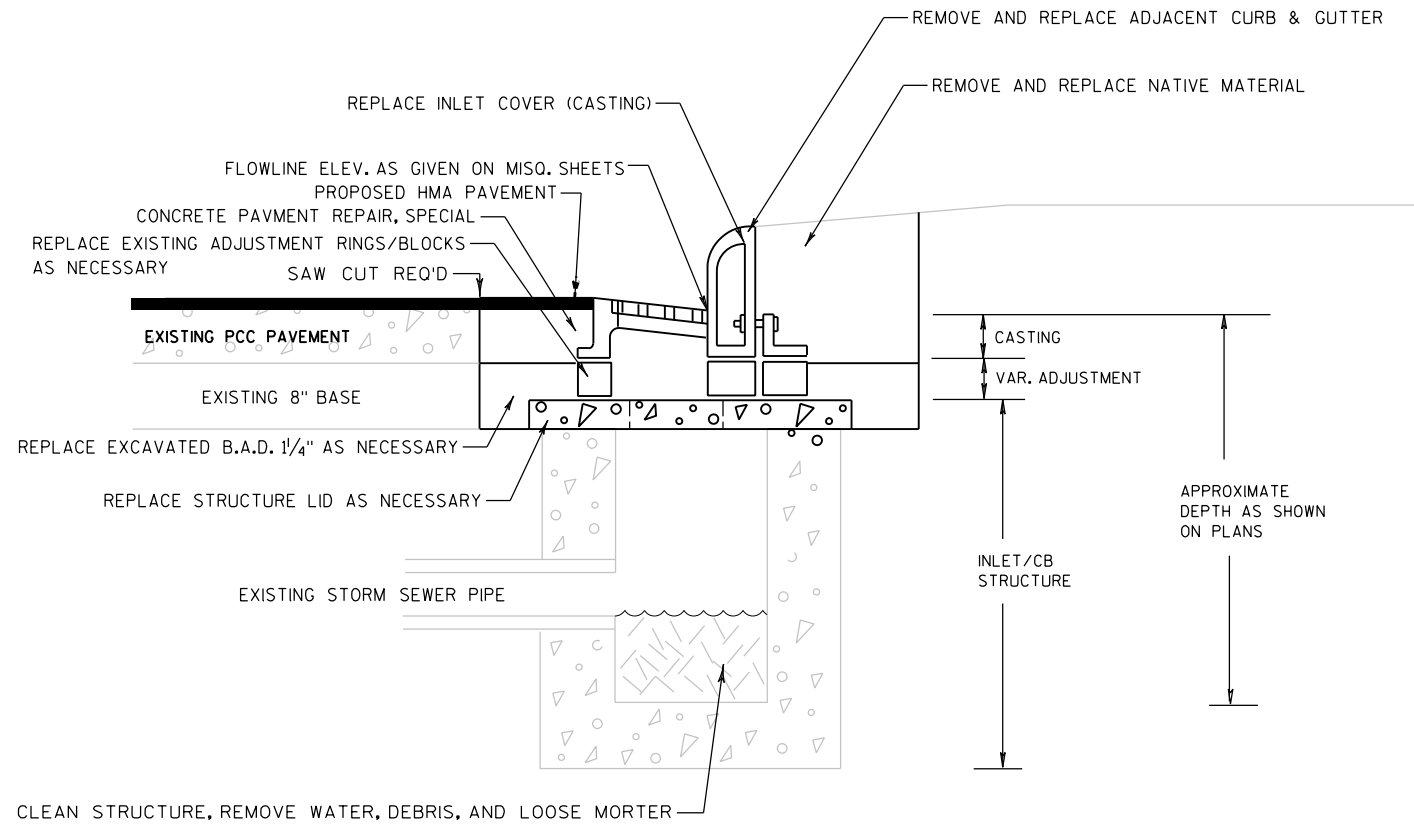


SIDE VIEW



TOP VIEW

INLET REPAIR TYPE 3  
PVC PIPE TROUGH DETAIL



CLEAN STRUCTURE, REMOVE WATER, DEBRIS, AND LOOSE MORTER

INCIDENTAL WORK, NO SEPARATE MEASUREMENT & PAYMENT

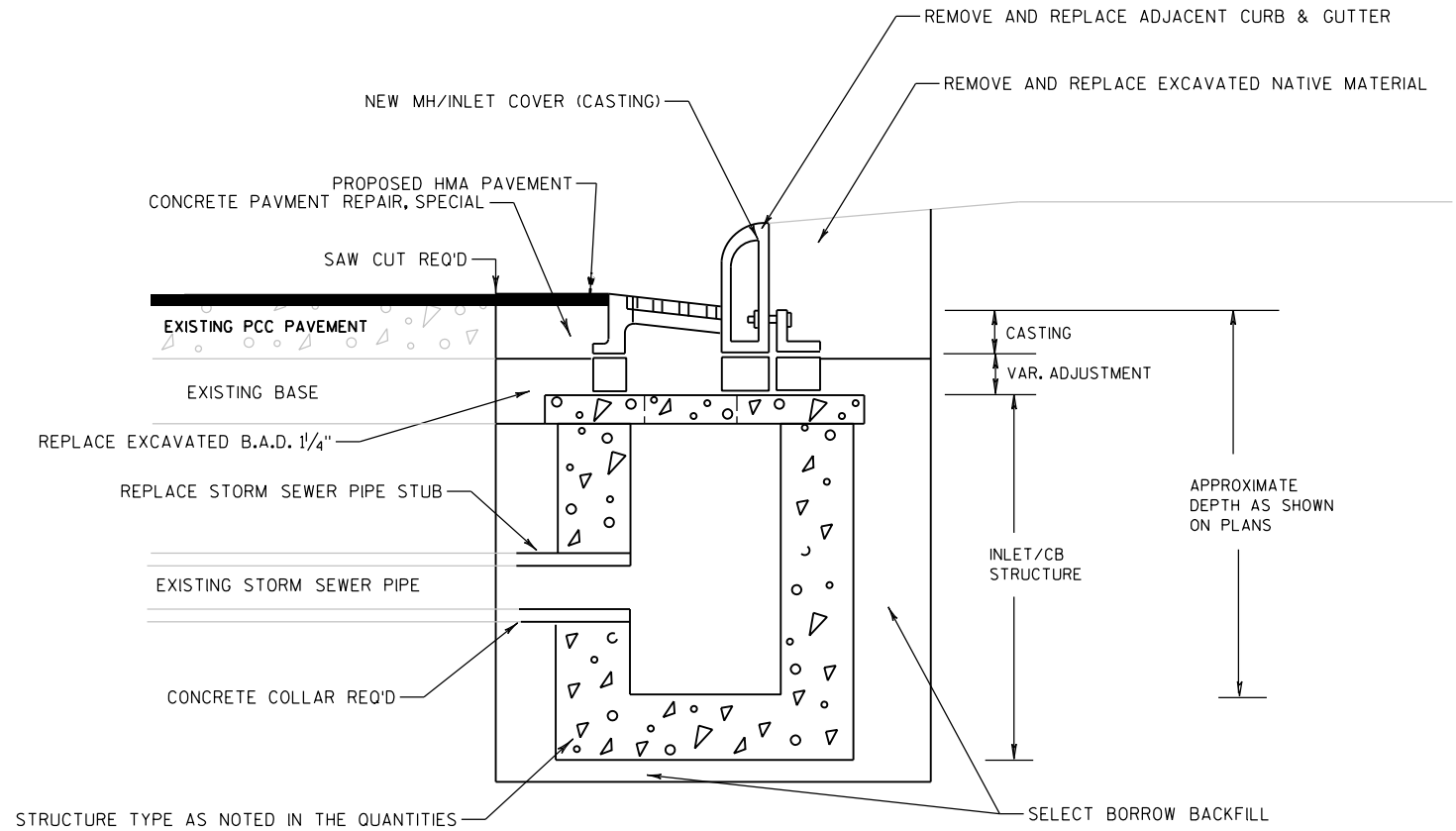
- ADJUSTMENT RINGS OR BLOCKS
- REMOVE AND REPLACE STRUCTURE LID
- STRUCTURE JOINT AND SPALL REPAIR
- REMOVE AND REPLACE NATIVE MATERIAL
- CLEAN STRUCTURE
- CASTING REMOVAL
- SAWING PAVEMENT

