



**CUY-90-14.90**

**PID 77332/85531**

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**APPENDIX UT-03**

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**NEORSD Walworth Run Relocation  
(Reference Document)**

State of Ohio  
Department of Transportation  
Jolene M. Molitoris, Director

**Innerbelt Bridge  
Construction Contract Group 1 (CCG1)**

Revision Date: June 1, 2010

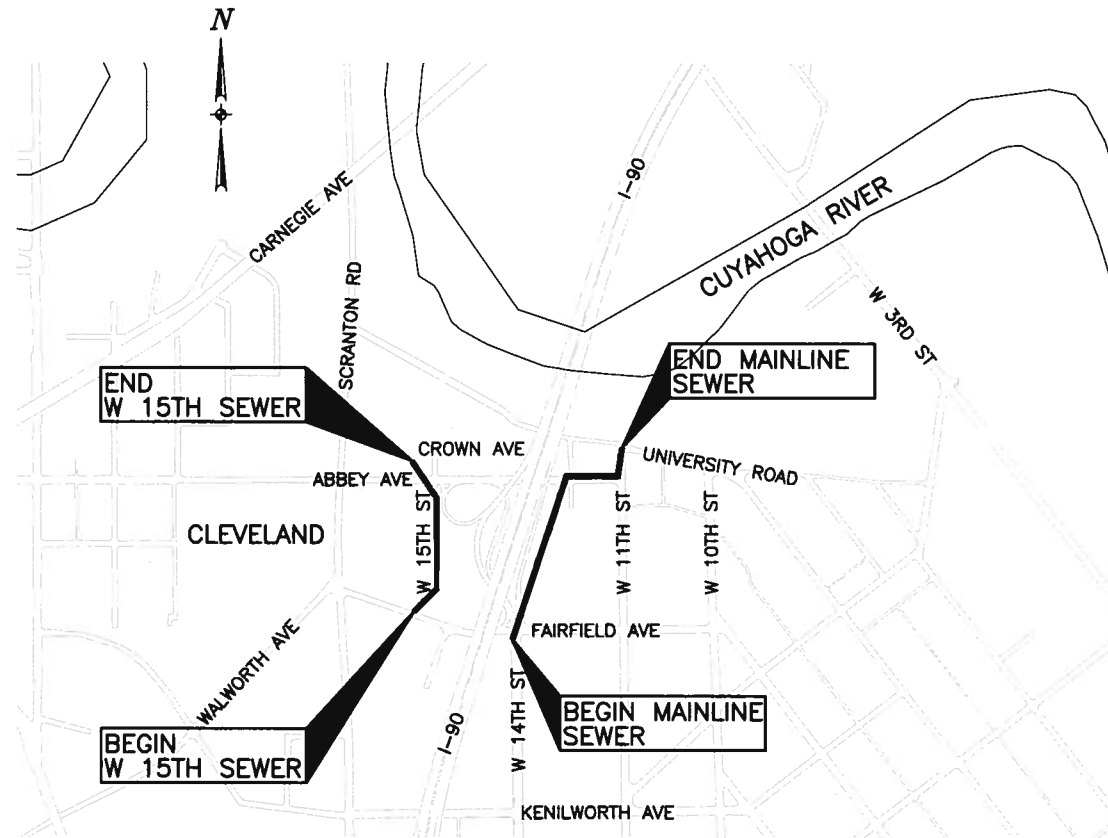


- Addendum No. 7 - Updated to include NEORSD Bid Set Plans

# NORTHEAST OHIO REGIONAL SEWER DISTRICT

## WALWORTH RUN INTERCEPTOR REALIGNMENT (WRIR)

WRIR



**LOCATION MAP**

SCALE: 1"=500'

NORTHEAST OHIO REGIONAL SEWER DISTRICT

BOARD OF TRUSTEES

DARNELL BROWN, PRESIDENT  
MAYOR GARY STARR, VICE PRESIDENT  
MAYOR DEAN DEPIERO, SECRETARY  
MAYOR JACK BACCI  
SHEILA KELLY  
WALTER O' MALLEY  
RONALD SULIK

JULIUS CIACCIA, EXECUTIVE DIRECTOR

ACCEPTED BY :

*[Signature]*  
JULIUS CIACCIA  
EXECUTIVE DIRECTOR

5/25/10  
DATE

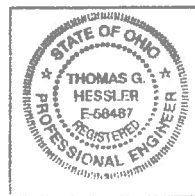
*[Signature]*  
KELLIE C. ROTUNNO, P.E.  
DIRECTOR OF ENGINEERING  
AND CONSTRUCTION

05/27/10  
DATE

NORTHEAST OHIO REGIONAL SEWER DISTRICT

SUBMITTED BY :

*[Signature]*  
DLZ/OHIO, INC. 6/1/10  
DATE



DLZ OHIO, INC.

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**NOTES**

1. BASIS OF BEARING AND ELEVATION: HORIZONTAL AND VERTICAL CONTROL IS BASED ON THE OHIO NORTH ZONE STATE PLANE COORDINATE SYSTEM NAD 83 AND THE NAVD 88 VERTICAL DATUM.
2. EXISTING STRUCTURES, GRADES, PIPING ETC., ARE SHOWN IN APPROXIMATE LOCATIONS ON THE PLANS. THE INFORMATION SHOWN IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. THE DATA SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
3. THE CONTRACTOR SHALL COORDINATE HIS OPERATIONS WITH THE WORK OF THE UTILITY OWNERS OR OTHERS WHO MAY RELOCATE EXISTING UTILITIES, AND SHALL NOTIFY OWNERS OF THE UTILITIES OF HIS SCHEDULE SUFFICIENTLY IN ADVANCE TO PERMIT THEM TO MAKE THE NECESSARY ALTERATIONS.
4. INFORMATION ON EXISTING UTILITIES AND OTHER SUB-STRUCTURES WAS OBTAINED FROM APPROPRIATE AGENCIES. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS OR STATED IN THE SPECIFICATIONS. THE LOCATIONS OF EXISTING UTILITIES AND SUB-STRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS, ELEVATIONS, AND DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION IN THE AREA OF THE SPECIFIC SUB-STRUCTURE.
5. THE LENGTH OF PIPE SHOWN ON THE DRAWINGS IS GIVEN FROM CENTER-TO-CENTER OF STRUCTURE FOR STRUCTURES UP TO 6-FT INSIDE DIAMETER OR SIZE AND TO THE INSIDE FACE OF STRUCTURE FOR STRUCTURES OVER 6-FT INSIDE DIAMETER OR SIZE.

**LEGEND**

- |   |                             |   |                               |
|---|-----------------------------|---|-------------------------------|
| ○ | - EXISTING MANHOLE          | • | - POST (SQUARE)               |
| □ | - EXISTING CATCH BASIN      | ○ | - POST (ROUND)                |
| ○ | - EXISTING HYDRANT          | ☼ | - TREE                        |
| ○ | - EXISTING/PROPOSED VALVE   | ○ | - SHRUB                       |
| ○ | - LIGHT POLE                | ● | - BENCH MARK                  |
| ○ | - TELEPHONE POLE            | ✕ | - CHISELED BENCH MARK         |
| ○ | - POWER POLE                | ⊠ | - EXISTING MONUMENT BOX       |
| ○ | - UTILITY POLE              | ○ | - IRON PIN/PIPE FOUND         |
| ○ | - LIGHT & POWER POLE        | ○ | - IRON PIN/PIPE SET           |
| ○ | - TELEPHONE & POWER POLE    | □ | - TACKED HUB                  |
| ○ | - TELEPHONE & LIGHT POLE    | ● | - DRILL HOLE                  |
| ○ | - GUY ANCHOR                | • | - PKNAIL                      |
| ○ | - SIGN (1 POST)             | • | - RAILROAD SPIKE              |
| ○ | - SIGN (2 POST)             | ⊠ | - ELECTRICAL BOX              |
| ⊙ | - EXISTING SANITARY MANHOLE | ⊙ | - EXISTING ELECTRICAL MANHOLE |
| ⊠ | - STORM INLET/ CATCH BASIN  | ⊙ | - BORING LOCATION             |

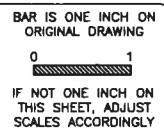
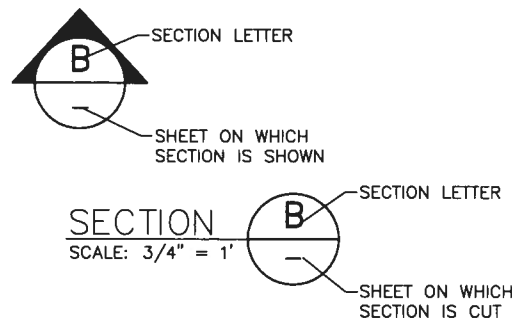
**ABBREVIATIONS**

- |   |                           |                                 |
|---|---------------------------|---------------------------------|
| ADH. - ADHESIVE   | E.W. - EACH WAY           | RL - PROPERTY LINE/PLATE        |
| AB - ANCHOR BOLT  | EQ - EQUAL                | PROP - PROPOSED                 |
| ADD'L - ADDITIONAL  | EX. OR - EXISTING         | PSI - POUNDS PER SQUARE INCH    |
| ALT. - ALTERNATE  | EXIST - EXISTING          | PSF - POUNDS PER SQUARE FOOT    |
| ALUM - ALUMINUM   | EXP - EXPANSION           | PVC - POLYVINYL CHLORIDE        |
| & - AND   | EXT - EXTERIOR            | R. - RISER                      |
| ASS'Y - ASSEMBLY  | FDN. - FOUNDATION         | RCP - REINFORCED CONCRETE PIPE  |
| ⊙ - AT  | FIN - FINISH              | REINF. - REINFORCING            |
| BITUM. - BITUMINOUS   | FL - FINISH LINE          | REQ'D. - REQUIRED               |
| B/ - BOTTOM OF  | FLR - FLOOR               | REQ'MTS. - REQUIREMENTS         |
| OR BOT/   | FF - FAR FACE             | RO - ROUGH OPENING              |
| BL - BASE LINE  | FTG - FOOTING             | RT - RIGHT                      |
| OR BL   | G - GAS                   | R/W - RIGHT-OF-WAY              |
| BLDG. - BUILDING  | GA. - GAGE                | SAN - SANITARY SEWER            |
| BLK. - BLOCK  | GR. - GRADE               | SCHED - SCHEDULE                |
| BOT - BOTTOM  | GRD. - GROUND             | SECT. - SECTION                 |
| B PL - BASE PLATE   | HORIZ - HORIZONTAL        | SF - SQUARE FEET                |
| BRG. - BEARING  | HP - HIGH POINT           | SHT. - SHEET                    |
| BT PL. - BENT PLATE   | HHP - HIGH HIGH POINT     | SIM - SIMILAR                   |
| CCFRPMP - CENTRIFUGALLY CAST FIBER-REINFORCED POLYMER MORTAR PIPE | HR. - HANDRAIL            | SJ - STEEL JOIST                |
| C/C - CENTER TO CENTER  | HS - HIGH STRENGTH        | SLBB - SHORT LEG BACK-TO-BACK   |
| C.J. - CONSTRUCTION JOINT   | I.F. - INSIDE FACE        | SLV - SHORT LEG VERTICAL        |
| CL - CENTERLINE   | INT - INTERIOR            | SPA. - SPACES OR SPACING        |
| CIRC - CIRCULAR   | INSUL. - INSULATION       | SPRD. - SPREAD                  |
| CLR - CLEAR   | INV. - INVERT             | SQ OR □ - SQUARE                |
| CLSM - CONTROLLED LOW-STRENGTH MATERIAL                           | JT - JOINT                | ST - STORM SEWER                |
| CMU - CONCRETE MASONRY UNIT                                       | K. - KIP (1000 POUNDS)    | STA. - STATION                  |
| COL - COLUMN  | LL - LIVE LOAD            | ST. STL. - STAINLESS STEEL      |
| COMB. - COMBINED  | LLB - LONG LEG            | STD - STANDARD                  |
| CONC - CONCRETE   | LLH - LONG LEG HORIZONTAL | STL - STEEL                     |
| CONT - CONTINUOUS   | LLV - LONG LEG VERTICAL   | STR. - STRUCTURAL               |
| CONTL. - CONTROL  | LONG. - LONGITUDINAL      | SUP. - SUPPORT                  |
| CPP - CLEVELAND PUBLIC POWER                                      | LP - LOW POINT            | SWO - STORMWATER OVERFLOW       |
| DEFL - DEFLECTION   | LT - LEFT                 | T. - TREAD                      |
| DEPR. - DEPRESSION  | LW - LIGHT WEIGHT         | T/ - TOP OF                     |
| DET - DETAIL  | MAS - MASONRY             | OR TOP/                         |
| DI(DIP) - DUCTILE IRON PIPE                                       | MAX - MAXIMUM             | T&B - TOP AND BOTTOM            |
| DIA - DIAMETER  | MH - MANHOLE              | TEMP - TEMPORARY                |
| ∅ - DIAMETER  | MID. - MIDDLE             | THK. - THICK                    |
| DIM - DIMENSION   | MIN - MINIMUM             | TOM - TOP OF MASONRY            |
| DL - DEAD LOAD  | MK. - MARK                | TYP - TYPICAL                   |
| DIST. - DISTANCE  | MO - MASONRY OPENING      | U.O.N. - UNLESS OTHERWISE NOTED |
| DWL/DWLS - DOWEL(S)   | N/A - NOT APPLICABLE      | VCP - VITRIFIED CLAY PIPE       |
| DWO - DRY WEATHER OUTLET  | N.F. - NEAR FACE          | VERT - VERTICAL                 |
| EE - EACH END   | NO. - NUMBER              | W - WATER                       |
| E.F. - EACH FACE  | OC - ON CENTER            | W/ - WITH                       |
| E.J. - EXPANSION JOINT  | O/H E - OVERHEAD EXISTING | W. - WEST                       |
| E. - EAST   | OPP. - OPPOSITE           | W/M - WATER MAIN                |
| ELEV.(EL.) - ELEVATION  | OPNG - OPENING            | W/O - WITHOUT                   |
| ELEC - ELECTRIC   | +/- - PLUS OR MINUS       | WP - WORK POINT                 |
| EMBD. - EMBEDDED  | PC - PRECAST              | WS - WATERSTOP                  |
|   |                           | WWF - WELDED WIRE FABRIC        |

**SHEET INDEX**

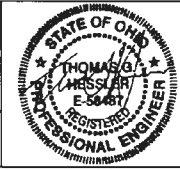
SHEET NO.	SHEET TITLE
G-1	LEGEND, SHEET INDEX, AND GENERAL NOTES
G-2	LOCATION MAP
G-3	SURVEY CONTROL
<b>MAINTENANCE OF TRAFFIC</b>	
MOT-1	JUNCTION CHAMBER NO.1 MAINTENANCE OF TRAFFIC PHASE 1
MOT-2	JUNCTION CHAMBER NO.1 MAINTENANCE OF TRAFFIC PHASE 2-PART A
MOT-3	JUNCTION CHAMBER NO.1 MAINTENANCE OF TRAFFIC PHASE 2-PART B
MOT-4	MAINTENANCE OF TRAFFIC DETOUR ROUTE FOR MANHOLE NO.1
MOT-5	MAINTENANCE OF TRAFFIC DETOUR ROUTE FOR MANHOLE NO.2 AND JUNCTION CHAMBER NO.2
<b>PLAN &amp; PROFILE</b>	
P-1	WRIR MAINLINE PLAN AND PROFILE STA 1+00 TO STA 5+00
P-2	WRIR MAINLINE PLAN AND PROFILE STA 5+00 TO STA 10+00
P-3	WRIR MAINLINE PLAN AND PROFILE STA 10+00 TO STA 15+00
P-4	WEST 15TH ST SANITARY SEWER PLAN AND PROFILE STA 0+00 TO STA 4+00
P-5	WEST 15TH ST SANITARY SEWER PLAN AND PROFILE STA 4+00 TO STA 8+00
P-6	CROWN AVE./W. 14TH ST STORM SEWER CONNECTION PLAN AND PROFILE
P-7	SEWER PROFILES
P-8	SEWER PROFILES
<b>CIVIL</b>	
C-1	NORTHERN SEWER ABANDONMENT PLAN
C-2	SOUTHERN SEWER ABANDONMENT PLAN
C-3	JUNCTION CHAMBER NO. 1 SITE PLAN
C-4	MANHOLE NO. 1 SITE PLAN
C-5	MANHOLE NO. 2 AND JUNCTION CHAMBER NO.2 SITE PLAN
C-6	WATER MAIN RELOCATION PLAN AND NOTES
C-7	WATER MAIN NOTES
C-8	WATER MAIN DETAILS
C-9	WATER MAIN DETAILS
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-11	TRENCH REPAIR DETAILS
C-12	PAVEMENT SECTIONS AND DETAILS
C-13	SEWER DETAILS
C-14	SEWER DETAILS
C-15	CITY OF CLEVELAND CATCH BASIN CB-1 DETAIL
C-16	CITY OF CLEVELAND INLET BASIN DETAIL
<b>TUNNEL</b>	
TU-1	WORK SHAFT JUNCTION CHAMBER NO.1 INITIAL SUPPORTS
TU-2	JUNCTION CHAMBER NO.1 SUPPORTS AT EXISTING INTERCEPTOR
TU-3	JUNCTION CHAMBER NO.1 BULLSEYE AND MISCELLANEOUS DETAILS
TU-4	JUNCTION CHAMBER NO.1 STRUCTURE DETAILS
TU-5	WORK SHAFT JUNCTION CHAMBER NO.2 INITIAL SUPPORTS
TU-6	JUNCTION CHAMBER NO.2 SUPPORTS AT EXISTING INTERCEPTOR
TU-7	JUNCTION CHAMBER NO.2 BULLSEYE AND MISCELLANEOUS DETAILS
TU-8	WORK SHAFT JUNCTION CHAMBER NO.2 STRUCTURAL DETAILS
TU-9	WORK SHAFT MANHOLE NO.1 INITIAL SUPPORTS
TU-10	WORK SHAFT MANHOLE NO.2 INITIAL SUPPORTS
TU-11	MANHOLE NO.1 AND MANHOLE NO.2 BREAK-IN, BREAK-OUT, BACK STOP TUNNEL AND SUMP DETAILS
TU-12	MONITORING
TU-13	STRUCTURAL DETAILS AND NOTES

**SECTION CUTS**



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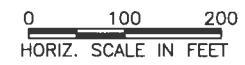
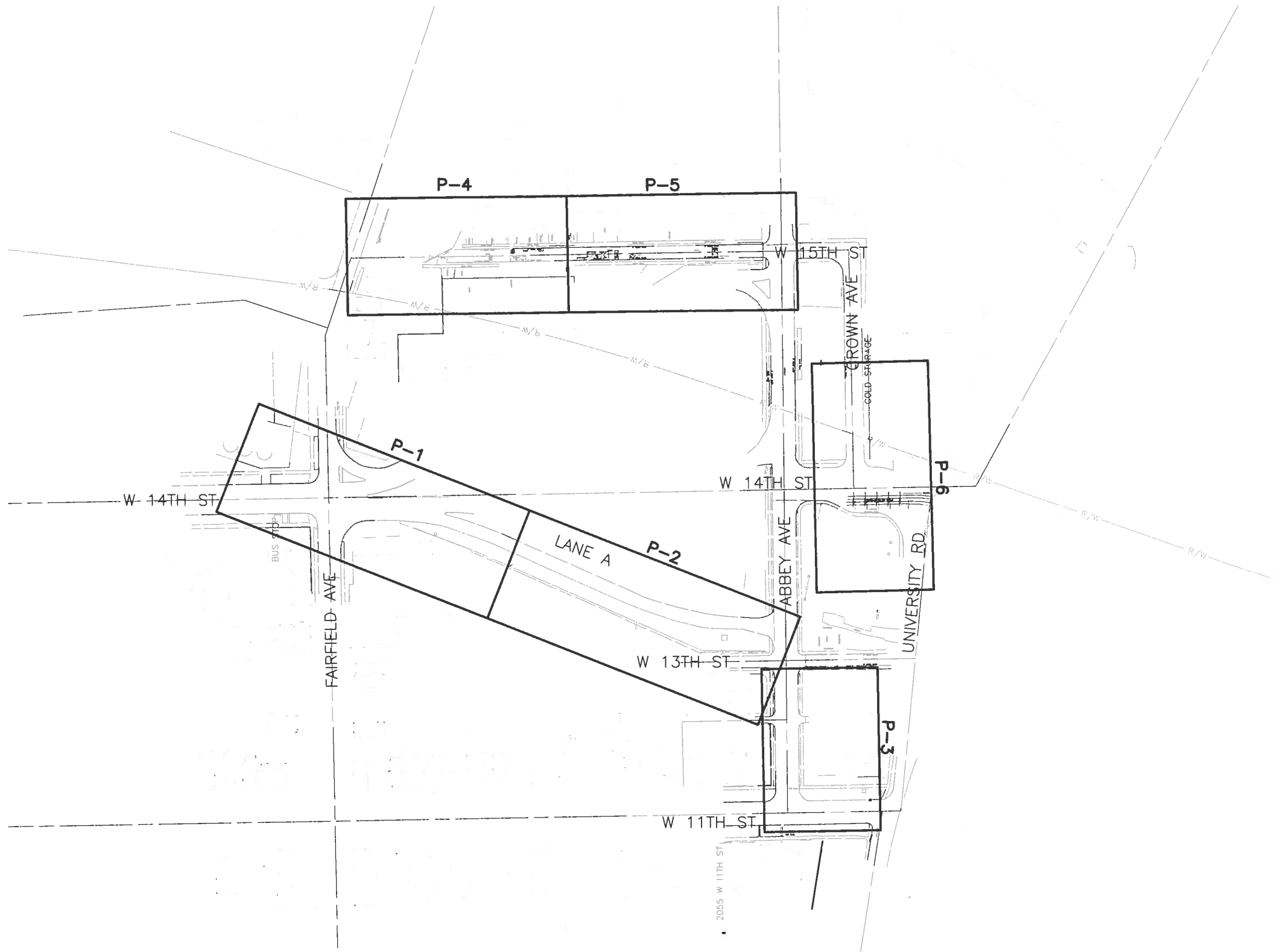
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DRAWN BY: SS
SHEET CHK'D BY: RDC
CROSS CHK'D BY: EDS
APPROVED BY: TGH
DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

LEGEND, SHEET INDEX, AND GENERAL NOTES

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SCALE: 1"=10'
SHEET NO.: G-1

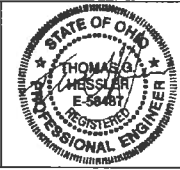


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 SHEET CHK'D BY: RDC  
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 DATE: 6/1/10

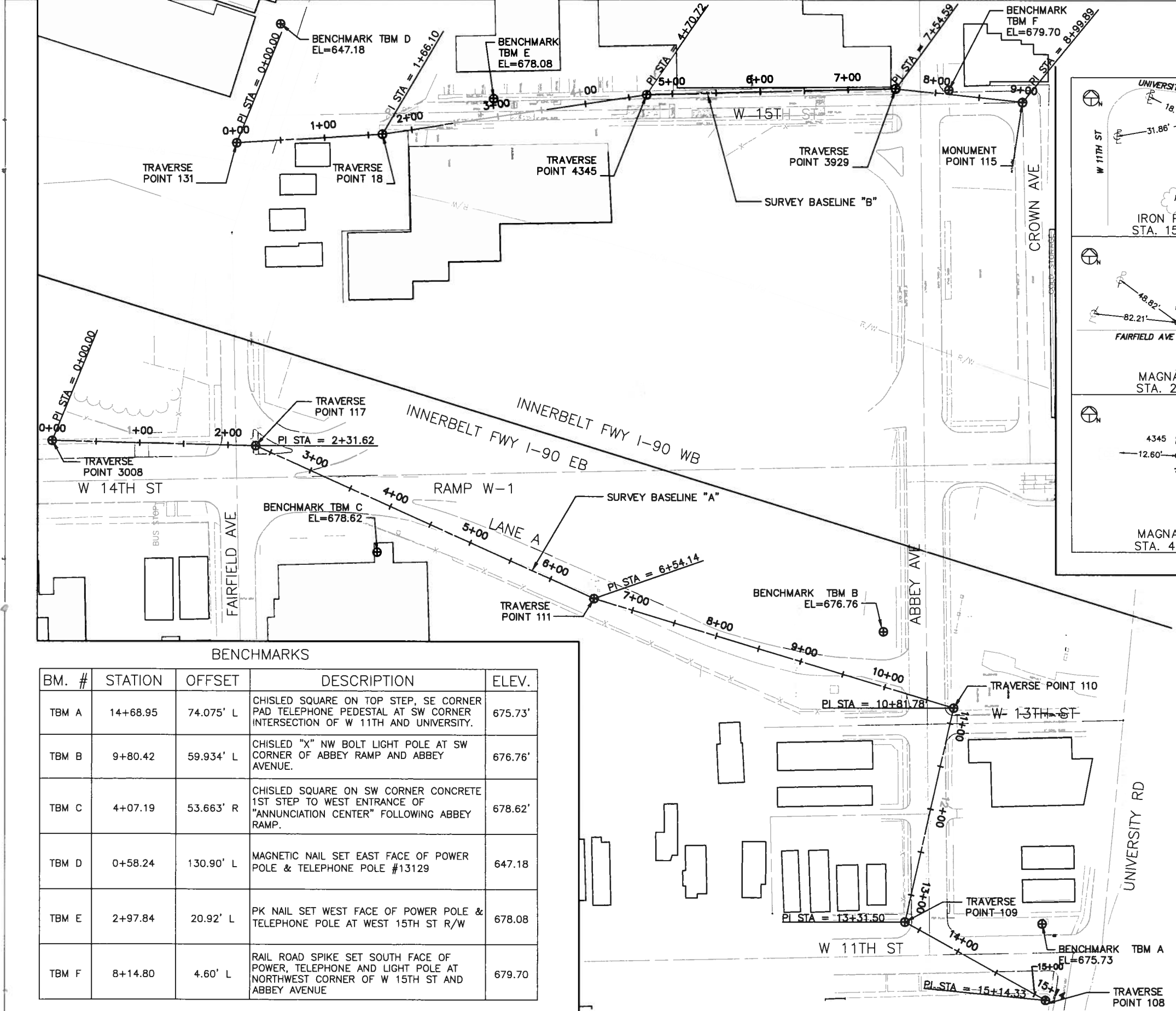


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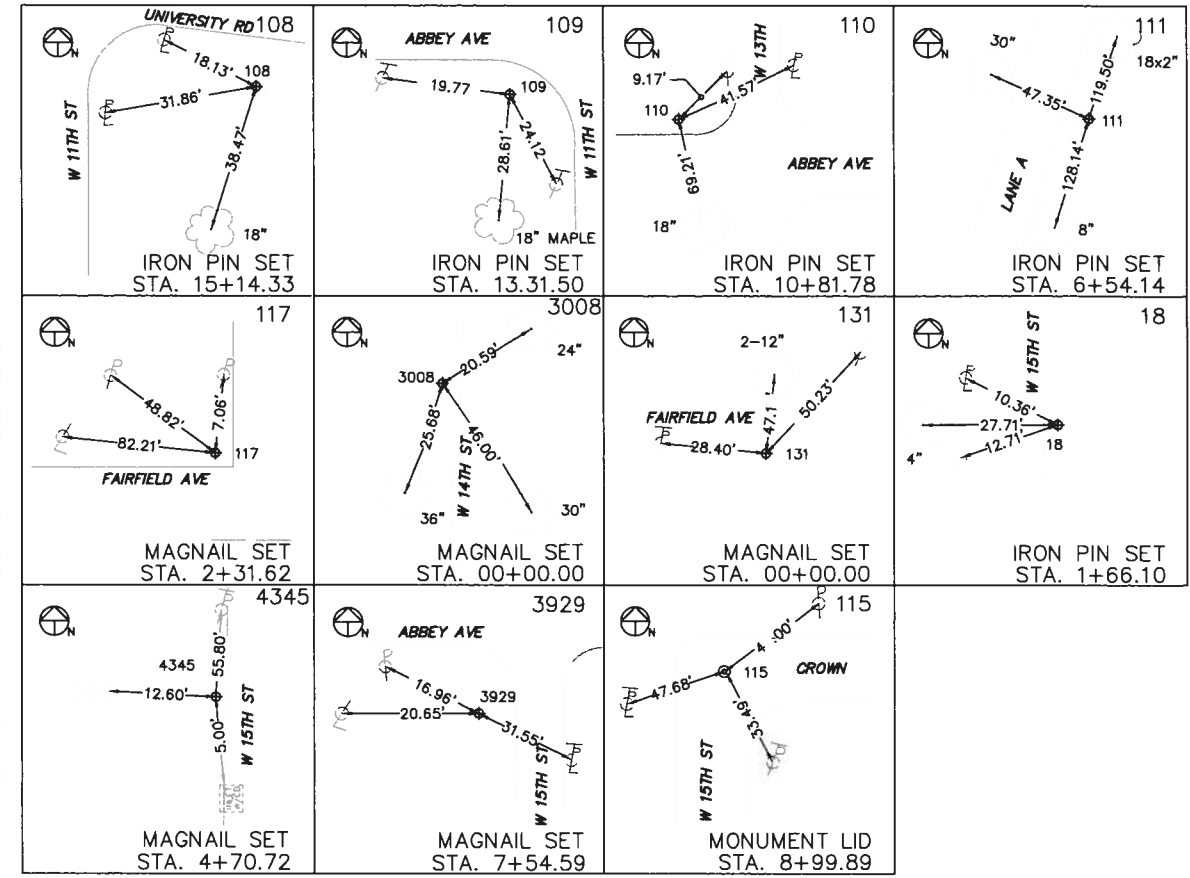
LOCATION MAP

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=100'  
 SHEET NO.: G-2





SURVEY BASELINE CONTROL POINT LOCATIONS



BENCHMARKS

BM. #	STATION	OFFSET	DESCRIPTION	ELEV.
TBM A	14+68.95	74.075' L	CHISLED SQUARE ON TOP STEP, SE CORNER PAD TELEPHONE PEDESTAL AT SW CORNER INTERSECTION OF W 11TH AND UNIVERSITY.	675.73'
TBM B	9+80.42	59.934' L	CHISLED "X" NW BOLT LIGHT POLE AT SW CORNER OF ABBEY RAMP AND ABBEY AVENUE.	676.76'
TBM C	4+07.19	53.663' R	CHISLED SQUARE ON SW CORNER CONCRETE 1ST STEP TO WEST ENTRANCE OF "ANNUNCIATION CENTER" FOLLOWING ABBEY RAMP.	678.62'
TBM D	0+58.24	130.90' L	MAGNETIC NAIL SET EAST FACE OF POWER POLE & TELEPHONE POLE #13129	647.18
TBM E	2+97.84	20.92' L	PK NAIL SET WEST FACE OF POWER POLE & TELEPHONE POLE AT WEST 15TH ST R/W	678.08
TBM F	8+14.80	4.60' L	RAIL ROAD SPIKE SET SOUTH FACE OF POWER, TELEPHONE AND LIGHT POLE AT NORTHWEST CORNER OF W 15TH ST AND ABBEY AVENUE	679.70

SURVEY BASELINE "A" CONTROL POINTS

PT. #	NORTHING	EASTING	ELEV.	STATION	DESC.
108	N 663454.480'	E 2190785.510'	675.770'	15+14.33	108 IRON PIN SET
109	N 663294.540'	E 2190696.920'	675.410'	13+31.50	109 IRON PIN SET
110	N 663350.000'	E 2190453.440'	676.000'	10+81.78	110 IRON PIN SET
111	N 662940.790'	E 2190329.240'	679.670'	6+54.14	111 IRON PIN SET
117	N 662555.680'	E 2190155.420'	675.940'	2+31.62	117 MAGNAIL SET
3008	N 662324.1300'	E 2190149.7600'	677.350'	0+00.00	3008 MAGNAIL SET

SURVEY BASELINE "B" CONTROL POINTS

PT. #	NORTHING	EASTING	ELEV.	STATION	DESC.
131	N 662533.9700'	E 2189810.5200'	655.190'	0+00.00	131 MAGNAIL SET
18	N 662699.7500'	E 2189800.2900'	676.530'	1+66.10	18 IRON PIN SET
4345	N 663000.9700'	E 2189754.8900'	677.340'	4+70.72	4345 MAGNAIL SET
3929	N 663284.7500'	E 2189747.8200'	679.060'	7+54.59	3929 MAGNAIL SET
MON 115	N 663429.2100'	E 2189763.4500'	677.160'	8+99.89	115 MONUMENT LID ONLY



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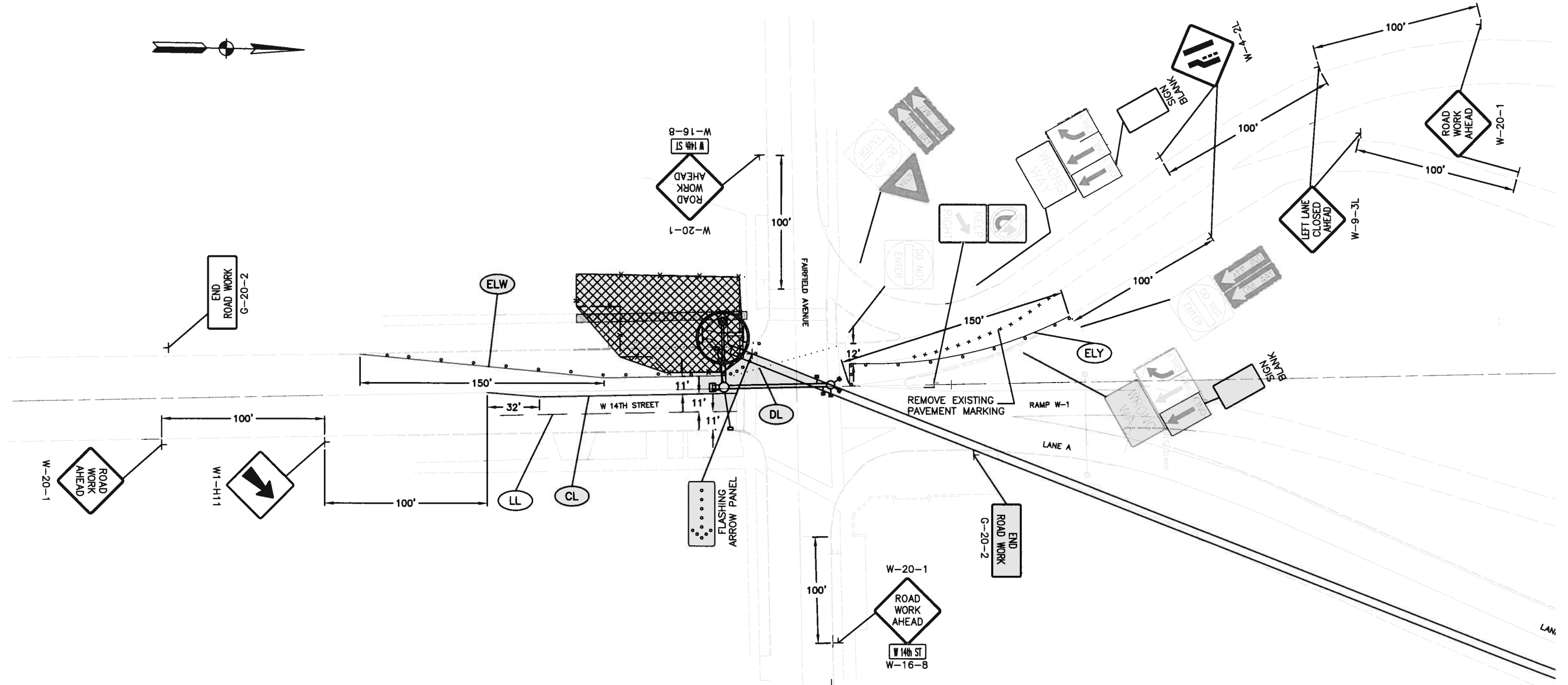
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WALWORTH RUN INTERCEPTOR REALIGNMENT

SURVEY CONTROL

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=60'  
 SHEET NO.: G-3

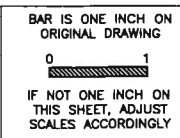


**MOT PLAN**

**LEGEND**

- CL CENTER LINE
- DL DOTTED LINE (WHITE)
- ELW EDGE LINE WHITE
- ELY EDGE LINE YELLOW
- LL LANE LINE
- SL STOP LINE
- ○ DRUMS
- ▨ WORK ZONE

- NOTES:**
1. ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH MAINTENANCE OF TRAFFIC PAVEMENT MARKINGS SHALL BE REMOVED OR COVERED AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD) AND THE ODOT SPECIFICATION MANUAL.
  2. CONTRACTOR SHALL ADJUST SIGNAL HEADS AT FAIRFIELD AND W. 14TH STREET AS PER THE OMUTCD SPECIFICATIONS REGARDING POSITIONING OVER LANES AND NUMBER OF SIGNAL FACES PER APPROACH.
  3. PEDESTRIANS TO BE MAINTAINED AS PER THE OMUTCD (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10).



REV. NO.	DATE	ISSUE BY	REMARKS

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 DRAWN BY: CRP  
 SHEET CHK'D BY: SJR  
 CROSS CHK'D BY: CRP  
 APPROVED BY: TGH  
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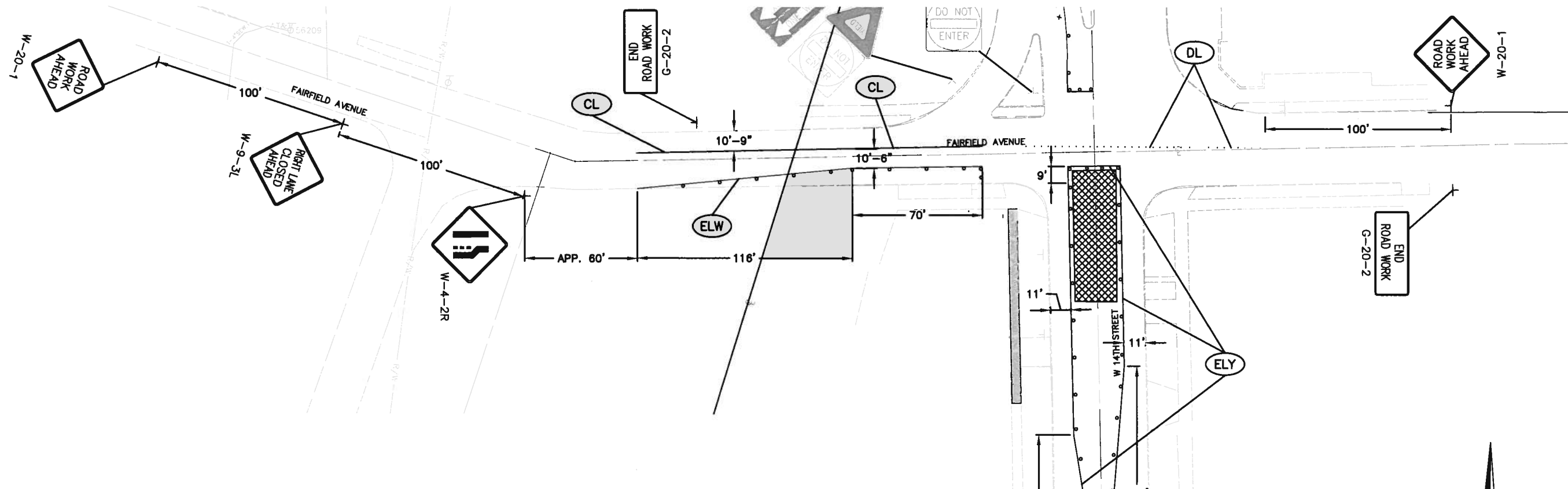


WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1 MAINTENANCE OF TRAFFIC PHASE 1

PROJECT NO.:  
 SHEET: X  
 SCALE: 1"=30'  
 SHEET NO.: MOT-1

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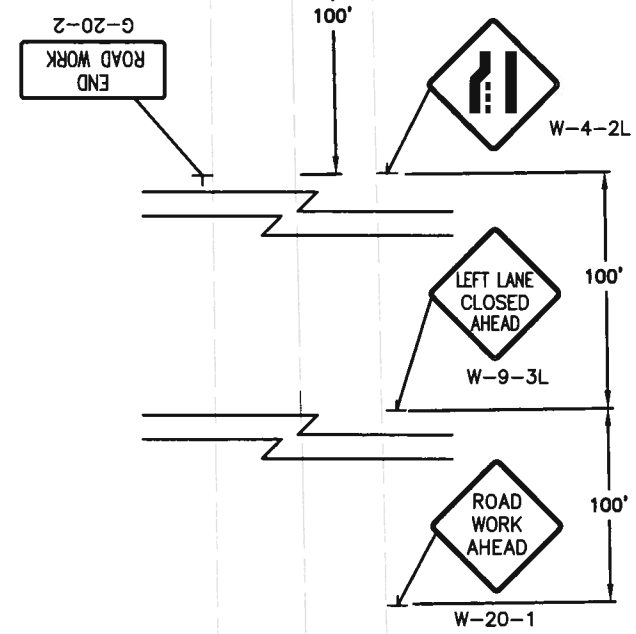


**MOT PLAN**

- NOTES:**
1. MOT SIGNS NORTH OF FAIRFIELD SHALL REMAIN AS SHOWN IN MOT PHASE 1.
  2. CONTRACTOR SHALL ADJUST SIGNAL HEADS AT FAIRFIELD AND W. 14TH STREET AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD) SPECIFICATIONS REGARDING POSITIONING OVER LANES AND NUMBER OF SIGNAL FACES PER APPROACH.
  3. PEDESTRIANS TO BE MAINTAINED AS PER THE OMUTCD (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10).
  4. ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH MAINTENANCE OF TRAFFIC PAVEMENT MARKINGS SHALL BE REMOVED OR COVERED AS PER THE OMUTCD AND THE ODOT SPECIFICATION MANUAL.

**LEGEND**

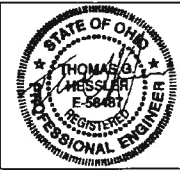
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- DL DOTTED LINE (YELLOW)
- ELW EDGE LINE WHITE
- ELY EDGE LINE YELLOW
- SL STOP LINE
- ○ DRUMS
- ▨ WORK ZONE



BAR IS ONE INCH ON ORIGINAL DRAWING  
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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 APPROVED BY: TGH  
 DATE: 6/1/10



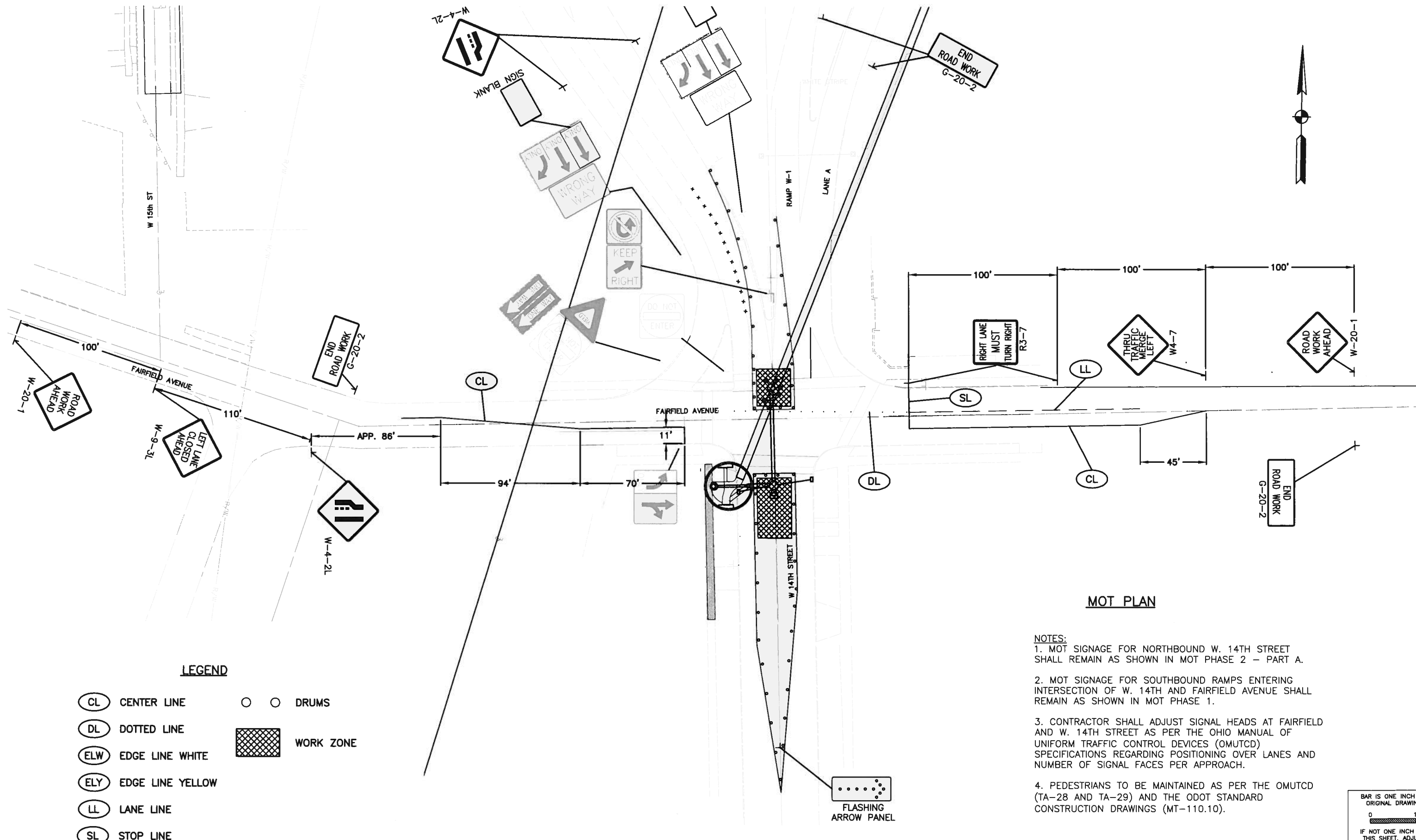
WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1 MAINTENANCE OF TRAFFIC PHASE 2 - PART A

PROJECT NO.:  
 SHEET: X  
 SCALE: 1"=30'  
 SHEET NO.: MOT-2

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**LEGEND**

- (CL) CENTER LINE
- (DL) DOTTED LINE
- (ELW) EDGE LINE WHITE
- (ELY) EDGE LINE YELLOW
- (LL) LANE LINE
- (SL) STOP LINE
- ○ DRUMS
- ▨ WORK ZONE

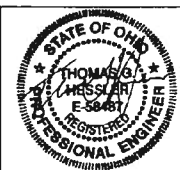
**MOT PLAN**

- NOTES:**
1. MOT SIGNAGE FOR NORTHBOUND W. 14TH STREET SHALL REMAIN AS SHOWN IN MOT PHASE 2 - PART A.
  2. MOT SIGNAGE FOR SOUTHBOUND RAMP'S ENTERING INTERSECTION OF W. 14TH AND FAIRFIELD AVENUE SHALL REMAIN AS SHOWN IN MOT PHASE 1.
  3. CONTRACTOR SHALL ADJUST SIGNAL HEADS AT FAIRFIELD AND W. 14TH STREET AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD) SPECIFICATIONS REGARDING POSITIONING OVER LANES AND NUMBER OF SIGNAL FACES PER APPROACH.
  4. PEDESTRIANS TO BE MAINTAINED AS PER THE OMUTCD (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10).

FLASHING ARROW PANEL

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: CRP  
 DRAWN BY: CRP  
 SHEET CHK'D BY: SJR  
 CROSS CHK'D BY: CRP  
 APPROVED BY: IGH  
 DATE: 6/1/10



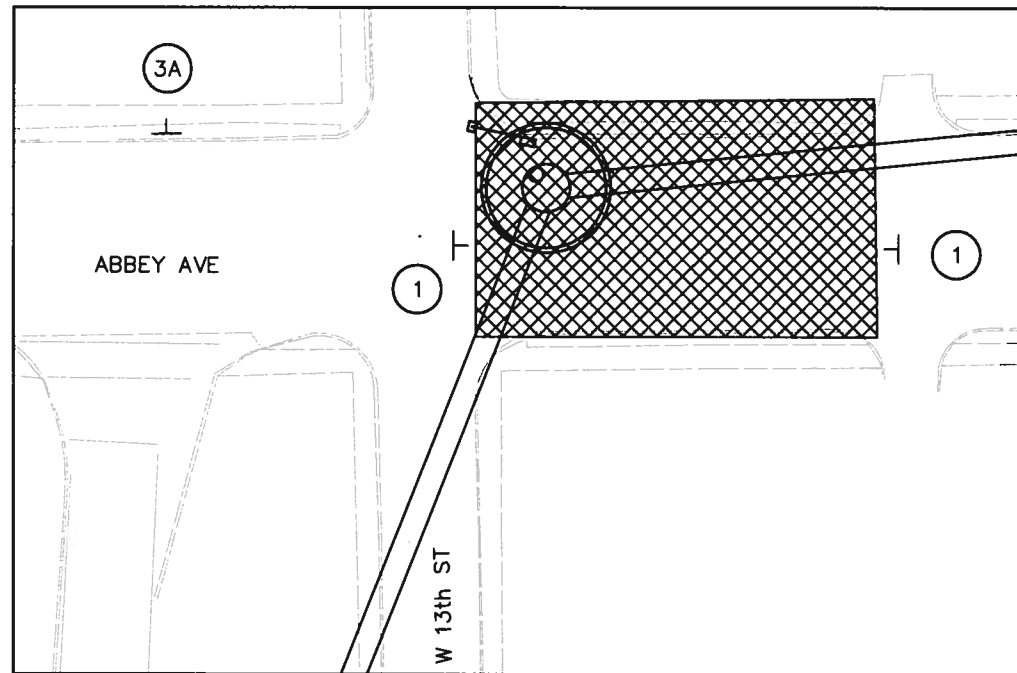
WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1 MAINTENANCE OF TRAFFIC PHASE 2 - PART B

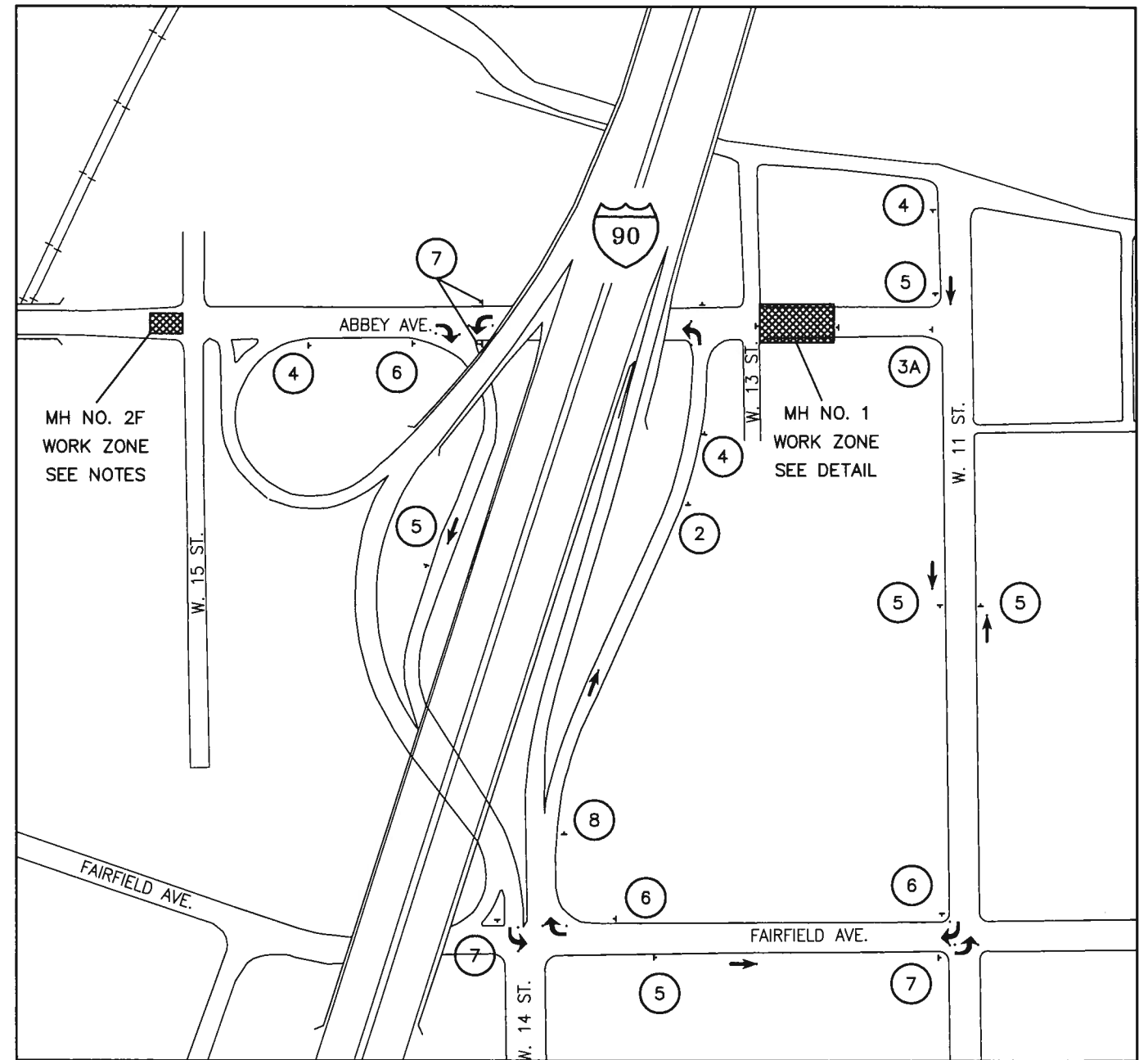
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY  
 PROJECT NO.:  
 SHEET: X  
 SCALE: 1"=10'  
 SHEET NO.: MOT-3

**MANHOLE NO. 2F WORK ZONE NOTES:**

1. CONTRACTOR SHALL USE MARKINGS AND/OR CHANNELIZING DEVICES AS DESCRIBED IN THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD) TO MAINTAIN TRAFFIC DURING THE CONSTRUCTION OF MH NO. 2F TO ENSURE THE SAFETY OF THE CONSTRUCTION PERSONNEL AND THE TRAVELING PUBLIC.
2. THE CONTRACTOR SHALL USE FLAGGERS, AS PER THE OMUTCD, TO MAINTAIN TRAFFIC AS NECESSARY WHEN THE WIDTH OF AVAILABLE PAVEMENT IS LESS THAN TWENTY (20) FEET FOR TWO WAY TRAFFIC, OR TEN (10) FEET IN A SINGLE DIRECTION OF TRAVEL.
3. THE CONTRACTOR SHALL PROVIDE A SAFE ROUTE FOR PEDESTRIANS. PEDESTRIAN TRAFFIC IS TO BE MAINTAINED AS PER THE OMUTCD (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10), AS NEEDED.
4. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL COMMERCIAL AND RESIDENTIAL PROPERTIES THROUGHOUT CONSTRUCTION.



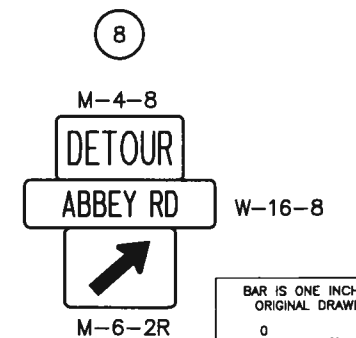
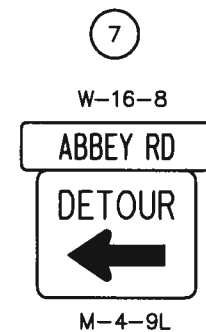
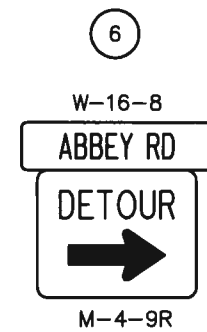
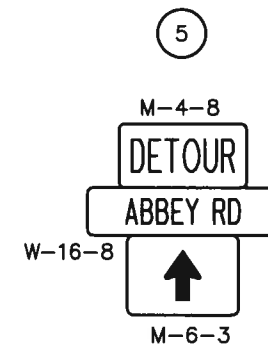
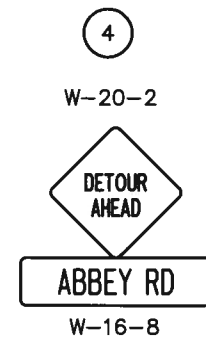
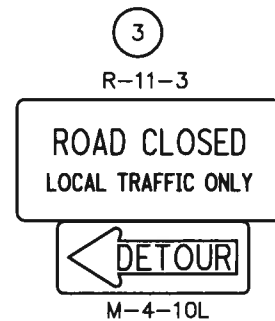
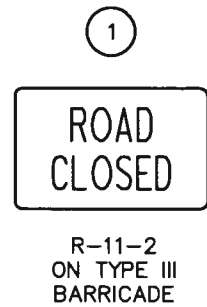
**MANHOLE NO. 1 WORK ZONE DETAIL**



**DETOUR PLAN**

FOR 3A ADD

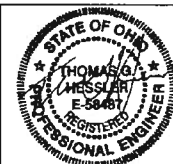
ABBAY RD  
W-16-8



BAR IS ONE INCH ON ORIGINAL DRAWING  
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: CRP  
DRAWN BY: CRP  
SHEET CHK'D BY: SJR  
CROSS CHK'D BY: CRP  
APPROVED BY: IGH  
DATE: 6/11/10

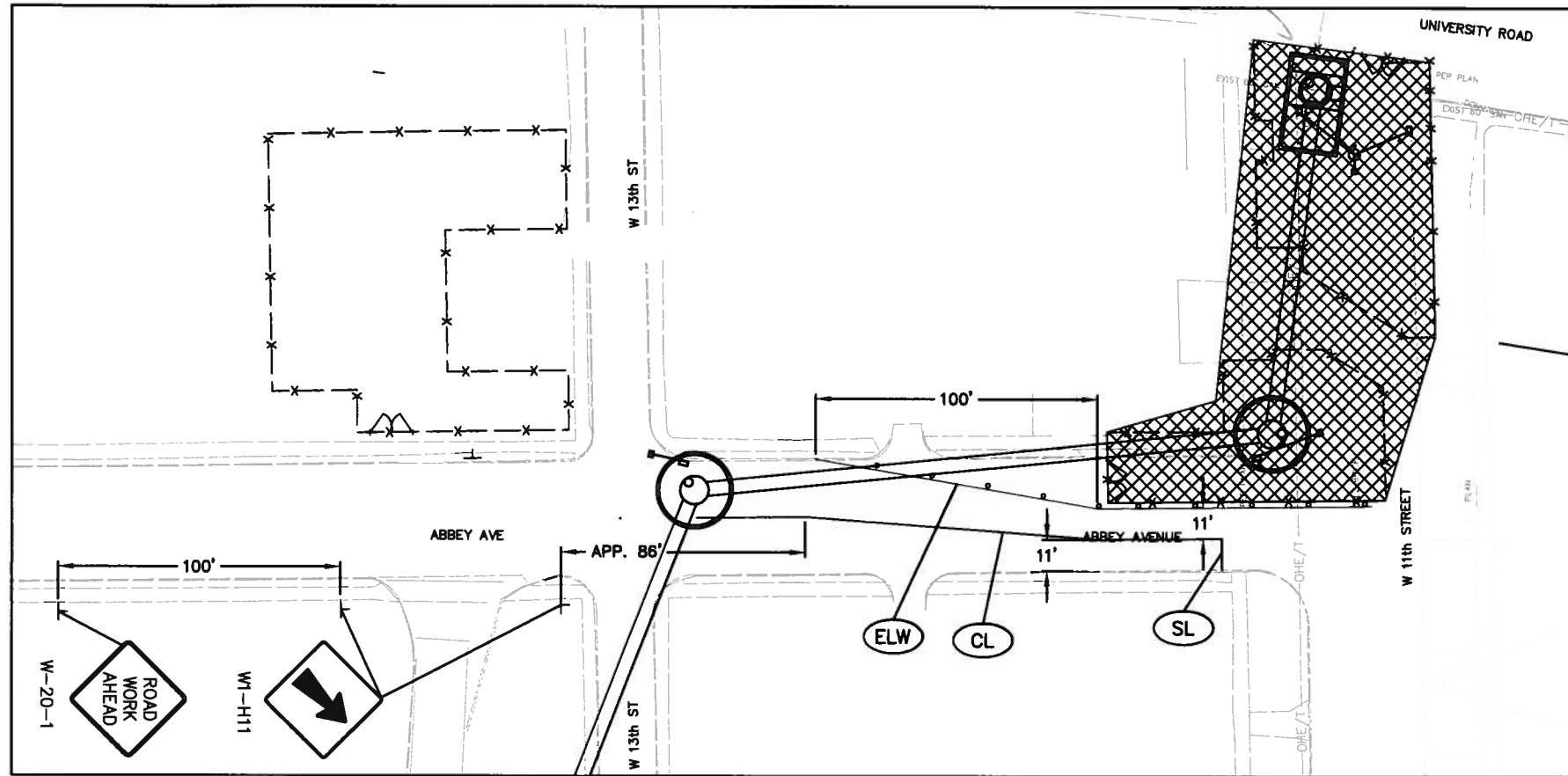


WALWORTH RUN INTERCEPTOR REALIGNMENT

MAINTENANCE OF TRAFFIC  
DETOUR ROUTE FOR  
MANHOLE NO. 1

PROJECT NO.:  
SHEET: X  
SCALE: NOT TO SCALE  
SHEET NO.: MOT-4

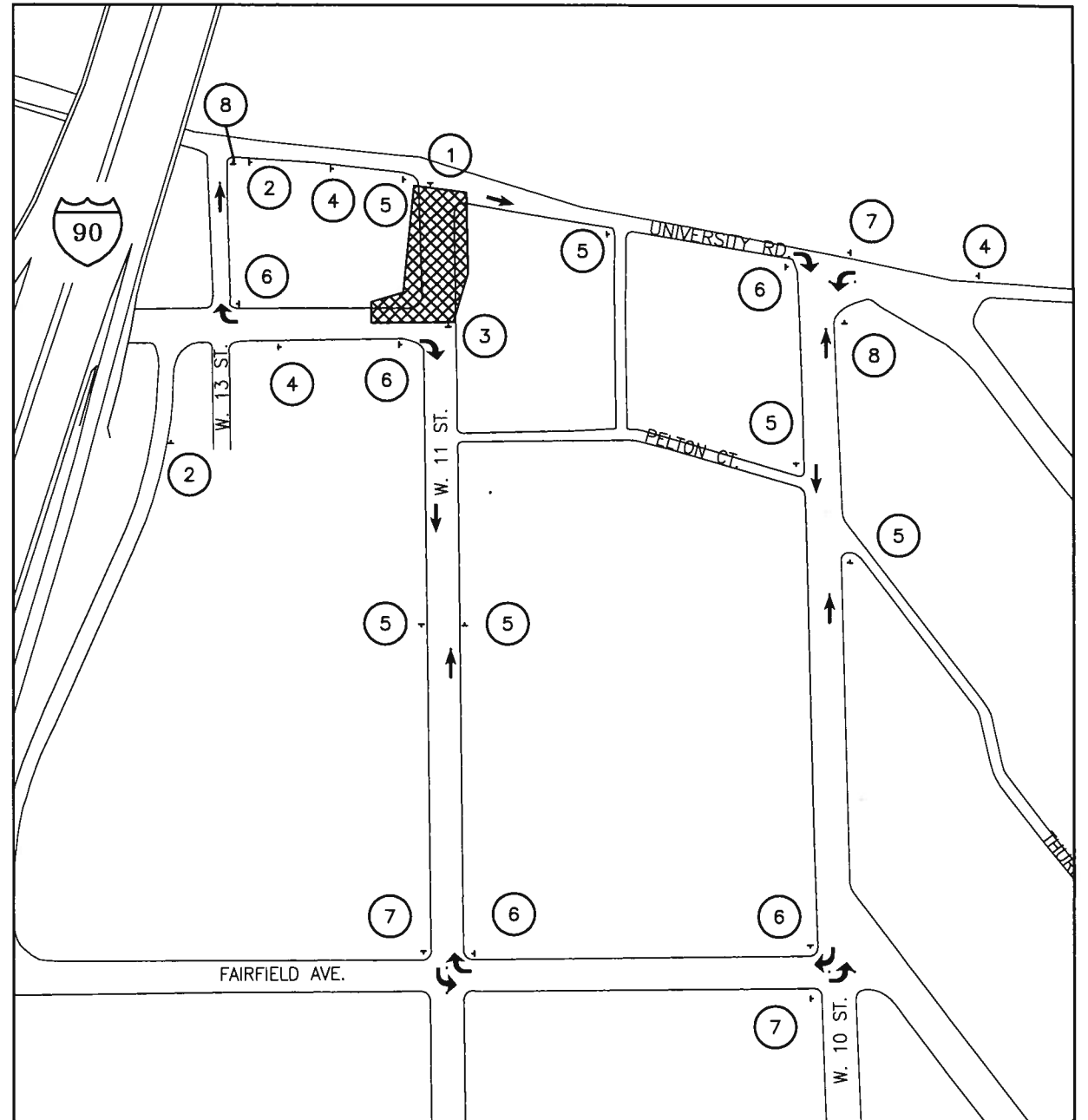
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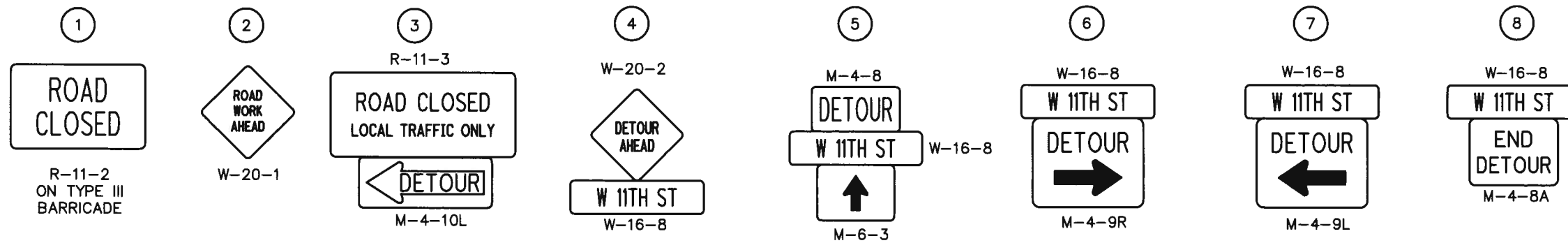
**WORK ZONE DETAIL**

**LEGEND**

- CL CENTER LINE
- ○ DRUMS
- ELW EDGE LINE WHITE
- ▨ WORK ZONE
- SL STOP LINE



**DETOUR PLAN**



BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: CRP  
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 SHEET CHK'D BY: SUB  
 CROSS CHK'D BY: CRP  
 APPROVED BY: IGH  
 DATE: 6/1/10

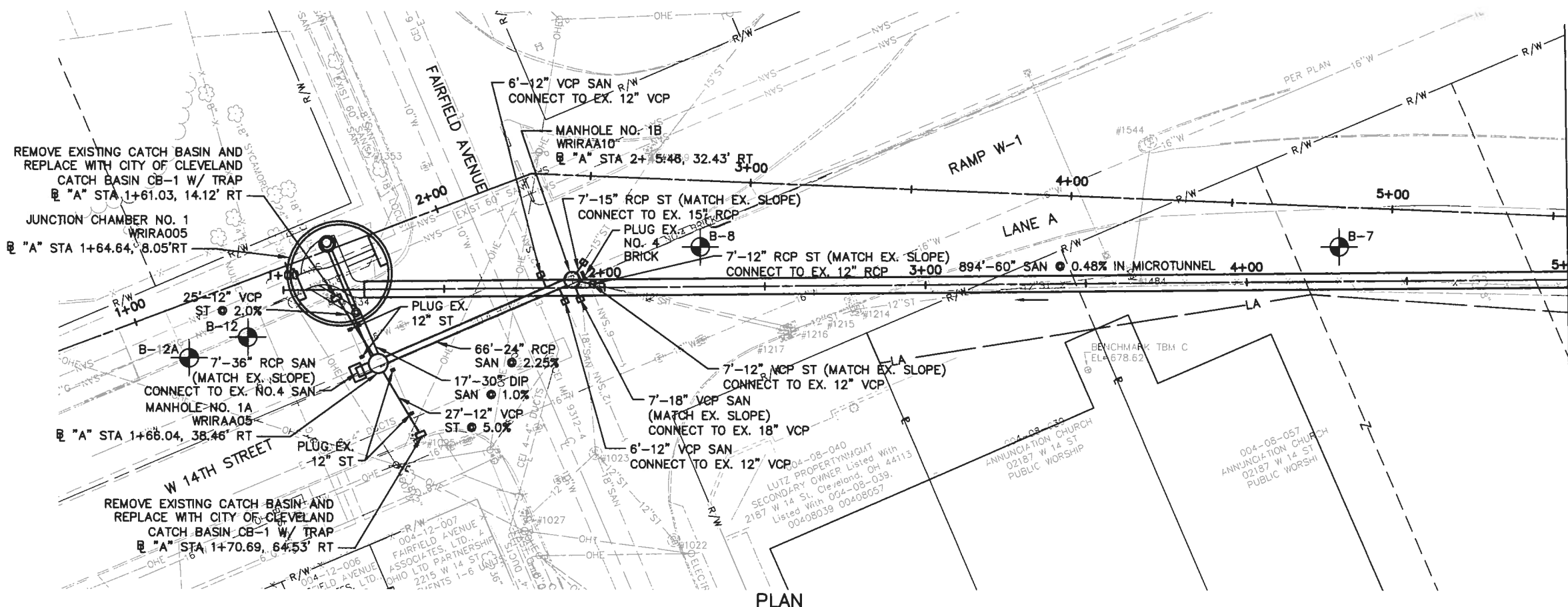


WALWORTH RUN INTERCEPTOR REALIGNMENT

MAINTENANCE OF TRAFFIC  
 DETOUR ROUTE FOR  
 MANHOLE NO. 2 AND  
 JUNCTION CHAMBER NO. 2

PROJECT NO.:  
 SHEET: X  
 SCALE: NOT TO SCALE  
 SHEET NO.: MOT-5

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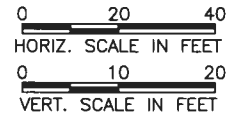
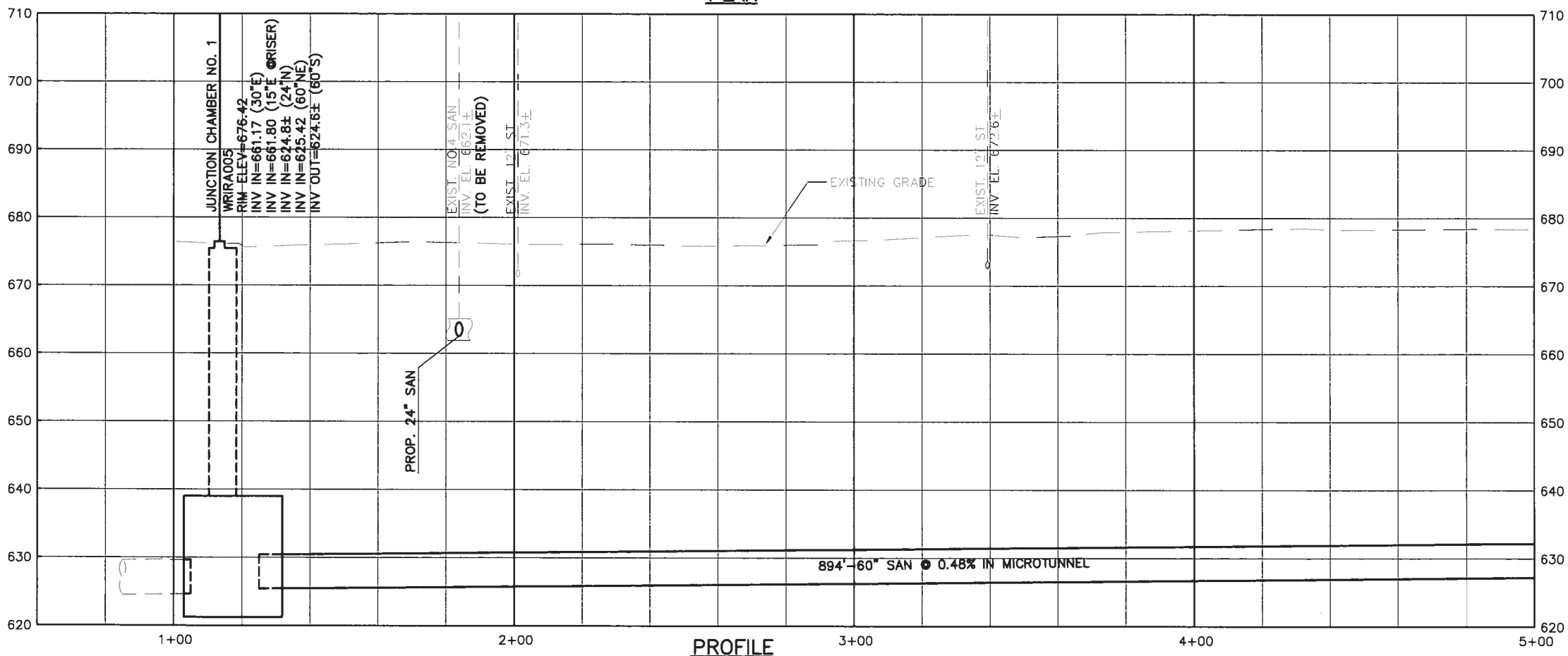


MATCH LINE STA. 5+00

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
MOT-1 TO MOT-3	MAINTENANCE OF TRAFFIC PLANS
C-2	SOUTHERN SEWER ABANDONMENT PLAN
C-3	JUNCTION CHAMBER NO. 1 SITE PLAN
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-15	CITY OF CLEVELAND CATCH BASIN CB-1 DETAIL
P-7&P-8	SEWER PROFILES
TU-1 TO TU-4	JUNCTION CHAMBER NO. 1 STRUCTURAL DETAILS

**NOTES:**  
 1. ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS, UNLESS OTHERWISE SHOWN.

IGR #1022 TOC=677.19 INV 12" RCP SW (TO #1023)=674.19	IN #1215 TOC=675.79 CURB INLET WINDOW INCB #1216 TOC=675.52 INV 12" RCP SW (TO #1150)=672.32
SMH #1023 TOC=676.91 FAIR-02 INV 18" VCP E=663.56 INV 18" VCP W=663.65 INV 12" CP NE=673.01 INV 15" VCP NE=666.31	INCB #1217 TOC=675.53 INCB #1269 TOC=675.69 INV 15" VCP S (TO #1150)=668.04
INCB #1027 TOC=676.62 INV 12" VCP NE=672.32	INCB #1334 TOC=675.48 MEASUREMENT +/- BOTTOM OF STRUCTURE=669.88
INCB #1095 TOC=675.80 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=671.15	SMH #1353 TOC=675.52 FAIR-04 INV 60" BRICK: E=625.27 INV 60" BRICK: W=625.12
SMH #1150 TOC=676.18 INV 12" RCP NE=670.88 INV 12" VCP NE=669.10 INV 18" VCP E=663.46 INV 15" RCP NW=667.73 INV NO 4 BRICK: N=662.00 INV NO 4 BRICK: S=662.01	IGS #1484 TOC=676.52 FILLED TO GRATE NO PIPES VISIBLE
STMH #1214 TOC=676.35 INV 12" RCP N=672.35 INV 12" RCP S=672.35	STMH #1544 TOC=679.26 FILLED TO GRATE NO PIPES VISIBLE

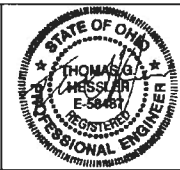


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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: MSE	
DRAWN BY: MSE	
SHEET CHK'D BY: RDC	
CROSS CHK'D BY: MSE	
APPROVED BY: TGH	
DATE: 5/1/10	



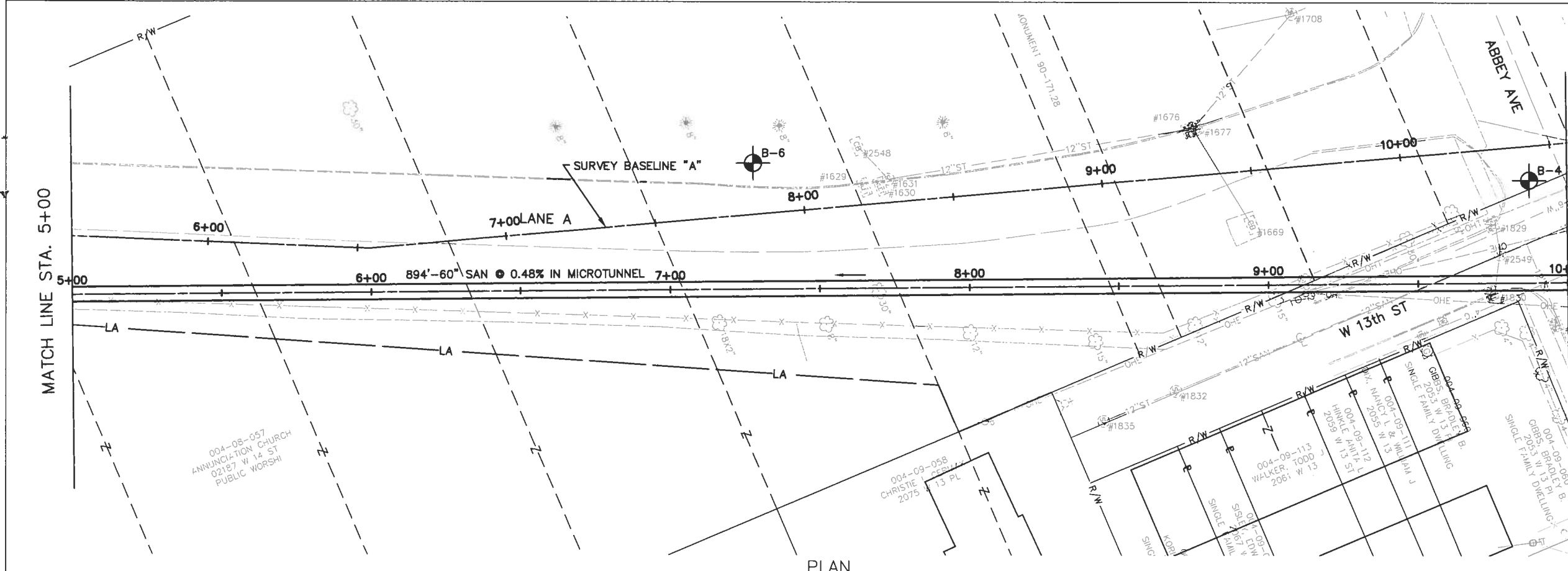
WALWORTH RUN INTERCEPTOR REALIGNMENT

WRIR MAINLINE  
 PLAN & PROFILE  
 STA. 1+00 TO STA. 5+00

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=20'H; 1"=10'V  
 SHEET NO.: P-1

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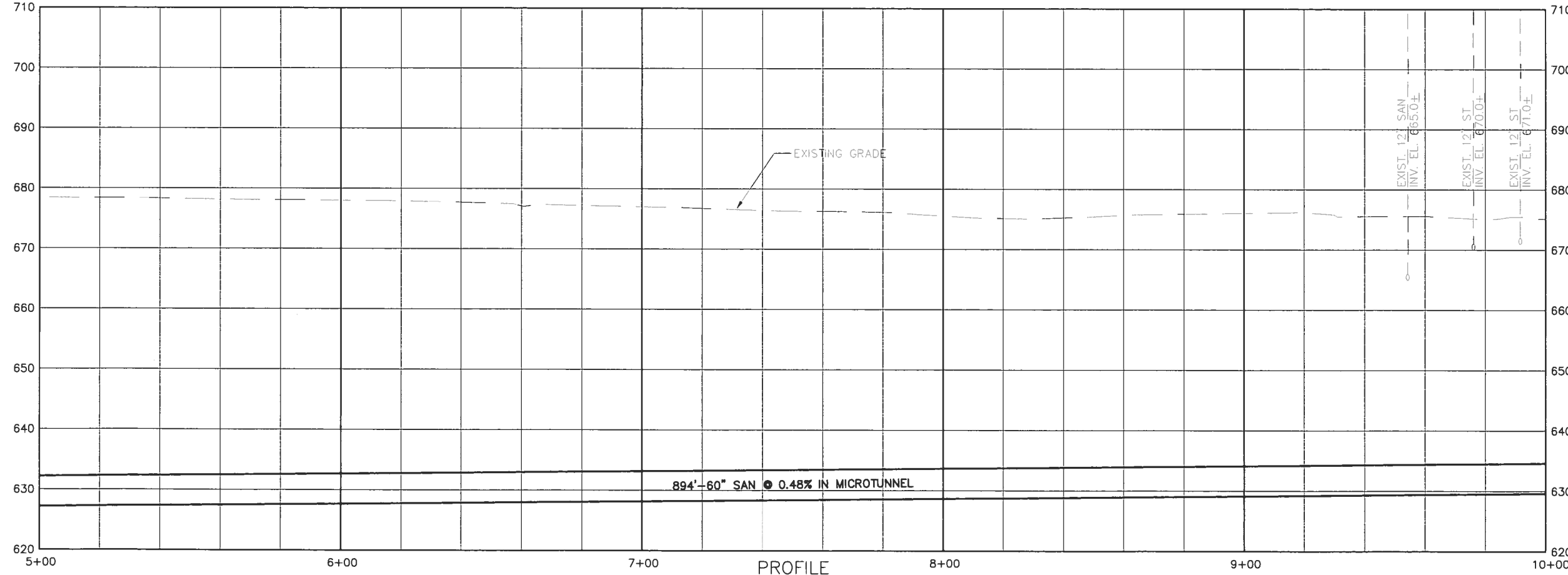
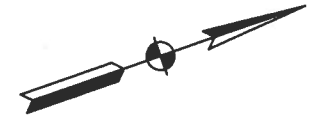




MATCH LINE STA. 10+00

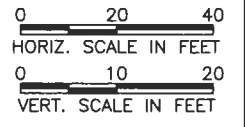
MATCH LINE STA. 5+00

PLAN



PROFILE

- IN #1629  
TOC=675.88  
CURB INLET WINDOW
- IN #1630  
TOC=675.78  
CURB INLET WINDOW
- STMH #1631  
TOC=676.19  
INV 12" PCP N (TO #1676)=670.99  
INV 12" PCP W (TO #2548)=671.09
- IGS #1669  
TOC=673.26  
NO PIPES VISIBLE
- INCB #1676  
TOC=673.38  
INV 12" RCP E (TO #1669)=668.58  
INV 12" VCP NW (TO #1708)=668.48  
INV 12" PCP SW (TO #1631)=668.68
- INCB #1677  
TOC=673.38
- INCB #1829  
TOC=675.22  
INV 12" VCP SE (TO #2549)=670.57
- INCB #1830  
TOC=675.09  
INV 12" VCP NW (TO #2549)=670.09
- INCB #1831  
TOC=675.11  
NO PIPES VISIBLE  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.91
- IGS #2548  
TOC=675.82  
FILLED TO TOP OF STRUCTURE
- STMH #2549  
TOC=675.42  
INV 12" VCP SE (TO #1830)=669.67  
INV 12" VCP NW (TO #1829)=669.02  
INV 12" VCP S (TO #1832)=664.92  
INV 12" VCP N=664.92



BAR IS ONE INCH ON ORIGINAL DRAWING  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DESIGNED BY: MSE	DATE: 6/1/10
DRAWN BY: MSE	
SHEET CHK'D BY: RDC	
CROSS CHK'D BY: MSE	
APPROVED BY: TGH	

REV. NO.	DATE	ISSUE BY	REMARKS

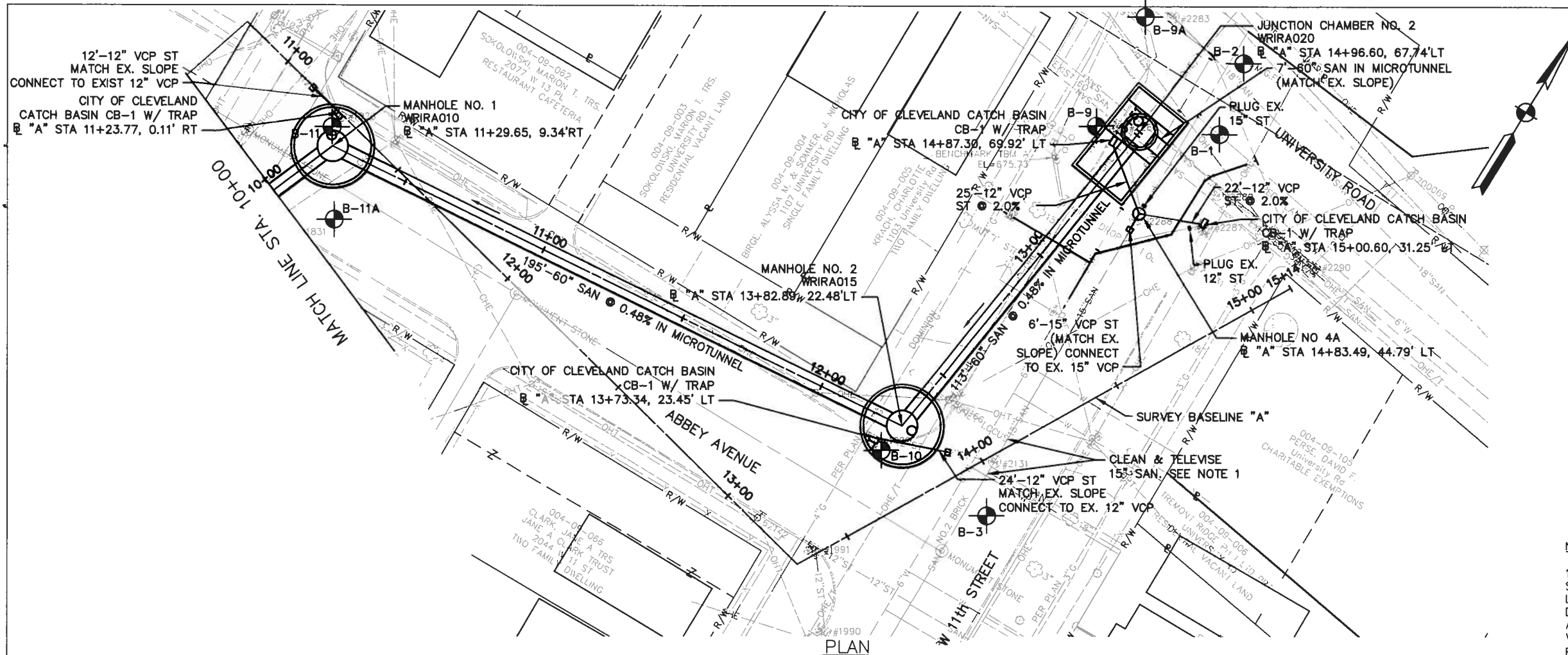


WALWORTH RUN INTERCEPTOR REALIGNMENT

WRIR MAINLINE  
PLAN & PROFILE  
STA. 5+00 TO STA. 10+00

PROJECT NO.:  
SHEET:  
SCALE: 1"=20'H; 1"=10'V  
SHEET NO.: P-2

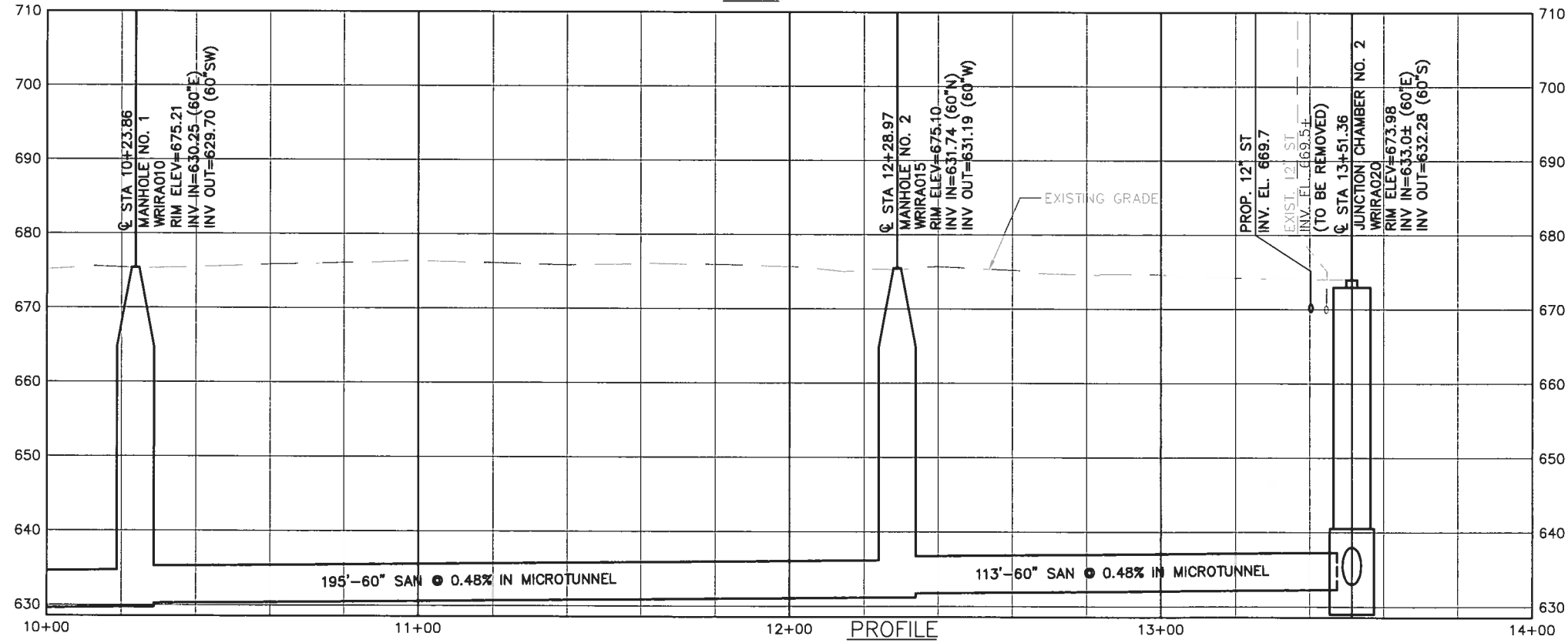




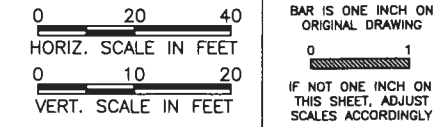
CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
MOT-4 TO MOT-5	MAINTENANCE OF TRAFFIC PLANS
C-1	NORTHERN SEWER ABANDONMENT PLAN
C-4	MANHOLE NO. 1 SITE PLAN
C-5	MANHOLE NO. 2 & JUNCTION CHAMBER NO. 2 SITE PLAN
C-6 TO C-9	WATER MAIN RELOCATION PLAN, NOTES, AND DETAILS
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-15	CITY OF CLEVELAND CATCH BASIN CB-1 DETAIL
P-7&P-8	SEWER PROFILES
TU-5 TO TU-8	JUNCTION CHAMBER NO. 2 STRUCTURAL DETAILS
TU-9	MH NO. 1 INITIAL SUPPORTS
TU-10	MH NO. 2 INITIAL SUPPORTS

**NOTES:**

- THE CONTRACTOR SHALL CLEAN AND TELEWISE THE EXISTING 15" SAN SEWER ON W11TH ST BETWEEN MH 2288 AND MH 2131 FOR A LENGTH OF 91 FEET, AND BETWEEN MH 2131 AND THE NEXT DOWNSTREAM MANHOLE FOR A LENGTH OF 408 FEET BEFORE AND AFTER CONSTRUCTING THE NEW WORK. PROVIDE 2 COPIES OF THE VIDEOTAPES TO THE ENGINEER. THIS WORK SHALL BE INCLUDED FOR PAYMENT UNDER THE UNIT PRICE FOR THE 60" SAN SEWER IN MICROTUNNEL. SHOULD THE CONTRACTOR DAMAGE THE EXISTING SANITARY SEWER MAINLINE OR LATERAL CONNECTIONS DURING CONSTRUCTION, HE SHALL REPAIR OR REPLACE THE SEWER TO THE SATISFACTION OF THE CITY. NEW SEWER MATERIALS SHALL MATCH EXISTING.
- ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS, UNLESS OTHERWISE SHOWN.

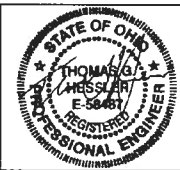


INCB #1836 TOC=675.09 FILLED WITH WATER MEASUREMENT +/- BOTTOM OF STRUCTURE=671.09	INCB #2286 TOC=673.69 FILLED TO TOP OF STRUCTURE
INCB #1990 TOC=674.82 MEASUREMENT +/- BOTTOM OF STRUCTURE=671.82	INCB #2287 TOC=673.92 FILLED TO TOP OF STRUCTURE
INCB #1991 TOC=674.52 INV 12" VCP SE (TO #1990)=670.62 INV 12" VCP E=669.62	SMH #2288 TOC=674.89 W11-01 INV 15" VCP N (TO #2131)=667.59 INV 15" VCP S (TO #?)=667.39
INCB #1992 TOC=674.61 INV 12" VCP NE=669.81	SMH #2289 TOC=674.25 UN-02 INV 60" BRICK SE (TO #?)=633.25 INV 60" BRICK NW (TO #2131)=633.15
SMH #2131 TOC=675.35 DID NOT OPEN - CPACKED LID	INCB #2290 TOC=673.93 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=667.38
SMH #2283 TOC=674.64 UN-03 INV 18" VCP E (TO #2356)=661.94 INV 15" VCP W (TO #1799)=661.99 INV 12" VCP SW=667.99 INV 12" VCP NW=666.04	



REV. NO.	DATE	ISSUE BY	REMARKS

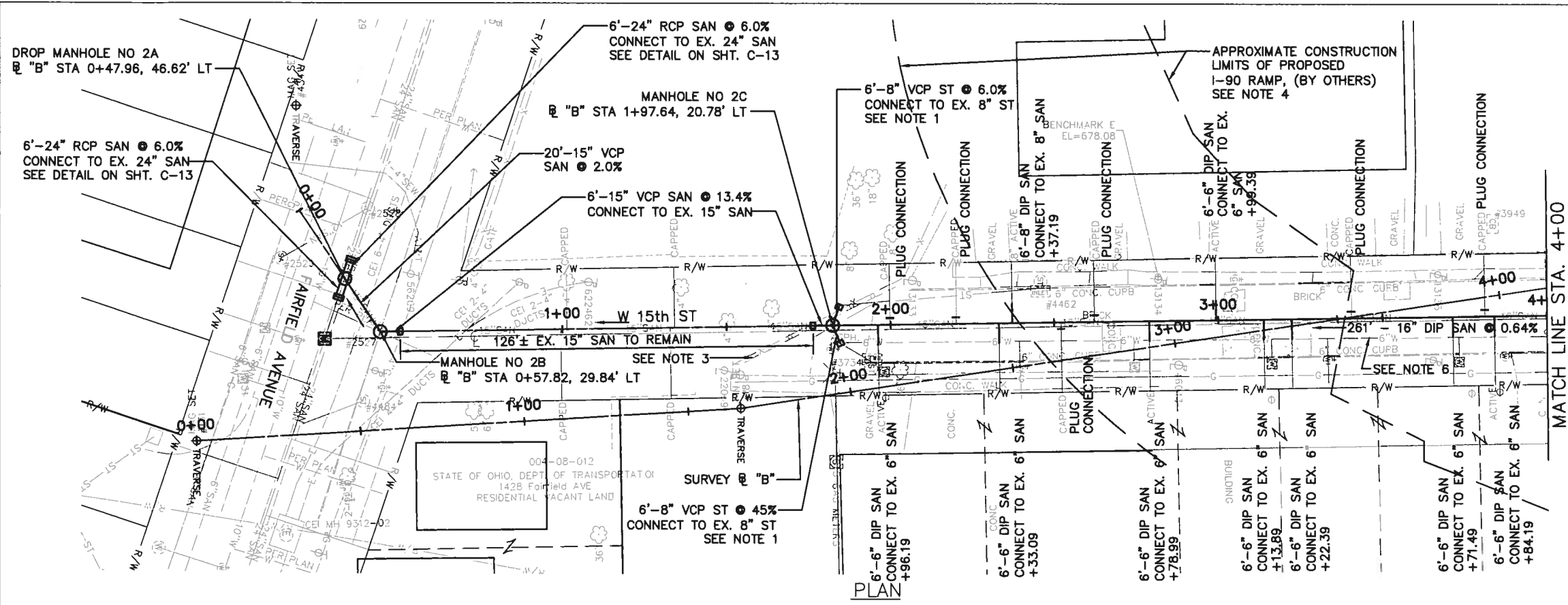
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 DRAWN BY: MSE  
 SHEET CHK'D BY: RDC  
 CROSS CHK'D BY: MSE  
 APPROVED BY: TGH  
 DATE: 5/1/10



**WALWORTH RUN INTERCEPTOR REALIGNMENT**

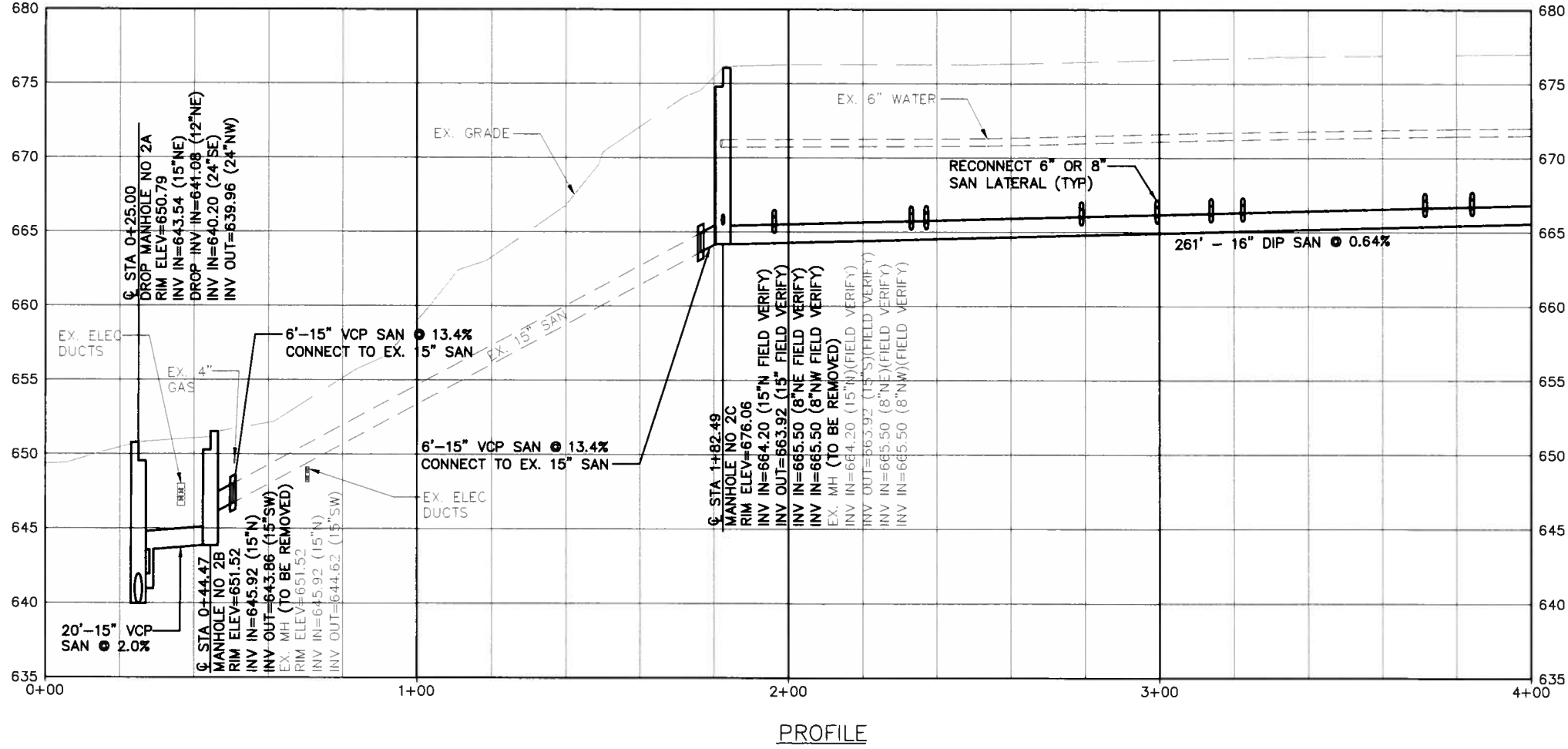
**WRIR MAINLINE PLAN & PROFILE  
 STA. 10+00 TO STA. 15+00**

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=20'H; 1"=10'V  
 SHEET NO.: P-3

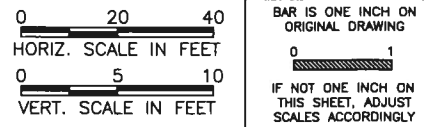


SMH #2527 TOC=651.52 FAIR-07 INV 15" VCP N=645.92 INV 15" VCP SW=644.62	CB #3734 TOC=676.73 INV 8" SW 672.73
SMH #2528 TOC=649.22 FAIR-09 INV 24" BPCV E (TO #2526)=638.72 INV 24" BRICK W=638.62 INV 12" BRICK S=635.42	CB #3949 TOC=676.93 NO PIPES VISIBLE
SMH #2529 TOC=650.51 FAIR-08 INV 60" BRICK SE (TO #1353)=630.21 INV 12" VCP W=633.81 INV 12" VCP W=629.81	CB #4462 TOC=676.69 INV 8" S 669.69
	CB #4484 TOC=652.91 INV 12" VCP SE=648.46

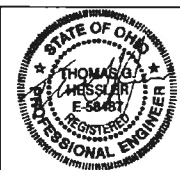
CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-2	SOUTHERN SEWER ABANDONMENT PLAN
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-11	TRENCH REPAIR DETAILS
C-13	SEWER DETAILS
P-5	W. 15TH ST. SAN SEWER PLAN & PROFILE STA 4+00 TO STA 8+00



- NOTES:**
1. CONNECTION CONFIGURATION, PIPE SIZES AND ELEVATIONS TO BE FIELD VERIFIED PRIOR TO MANHOLE FABRICATION. CONTRACTOR SHALL REPLACE 8" STORM SEWER CONNECTION TO A POINT ALONG DIRECT ALIGNMENT TO CATCH BASIN, AS DIRECTED BY THE ENGINEER.
  2. THE CONTRACTOR SHALL PLUG ALL CAPPED CONNECTIONS WHICH ARE DISTURBED BY EXCAVATION.
  3. REMOVE AND REPLACE EXISTING GUARDRAIL AND FENCE AS REQUIRED TO CONSTRUCT SANITARY SEWER.
  4. THE PROPOSED I-90 RAMP (TO BE DESIGNED BY OTHERS) WILL RESULT IN EMBANKMENT FILLS ABOVE THE EXISTING GRADE. THE ENGINEER HAS DESIGNED THE PROPOSED 15" SAN SEWER FROM STA. 1+82 TO STA. 4+00 FOR 32' OF EARTH COVER OVER THE TOP OF PIPE.
  5. ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS, UNLESS OTHERWISE SHOWN.
  6. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN AVOIDING DAMAGE TO THE EXISTING WATER MAIN DURING CONSTRUCTION. ANY WATER MAIN DAMAGE CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.



DESIGNED BY: RDC
DRAWN BY: RDC
SHEET CHK'D BY: MCJ
CROSS CHK'D BY: RDC
APPROVED BY: IGH
DATE: 6/1/10

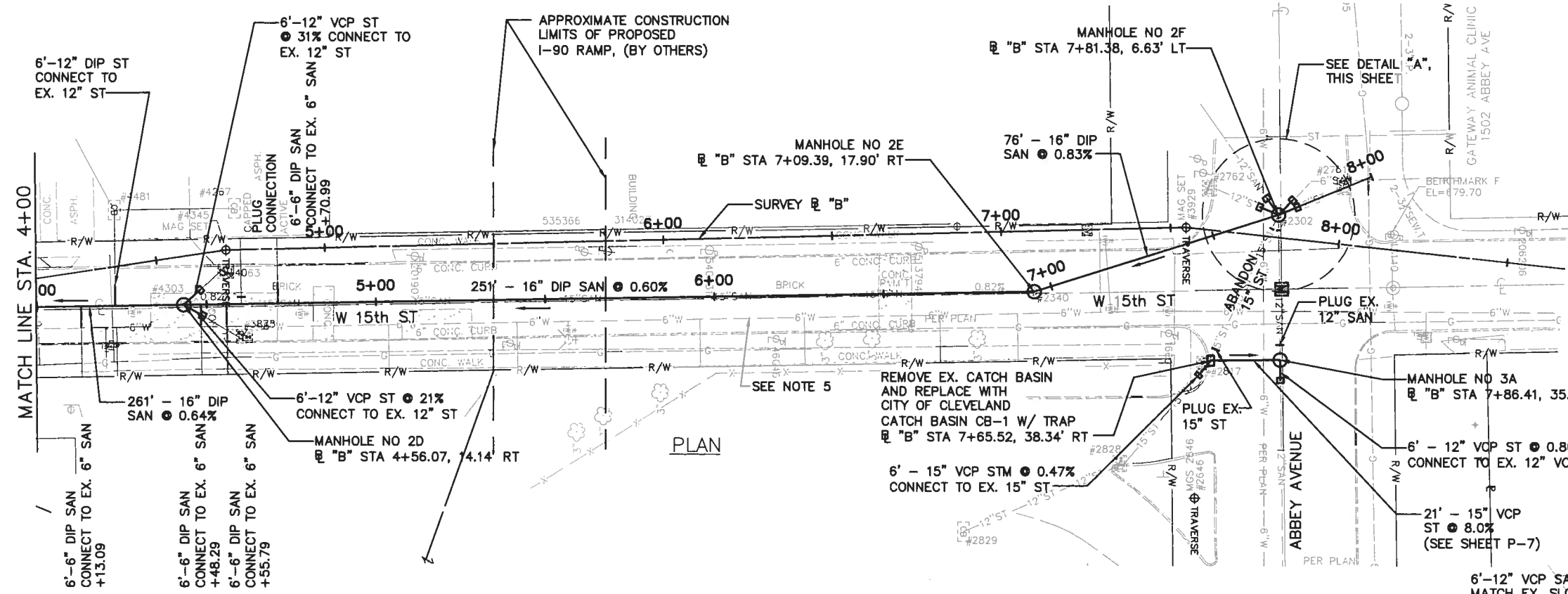


WALWORTH RUN INTERCEPTOR REALIGNMENT

W15TH ST SANITARY SEWER  
PLAN & PROFILE  
STA 0+00 TO STA 4+00

PROJECT NO.:
SHEET:
SCALE: 1"=20'H; 1"=5'V
SHEET NO.: P-4

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CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-1	NORTHERN SEWER ABANDONMENT PLAN
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-11	TRENCH REPAIR DETAILS
C-13	SEWER DETAILS
C-15	CITY OF CLEVELAND CATCH BASIN CB-1 DETAIL
P-4	W. 15TH ST. SAN SEWER PLAN & PROFILE STA 0+00 TO 4+00
P-7	W. 15TH ST. AND ABBEY AVE CATCH BASIN CONNECTION PROFILE

SMH #2302  
 TOC=678.88  
 AB-01  
 INV 12" VCP SW=668.23  
 INV 12" VCP E=668.33  
 INV 15" VCP SE=668.98  
 INV 12" VCP SW=674.33  
 INV 12" VCP HW=673.38  
 INV 6"(?) PVC NW=668.78

SMH #2340  
 TOC=678.10  
 WIS-01 START OF RUN  
 INV 12" VCP S (TO #2344)=667.90

INCB #2761  
 TOC=678.51  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=676.01

INCB #2762  
 TOC=678.56  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=675.56

INCB #2817  
 TOC=677.70  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=671.70

INCB #2828  
 TOC=677.23  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=673.23

IGS #2829  
 TOC=675.40  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=672.40

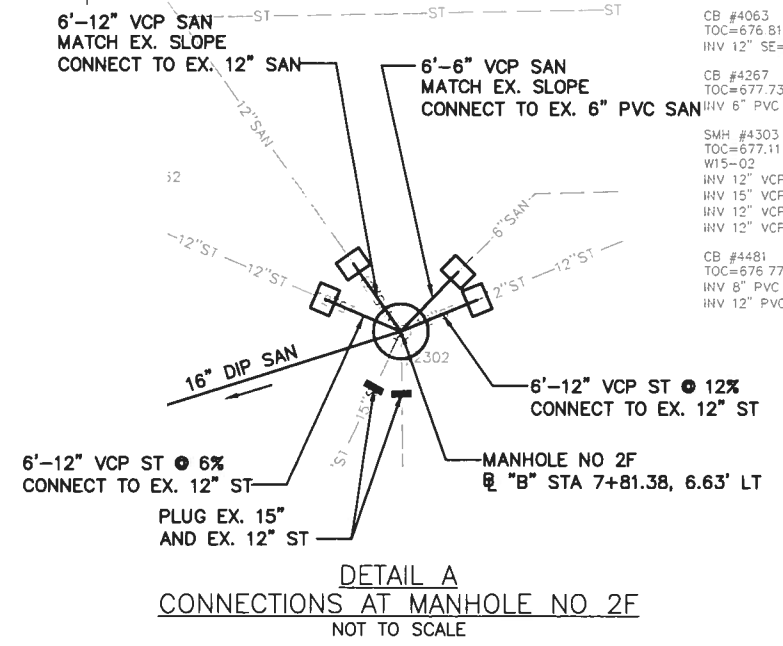
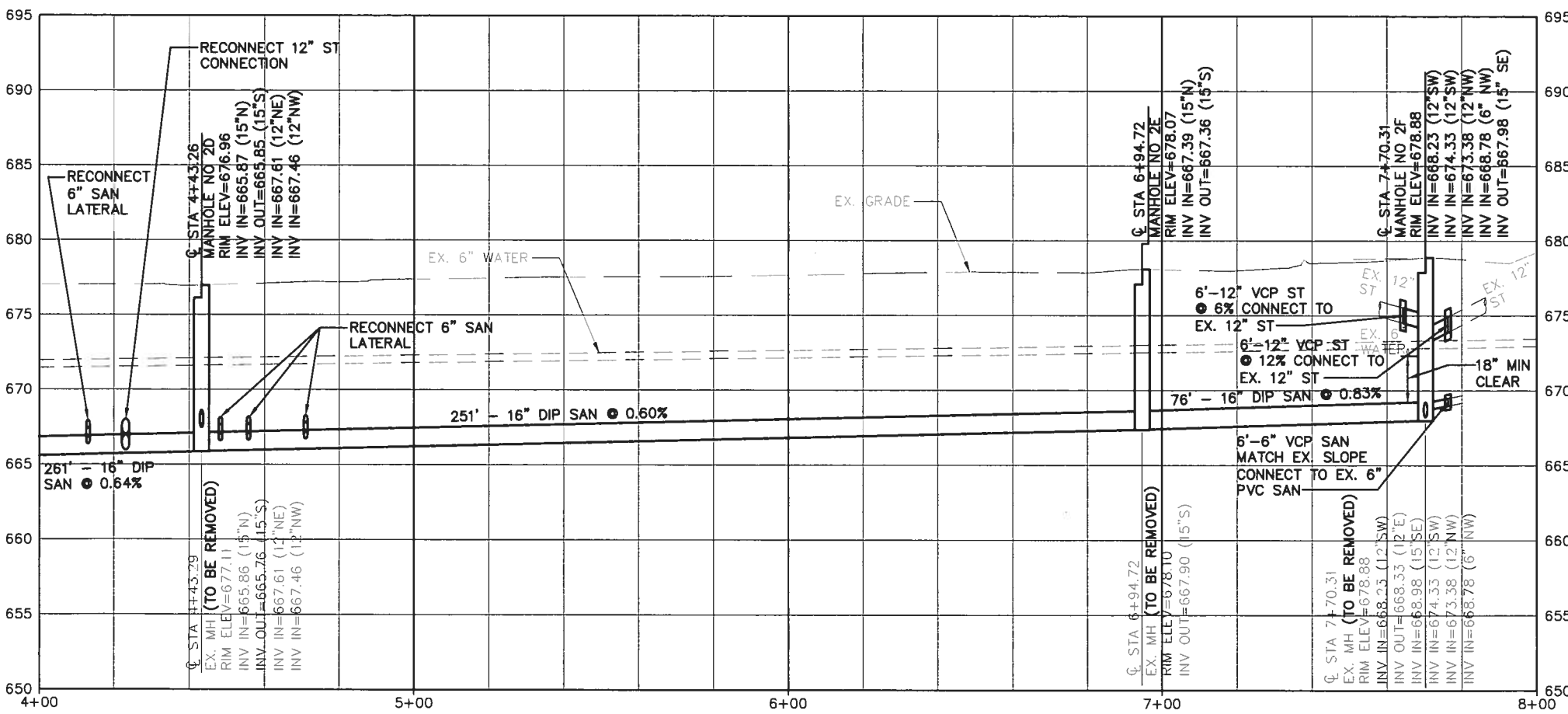
CB #3873  
 TOC=676.79  
 INV 12" VCP SW=672.09

CB #4063  
 TOC=676.81  
 INV 12" SE=672.81

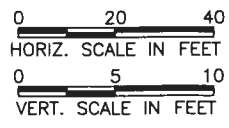
CB #4267  
 TOC=677.73  
 INV 6" PVC S=675.23

SMH #4303  
 TOC=677.11  
 WIS-02  
 INV 12" VCP H (TO #2340)=665.88  
 INV 15" VCP S (TO #WIS-03 ?)=665.76  
 INV 12" VCP HW=667.46  
 INV 12" VCP NE=667.61

CB #4481  
 TOC=676.77  
 INV 8" PVC E=670.94  
 INV 12" PVC W=670.89



- NOTES:
1. THE CONTRACTOR SHALL PLUG ALL CAPPED CONNECTIONS WHICH ARE DISTURBED BY EXCAVATION.
  2. ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS.
  3. REPLACE EXISTING CURB AND PAVEMENT AS NECESSARY TO INSTALL STORM SEWERS AND CATCH BASINS.
  4. FROM @ STA. 4+80 TO @ STA. 6+94 THE LOCATIONS, NUMBER, AND STATUS OF SERVICE CONNECTIONS IS UNKNOWN. THE CONTRACTOR SHALL IDENTIFY SUCH CONNECTIONS AND RECONNECT THEM TO THE NEW SEWER IF THEY ARE ACTIVE. THE CONTRACTOR SHALL PLUG THEM IF THEY ARE INACTIVE. A QUANTITY OF 24 LF OF 6" DIP SAN HAS BEEN INCLUDED IN THE BID FORM FOR THE RECONNECTION OF LATERALS IN THIS AREA.
  5. SEE NOTE 6 ON SHEET P-4.

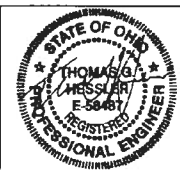


BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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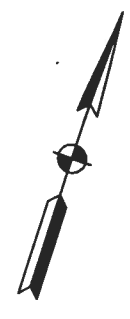
DESIGNED BY: RDC	DATE: 6/1/10
DRAWN BY: RDC	
SHEET CHK'D BY: MCJ	
CROSS CHK'D BY: RDC	
APPROVED BY: IGH	
REMARKS	



WALWORTH RUN INTERCEPTOR REALIGNMENT

W15TH ST SANITARY SEWER PLAN & PROFILE  
 STA 4+00 TO STA 8+00

PROJECT NO.:	
SHEET:	
SCALE: 1"=20'H; 1"=5'V	
SHEET NO.:	P-5

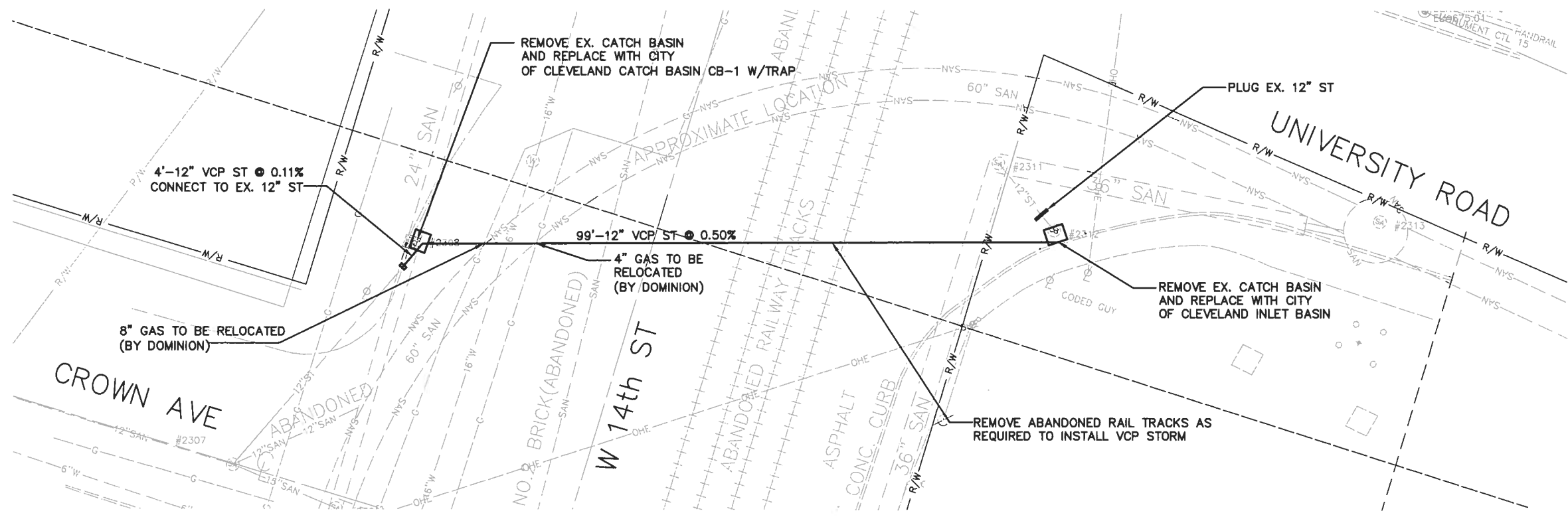


SMH #2307  
 TOC=674.18  
 CR=02  
 INV 12" VCP NE=668.48  
 INV 12" VCP W=659.62  
 INV 15" VCP SE=659.73

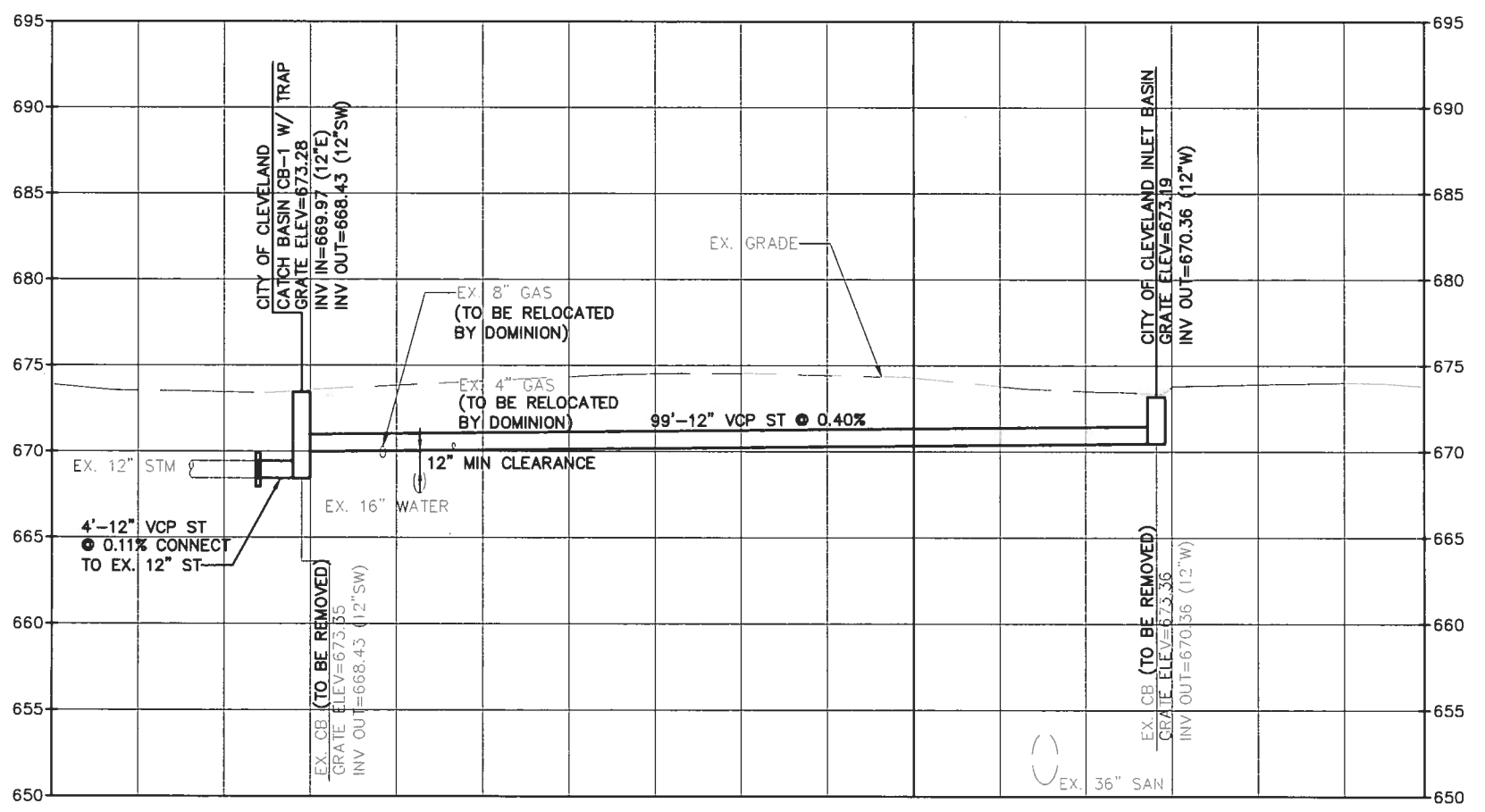
INCB #2308  
 TOC=673.35  
 INV 12" VCP SW=668.43

SMH #2311  
 TOC=673.97  
 UN=06  
 INV 38" BRICK HE=650.37  
 INV 38" BRICK SW=650.52  
 INV 12" VCP SE=669.97

IGR #2312  
 TOC=673.36  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=670.36



PLAN

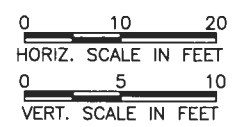


PROFILE

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-11	TRENCH REPAIR DETAILS
C-13	SEWER DETAILS
C-15	CITY OF CLEVELAND CATCH BASIN CB-1 DETAIL
C-16	CITY OF CLEVELAND INLET BASIN DETAIL

NOTES:

1. ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS.
2. REPLACE EXISTING CURB AND PAVEMENT AS NECESSARY TO INSTALL STORM SEWERS AND CATCH BASINS.



BAR IS ONE INCH ON ORIGINAL DRAWING  
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DESIGNED BY: RDC
DRAWN BY: RDC
SHEET CHK'D BY: MCJ
CROSS CHK'D BY: RDC
APPROVED BY: LGH
DATE: 6/1/10

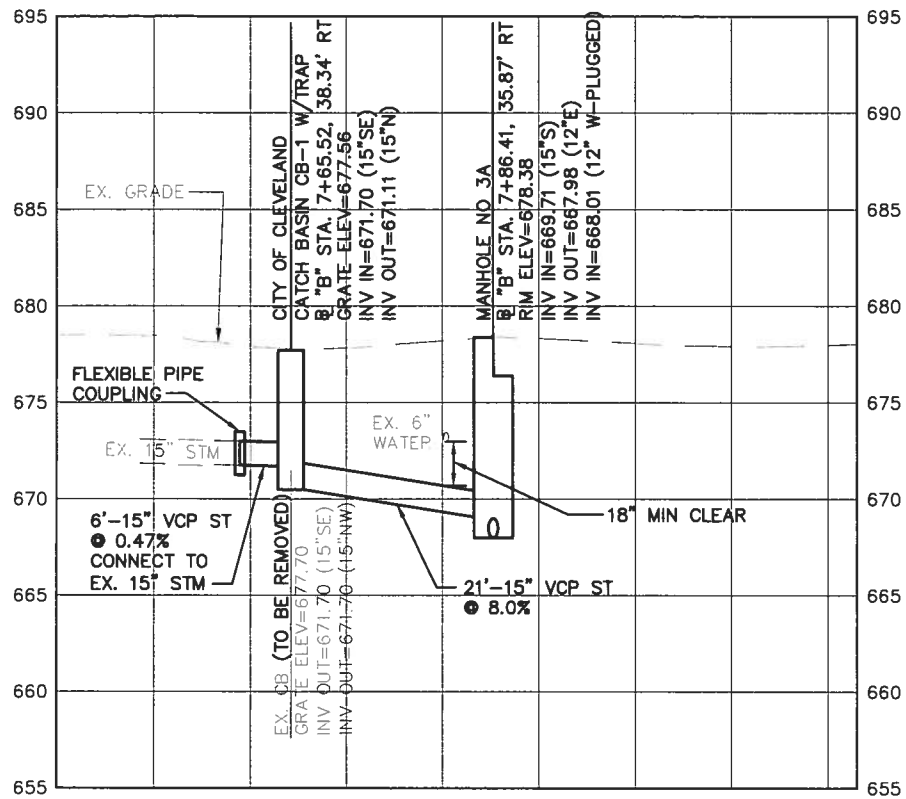


WALWORTH RUN INTERCEPTOR REALIGNMENT

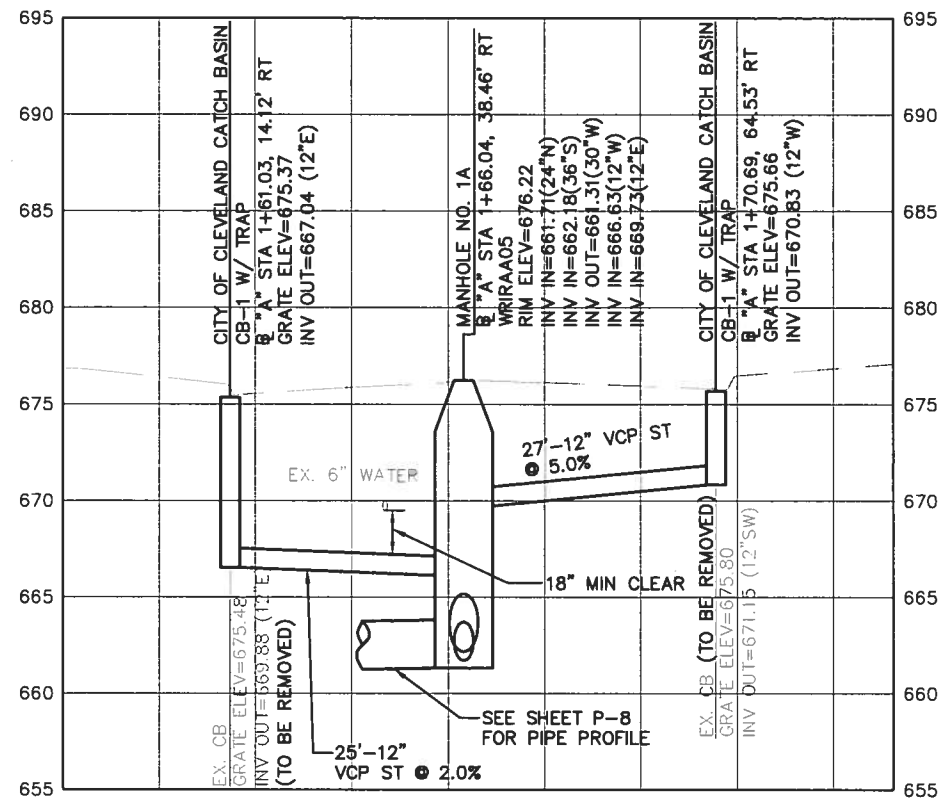
CROWN AVE / W. 14TH ST. STORM SEWER CONNECTION PLAN & PROFILE

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=10'H; 1"=5'V  
 SHEET NO.: P-6

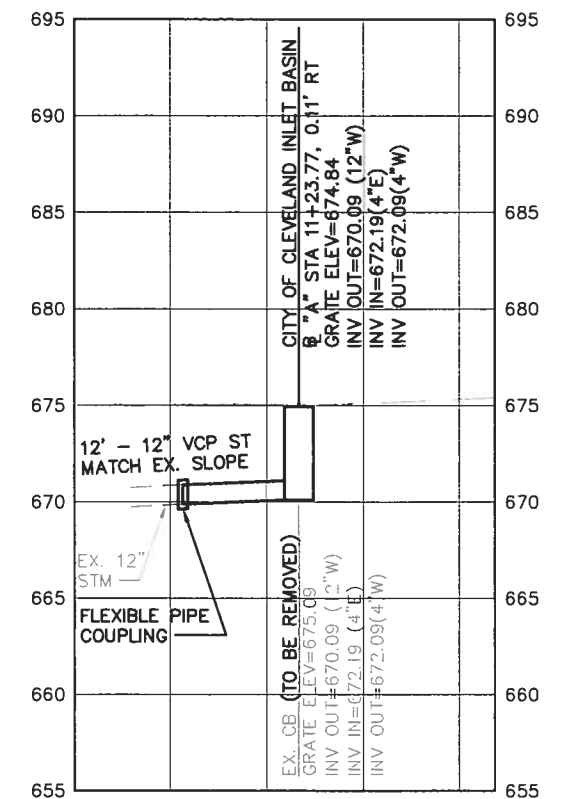
REV. NO.	DATE	ISSUE BY	REMARKS



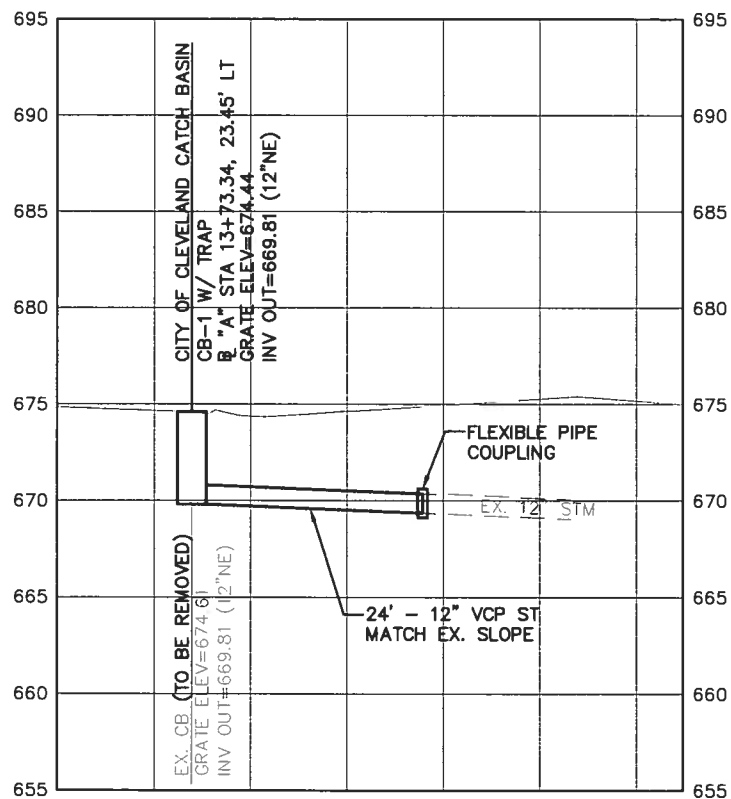
W 15TH AND ABBEY AVE CATCH BASIN CONNECTION



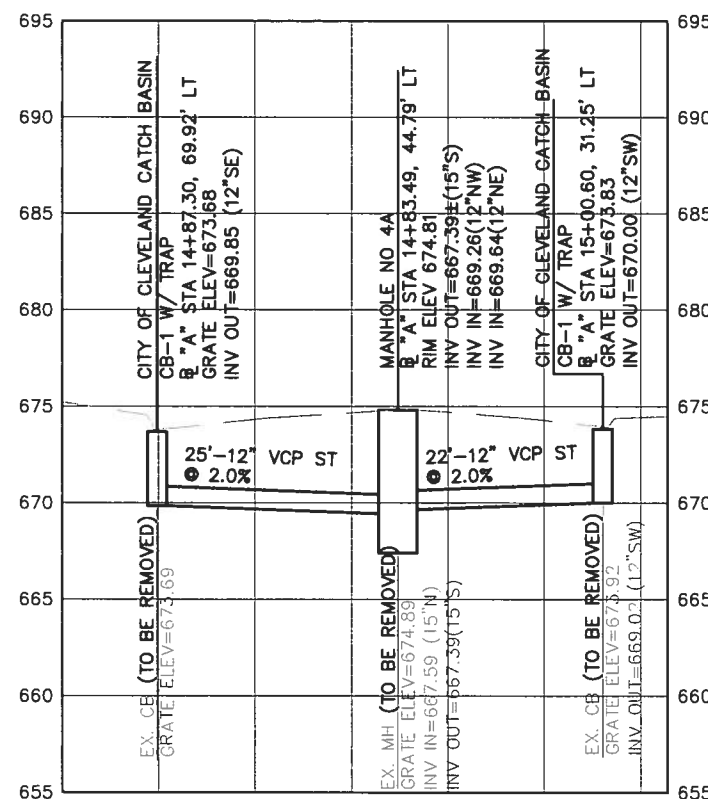
W 14TH AND FAIRFIELD AVE CATCH BASIN CONNECTIONS



W 13TH AND ABBEY AVE CATCH BASIN CONNECTIONS



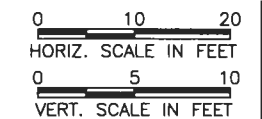
W 11TH AND ABBEY AVE CATCH BASIN CONNECTION



W 11TH AND UNIVERSITY AVE CATCH BASIN CONNECTIONS

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
P-1	WRIR MAINLINE PLAN AND PROFILE STA. 1+00 TO STA. 5+00
P-3	WRIR MAINLINE PLAN AND PROFILE STA. 10+00 TO STA. 15+00
P-4	W. 15TH ST. SAN SEWER PLAN & PROFILE STA 0+00 TO 4+00
P-5	W. 15TH ST. SAN SEWER PLAN & PROFILE STA 4+00 TO 8+00

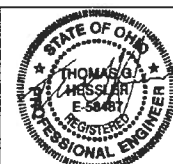
NOTE: THE CONTRACTOR SHALL CUT EXISTING SHEETING AS NECESSARY TO CONSTRUCT CATCH BASIN CONNECTIONS.