WORK MEASURED & PAID SEPARATELY

- INLET/ MANHOLE COVER (CASTING)
- CONCRETE PAV'T REPAIR (REMOVAL INCIDENTAL)
- REMOVE AND REPLACE CURB & GUTTER
- BASE AGG. DENSE 1/4- INCH

**ADJUST CATCH INLET/CATCH BASIN**

SEE PLANS AND QUANTITIES FOR LOCATIONS



STRUCTURE TYPE AS NOTED IN THE QUANTITIES

INCIDENTAL WORK, NO SEPARATE MEASUREMENT & PAYMENT

- ADJUSTMENT RINGS OR BLOCKS
- STORM SEWER PIPE STUB
- SELECT BORROW BACKFILL
- REMOVE AND REPLACE NATIVE MATERIAL
- CASTING AND OLD STRUCTURE REMOVAL
- SAWING PAVEMENT

WORK MEASURED & PAID SEPARATELY

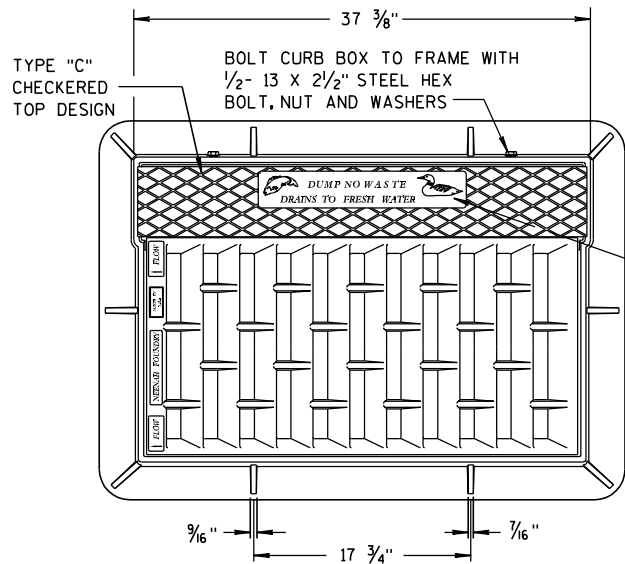
- INLET/ MANHOLE COVER (CASTING)
- CONCRETE PAV'T REPAIR (REMOVAL INCIDENTAL)
- REMOVE AND REPLACE CURB & GUTTER
- BASE AGG. DENSE 1/4- INCH
- NEW STRUCTURE
- CONCRETE COLLAR

**RECONSTRUCT INLET/CATCH BASIN**

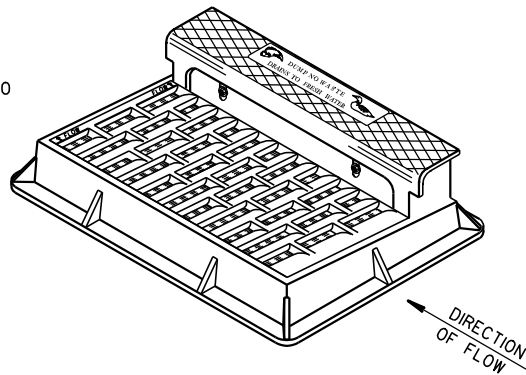
SEE PLANS AND QUANTITIES FOR LOCATIONS



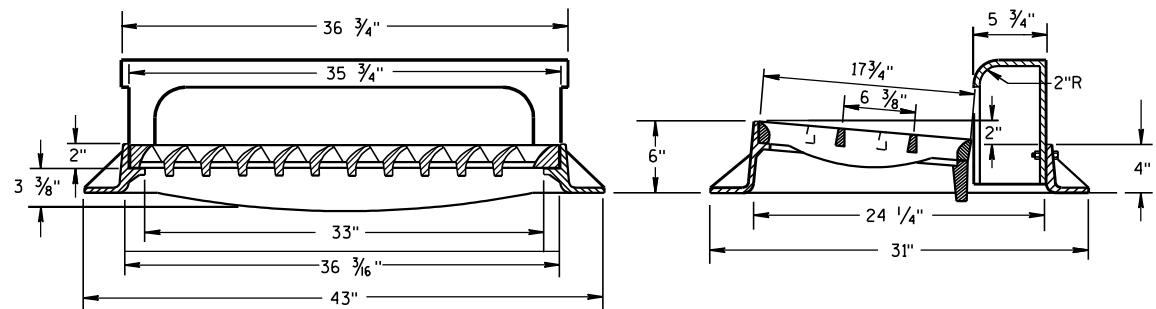
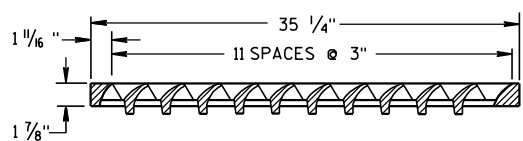




NOTE:  
GRATE IS REVERSIBLE.



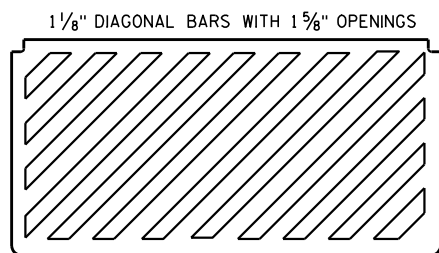
NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"



**TYPE "H"**

(APPROXIMATE WEIGHT 441 LBS.)

FRAME..... 181 LBS.  
GRATE..... 146 LBS.  
CURB BOX..... 114 LBS.



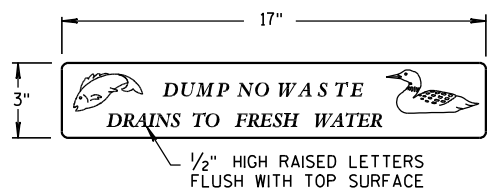
**SPECIAL GRATE FOR TYPE "H" COVER**

(MEASURES 35 1/4" X 17 3/4" X 2")

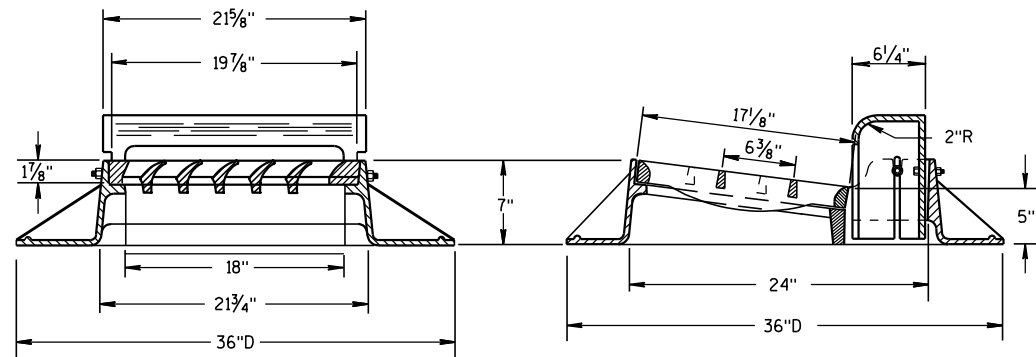
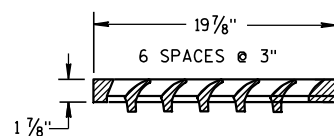
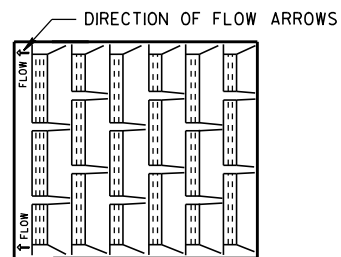
(APPROXIMATE WEIGHT 159 LBS.)

GRATE..... 159 LBS.

(NOTED AS TYPE H-S ON DRAINAGE TABLE)



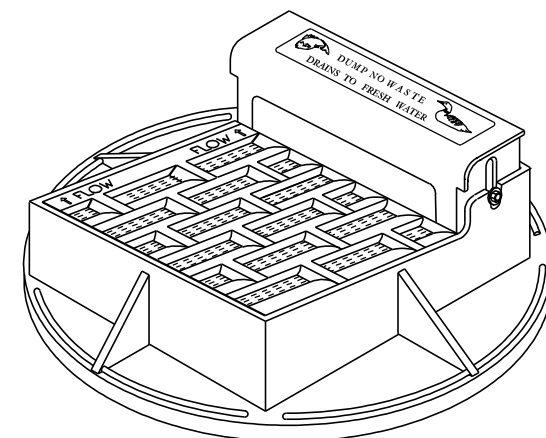
**LOGO DETAIL**



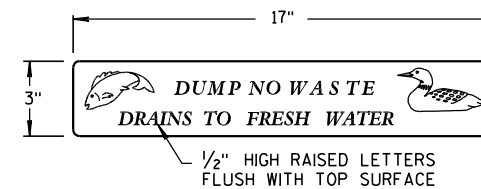
**TYPE "A"**

(APPROXIMATE WEIGHT 340 LBS.)

FRAME..... 185 LBS.  
GRATE..... 71 LBS.  
CURB BOX..... 84 LBS.



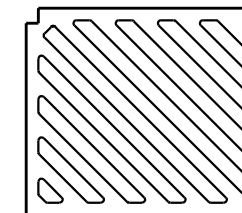
NOTE: CURB BOX ADJUSTABLE 4" TO 9"



**LOGO DETAIL**

NOTE:  
GRATE IS REVERSIBLE.

1" DIAGONAL BARS  
WITH 1 1/2" OPENINGS



**SPECIAL GRATE FOR TYPE "A" COVER**

(MEASURES 19 3/4" X 17" X 1 7/8")

GRATE..... 84 LBS.

(NOTED AS TYPE A-S ON DRAINAGE TABLE)

**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.

**INLET COVERS  
TYPE A, H, A-S, & H-S**

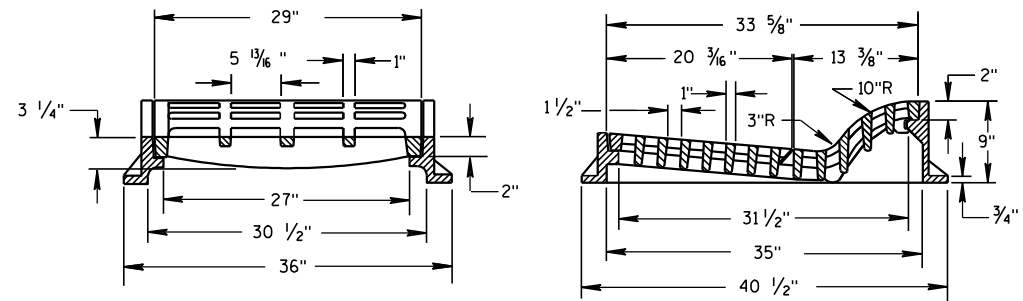
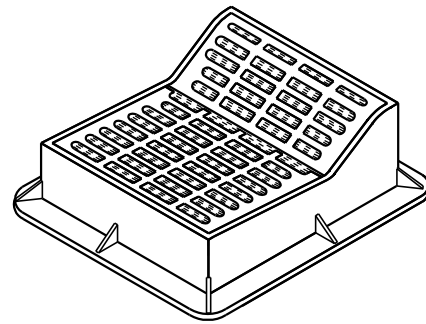
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

6/5/2012  
DATE

FHWA

/s/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER



**TYPE "F"**

(APPROXIMATE WEIGHT 644 LBS.)

FRAME.....302 LBS.  
 GRATE.....160 LBS.  
 GRATE.....182 LBS.