BAR IS ONE INCH ON ORIGINAL DRAWING  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: RDC  
DRAWN BY: RDC  
SHEET CHK'D BY: MCJ  
CROSS CHK'D BY: RDC  
APPROVED BY: TGH  
DATE: 6/1/10

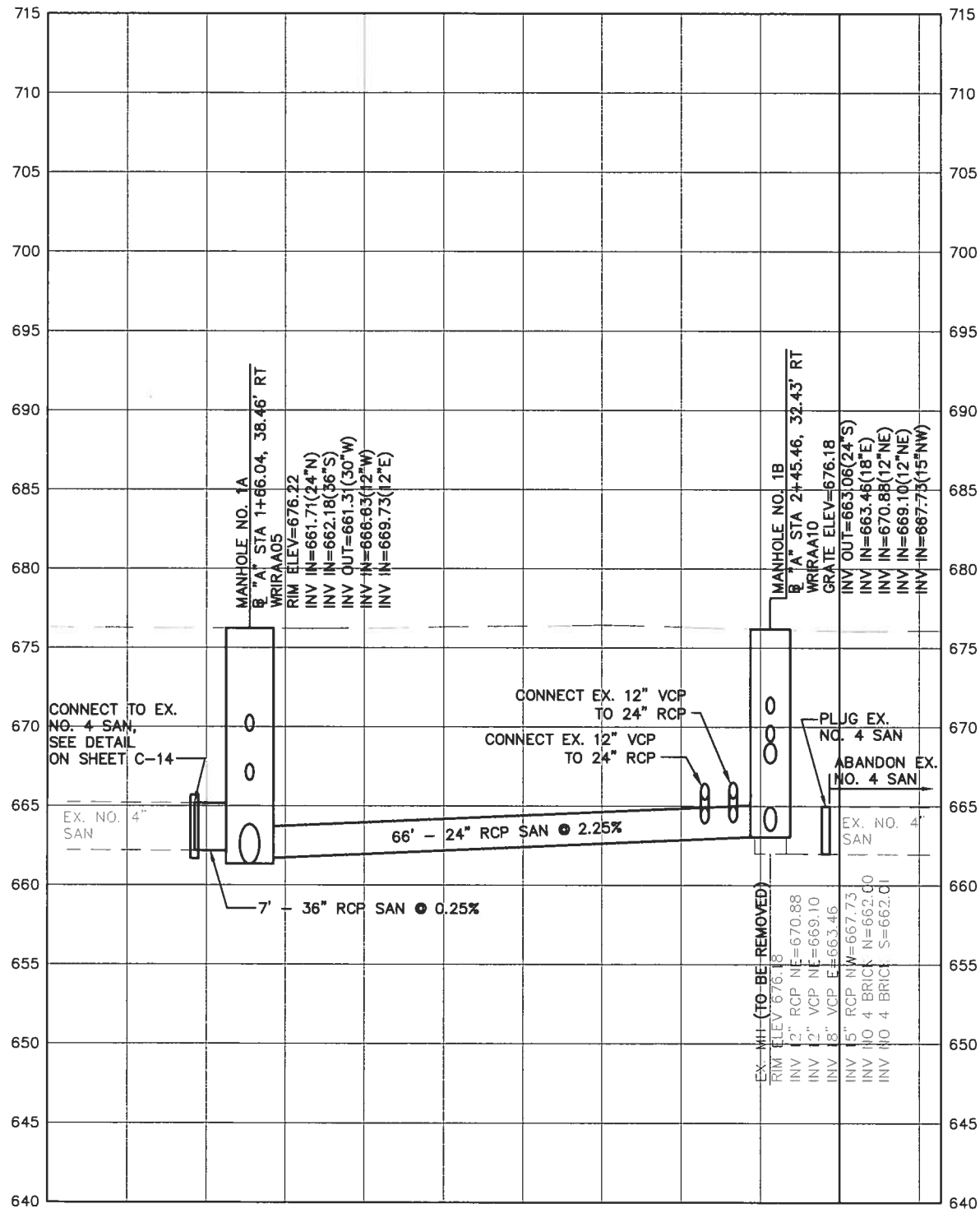


WALWORTH RUN INTERCEPTOR REALIGNMENT

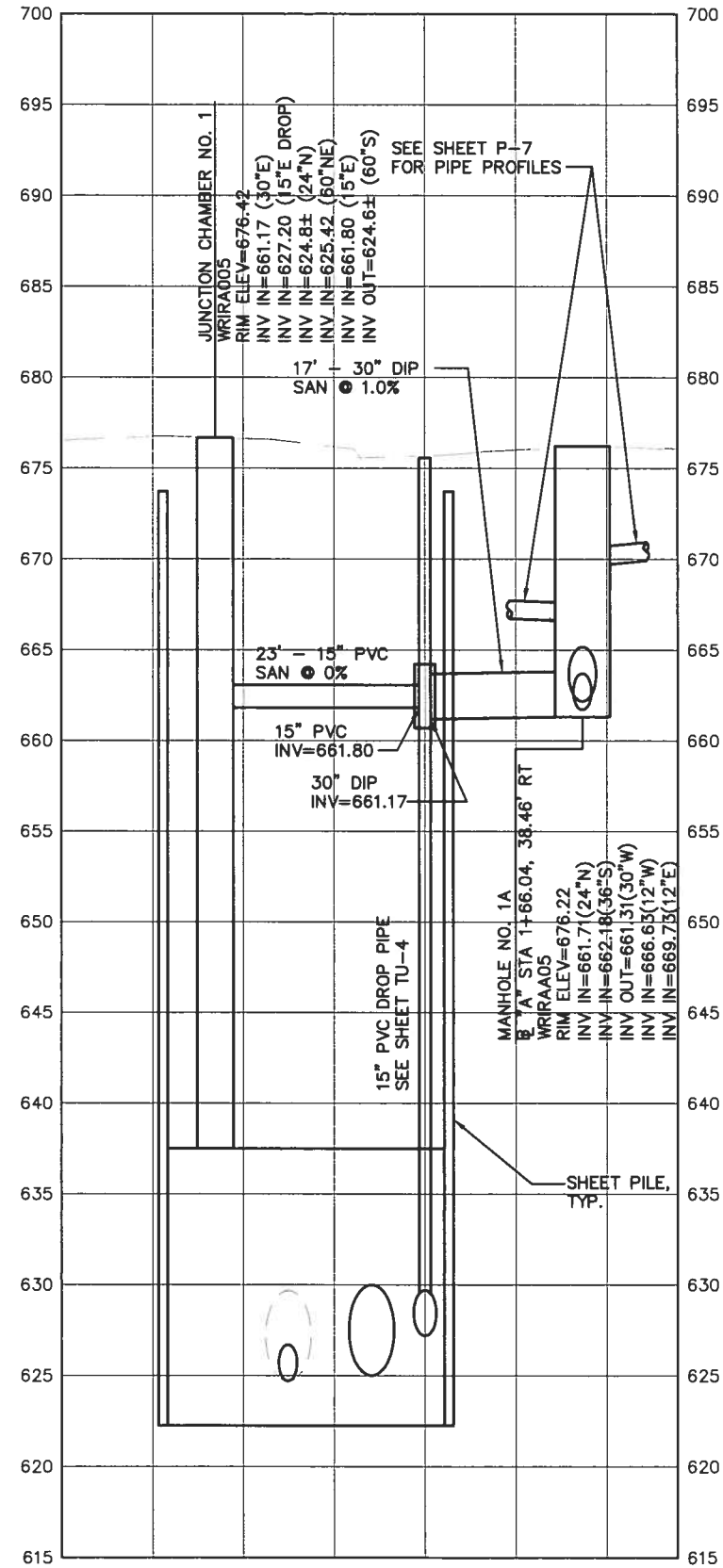
SEWER PROFILES

PROJECT NO.:  
SHEET:  
SCALE: 1"=10'H; 1"=5'V  
SHEET NO.: P-7

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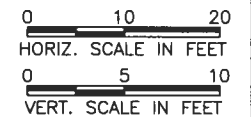


W 14TH ST. AND FAIRFIELD AVE – SEWER CONNECTION



W 14TH ST. AND FAIRFIELD AVE – CONNECTION TO JUNCTION CHAMBER 1

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
P-1	WRIR MAINLINE PLAN AND PROFILE STA. 1+00 TO STA. 5+00



BAR IS ONE INCH ON ORIGINAL DRAWING  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: MSE  
 DRAWN BY: RDC  
 SHEET CHK'D BY: MSE  
 CROSS CHK'D BY: RDC  
 APPROVED BY: JGH  
 DATE: 6/11/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

SEWER PROFILES

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=10'H; 1"=5'V  
 SHEET NO.: P-8



STMH #1708  
TOC=675.75  
INV 12" CMP S=672.15  
INV 12" VCP SW=670.35  
INV 12" VCP W=667.55  
INV 12" VCP SE (TO #1677)=667.65  
INV 12" VCP N=669.35

INCB #1829  
TOC=675.22  
INV 12" VCP SE (TO #2549)=670.57

INCB #1721  
TOC=673.55  
DARK - LITTLE LIGHT  
INV 12" RCP N (TO #1722)=666.94

INCB #1798  
TOC=674.53  
W13-01  
INV 12" VCP S (TO #1832)=663.68  
INV 12" VCP NE (TO #1799)=663.59  
INV 12" VCP E=666.56  
INV 12" VCP W=666.38

SMH #1799  
TOC=674.42  
UN-04  
INV 12" VCP SW (TO #1798)=662.97  
INV 15" VCP E (TO #2283)=662.67  
INV 12" VCP SE=664.87  
INV 12" VCP SW=669.62  
INV 4" VCP NE=670.12  
INV 12" VCP W=666.77

INCB #1826  
TOC=675.09  
INV 4" VCP W=672.09  
INV 4" VCP E=672.19  
INV 12" VCP W=670.09

INCB #1830  
TOC=675.09  
INV 12" VCP NW (TO #2549)=670.09

INCB #1831  
TOC=675.11  
INV 4" VCP E=672.61  
INV 12" VCP W=671.31

INCB #1991  
TOC=674.52  
INV 12" VCP SE (TO #1990)=670.62  
INV 12" VCP E=669.62

INCB #1992  
TOC=674.61  
INV 12" VCP NE=669.81

SMH #2086  
TOC=677.41  
FLOW NOT MOVING DEBRIS  
INV 2.25 x 1.94" BRICK N (TO #2288)=665.36  
INV 2.25 x 1.94" BRICK S=665.36

SMH #2131  
TOC=675.35  
DID NOT OPEN - CRACKED LID

SMH #2227  
TOC=675.00  
COULD NOT OPEN - SEALED SHUT

INCB #2282  
TOC=674.01  
INV 12" VCP E (TO #2283)=669.46

SMH #2283  
TOC=674.64  
UN-03  
INV 18" VCP E (TO #2356)=661.94  
INV 15" VCP W (TO #1799)=661.99  
INV 12" VCP SW=667.99  
INV 12" VCP NW=666.04

INCB #2286  
TOC=673.69  
FILLED TO TOP OF STRUCTURE

INCB #2287  
TOC=673.92  
INV 12" VCP SW=669.02

SMH #2288  
TOC=674.89  
W11-01  
INV 15" VCP N (TO #2131)=667.59  
INV 15" VCP S (TO #?)=667.39

SMH #2289  
TOC=674.25  
UN-02  
INV 60" BRICK SE (TO #?)=633.25  
INV 60" BRICK NW (TO #2131)=633.15

INCB #2290  
TOC=673.93  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=667.38

IGS #2300  
TOC=675.20  
FILLED TO TOP OF STRUCTURE

IGS #2301  
TOC=673.40  
FILLED TO TOP OF STRUCTURE

SMH #2302  
TOC=678.88  
AB-01  
INV 12" VCP SW=668.23  
INV 12" VCP E=668.33  
INV 15" VCP SE=668.98  
INV 12" VCP SW=674.33  
INV 12" VCP NW=673.38  
INV 6" (?) PVC NW=668.76

SMH #2303  
TOC=674.57  
W14-01  
INV 12" VCP N=667.27  
INV 12" RCP NE=668.37  
INV 15" VCP E=665.07  
INV 12" VCP E=661.67  
INV 48" BRICK S=657.97  
INV 12" VCP SW=668.57  
INV 48" BRICK NW=657.97

SMH #2304  
TOC=674.06  
W14-02  
INV 45 x 35.4" BRICK N (TO #2306)=657.71  
INV 45 x 35.4" BRICK SE (TO #2303)=657.81  
INV 12" VCP SW=661.06

INCB #2305  
TOC=673.68  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=668.78

SMH #2306  
TOC=674.23  
CR-03  
INV 24" BRICK N=654.23  
INV 24" BRICK S=654.53  
INV 15" VCP W=658.63  
INV 36" VCP E=651.93 (DWO)

SMH #2307  
TOC=674.18  
CR-02  
INV 12" VCP NE=668.48  
INV 12" VCP W=659.68  
INV 15" VCP SE=659.73

INCB #2308  
TOC=673.35  
INV 12" VCP SW=668.43

SMH #2310  
TOC=674.65  
W14-03  
INV 36" BRICK N (TO #?)=651.70  
INV 36" BRICK SW (TO #2306)=652.00

SMH #2311  
TOC=673.97  
UN-06  
INV 38" BRICK NE=650.37  
INV 38" BRICK SW=650.52  
INV 12" VCP SE=669.97

IGR #2312  
TOC=673.36  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=670.36

SMH #2313  
TOC=673.89  
UN-05  
INV 60" BRICK NE (TO #2289)=630.89  
INV 60" BRICK NW=630.69  
INV 12" RCP SW=649.89

SMH #2340  
TOC=678.10  
W15-01 START OF RUN  
INV 15" VCP S (TO #2344)=667.90

SMH #2341  
TOC=676.99  
CR-01  
INV 12" VCP S (TO #?)=670.49  
INV 12" VCP E (TO #2307)=669.49

SMH #2342  
TOC=673.66  
UN-07 START OF RUN  
INV 18" VCP NW=666.46

INCB #2343  
TOC=674.81  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=670.46

SMH #2344  
TOC=677.11  
W15-02  
INV 12" VCP N (TO #2340)=665.86  
INV 15" VCP S (TO #W15-03 ?)=665.76  
INV 12" VCP NE=667.46  
INV 12" VCP NE=667.61

SMH #2356  
TOC=674.18  
UN-01  
INV 18" VCP W (TO #2283)=659.68  
INV 18" VCP SE (TO #?)=659.78  
INV 12" VCP SW=668.28  
INV 10" VCP NE=664.78  
INV 4" VCP N=669.58

SMH #2520  
TOC=661.01  
UN-09  
INV 18" VCP E=654.91  
INV 6" VCP NE=658.81  
INV 18" VCP W=654.91

SMH #2521  
TOC=651.79  
UN-10  
INV 18" VCP NE (TO #2520)=645.49  
INV 27 x 23.3" BRICK SE=638.21  
INV 27 x 23.3" BRICK NW=638.21

SMH #2522  
TOC=641.23  
UN-11  
INV 24" BRICK E (TO #2521)=626.98  
INV 18" VCP S (TO #?)=627.28  
INV 24" BRICK W=626.63

SMH #2523  
TOC=634.47  
UN-12  
INV 24" VCP E (TO #2522)=619.02  
INV 6" VCP S (TO #?)=623.87  
INV 24" VCP E=618.77

SMH #2524  
TOC=648.48  
UN-08 STRUCTURE NOT INSPECTED  
NO REPORT

IGS #2548  
TOC=675.82  
FILLED TO TOP OF STRUCTURE

STMH #2549  
TOC=675.42  
INV 12" VCP SE (TO #1830)=669.67  
INV 12" VCP NW (TO #1829)=669.02  
INV 12" VCP S (TO #1832)=664.92  
INV 12" VCP N=664.92

INCB #2761  
TOC=678.51  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=676.01

INCB #2762  
TOC=678.56  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=675.56

INCB #2817  
TOC=677.70  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.70

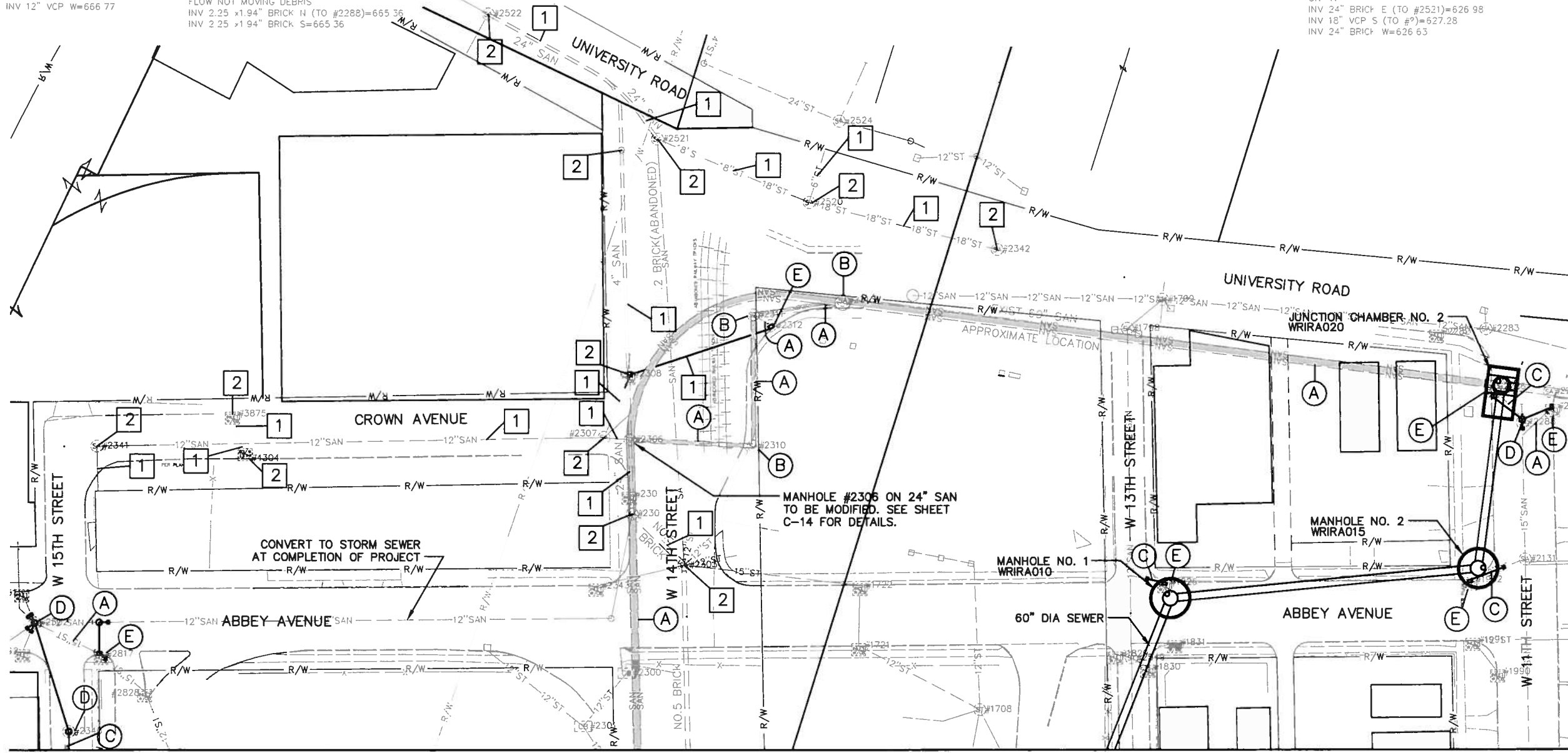
INCB #2828  
TOC=677.23  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=673.23

STMH #2963  
TOC=677.76  
OUTSIDE PROJECT LIMITS NO REPORT NEEDED

STMH #2964  
TOC=678.12  
OUTSIDE PROJECT LIMITS NO REPORT NEEDED

SMH #2965  
TOC=678.17  
14-B  
INV 60" BRICK N (TO #2966)=620.37  
INV 60" BRICK S (TO #?)=620.32  
INV 6" VCP SW=673.37

SMH #2966  
TOC=677.53  
INV 60" BRICK N (TO #1353)=622.28  
INV 60" BRICK S (TO #2965)=622.23

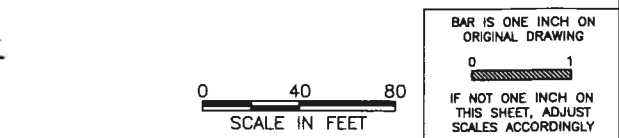


CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-14	TYPICAL MANHOLE ABANDONMENT AND MH 2306 MODIFICATIONS

- LEGEND FOR CONTRACT WORK**
- (A) ABANDON PIPE IN PLACE. BULKHEAD EXPOSED ENDS.
  - (B) ABANDON MANHOLE. REMOVE CASTING AND STRUCTURE TO A MINIMUM TWO (2) FEET BELOW GRADE. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS. BACKFILL TO GRADE.
  - (C) REMOVE PIPE. PLUG EXPOSED ENDS WHERE SHOWN.
  - (D) REMOVE AND REPLACE MANHOLE
  - (E) REMOVE AND REPLACE CATCH BASIN

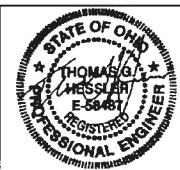
- NOTES FOR CONTRACT WORK**
1. INSTALL CONCRETE BULKHEAD AT MANHOLE #2306 DRY WEATHER OUTLET TO 36" SANITARY SEWER, MAINTAIN FLOW IN 24" SANITARY SEWER.

- LEGEND FOR FUTURE WORK (BY OTHERS)**
- 1 ABANDON, REMOVE, OR REPLACE PIPE.
  - 2 ABANDON, REMOVE, OR REPLACE MANHOLE/ CATCH BASIN.



MATCH LINE SEE SHEET C-2  
PLAN

DESIGNED BY: EDS	DATE: 6/1/10		
DRAWN BY: SS			
SHEET CHK'D BY: MSE			
CROSS CHK'D BY: EDS			
APPROVED BY: TGH			
REV. NO.	DATE	ISSUE BY	REMARKS

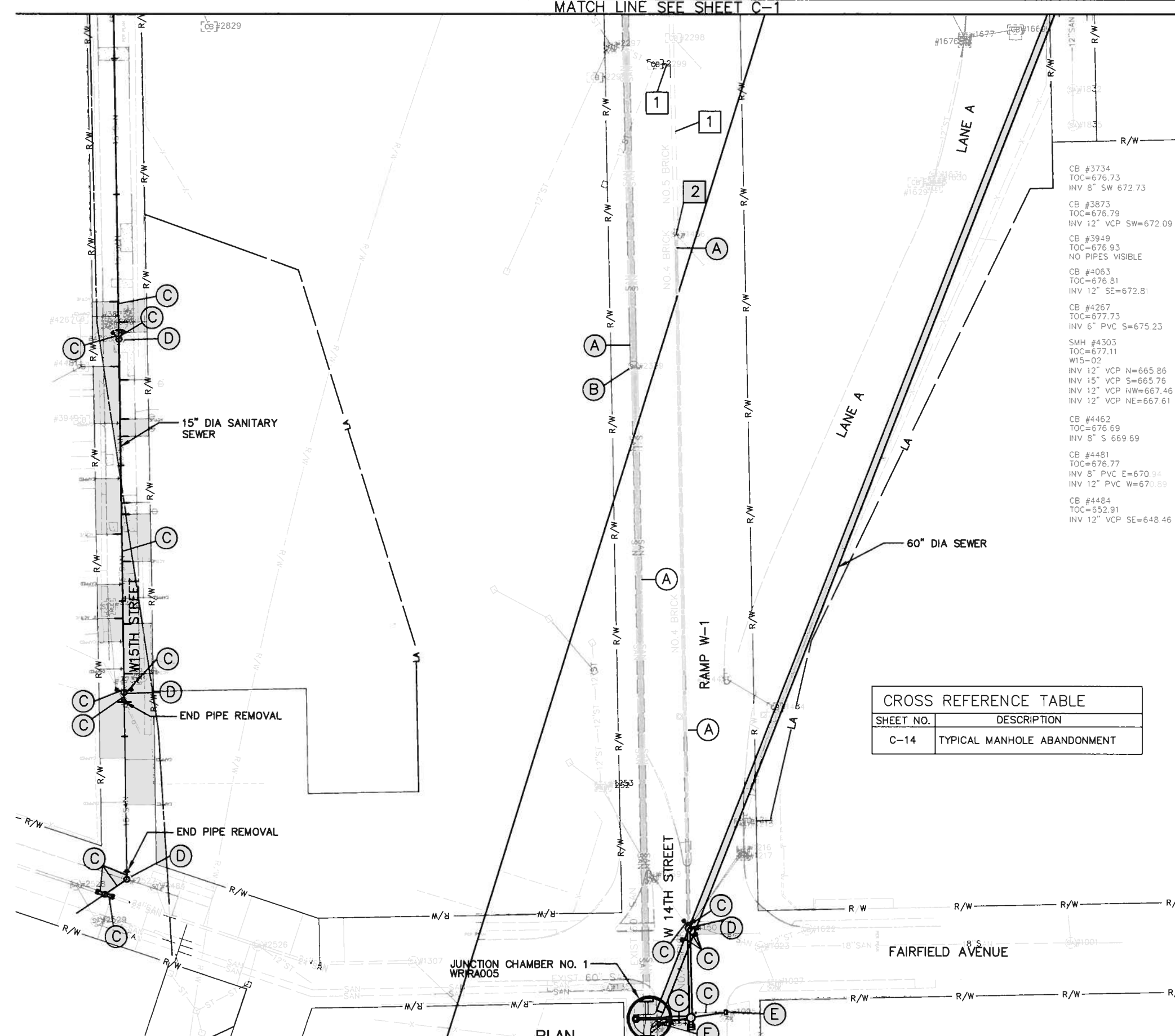


WALWORTH RUN INTERCEPTOR REALIGNMENT

NORTHERN SEWER ABANDONMENT PLAN

PROJECT NO.:	
SHEET: X	
SCALE: 1"=40'	
SHEET NO.: C-1	

MATCH LINE SEE SHEET C-1

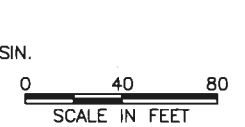


SMH #1001 TOC=679.65 FAIR-01 INV 18" VCP E=664.35 INV 18" VCP W=664.40 INV 12" VCP NW=669.95	INCB #1334 TOC=675.48 MEASUREMENT +/- BOTTOM OF STRUCTURE=669.88	SMH #1456 TOC=675.49 U90-01 INV 44.4 x 35.4" BRICK NW=659.39 INV 41.4 x 30.5" BRICK SE=659.64 INV 12" VCP SE=672.57	SMH #1456 TOC=675.49 U90-01 INV 44.4 x 35.4" BRICK NW=659.39 INV 41.4 x 30.5" BRICK SE=659.64 INV 12" VCP SE=672.57	SMH #1456 TOC=675.49 U90-01 INV 44.4 x 35.4" BRICK NW=659.39 INV 41.4 x 30.5" BRICK SE=659.64 INV 12" VCP SE=672.57	SMH #1456 TOC=675.49 U90-01 INV 44.4 x 35.4" BRICK NW=659.39 INV 41.4 x 30.5" BRICK SE=659.64 INV 12" VCP SE=672.57
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CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-14	TYPICAL MANHOLE ABANDONMENT

- LEGEND FOR CONTRACT WORK**
- (A) ABANDON PIPE IN PLACE. BULKHEAD EXPOSED ENDS.
  - (B) ABANDON MANHOLE. REMOVE CASTING AND STRUCTURE TO A MINIMUM TWO (2) FEET BELOW GRADE. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS. BACKFILL TO GRADE WITH CLSM.
  - (C) REMOVE PIPE. PLUG EXPOSED ENDS WHERE SHOWN
  - (D) REMOVE AND REPLACE MANHOLE
  - (E) REMOVE AND REPLACE CATCH BASIN
- INDICATES LIMITS OF PROPOSED ABANDONMENT

- LEGEND FOR FUTURE WORK (BY OTHERS)**
- 1 ABANDON, REMOVE, OR REPLACE PIPE.
  - 2 ABANDON, REMOVE, OR REPLACE MANHOLE/ CATCH BASIN.



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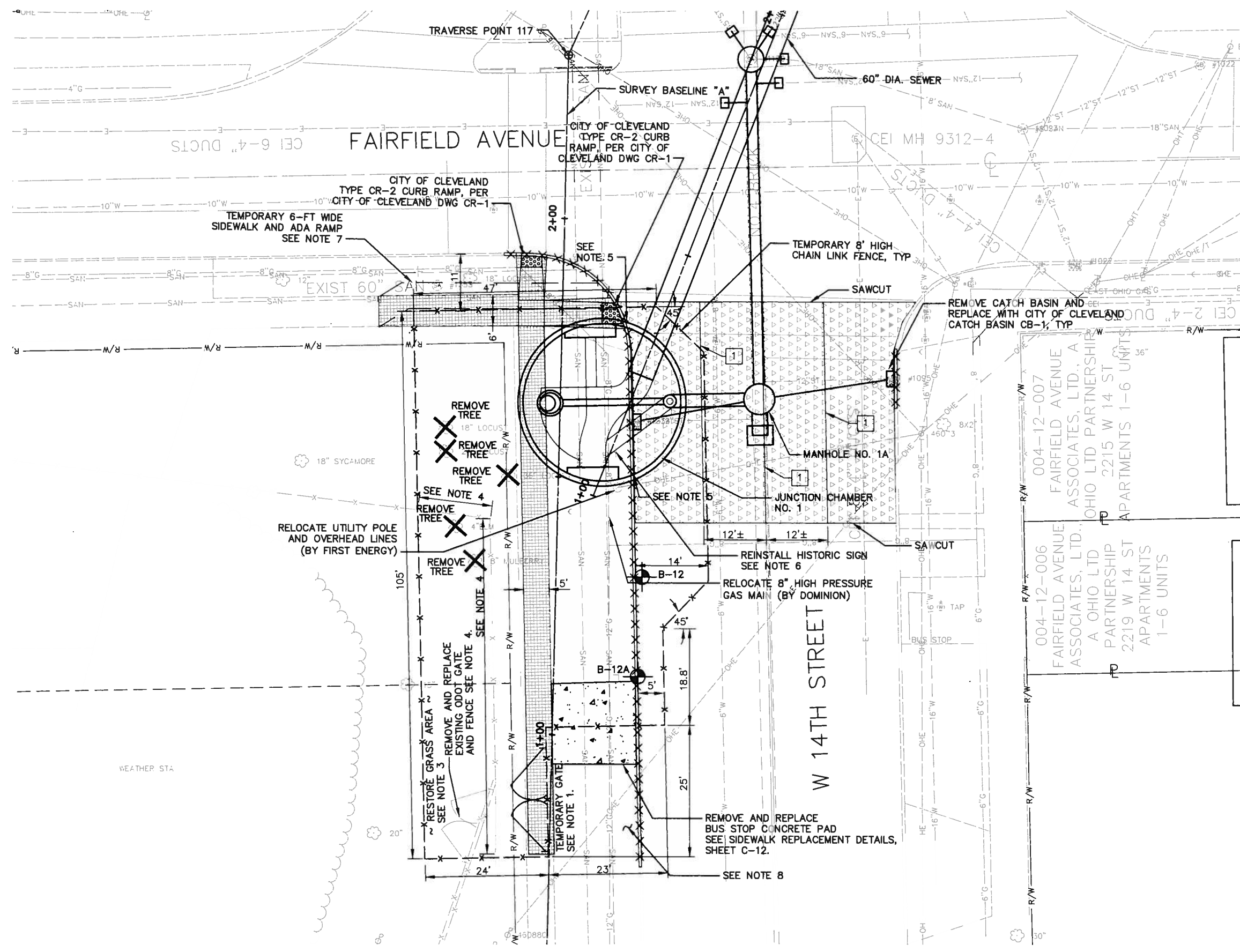
DESIGNED BY: EDS	DATE: 6/1/10
DRAWN BY: SS	
SHEET CHK'D BY: MSE	
CROSS CHK'D BY: EDS	
APPROVED BY: IGH	
REMARKS	

WALWORTH RUN INTERCEPTOR REALIGNMENT

SOUTHERN SEWER ABANDONMENT PLAN

PROJECT NO.:  
SHEET: X  
SCALE: 1"=40'  
SHEET NO.: C-2

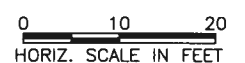




CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-12	PAVEMENT SECTIONS AND DETAILS
P-1	WRIR PLAN & PROFILE

- LEGEND**
- REMOVE AND REPLACE CURB
  - REMOVE AND REPLACE FULL-DEPTH ASPHALT PAVEMENT
  - REMOVE AND REPLACE SIDEWALK
  - LONGITUDINAL PAVEMENT JOINT

- NOTES:**
- CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATE.
  - CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATE AFTER CONSTRUCTION IS COMPLETE.
  - CONTRACTOR SHALL SEED AND MULCH ALL GRASS AREAS DISTURBED DURING CONSTRUCTION.
  - CONTRACTOR SHALL REMOVE EXISTING ODOT FENCE AND GATE DURING CONSTRUCTION. REPLACE FENCE WITH NEW ODOT TYPE CL FENCE (REF. ODOT DWG. F-1.1) UPON COMPLETION OF JUNCTION CHAMBER CONSTRUCTION. PROVIDE ONE 10-FT WIDE CHAIN LINK WALK GATE (REF. ODOT DWG. F-3.2) TO REPLACE EXISTING GATE.
  - CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  - CONTRACTOR SHALL REMOVE THE "TREMONT HISTORIC DISTRICT SIGN" AND FOUNDATION. STORE AND PROTECT THE SIGN DURING CONSTRUCTION. INSTALL A NEW FOUNDATION AND REINSTALL THE EXISTING SIGN AT OR NEAR ITS FORMER LOCATION AFTER THE CHAMBER CONSTRUCTION IS COMPLETE.
  - CONTRACTOR SHALL PROVIDE A TEMPORARY CONCRETE SIDEWALK WITH ADA RAMP DURING CONSTRUCTION. THE SIDEWALK AND RAMP SHALL BE REPLACED BY THE PERMANENT SIDEWALK AND ADA RAMP SHOWN.
  - CONTRACTOR SHALL PROVIDE A TEMPORARY GRAVEL OR PAVED ACCESS DRIVE FROM THE STREET TO THE TEMPORARY GATE. RESTORE SITE TO ORIGINAL CONDITION FOLLOWING CONSTRUCTION.



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PLAN

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 DRAWN BY: SS  
 SHEET CHK'D BY: MSE  
 CROSS CHK'D BY: EDS  
 APPROVED BY: TGH  
 DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1  
SITE PLAN

PROJECT NO.:  
SHEET: X  
SCALE: 1"=10'  
SHEET NO.: C-3

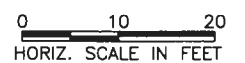
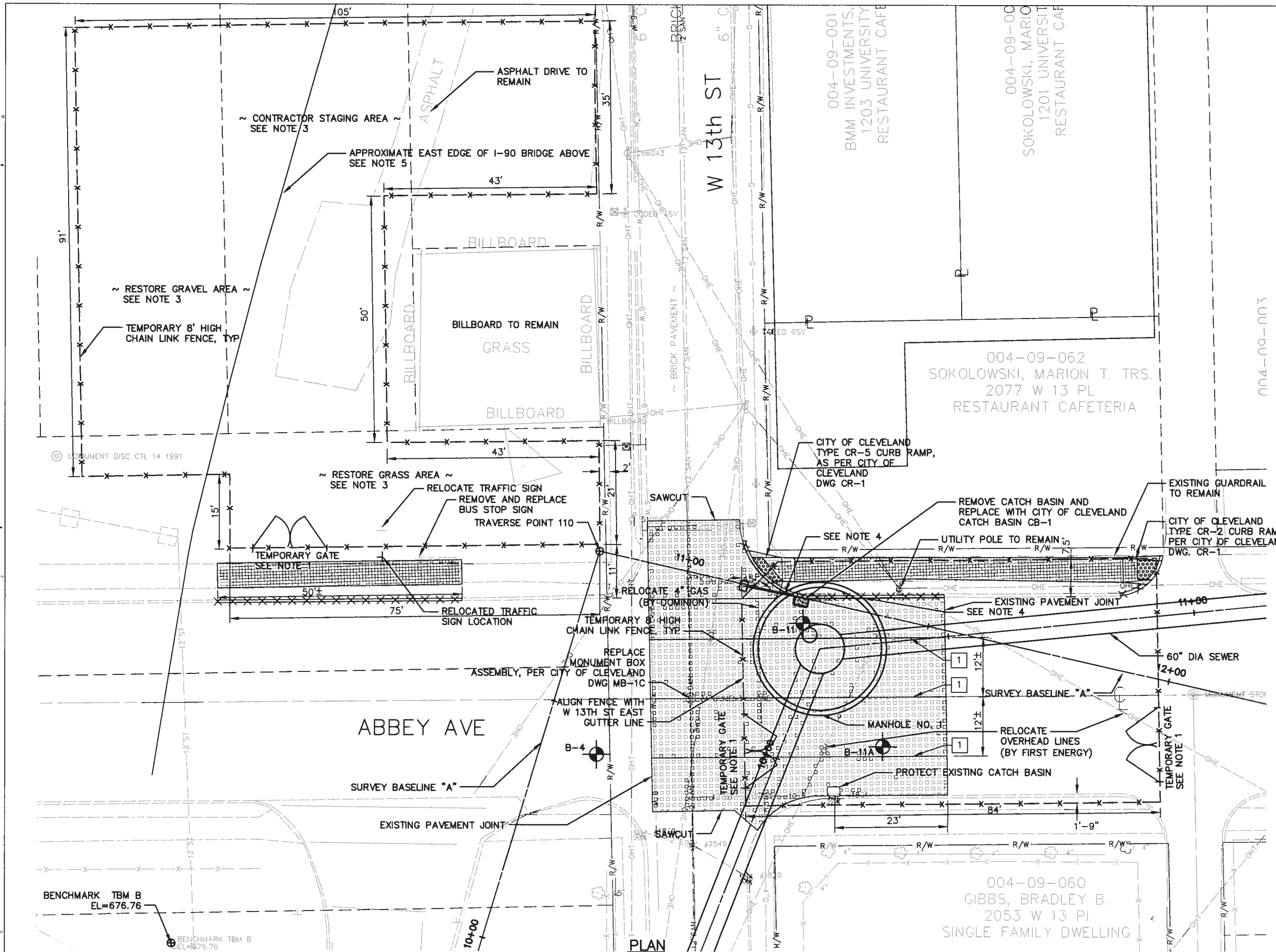


CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-12	PAVEMENT SECTIONS AND DETAILS
P-2	WRIR PLAN & PROFILE

**LEGEND**

- ✕✕✕ REMOVE AND REPLACE CURB
- [Grid Pattern] REMOVE AND REPLACE FULL-DEPTH CONCRETE PAVEMENT
- [Cross-hatch Pattern] REMOVE AND REPLACE SIDEWALK
- [Box with 1] LONGITUDINAL PAVEMENT JOINT
- [Circle with dot] SOIL BORING

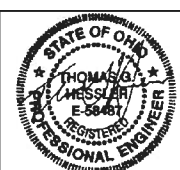
- NOTES:**
- CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATES.
  - CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATES AFTER CONSTRUCTION IS COMPLETE.
  - CONTRACTOR SHALL SEED AND MULCH ALL GRASS AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL GRAVEL AREAS DISTURBED DURING CONSTRUCTION.
  - CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  - CONTRACTOR SHALL LIMIT HIS OPERATIONS TO AVOID DAMAGE TO THE EXISTING I-90 BRIDGE. HEADROOM IS RESTRICTED BENEATH THE BRIDGE STRUCTURE.



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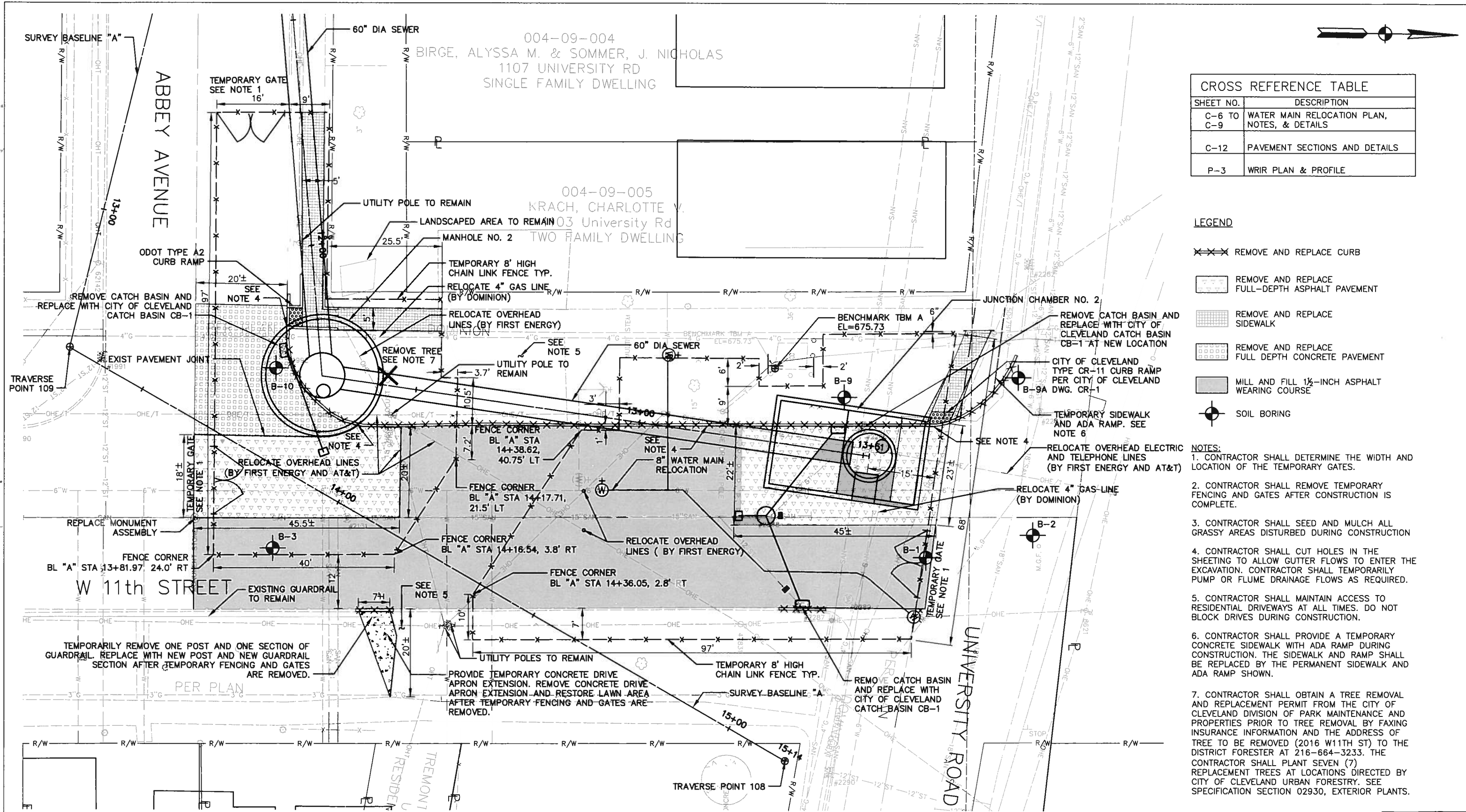
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 APPROVED BY: TGH  
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WALWORTH RUN INTERCEPTOR REALIGNMENT

MANHOLE NO. 1 SITE PLAN

PROJECT NO.:  
 SHEET: X  
 SCALE: 1"=10'  
 SHEET NO.: C-4



CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-6 TO C-9	WATER MAIN RELOCATION PLAN, NOTES, & DETAILS
C-12	PAVEMENT SECTIONS AND DETAILS
P-3	WRIR PLAN & PROFILE

**LEGEND**

- REMOVE AND REPLACE CURB
- REMOVE AND REPLACE FULL-DEPTH ASPHALT PAVEMENT
- REMOVE AND REPLACE SIDEWALK
- REMOVE AND REPLACE FULL DEPTH CONCRETE PAVEMENT
- MILL AND FILL 1/2-INCH ASPHALT WEARING COURSE
- SOIL BORING

- NOTES:**
- CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATES.
  - CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATES AFTER CONSTRUCTION IS COMPLETE.
  - CONTRACTOR SHALL SEED AND MULCH ALL GRASSY AREAS DISTURBED DURING CONSTRUCTION
  - CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO RESIDENTIAL DRIVEWAYS AT ALL TIMES. DO NOT BLOCK DRIVES DURING CONSTRUCTION.
  - CONTRACTOR SHALL PROVIDE A TEMPORARY CONCRETE SIDEWALK WITH ADA RAMP DURING CONSTRUCTION. THE SIDEWALK AND RAMP SHALL BE REPLACED BY THE PERMANENT SIDEWALK AND ADA RAMP SHOWN.
  - CONTRACTOR SHALL OBTAIN A TREE REMOVAL AND REPLACEMENT PERMIT FROM THE CITY OF CLEVELAND DIVISION OF PARK MAINTENANCE AND PROPERTIES PRIOR TO TREE REMOVAL BY FAXING INSURANCE INFORMATION AND THE ADDRESS OF TREE TO BE REMOVED (2016 W11TH ST) TO THE DISTRICT FORESTER AT 216-664-3233. THE CONTRACTOR SHALL PLANT SEVEN (7) REPLACEMENT TREES AT LOCATIONS DIRECTED BY CITY OF CLEVELAND URBAN FORESTRY. SEE SPECIFICATION SECTION 02930, EXTERIOR PLANTS.

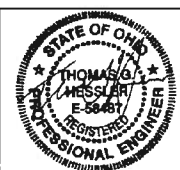
**PLAN**



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 APPROVED BY: TGH  
 DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

MANHOLE NO. 2 AND JUNCTION CHAMBER NO. 2 SITE PLAN

PROJECT NO.:  
 SHEET:  
 SCALE: 1"=10'  
 SHEET NO.: C-5

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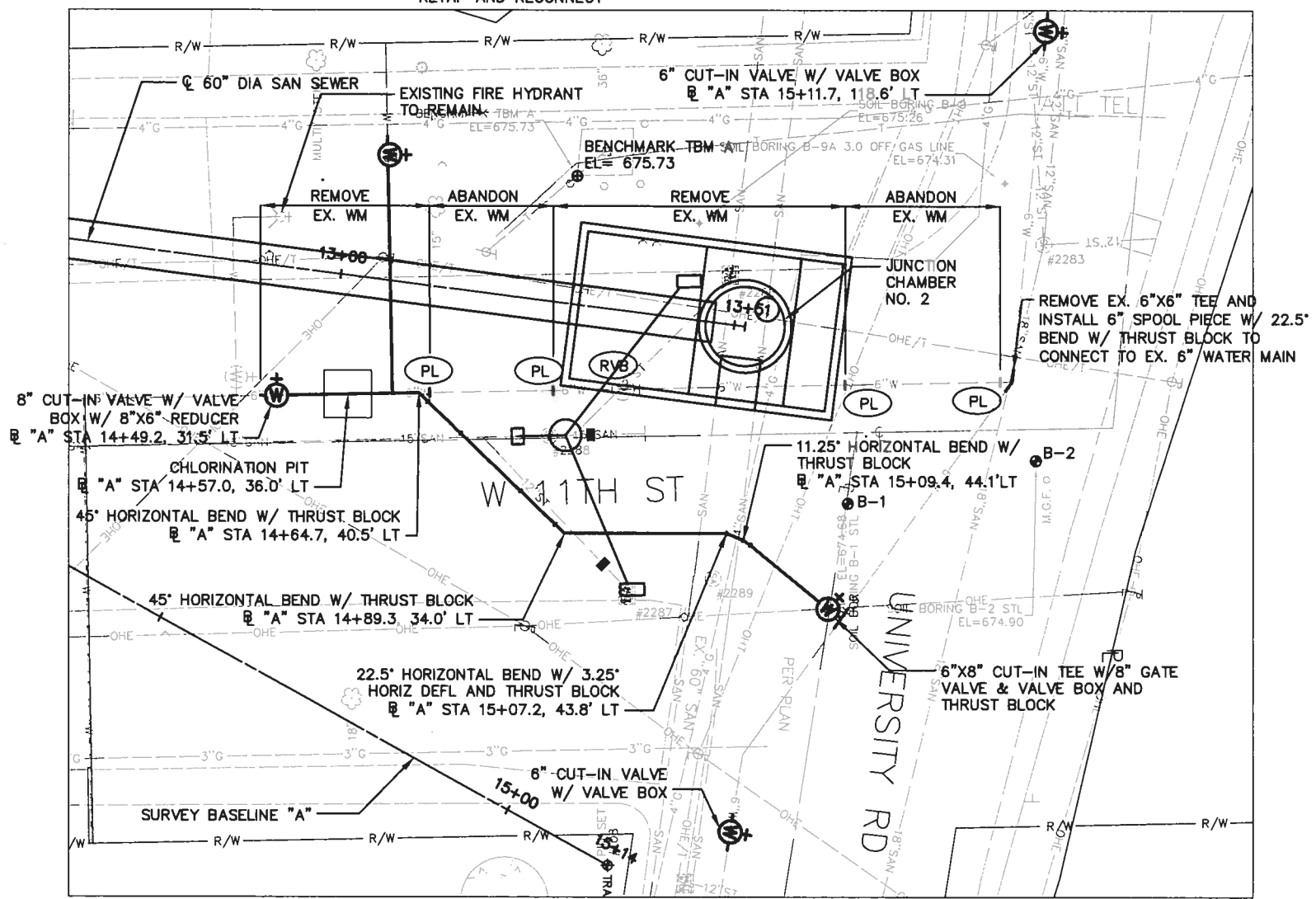
**CLEVELAND DIVISION OF WATER NOTES FOR NEW WATER MAIN INSTALLATION**

CONTRACTOR IS TO ABIDE BY THE MOST CURRENT VERSION OF THE CLEVELAND, DIVISION OF WATER NOTES AND DETAILS. THE MOST UP-TO-DATE VERSION CAN BE FOUND AT WWW.CLEVELANDWATER.COM.

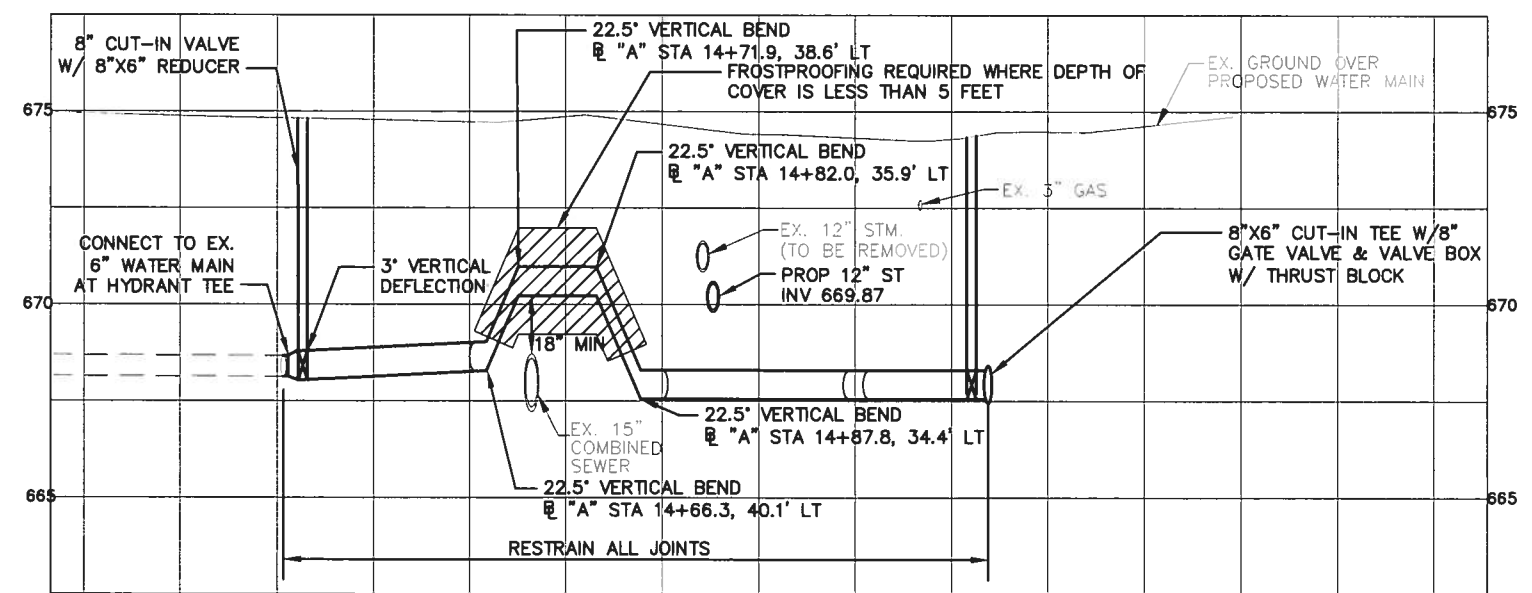
**GENERAL:**

1. THE INFORMATION SHOWN ON THE CLEVELAND DIVISION OF WATER'S SUMMARY OF WORK/CHARGE LETTER AND STRIP MAPS IS TAKEN FROM EXISTING AVAILABLE RECORDS, AND THEIR ACCURACY IS NOT GUARANTEED.
2. CALL THE INSPECTION AND ENFORCEMENT UNIT AT 216-664-2342 TO SCHEDULE A PRECONSTRUCTION MEETING. THE OPERATION OF ANY VALVE OR ALTERATION OF ANY PART OF THE WATER SYSTEM BY CONTRACTORS OR THEIR EMPLOYEES IS PROHIBITED WITHOUT THE SUPERVISION OF THE CLEVELAND DIVISION OF WATER INSPECTOR.
3. THE MUNICIPALITY SHALL REQUIRE THAT THE PROJECT'S PROFESSIONAL ENGINEER OBTAIN ACTUAL FIELD MEASUREMENTS OF THE MAIN DURING INSTALLATION AND SHALL FURNISH THE CWD INSPECTOR WITH RECORD PRINTS IN A FORM ACCEPTABLE TO THE DIVISION OF WATER. THE CLEVELAND DIVISION OF WATER WILL REQUIRE THE DELIVERY AND ACCEPTANCE OF TWO COPIES OF RECORD (AS BUILT) PRINTS, STAMPED BY A PROFESSIONAL ENGINEER, BEFORE THE PRESSURE TEST AND CHLORINATION OF THE MAIN.
4. FOR THE PURPOSES OF CHLORINATION AND BACTERIOLOGICAL TESTING OF THE WATER MAINS THE CONTRACTOR SHALL PROVIDE AND INSTALL, AT EACH OF THE CHLORINATION PIT LOCATIONS SHOWN AND AT OTHER LOCATIONS DETERMINED BY THE DIVISION OF WATER, FLUSHING/SAMPLING TAPS OF SIZES TO BE DETERMINED BY THE DIVISION OF WATER. CHLORINATION PITS SHALL BE SIX (6) FOOT SQUARE MEETING OSHA STANDARDS.
5. A TWO YEAR WARRANTY, COMMENCING FROM THE DATE OF ACCEPTANCE OF THE FINAL CHLORINATION OF THE WATER MAIN INSTALLATION, SHALL BE PROVIDED BY THE BUILDER/DEVELOPER AND/OR CONTRACTOR FOR ALL WATER MAINS AND SERVICE CONNECTION WORK PERFORMED BY THE CONTRACTOR, INCLUDING RETAPS, SHOULD ANY LEAKS OCCUR AND REPAIRS BE REQUIRED DUE TO DEFECTIVE MATERIAL OR POOR WORKMANSHIP.
6. USE BACKFILL MATERIAL AS SPECIFIED AND COMPACT SUFFICIENTLY IN THOSE AREAS WHERE EXISTING MAINS AND WATER SERVICE CONNECTIONS ARE EXPOSED. (SEE DIVISION OF WATER STANDARD DETAIL STD-001).
7. ALL MATERIALS, INCLUDING BUT NOT LIMITED TO WATER MAINS, FIRE HYDRANTS, VALVES, CONNECTION MATERIALS AND OTHER WATER APPURTENANCES, SHALL BE NEW AND UNUSED AND SHALL CONFORM TO THE MOST CURRENT DIVISION OF WATER SPECIFICATIONS. ALL MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH DIVISION OF WATER'S STANDARDS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING WATER MAINS AND APPURTENANCES THEREOF WHEN CONNECTING THE NEW WATER MAIN FOR THE HYDROSTATIC TEST. ALL REPAIRS TO DAMAGED EXISTING FACILITIES SHALL BE MADE BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, TO THE SATISFACTION OF THE DIVISION OF WATER. (REFER TO THE THE ALTERNATE TEST DETAIL STD-002 AS NEEDED).
9. ALL HYDROSTATIC PRESSURE TESTING SHALL BE DONE BY THE CONTRACTOR IN THE PRESENCE OF THE DIVISION OF WATER'S INSPECTOR. THE HYDROSTATIC TEST PRESSURE SHALL BE 75 PSI ABOVE THE STATIC PRESSURE PREVAILING AT THE SITE, BUT IN NO CASE LESS THAN 150 PSI. THE PRESSURE TEST SHALL BE FOR A DURATION OF TWO (2) HOURS WITH THE PRESSURE BEING MAINTAINED WITHIN 5 PSI OF THE REQUIRED TEST PRESSURE. SHOULD THE PRESSURE TEST FAIL, THE CONTRACTOR SHALL FIND AND CORRECT THE DEFICIENCY(IES) TO THE SATISFACTION OF THE DIVISION OF WATER AND REPEAT THE TWO (2) HOUR PRESSURE TEST.
- 10A. ALL PIPE, UNLESS OTHERWISE CALLED FOR, SHALL BE DUCTILE IRON, MINIMUM CLASS 52, CEMENT LINED HAVING PUSH-ON JOINTS WITH RADIALLY COMPRESSED RUBBER RING GASKET AND INSTALLED AS PER THE MOST CURRENT REVISION OF AWWA C600.
- 10B. ALL FITTINGS, UNLESS OTHERWISE CALLED FOR, SHALL BE APPROVED DUCTILE IRON, CLASS 350, CEMENT LINED OR FUSION BONDED EPOXY COATED. ALL FITTINGS AND PIPE CONNECTED TO FITTINGS SHALL BE RESTRAINED USING A "RETAINED" MECHANICAL JOINT CONFORMING TO THE MATERIAL AND PERFORMANCE REQUIREMENTS OF ANSI/AWWA C-110/A21.10 AND ANSI/AWWA C-111/A21.11, OR "COMPACT" FITTINGS IN ACCORDANCE WITH ANSI/AWWA C-153/A21.53. EXCEPT FOR ANCHOR TEES, REDUCERS OR OTHER SPECIAL CIRCUMSTANCES WHEN DIRECTED BY CLEVELAND DIVISION OF WATER, ALL FITTINGS ARE TO HAVE BELL ENDS.
- 10C. ALL BOLTS AND NUTS ON ALL "RETAINED" MECHANICAL JOINTS SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".
- 10D. WHERE SHOWN ON THE PLANS, OR WHEN OTHERWISE CALLED FOR, PIPE AND FITTINGS SHALL HAVE AN APPROVED "TYPE I" OR "TYPE II" BOLTLESS RESTRAINED PUSH-ON JOINTS TO THE LIMITS SHOWN ON THE DRAWINGS.

CR-1 ADDRESS #1103 UNIVERSITY  
1" WSC #4775  
RETAP AND RECONNECT

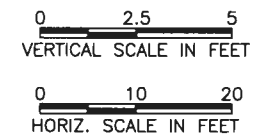


PLAN



PROFILE ALONG WATER MAIN/W 11TH ST

- LEGEND**
- CR-1 REPLACE EXISTING CONNECTION, SHORT SIDE, (1" AND UNDER) WITH 1" COPPER CONNECTION, INCLUDING CURB VALVE AND VALVE BOX
  - PL PLUG EXISTING WATER MAIN END
  - RVB REMOVE VALVE AND VALVE BOX



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DESIGNED BY: EDS	DATE: 6/1/10
DRAWN BY: SS	
SHEET CHK'D BY: MCJ	
CROSS CHK'D BY: EDS	
APPROVED BY: TGH	
REV. NO.	DATE
ISSUE BY	REMARKS



WALWORTH RUN INTERCEPTOR REALIGNMENT

WATER MAIN RELOCATION PLAN AND NOTES

PROJECT NO.:	
SHEET:	
SCALE:	1"=10'
SHEET NO.:	C-6



**CLEVELAND DIVISION OF WATER NOTES FOR NEW WATER MAIN INSTALLATION (CONTINUED)**

- 10. AT THE END OF EACH WORKDAY, THE CONTRACTOR SHALL PLUG ALL OPEN PIPE ENDS WITH WATER TIGHT PLUGS AS PER THE "PREVENTITIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION" SECTION OF THE MOST CURRENT REVISION OF AWWA C-651 AS TO PREVENT THE INFILTRATION OR INTRUSION OF ANY FOREIGN OBJECTS OR MATERIALS. DATE STAMPED DIGITAL PHOTOS SHALL BE PROVIDED FOR EACH WORKDAY DEMONSTRATING THAT PROPER AWWA C-651 METHODS WERE USED TO PLUG ALL OPEN WATER MAIN ENDS. EACH PHOTO SHALL CLEARLY IDENTIFY THE STATION AT WHICH THE PIPE IS PLUGGED. THE STATIONING SHALL BE SHOWN BY THE USE OF A STATION MARKER PLACED AT THE PLUGGED PIPE END.  
  
PHOTOS SHALL BE SUBMITTED ON A DAILY BASIS UNLESS OTHERWISE DEFINED BY THE CWD INSPECTOR OR ENGINEER. ALL PHOTOS TAKEN OVER THE COURSE OF THE PROJECT SHALL BE SUBMITTED BY THE CONTRACTOR AS PART OF THE AS-BUILT SUBMITTAL. AS-BUILTS SHALL BE CONSIDERED INCOMPLETE WITHOUT SAID COLLECTION OF DIGITAL PHOTOS.
- 11. IN ALL HYDRANT INSTALLATIONS THE CONTRACTOR SHALL FACE ALL HYDRANT'S 4" (STEAMER) NOZZLE TOWARD THE PAVEMENT PRIOR TO TESTING AND CHLORINATION OF WATER MAINS. CONTRACTOR SHALL CONSULT WITH THE LOCAL MUNICIPALITY'S ENGINEERING OR SERVICE DEPARTMENT TO OBTAIN HYDRANT MODEL AND NOZZLE THREAD REQUIREMENTS IF NOT INDICATED ON THE APPROVED PLANS.
- 12. ALL VALVES SHALL BE AN APPROVED MODEL RESILIENT SEATED GATE VALVES AS PER THE MOST CURRENT VERSION OF AWWA C509 OR C515.

**CONNECTIONS:**

- 13. WATER CONNECTIONS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY AND ARE NOT PART OF THE WATER MAIN APPROVAL. ADDITIONAL PERMITS FOR SERVICE CONNECTIONS MUST BE OBTAINED FROM THE DIVISION OF WATER PRIOR TO INSTALLATION OF ANY PORTION OF THE SERVICE CONNECTION(S). IT IS THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE FOR PERMITS FOR ALL SIZE WATER SERVICE CONNECTIONS BEFORE PERFORMING ANY WORK. THE AMOUNT OF THE CHARGES CAN BE OBTAINED FROM THE DIVISION OF WATER, PERMITS AND SALES SECTION AT 216-664-2444 X5203.
- 14. ONE INCH SERVICE CONNECTIONS SHALL BE PERMITTED TO SERVICE HOMES BASED ON THE FOLLOWING CRITERIA:  
  
\* PEAK FLOW DEMANDS DO NOT EXCEED 25 GPM FOR AN INDIVIDUAL HOME/UNIT. INCLUSIVE OF ALL USAGE (FIRE, DOMESTIC AND/OR IRRIGATION) AND  
  
\* LENGTH OF ONE INCH CONNECTION DOES NOT EXCEED 75 FEET AS MEASURED FROM THE MAIN TO THE POINT OF ENTRY INTO THE PROPOSED HOME/UNIT.  
  
ANY SERVICE REQUESTS DIFFERING FROM THE STATED CRITERIA SHALL REQUIRE THE SUBMITTAL OF A COMPLETE WATER SERVICE APPLICATION. PEAK DEMANDS ARE TO BE ASSESSED ON APPLICATION AND SETBACKS ARE TO BE SHOWN ON AN ACCOMPANYING SITE PLAN. SITE PLANS SHALL SHOW WATER METER VAULTS IN THE RIGHT OF WAY OR IN AN EASEMENT CONTIGUOUS TO THE RIGHT OF WAY FOR ANY HOMES/UNITS WITH SETBACKS GREATER THAN 150 FEET. EASEMENTS ARE TO BE PROVIDED WITH THE SERVICE CONNECTION APPLICATION SUBMITTAL.
- 15. ALL WATER MAIN CURB VALVE BOXES & METER VAULTS SHALL BE INSTALLED IN GRASS AREAS WHEN POSSIBLE.

**EMERGENCIES:**

- 16. IF A WATER MAIN OR SERVICE CONNECTION BREAK OCCURS DURING CONSTRUCTION AND EMERGENCY ASSISTANCE IS REQUIRED, PLEASE NOTIFY THE DIVISION OF WATER AT 216-664-3060.

**UTILITIES:**

- 1. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST TWO (2) WORKING DAYS (NOT INCLUDING SATURDAYS AND LEGAL HOLIDAYS) PRIOR TO CONSTRUCTION TO HAVE UTILITIES STAKED, MARKED OR OTHERWISE DESIGNATED IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OR LOCATION SHALL OCCUR APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.
- 2. THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS AND BELIEVED TO ESSENTIALLY CORRECT. THE LOCATIONS WERE OBTAINED FROM THE OWNERS OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C. NO GUARANTEE IS MADE RELATIVE TO THE COMPLETENESS OR ACCURACY AND THE CONTRACTOR IS REQUIRED TO CONTACT THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN ON THE PLANS AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION IN ANY AREA.
- 3. ALL EXISTING UTILITIES, SERVICES, POLES AND CONNECTIONS SHALL BE PROTECTED AT THE CONTRACTOR'S EXPENSE. IF DAMAGE IS CAUSED BY CONSTRUCTION TO ANY EXISTING UTILITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME AT HIS EXPENSE IN ACCORDANCE WITH DIRECTIONS OF THE ENGINEERS, AND FOR ANY RESULTING CONTINGENT DAMAGES. EXISTING UTILITIES INCLUDE, BUT ARE NOT LIMITED TO WATER MAINS, STORM SEWERS, SANITARY SEWERS, GAS, ELECTRICAL, TELEPHONE, FIBER OPTIC CABLE, TELEVISION CABLE, AND INDIVIDUAL SERVICE CONNECTIONS AND LATERALS.

**UTILITIES (CONTINUED)**

- 4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITIES, SERVICES, OR STRUCTURES TO VERIFY THE VERTICAL AND HORIZONTAL LOCATION OF THE UTILITY, SERVICE, OR STRUCTURE AND ITS EFFECT ON THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE UTILITY OWNER.
- 5. INDIVIDUAL STORM, SANITARY, GAS, WATER, ELECTRICAL, TELEPHONE AND CABLE SERVICE CONNECTIONS MAY NOT BE SHOWN. THE CONTRACTOR SHALL LOCATE AND PROTECT SERVICE CONNECTIONS THROUGHOUT THE COURSE OF THE WORK. IN THE EVENT SERVICE CONNECTIONS ARE BROKEN OR DISTURBED, THE CONTRACTOR SHALL REPAIR OR REPLACE THE SERVICE CONNECTIONS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL EXPECT EACH RESIDENCE/COMMERCIAL PROPERTY ALONG THE ROUTE TO HAVE AT LEAST ONE SERVICE CONNECTION FOR EACH UTILITY.
- 6. EXISTING LATERAL CONNECTIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE TO DETERMINE LOCATION AND NUMBER OF LATERALS. NOT ALL LATERALS MAY BE SHOWN.
- 7. STORM SEWER, SANITARY SEWER, AND CULVERT INVERTS SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY DEPTHS AND LOCATIONS PRIOR TO CONSTRUCTION.
- 8. THE CONTRACTOR SHALL REPAIR AT HIS OWN COST ANY DAMAGE TO TRAFFIC SIGNAL LOOP DETECTORS. CONTRACTOR SHALL FIELD VERIFY ALL LOOP DETECTORS WITHIN PROJECT AREA.

**PAVEMENTS AND WALKS:**

- 1. ROADWAYS, DRIVES, AND PAVEMENTS DISTURBED BY CONSTRUCTION SHALL BE REPLACED. SEE DETAILS ON PLANS AND SPECIFICATIONS. TEMPORARY PAVEMENT SHALL BE USED WHEN HOT MIX ASPHALT IS NOT AVAILABLE OR WHEN WEATHER FOR PAVEMENT IS UNACCEPTABLE. SIDEWALKS AND DRIVEWAY APRONS SHALL BE FLOAT FINISHED.
- 2. THE CONTRACTOR MAY DAMAGE EXISTING ROADWAY CURBING WHILE INSTALLING THE WATER MAIN. THE CONTRACTOR SHALL REPLACE ANY DAMAGED CURBING ALONG ALL ROADS WITH ODOT 609 CURBING. CURB REPLACEMENT SHALL MATCH EXISTING CURB, AND LIMITS OF REPLACEMENT SHALL BE TO THE NEAREST CONTROL JOINT ON EITHER SIDE OF THE AREA DAMAGED.
- 3. WHERE NECESSARY TO DISTURB PAVEMENTS OR DRIVES, PAVEMENT SHALL BE CUT IN NEAT, STRAIGHT LINES.

**SUPPLEMENTAL WATER MAIN NOTES:**

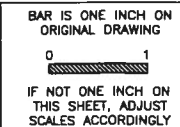
- 1. ALL NEW VALVES SHALL OPEN BY TURNING CLOCKWISE. VALVES SHALL BE SAME SIZE AS THE WATER MAIN. ALL VALVE BOXES SHALL BE INSTALLED FLUSH TO GRADE.
- 2. THE MAXIMUM TRENCH OPENING SHALL NOT EXCEED 100 LINEAL FEET. WHERE ACCESS TO DRIVES AND PARKING LOTS IS HINDERED OR BLOCKED FOR AN EXTENDED PERIOD OF TIME, THE CONTRACTOR SHALL PROVIDE TEMPORARY BITUMINOUS PAVEMENT TO MAINTAIN ACCESS. CONTRACTOR SHALL KEEP ALL WORK WITHIN THE RIGHT-OF-WAY.
- 3. UNLESS OTHERWISE NOTED, THE NEW WATER MAIN SHALL HAVE 6' MINIMUM COVER OVER THE TOP OF PIPE.
- 4. A MINIMUM OF 35 PSI SHALL BE MAINTAINED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.
- 5. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
- 6. PIPE JOINTS SHALL BE DEFLECTED TO MAINTAIN HORIZONTAL ALIGNMENT AND VERTICAL ELEVATIONS UNLESS OTHERWISE INDICATED. DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURERS RECOMMENDATIONS.
- 7. ALL COSTS ASSOCIATED WITH ABANDONING AND/OR REMOVING THE EXISTING WATER MAIN, LINE VALVES, OR SERVICE CONNECTIONS SHALL BE INCLUDED IN THE BID PRICE PER LINEAL FOOT OF WATER MAIN.
- 8. NEW FIRE HYDRANTS SHALL BE BAGGED UNTIL THE NEW WATER MAIN IS INSTALLED AND IN OPERATION.
- 9. THE WATER MAIN SHALL BE PRESSURE TESTED AND DISINFECTED PRIOR TO PERFORMING CORPORATION STOP TAPS.
- 10. FIRE HYDRANT PLACEMENT SHALL BE ESTABLISHED BY GOVERNING FIRE DEPARTMENT.
- 11. CONTRACTOR SHALL PRESSURE TEST AND DISINFECTION TEST WITHIN 15 DAYS OF WATER MAIN INSTALLATION.
- 12. ANY EXISTING UTILITIES OR APPURTENANCES INSIDE OR OUTSIDE OF THE CONSTRUCTION LIMITS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

- 13. GROUNDWATER CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE TIME THE EXCAVATION REACHES THE GROUNDWATER LEVEL TO MAINTAIN INTEGRITY OF THE IN-SITU MATERIALS. WHILE THE EXCAVATION IS OPEN, THE GROUNDWATER LEVEL SHALL BE MAINTAINED CONTINUOUSLY AT 2 FEET OR MORE BELOW THE WORKING LEVEL.
- 14. UNSTABLE OR UNSUITABLE PIPE FOUNDATION CONDITIONS THAT RESULT FROM INADEQUATE OR INAPPROPRIATE DEWATERING METHODS SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- 15. ANY EXISTING PROPERTY CORNER PINS OR MONUMENTS DAMAGED OR DESTROYED BY THE CONSTRUCTION SHALL BE RESET BY A REGISTERED SURVEYOR UPON COMPLETION OF THE PROJECT PRIOR TO FINAL PAYMENT. A CERTIFICATION SHALL BE FURNISHED BY A REGISTERED SURVEYOR, STATING THAT SAID DAMAGES HAVE BEEN RESTORED. THE COST SHALL BE INCLUDED IN THE PRICE BID PER LINEAL FOOT OF WATER MAIN.
- 16. ACCESS TO ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
- 17. RIGHT-OF-WAY AND PROPERTY LINES SHOWN WERE PREPARED FROM RECORD INFORMATION AND DO NOT REPRESENT A BOUNDARY SURVEY.
- 18. CONTRACTOR SHALL CLEAN THE ROADWAY AT THE END OF EACH DAY OF OPERATION OR EVERY 500 FEET OF INSTALLED WATER MAIN. CLEANING SHALL BE PERFORMED USING A POWER BROOM OR HYDROSPRAYER, OR AS DIRECTED BY THE ENGINEER.
- 19. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED FOR CONSTRUCTION, INCLUDING BUT NOT LIMITED TO EXCAVATION AND ROAD OPENINGS. PERMITS SHALL BE OBTAINED FROM THE CITY ENGINEER AND FROM ANY LOCAL GOVERNMENTAL OFFICIALS IN WHICH THE WORK IS BEING PERFORMED.
- 20. CONTRACTOR SHALL NOT BE PERMITTED TO STORE MATERIALS, EQUIPMENT, OR VEHICLES ON PRIVATE PROPERTY.
- 21. THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER MAINS AND SERVICE CONNECTIONS PER SPECIFICATION SECTION 02660. TEMPORARY MAINS SHALL BE LAID IN THE GUTTERLINES AND SHALL CROSS THE STREETS AT INTERSECTIONS. TEMPORARY MAINS SHALL NOT BE LAID ON TREELAWNS.

**CONSTRUCTION SEQUENCE**

THE PROPOSED WATER MAIN SHALL BE CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE FOLLOWING CONSTRUCTION SEQUENCE:

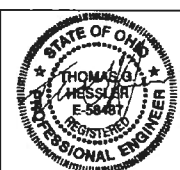
- 1. INSTALL AND OPERATIONALIZE TEMPORARY WATER SERVICE CONNECTION TO 1103 UNIVERSITY ROAD.
- 2. INSTALL 8-INCH CUT-IN VALVE WITH 8-INCH BY 6-INCH REDUCER AT BASELINE STATION 14+49.2, 31.5' LT AND 6-INCH CUT-IN VALVES ON UNIVERSITY ROAD.
- 3. CLOSE VALVES AT BASELINE STATION 14+49.2, 31.5' LT AND ON UNIVERSITY ROAD TO ISOLATE THE WATER MAIN ON W 11TH STREET BETWEEN BASELINE STATION 14+49.2 AND UNIVERSITY ROAD.
- 4. BEGINNING AT BASELINE STATION 14+49.2, 31.5' LT, REMOVE EXISTING 6-INCH WATER MAIN AND INSTALL PROPOSED 8-INCH WATER MAIN. INSTALL TEMPORARY END CAPS, DO NOT CONNECT TO EXISTING MAIN AT UNIVERSITY ROAD.
- 5. REMOVE EXISTING 6-INCH BY 6-INCH TEE AND BEND AT UNIVERSITY ROAD AND INSTALL 22.5" BEND AND 6-INCH SPOOL PIECES TO CONNECT TO EXISTING WATER MAIN. PLUG ABANDONED WATER MAIN ENDS WHERE SHOWN ON PLANS.
- 6. COMPLETE HYDROSTATIC PRESSURE TESTING, DISINFECTION, BACTERIA TESTING, AND FLUSHING OF NEW MAIN.
- 7. INSTALL 6-INCH BY 8-INCH CUT-IN TEE WITH 8-INCH VALVE AT UNIVERSITY ROAD, AND COMPLETE CONNECTION AT UNIVERSITY RD.
- 8. OPEN LINE VALVES AND OPERATIONALIZE NEW WATER MAIN.
- 9. TAP NEW MAIN, AND REPLACE AND OPERATIONALIZE NEW SERVICE CONNECTION.
- 10. REMOVE TEMPORARY WATER MAIN SYSTEM.