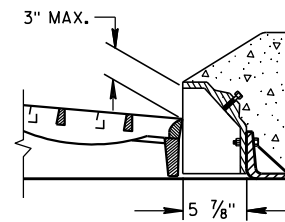
USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

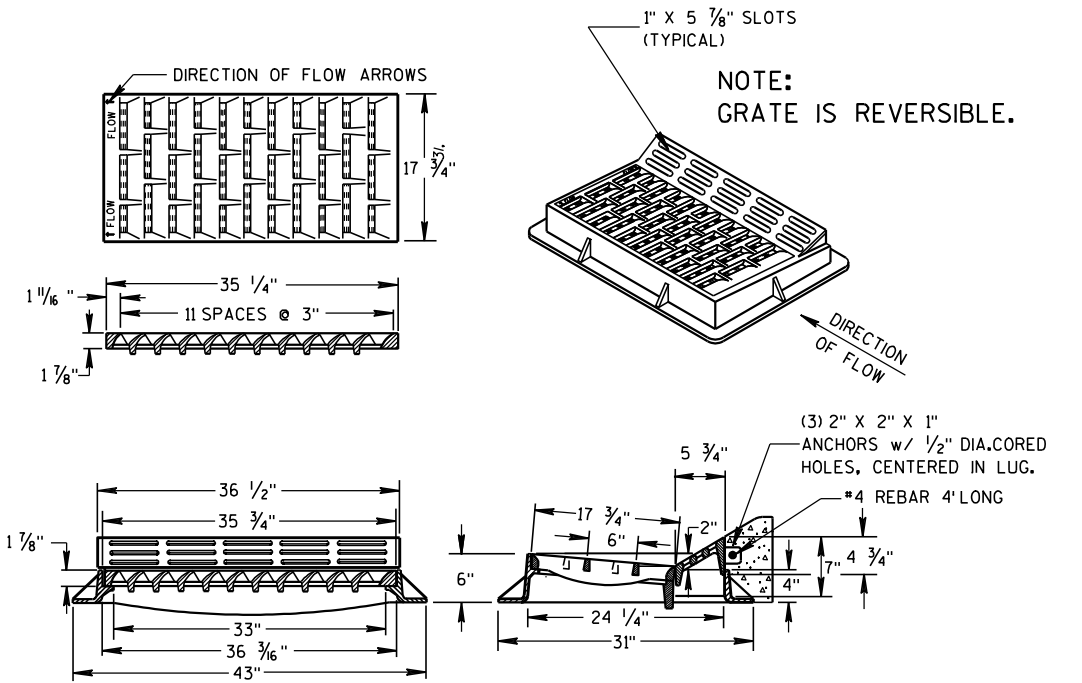
THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.



**ALTERNATIVE CURB BOX FOR TYPE "HM" COVER**

(APPROXIMATE WEIGHT CURB BOX 68 LBS.)

USE WITH TYPES G & J CONCRETE CURB & GUTTER, 30 INCH NOTED AS TYPE HM-GJ ON DRAINAGE TABLE



**TYPE "HM"**

(APPROXIMATE WEIGHT 414 LBS.)

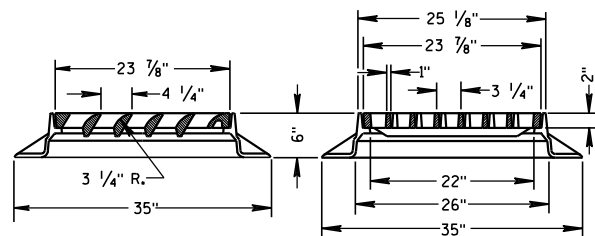
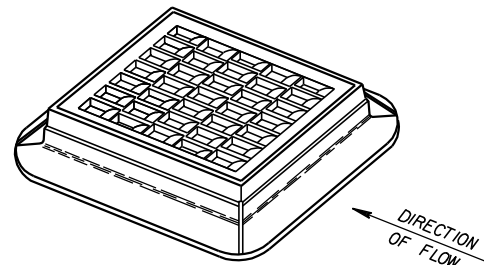
FRAME.....181 LBS.  
 GRATE.....159 LBS.  
 CURB BOX.....74 LBS.

USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

NOTE:  
 SPECIAL GRATE FOR THE TYPE "H" COVER MAY ALSO BE USED FOR THE TYPE "HM" COVER NOTED AS TYPE HM-S ON DRAINAGE TABLE

6

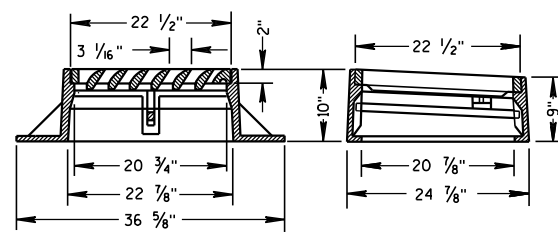
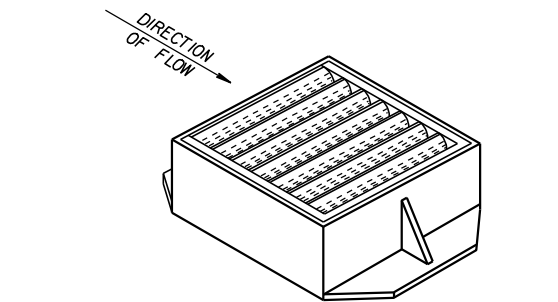
6



**TYPE "S"**

(APPROXIMATE WEIGHT 333 LBS.)

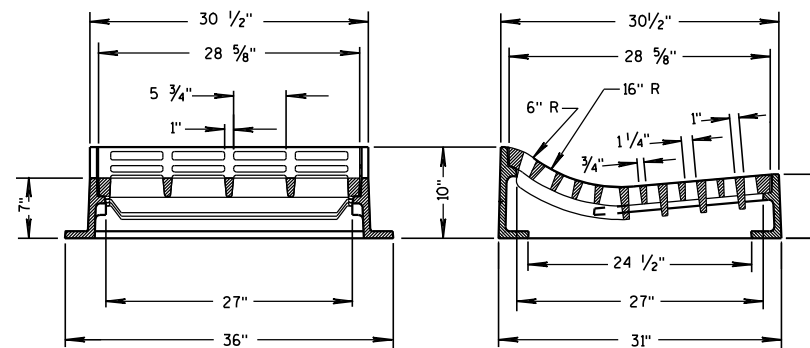
FRAME.....164 LBS.  
 GRATE.....169 LBS.



**TYPE "V"**

(APPROXIMATE WEIGHT 410 LBS.)

FRAME.....269 LBS.  
 GRATE.....136 LBS.  
 SAFETY BAR.....5 LBS.

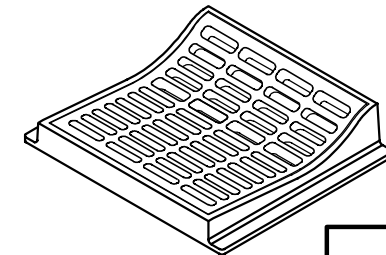


**TYPE "T"**

(APPROXIMATE WEIGHT 530 LBS.)

FRAME.....270 LBS.  
 GRATE.....260 LBS.

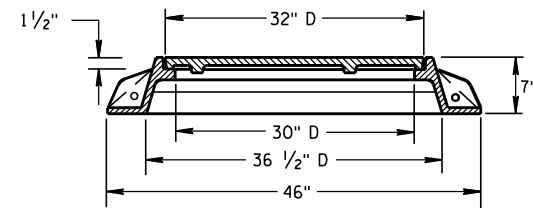
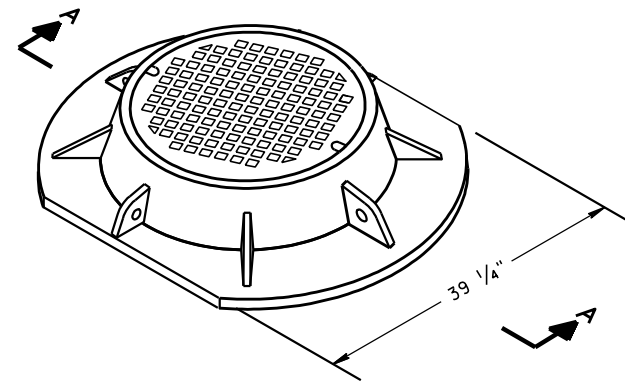
USE WITH TYPES R & T CONCRETE CURB & GUTTER, 36 INCH.



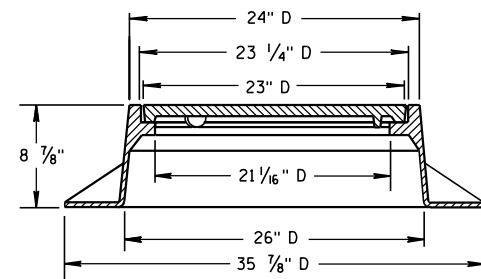
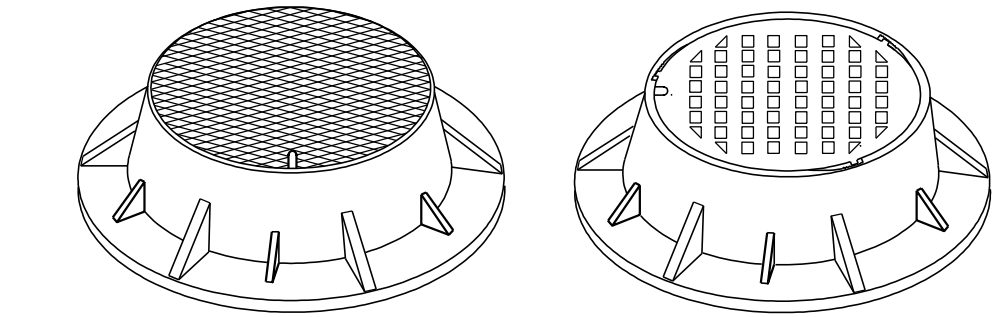
**INLET COVERS  
 TYPE F, HM, HM-S, S, T, V,  
 HM-GJ, & HM-GJ-S**

STATE OF WISCONSIN  
 DEPARTMENT OF TRANSPORTATION

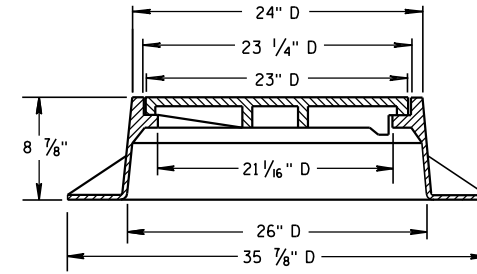
APPROVED  
 6/5/2012 /s/ Jerry H. Zogg  
 DATE ROADWAY STANDARDS DEVELOPMENT  
 ENGINEER  
 FHWA



**SECTION A-A  
TYPE "K"**  
(APPROXIMATE WEIGHT 439 LBS.)  
FRAME.....216 LBS.  
LID.....223 LBS.



**TYPE "J"**  
(APPROXIMATE WEIGHT 267 LBS.)  
FRAME.....152 LBS.  
LID.....115 LBS.



**TYPE "J" SPECIAL**  
TYPE "B" NON-ROCKING SELF-SEAL LID  
(APPROXIMATE WEIGHT 267 LBS.)  
FRAME.....158 LBS.  
LID.....109 LBS.  
(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)

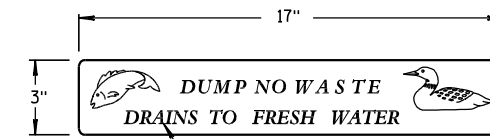
**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

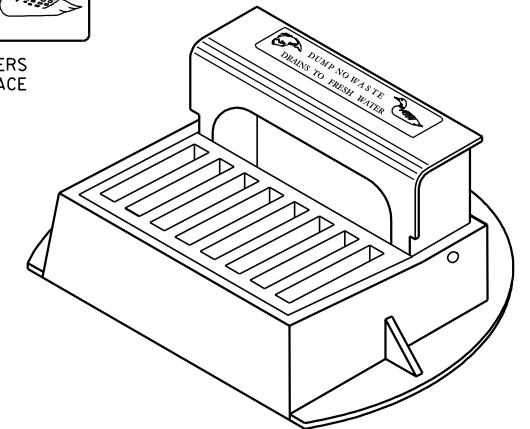
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

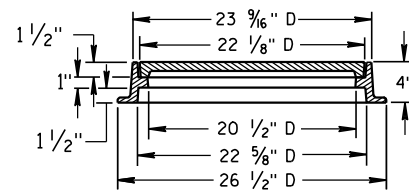
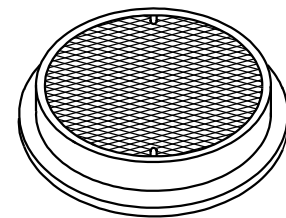
THE ACTUAL WEIGHT OF COVERS MAY VARY WITHIN 5 PERCENT, PLUS OR MINUS, OF THE APPROXIMATE WEIGHT.