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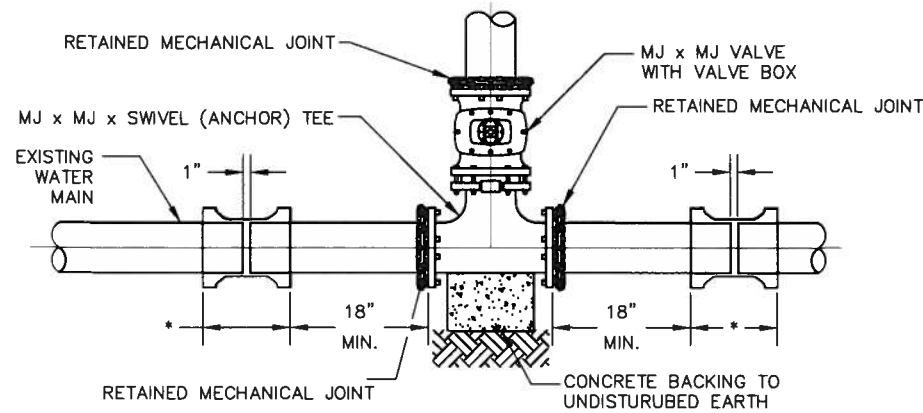
DESIGNED BY: EDS  
 DRAWN BY: SS  
 SHEET CHK'D BY: MJC  
 CROSS CHK'D BY: EDS  
 APPROVED BY: TGH  
 DATE: 6/1/10



**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WATER MAIN NOTES**

PROJECT NO.:  
 SHEET:  
 SCALE: NONE  
 SHEET NO.: C-7



**CUT-IN TEE DETAIL METHOD No.1 (STD-T01)**  
NOT TO SCALE

\*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.

COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.

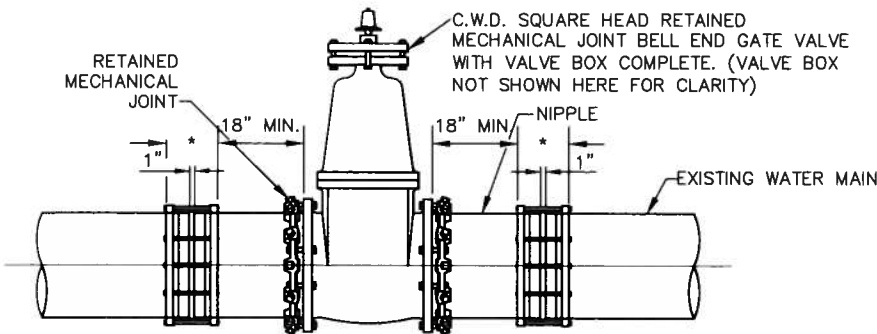
MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).

THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.

ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASUREMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

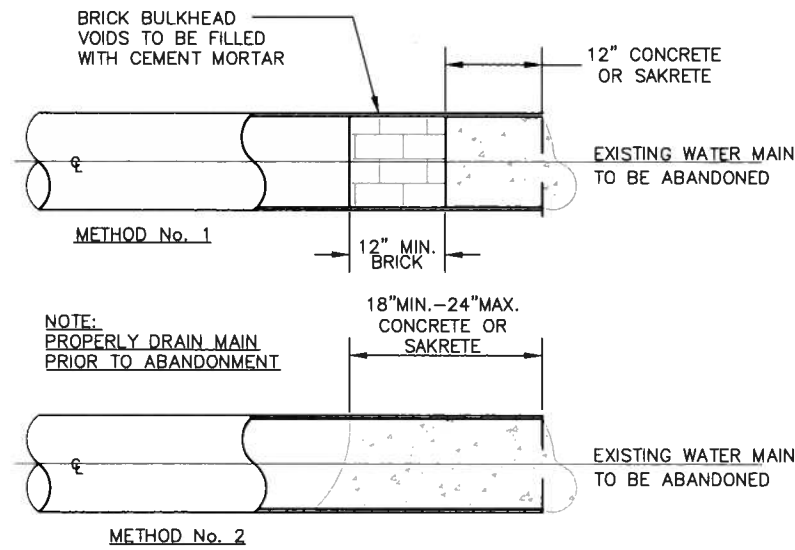
THE DIVISION OF WATER WILL DETERMINE THE FIELD LOCATION OF THE CUT-IN-VALVE ASSEMBLY. THE DIVISION OF WATER WILL ALSO SET THE TIME OF INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY.

THE CONTRACTOR SHALL DO ALL PIPE CUTTING AND INSTALLATION. HOWEVER, THE INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY SHALL BE DONE UNDER THE SUPERVISION OF THE DIVISION OF WATER.

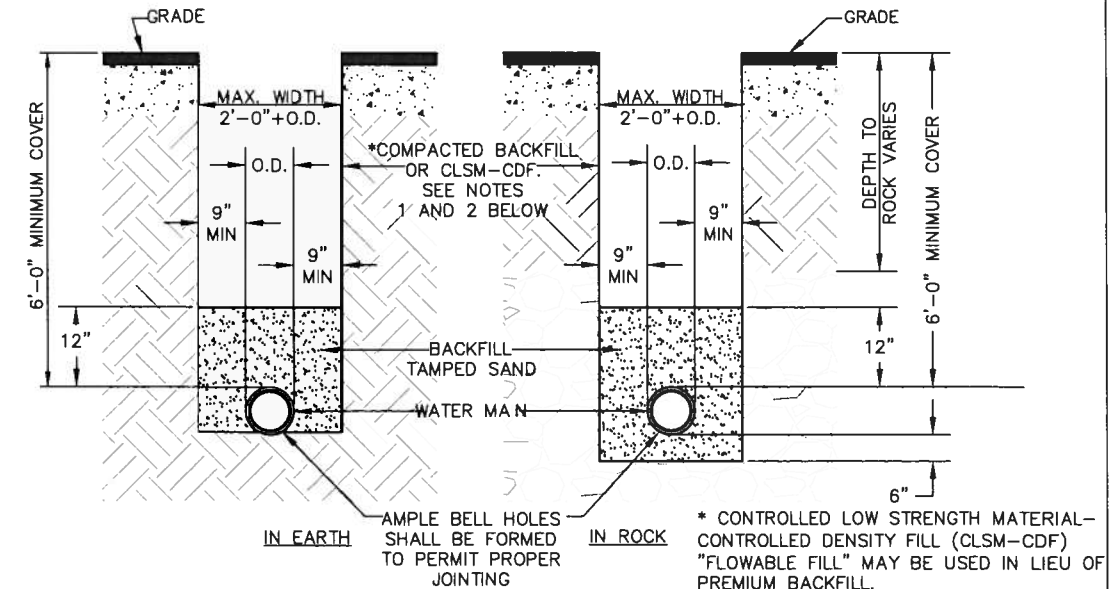


NOTE: BEFORE CUTTING EXISTING WATER MAIN, THE NIPPLES SHALL BE CONNECTED TO THE MECHANICAL JOINT BELL END GATE VALVE. AFTER CUTTING PIPE, FINAL CONNECTIONS SHALL BE MADE WITH COUPLINGS/SOLID SLEEVES AS SPECIFIED.

**CUT-IN-VALVE DETAIL (STD-005)**  
NOT TO SCALE



**PLUGGING ABANDONED WATER MAIN ENDS (STD-004)**  
NOT TO SCALE



**WATER MAIN TRENCH DETAILS (STD-001)**  
NOT TO SCALE

NOTES:

1) PREMIUM BACKFILL CONSISTING OF CONTROLLED LOW STRENGTH MATERIAL - CONTROLLED DENSITY FILL (CLSM-CDF) "FLOWABLE FILL" IS REQUIRED:

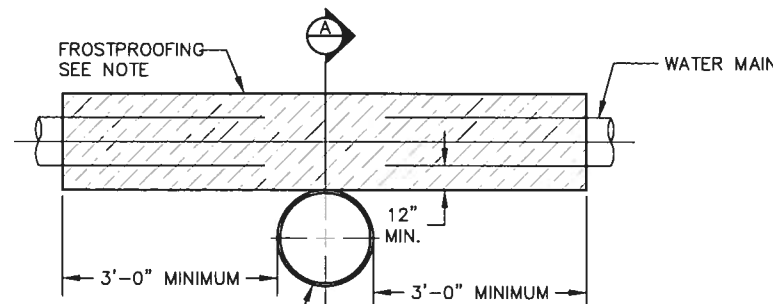
- A) UNDER ALL EXISTING OR FUTURE PAVEMENTS, SIDEWALKS AND DRIVES
- B) AT ALL LOCATIONS WITHIN THE CITY OF CLEVELAND CORPORATION LIMITS
- C) AS SPECIFIED IN LOCAL MUNICIPALITIES SERVED BY CWD (SEE LOCAL REQUIREMENTS)

2) WHEN PREMIUM BACKFILL IS REQUIRED BY THE LOCAL MUNICIPALITY FOR CASES OTHER THAN THOSE LISTED IN NOTE 1 ABOVE, IT SHALL BE LIMESTONE GRADED PER ODOT 304.02 OR ODOT 411. NO SLAG IS PERMITTED.\*

3) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.

4) MINIMUM COMPACTION FOR ALL SAND BEDDING, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.

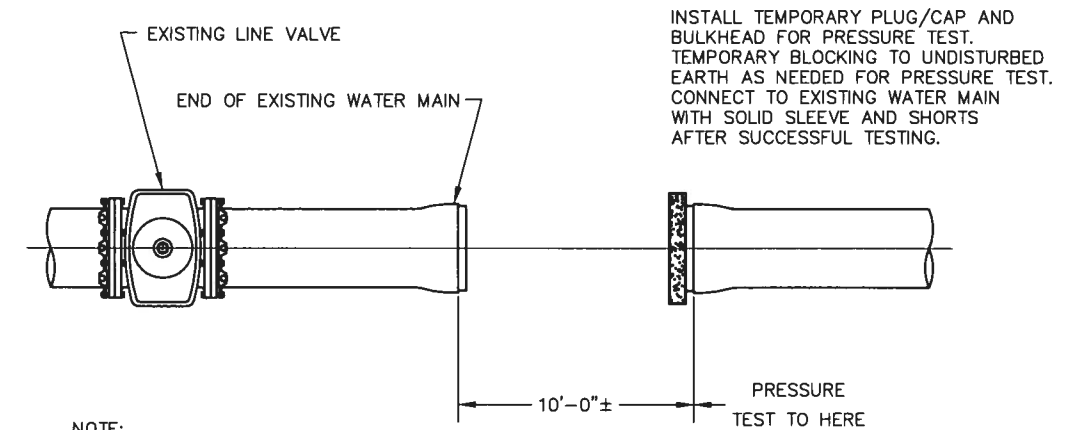
5) PAVEMENT, SIDEWALK OR DRIVES TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPALITY'S SPECIFICATIONS.



MINIMUM ONE (1) FOOT FROSTPROOFING INSULATION ENVELOPE REQUIRED WITH WATER MAIN LAID WITH LESS THAN FIVE (5) FT. COVER; CROSSING OVER STORM SEWERS 24" AND LARGER; OR CROSSING UNDER OPEN END CULVERTS, OR OTHERWISE DIRECTED BY C.W.D. IN NO CASE SHALL THE MAINS BE LAID WITH LESS THAN 3'-6" OF COVER IN UNPAVED AREAS & 3'-0" TO BOTTOM OF SLAB IN PAVED AREAS.

NOTE: COMPACTED "WITCOLITE" INSULATION AS MANUFACTURED BY PIONEER PRODUCTS, DIVISION OF WITCO CHEMICAL COMPANY, INC. OR "GILSULATE 500 XR" AS MANUFACTURED BY AMERICAN THERMAL PRODUCTS, INC.

**TYPICAL FROSTPROOFING DETAIL (STD-009)**  
NOT TO SCALE



NOTE:

**PRESSURE TESTING OF WATER MAINS:**

WHERE NEW/EXTENDED WATER MAINS ARE CONNECTED TO AN EXISTING WATER MAIN FOR PRESSURE TEST, RESULTING IN FAILURE OF THE PRESSURE TEST OR ANY DAMAGE TO THE EXISTING WATER MAIN, OR ITS APPURTENANCES, THE REPAIR THEREOF SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. ALL REPAIRS SHALL BE DONE TO THE SATISFACTION OF THE DIVISION OF WATER.

**ALTERNATE PRESSURE TESTING DETAIL (STD-002)**  
NOT TO SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

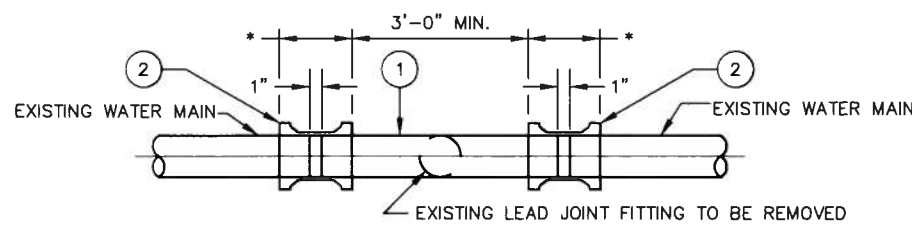
DESIGNED BY: EDS  
DRAWN BY: SS  
SHEET CHK'D BY: MCJ  
CROSS CHK'D BY: EDS  
APPROVED BY: IGH  
DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

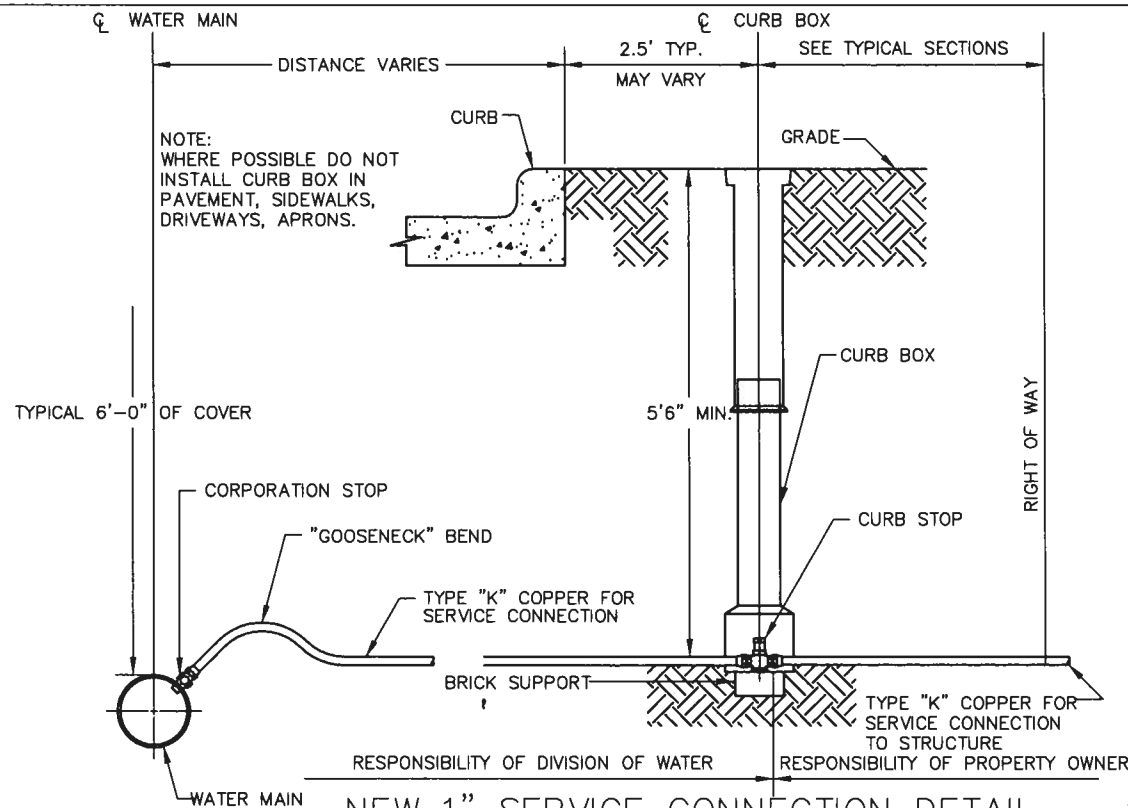
WATER MAIN DETAILS

PROJECT NO.:  
SHEET:  
SCALE: NONE  
SHEET NO.: C-8

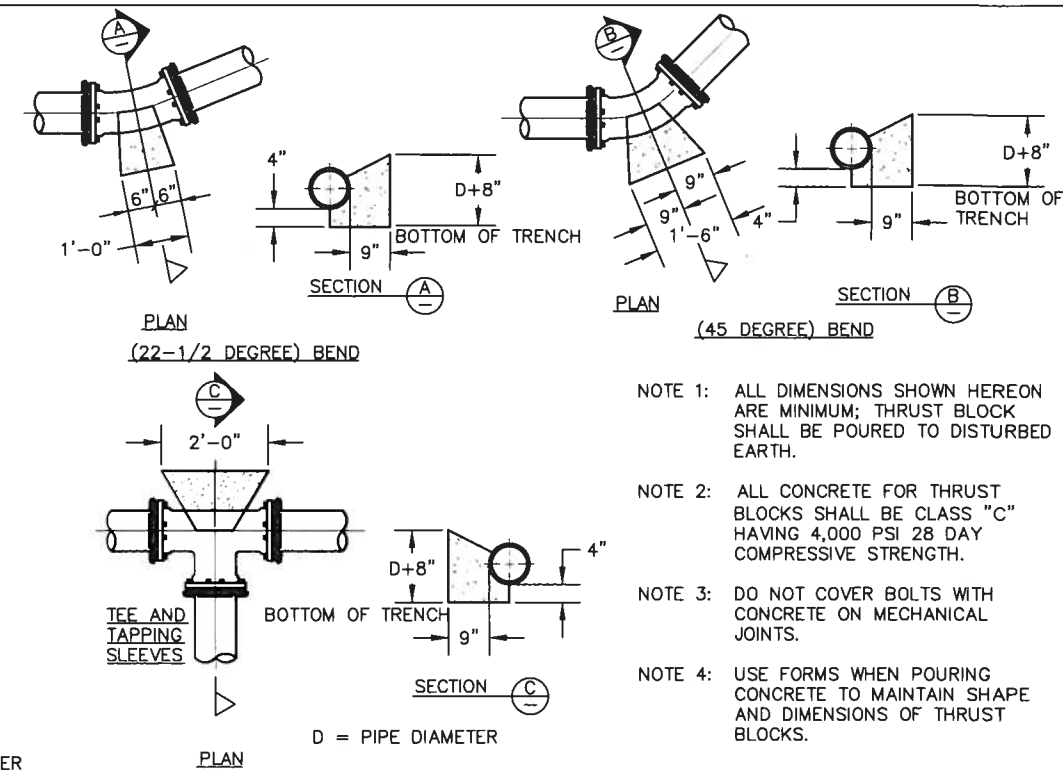


- 1) PLAIN END x PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT TO SUIT).
- 2) \*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.  
 COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.  
 MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).  
 THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE) OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.
- 3) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

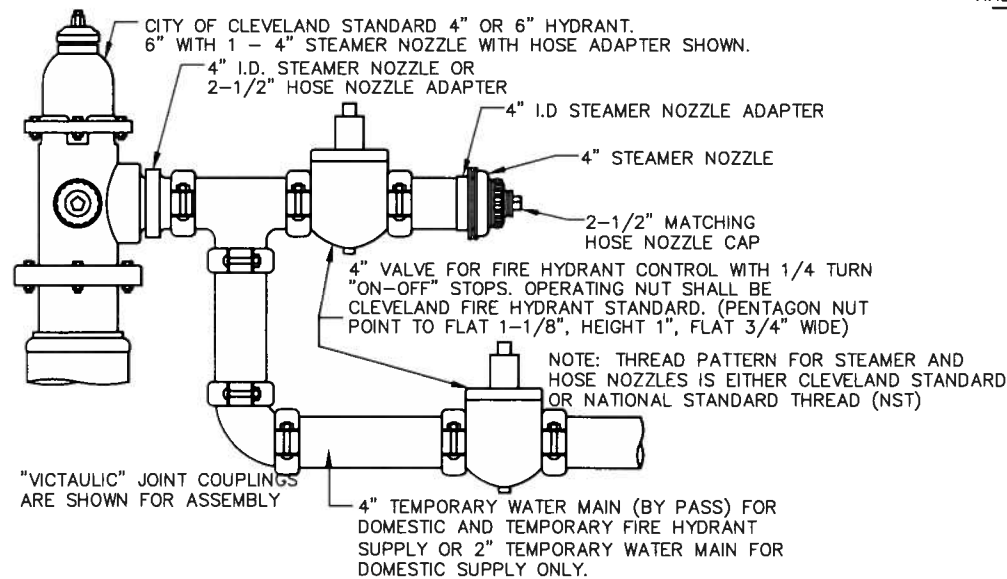
**SPOOL PIECE INSTALLATION DETAIL (STD-008)**  
NOT TO SCALE



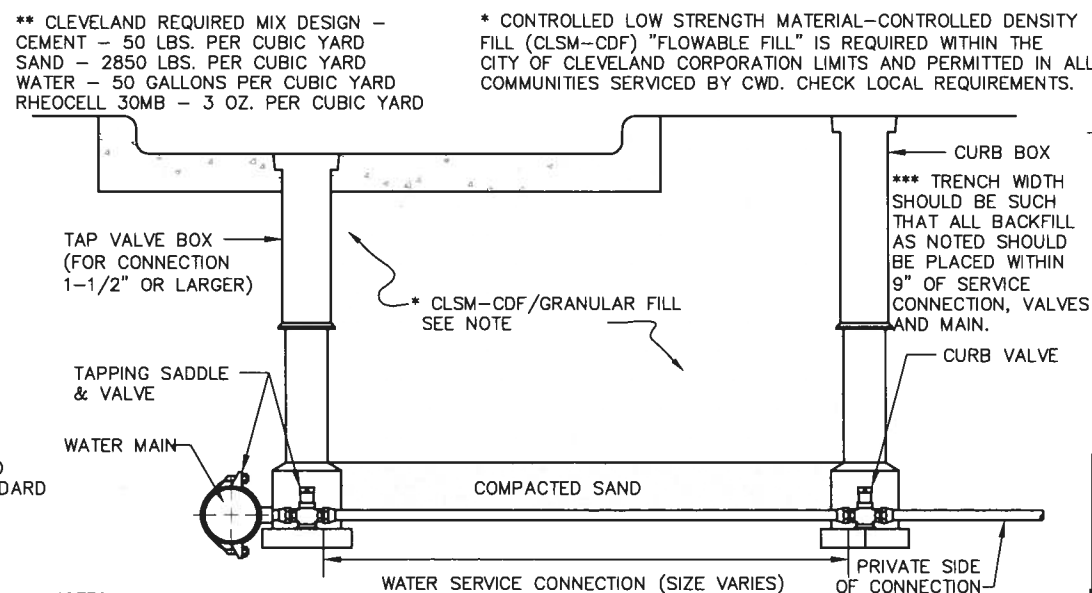
**NEW 1" SERVICE CONNECTION DETAIL IN PUBLIC RIGHT OF WAY (STD-C04)**  
NOT TO SCALE



**TYPICAL THRUST BLOCK DETAIL FOR HORIZONTAL DEFLECTION FOR PIPE UP TO 16" DIAMETER (STD-006)**  
NOT TO SCALE

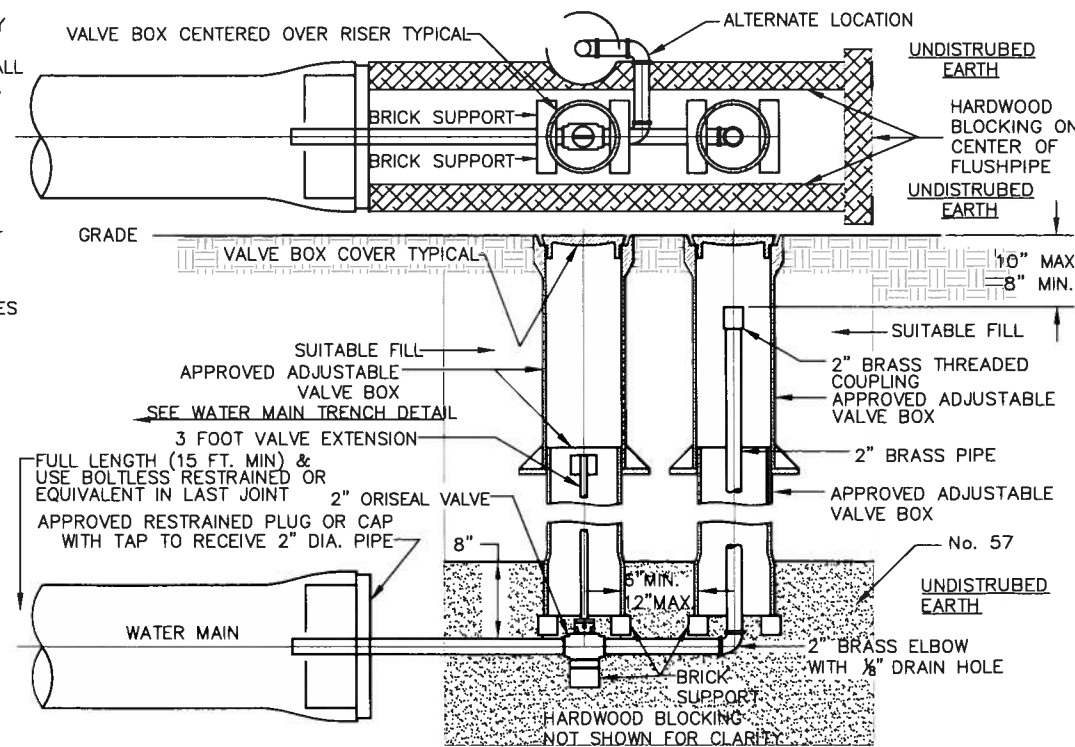


**TEMPORARY WATER MAIN & HYDRANT CONNECTION ASSEMBLY-A TO PROVIDE SIMULTANEOUS SERVICE IN EXISTING HYDRANT AND TEMPORARY BYPASS MAIN (STD-H14)**  
NOT TO SCALE



- NOTES:
- 1) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING BACKFILL, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
  - 2) MINIMUM COMPACTION FOR ALL SAND BEDDING BACKFILL, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.

**SERVICE CONNECTION BACKFILL DETAIL (STD-023)**  
NOT TO SCALE



**TYPICAL FLUSHING ASSEMBLY (STD-003)**  
NOT TO SCALE

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DESIGNED BY: EDS	REV. NO.	DATE	ISSUE BY	REMARKS
DRAWN BY: SS				
SHEET CHK'D BY: MCJ				
CROSS CHK'D BY: EDS				
APPROVED BY: TGH				
DATE: 6/1/10				



WALWORTH RUN INTERCEPTOR REALIGNMENT

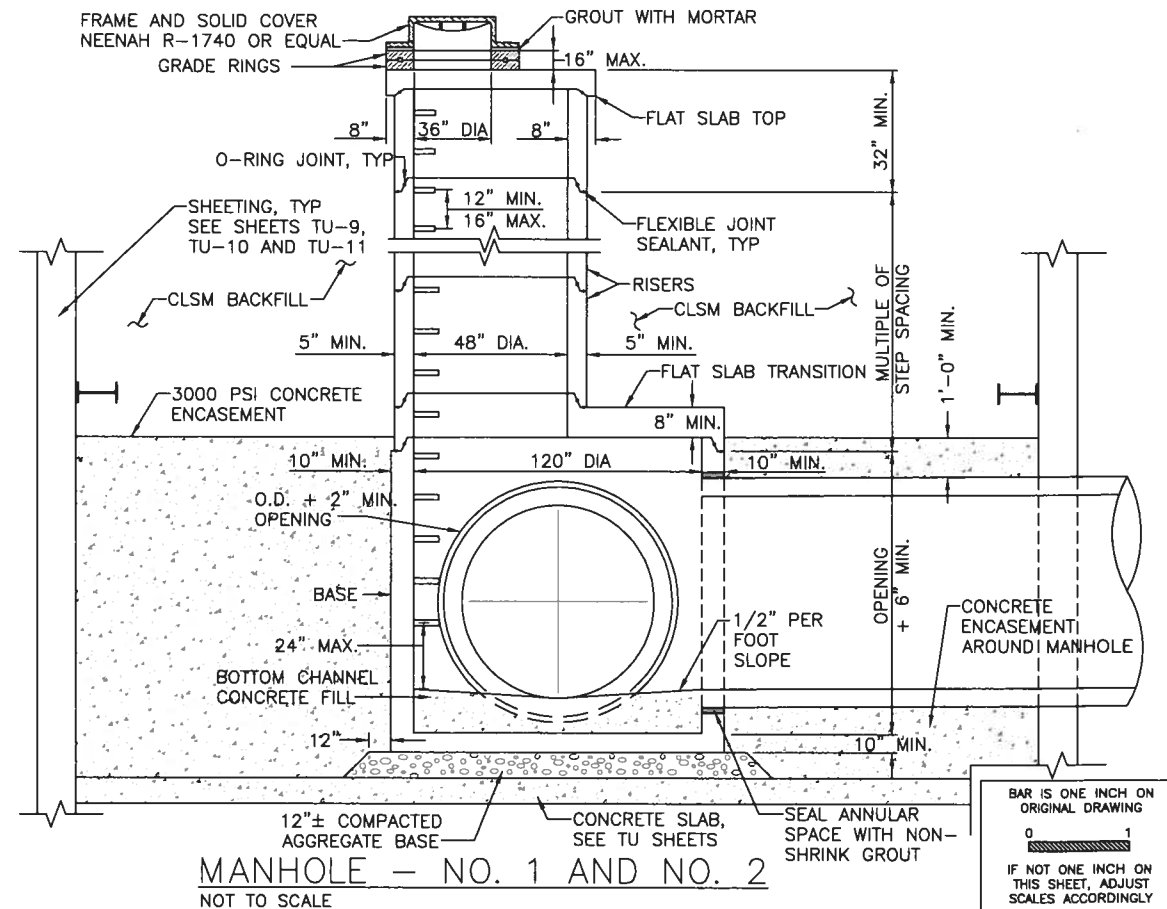
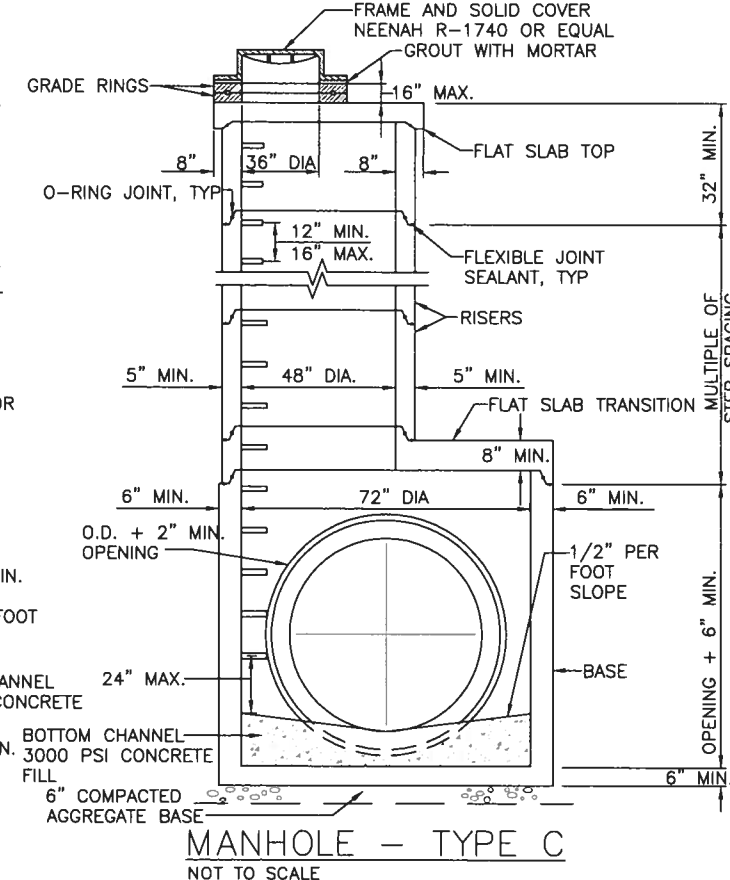
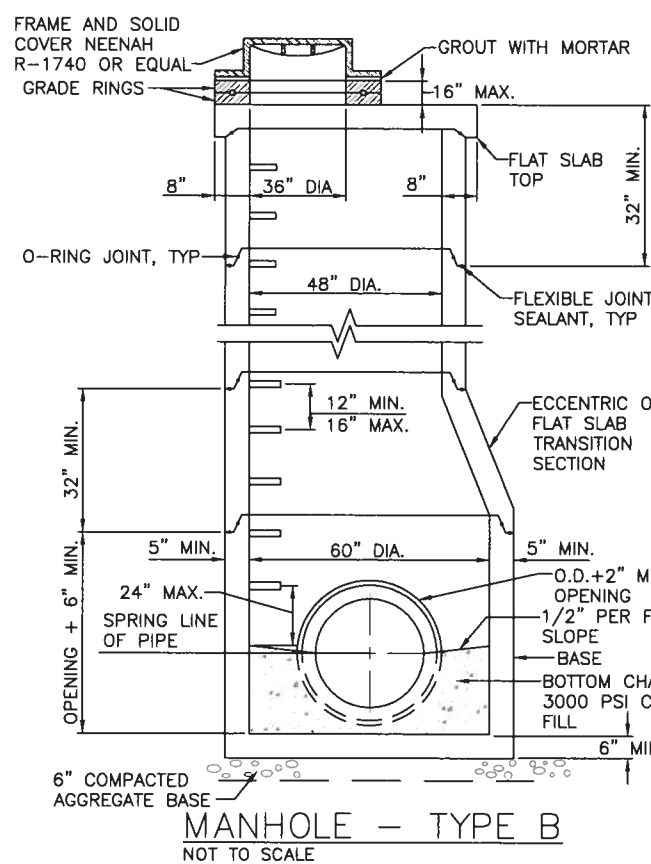
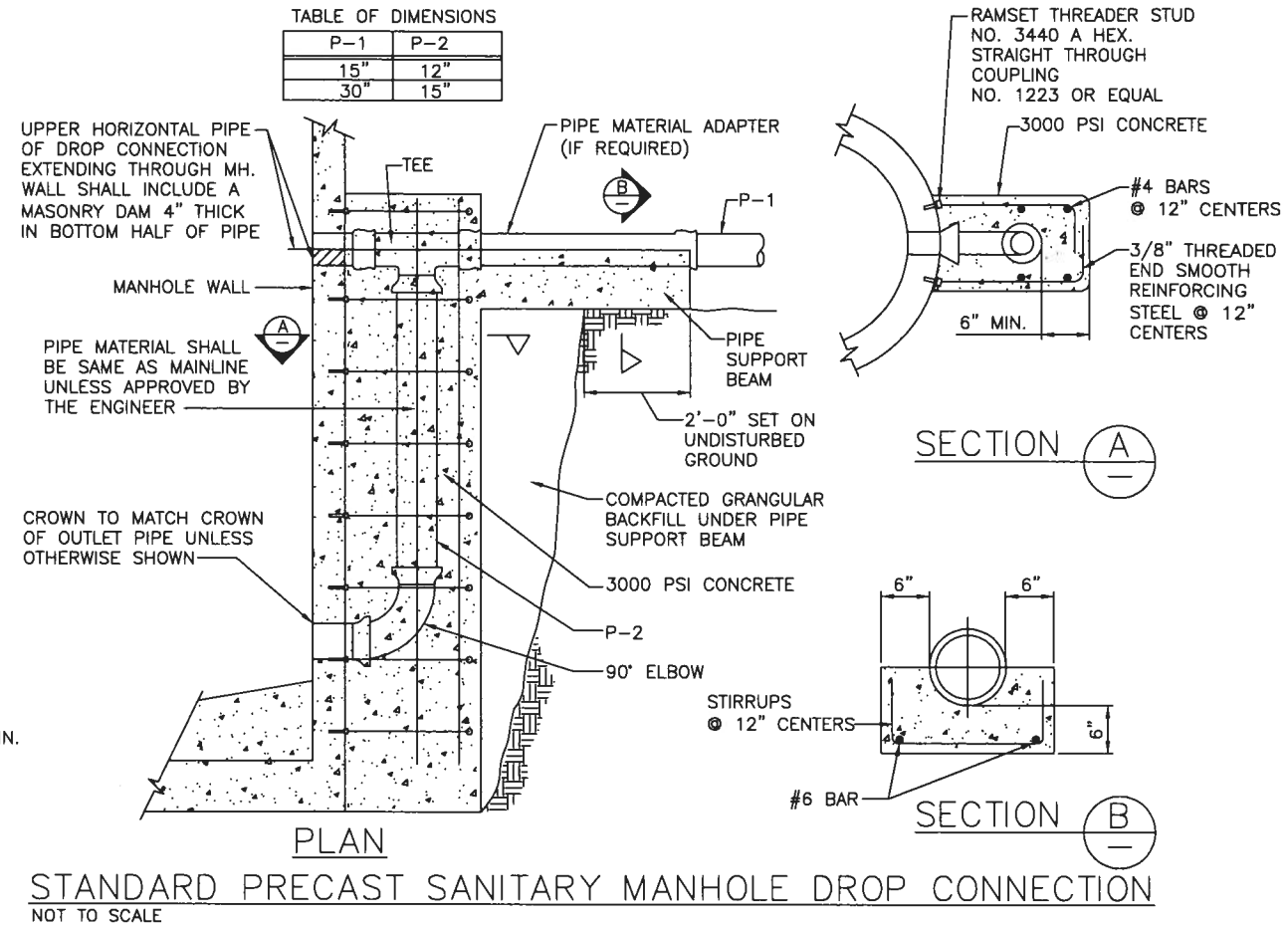
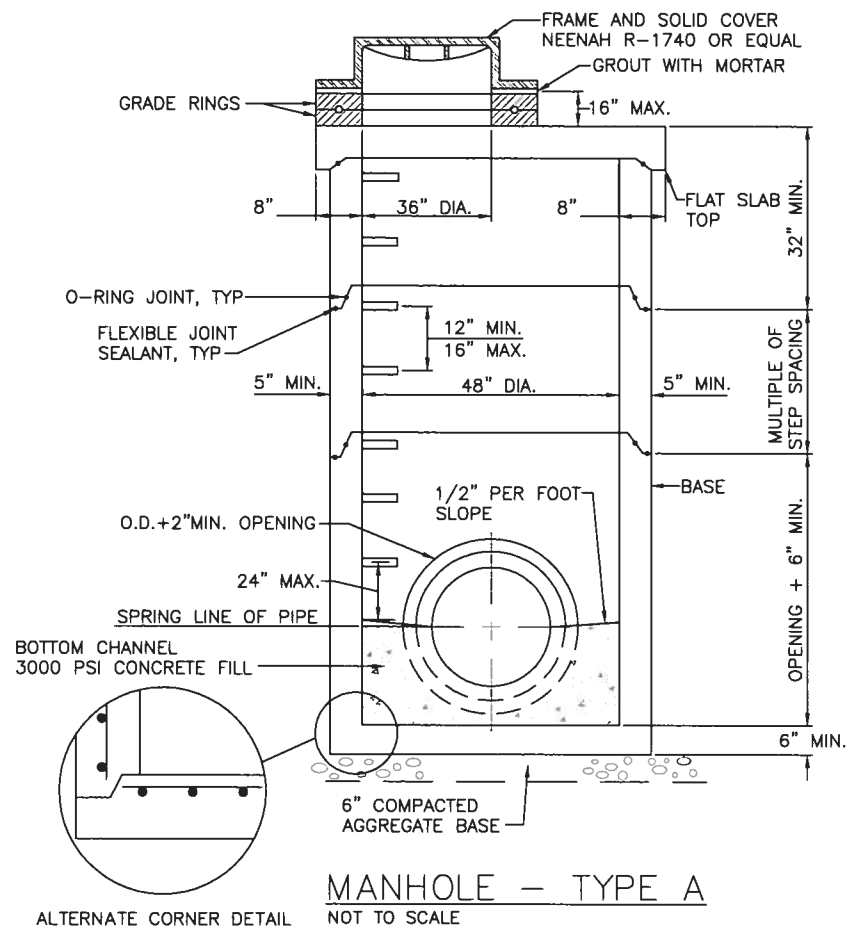
WATER MAIN DETAILS

PROJECT NO.:  
SHEET:  
SCALE: NONE  
SHEET NO.: C-9

PRECAST MANHOLE SCHEDULE				
MANHOLE NUMBER	MANHOLE TYPE			COMMENTS
	TYPE A	TYPE B	TYPE C	
1				SEE DETAIL ON THIS SHEET
2				SEE DETAIL ON THIS SHEET
1A			X	
1B		X		
2A	X			DROP MANHOLE
2B	X			
2C	X			
2D	X			
2E	X			
2F	X			
3A	X			
4A	X			
TOTAL	8	1	1	

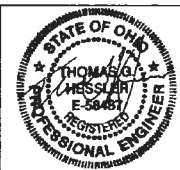
**NOTES**

- SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.
- BASES FOR MANHOLES ARE SHOWN WITH MONOLITHIC FLOOR AND RISERS WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED, EITHER WHEN THE UNIT IS CAST OR LATER, TO MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR INSTALLED BY FIELD CONSTRUCTION. FLOORS MAY ALSO BE POURED IN PLACE.
- OPENINGS IN RISER SECTIONS SHALL BE PREFABRICATED. FLEXIBLE CONNECTIONS SHALL BE PROVIDED FOR SANITARY AND STORM SEWERS. PREMIUM SEALS SHALL MEET ASTM C-923.
- JOINT SEALS BETWEEN PRECAST MANHOLE SECTIONS SHALL BE RESILIENT AND FLEXIBLE GASKET JOINTS. JOINTS SHALL MEET ASTM C-443, FEDERAL SPECIFICATION SS-5-00210 (210 A), AND AASHTO M-198.
- MANHOLE JOINTS SHALL BE SEALED BY A FLEXIBLE SEALANT, CONSEAL CS-202 AS MANUFACTURED BY CONSEAL CONCRETE SEALANTS, INC., OR APPROVED EQUAL.
- MANHOLE GRADE RINGS SHALL BE SEALED EXTERNALLY AND BETWEEN GRADE RINGS WITH A LAYER OF MASTIC COMPOUND SUCH AS FABERLITE, KENT SEAL, OR EQUAL.
- PRECAST MANHOLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
- SEAL ALL LIFT HOLES WITH APPROVED CONCRETE PLUGS.
- SEE PLANS FOR RIM ELEVATIONS.
- TOP MANHOLE STEP SHALL BE INSTALLED NOT MORE THAN 2' BELOW TOP OF FRAME.
- APPLY "THOROSEAL" BY THORO SYSTEM PRODUCTS, OR APPROVED EQUAL TO THE INSIDE EXPOSED SURFACES OF ALL MANHOLES.



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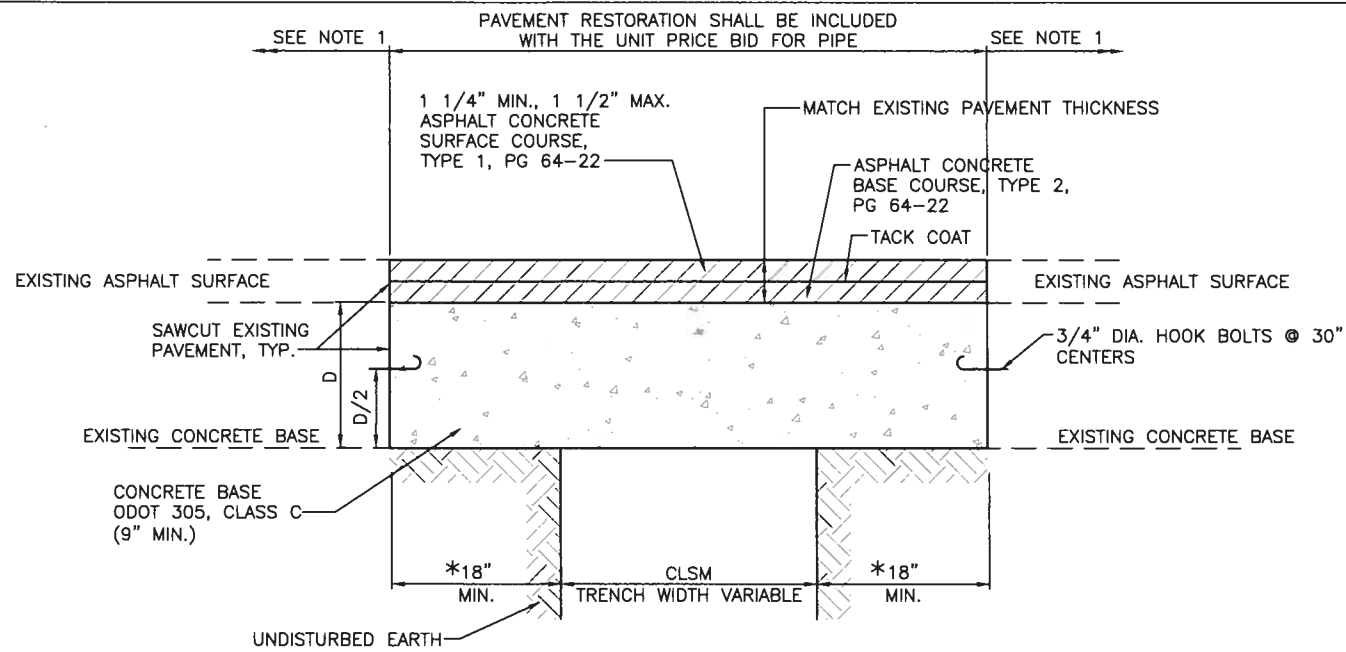
DESIGNED BY: EDS  
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 SHEET CHK'D BY: RDC  
 CROSS CHK'D BY: EDS  
 APPROVED BY: TGH  
 DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

PRECAST CONCRETE MANHOLE DETAILS  
 PROJECT NO.:  
 SHEET:  
 SCALE: NONE  
 SHEET NO.: C-10

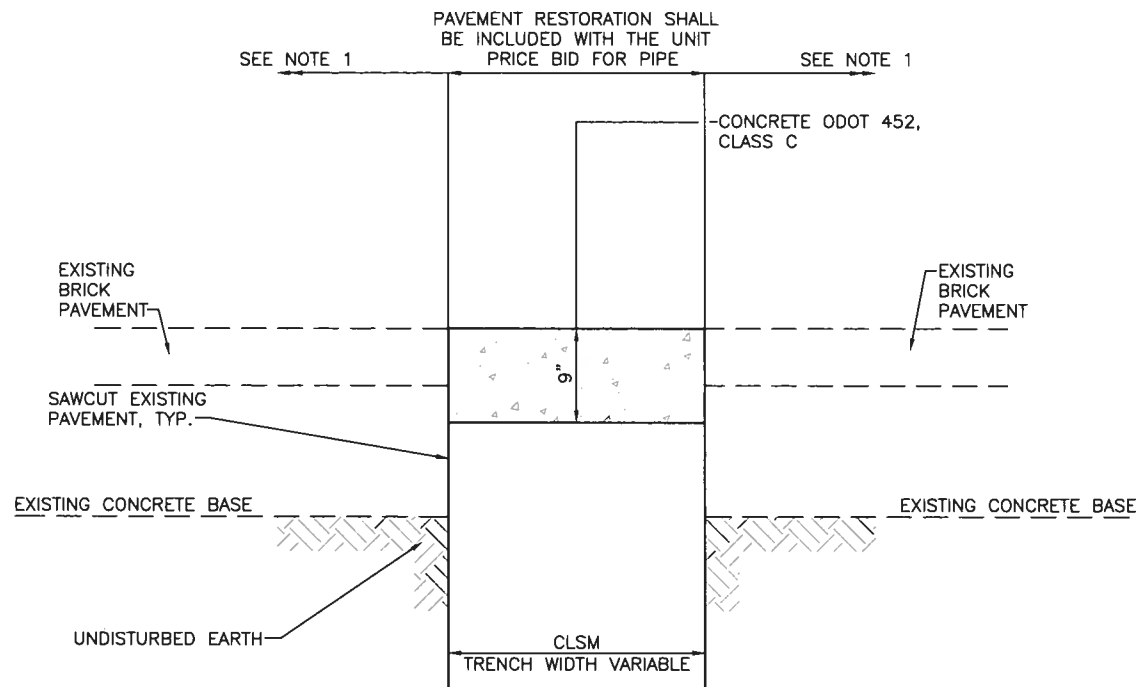




\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH CONCRETE BASE

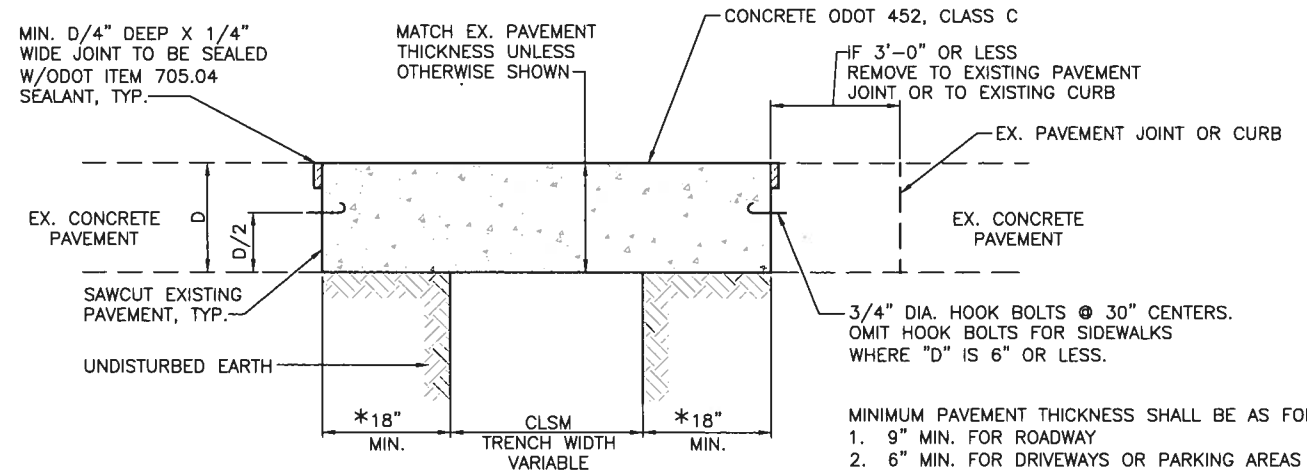
NOT TO SCALE



\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

TYPICAL TRENCH DETAIL FOR W. 15TH STREET  
 @ STA. 1+82 TO @ STA. 7+40.

NOT TO SCALE

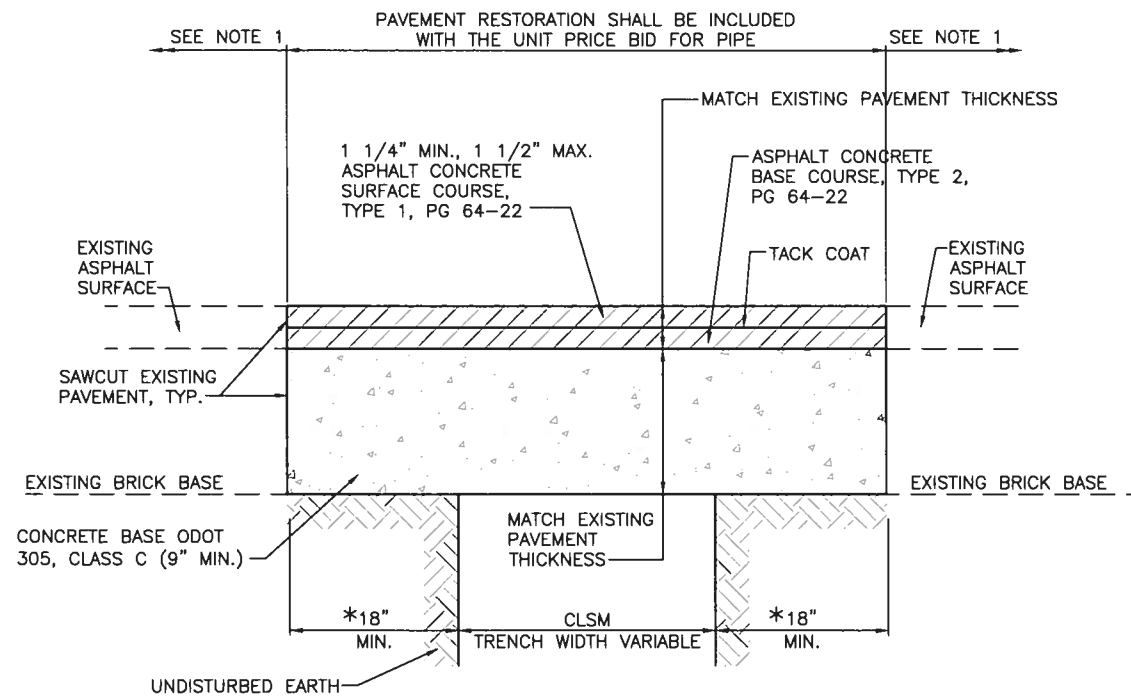


- MINIMUM PAVEMENT THICKNESS SHALL BE AS FOLLOWS:
1. 9" MIN. FOR ROADWAY
  2. 6" MIN. FOR DRIVEWAYS OR PARKING AREAS
  3. 4" MIN. FOR SIDEWALKS

\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

TYPICAL TRENCH DETAIL FOR CONCRETE PAVEMENT

NOT TO SCALE

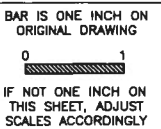


\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH BRICK BASE

NOT TO SCALE

NOTE:  
 1. MILL AND RESURFACE ASPHALT PAVEMENT WHERE SHOWN ON THE DRAWINGS. PAYMENT SHALL BE INCLUDED WITH THE UNIT PRICE BID FOR PAVEMENT MILLING AND RESURFACING



PROJECT NO.:  
 SHEET:  
 SCALE: NONE  
 SHEET NO.: C-11

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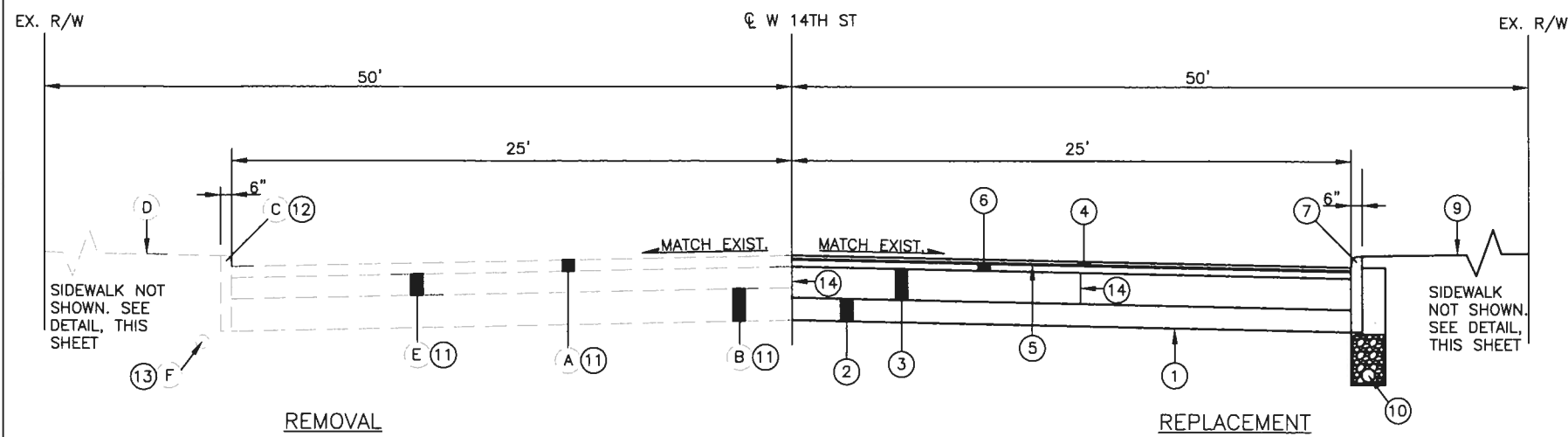
REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: EDS  
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 APPROVED BY: TGH  
 DATE: 6/1/10

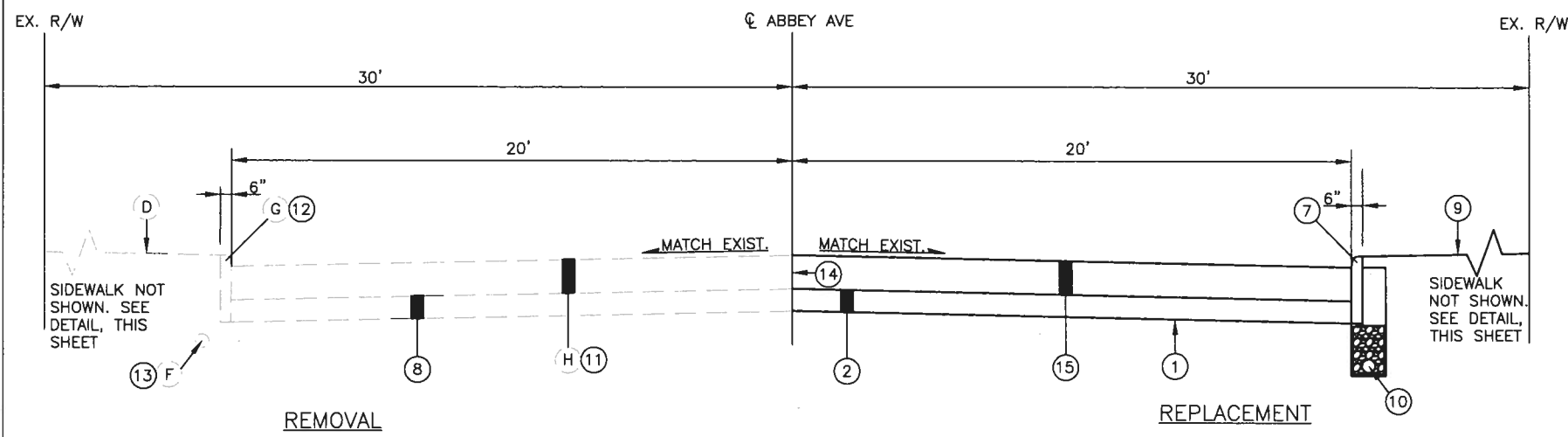


WALWORTH RUN INTERCEPTOR REALIGNMENT

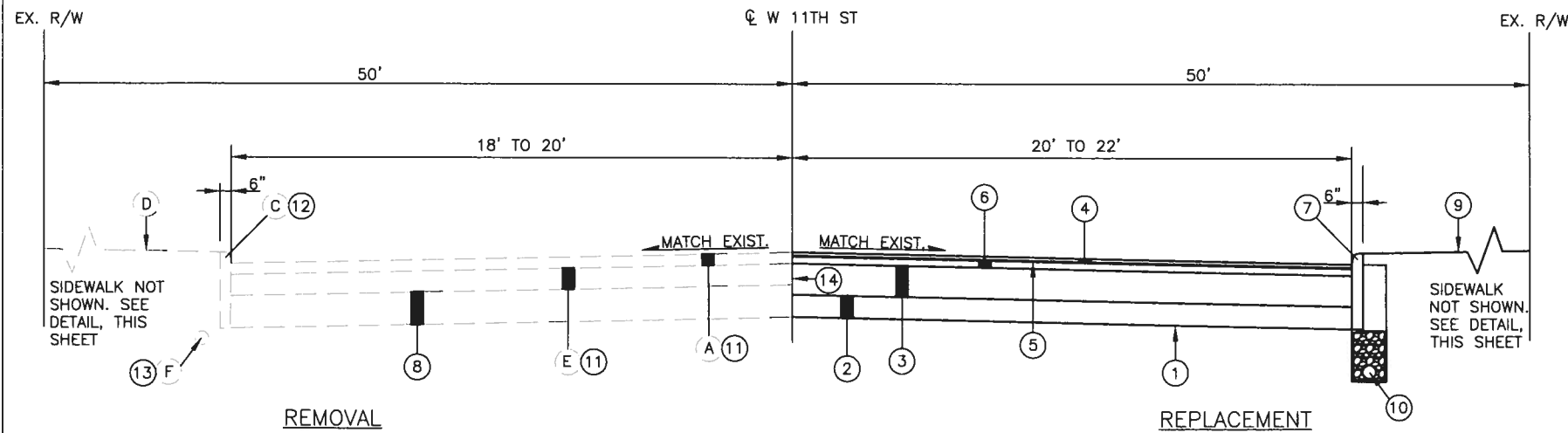
TRENCH REPAIR DETAILS



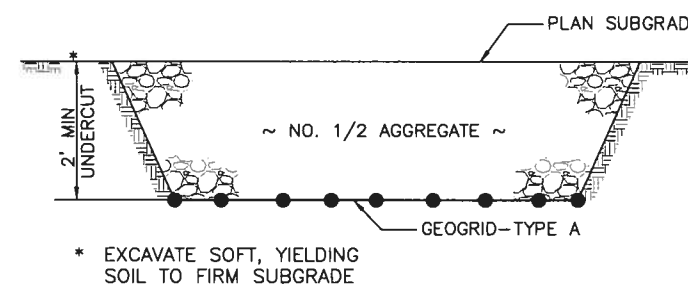
TYPICAL PAVEMENT SECTION-W 14TH ST AT JUNCTION CHAMBER NO.1  
NOT TO SCALE



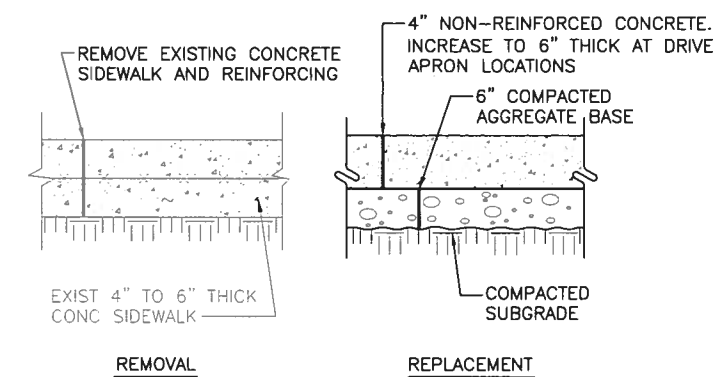
TYPICAL PAVEMENT SECTION-ABBEY AVE AT MANHOLE NO.1 AND NO.2  
NOT TO SCALE



TYPICAL PAVEMENT SECTION-W 11TH ST AT MANHOLE NO.2 AND JUNCTION CHAMBER NO.2  
SHOWING FULL DEPTH PAVEMENT REPLACEMENT  
NOT TO SCALE



SUBGRADE STABILIZATION DETAIL  
NOT TO SCALE



SIDEWALK REMOVAL AND REPLACEMENT  
NOT TO SCALE

LEGEND

- ① SUBGRADE COMPACTION
- ② 6" AGGREGATE BASE
- ③ 9" CONCRETE BASE, ODOT ITEM 305
- ④ 1 1/4" ASPHALT CONCRETE SURFACE COURSE TYPE 1, PG64-22
- ⑤ TACK COAT (0.040 GAL/SY)
- ⑥ 1 1/4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2, PG64-22
- ⑦ CAST-IN-PLACE TYPE 6 CONCRETE CURB. SEE CITY OF CLEVELAND DWG CD-1
- ⑧ EXCAVATION TO SUBGRADE
- ⑨ SEEDING AND MULCHING
- ⑩ 4" UNDERDRAIN WITH AGGREGATE AND FILTER WRAP
- ⑪ ODOT ITEM 202-PAVEMENT REMOVED WHERE SHOWN ON PLANS
- ⑫ ODOT ITEM 202-CURB REMOVED WHERE SHOWN ON PLANS
- ⑬ UNDERDRAIN REMOVED
- ⑭ LONGITUDINAL JOINT WITH TIE BARS, SEE CITY OF CLEVELAND DWG CONC 1
- ⑮ 10" CONCRETE PAVEMENT, ODOT ITEM 452
- A EXISTING 4"± ASPHALT PAVEMENT
- B EXISTING 9"± CONCRETE BASE
- C EXISTING CONCRETE CURB
- D EXISTING TREE LAWN
- E EXISTING 5"± BRICK BASE
- F EXISTING 4" UNDERDRAIN
- G EXISTING SANDSTONE CURB
- H EXISTING 10" REINFORCED CONCRETE PAVEMENT

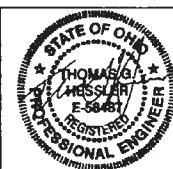
NOTES:  
1. FOR ITEMS ③ AND ⑮ PROVIDE TRANSVERSE PAVEMENT JOINTS PER CITY OF CLEVELAND STANDARD CONSTRUCTION DRAWINGS.

BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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REV. NO.	DATE	ISSUE BY	REMARKS

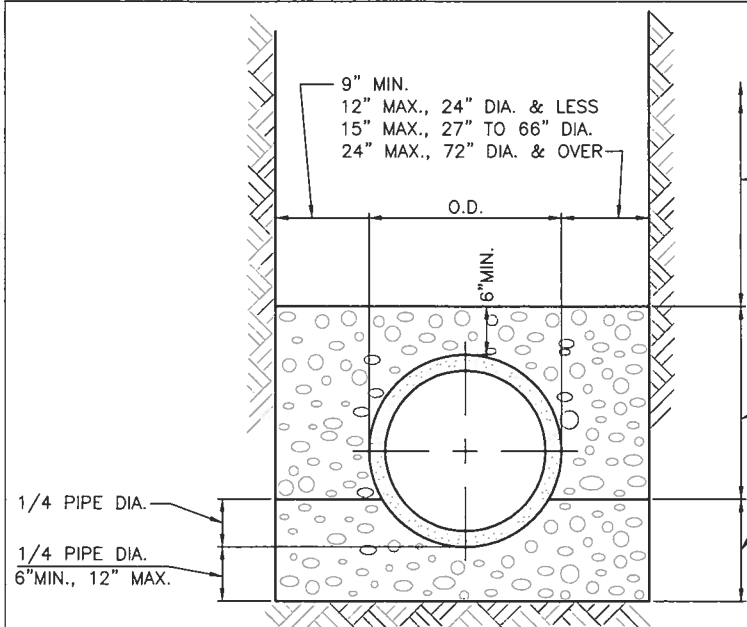
DESIGNED BY: EDS  
DRAWN BY: SS  
SHEET CHK'D BY: TGH  
CROSS CHK'D BY: EDS  
APPROVED BY: TGH  
DATE: 6/1/10



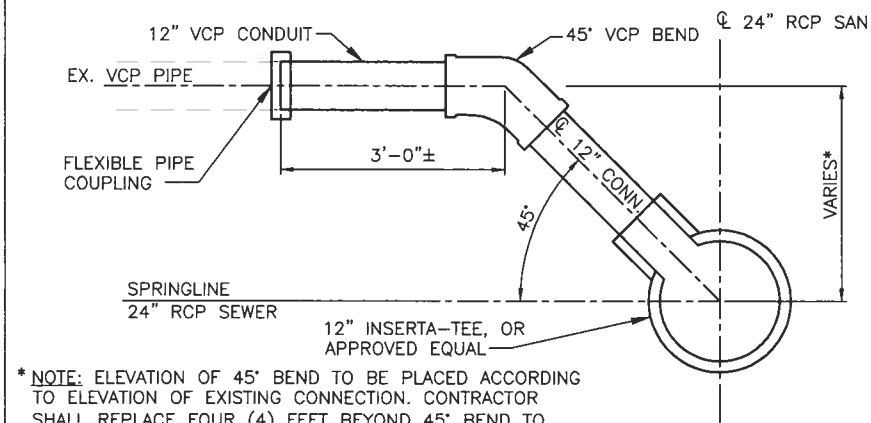
WALWORTH RUN INTERCEPTOR REALIGNMENT

PAVEMENT SECTIONS AND DETAILS

PROJECT NO.:  
SHEET: X  
SCALE: NONE  
SHEET NO.: C-12

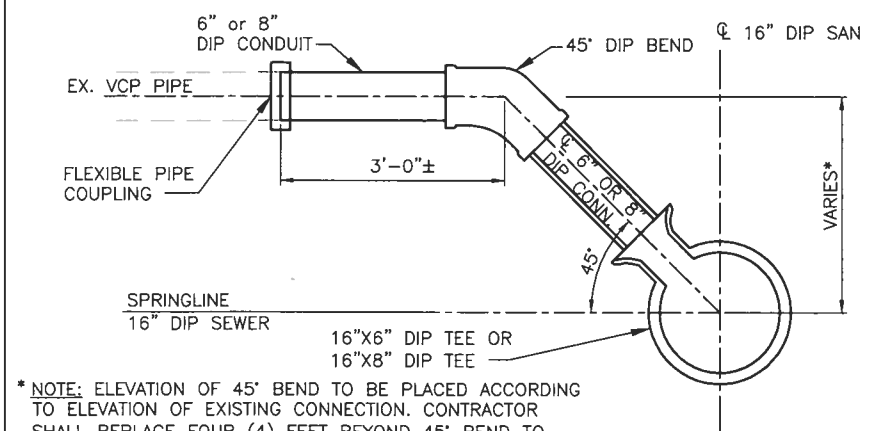


TYPICAL SEWER TRENCH FOR RCP AND VCP  
NOT TO SCALE



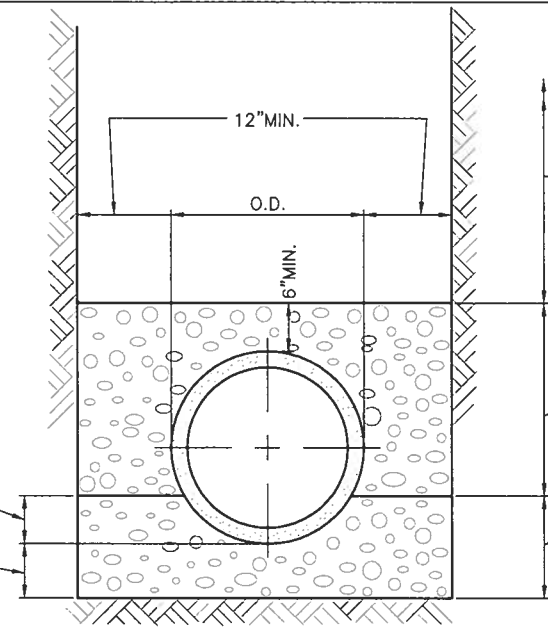
\*NOTE: ELEVATION OF 45° BEND TO BE PLACED ACCORDING TO ELEVATION OF EXISTING CONNECTION. CONTRACTOR SHALL REPLACE FOUR (4) FEET BEYOND 45° BEND TO CONNECT TO THE EXISTING PIPE.