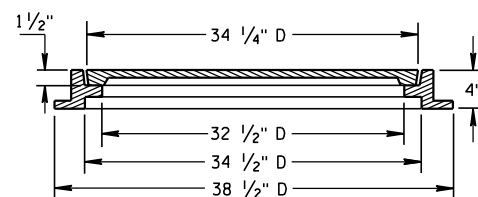
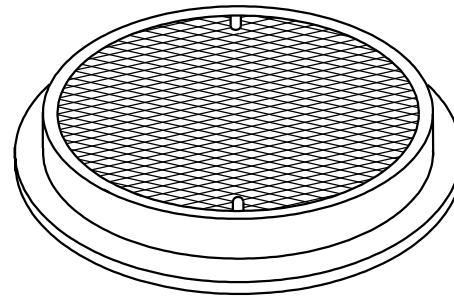
**LOGO DETAIL**



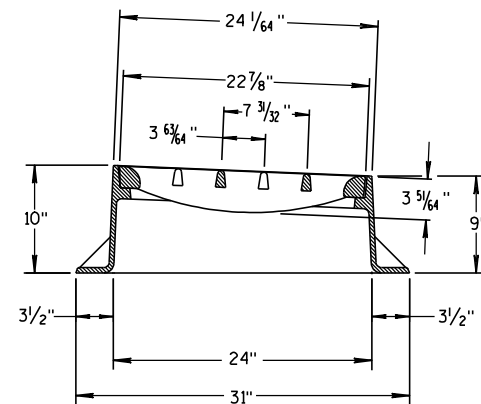
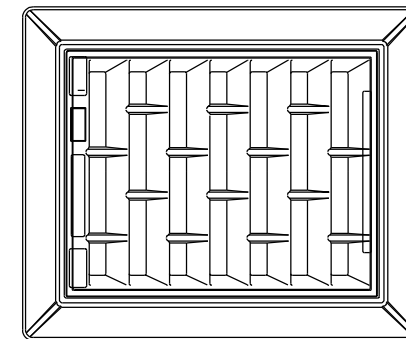
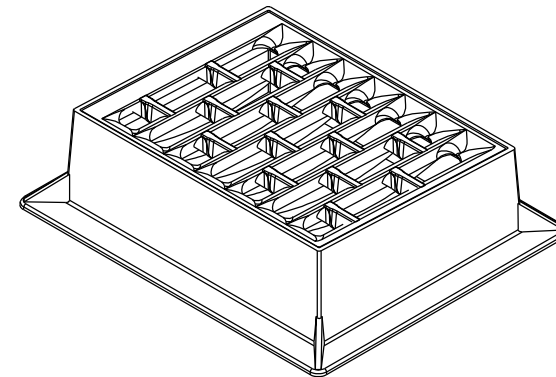
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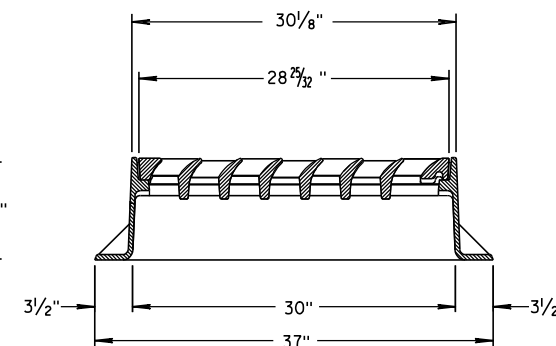
**TYPE "L"**  
(APPROXIMATE WEIGHT 158 LBS.)  
FRAME.....81 LBS.  
LID.....77 LBS.



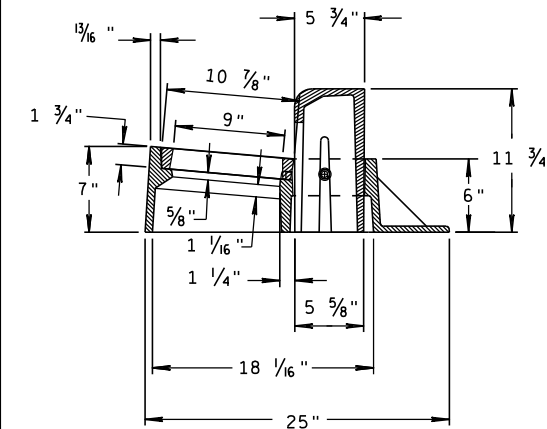
**TYPE "M"**  
(APPROXIMATE WEIGHT 377 LBS.)  
FRAME.....125 LBS.  
LID.....252 LBS.



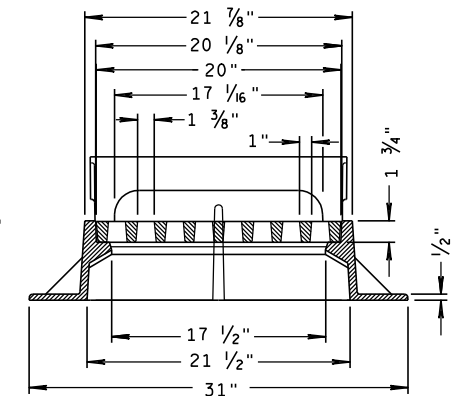
**INLET COVER TYPE "BW"**



6



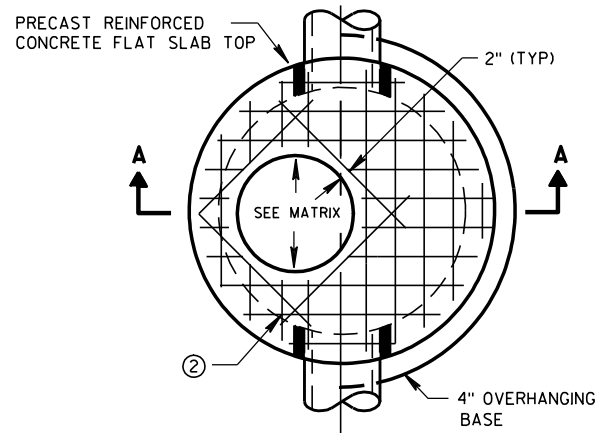
**INLET COVER TYPE "Z"**  
(APPROXIMATE WEIGHT 344 LBS.)  
FRAME.....206 LBS.  
GRATE.....46 LBS.  
CURB BOX.....92 LBS.



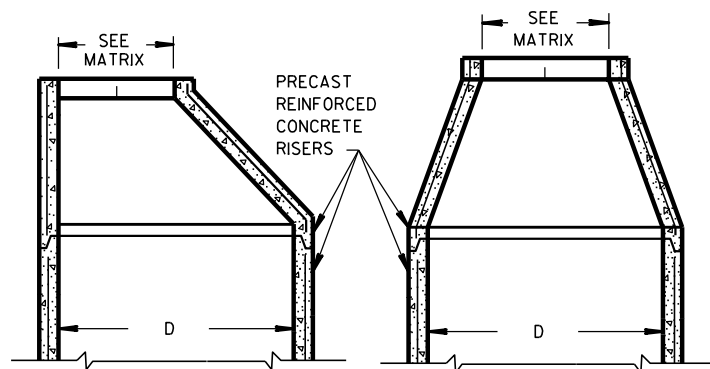
**INLET COVERS, TYPE BW, Z  
MANHOLE COVERS, TYPE  
K, J, J-S, L & M**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
6/5/2012 /S/ Jerry H. Zogg  
DATE ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA

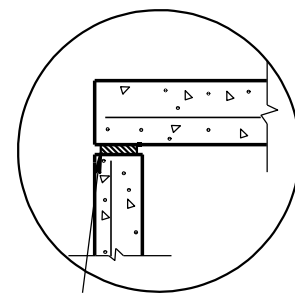


PLAN VIEW CIRCULAR OPENING

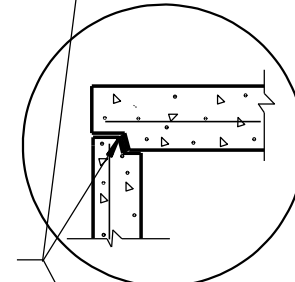


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

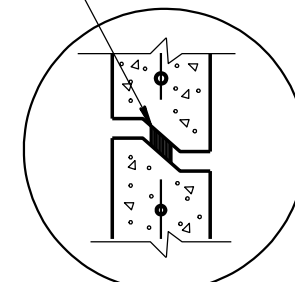
OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP



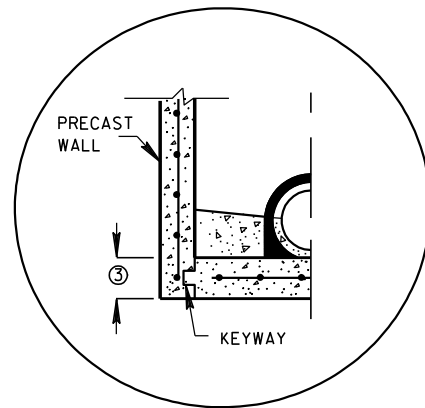
TOP WITH PLAIN END JOINT



TOP WITH TONGUE AND GROOVE JOINT

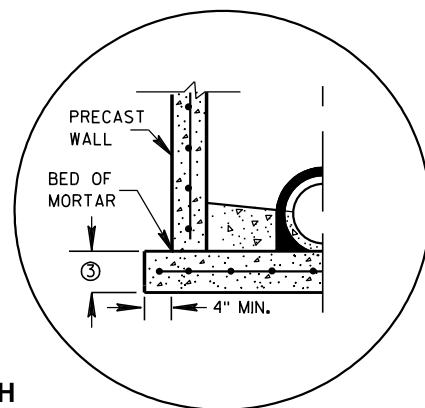


RISER WITH TONGUE AND GROOVE JOINT



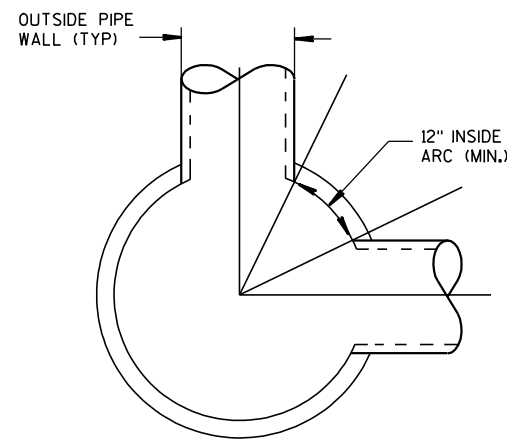
PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

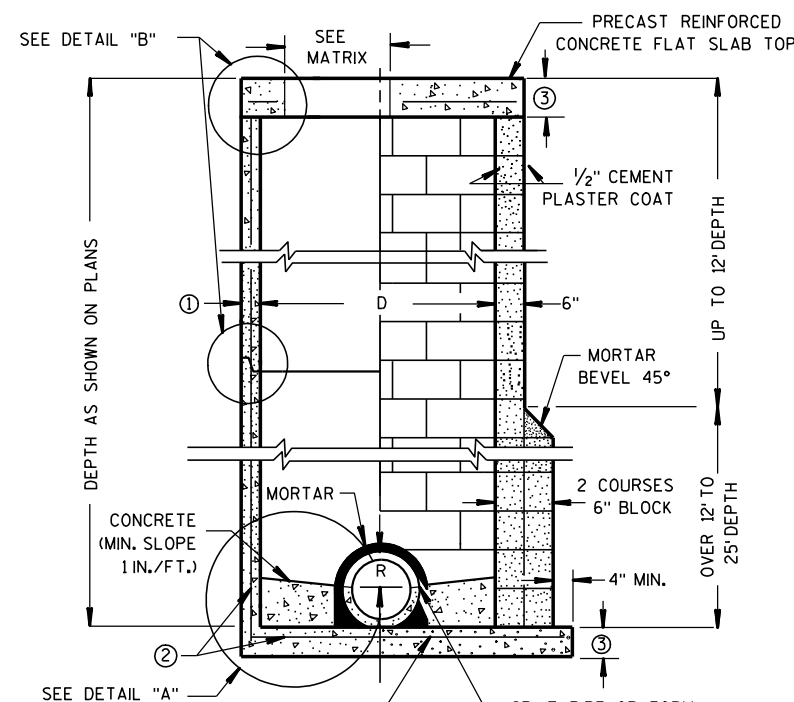


SEPERATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"



CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES

PRECAST REINFORCED CONCRETE BLOCK WITH CONCRETE WITH MONOLITHIC BASE CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS. UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST MANHOLE UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF GRANULAR BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES. THE CONE TOPS SHALL BE INSTALLED ON A BED OF MORTAR.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES, AND CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2" AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED. CONCRETE BLOCK WILL NOT BE PERMITTED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPERATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

- ① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.
- ② FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- ③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

MANHOLE COVER OPENING MATRIX

MANHOLE COVER TYPE	C	ALL J'S	K	L	M
OPENING SIZE (FT)					
2 DIA.	X	X		X	
3 DIA.			X		X

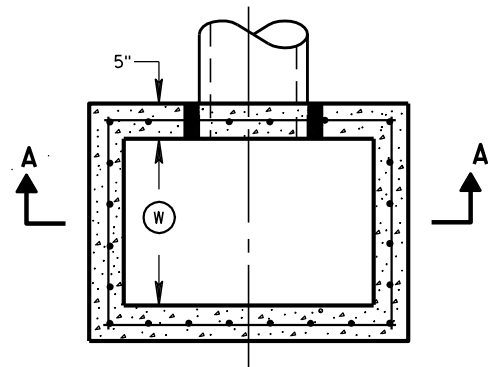
PIPE MATRIX

MANHOLE SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	36
7-FT	48	36
8-FT	60	42