SANITARY SERVICE CONNECTION DETAIL FOR RCP  
NOT TO SCALE

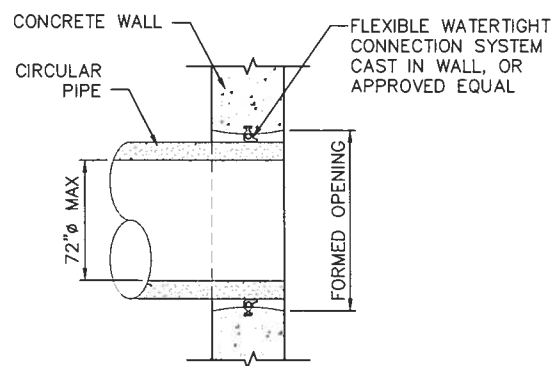


\*NOTE: ELEVATION OF 45° BEND TO BE PLACED ACCORDING TO ELEVATION OF EXISTING CONNECTION. CONTRACTOR SHALL REPLACE FOUR (4) FEET BEYOND 45° BEND TO CONNECT TO THE EXISTING PIPE.

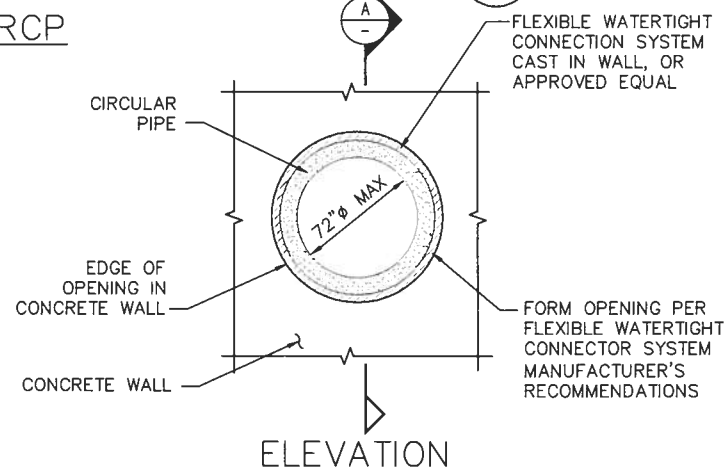
SANITARY SERVICE CONNECTION DETAIL FOR DIP  
NOT TO SCALE



TYPICAL SEWER TRENCH FOR DIP  
NOT TO SCALE

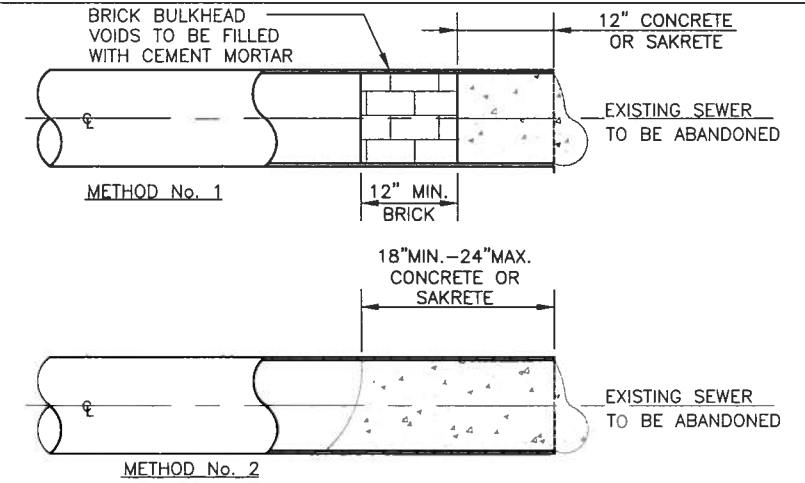


SECTION A

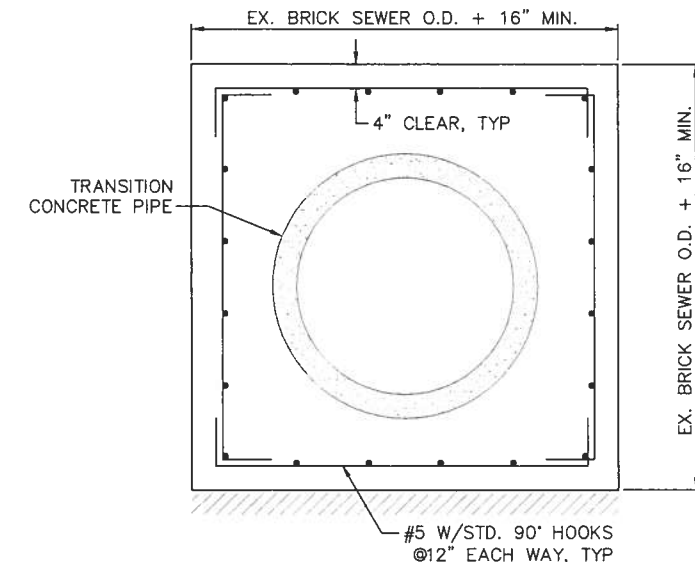


ELEVATION

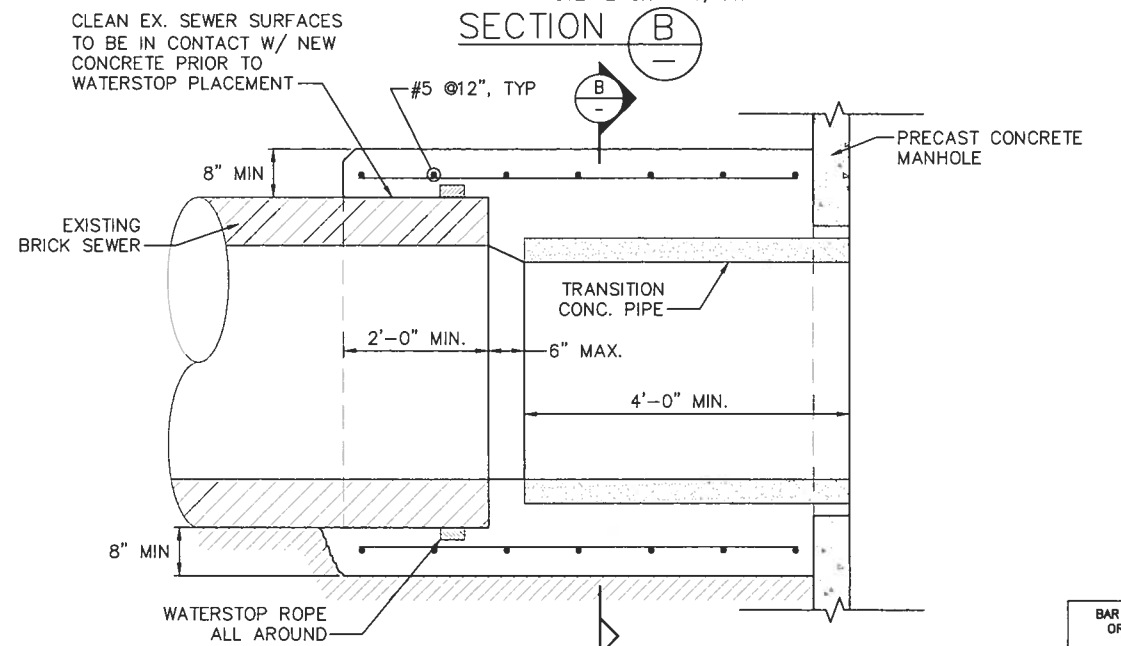
TYPICAL PIPE-WALL PENETRATION DETAIL WITH FLEXIBLE CONNECTOR  
NOT TO SCALE



PLUGGING ABANDONED SEWER ENDS  
NOT TO SCALE



SECTION B



TYPICAL EXISTING BRICK-TO-RCP CONNECTION DETAIL  
NOT TO SCALE

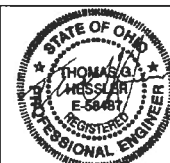
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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SHEET:  
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SHEET NO.: C-13

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REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: EDS  
DRAWN BY: MCJ  
SHEET CHK'D BY: MSE  
CROSS CHK'D BY: EDS  
APPROVED BY: TGH  
DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

SEWER DETAILS

REMOVE CASTING AND STRUCTURE. RESTORE PAVEMENT AND GRADE AS REQUIRED

FINISHED GRADE

2'-0" MIN

CLSM BACKFILL

EXISTING MANHOLE TO BE ABANDONED

STRUCTURAL CONCRETE FILL

EXISTING SEWER TO BE ABANDONED

1'-0" MIN

TYPICAL MANHOLE ABANDONMENT

NOT TO SCALE

MANHOLE #2306 MODIFICATION NOTES:

1. THE EXISTING 36" BRICK SEWER-TO-MANHOLE CONNECTION SHOWN IS APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
2. THE EXISTING DROP CHANNEL/PIPE AT THE BOTTOM OF THE MANHOLE SHALL BE ABANDONED AND FILLED WITH STRUCTURAL CONCRETE. THE CONTRACTOR MAY NEED TO PLACE THE CONCRETE FILL IN TWO OR THREE LIFTS IN ORDER TO MINIMIZE THE CONCRETE FILL REQUIRED. THE CONTRACTOR SHALL NOT USE A BULKHEAD OR ANY OTHER MATERIAL OR METHOD TO PLUG THE EXISTING SEWER.



4'-6" LONG X 3'-0" WIDE CLEAR AT BASE OF MH

EXISTING 15" VCP SEWER (ABOVE) TO REMAIN INV. 658.6



EXISTING SEWER TO BE ABANDONED

2'-6" DIA MIN CLEAR AT TOP OF MANHOLE

EXISTING 24" BRICK SEWER TO REMAIN, INV. 654.2

EXISTING 12" DIA DROP CHANNEL TO BE ABANDONED AND FILLED WITH STRUCTURAL CONCRETE FILL

EXISTING 36" BRICK SEWER TO BE ABANDONED, INV. 651.9

EXISTING 24" BRICK SEWER TO REMAIN, INV. 651.5

PLAN

BULKHEAD EXISTING SEWER (TYP.) BULKHEAD SHALL BE DESIGNED BY CONTRACTOR TO SUIT FIELD CONDITION

EXISTING GRADE 674.2±

VARIABLES  
30" DIA MIN

EXISTING MASONRY BRICK MANHOLE

EXISTING 24" BRICK SEWER (BEYOND) INV. 654.2

EXISTING 36" BRICK SEWER TO BE ABANDONED

SECTION A

FILL EX. 12" DIA DROP CHANNEL WITH CONC. FILL

INV. 651.9

MANHOLE #2306 MODIFICATIONS

NOT TO SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NO.:

SHEET:

SCALE: NONE

SHEET NO.: C-14

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REV. NO.	DATE	ISSUE BY	REMARKS

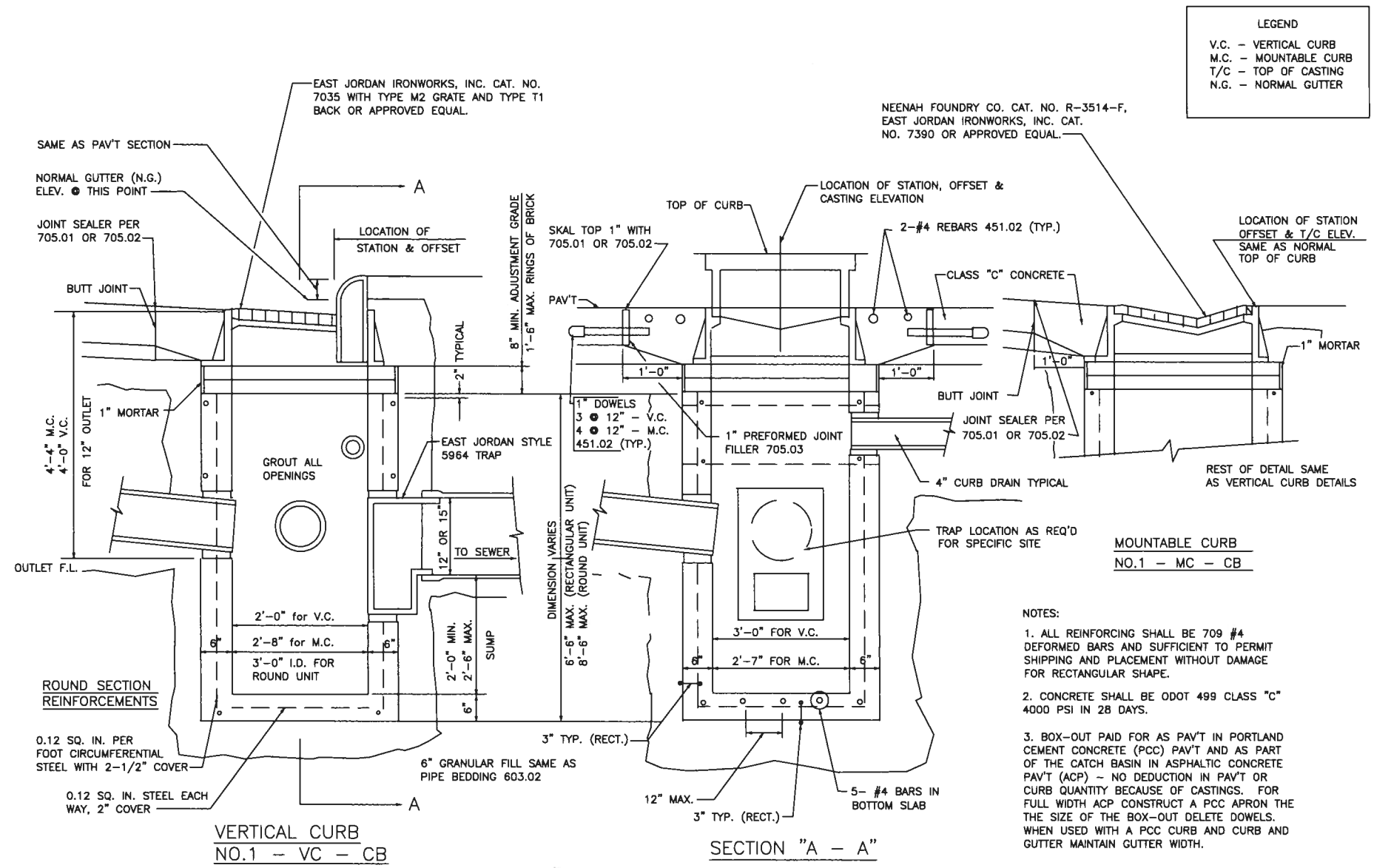
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DRAWN BY: RDC  
SHEET CHK'D BY: EDS  
CROSS CHK'D BY: RDC  
APPROVED BY: TGH  
DATE: 6/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

SEWER DETAILS

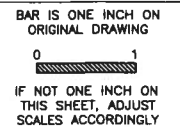
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- NOTES:
1. ALL REINFORCING SHALL BE 709 #4 DEFORMED BARS AND SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE FOR RECTANGULAR SHAPE.
  2. CONCRETE SHALL BE ODOT 499 CLASS "C" 4000 PSI IN 28 DAYS.
  3. BOX-OUT PAID FOR AS PAV'T IN PORTLAND CEMENT CONCRETE (PCC) PAV'T AND AS PART OF THE CATCH BASIN IN ASPHALTIC CONCRETE PAV'T (ACP) - NO DEDUCTION IN PAV'T OR CURB QUANTITY BECAUSE OF CASTINGS. FOR FULL WIDTH ACP CONSTRUCT A PCC APRON THE SIZE OF THE BOX-OUT DELETE DOWELS. WHEN USED WITH A PCC CURB AND CURB AND GUTTER MAINTAIN GUTTER WIDTH.

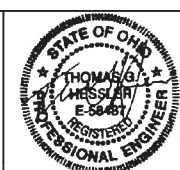
**ALTERNATE BASIN SHAPE**  
 A ROUND PRECAST CONCRETE UNIT MAY BE USED IN LIEU OF RECTANGULAR UNIT. THE ROUND SECTION SHALL BE A 36" I.D. UNIT WITH INTEGRAL BASE AND PRECAST TOP TRANSITION (ROUND TO RECTANGULAR) SECTION TO FIT CASTING BEING USED. TRANSITION UNIT REQUIRES A #5 REBAR AT CORNERS OF RECTANGULAR SHAPED SECTION AND 3 x 8 W6 X X W5 WELDED WIRE FABRIC IN VERTICAL SECTION.

**CITY OF CLEVELAND STANDARD CATCH BASIN CB-1**  
 NOT TO SCALE



REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: EDS  
 DRAWN BY: SS  
 SHEET CHK'D BY: RDC  
 CROSS CHK'D BY: EDS  
 APPROVED BY: TGH  
 DATE: 6/1/10



WALWORTH RUN INTERCEPTOR  
 REALIGNMENT

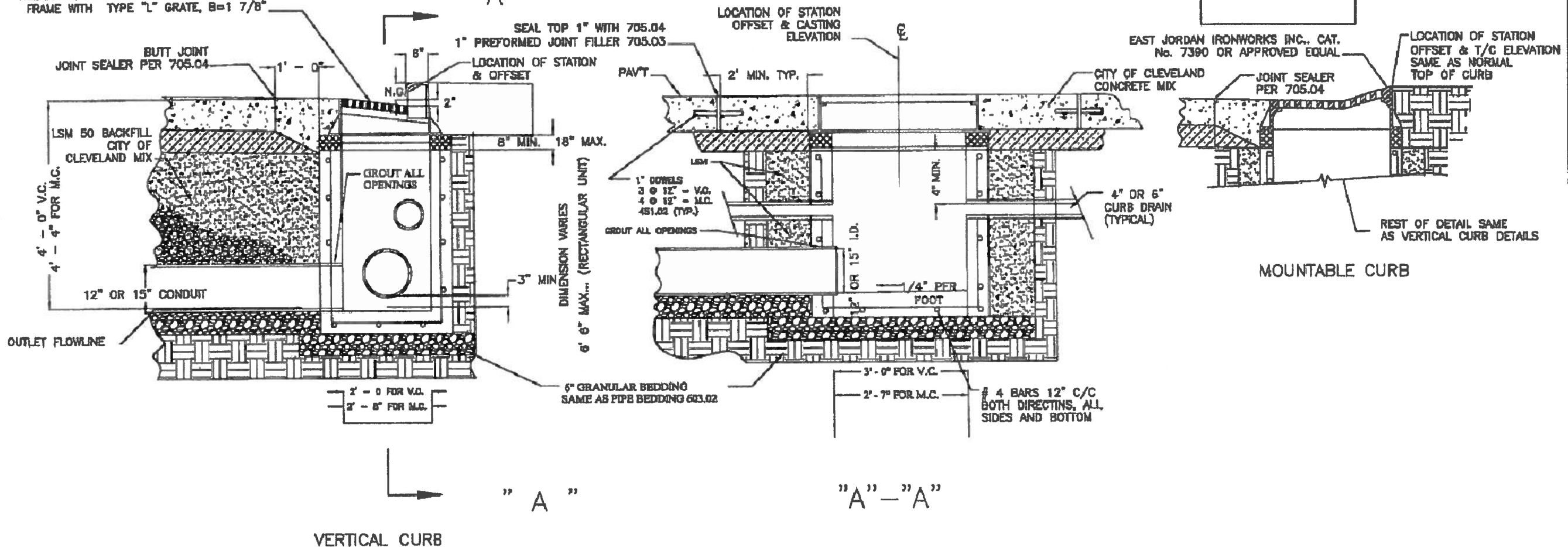
CITY OF CLEVELAND  
 CATCH BASIN CB-1 DETAIL

PROJECT NO.:  
 SHEET:  
 SCALE: NONE  
 SHEET NO.: C-15

EAST JORDAN IRONWORKS INC., CAT. No. 7035  
 WITH TYPE M2 GRATE AND TYPE T1 BACK  
 OR APPROVED EQUAL  
 NEENAH SPECIAL R-3246-CL CATCH BASIN  
 FRAME WITH TYPE "L" GRATE, B=1 7/8"

# INLET BASIN

**LEGEND**  
 V.C. = VERTICAL CURB  
 M.C. = MOUNTABLE CURB  
 T/C = TOP OF CASTING  
 N.G. = NORMAL GUTTER



**NOTES**

1. ALL REINFORCING SHALL BE # 4 DEFORMED BARS, AS PER ODOT 709, AND SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE TO RECTANGULAR SHAPE.
2. CONCRETE SHALL BE ODOT 499 CLASS "C" 4000 PSI IN 28 DAYS.
3. BOX-OUT SHALL BE PAID FOR AS PAVEMENT IN PORTLAND CEMENT CONCRETE PAVEMENT AND AS PART OF THE CATCH BASIN IN ASPHALTIC CONCRETE PAVEMENT WITH NO REDUCTION IN PAVEMENT OR CURB QUANTITY BECAUSE OF CASTING.
4. FOR FULL WIDTH ASPHALTIC CONCRETE PAVEMENT- CONSTRUCT A PORTLAND CEMENT CONCRETE APRON.
5. MINIMUM WALL THICKNESS 8" FOR CAST IN PLACE AND 6" FOR PRECAST

**CITY OF CLEVELAND**  
 DEPARTMENT OF PUBLIC SERVICE  
 DIVISION OF ENGINEERING & CONSTRUCTION  
 JOWARIE WASK-DIRECTOR OF PUBLIC SERVICE  
 STANDARD CONSTRUCTION DRAWING  
 STANDARD RECTANGULAR PRECAST CONCRETE  
 INLET BASIN  
 NOT TO SCALE

DRAWN BY: R. PLIODZINSKAS DATE: 4/8/08  
 SUBMITTED BY: W. MCLAUGHLIN DATE: 4/8/08  
 APPROVED: [Signature] DATE: 7-8-09  
 COMMISSIONER OF ENGINEERING & CONSTRUCTION

FILE NO, CB-1 | SHEET 2/7 | 27

BAR IS ONE INCH ON ORIGINAL DRAWING  
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REV. NO.	DATE	ISSUE BY	REMARKS

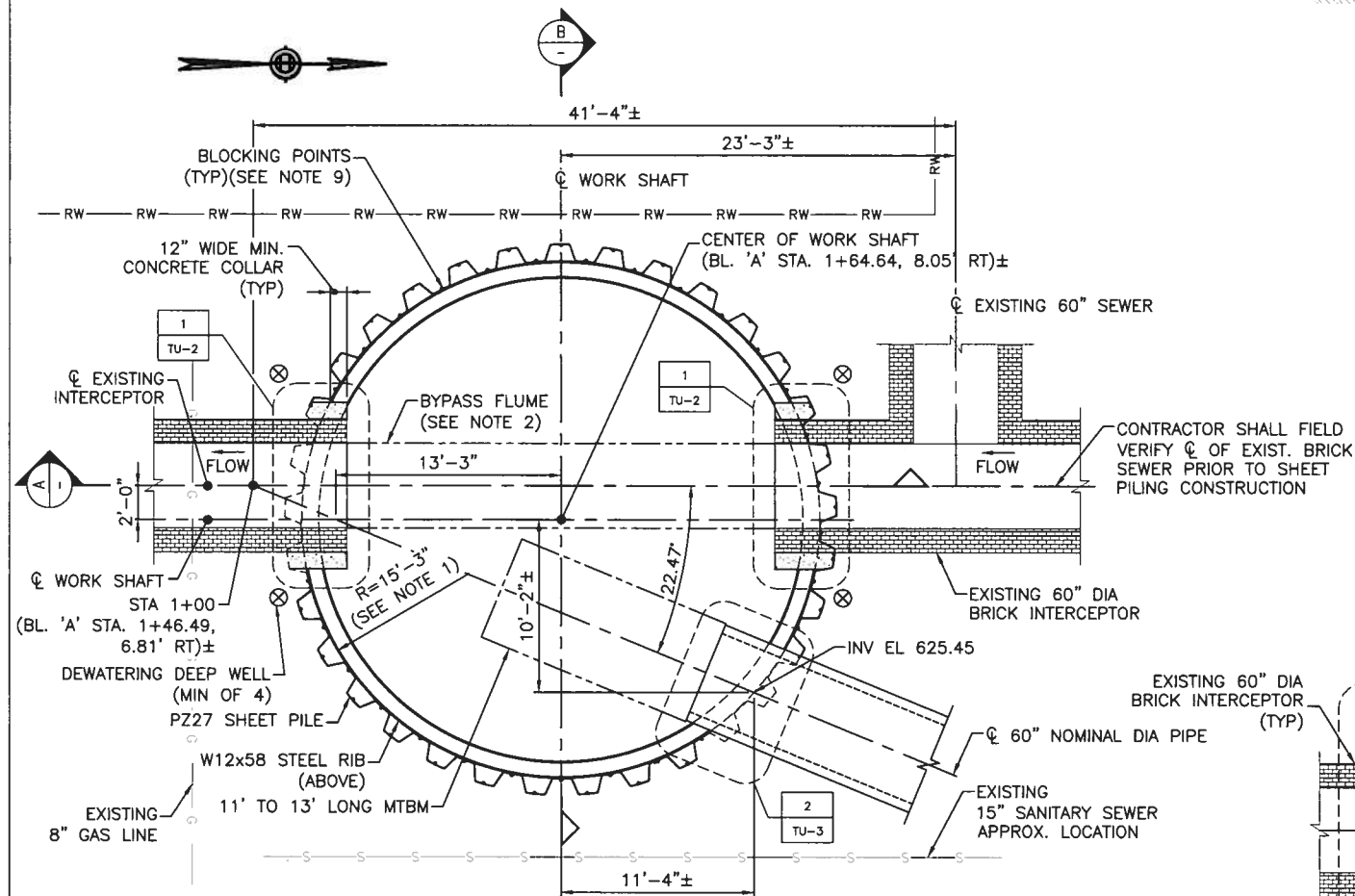
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 DRAWN BY: SS  
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 APPROVED BY: TGH  
 DATE: 5/1/10



WALWORTH RUN INTERCEPTOR REALIGNMENT

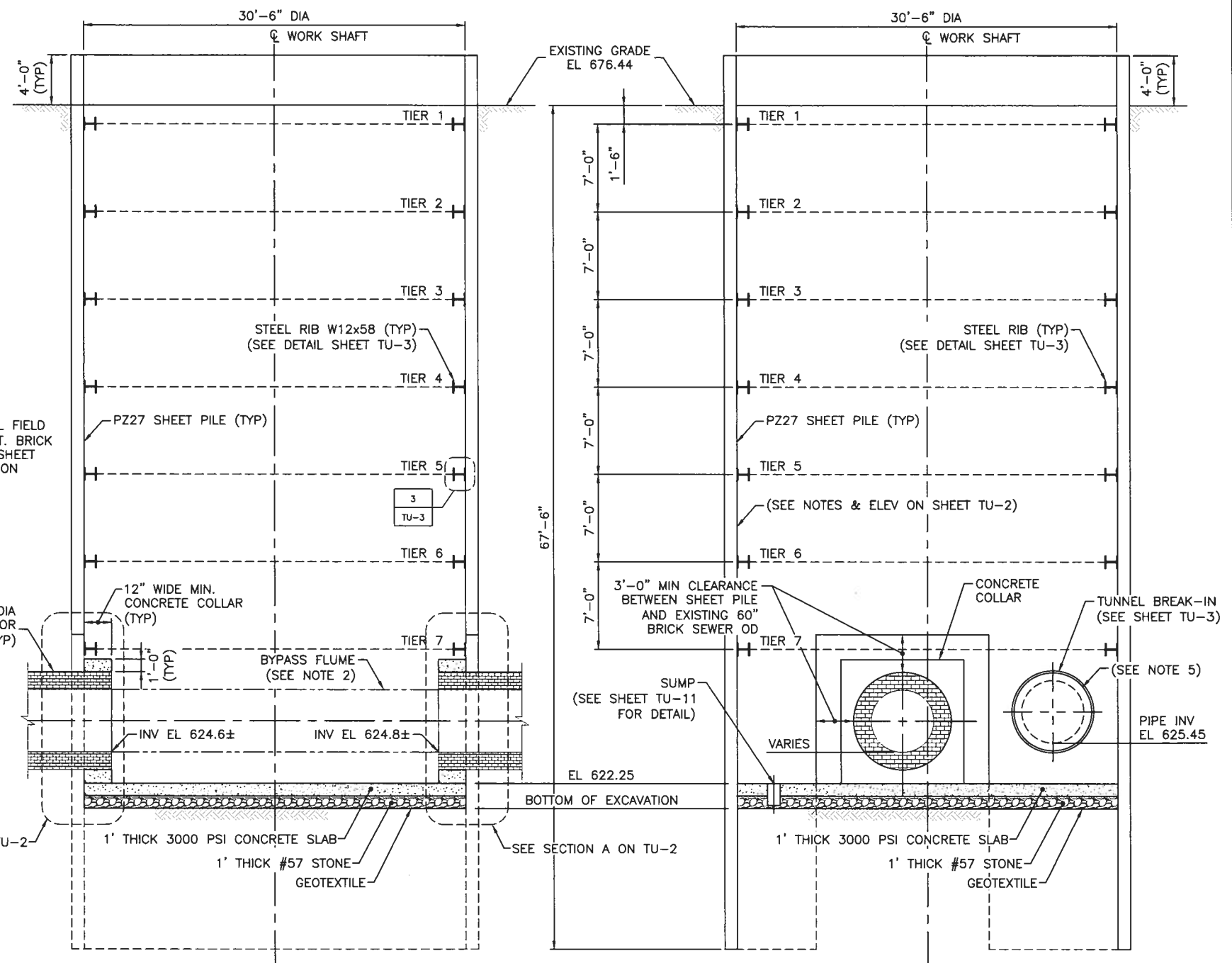
CITY OF CLEVELAND INLET BASIN DETAIL

PROJECT NO.:  
 SHEET:  
 SCALE: NONE  
 SHEET NO.: C-16



**GENERAL SHAFT NOTES:**

1. CIRCULAR SHEET PILING LAYOUT SHOWN IS BASED ON SKYLINE STEEL LLC PZ27 SHEETING.
2. DESIGN AND INSTALL FLOW BYPASS FLUME FOR 154 CFS CAPACITY (JC No 1 AND JC No2 ONLY).
3. REFER TO SHAFT SITE PLANS FOR UTILITY INFORMATION.
4. OVERHEAD UTILITIES NOT SHOWN.
5. THE APPROXIMATE MTBM DIAMETER IS 64"± FOR CCFRMP AND 76"± FOR POLYMER CONCRETE PIPE.
6. ALL STRUCTURAL STEEL MEMBERS INCLUDING SHEET PILES ARE FY=50 KSI.
7. USE E70XX ELECTRODES FOR ALL WELDS.
8. THE MAX THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 30 TONS. THE ACTUAL BREAK-IN PRESSURE SHALL BE CONTROLLED BY THE CONTRACTOR TO CUT THE CONCRETE BULLSEYE NEATLY BY THE MTBM.
9. PROVIDE WOOD BLOCKING BETWEEN RIBS AND SHEET PILE, IF GAP EXISTS BETWEEN RIBS AND SHEET PILE.
10. INITIAL SUPPORTS DESIGN INCLUDES 300 PSI CONSTRUCTION SURCHARGE AT SURFACE (STORAGE OR EQUIPMENT).



**SECTION**

SCALE: 3/16" = 1'-0"

**NOTES:**

1. REFER TO SHEET TU-3 FOR SUGGESTED MTBM BULLSEYE ARRANGEMENT AND MISCELLANEOUS DETAILS. FOR CLARITY, BULLSEYE CONCRETE NOT SHOWN IN SECTION VIEW.
2. SEE SHEET TU-2 FOR SEQUENCE OF CONSTRUCTION.



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REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: EP/HH/NK  
DRAWN BY: TG  
SHEET CHK'D BY: LG  
CROSS CHK'D BY: JZ  
APPROVED BY: JZ  
DATE: JUNE 15, 2010

**Dawn Underground Engineering, Inc.**  
Tunnel and Underground Structures Consultants  
10 Village Court - Hazlet - New Jersey 07730  
Tel: 732-739-8840 Fax: 732-739-8870

**Northeast Ohio Regional Sewer District**  
Protecting Your Health and Environment

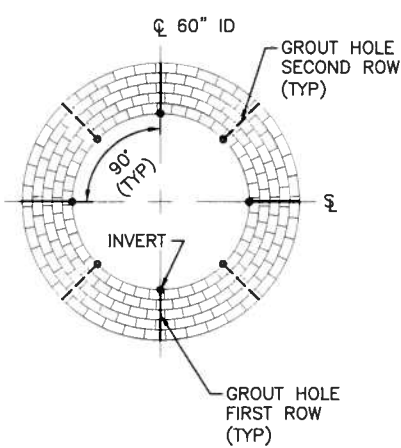
Professional Engineer Seal for Joseph E. Zarawski, State of Ohio, No. 10499, dated 6/15/10.

**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER No. 1 INITIAL SUPPORTS PLAN & SECTIONS**

PROJECT NO.:  
SHEET:  
SCALE: 3/16" = 1'-0"  
SHEET NO.: TU-1



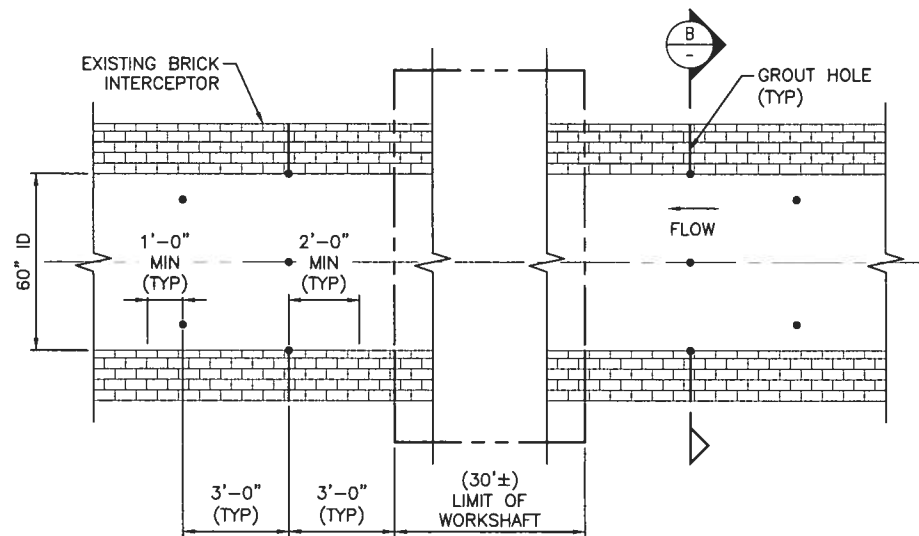


SECTION B  
SCALE: N.T.S.

NOTE: GROUT HOLE PATTERN FOR CUT-OFF & CONTACT GROUTING FROM WITHIN EXISTING INTERCEPTOR.

**GROUT HOLE PATTERN**

SCALE: 3/8" = 1'-0"



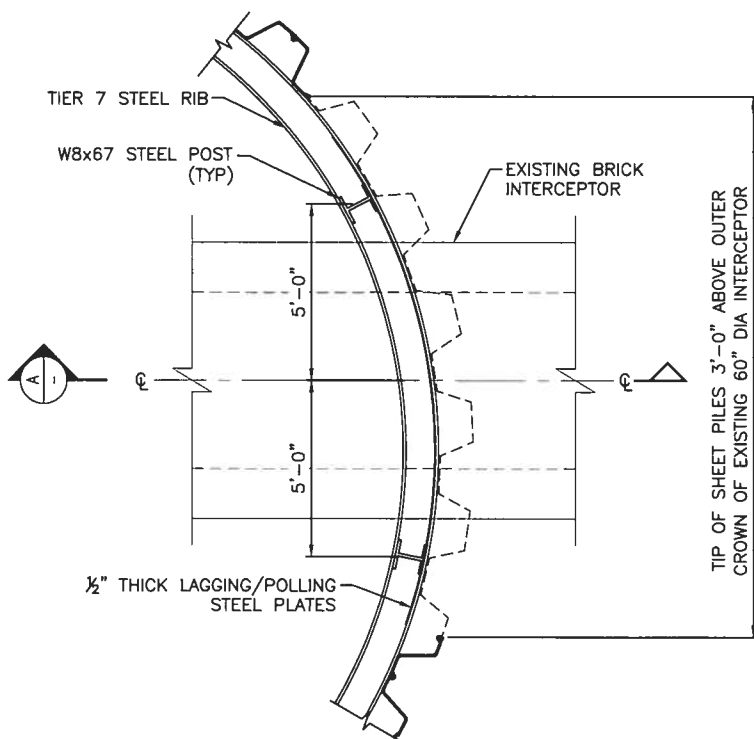
**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT JUNCTION CHAMBER NO. 1**

1. INSTALL SHEET PILES TO THE DEPTH SHOWN. IN PROXIMITY OF THE EXISTING INTERCEPTOR, TERMINATE THE SHEET PILES MINIMUM THREE (3) FEET ABOVE AND ON BOTH SIDES OF THE INTERCEPTOR'S EXTERIOR LIMITS.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT THE TUNNEL BREAK-IN LOCATION WITHIN LIMITS INDICATED.
3. FROM WITHIN THE EXISTING INTERCEPTOR PERFORM CUT-OFF /CONTACT GROUTING OF THE INTERCEPTOR'S EXTERIOR IN A PATTERN SHOWN ON THE DRAWING.
4. INSTALL DEWATERING DEEP WELLS. LOCATE THE WELLS AS CLOSE AS PRACTICAL TO THE EXTERIOR OF THE SHEET PILING AND THE EXISTING INTERCEPTOR TO MINIMUM DEPTH INDICATED IN GBR.
5. START OPERATING DEWATERING WELLS ON 24 HOURS/DAY 7 DAYS/WEEK BASIS.
6. EXCAVATE WORK SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
7. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH BELOW EACH TIER LEVEL AND SUBSEQUENTLY INSTALL EACH TIER STEEL SUPPORTS (FROM TIER 2 THROUGH TIER 6).
8. AFTER INSTALLATION OF THE TIER 6, CONTINUE TO EXCAVATE THE SHAFT TO A MAXIMUM OF 2 FEET DEPTH BELOW TIER 7 LEVEL. DURING THE EXCAVATION EMPLOY STEEL POLLING AND LAGGING PLATES TO COVER THE GAP AND TO CONTROL SOIL INFLOW FROM WITHIN THE GAP BETWEEN THE SHEET PILING AND THE OUTSIDE OF EXISTING INTERCEPTOR. DRIVE THE PLATES BELOW THE EXCAVATION TO MAINTAIN STABLE CONDITIONS AT ALL TIMES. WELD STEEL POLLING/LAGGING PLATES TOGETHER AND TO SHEET PILING TO COMPLETELY CLOSE THE GAP. INSTALL TIER 7 STEEL SUPPORTS (STEEL RIB WALER).
9. CONTINUE TO EXCAVATE THE SHAFT TO THE SPRING LINE LEVEL OF THE EXISTING INTERCEPTOR BY INSTALLING STEEL LAGGING/POLLING PLATES WITHIN THE GAP BETWEEN THE SHEET PILING AND EXISTING INTERCEPTOR TO CONTROL SOIL AND WATER INFILTRATION. PROVIDE WATER TIGHT SEAL AND FILL VOIDS IN THIS AREA BY EMPLOYING FOAM, CHEMICAL AND OTHER GROUTING METHODS. WELD ALL STEEL PLATES TOGETHER AND TO SHEET PILES.
10. DURING LOW FLOW CONDITION, SAW CUT THE INTERCEPTOR UP TO ITS SPRING LINE AT FUTURE CONCRETE COLLAR LIMIT AND DEMOLISH AND REMOVE THE TOP HALF OF EXISTING INTERCEPTOR. PROVIDE A FLOW BYPASS SYSTEM FOR THE SEWER FLOW.

11. CONTINUE TO EXCAVATE THE SHAFT TO THE BOTTOM OF THE EXCAVATION BY INSTALLING STEEL LAGGING/POLLING PLATES WITHIN THE GAP BETWEEN THE SHEET PILING AND EXISTING INTERCEPTOR TO CONTROL SOIL AND WATER INFILTRATION. PROVIDE WATER TIGHT SEAL AND FILL VOIDS IN THIS AREA BY EMPLOYING FOAM, CHEMICAL AND OTHER GROUTING METHODS. WELD ALL STEEL PLATES TOGETHER AND TO SHEET PILES.
12. DEMOLISH BOTTOM HALF (BELOW SPRING LINE) OF THE EXISTING INTERCEPTOR. PROVIDE SUPPORT TO FLOW BYPASS SYSTEM AS NECESSARY. INSTALL STEEL POSTS ON BOTH SIDES OF THE EXISTING SEWER AND BOTH SIDES OF TUNNEL BREAK-IN FROM TIER 7 INTO FUTURE CONCRETE SLAB AS SHOWN ON THE DRAWINGS. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE, CRUSHED STONE BASE AND CONCRETE SLAB.
13. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. PLACE CONCRETE COLLAR AROUND THE EXISTING INTERCEPTOR. ALLOW THE CONCRETE SLAB AND COLLAR TO GAIN THE DESIGN STRENGTH. STOP OPERATING DEWATERING WELLS. IF THE AREA AROUND THE EXISTING INTERCEPTOR SHOWS LEAKAGE, CORRECT THE PROBLEM BY WELDING, GROUTING AND SEALING UNTIL INFILTRATION IS STOPPED AND STABILITY IS ASSURED.
14. CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PROCEDURE FOR BREAK-IN FOR DRIVE 1**

15. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN LOCATION TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULL'S EYE.
16. TEST THE BULL'S EYE AREA FOR WATER TIGHTNESS BY DRILLING TEST PORTS. PROVIDE ADDITIONAL GROUTING AS NECESSARY TO ELIMINATE ANY LEAKAGE. WHEN ACCEPTABLE, CUT THE MAIN SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AREA (BULL'S EYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL THE BULL'S EYE ZONE AS NECESSARY.
17. PLACE CONCRETE BULLSEYE AND INSTALL STEEL BULL'S EYE SEAL PLATE AT THE TUNNEL BREAK-IN FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 1.
18. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE CARRIER PIPE THROUGH THE PIPE GROUT PORTS BEFORE THE SEALS ARE REMOVED AT BULL'S EYES OF THE DRIVE.

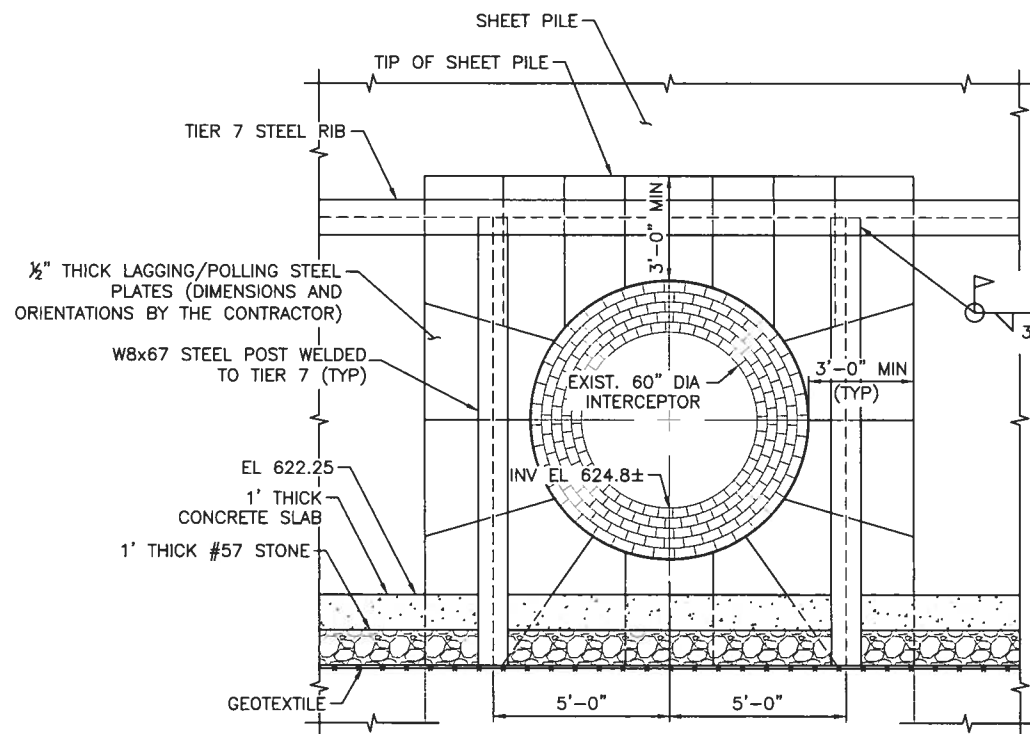


NOTE: CONCRETE COLLAR IS NOT SHOWN FOR CLARITY

**NORTH PLAN VIEW**

SCALE: 3/8" = 1'-0"

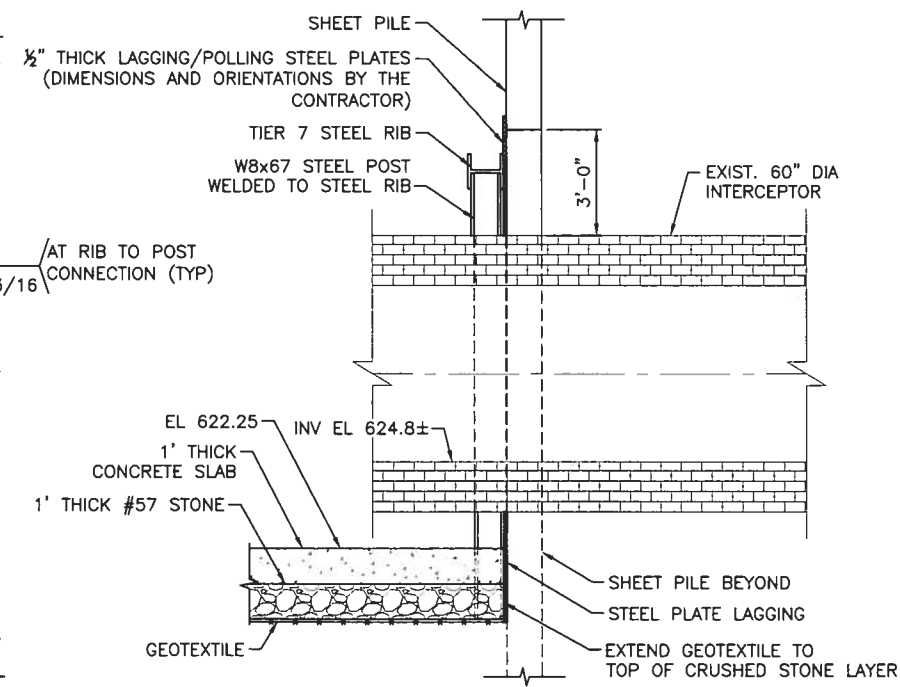
1  
TU-1



NOTE: CONCRETE COLLAR IS NOT SHOWN FOR CLARITY

**NORTH FRONT ELEVATION**

SCALE: 3/8" = 1'-0"



NOTE: CONCRETE COLLAR IS NOT SHOWN FOR CLARITY

**SECTION**

SCALE: 3/8" = 1'-0"

A  
-

3/8"=1'-0"



BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

NOTE: SOUTH PLAN VIEW AND ELEVATION ARE SYMMETRICAL TO NORTH PLAN VIEW AND ELEVATION

DESIGNED BY:	EP/MH/NK		
DRAWN BY:	TG		
SHEET CHK'D BY:	LG		
CROSS CHK'D BY:	JZ		
APPROVED BY:	JZ		
DATE:	JUNE 15, 2010		
REV. NO.	DATE	ISSUE BY	REMARKS

**Dawn Underground Engineering, Inc.**  
Tunnel and Underground Structures Consultants  
10 Village Court - Hazlet - New Jersey 07730  
Tel: 732-739-8840 Fax: 732-739-8870

**Northeast Ohio Regional Sewer District**  
Protecting Your Health and Environment

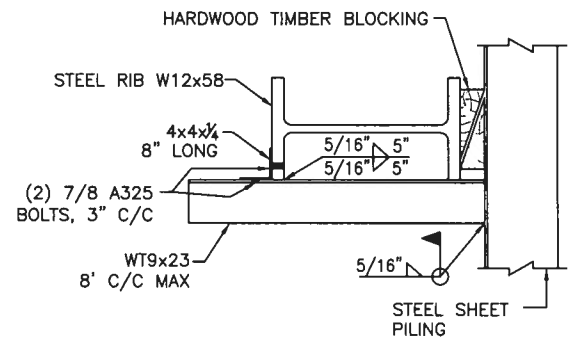
Professional Engineer Seal for **JOZSEPH E. ZARAWSKI**, No. 44915, State of Ohio, dated 6/15/10.

**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER No. 1 SUPPORTS AT EXISTING INTERCEPTOR**

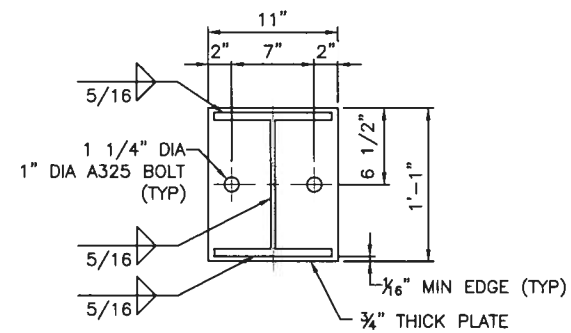
PROJECT NO.:  
SHEET:  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-2



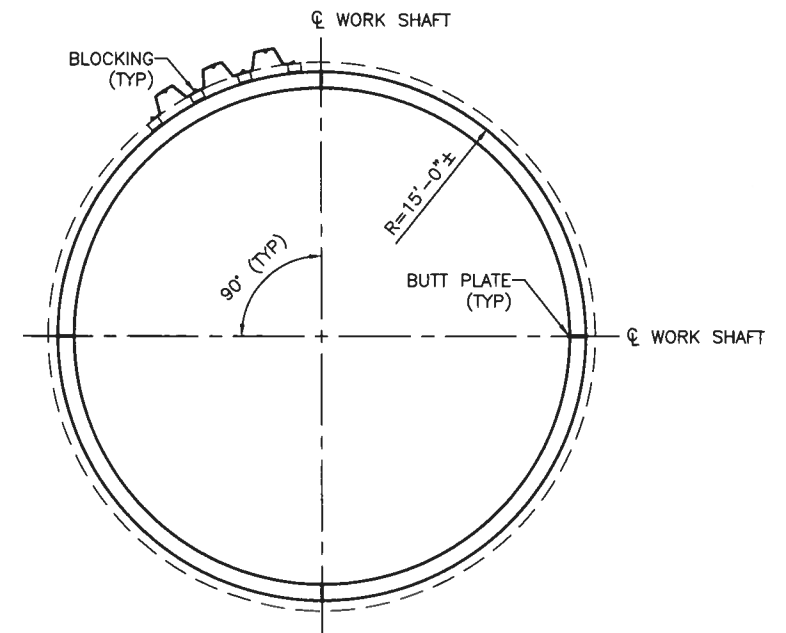


**RIB SEAT DETAIL**  
SCALE: N.T.S.

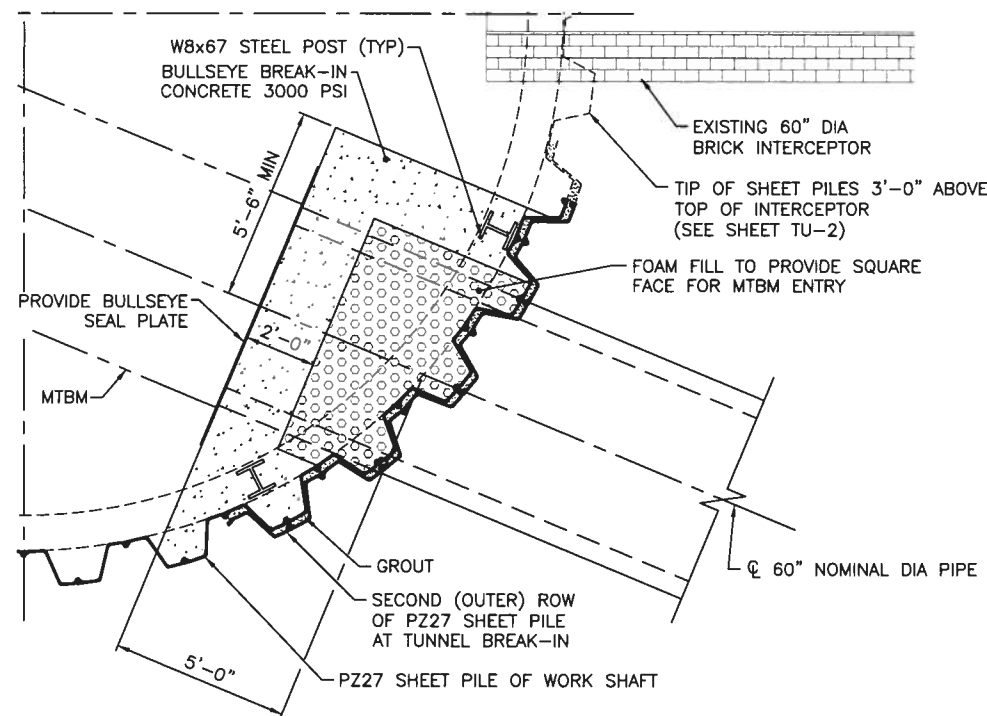
3  
TU-1



**BUTT PLATE DETAIL**  
SCALE: 1 1/2" = 1'-0"

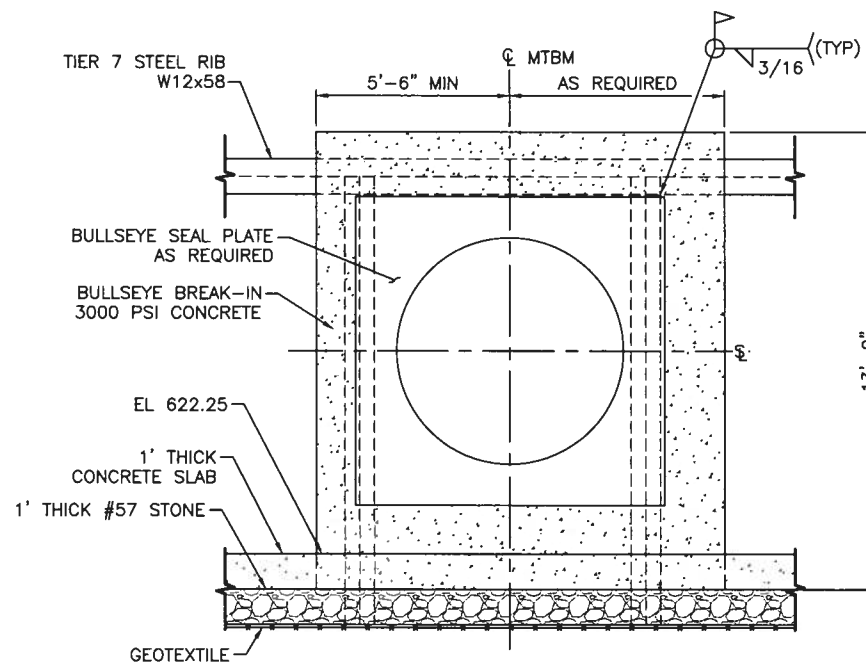


**4 PIECE RING OF W12x58 STEEL RIB**  
SCALE: 3/8" = 1'-0"

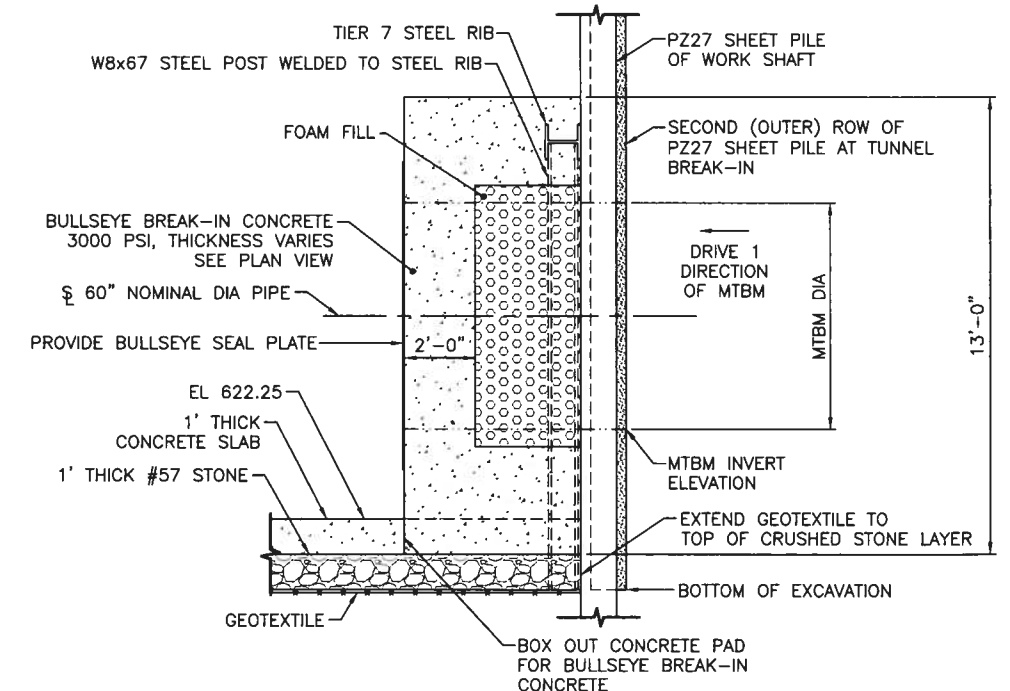


**PLAN VIEW TUNNEL BREAK-IN DETAIL**  
SCALE: 3/8" = 1'-0"

2  
TU-1



**ELEVATION TUNNEL BREAK-IN DETAIL**  
SCALE: 3/8" = 1'-0"



**SECTION TUNNEL BREAK-IN DETAIL**  
SCALE: 3/8" = 1'-0"



BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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SHEET CHK'D BY: LG  
CROSS CHK'D BY: JZ  
APPROVED BY: JZ  
DATE: JUNE 15, 2010

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10 Village Court - Hazlet - New Jersey 07730  
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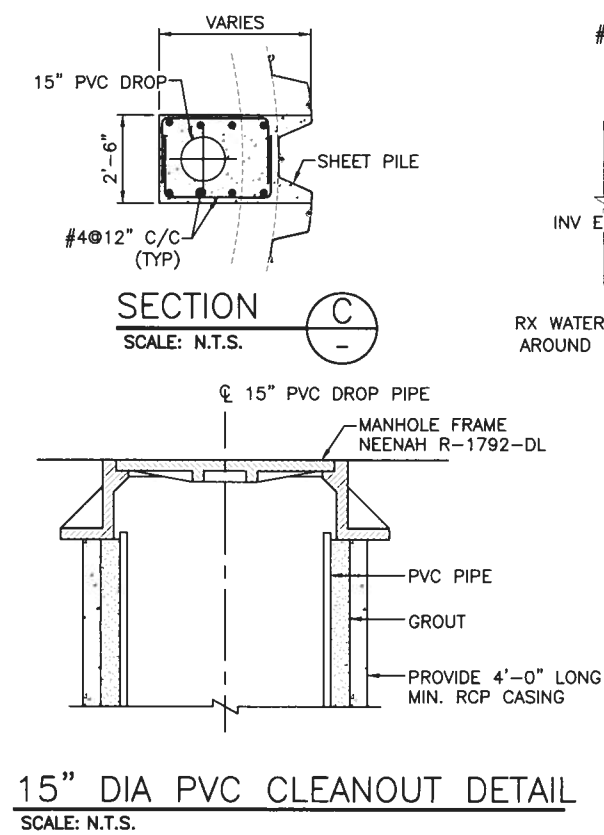
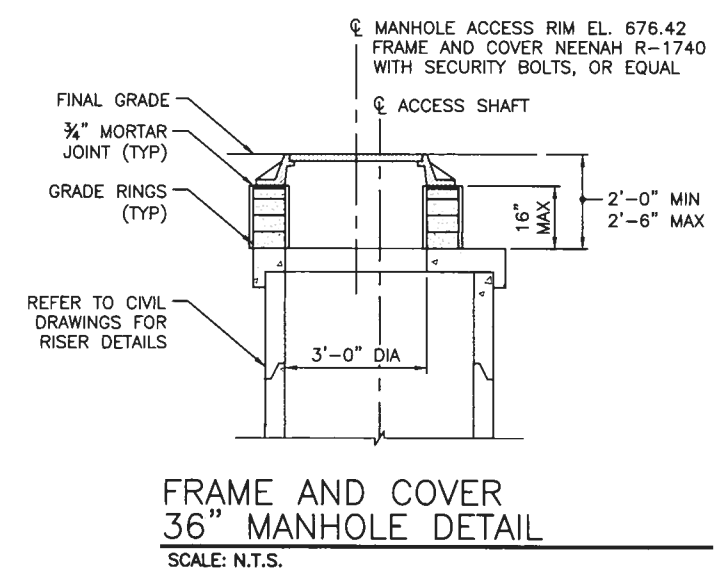
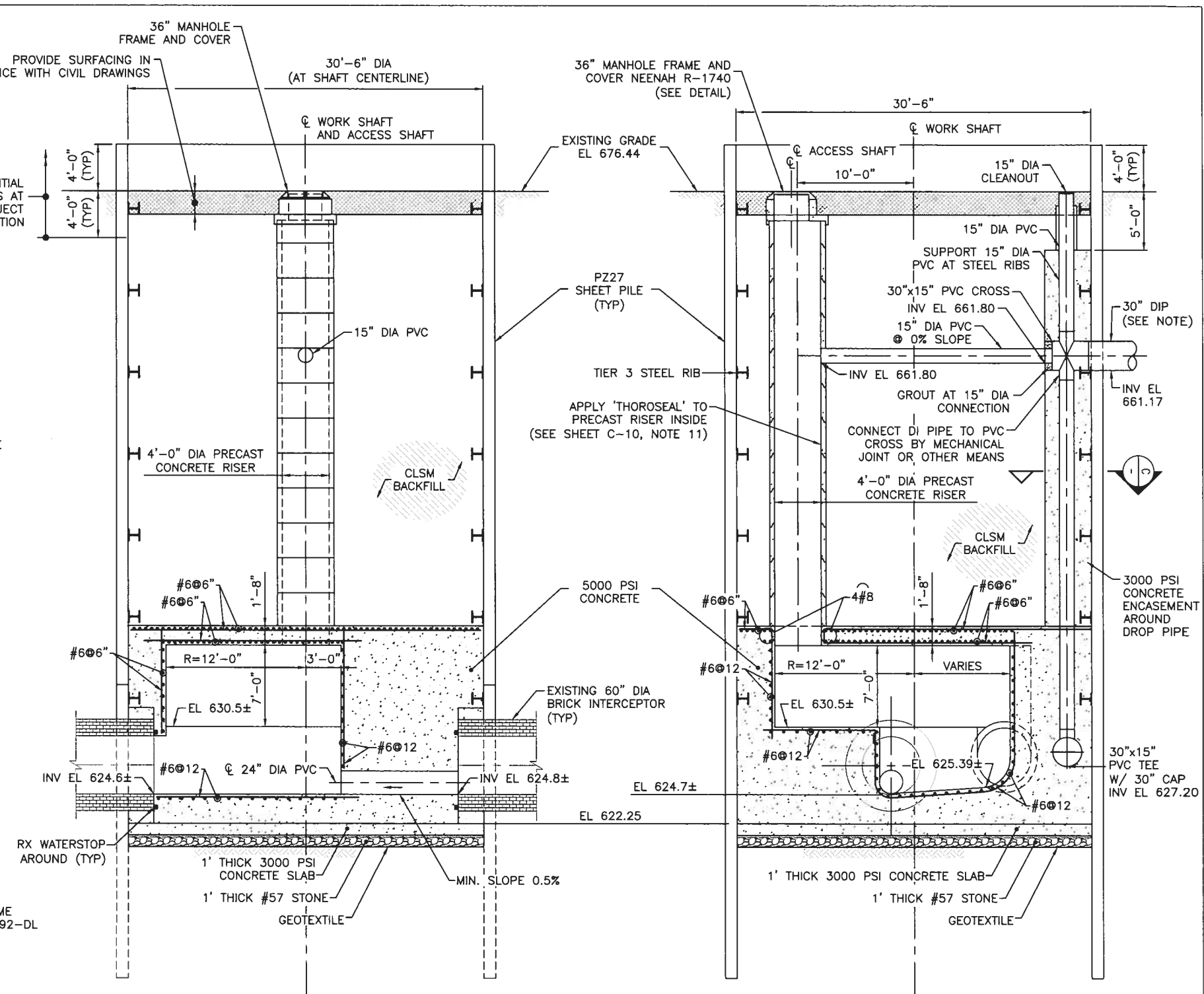
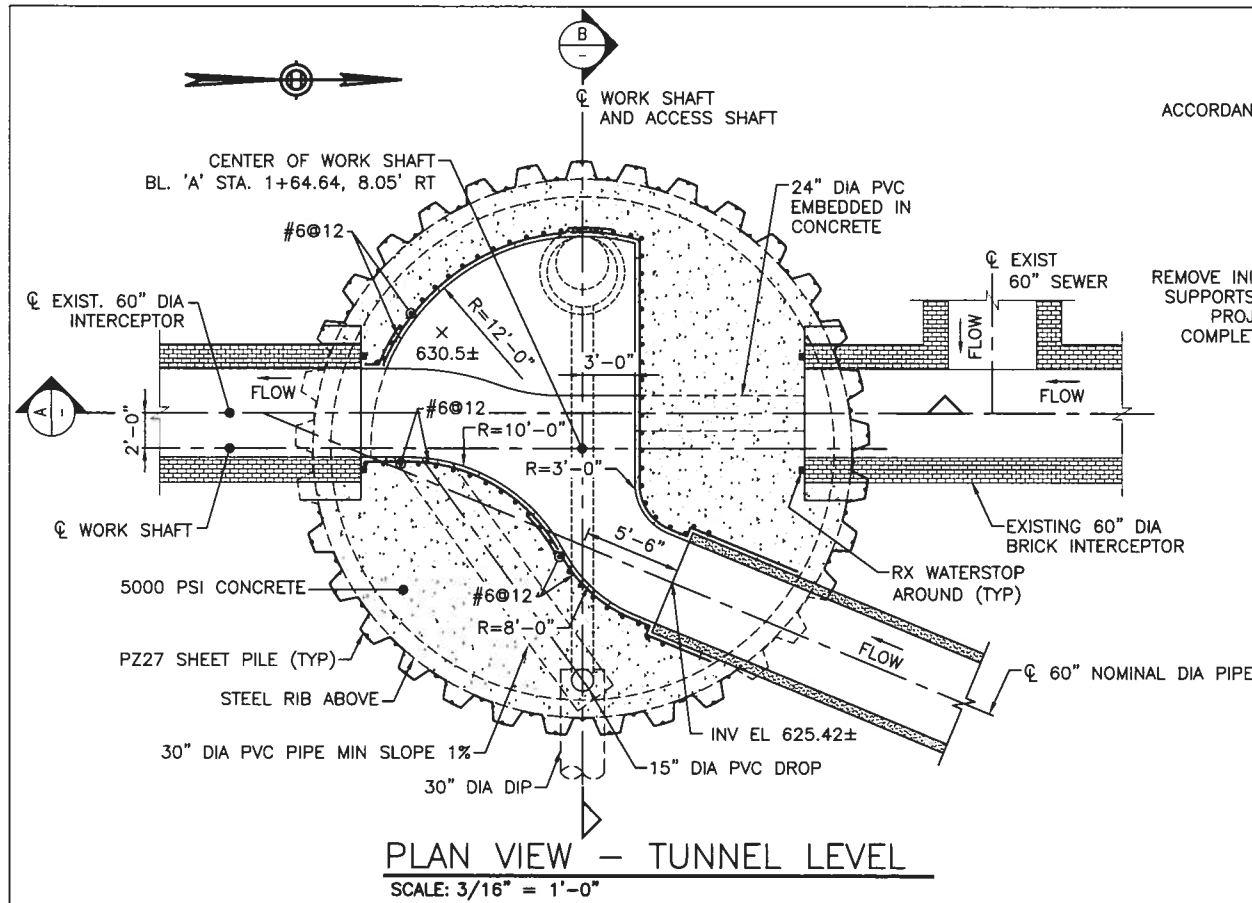
**Northeast Ohio Regional Sewer District**  
Protecting Your Health and Environment

JOSEPH E. ZUPAWSKI  
6/15/10

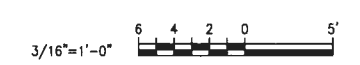
WALWORTH RUN INTERCEPTOR REALIGNMENT

**WORK SHAFT JUNCTION CHAMBER No. 1 BULLSEYE AND MISCELLANEOUS DETAILS**

PROJECT NO.:  
SHEET:  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-3



- NOTES:
- BEFORE INSTALLING 30" DIP AND 30"x15" PVC CROSS, BACKFILL SHAFT TO 2 FT BELOW TIER 3 STEEL RIB. THEN REMOVE TIER 3 STEEL RIB AND INSTALL DI PIPING.
  - SEE SHEET C-10 FOR PRECAST CONCRETE RISER DETAILS.



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CROSS CHK'D BY:	JZ		
APPROVED BY:	JZ		
DATE:	JUNE 15, 2010		
REV. NO.	DATE	ISSUE BY	REMARKS

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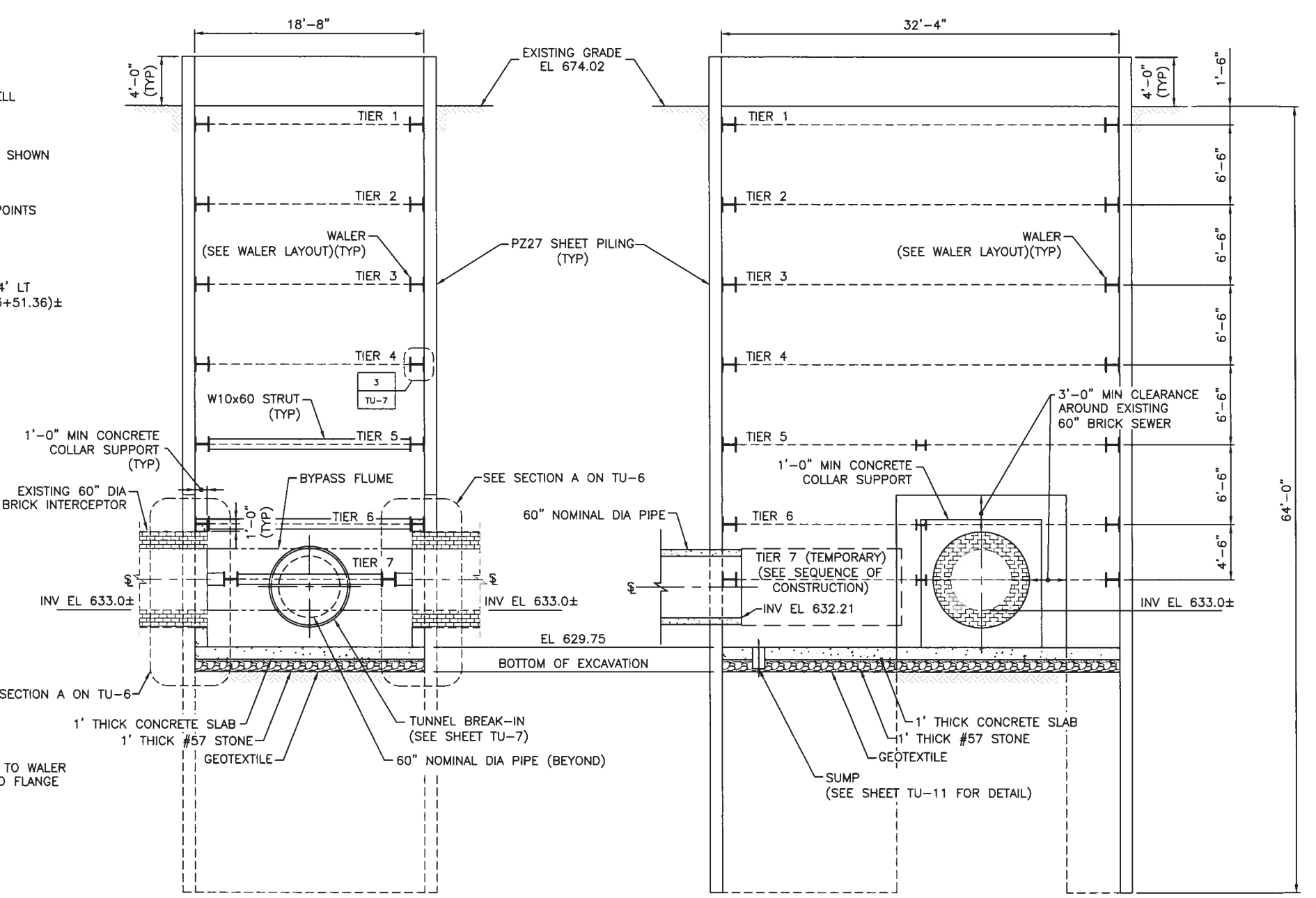
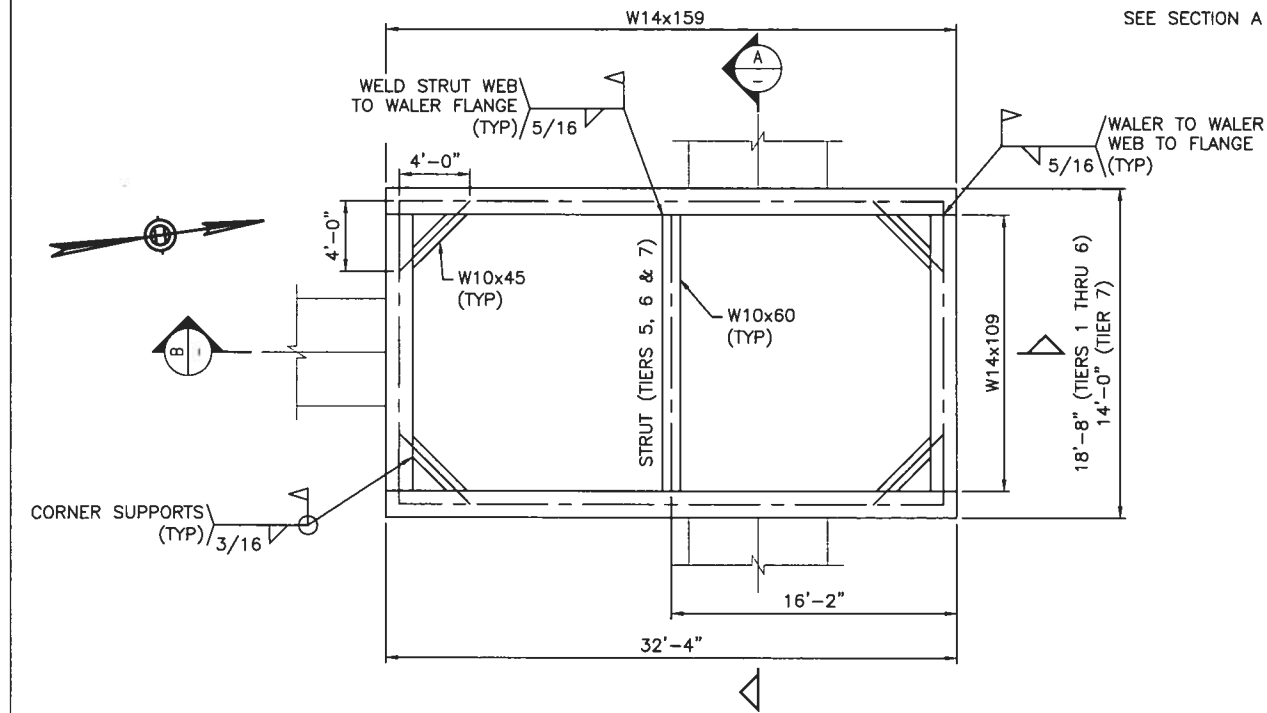
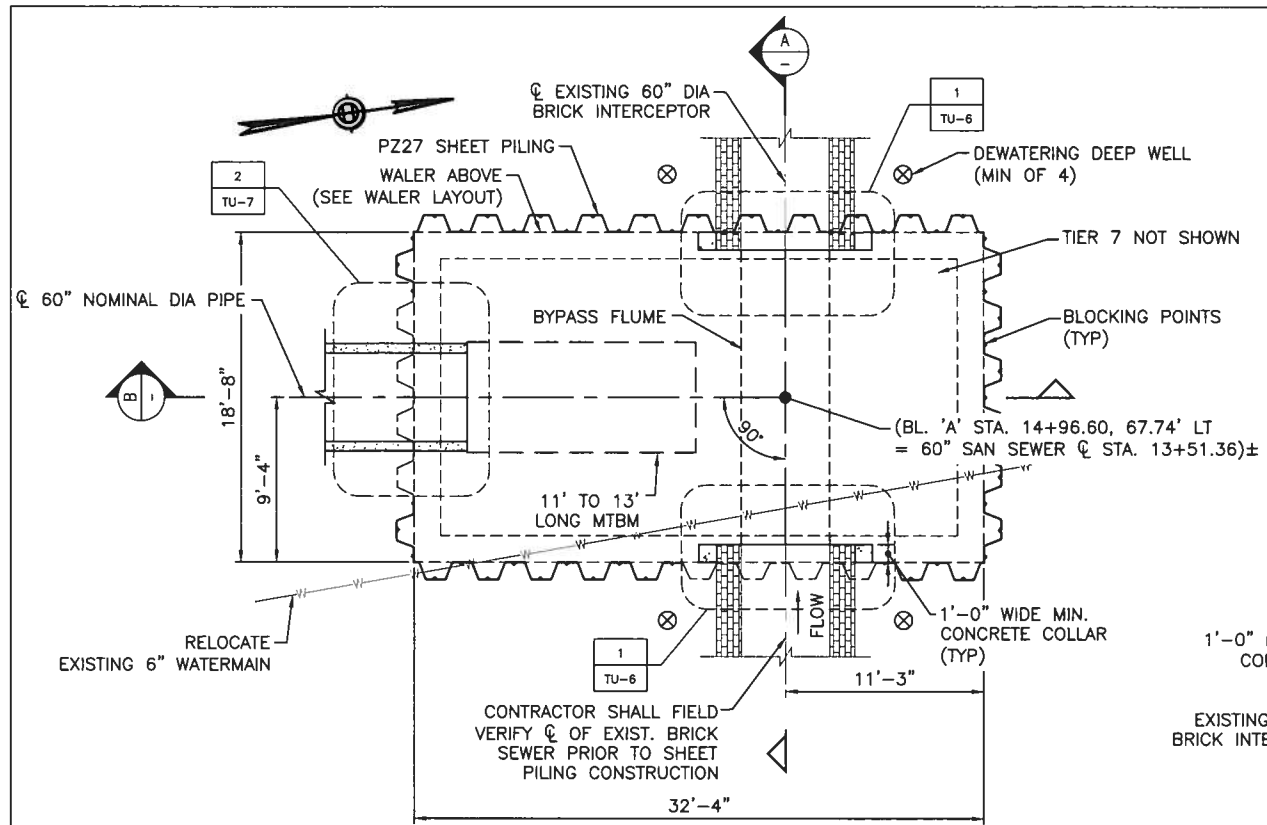
**Northeast Ohio Regional Sewer District**  
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Professional Engineer Seal for Joseph E. Zurawski, State of Ohio, No. 46935, dated 6/15/10.

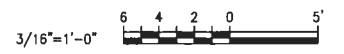
WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER No. 1  
STRUCTURE DETAILS

PROJECT NO.:  
SHEET:  
SCALE: 3/16" = 1'-0"  
SHEET NO.: TU-4



- NOTES:
- FOR GENERAL NOTES SEE SHEET TU-1.
  - REFER TO SHEET TU-6 FOR SUGGESTED MTBM BULLSEYE ARRANGEMENT AND MISCELLANEOUS DETAILS. FOR CLARITY, BULLSEYE CONCRETE NOT SHOWN ON SECTION VIEW.
  - SEE SHEET TU-6 FOR SEQUENCE OF CONSTRUCTION.



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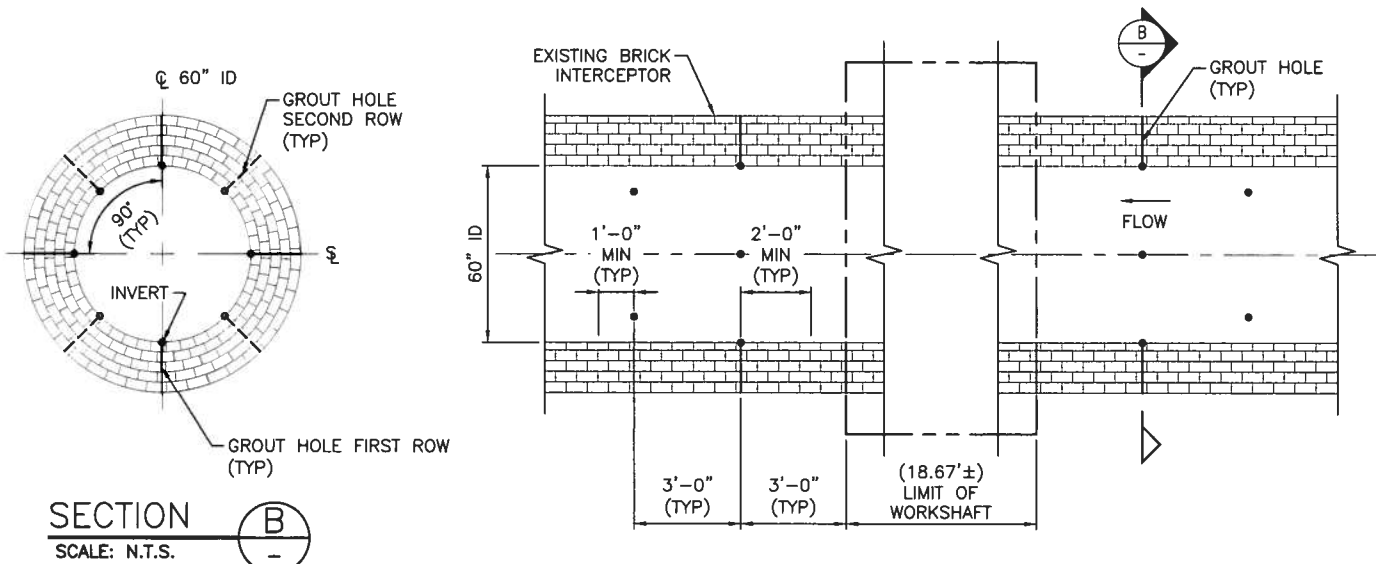
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Protecting Your Health and Environment

JOSEPH F. ZUPARSKI  
Professional Engineer  
6/15/10

WALWORTH RUN INTERCEPTOR REALIGNMENT

WORK SHAFT JUNCTION CHAMBER No. 2  
INITIAL SUPPORTS  
PLAN & SECTIONS

PROJECT NO.:  
SHEET:  
SCALE: 3/16" = 1'-0"  
SHEET NO.: TU-5



NOTE: GROUT HOLE PATTERN FOR CUT-OFF & CONTACT GROUTING FROM WITHIN EXISTING INTERCEPTOR.

**GROUT HOLE PATTERN**

SCALE: 3/8" = 1'-0"

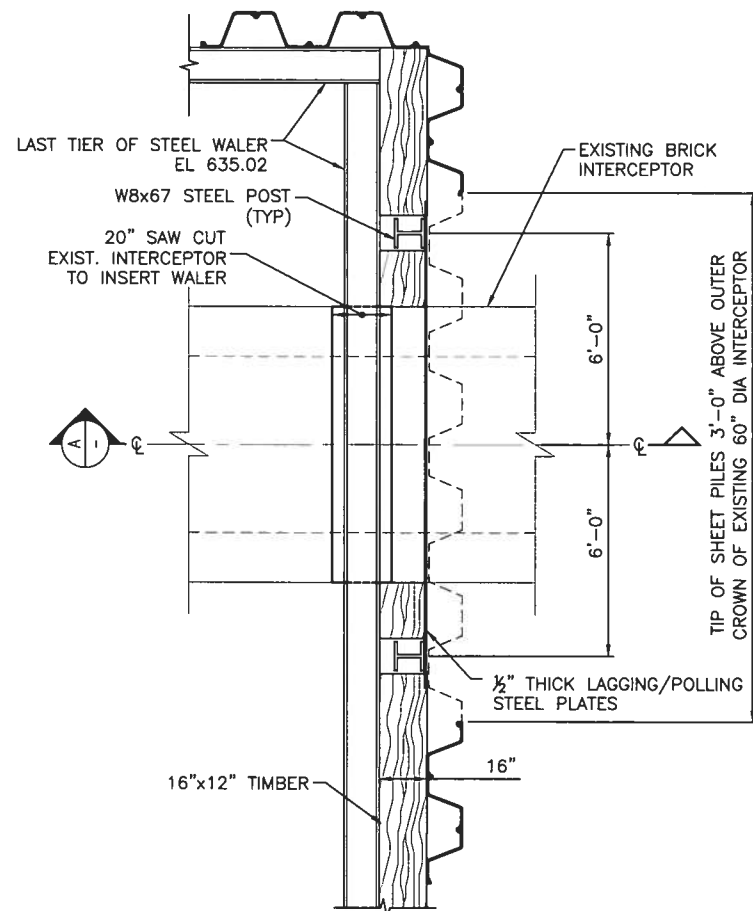
**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT JUNCTION CHAMBER NO. 2**

1. INSTALL SHEET PILES TO THE DEPTH SHOWN. IN PROXIMITY OF THE EXISTING INTERCEPTOR, TERMINATE THE SHEET PILES MINIMUM THREE (3) FEET ABOVE AND ON BOTH SIDES OF THE INTERCEPTOR'S EXTERIOR LIMITS.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT THE TUNNEL BREAK-IN LOCATION WITHIN LIMITS INDICATED.
3. FROM WITHIN THE EXISTING INTERCEPTOR PERFORM CUT-OFF /CONTACT GROUTING OF THE INTERCEPTOR'S EXTERIOR IN A PATTERN SHOWN ON THE DRAWING.
4. INSTALL DEWATERING DEEP WELLS. LOCATE THE WELLS AS CLOSE AS PRACTICAL TO THE EXTERIOR OF THE SHEET PILING AND THE EXISTING INTERCEPTOR TO MINIMUM DEPTH INDICATED IN GBR.
5. START OPERATING DEWATERING WELLS ON 24 HOURS/DAY 7 DAYS/WEEK BASIS.
6. EXCAVATE WORK SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
7. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH BELOW EACH TIER LEVEL AND SUBSEQUENTLY INSTALL EACH TIER STEEL SUPPORTS (FROM TIER 2 THROUGH TIER 5). INSTALL STRUT FOR TIER 5.
8. AFTER INSTALLATION OF TIER 5, CONTINUE TO EXCAVATE THE SHAFT TO A MAXIMUM OF 2 FEET DEPTH BELOW TIER 6 LEVEL. DURING THE EXCAVATION EMPLOY STEEL POLLING AND LAGGING PLATES TO COVER THE GAP AND TO CONTROL SOIL INFLOW FROM WITHIN THE GAP BETWEEN THE SHEET PILING AND THE OUTSIDE OF EXISTING INTERCEPTOR. DRIVE THE PLATES BELOW THE EXCAVATION TO MAINTAIN STABLE CONDITIONS AT ALL TIMES. WELD STEEL POLLING/LAGGING PLATES TOGETHER AND TO SHEET PILING TO COMPLETELY CLOSE THE GAP. INSTALL TIER 6 STEEL SUPPORTS (WALERS AND STRUT).
9. CONTINUE TO EXCAVATE THE SHAFT TO A MAXIMUM OF 2 FEET DEPTH BELOW TIER 7 LEVEL. DURING THE EXCAVATION EMPLOY STEEL POLLING AND LAGGING PLATES TO COVER THE GAP AND TO CONTROL SOIL INFLOW FROM WITHIN THE GAP BETWEEN THE SHEET PILING AND THE OUTSIDE OF EXISTING INTERCEPTOR. DRIVE THE PLATES BELOW THE EXCAVATION TO MAINTAIN STABLE CONDITIONS AT ALL TIMES. WELD STEEL POLLING/LAGGING PLATES TOGETHER AND TO SHEET PILING TO COMPLETELY CLOSE THE GAP.
10. DURING LOW FLOW CONDITION, SAW CUT THE INTERCEPTOR AT THE FUTURE CONCRETE COLLAR LIMIT JUST BELOW THE SPRING LINE OF INTERCEPTOR THAT CAN ACCOMMODATE TIER 7 STEEL SUPPORTS. DEMOLISH AND REMOVE THE SAW CUT TOP HALF OF EXISTING INTERCEPTOR. INSTALL TIER 7 STEEL SUPPORTS. PROVIDE A FLOW BYPASS SYSTEM FOR THE SEWER FLOW.

11. CONTINUE TO EXCAVATE THE SHAFT TO THE LIMIT OF THE EXCAVATION BY INSTALLING STEEL LAGGING/POLLING PLATES WITHIN THE GAP BETWEEN THE SHEET PILING AND EXISTING INTERCEPTOR TO CONTROL SOIL AND WATER INFILTRATION. PROVIDE WATER TIGHT SEAL AND FILL VOIDS IN THIS AREA BY EMPLOYING FOAM, CHEMICAL AND OTHER GROUTING METHODS. WELD ALL STEEL PLATES TOGETHER AND TO SHEET PILES.
12. DEMOLISH BOTTOM HALF (BELOW SPRING LINE) OF THE EXISTING INTERCEPTOR. PROVIDE SUPPORT TO FLOW BYPASS SYSTEM AS NECESSARY. INSTALL STEEL POSTS ON BOTH SIDES OF THE EXISTING SEWER AND BOTH SIDES OF TUNNEL BREAK-IN FROM TIER 6 INTO FUTURE CONCRETE SLAB AS SHOWN ON THE DRAWINGS. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE, CRUSHED STONE BASE AND CONCRETE SLAB.
13. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. PLACE CONCRETE COLLAR AROUND THE EXISTING INTERCEPTOR. ALLOW THE CONCRETE SLAB AND COLLAR TO GAIN THE DESIGN STRENGTH. STOP OPERATING DEWATERING WELLS. IF THE AREA AROUND THE EXISTING INTERCEPTOR SHOWS LEAKAGE, CORRECT THE PROBLEM BY WELDING, GROUTING AND SEALING UNTIL INFILTRATION IS STOPPED AND STABILITY IS ASSURED.
14. REMOVE STEEL SUPPORTS FOR TIER 7 (I.E., WALERS & STRUT).
15. CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PROCEDURE FOR BREAK-IN FOR DRIVE 3**

16. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN LOCATION TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULL'S EYE.
17. TEST THE BULL'S EYE AREA FOR WATER TIGHTNESS BY DRILLING TEST PORTS. PROVIDE ADDITIONAL GROUTING AS NECESSARY TO ELIMINATE ANY LEAKAGE. WHEN ACCEPTABLE, CUT THE MAIN SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AREA (BULL'S EYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL THE BULL'S EYE ZONE AS NECESSARY.
18. PLACE CONCRETE FOR AND INSTALL STEEL BULL'S EYE SEAL PLATE AT THE TUNNEL BREAK-IN FOR DRIVE 3. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICRO TUNNEL BORING MACHINE (MTBM) FOR DRIVE 3.
19. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE CARRIER PIPE THROUGH THE PIPE GROUT PORTS BEFORE THE SEALS ARE REMOVED AT BULL'S EYES OF THE DRIVE.

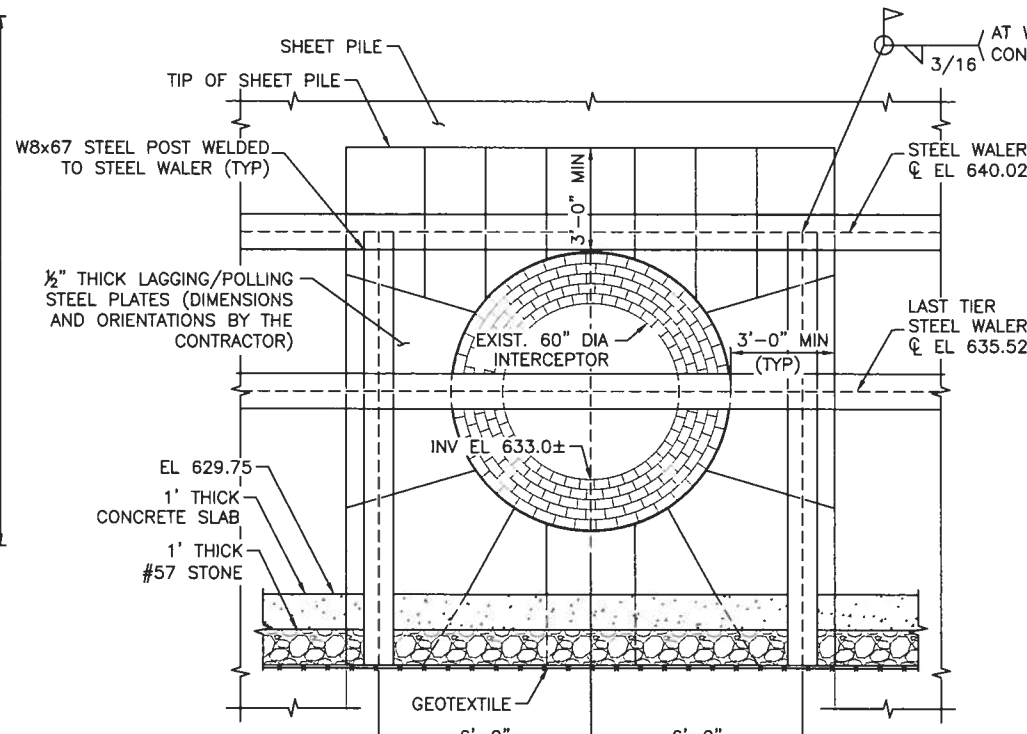


NOTE: CONCRETE COLLAR IS NOT SHOWN FOR CLARITY

**EAST PLAN VIEW**

SCALE: 3/8" = 1'-0"

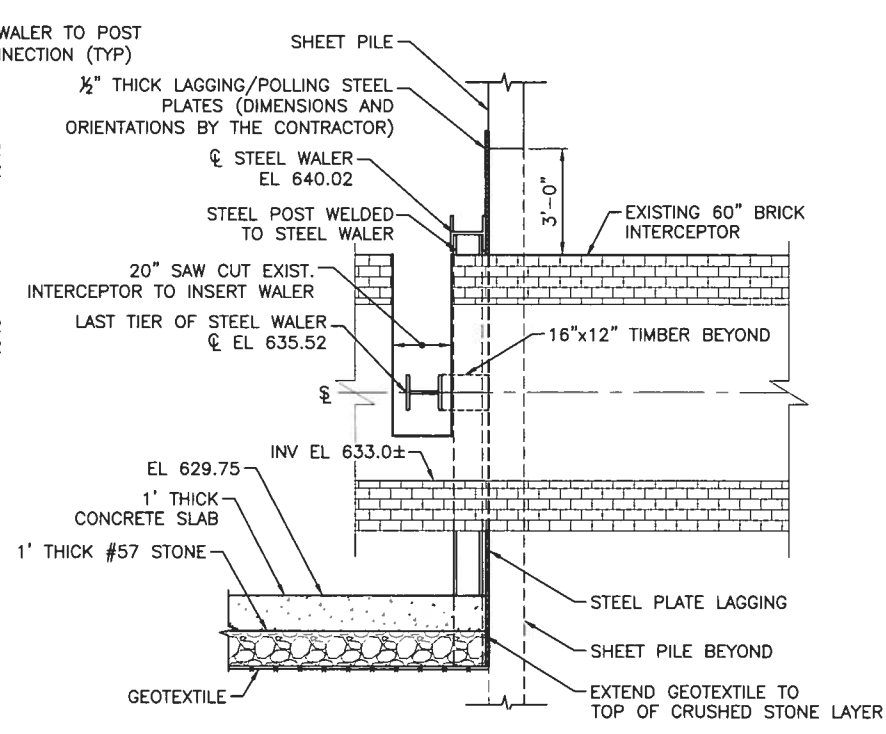
1  
TU-5



NOTE: CONCRETE COLLAR IS NOT SHOWN FOR CLARITY

**EAST FRONT ELEVATION**

SCALE: 3/8" = 1'-0"



NOTE: CONCRETE COLLAR IS NOT SHOWN FOR CLARITY

**SECTION**

SCALE: 3/8" = 1'-0"

A

3/8"=1'-0"



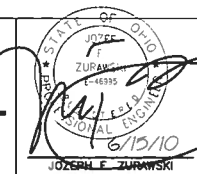
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CROSS CHK'D BY: JZ  
APPROVED BY: JZ  
DATE: JUNE 15, 2010

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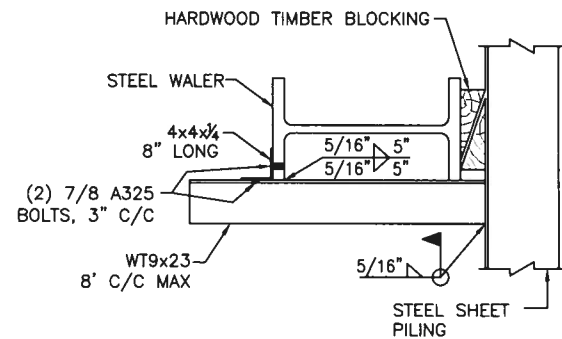
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Protecting Your Health and Environment



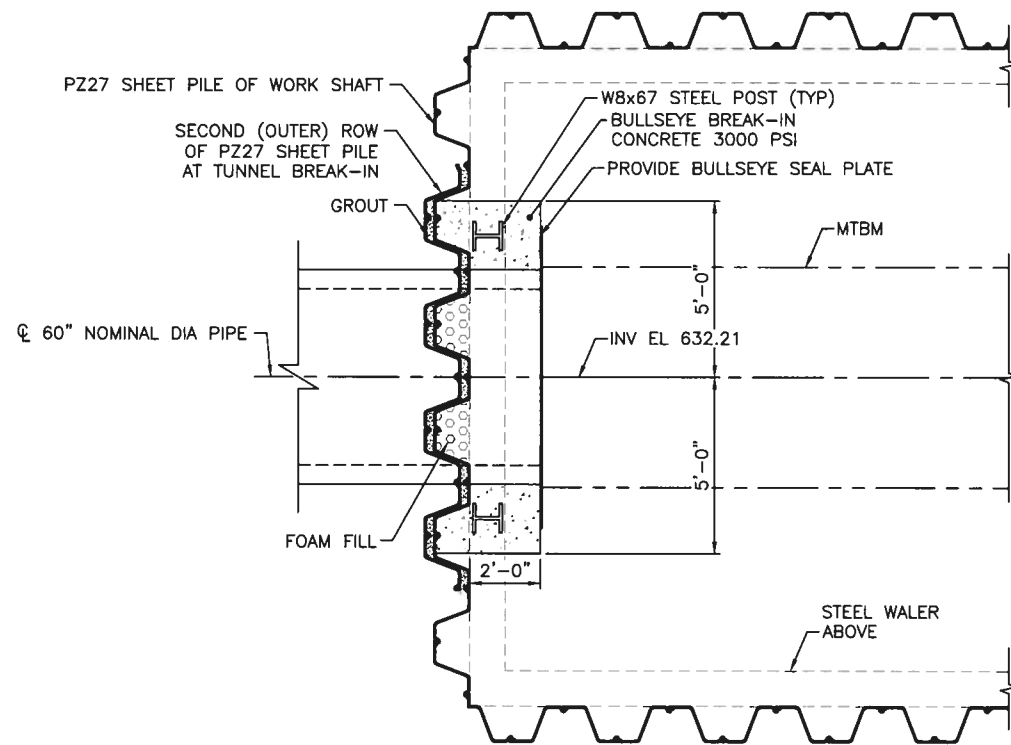
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER NO. 2 SUPPORTS AT EXISTING INTERCEPTOR**

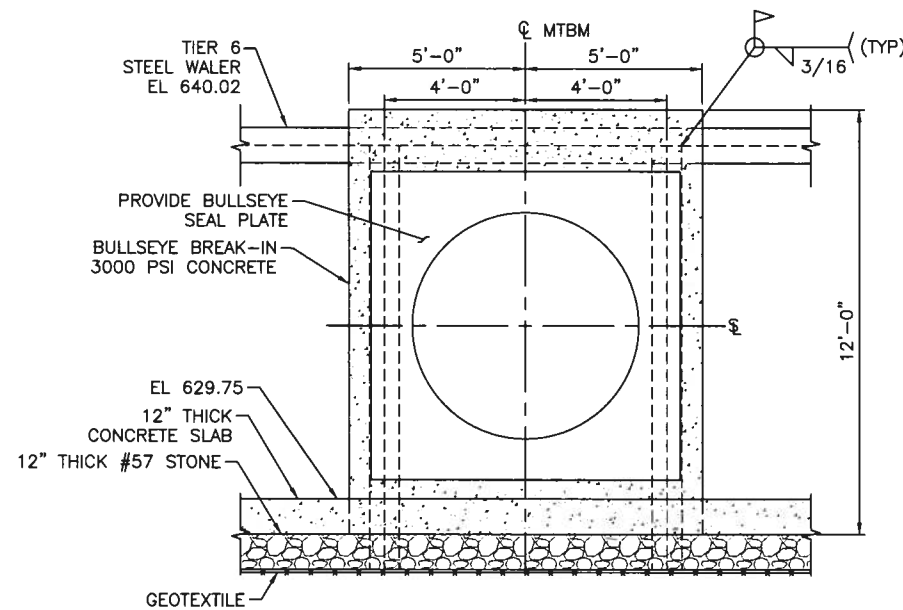
PROJECT NO.:  
SHEET:  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-6



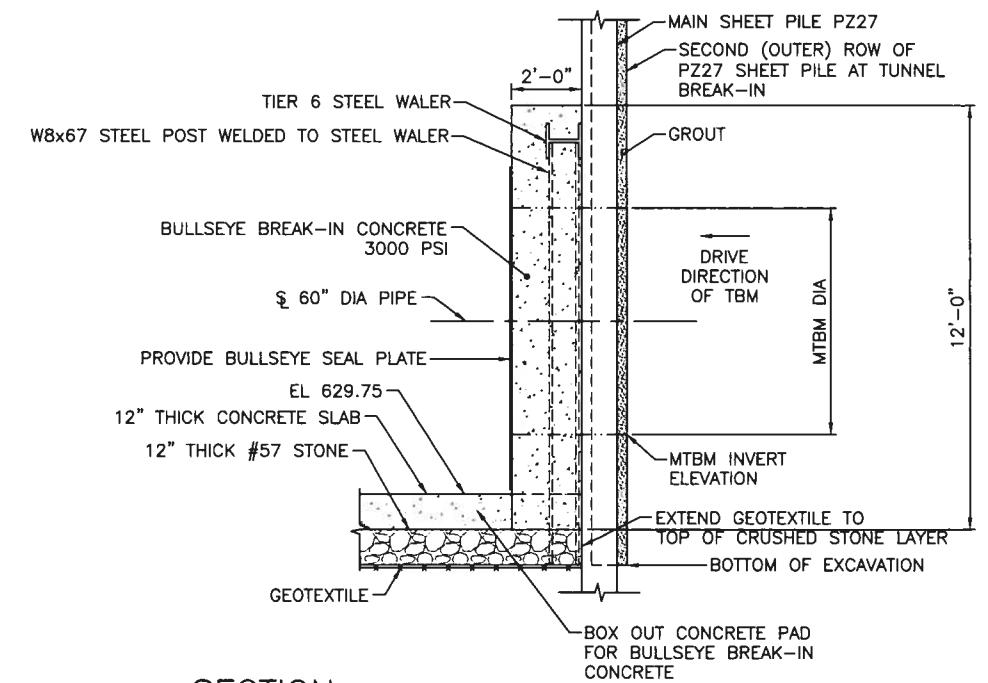
**WALER SEAT DETAIL** 3  
 SCALE: N.T.S. TU-5



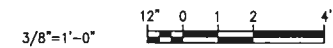
**PLAN VIEW TUNNEL BREAK-IN DETAIL** 2  
 SCALE: 3/8" = 1'-0" TU-5



**ELEVATION TUNNEL BREAK-IN DETAIL**  
 SCALE: 3/8" = 1'-0"



**SECTION TUNNEL BREAK-IN DETAIL**  
 SCALE: 3/8" = 1'-0"



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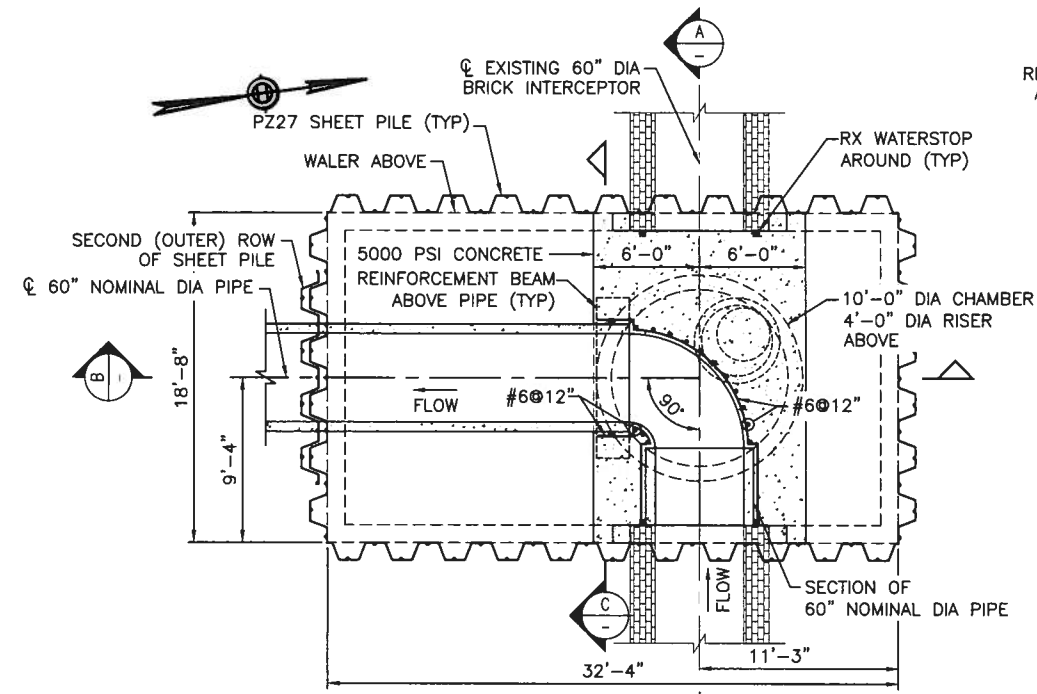
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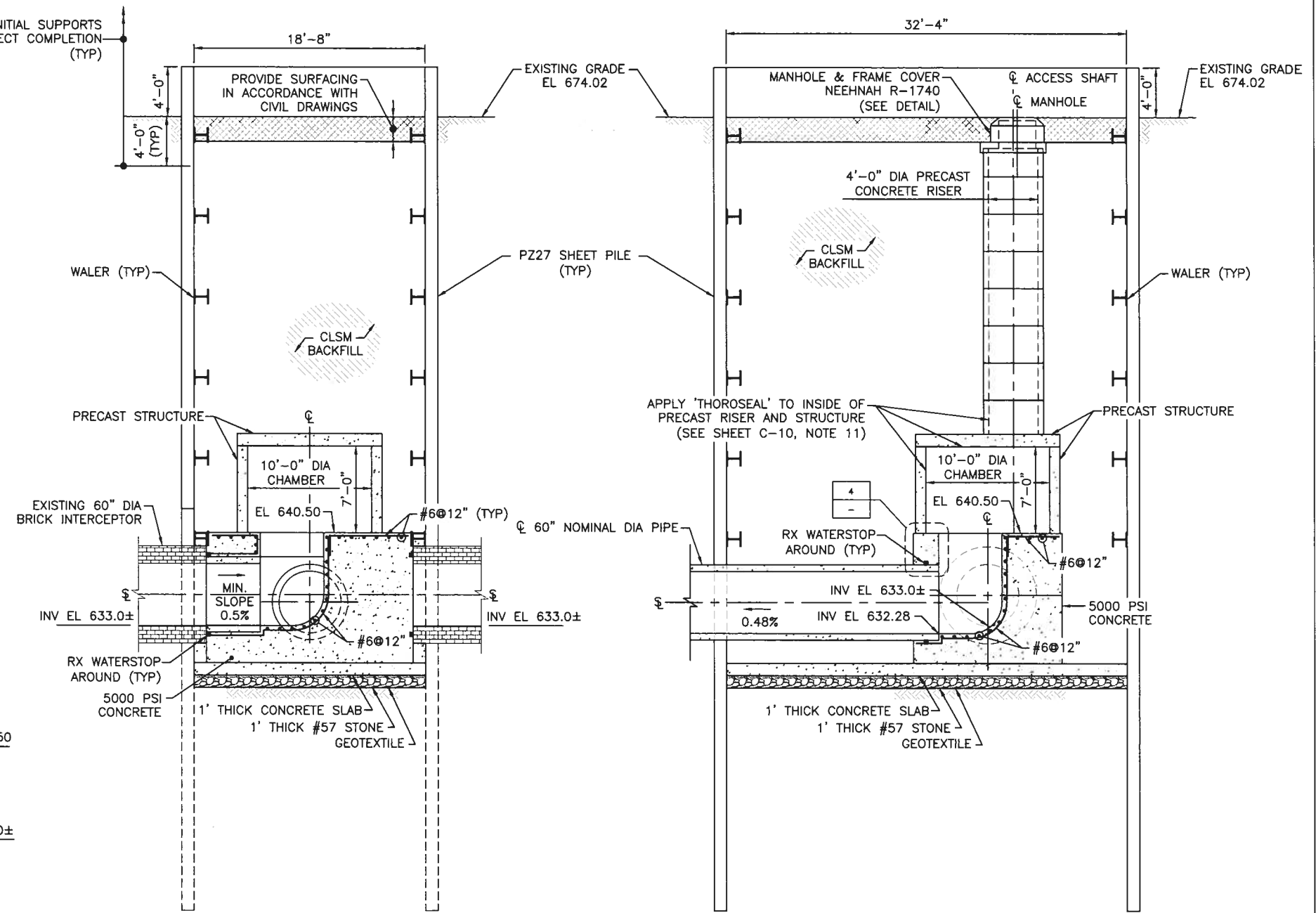
WALWORTH RUN INTERCEPTOR REALIGNMENT

**WORK SHAFT JUNCTION CHAMBER No. 2 BULLSEYE AND MISCELLANEOUS DETAILS**

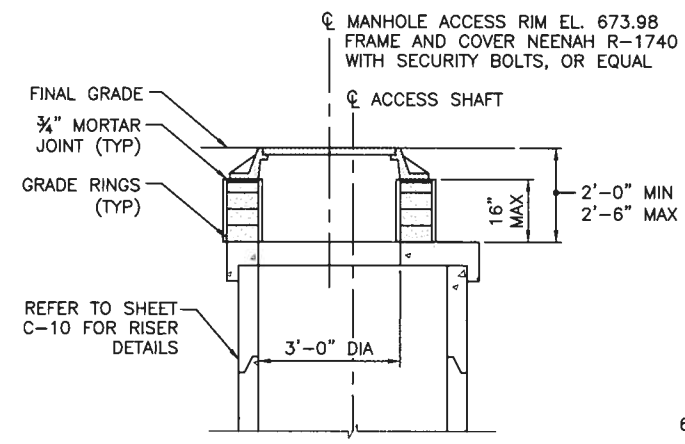
PROJECT NO.:  
 SHEET:  
 SCALE: 3/16"=1'-0"  
 SHEET NO.: TU-7



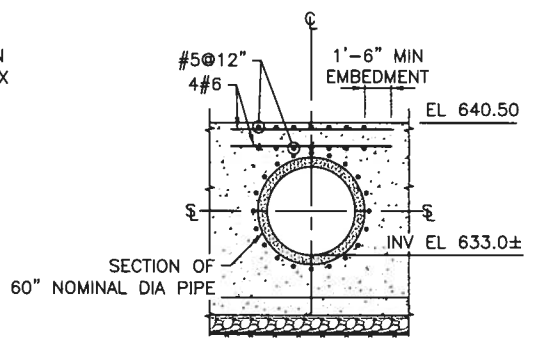
**PLAN VIEW - TUNNEL LEVEL**  
SCALE: 3/16" = 1'-0"



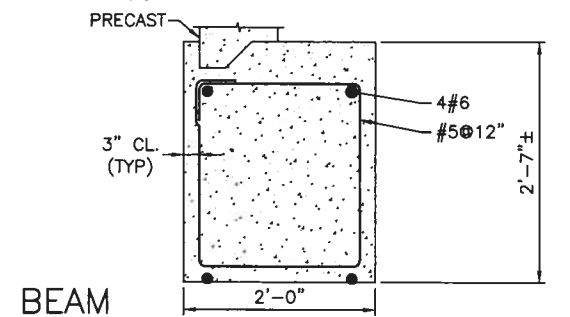
**SECTION A** SCALE: 3/16" = 1'-0"  
**SECTION B** SCALE: 3/16" = 1'-0"  
**SECTION C** SCALE: 3/16" = 1'-0"



**FRAME AND COVER 36" MANHOLE DETAIL**  
SCALE: N.T.S.

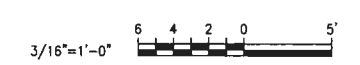


**SECTION** SCALE: 3/16" = 1'-0"



**BEAM REINFORCEMENT DETAIL** 4  
SCALE: N.T.S.

NOTE: SEE SHEET C-10 FOR PRECAST CONCRETE CHAMBER AND RISER DETAILS.



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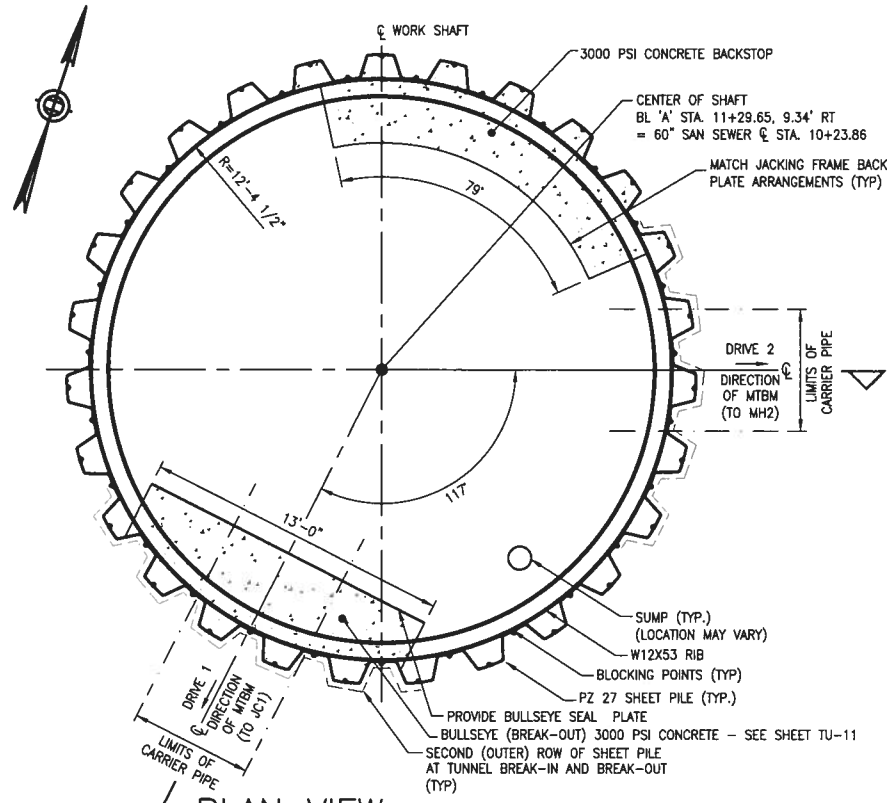
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Protecting Your Health and Environment

STATE OF OHIO  
Professional Engineer  
JOZSEF E. SZARANSKI  
6/15/10

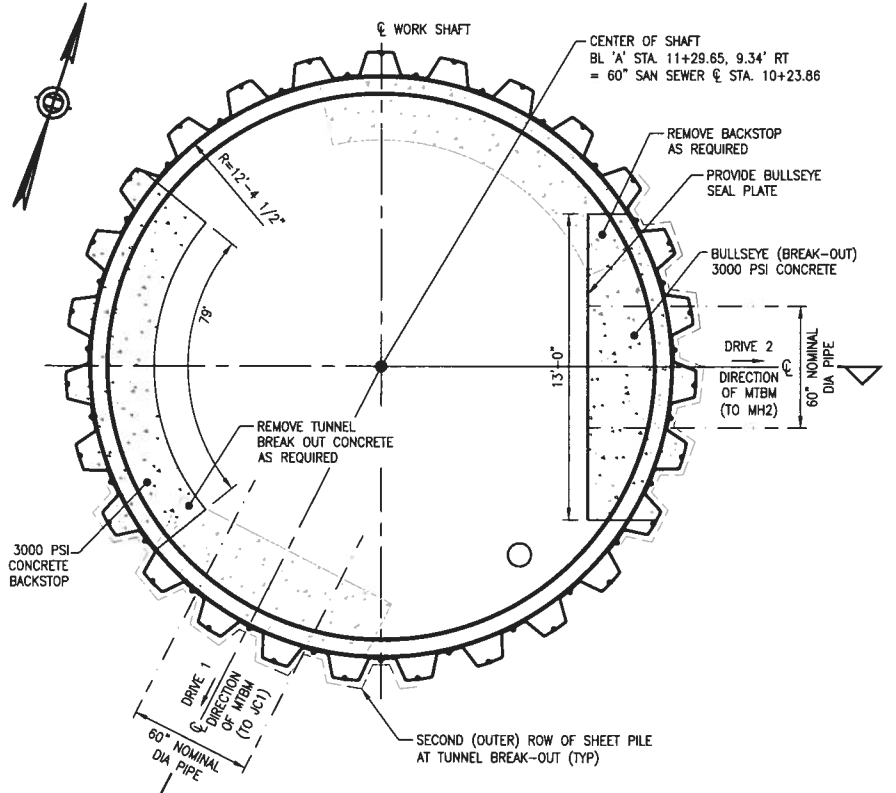
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER No. 2 STRUCTURAL DETAILS**

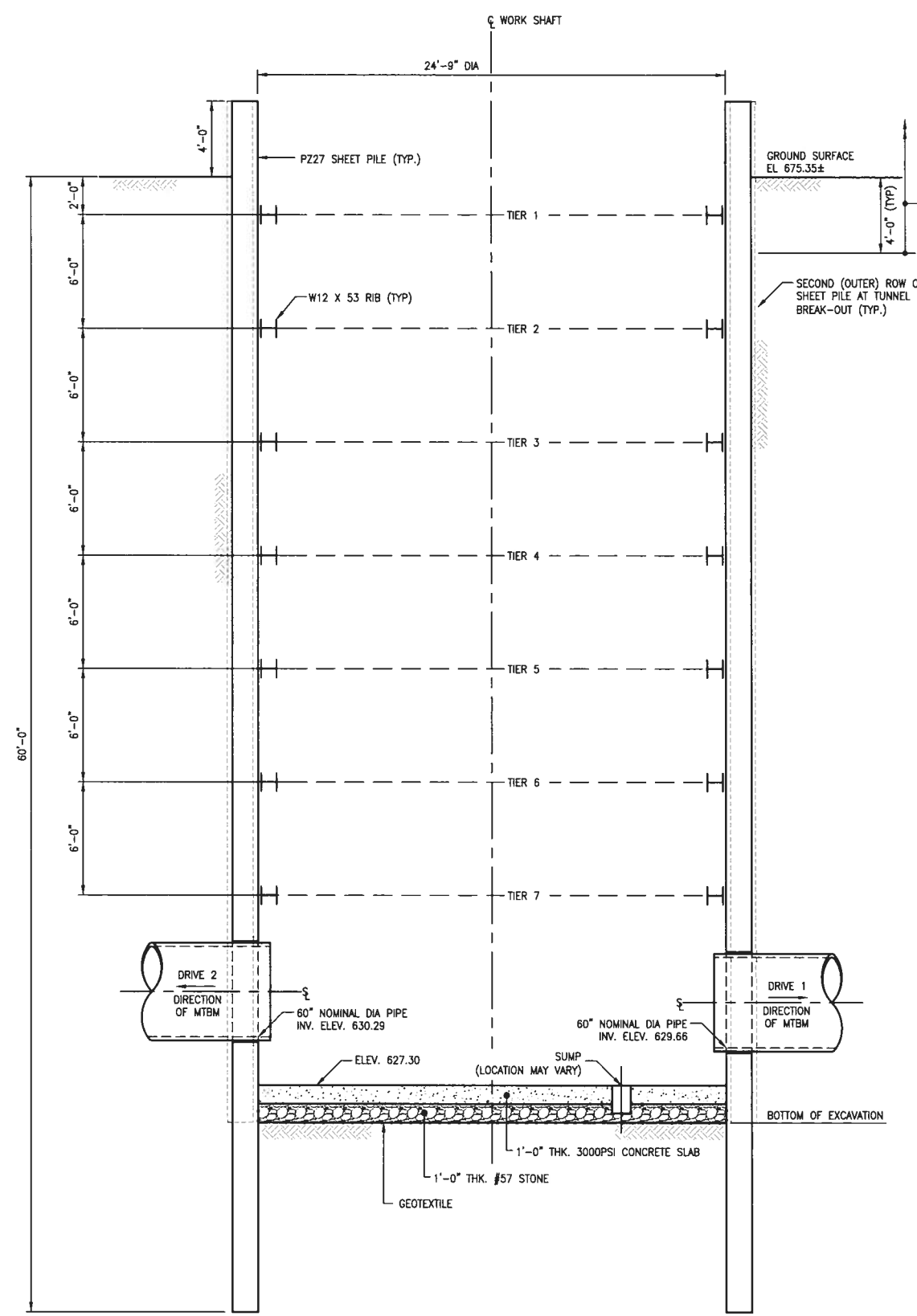
PROJECT NO.:  
SHEET:  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-8



**PLAN VIEW DRIVE 1 (JACKING)**  
SCALE: 1/4" = 1'-0"



**PLAN VIEW DRIVE 2 (JACKING)**  
SCALE: 1/4" = 1'-0"



**SECTION 1**  
SCALE: 1/4" = 1'-0"

**GENERAL NOTES:**

1. FOR GENERAL SHAFT NOTES SEE TU-1.
2. REFER TO SHEET TU-11 FOR BULLSEYE AND MISC. DETAILS.
3. FOR CLARITY BACKSTOP AND BULLSEYE CONCRETE IS NOT SHOWN ON SECTION.
4. SEE SHEET C-10 FOR PRECAST CONCRETE MANHOLE DETAILS.
5. THE CONCRETE BACKSTOP IS DESIGNED FOR MAXIMUM 450 TON THRUST APPLIED UNIFORMLY OVER THE BACKSTOP SURFACE. REFER TO GBR FOR ADDITIONAL REQUIREMENTS

**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MANHOLE NO. 1 (MH1)**

THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MH1 IS PREPARED CONSIDERING THAT MICROTUNNEL DRIVE 1 WILL BE COMPLETED FIRST.

TO MAINTAIN THE EXCAVATION AND SUPPORT STABILITY, THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR THE WORK SHAFT SHALL BE FOLLOWED:

1. INSTALL SHEET PILES TO THE DEPTH SHOWN.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT TUNNEL BREAK-OUT LOCATIONS WITHIN LIMITS INDICATED.
3. EXCAVATE SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
4. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH FOR EACH OF THE REMAINING TIER LEVEL AND INSTALL REMAINING TIER STEEL SUPPORTS.
5. AFTER INSTALLATION OF THE LAST TIER, CONTINUE TO EXCAVATE THE SHAFT DOWN TO THE BOTTOM OF EXCAVATION.
6. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE FABRIC, CRUSHED STONE BASE, STEEL POSTS AND CONCRETE SLAB. PROVIDE SUMP PIT AS SHOWN. ALLOW THE CONCRETE SLAB TO GAIN THE DESIGN STRENGTH.
7. CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PREPARATION FOR BREAK-OUT FOR DRIVE 1 AND DRIVE 2**

8. PLACE SUITABLE GROUT BETWEEN TWO ROWS OF SHEETING AT TUNNEL BREAK-OUT LOCATIONS TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULLS EYE.
9. CUT THE SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-OUT AREAS (BULLSEYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL BULLSEYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULLSEYE ZONE.

**PROCEDURE FOR BREAK-OUT FOR DRIVE 1 AND DRIVE 2**

10. INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-OUT BETWEEN SEAL PLATE AND SHEET PILES FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICRO TUNNEL BORING MACHINE (MTBM) FOR DRIVE 1.
11. ON COMPLETION OF DRIVE1, INSTALL BREAK-OUT FOR DRIVE 2 SIMILAR TO THE BREAK-OUT PROCEDURE FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 2.

**CONCRETE BACKSTOP CONSTRUCTION FOR DRIVE 1 AND DRIVE 2**

12. CONSTRUCT THE CONCRETE BACK STOP FOR DRIVE 1.
13. ON COMPLETION OF DRIVE 1, CONSTRUCT THE CONCRETE BACK STOP FOR DRIVE 2.



REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: EP/HH  
 DRAWN BY: TG  
 SHEET CHK'D BY: LG  
 CROSS CHK'D BY: JZ  
 APPROVED BY: JZ  
 DATE: JUNE 15, 2010

**Dawn Underground Engineering, Inc.**  
 Tunnel and Underground Structures Consultants  
 10 Village Court - Hazlet - New Jersey 07730  
 Tel: 732-739-8840 Fax: 732-739-8870

**Northeast Ohio Regional Sewer District**  
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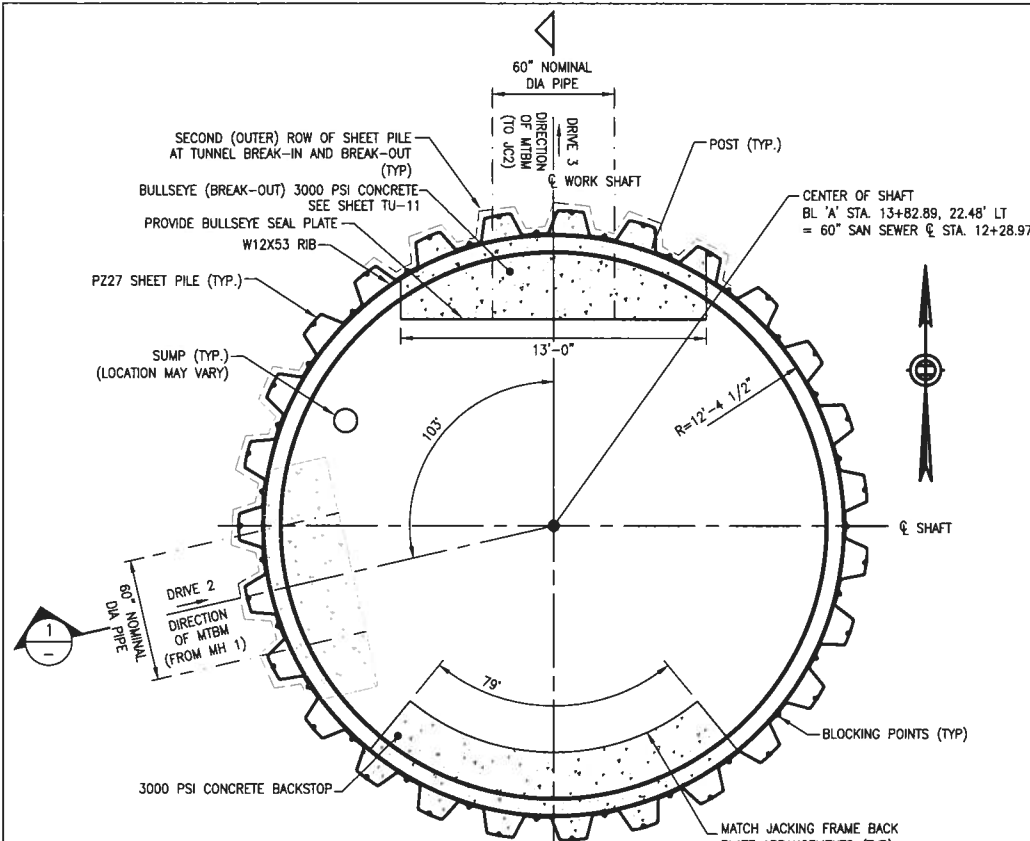
This document was originally issued by [Signature] on [Date]. This document is not considered a final design.

**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT MANHOLE No.1 INITIAL SUPPORTS PLANS & SECTION**

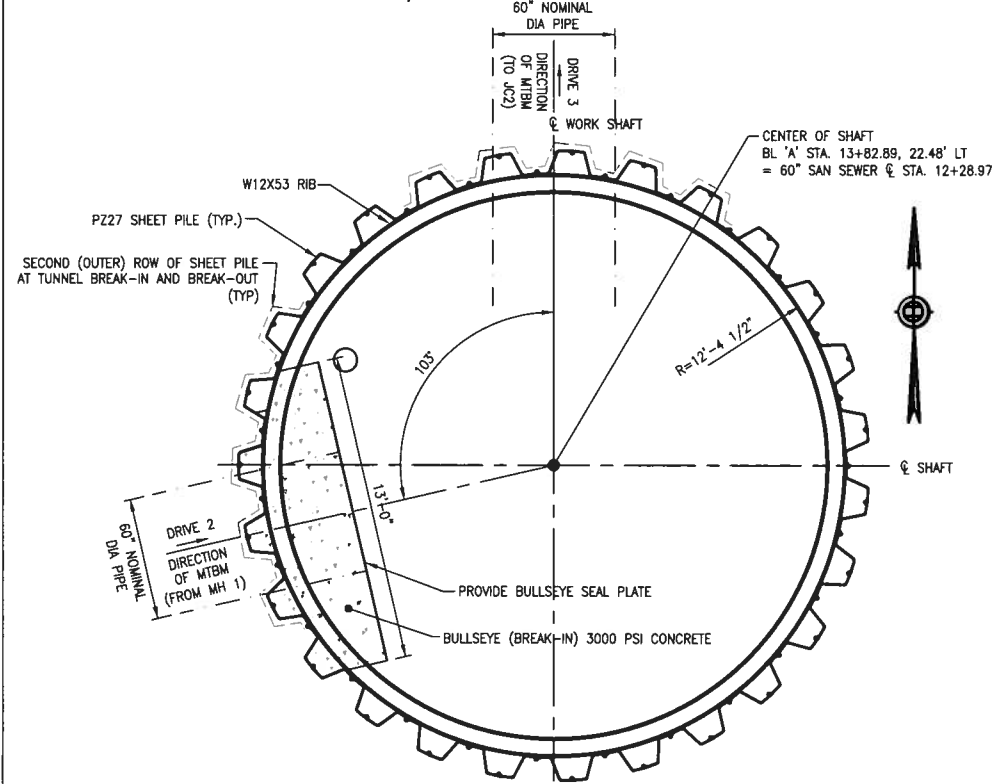
PROJECT NO.:  
 SHEET:  
 SCALE: AS NOTED  
 SHEET NO.: TU-9





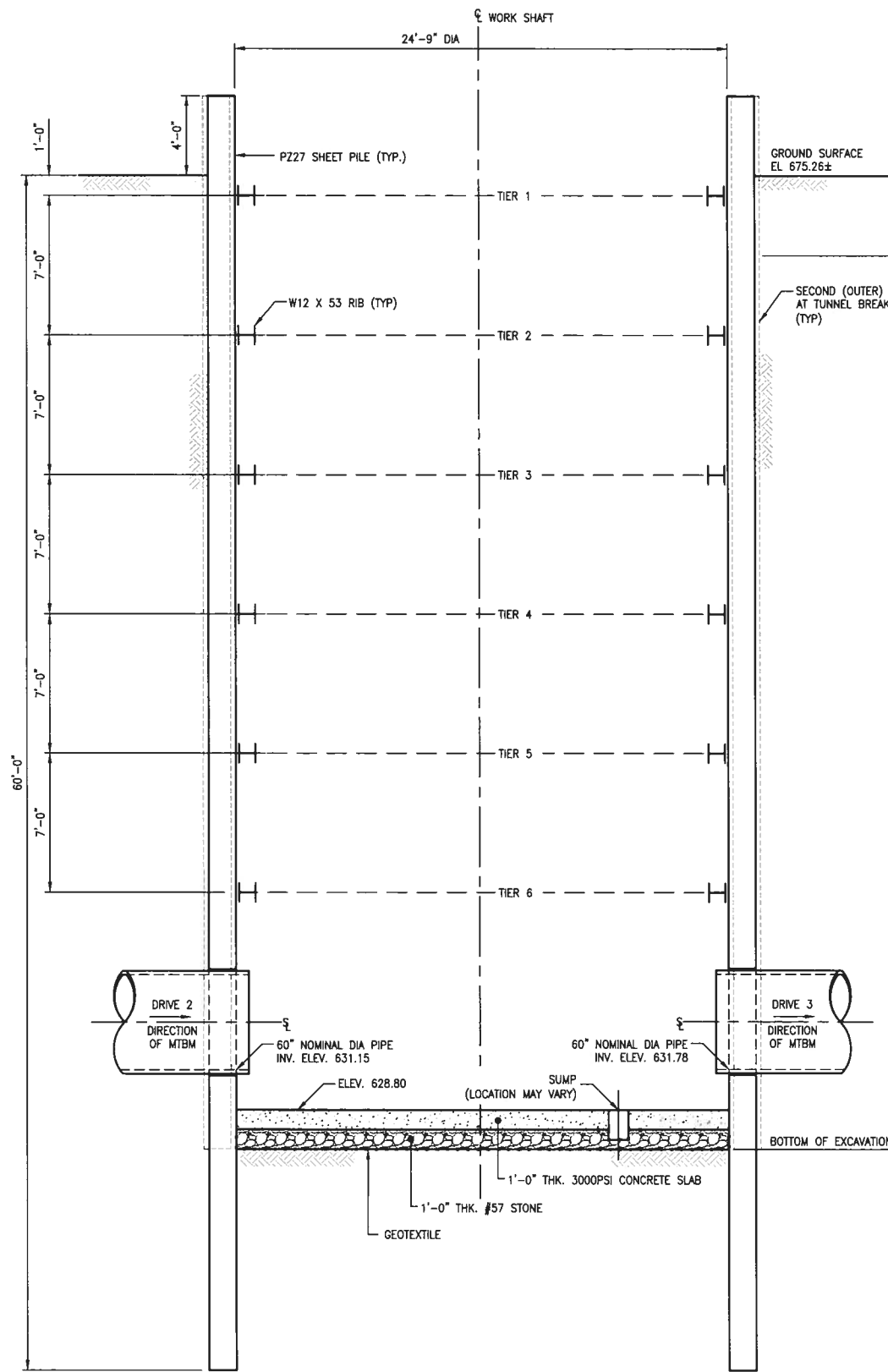
**PLAN VIEW  
DRIVE 3 (JACKING)**

SCALE: 1/4" = 1'-0"



**PLAN VIEW  
DRIVE 2 (RECEIVING)**

SCALE: 1/4" = 1'-0"



**SECTION**

SCALE: 1/4" = 1'-0"

**GENERAL NOTES:**

1. FOR GENERAL SHAFT NOTES SEE TU-1.
2. REFER TO SHEET TU-11 FOR BULLSEYE AND MISC. DETAILS.
3. FOR CLARITY BACKSTOP AND BULLSEYE CONCRETE IS NOT SHOWN ON SECTION.
4. SEE SHEET C-10 FOR PRECAST CONCRETE MANHOLE DETAILS.
5. THE CONCRETE BACKSTOP IS DESIGNED FOR MAXIMUM 450 TON THRUST APPLIED UNIFORMLY OVER THE BACKSTOP SURFACE. REFER TO GBR FOR ADDITIONAL REQUIREMENTS

**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MANHOLE NO. 2 (MH2)**

THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MH2 IS PREPARED CONSIDERING THAT MICROTUNNEL DRIVE 2 WILL BE COMPLETED FIRST.

TO MAINTAIN THE EXCAVATION AND SUPPORT STABILITY, THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR THE WORK SHAFT SHALL BE FOLLOWED:

1. INSTALL SHEET PILES TO THE DEPTH SHOWN.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT TUNNEL BREAK-IN AND BREAK-OUT LOCATION WITHIN LIMITS INDICATED.
3. EXCAVATE SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
4. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH FOR EACH OF THE REMAINING TIER LEVEL AND INSTALL REMAINING TIER STEEL SUPPORTS.
5. AFTER INSTALLATION OF THE LAST TIER, CONTINUE TO EXCAVATE THE SHAFT DOWN TO THE BOTTOM OF EXCAVATION.
6. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE FABRIC, CRUSHED STONE BASE, STEEL POST AND CONCRETE SLAB. PROVIDE SUMP PIT AS SHOWN. ALLOW THE CONCRETE SLAB TO GAIN THE DESIGN STRENGTH.
7. CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PREPARATION FOR BREAK-IN FOR DRIVE 2 AND BREAK-OUT FOR DRIVE 3**

8. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN AND BREAK-OUT LOCATIONS TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULLS EYE.
9. CUT THE SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AND BREAK-OUT AREA (BULLSEYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL BULLSEYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULLSEYE ZONE.

**PROCEDURE FOR BREAK-IN FOR DRIVE 2**

10. INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-IN FOR DRIVE 2. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 2.
11. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE PIPE THROUGH THE GROUT PORTS.

**PROCEDURE FOR BREAK-OUT FOR DRIVE 3**

12. ON COMPLETION OF DRIVE 2, INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-OUT FOR DRIVE 3. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. JUST BEFORE COMMENCING THE WORK ON MICROTUNNELING FOR DRIVE 3, PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR MTBM FOR DRIVE 3.

**CONCRETE BACKSTOP CONSTRUCTION FOR DRIVE 3**

13. ON COMPLETION OF DRIVE 2, CONSTRUCT THE CONCRETE BACK STOP.



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 DATE: JUNE 15, 2010

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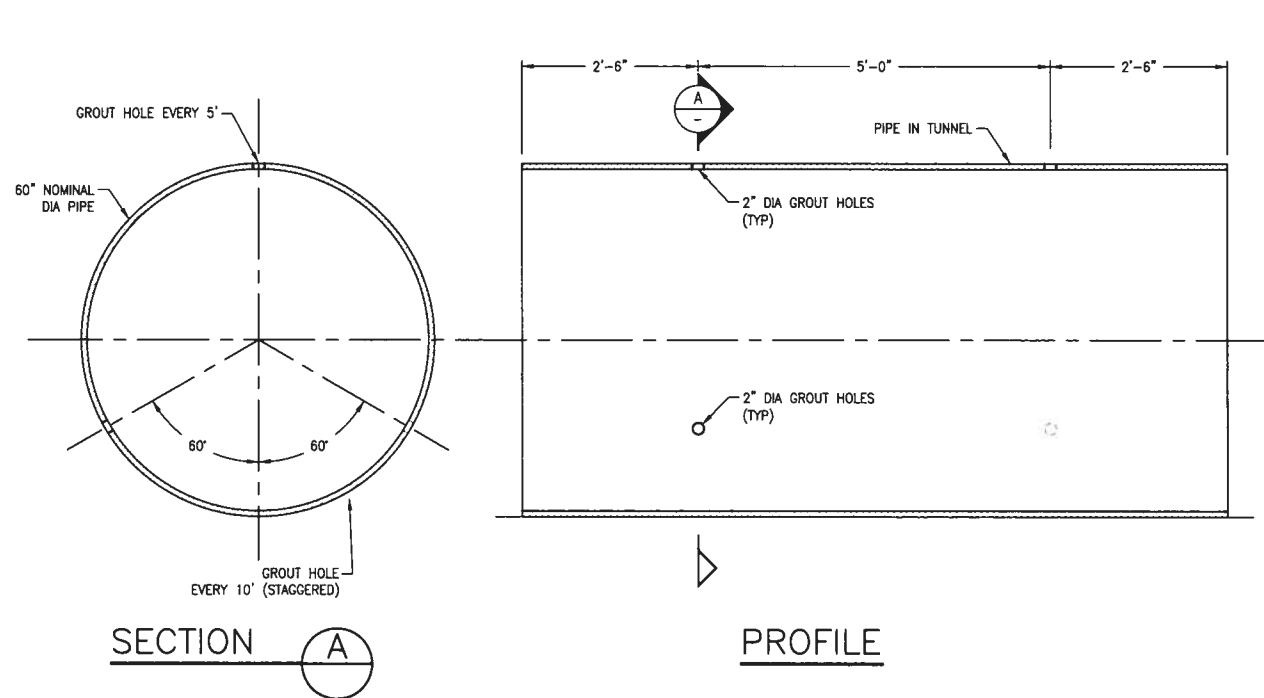
This document was originally issued by the District on 06/15/10. This document is not to be used after 06/15/10.  
 Jozef C. Matuski

**WALWORTH RUN INTERCEPTOR REALIGNMENT**

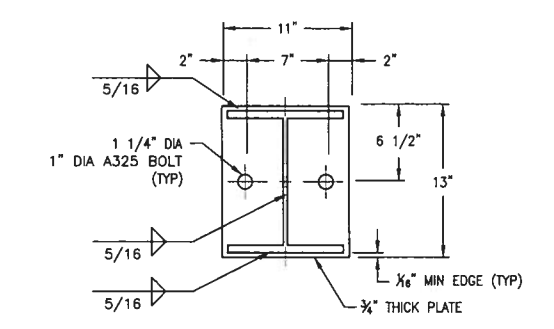
**WORK SHAFT MANHOLE No.2 INITIAL SUPPORTS PLAN & SECTIONS**

PROJECT NO.:  
 SHEET:  
 SCALE: AS NOTED  
 SHEET NO.: TU-10

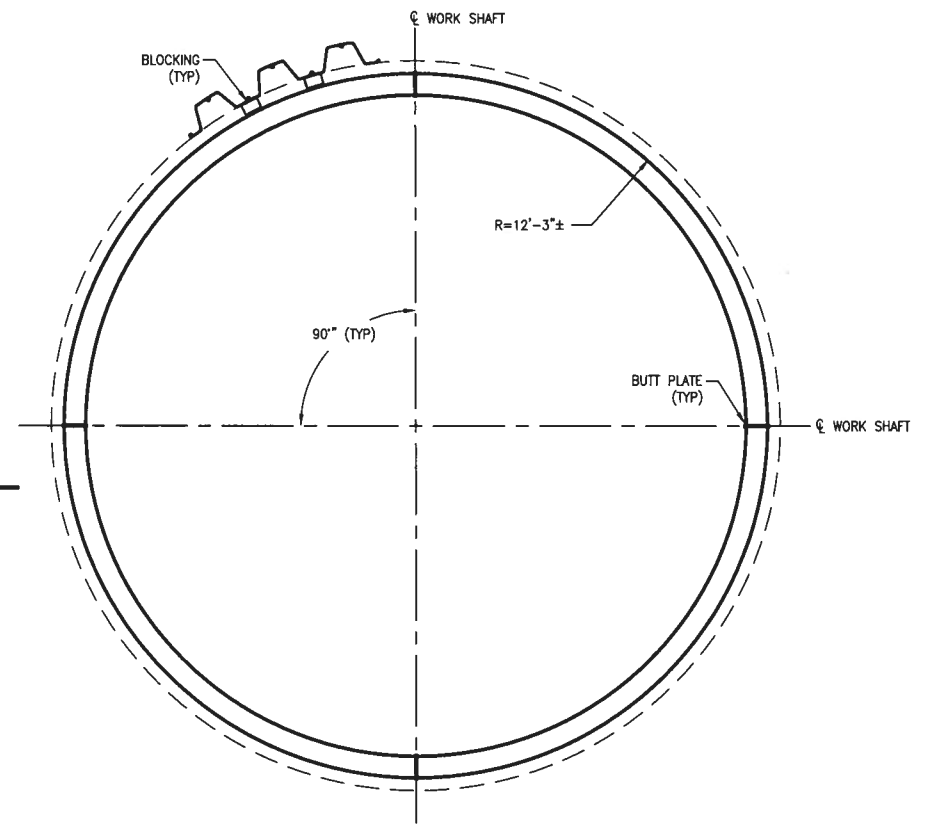




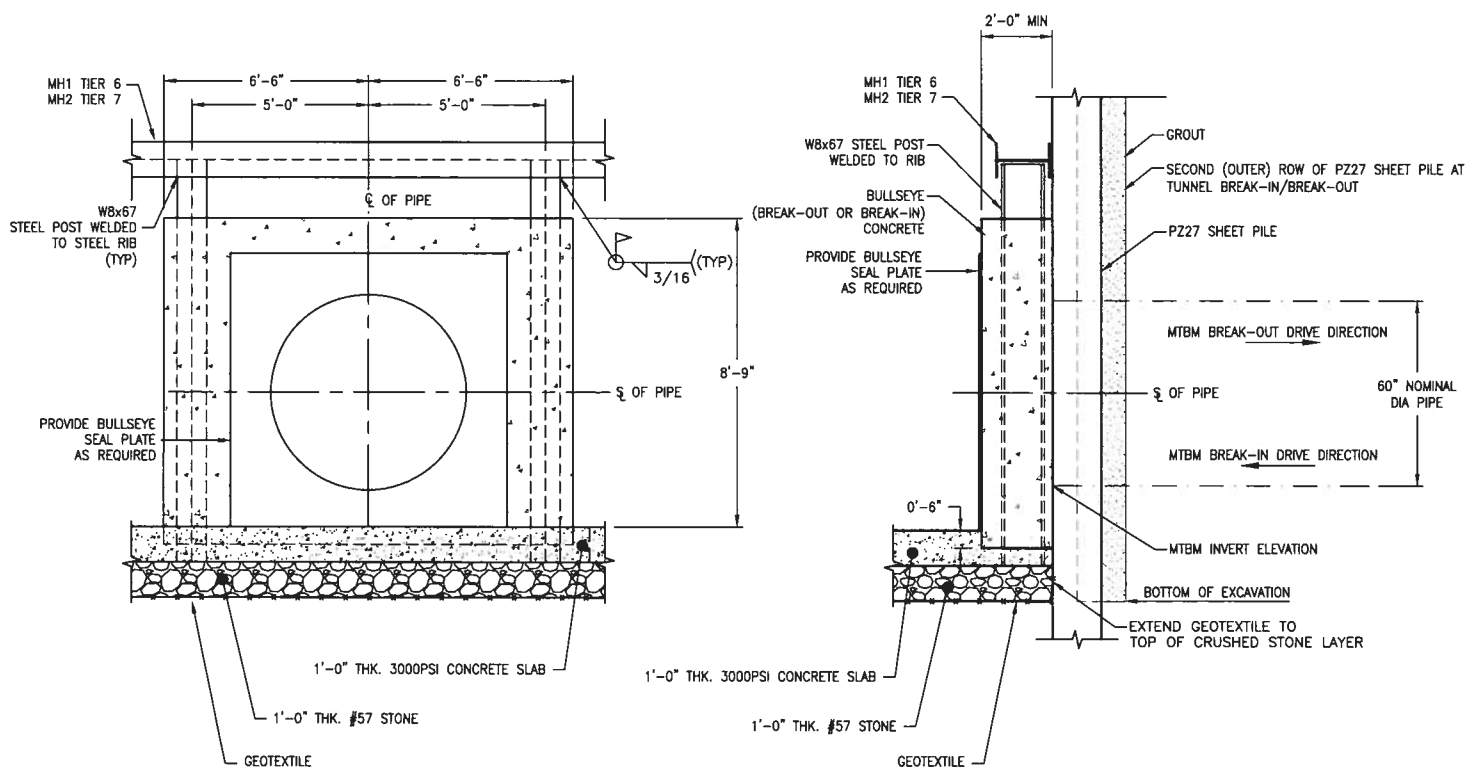
**MICROTUNNEL GROUT HOLE DETAILS**  
SCALE: N.T.S.



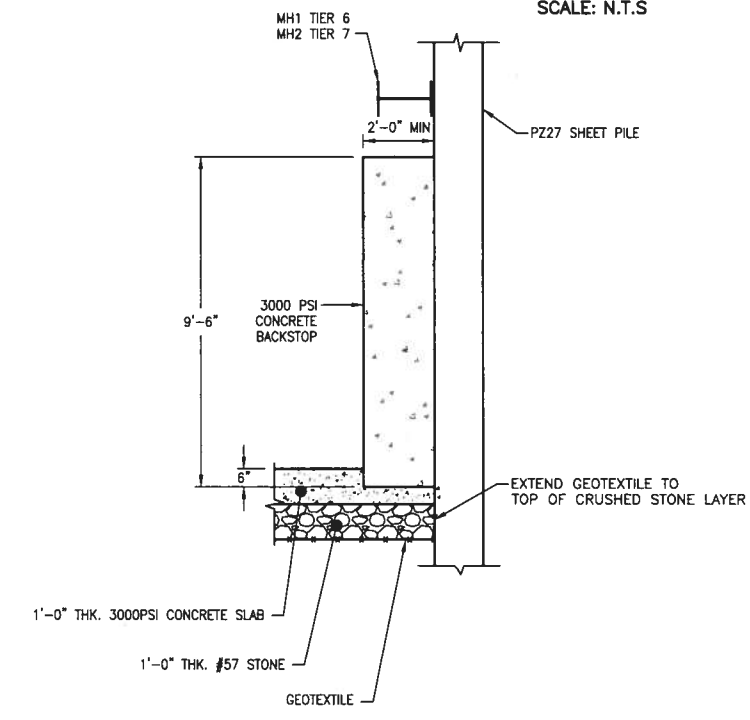
**BUTT PLATE DETAIL**  
SCALE: N.T.S.



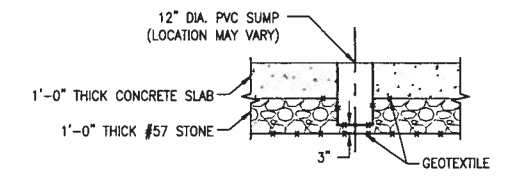
**4 PIECE RING OF W12x53 STEEL RIB**  
SCALE: N.T.S.



**BULLSEYE DETAIL**  
SCALE: N.T.S.



**BACKSTOP DETAIL**  
SCALE: N.T.S.



**SUMP DETAIL**  
SCALE: N.T.S.

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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

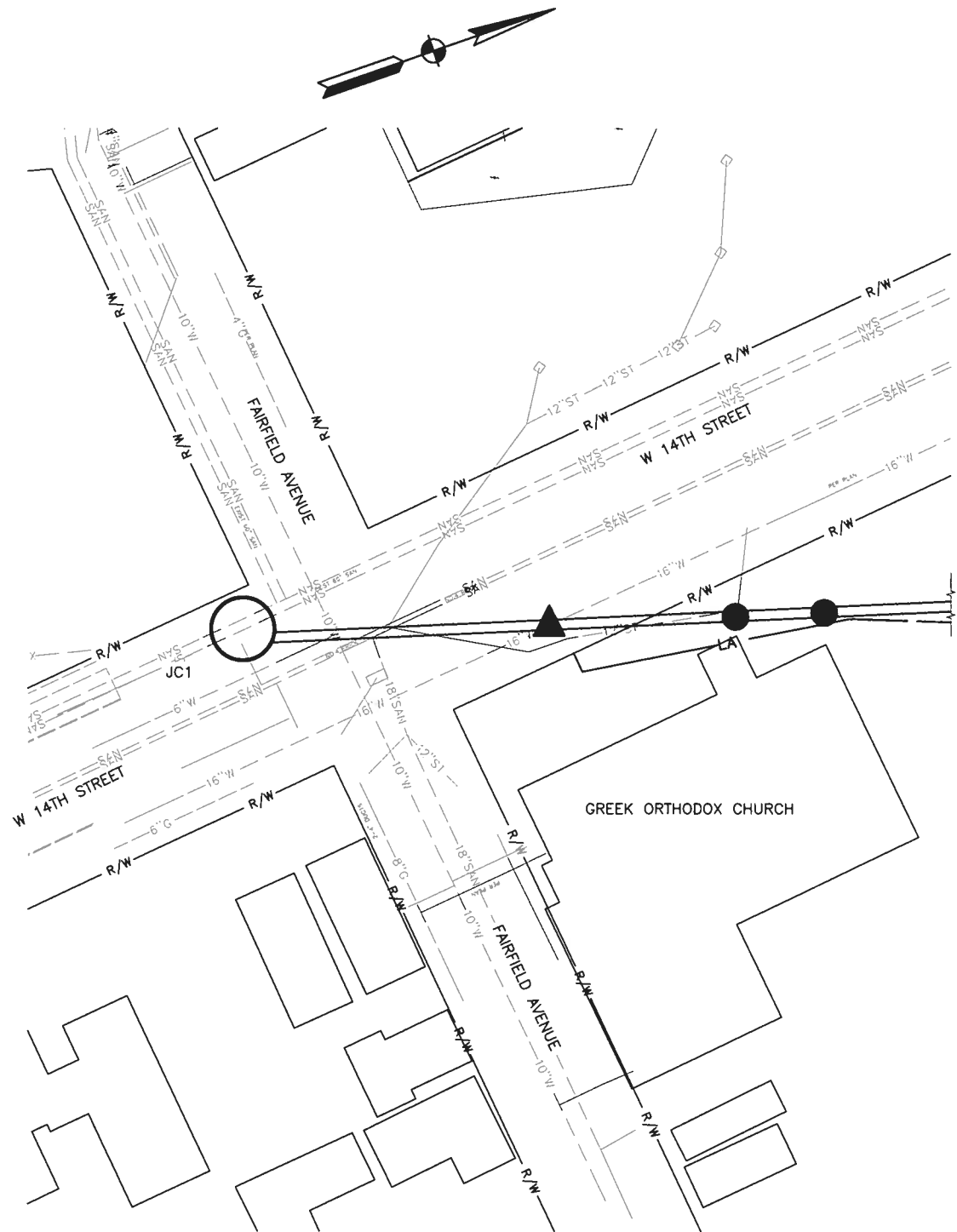
**WORK SHAFTS FOR MANHOLE No. 1 AND MANHOLE No. 2 BREAK-IN, BREAK-OUT, BACKSTOP AND SUMP DETAILS**

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

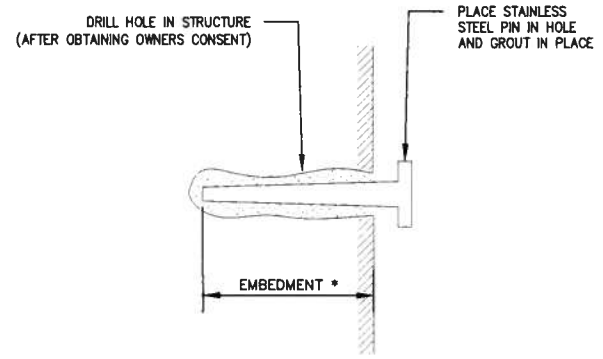
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NO.:  
 SHEET:  
 SCALE: AS NOTED  
 SHEET NO.: TU-11



PLAN VIEW  
MONITORING AT JC1

- LEGEND**
- - GROUND SETTLEMENT POINT
  - ▲ - UTILITY SETTLEMENT POINT



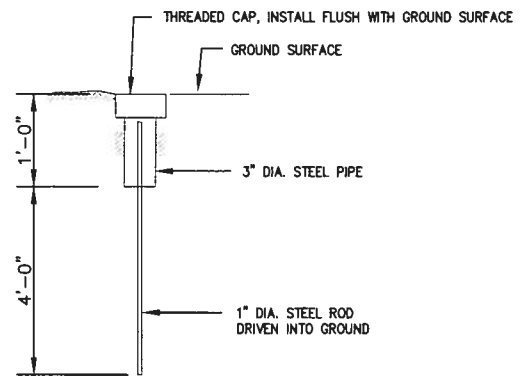
DRILL HOLE IN STRUCTURE  
(AFTER OBTAINING OWNERS CONSENT)

PLACE STAINLESS  
STEEL PIN IN HOLE  
AND GROUT IN PLACE

EMBEDMENT \*

**STRUCTURE SETTLEMENT POINT**  
N.T.S.

\* EMBED TO A DEPTH AS NECESSARY TO PROVIDE A RIGID IMMOVABLE POINT



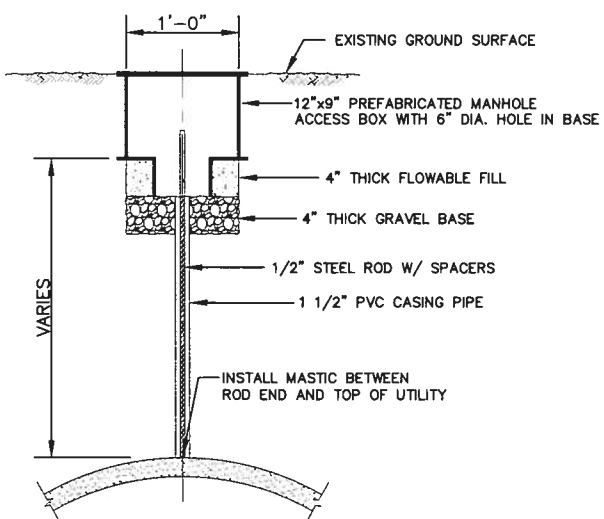
THREADED CAP, INSTALL FLUSH WITH GROUND SURFACE

GROUND SURFACE

3" DIA. STEEL PIPE

1" DIA. STEEL ROD  
DRIVEN INTO GROUND

**GROUND SETTLEMENT POINT**  
N.T.S.



EXISTING GROUND SURFACE

12"x9" PREFABRICATED MANHOLE  
ACCESS BOX WITH 6" DIA. HOLE IN BASE

4" THICK FLOWABLE FILL

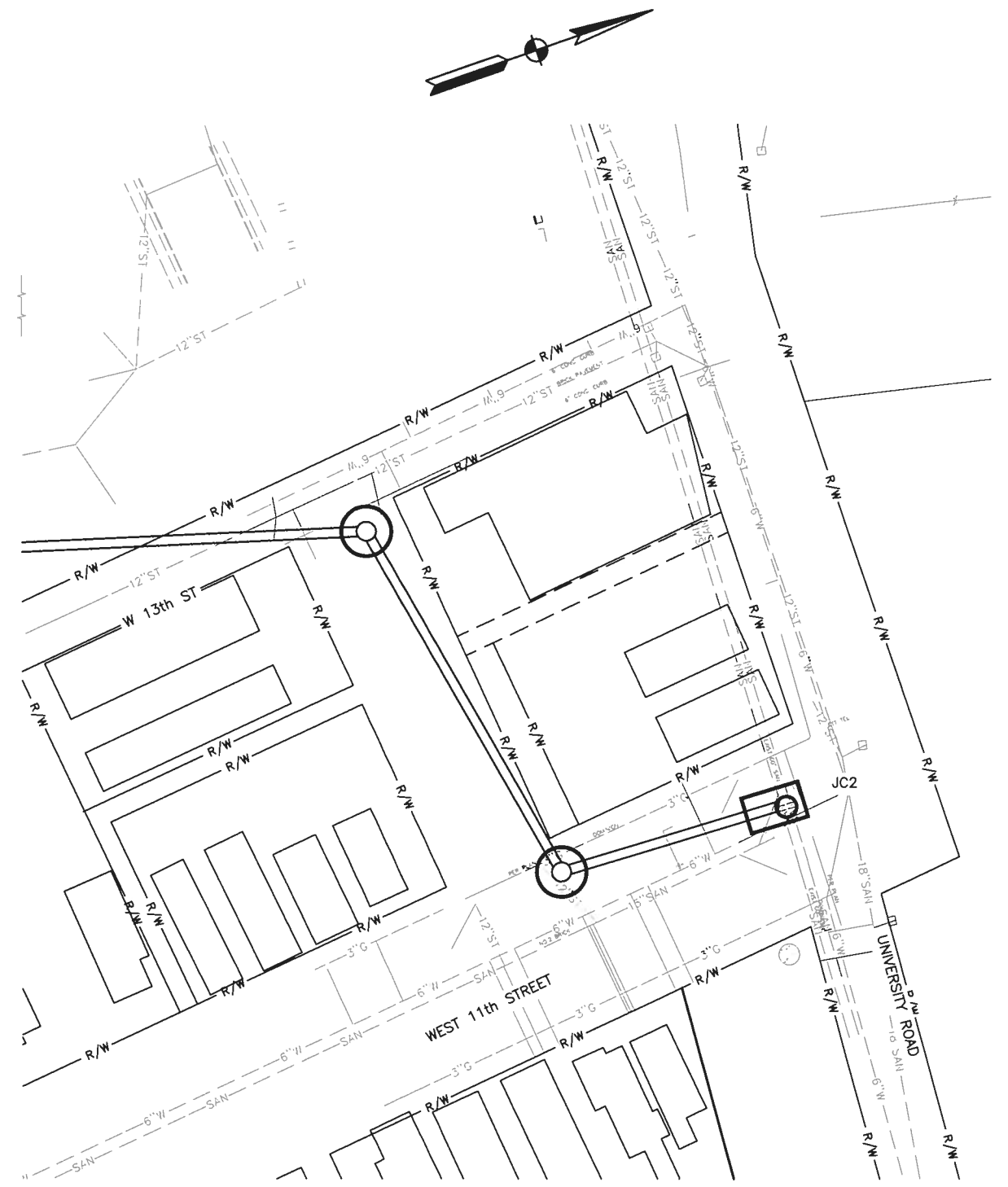
4" THICK GRAVEL BASE

1/2" STEEL ROD W/ SPACERS

1 1/2" PVC CASING PIPE

INSTALL MASTIC BETWEEN  
ROD END AND TOP OF UTILITY

**UTILITY SETTLEMENT POINT**  
N.T.S.



PLAN VIEW  
MONITORING AT MH1, MH2 & JC2

- NOTES:**
- LOCATIONS OF SEISMOGRAPH MONITORING POINTS, STRUCTURE SETTLEMENT POINTS AND OTHER GROUND SETTLEMENT POINTS SHALL BE SELECTED BY CONTRACTOR IN THE FIELD UPON APPROVAL BY THE ENGINEER.
  - LOCATIONS OF SHOWN MONITORING ARE APPROXIMATE. THEY WILL BE DETERMINED BY CONTRACTOR IN THE FIELD, UPON APPROVAL BY THE ENGINEER.



BAR IS ONE INCH ON ORIGINAL DRAWING

0 1

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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**Northeast Ohio Regional Sewer District**  
 Protecting Your Health and Environment

Professional Engineer Seal for Joseph E. Zurawski, State of Ohio, No. 45995, dated 6/15/10.

WALWORTH RUN INTERCEPTOR REALIGNMENT

MONITORING

PROJECT NO.:  
 SHEET:  
 SCALE: 1" = 40'  
 SHEET NO.: TU-12

**GENERAL**

1. QUALITY OF CONSTRUCTION REQUIRED, PERFORMANCE LEVELS OF WORKMANSHIP, MANUFACTURING AND INDUSTRY STANDARDS, STRENGTH AND PHYSICAL REQUIREMENTS OF MATERIALS, CONFORMANCE TO CODES AND REGULATIONS, GUARANTEES AND OTHER PROJECT REQUIREMENTS ARE SPECIFIED IN THE SPECIFICATIONS.
2. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.
3. PERFORM ALL WORK IN COORDINATION WITH ALL DRAWINGS AND INFORMATION RELATED TO STRUCTURAL WORK.
4. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS THAT MAY BE NECESSARY. SUCH TEMPORARY MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
5. DURING CONSTRUCTION, STRUCTURE MAY BE BUOYANT WHEN EMPTY. IN THE EVENT THAT THE EXCAVATION BECOMES FLOODED OR THE SURROUNDING GROUND BECOMES SATURATED, ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT FLOATATION OF THE STRUCTURE.

**STANDARD HOOKS**

1. UNLESS OTHERWISE SHOWN OR NOTED, ALL 90°, 135° AND 180° HOOKS FOR REINFORCING SHALL BE IN ACCORDANCE WITH THE STANDARD HOOK DETAILS SHOWN IN A/C DETAILING MANUAL.

**CAST-IN-PLACE CONCRETE**

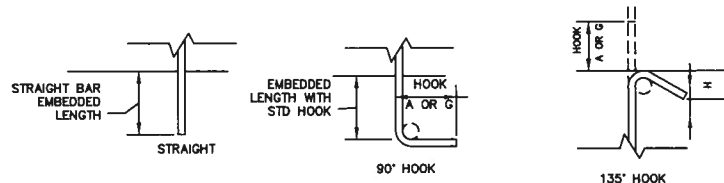
1. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:
  - 3,000 psi
  - 5,000 psi
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
3. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANCHOR HOOK, IF REQUIRED, IS NOT INCLUDED.
4. CLEARANCES FOR REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING:
  - TYPICAL REINFORCING BAR CLEARANCE TABLE
  - CONCRETE CAST AGAINST EARTH . . . . . 3"
  - SLAB REINF. TO CLEAR WATER STOP . . . . . 3"
  - SURFACES EXPOSED TO LIQUIDS . . . . . 3"
  - SURFACES EXPOSED TO EARTH OR WEATHER . . . 3"
5. PROVIDE WATERSTOPS AT ALL CONSTRUCTION JOINTS IN SLABS AND WALLS.
  - PROVIDE 6" WIDE PVC WATERSTOP AT ALL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS IN SLABS AND WALLS OF NEW CONCRETE CONSTRUCTION.
  - PROVIDE BENTONITE (HYDROPHILIC) WATERSTOP AT PIPE-WALL-PENETRATIONS, PRECAST CONCRETE RISERS AND AT JOINTS BETWEEN EXISTING STRUCTURE AND NEW CONCRETE CONSTRUCTION.
6. WELDING OF REINFORCING STEEL IS NOT PERMITTED, UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
7. REINFORCING BARS REQUIRED FOR PROPER SUPPORT OF PRINCIPAL REINFORCING SHALL BE DETAILED AND SUPPLIED BY THE CONTRACTOR WHETHER OR NOT THEY ARE INDICATED ON THE DRAWINGS.
8. POSITIVE CONNECTION SPLICES: MECHANICAL CONNECTIONS SHALL DEVELOP 125 PERCENT OF THE YIELD STRENGTH OF THE REINFORCING BAR. ALL SPLICES WILL BE VISUALLY INSPECTED BY THE ENGINEER TO VERIFY THAT THE SPLICE HAS BEEN MADE PROPERLY.
9. BOND BREAKER MATERIAL SHALL BE 15 POUNDS FELT PAPER, UNLESS NOTED OTHERWISE.

**REINFORCEMENT BAR DEVELOPMENT**

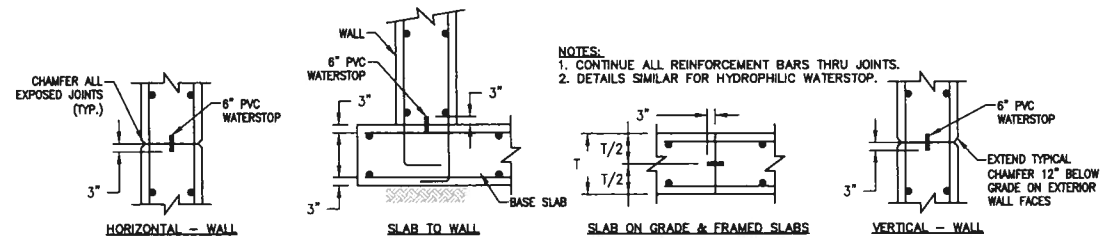
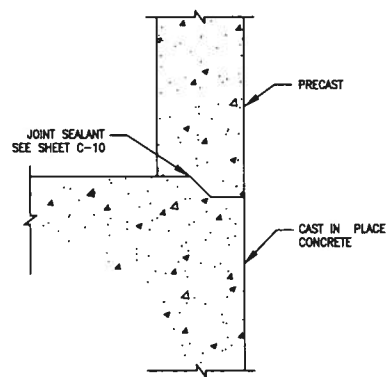
1. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, REINFORCING BARS SHALL BE DEVELOPED AND/OR SPLICED IN ACCORDANCE WITH THE FOLLOWING TABLE:

BAR SIZE	REINFORCEMENT LAP SPLICE, EMBEDMENT LENGTH AND STANDARD HOOKS										
	MIN. LAP LENGTHS FOR BEAMS*		MIN. LAP LENGTHS FOR SLABS AND WALLS**		MIN. LAP LENGTHS FOR COLUMNS	MIN. EMBEDMENT LENGTHS		MIN. STD. HOOKS			
	CLASS B	OTHERS	CLASS B	OTHERS		STRAIGHT BARS*	WITH STANDARD HOOKS	A OR G	A OR G	H	
#3	25	19	16	16	12	19	15	5	6	4	2.5
#4	33	25	20	16	15	25	19	7	8	4.5	3
#5	41	31	25	19	19	31	24	9	10	5.5	3.75
#6	49	37	29	23	23	37	29	10	12	6	4.5
#7	71	54	43	33	27	54	42	12	14	9	5.25
#8	81	62	49	37	30	62	48	14	16	10.5	6
#9	91	70	60	46	34	70	54	15	19	-	-
#10	102	79	74	57	39	79	61	17	22	-	-
#11	114	87	89	69	43	87	67	19	24	-	-

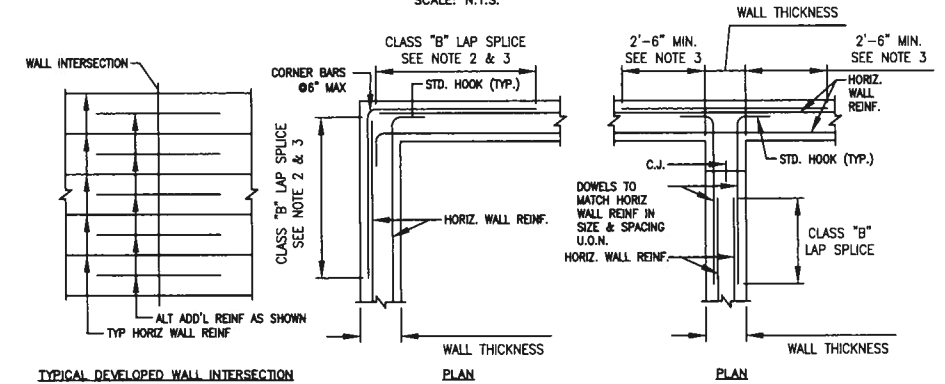
2. REINFORCEMENT LAP SPLICE, EMBEDMENT LENGTH AND STANDARD HOOKS TABLE IS BASED ON A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4000 PSI AND 60,000 PSI REINFORCEMENT (WITH NO EPOXY COATING).
3. ALL LAP SPLICES SHALL BE CLASS B SPLICES.
  - \* THE MINIMUM LAP LENGTH FOR BEAMS AND STRAIGHT EMBEDMENTS ARE BASED ON A 3 BAR DIAMETER MINIMUM CENTER TO CENTER BAR SPACING AND A 2 INCH BAR COVER. IF THE SPLICE AND/OR EMBEDMENT DOES NOT CONFORM TO THESE REQUIREMENTS, THEN CONTRACTOR SHALL APPLY APPROPRIATE FACTORS IN COMPLIANCE WITH ACI 318 WITH APPROVAL BY ENGINEER.
  - \*\* THE MINIMUM LAP LENGTH FOR SLABS AND WALLS IS BASED ON A 6 INCH BAR SPACING AND A 2 INCH BAR COVER. IF THE LAP CONDITION DOES NOT CONFORM TO THESE REQUIREMENTS, THEN USE BEAM LAP LENGTHS; OR COMPLY WITH LAP REQUIREMENTS OF ACI 318 WITH APPROVAL BY ENGINEER.
  - \*\*\* TOP BARS ARE DEFINED AS ALL HORIZONTAL BARS, EXCLUDING WALL BARS, WITH 12" OR MORE FRESH CONCRETE BENEATH.
4. WHERE SPLICES ARE INDICATED BETWEEN BARS OF DIFFERENT SIZES, THE SPLICE LENGTH SHALL BE BASED ON THE SMALLER BAR SIZE.



PRECAST RISER TO C.I.P. CONCRETE JOINT DETAIL  
SCALE: N.T.S.

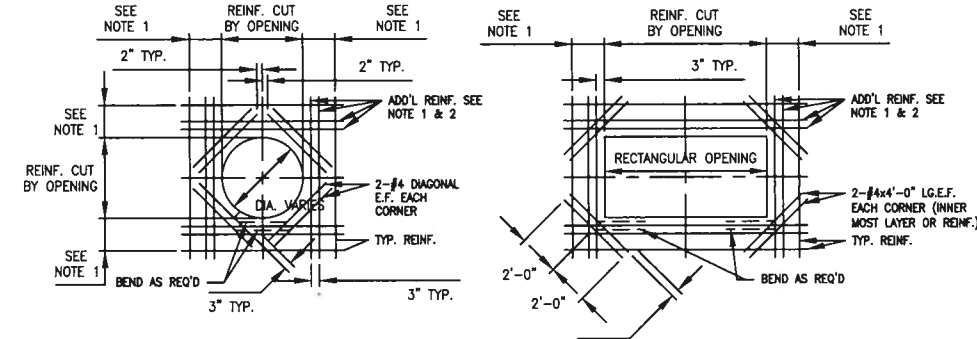


TYPICAL CONSTRUCTION JOINT DETAILS  
SCALE: N.T.S.



TYPICAL REINFORCEMENT DETAIL AT WALL INTERSECTIONS  
SCALE: N.T.S.

- NOTES:
1. PROVIDE ADDITIONAL REINFORCING AT WALL INTERSECTIONS AS SHOWN ABOVE UNLESS NOTED OTHERWISE ON DRAWINGS.
  2. PROVIDE CORNER BAR REINFORCING AT SIX INCHES SPACING, UNLESS OTHERWISE NOTED ON DRAWINGS, AT ALL CORNERS. CORNER BAR REINFORCEMENT SHALL MATCH TYPICAL HORIZONTAL WALL REINFORCEMENT IN SIZE. DIMENSIONS SHALL BE 0.25 TIMES THE CLEAR SPAN DISTANCE BETWEEN WALL INTERSECTIONS MEASURED HORIZONTALLY, BUT SHALL NOT BE LESS THAN TYPE "B" LAP SPLICE NOR GREATER THAN 6'-0".
  3. ADDITIONAL REINFORCEMENT SHALL MATCH SIZE AND SPACING OF WALL HORIZONTAL REINFORCEMENT, UNLESS OTHERWISE NOTED. ALTERNATE ADDITIONAL REINFORCEMENT WITH HORIZONTAL WALL REINFORCEMENT.



TYPICAL REINFORCEMENT AROUND OPENING IN WALL AND SLAB  
SCALE: N.T.S.

- NOTES:
1. PROVIDE ADDITIONAL REINFORCEMENT AT ALL OPENINGS EQUAL IN AREA TO TYPICAL REINFORCEMENT CUT BY OPENING IN EACH DIRECTION. ADDITIONAL REINFORCEMENT TO MATCH SIZE AND LENGTH OF TYPICAL REINFORCEMENT (MIN. 2 BARS E.F.) AND PLACED BETWEEN TYPICAL REINFORCEMENT ON EACH SIDE OF OPENING.
  2. PROVIDE MATCHING DOWELS, WHERE REQUIRED TO PROVIDE CLASS "B" LAP WITH ADDITIONAL REINFORCEMENT.

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**Northeast Ohio Regional Sewer District**  
 Protecting Your Health and Environment

Professional Engineer Seal for Joseph E. Zurawski, State of Ohio, No. 44697, dated 6/15/10.

WALWORTH RUN INTERCEPTOR REALIGNMENT

STRUCTURAL DETAILS AND NOTES

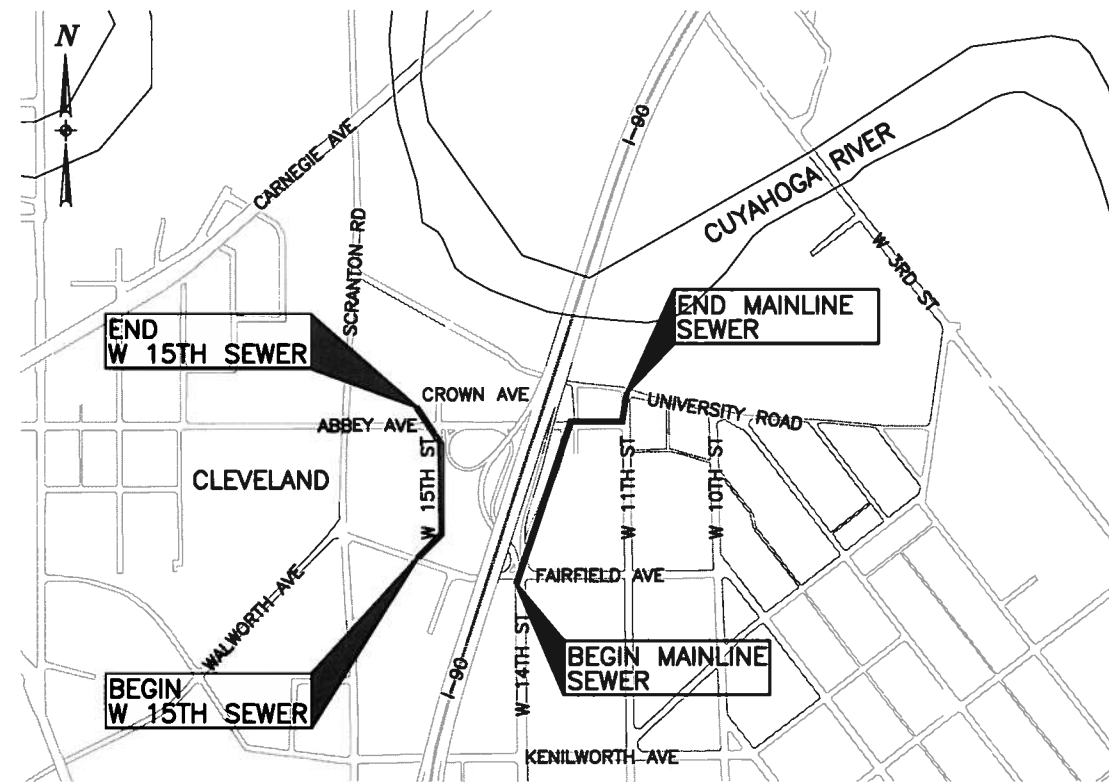
BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NO.:  
 SHEET:  
 SCALE: 3/16"=1'-0"  
 SHEET NO.: TU-13

# NORTHEAST OHIO REGIONAL SEWER DISTRICT

## WALWORTH RUN INTERCEPTOR REALIGNMENT (WRIR)

*WRIR*



**LOCATION MAP**  
SCALE: 1"=500'

NORTHEAST OHIO REGIONAL SEWER DISTRICT

BOARD OF TRUSTEES

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GARY W. STARR, VICE PRESIDENT  
DEAN DEPIERO, SECRETARY  
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WALTER O' MALLEY  
RONALD D. SULIK

JULIUS CIACCIA, JR., EXECUTIVE DIRECTOR

ACCEPTED BY :

JULIUS CIACCIA, JR.  
EXECUTIVE DIRECTOR

DATE

KELLIE C. ROTUNNO  
DIRECTOR OF ENGINEERING  
AND CONSTRUCTION

DATE

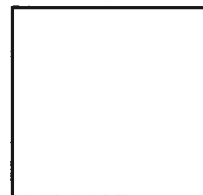
NORTHEAST OHIO REGIONAL SEWER DISTRICT

SUBMITTED BY :

DLZ OHIO, INC

DATE

DLZ OHIO, INC.



**90% SUBMITTAL**  
**APRIL 30, 2010**

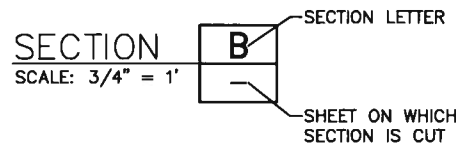
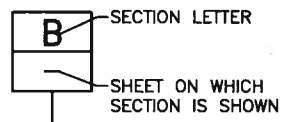
**NOTES**

1. BASIS OF BEARING AND ELEVATION: HORIZONTAL AND VERTICAL CONTROL IS BASED ON THE OHIO NORTH ZONE STATE PLANE COORDINATE SYSTEM NAD 83 AND THE NAVD 88 VERTICAL DATUM.
2. EXISTING STRUCTURES, GRADES, PIPING ETC., ARE SHOWN IN APPROXIMATE LOCATIONS ON THE PLANS. THE INFORMATION SHOWN IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. THE DATA SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
3. THE CONTRACTOR SHALL COORDINATE HIS OPERATIONS WITH THE WORK OF THE UTILITY OWNERS OR OTHERS WHO MAY RELOCATE EXISTING UTILITIES, AND SHALL NOTIFY OWNERS OF THE UTILITIES OF HIS SCHEDULE SUFFICIENTLY IN ADVANCE TO PERMIT THEM TO MAKE THE NECESSARY ALTERATIONS.
4. INFORMATION ON EXISTING UTILITIES AND OTHER SUB-STRUCTURES WAS OBTAINED FROM APPROPRIATE AGENCIES. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS OR STATED IN THE SPECIFICATIONS. THE LOCATIONS OF EXISTING UTILITIES AND SUB-STRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS, ELEVATIONS, AND DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION IN THE AREA OF THE SPECIFIC SUB-STRUCTURE.
5. THE LENGTH OF PIPE SHOWN ON THE DRAWINGS IS GIVEN FROM CENTER-TO-CENTER OF STRUCTURE FOR STRUCTURES UP TO 6-FT INSIDE DIAMETER OR SIZE AND TO THE INSIDE FACE OF STRUCTURE FOR STRUCTURES OVER 6-FT INSIDE DIAMETER OR SIZE.

**LEGEND**

- |   |                             |   |                               |
|---|-----------------------------|---|-------------------------------|
| ○ | - EXISTING MANHOLE          | • | - POST (SQUARE)               |
| □ | - EXISTING CATCH BASIN      | ○ | - POST (ROUND)                |
| ⊕ | - EXISTING HYDRANT          | ☁ | - TREE                        |
| ⊙ | - EXISTING/PROPOSED VALVE   | ○ | - SHRUB                       |
| ⊙ | - LIGHT POLE                | ● | - BENCH MARK                  |
| ⊙ | - TELEPHONE POLE            | × | - CHISELED BENCH MARK         |
| ⊙ | - POWER POLE                | ⊞ | - EXISTING MONUMENT BOX       |
| ⊙ | - UTILITY POLE              | ⊙ | - IRON PIN/PIPE FOUND         |
| ⊙ | - LIGHT & POWER POLE        | ⊙ | - IRON PIN/PIPE SET           |
| ⊙ | - TELEPHONE & POWER POLE    | □ | - TACKED HUB                  |
| ⊙ | - GUY ANCHOR                | ⊙ | - DRILL HOLE                  |
| ⊙ | - SIGN (1 POST)             | • | - PKNAIL                      |
| ⊙ | - SIGN (2 POST)             | • | - RAILROAD SPIKE              |
| ⊙ | - EXISTING SANITARY MANHOLE | ⊞ | - ELECTRICAL BOX              |
| ⊙ | - STORM INLET/ CATCH BASIN  | ⊙ | - EXISTING ELECTRICAL MANHOLE |
| ⊙ | - STORM INLET/ CATCH BASIN  | ⊙ | - BORING LOCATION             |
- 
- |  |          |  |                   |
|--|----------|--|-------------------|
|  | CONCRETE |  | SCREENED GRAVEL   |
|  | GROUT    |  | UNDISTURBED EARTH |

**SECTION CUTS**

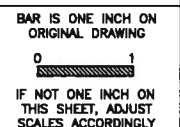


**ABBREVIATIONS**

- |   |                              |                                 |
|---|------------------------------|---------------------------------|
| ADH. - ADHESIVE   | E.W. - EACH WAY              | P - PROPERTY LINE/PLATE         |
| AB - ANCHOR BOLT  | EQ - EQUAL                   | PROP - PROPOSED                 |
| ADD'L - ADDITIONAL  | EX OR EXIST - EXISTING       | PSI - POUNDS PER SQUARE INCH    |
| ALT. - ALTERNATE  | EXP - EXPANSION              | PSF - POUNDS PER SQUARE FOOT    |
| ALUM - ALUMINUM   | EXT - EXTERIOR               | PVC - POLYVINYL CHLORIDE        |
| & - AND   | FDN. - FOUNDATION            | R - RISER                       |
| ASS'Y - ASSEMBLY  | FIN - FINISH                 | RCP - REINFORCED CONCRETE PIPE  |
| ⊙ - AT  | FL - FINISH LINE             | REINF - REINFORCING             |
| BITUM. - BITUMINOUS   | FLR - FLOOR                  | REQ'D. - REQUIRED               |
| B/ - BOTTOM OF  | FF - FAR FACE                | REQ MTS. - REQUIREMENTS         |
| OR BOT/ -   | FTG - FOOTING                | RO - ROUGH OPENING              |
| B - BASE LINE   | G - GAS                      | RT - RIGHT                      |
| OR BL -   | GA. - GAGE                   | R/W - RIGHT-OF-WAY              |
| BLDG. - BUILDING  | GR. - GRADE                  | SAN - SANITARY SEWER            |
| BLK. - BLOCK  | GRD. - GROUND                | SCHED - SCHEDULE                |
| BT - BOTTOM   | HORIZ - HORIZONTAL           | SECT - SECTION                  |
| B PL - BASE PLATE   | HP - HIGH POINT              | SF - SQUARE FEET                |
| BRG. - BEARING  | HHP - HIGH HIGH POINT        | SHT. - SHEET                    |
| BT PL. - BENT PLATE   | HR. - HANDRAIL               | SIM - SIMILAR                   |
| CCFRPMP - CENTRIFUGALLY CAST FIBER-REINFORCED POLYMER MORTAR PIPE | HS - HIGH STRENGTH           | SJ - STEEL JOIST                |
| C/C - CENTER TO CENTER  | I.F. - INSIDE FACE           | SLBB - SHORT LEG BACK-TO-BACK   |
| C.J. - CONSTRUCTION JOINT   | INT - INTERIOR               | SLV - SHORT LEG VERTICAL        |
| ⊙ - CENTERLINE  | INSUL. - INSULATION          | SPA. - SPACES OR SPACING        |
| CIRC - CIRCULAR   | INV. - INVERT                | SPRD. - SPREAD                  |
| CLR - CLEAR   | JT - JOINT                   | SQ OR □ - SQUARE                |
| CLSM - MATERIAL CONTROLLED LOW-STRENGTH CONCRETE                  | K. - KIP (1000 POUNDS)       | ST - STORM SEWER                |
| CMU - CONTROLLED LOW-STRENGTH CONCRETE MASONRY UNIT               | LL - LIVE LOAD               | STA. - STATION                  |
| COL - COLUMN  | LLBB - LONG LEG BACK-TO-BACK | ST. STL. - STAINLESS STEEL      |
| CONC. - CONCRETE  | LLH - LONG LEG HORIZONTAL    | STD - STANDARD                  |
| CONT. - CONTINUOUS  | LLV - LONG LEG VERTICAL      | STL. - STEEL                    |
| CONTL. - CONTROL  | LONG. - LONGITUDINAL         | STR. - STRUCTURAL               |
| CPP -   | LP - LOW POINT               | SUP. - SUPPORT                  |
| DEFL. - DEFLECTION  | LT - LEFT                    | SWO - STORMWATER OVERFLOW       |
| DEPR. - DEPRESSION  | LW - LIGHT WEIGHT            | T. - TREAD                      |
| DET - DETAIL  | MAS - MASONRY                | T/ - TOP OF                     |
| DI(DIP) - DUCTILE IRON PIPE                                       | MAX - MAXIMUM                | OR TOP/                         |
| DIA - DIAMETER  | MH - MANHOLE                 | T&B - TOP AND BOTTOM            |
| ⊙ - DIAMETER  | MID. - MIDDLE                | TEMP - TEMPORARY                |
| ⊙ - DIAMETER  | MIN. - MINIMUM               | THK. - THICK                    |
| DIM - DIMENSION   | MK. - MARK                   | TOM - TOP OF MASONRY            |
| DL - DEAD LOAD  | MO - MASONRY OPENING         | TYP - TYPICAL                   |
| DIST. - DISTANCE  | N/A - NOT APPLICABLE         | U.O.N. - UNLESS OTHERWISE NOTED |
| DWL/DWLS - DOWEL(S)   | N.F. - NEAR FACE             | VCP - VITRIFIED CLAY PIPE       |
| DWO - DRY WEATHER OUTLET  | NO. - NUMBER                 | VERT - VERTICAL                 |
| EE - EACH END   | OC - ON CENTER               | W - WATER                       |
| E.F. - EACH FACE  | O/H E - OVERHEAD EXISTING    | W/ - WITH                       |
| E.J. - EXPANSION JOINT  | OPP. - OPPOSITE              | W/W - WEST                      |
| E - EAST  | OPNG - OPENING               | W/M - WATER MAIN                |
| ELEV.(EL.) - ELEVATION  | +/- - PLUS OR MINUS          | W/O - WITHOUT                   |
| ELEC - ELECTRIC   | PC - PRECAST                 | WP - WORK POINT                 |
| EMBD. - EMBEDDED  |                              | WS - WATERSTOP                  |
|   |                              | WWF - WELDED WIRE FABRIC        |

**SHEET INDEX**

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| G-2                           | LOCATION MAP   |
| G-3                           | SURVEY CONTROL   |
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| MOT-2                         | JUNCTION CHAMBER NO.1 MAINTENANCE OF TRAFFIC PHASE 2-PART A                    |
| MOT-3                         | JUNCTION CHAMBER NO.1 MAINTENANCE OF TRAFFIC PHASE 2-PART B                    |
| MOT-4                         | MAINTENANCE OF TRAFFIC DETOUR ROUTE FOR MANHOLE NO.1                           |
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| TU-12                         | MONITORING   |
| TU-13                         | STRUCTURAL DETAILS AND NOTES   |



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**DLZ**  
ENGINEERS • ARCHITECTS • SCIENTISTS  
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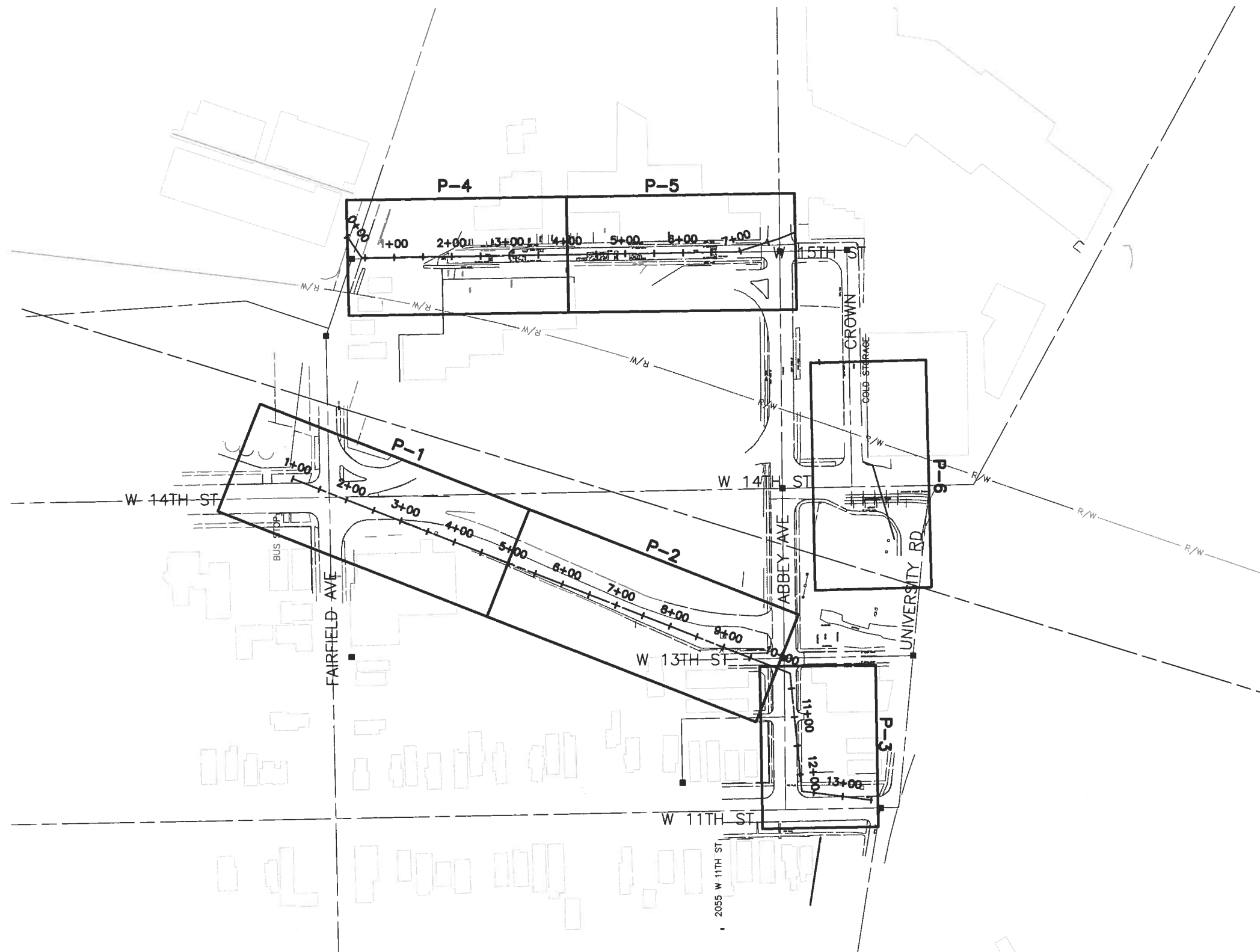
**Northeast Ohio Regional Sewer District**  
Protecting Your Health and Environment

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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**LEGEND, SHEET INDEX, AND GENERAL NOTES**

PROJECT NO.:  
SHEET: X  
SCALE: 1"=10'  
SHEET NO.: G-1



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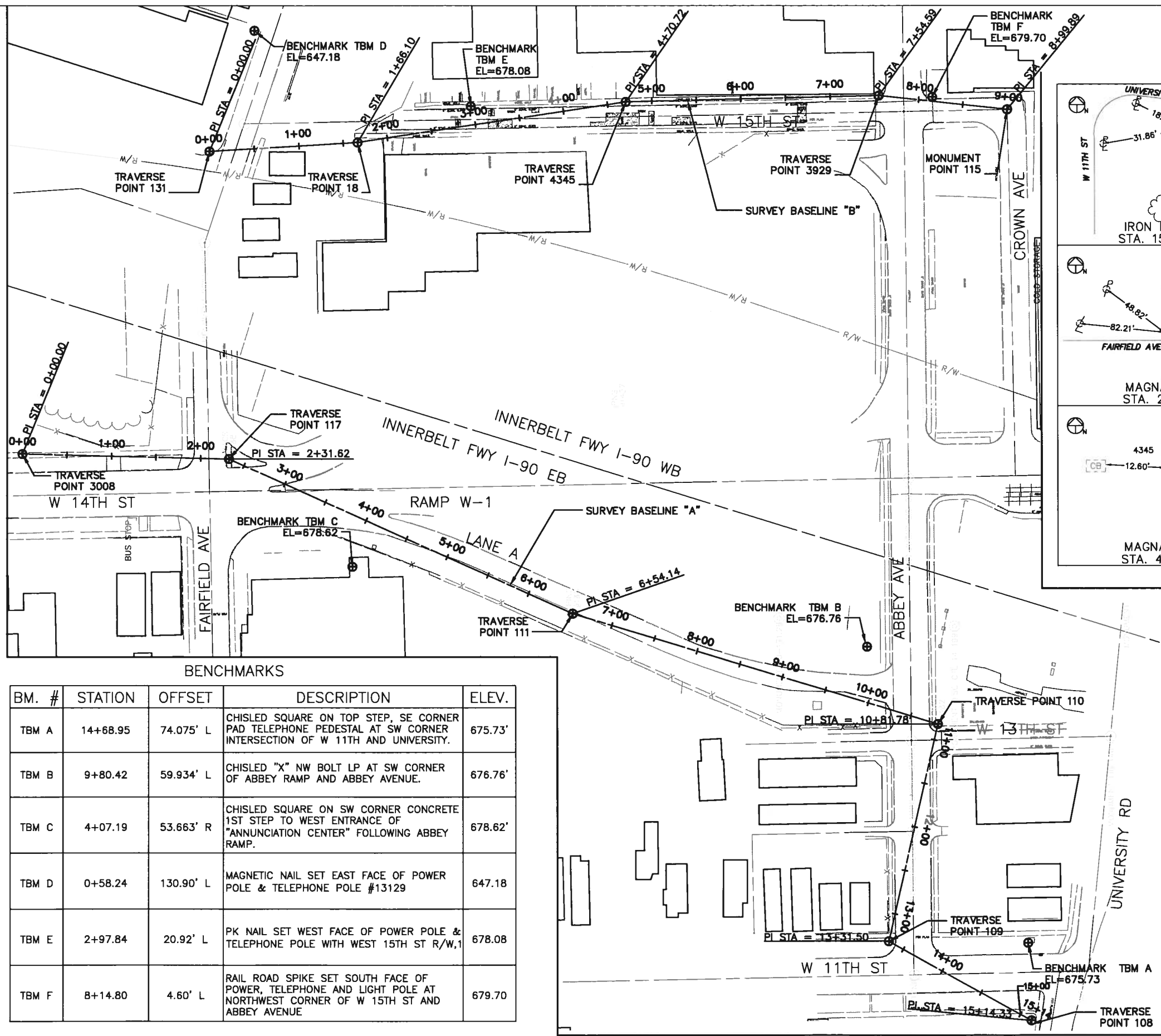


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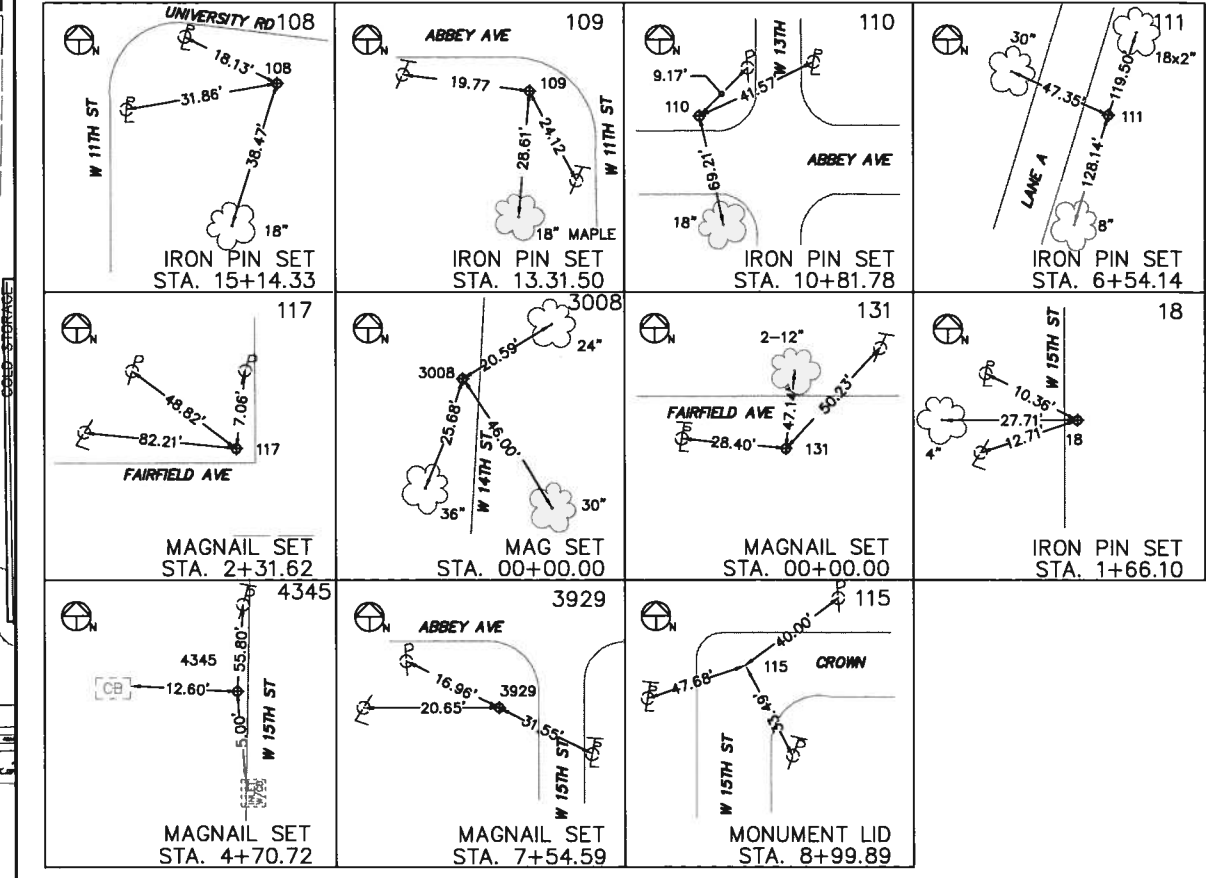
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**LOCATION MAP**

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=60'  
 SHEET NO.: G-2



SURVEY BASELINE CONTROL POINT LOCATIONS



BENCHMARKS

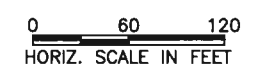
BM. #	STATION	OFFSET	DESCRIPTION	ELEV.
TBM A	14+68.95	74.075' L	CHISLED SQUARE ON TOP STEP, SE CORNER PAD TELEPHONE PEDESTAL AT SW CORNER INTERSECTION OF W 11TH AND UNIVERSITY.	675.73'
TBM B	9+80.42	59.934' L	CHISLED "X" NW BOLT LP AT SW CORNER OF ABBEY RAMP AND ABBEY AVENUE.	676.76'
TBM C	4+07.19	53.663' R	CHISLED SQUARE ON SW CORNER CONCRETE 1ST STEP TO WEST ENTRANCE OF "ANNUNCIATION CENTER" FOLLOWING ABBEY RAMP.	678.62'
TBM D	0+58.24	130.90' L	MAGNETIC NAIL SET EAST FACE OF POWER POLE & TELEPHONE POLE #13129	647.18
TBM E	2+97.84	20.92' L	PK NAIL SET WEST FACE OF POWER POLE & TELEPHONE POLE WITH WEST 15TH ST R/W, 1	678.08
TBM F	8+14.80	4.60' L	RAIL ROAD SPIKE SET SOUTH FACE OF POWER, TELEPHONE AND LIGHT POLE AT NORTHWEST CORNER OF W 15TH ST AND ABBEY AVENUE	679.70

SURVEY BASELINE "A" CONTROL POINTS

PT. #	NORTHING	EASTING	ELEV.	STATION	DESC.
108	N 663454.480'	E 2190785.510'	675.770'	15+14.33	108 IRON PIN SET
109	N 663294.540'	E 2190696.920'	675.410'	13+31.50	109 IRON PIN SET
110	N 663350.000'	E 2190453.440'	676.000'	10+81.78	110 IRON PIN SET
111	N 662940.790'	E 2190329.240'	679.670'	6+54.14	111 IRON PIN SET
117	N 662555.680'	E 2190155.420'	675.940'	2+31.62	117 MAGNAIL SET
3008	N 662324.1300'	E 2190149.7600'	677.350'	0+00.00	3008 MAGNAIL SET

SURVEY BASELINE "B" CONTROL POINTS

PT. #	NORTHING	EASTING	ELEV.	STATION	DESC.
131	N 662533.9700'	E 2189810.5200'	655.190'	0+00.00	131 MAGNAIL SET
18	N 662699.7500'	E 2189800.2900'	676.530'	1+66.10	18 IRON PIN SET
4345	N 663000.9700'	E 2189754.8900'	677.340'	4+70.72	4345 MAGNAIL SET
3929	N 663284.7500'	E 2189747.8200'	679.060'	7+54.59	3929 MAGNAIL SET
MON 115	N 663429.2100'	E 2189763.4500'	677.160'	8+99.89	115 MONUMENT LID ONLY



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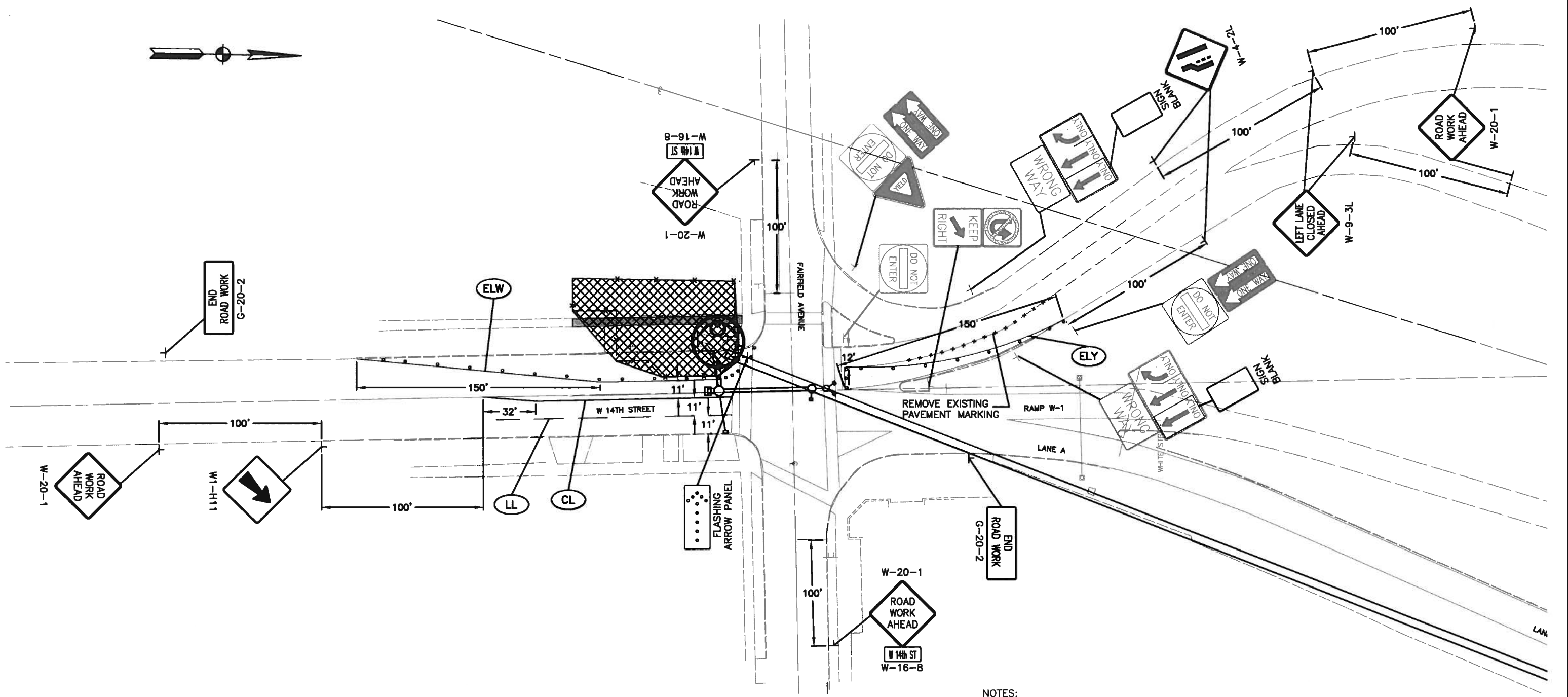
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SURVEY CONTROL

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 SHEET NO.: G-3



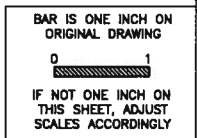


MOT PLAN

**LEGEND**

- CL CENTER LINE
- DL DOTTED LINE
- ELW EDGE LINE WHITE
- ELY EDGE LINE YELLOW
- LL LANE LINE
- SL STOP LINE
- DRUMS
- WORK ZONE

- NOTES:**
1. ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH MAINTENANCE OF TRAFFIC PAVEMENT MARKINGS SHALL BE REMOVED OR COVERED AS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND THE ODOT SPECIFICATION MANUAL.
  2. CONTRACTOR SHALL ADJUST SIGNAL HEADS AT FAIRFIELD AND W. 14TH STREET AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES SPECIFICATIONS REGARDING POSITIONING OVER LANES AND NUMBER OF SIGNAL FACES PER APPROACH.
  3. PEDESTRIANS TO BE MAINTAINED AS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10).



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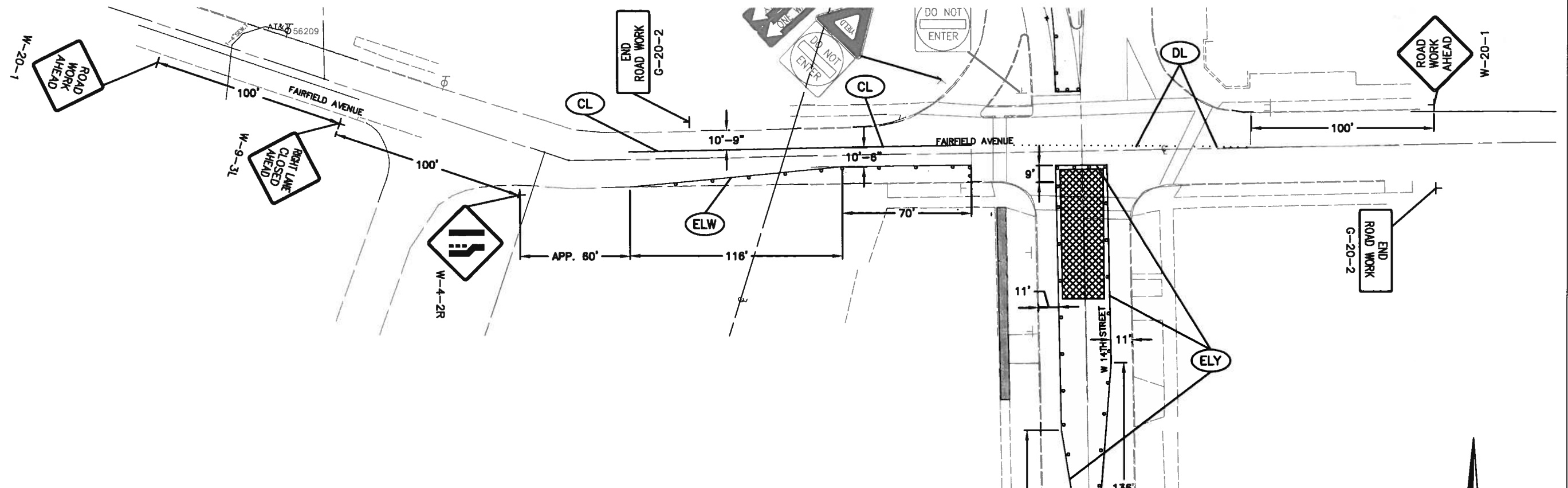


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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**JUNCTION CHAMBER NO. 1 MAINTENANCE OF TRAFFIC PHASE 1**

PROJECT NO.: \_\_\_\_\_  
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 SCALE: 1"=30'  
 SHEET NO.: MOT-1

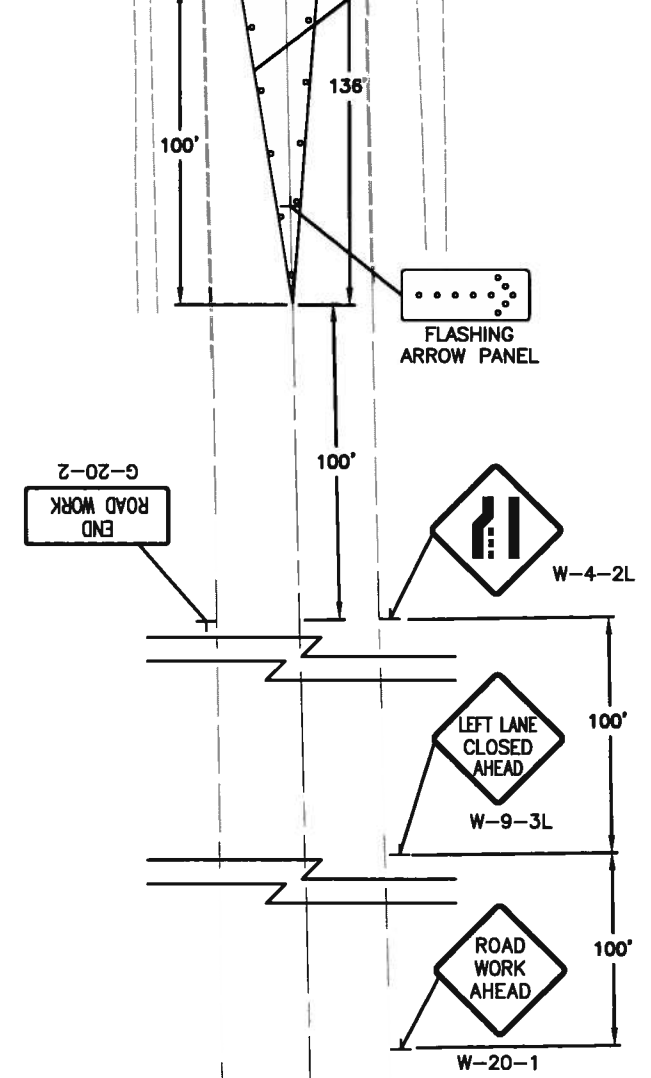


**MOT PLAN**

- NOTES:**
1. MOT SIGNS NORTH OF FAIRFIELD SHALL REMAIN AS SHOWN IN MOT PHASE 1.
  2. CONTRACTOR SHALL ADJUST SIGNAL HEADS AT FAIRFIELD AND W. 14TH STREET AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES SPECIFICATIONS REGARDING POSITIONING OVER LANES AND NUMBER OF SIGNAL FACES PER APPROACH.
  3. PEDESTRIANS TO BE MAINTAINED AS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10).
  4. ALL EXISTING PAVEMENT MARKINGS IN CONFLICT WITH MAINTENANCE OF TRAFFIC PAVEMENT MARKINGS SHALL BE REMOVED OR COVERED AS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND THE ODOT SPECIFICATION MANUAL.

**LEGEND**

- (CL) CENTER LINE
- (DL) DOTTED LINE (YELLOW)
- (ELW) EDGE LINE WHITE
- (ELY) EDGE LINE YELLOW
- (SL) STOP LINE
- ○ DRUMS
- ▨ WORK ZONE



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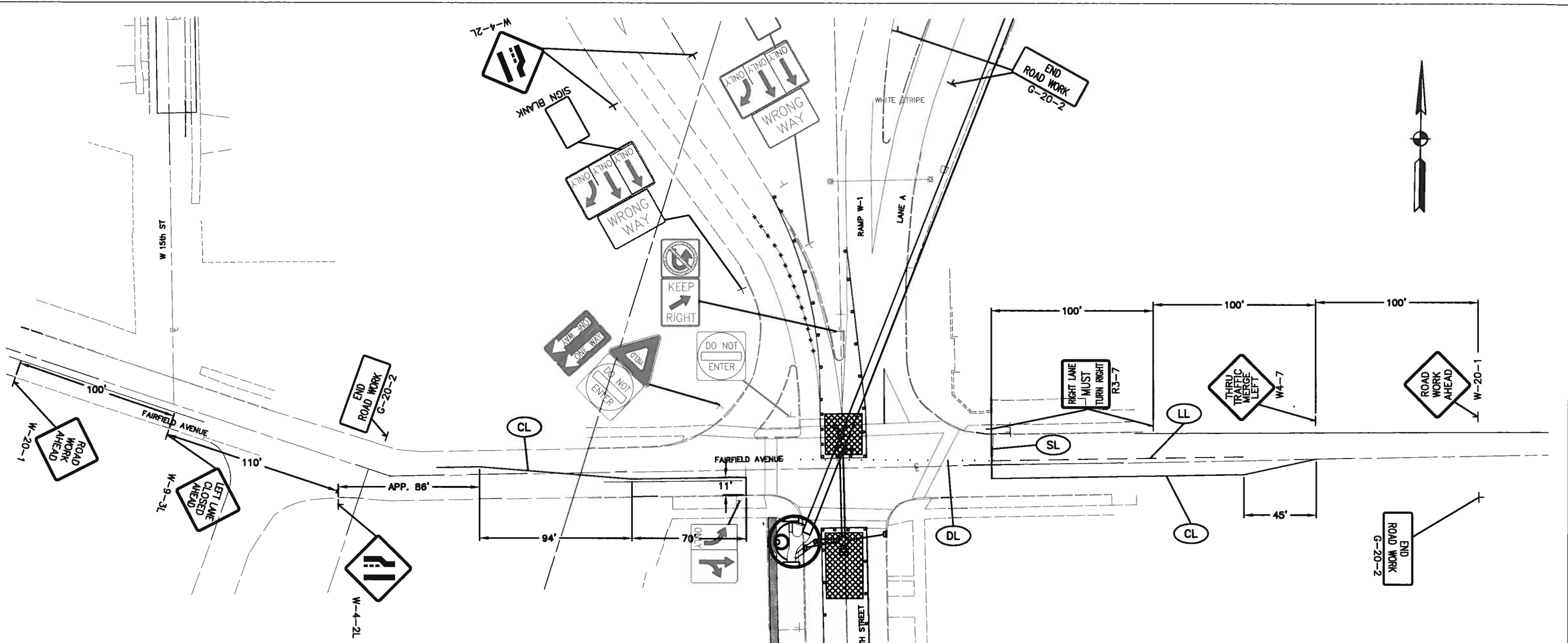


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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**JUNCTION CHAMBER NO. 1 MAINTENANCE OF TRAFFIC PHASE 2 - PART A**

PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: 1"=30'  
 SHEET NO.: MOT-2



**MOT PLAN**

- NOTES:**
- MOT SIGNAGE FOR NORTHBOUND W. 14TH STREET SHALL REMAIN AS SHOWN IN MOT PHASE 2 - PART A.
  - MOT SIGNAGE FOR SOUTHBOUND RAMPS ENTERING INTERSECTION OF W. 14TH AND FAIRFIELD AVENUE SHALL REMAIN AS SHOWN IN MOT PHASE 1.
  - CONTRACTOR SHALL ADJUST SIGNAL HEADS AT FAIRFIELD AND W. 14TH STREET AS PER THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES SPECIFICATIONS REGARDING POSITIONING OVER LANES AND NUMBER OF SIGNAL FACES PER APPROACH.
  - PEDESTRIANS TO BE MAINTAINED AS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TA-28 AND TA-29) AND THE ODOT STANDARD CONSTRUCTION DRAWINGS (MT-110.10).

**LEGEND**

- CL CENTER LINE
- DL DOTTED LINE
- ELW EDGE LINE WHITE
- ELY EDGE LINE YELLOW
- LL LANE LINE
- SL STOP LINE
- ○ DRUMS
- ▨ WORK ZONE

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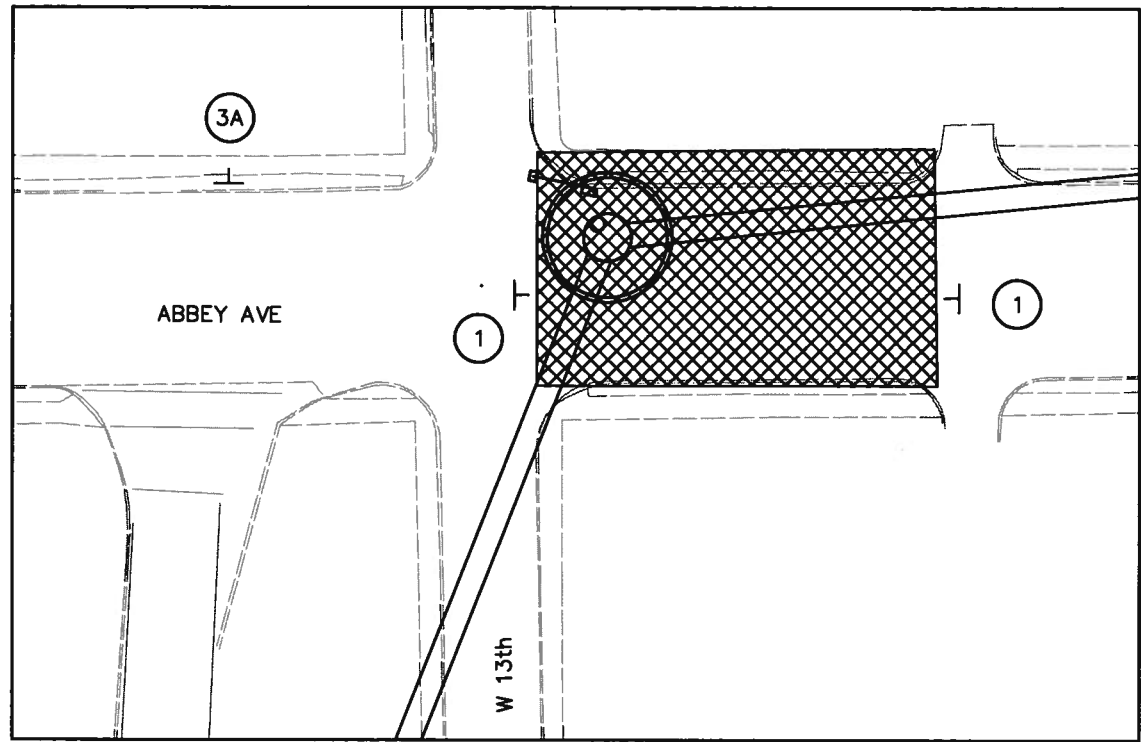


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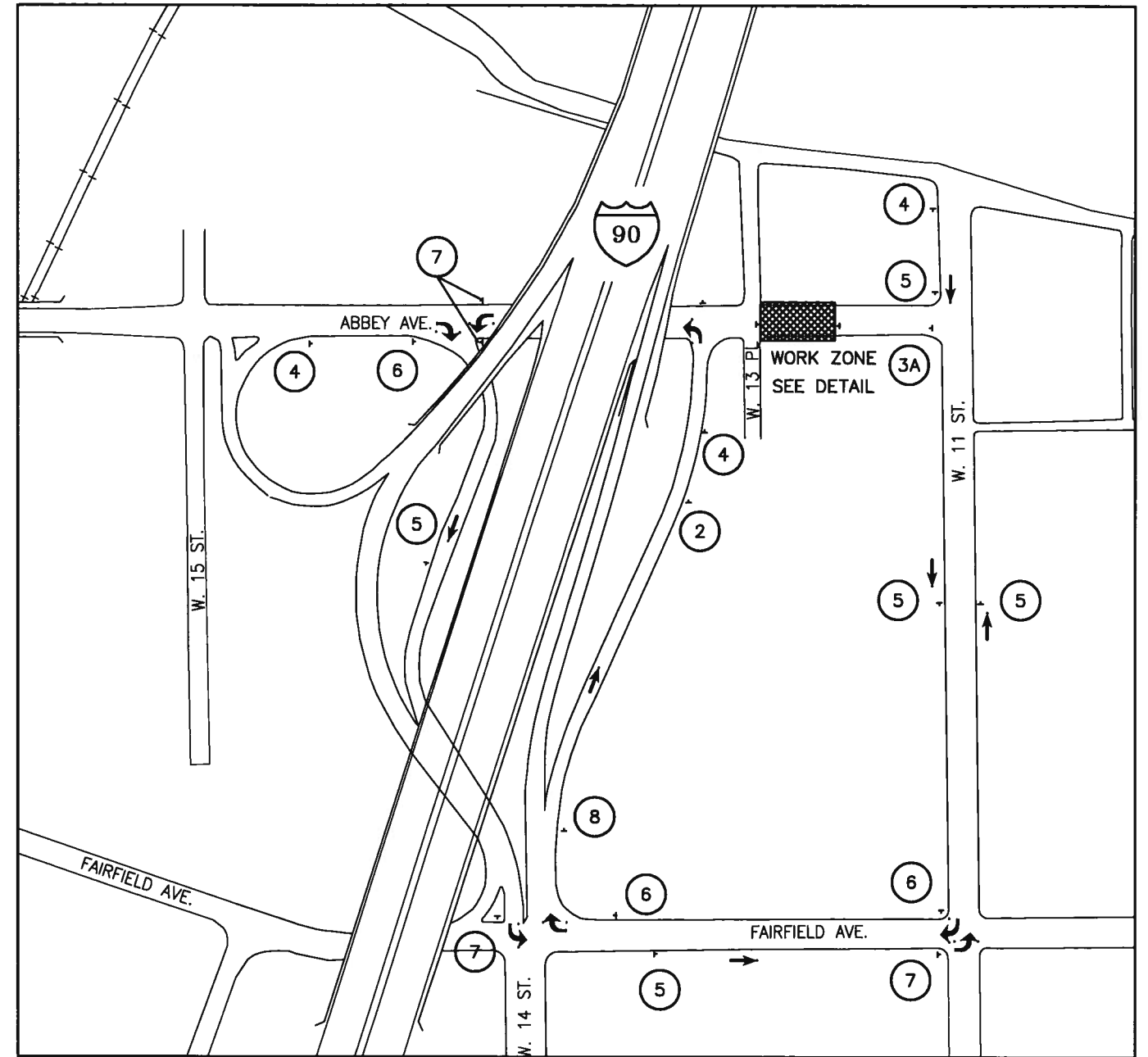
WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1  
 MAINTENANCE OF TRAFFIC  
 PHASE 2 - PART B

BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY  
 PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: 1"=10'  
 SHEET NO.: MOT-3



**WORK ZONE DETAIL**



**DETOUR PLAN**

- ①

**ROAD CLOSED**

R-11-2 ON TYPE III BARRICADE
- ②

**ROAD WORK AHEAD**

W-20-1
- ③

R-11-3

**ROAD CLOSED LOCAL TRAFFIC ONLY**

**DETOUR**

M-4-10L

FOR ③A ADD

**ABBEY RD**

W-16-8
- ④

W-20-2

**DETOUR AHEAD**

**ABBEY RD**

W-16-8
- ⑤

M-4-8

**DETOUR**

**ABBEY RD**

↑

M-6-3

W-16-8
- ⑥

W-16-8

**ABBEY RD**

**DETOUR**

→

M-4-9R
- ⑦

W-16-8

**ABBEY RD**

**DETOUR**

←

M-4-9L
- ⑧

M-4-8

**DETOUR**

**ABBEY RD**

↗

W-16-8

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0 1

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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**MAINTENANCE OF TRAFFIC DETOUR ROUTE FOR MANHOLE NO. 1**

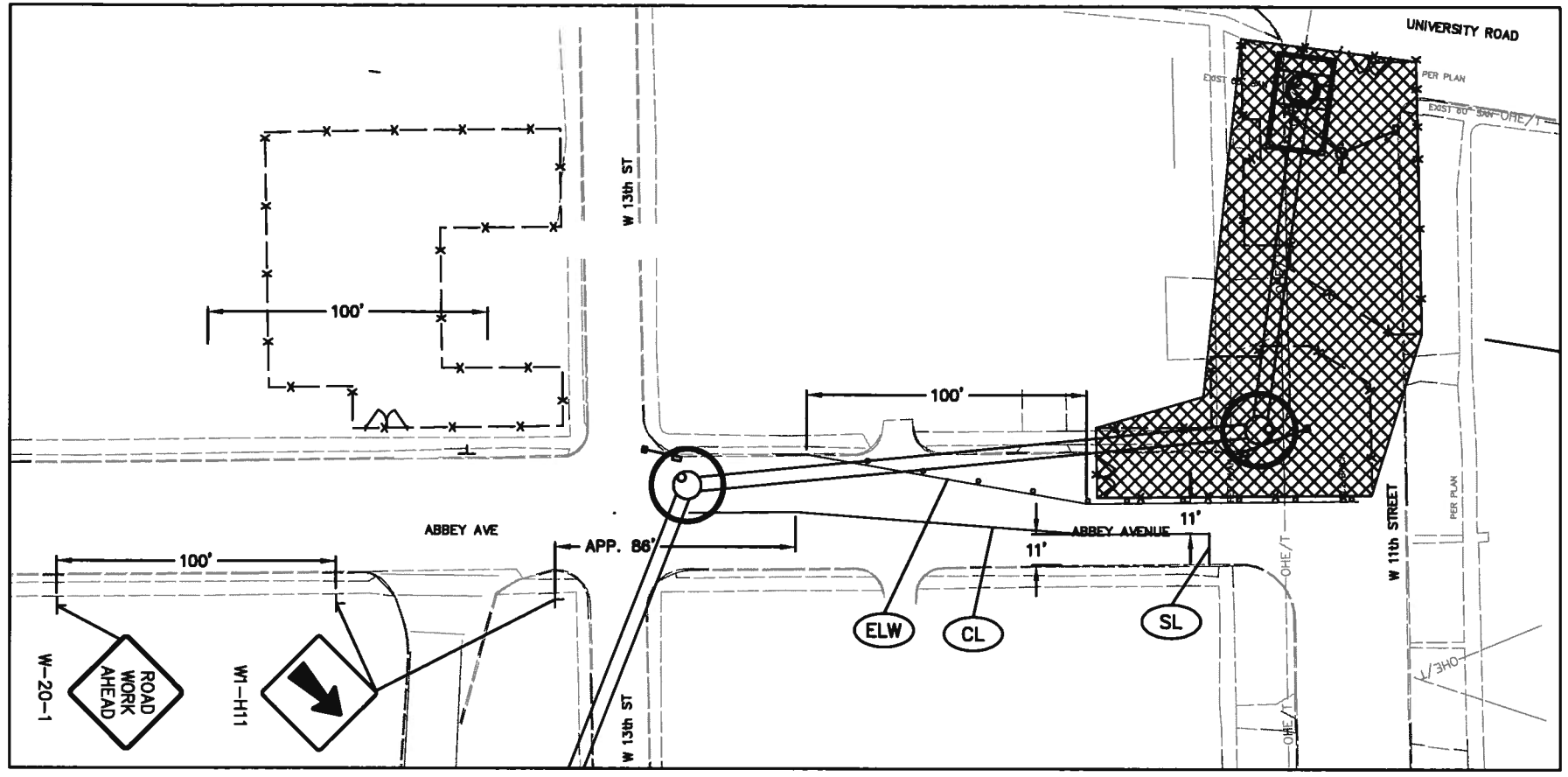
PROJECT NO.: \_\_\_\_\_

SHEET: X

SCALE: NOT TO SCALE

SHEET NO.: MOT-4

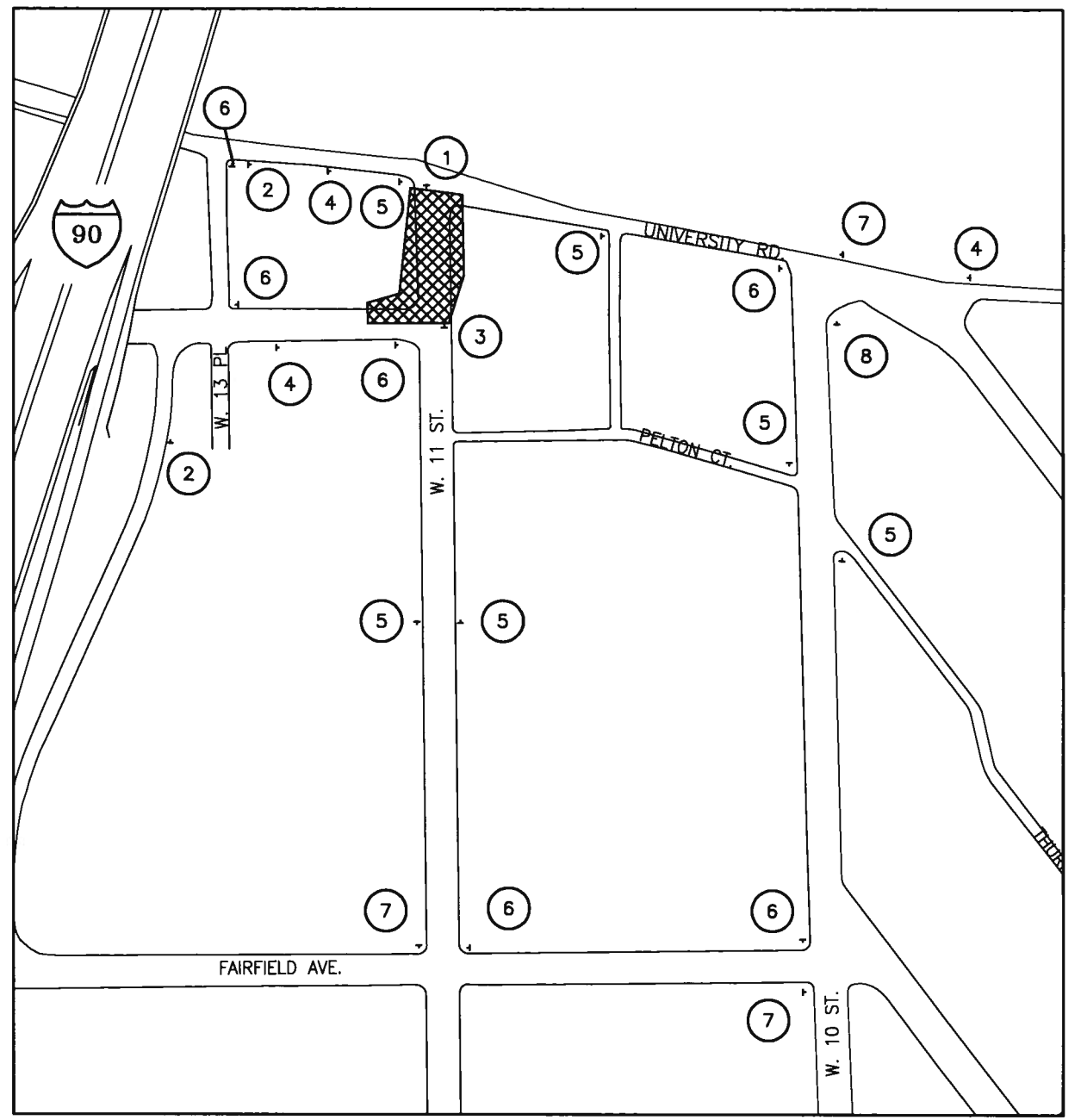
M6-2R-21



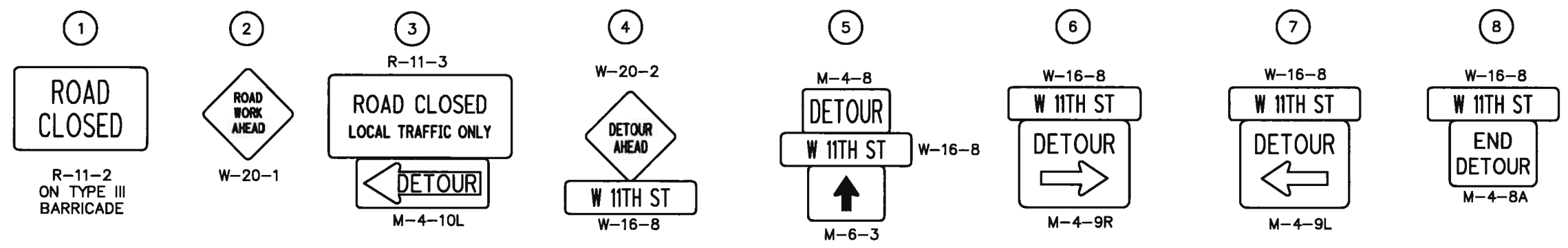
**WORK ZONE DETAIL**

**LEGEND**

- CL CENTER LINE
- ELW EDGE LINE WHITE
- SL STOP LINE
- ○ DRUMS
- ▨ WORK ZONE



**DETOUR PLAN**



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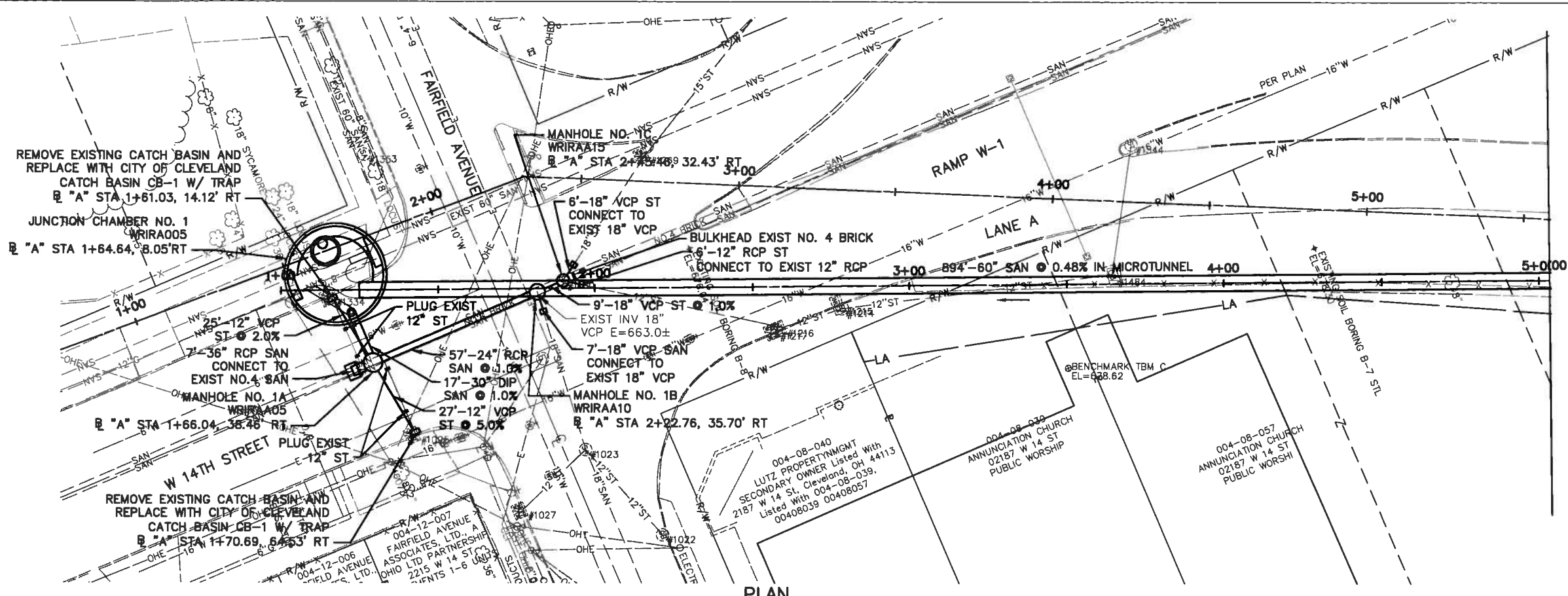


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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

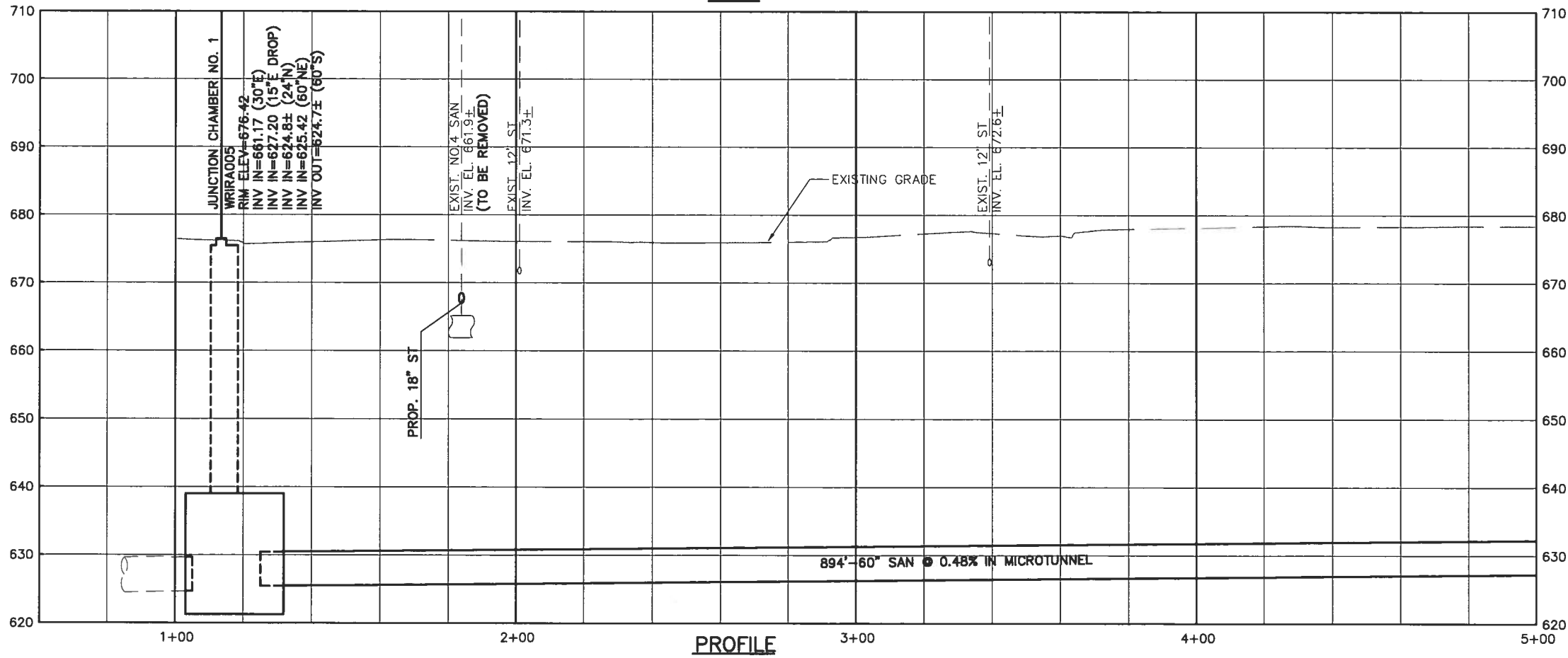
**MAINTENANCE OF TRAFFIC  
 DETOUR ROUTE FOR  
 MANHOLE NO. 2 AND  
 JUNCTION CHAMBER NO. 2**

PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: NOT TO SCALE  
 SHEET NO.: MOT-5

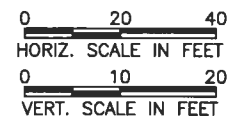


MATCH LINE STA. 5+00

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
MOT-1 TO MOT-3	MAINTENANCE OF TRAFFIC PLANS
C-2	SEWER ABANDONMENT PLAN
C-3	JUNCTION CHAMBER NO. 1 SITE PLAN
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-14	CITY OF CLEVELAND CATCH BASIN DETAIL
P-7&P-8	SEWER PROFILES



IGR #1022 TOC=677.19 INV 12" RCP SW (TO #1023)=674.19	INCB #1216 TOC=675.52 INV 12" RCP SW (TO #1150)=672.32
SMH #1023 TOC=676.91 FAIR-02 INV 18" VCP E=663.56 INV 18" VCP W=663.65 INV 12" CP NE=673.01 INV 15" VCP NE=666.31	INCB #1217 TOC=675.53 INCB #1269 TOC=675.69 INV 18" VCP S (TO #1150)=668.04
INCB #1027 TOC=676.62 INV 12" VCP NE=672.32	INCB #1334 TOC=675.48 MEASUREMENT +/- BOTTOM OF STRUCTURE=669.88
INCB #1095 TOC=675.80 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=671.15	SMH #1353 TOC=675.52 FAIR-04 INV 60" BRICK E=625.27 INV 60" BRICK W=625.12
SMH #1150 TOC=676.18 INV 12" RCP NE=671.24 INV 18" RCP NW=667.82 BOTTOM OF STRUCTURE=661.88	IGS #1484 TOC=676.52 FILLED TO GRATE NO PIPES VISIBLE
STMH #1214 TOC=676.35 INV 12" RCP N=672.35 INV 12" RCP S=672.35	STMH #1544 TOC=679.26 FILLED TO GRATE NO PIPES VISIBLE
IN #1215 TOC=675.79 CURB INLET WINDOW	



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DATE: \_\_\_\_\_



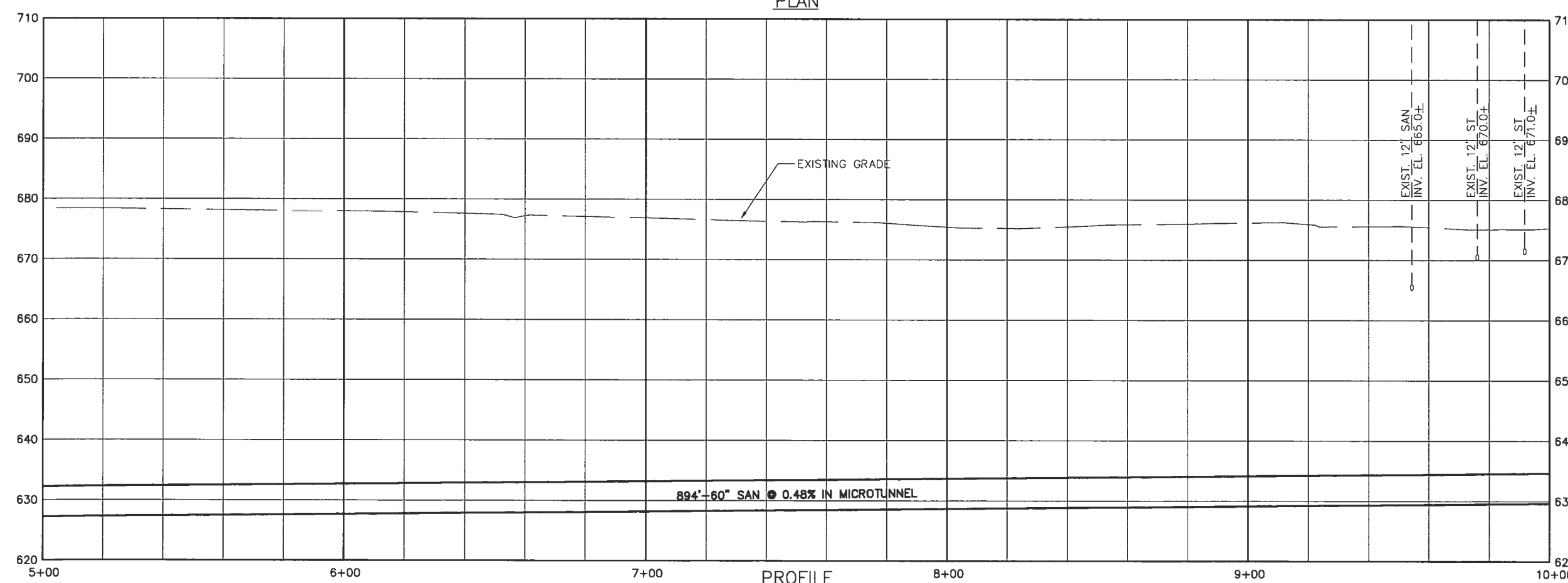
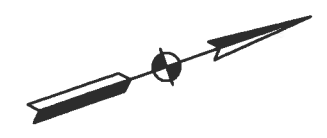
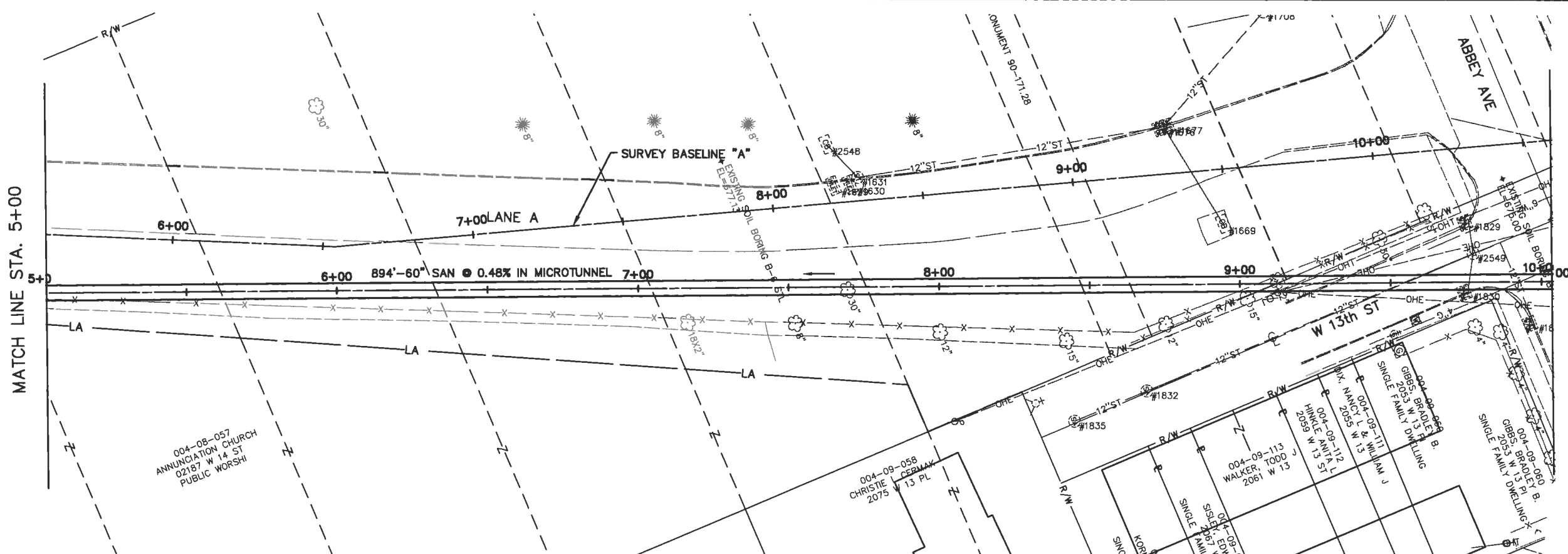
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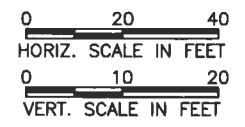
**WRIR MAINLINE PLAN & PROFILE  
STA. 1+00 TO STA. 5+00**

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 1"=20'H; 1"=10'V  
SHEET NO.: P-1





- IN #1629  
TOC=675.88  
CURB INLET WINDOW
- IN #1630  
TOC=675.78  
CURB INLET WINDOW
- STMH #1631  
TOC=676.19  
INV 12" RCP N (TO #1676)=670.99  
INV 12" RCP W (TO #2548)=671.09
- IGS #1669  
TOC=673.26  
NO PIPES VISIBLE
- INCB #1676  
TOC=673.38  
INV 12" RCP E (TO #1669)=668.58  
INV 12" VCP NW (TO #1708)=668.48  
INV 12" RCP SW (TO #1631)=668.68
- INCB #1677  
TOC=673.38
- INCB #1829  
TOC=675.22  
INV 12" VCP SE (TO #2549)=670.57
- INCB #1830  
TOC=675.09  
INV 12" VCP NW (TO #2549)=670.09
- INCB #1831  
TOC=675.11  
NO PIPES VISIBLE  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.91
- IGS #2548  
TOC=675.82  
FILLED TO TOP OF STRUCTURE
- STMH #2549  
TOC=675.42  
INV 12" VCP SE (TO #1830)=669.67  
INV 12" VCP NW (TO #1829)=669.02  
INV 12" VCP S (TO #1832)=664.92  
INV 12" VCP N=664.92



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HORIZ. SCALE IN FEET  
VERT. SCALE IN FEET  
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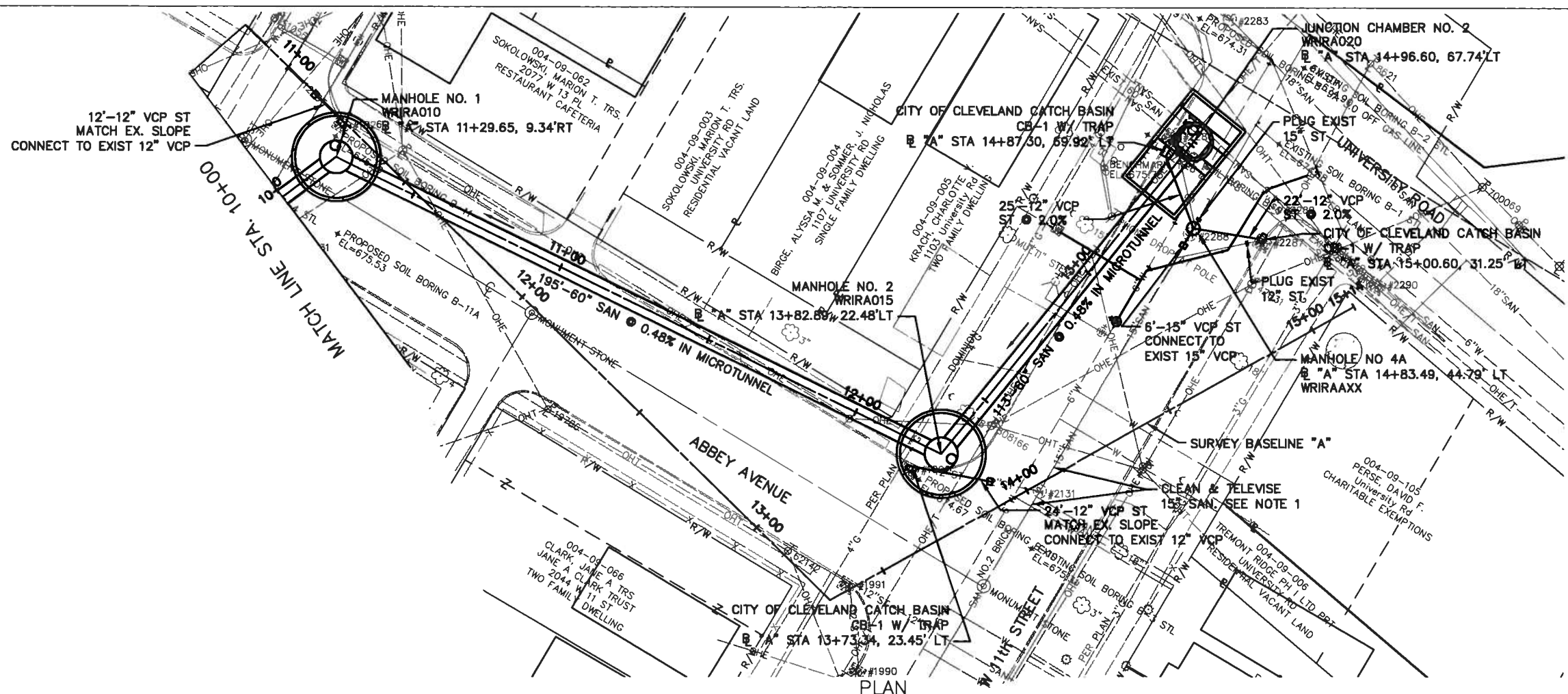


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WALWORTH RUN INTERCEPTOR REALIGNMENT

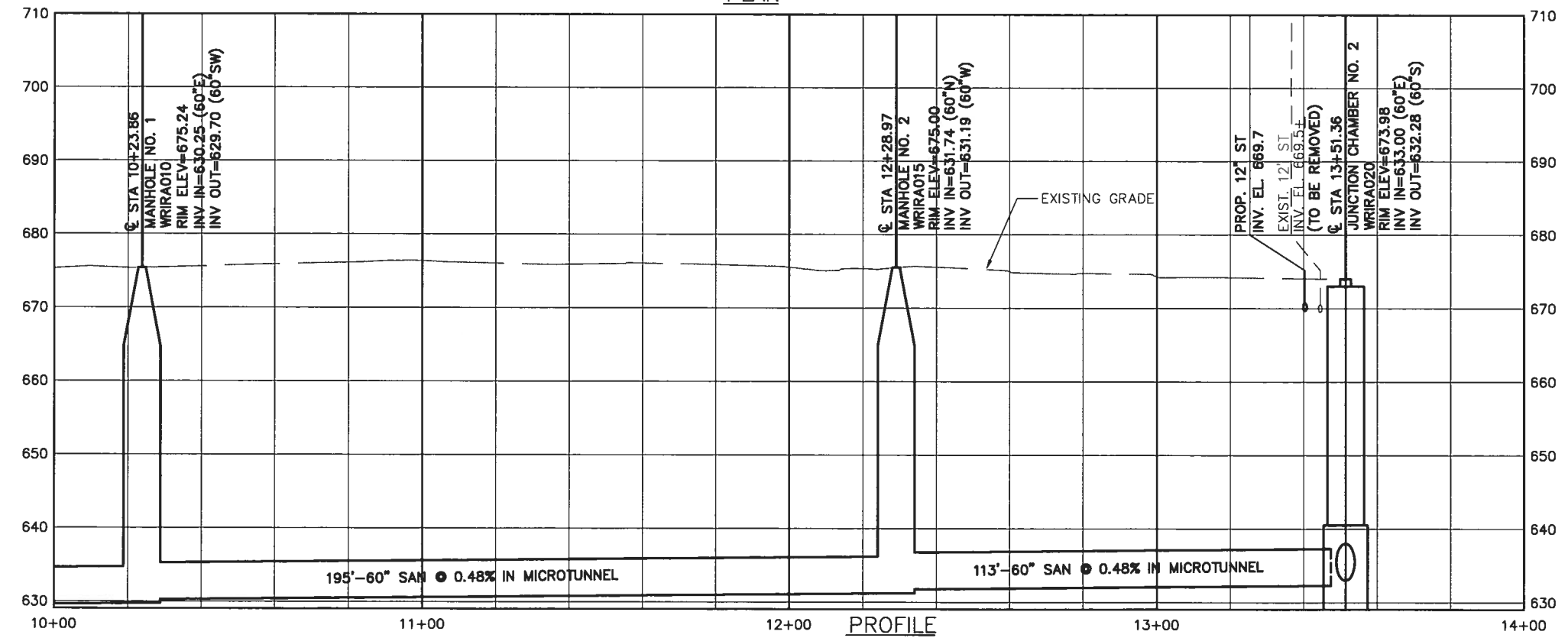
WRIR MAINLINE PLAN & PROFILE  
STA. 5+00 TO STA. 10+00

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 1"=20'H; 1"=10'V  
SHEET NO.: P-2

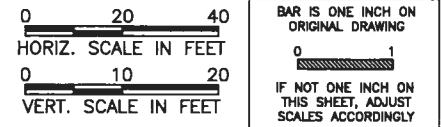


CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
MOT-4 TO MOT-5	MAINTENANCE OF TRAFFIC PLANS
C-1	SEWER ABANDONMENT PLAN
C-4	MH NO. 1 SITE PLAN
C-5	MANHOLE NO. 2 & JUNCTION CHAMBER NO. 2 SITE PLAN
C-6 TO C-9	WATER MAIN PLANS AND DETAILS
C-10	PRECAST CONCRETE MANHOLE DETAILS
P-7&P-8	SEWER PROFILES
TU-5 TO TU-8	JUNCTION CHAMBER NO. 2 STRUCTURAL DETAILS
TU-9	MH NO. 1 INITIAL SUPPORTS
TU-10	MH NO. 2 INITIAL SUPPORTS

**NOTE:**  
 1. THE CONTRACTOR SHALL CLEAN AND TELEWISE THE EXISTING 15" SAN SEWER ON W11TH ST BETWEEN MH 2287 AND MH 2131, AND BETWEEN MH 2131 AND THE NEXT DOWNSTREAM MANHOLE BEFORE AND AFTER CONSTRUCTING THE NEW WORK. PROVIDE 2 COPIES OF THE VIDEOTAPES TO THE ENGINEER. THIS WORK SHALL BE INCLUDED FOR PAYMENT UNDER THE UNIT PRICE FOR THE 60" SAN SEWER IN MICROTUNNEL. SHOULD THE CONTRACTOR DAMAGE THE EXISTING SANITARY SEWER MAINLINE OR LATERAL CONNECTIONS DURING CONSTRUCTION, HE SHALL REPAIR OR REPLACE THE SEWER TO THE SATISFACTION OF THE CITY. NEW SEWER MATERIALS SHALL MATCH EXISTING.



- INCB #1826  
TOC=675.09  
FILLED WITH WATER MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.09
- INCB #1990  
TOC=674.82  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.82
- INCB #1991  
TOC=674.52  
INV 12" VCP SE (TO #1990)=670.62  
INV 12" VCP E=669.62
- INCB #1992  
TOC=674.61  
INV 12" VCP NE=669.81
- SMH #2131  
TOC=675.35  
DID NOT OPEN - CRACKED LID
- SMH #2283  
TOC=674.64  
UN-03  
INV 18" VCP E (TO #2356)=661.94  
INV 15" VCP W (TO #1799)=661.99  
INV 12" VCP SW=667.99  
INV 12" VCP NW=666.04
- INCB #2286  
TOC=673.69  
FILLED TO TOP OF STRUCTURE
- INCB #2287  
TOC=673.92  
FILLED TO TOP OF STRUCTURE
- SMH #2288  
TOC=674.89  
W11-01  
INV 15" VCP N (TO #2131)=667.59  
INV 15" VCP S (TO #?)=667.39
- SMH #2289  
TOC=674.25  
UN-02  
INV 60" BRICK SE (TO #?)=633.25  
INV 60" BRICK NW (TO #2131)=633.15
- INCB #2290  
TOC=673.93  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=667.38



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CROSS CHK'D BY:	
APPROVED BY:	
DATE:	

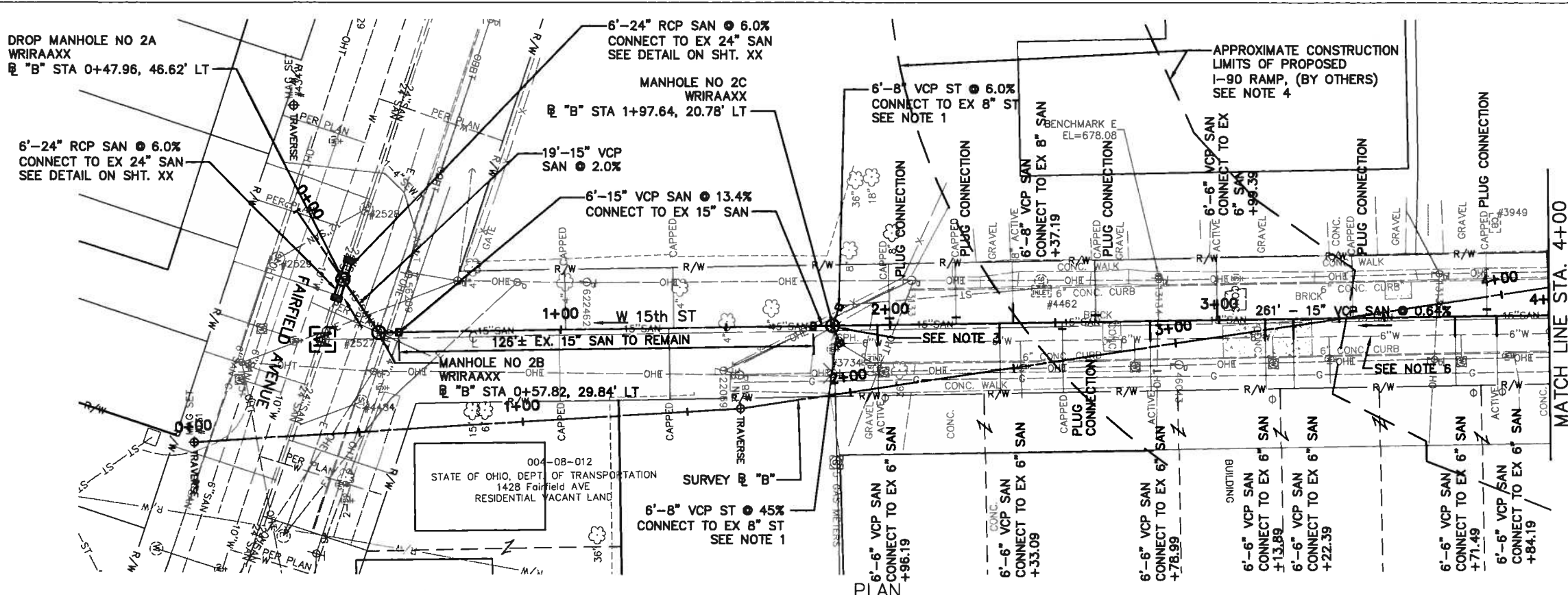
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WRIR MAINLINE PLAN & PROFILE  
 STA. 10+00 TO STA. 15+00**

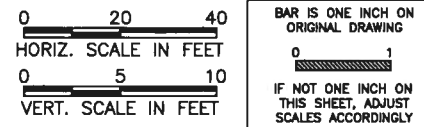
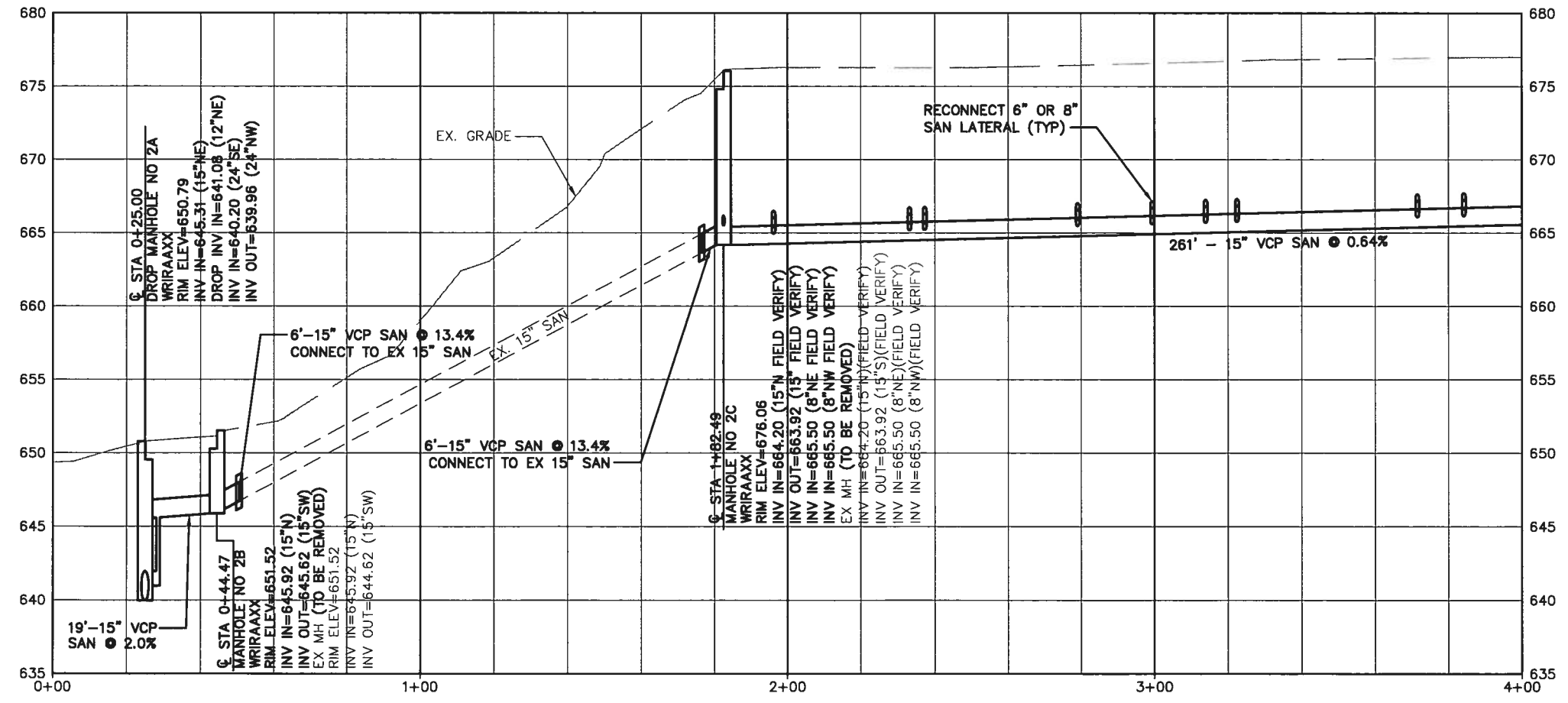
PROJECT NO.:	
SHEET:	
SCALE: 1"=20'H; 1"=10'V	
SHEET NO.:	P-3



SMH #2527 TOC=651.52 FAIR-07 INV 15" VCP N=645.92 INV 15" VCP SW=644.62	CB #3734 TOC=678.73 INV 8" SW 672.73
SMH #2528 TOC=649.22 FAIR-09 INV 24" BRICK E (TO #2526)=638.72 INV 24" BRICK W=638.62 INV 12" BRICK S=635.42	CB #3949 TOC=676.93 INV 8" S 669.69
SMH #2529 TOC=650.51 FAIR-08 INV 60" BRICK SE (TO #1353)=630.21 INV 12" VCP W=633.81 INV 12" VCP W=629.81	CB #4462 TOC=678.69 INV 8" S 669.69
	CB #4484 TOC=652.91 INV 12" VCP SE=648.46

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-2	SEWER ABANDONMENT PLAN
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-11	TRENCH REPAIR DETAILS
C-13	SEWER DETAILS
P-5	W. 15TH ST. SAN SEWER

- NOTES:**
1. CONNECTION CONFIGURATION, PIPE SIZES AND ELEVATIONS TO BE FIELD VERIFIED PRIOR TO MANHOLE FABRICATION. CONTRACTOR SHALL REPLACE 8" STORM SEWER CONNECTION TO A POINT ALONG DIRECT ALIGNMENT TO CATCH BASIN, AS DIRECTED BY THE ENGINEER.
  2. THE CONTRACTOR SHALL PLUG ALL CAPPED CONNECTIONS WHICH ARE DISTURBED BY EXCAVATION.
  3. REMOVE AND REPLACE EXISTING GUARDRAIL AND FENCE AS REQUIRED TO CONSTRUCT SANITARY SEWER.
  4. THE PROPOSED I-90 RAMP (TO BE DESIGNED BY OTHERS) WILL RESULT IN EMBANKMENT FILLS ABOVE THE EXISTING GRADE. THE ENGINEER HAS DESIGNED THE PROPOSED 15" SAN SEWER FROM STA. 1+82 TO STA. 4+00 FOR 32' OF EARTH COVER.
  5. ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS, UNLESS OTHERWISE SHOWN.
  6. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN AVOIDING DAMAGE TO THE EXISTING WATER MAIN DURING CONSTRUCTION. ANY WATER MAIN DAMAGE CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.



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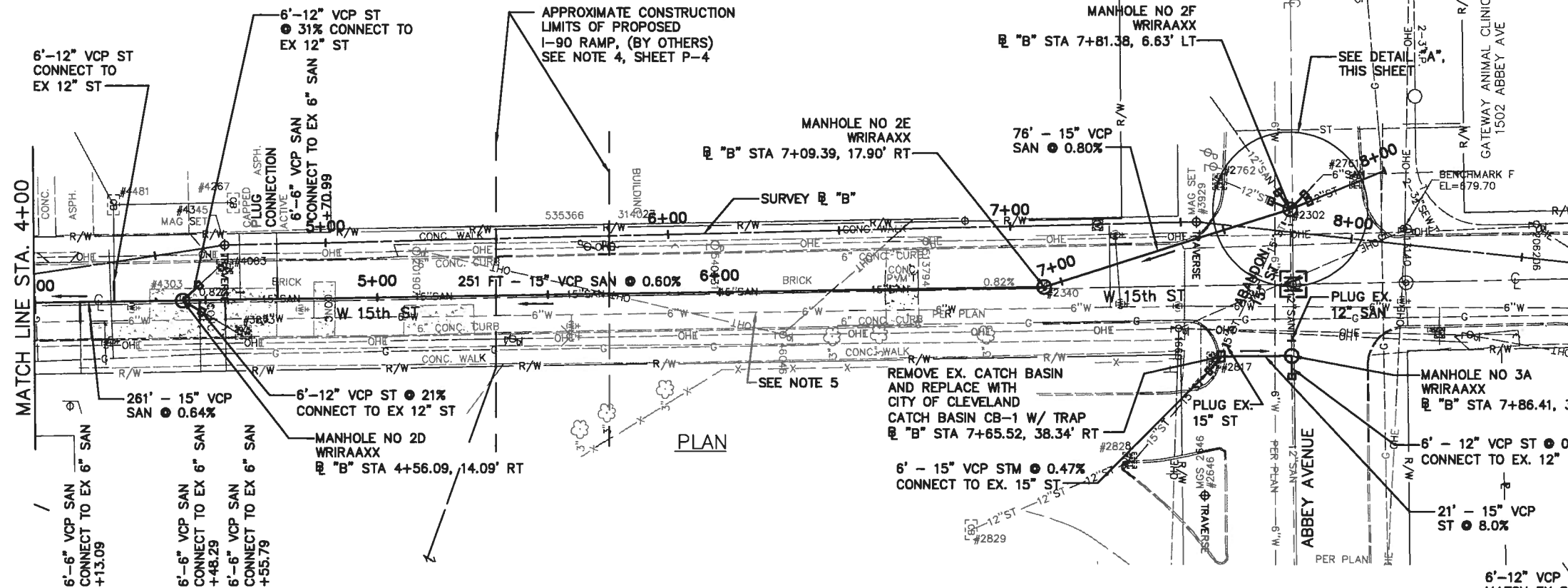


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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**W15TH ST SANITARY SEWER PLAN & PROFILE STA 0+00 TO STA 4+00**

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=20'H; 1"=5'V  
 SHEET NO.: P-4



CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-1	SEWER ABANDONMENT PLAN
C-10	PRECAST CONCRETE MANHOLE DETAILS
C-11	TRENCH REPAIR DETAILS
C-13	SEWER DETAILS
P-4	W. 15TH ST. SAN SEWER
P-7	W. 15TH ST. AND ABBEY AVE CATCH BASIN CONNECTION PROFILE

SMH #2302  
 TOC=678.88  
 AB-01  
 INV 12" VCP SW=668.23  
 INV 12" VCP E=668.33  
 INV 15" VCP SE=668.98  
 INV 12" VCP SW=674.33  
 INV 12" VCP NW=673.38  
 INV 8"(?) PVC NW=668.78

SMH #2340  
 TOC=678.10  
 W15-01 START OF RUN  
 INV 12" VCP S (TO #2344)=667.90

INCB #2761  
 TOC=678.51  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=676.01

INCB #2762  
 TOC=678.56  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=675.56

INCB #2817  
 TOC=677.70  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=671.70

INCB #2828  
 TOC=677.23  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=673.23

IGS #2829  
 TOC=675.40  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=672.40

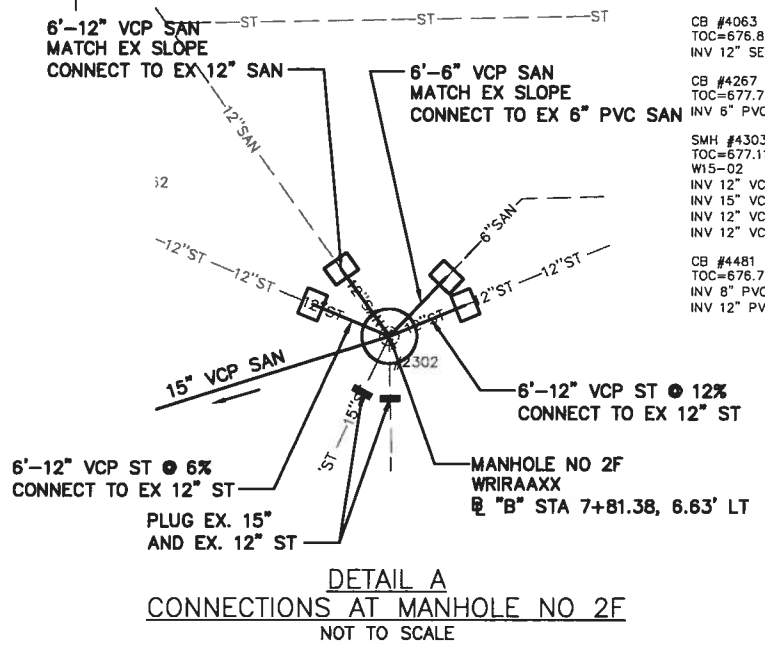
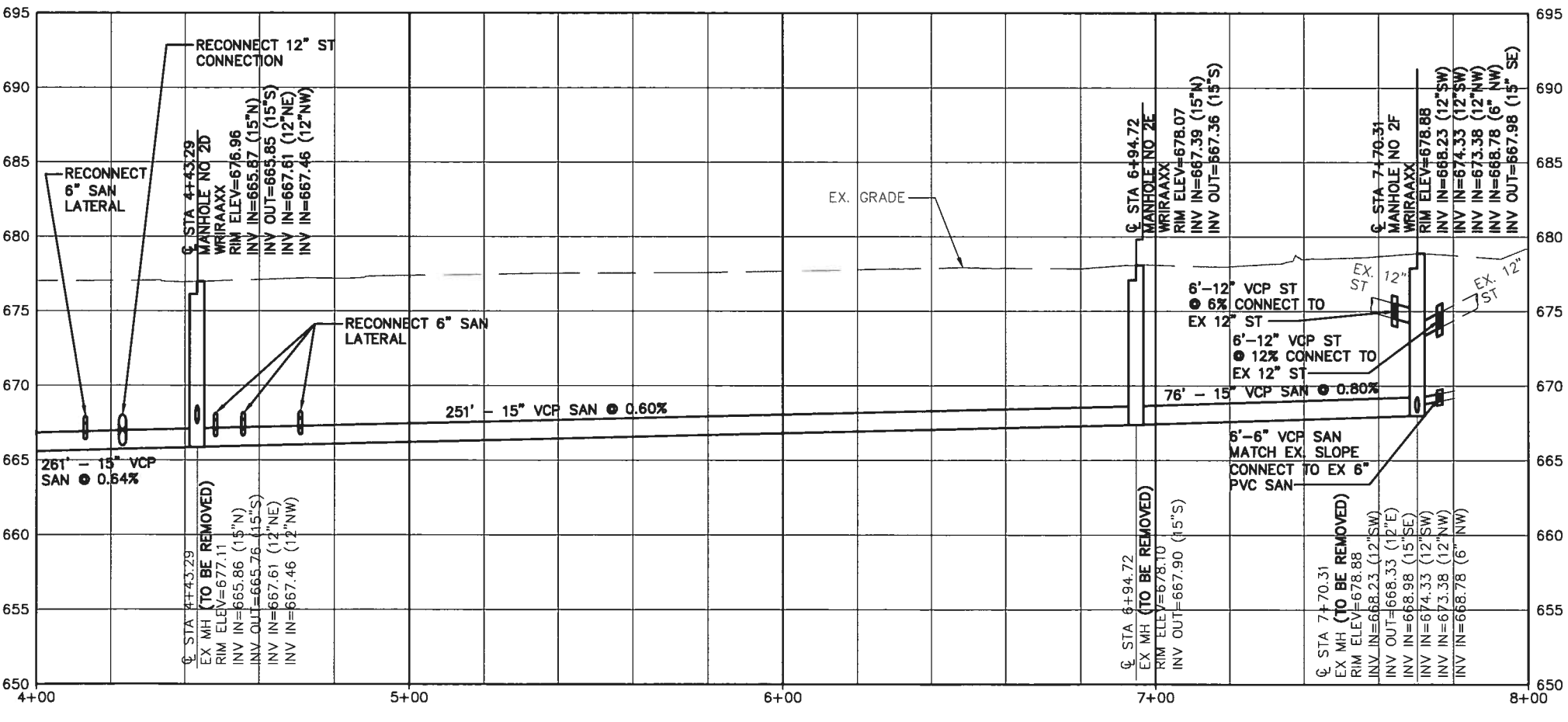
CB #3873  
 TOC=676.79  
 INV 12" VCP SW=672.09

CB #4063  
 TOC=676.81  
 INV 12" SE=672.81

CB #4267  
 TOC=677.73  
 INV 6" PVC S=675.23

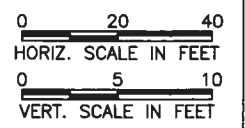
SMH #4303  
 TOC=677.11  
 W15-02  
 INV 12" VCP N (TO #2340)=665.86  
 INV 15" VCP S (TO #W15-03 ?)=665.76  
 INV 12" VCP NW=667.46  
 INV 12" VCP NE=667.61

CB #4481  
 TOC=676.77  
 INV 8" PVC E=670.94  
 INV 12" PVC W=670.89



**NOTES:**

- THE