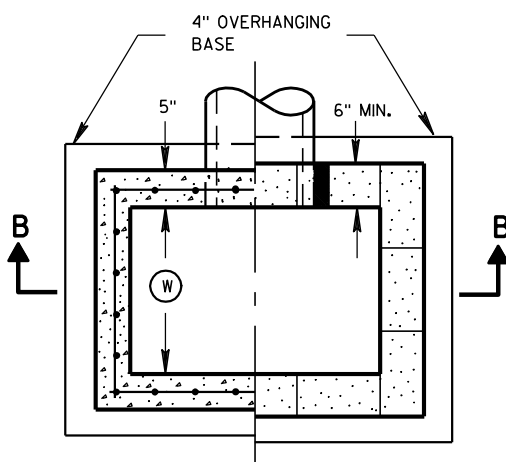
MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

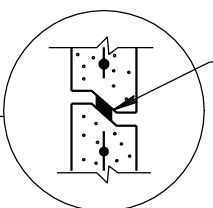
APPROVED  
6/5/2012 /S/ Jerry H. Zogg  
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER  
FHWA



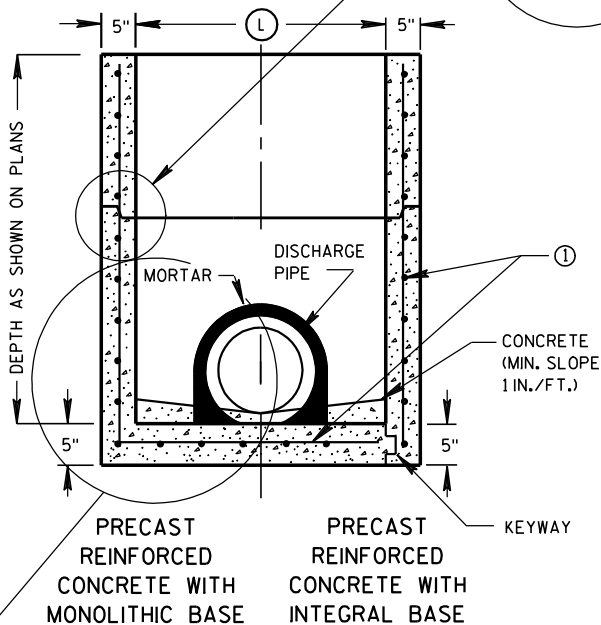
PLAN VIEW



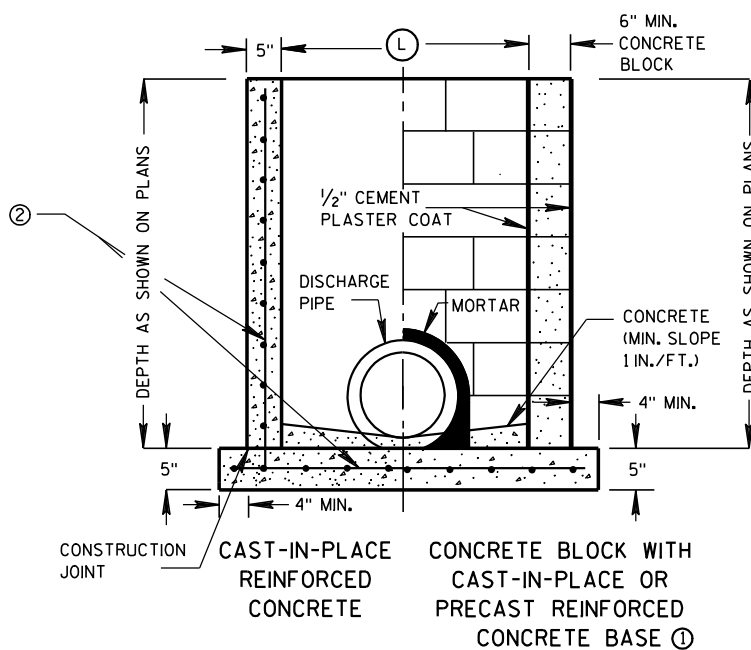
PLAN VIEW



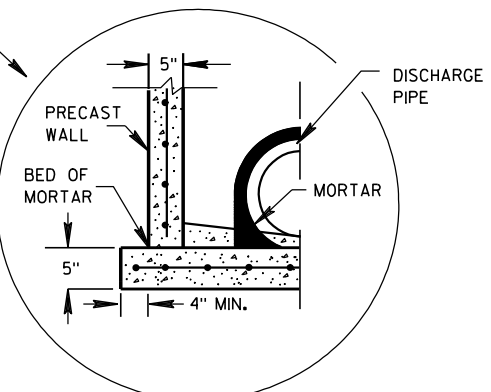
RISER JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)



SECTION A-A



SECTION B-B



SEPERATE PRECAST REINFORCED CONCRETE BASE OPTION

**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF GRANULAR BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPERATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

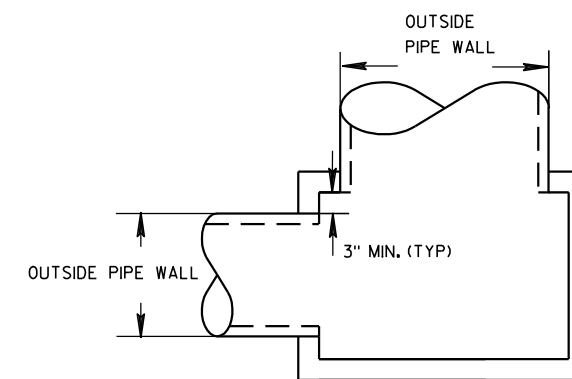
- ① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.
- ② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

**INLET COVER MATRIX**

INLET SIZE	INLET COVER TYPE		ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM
	WIDTH (W) (FT)	LENGTH (L) (FT)									
2X2-FT	2	2	X	X				X		X	
2X2.5-FT	2	2.5			X			X	X	X	X
2X3-FT	2	3					X				
2.5X3-FT	2.5	3				X					

**PIPE MATRIX**

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER	
	WIDTH (IN)	LENGTH (IN)
2X2-FT	12	12
2X2.5-FT	12	18
2X3-FT	12	24
2.5X3-FT	18	24



DETAIL "A"

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
DATE 6/5/2012  
DATE /S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER  
FHWA

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT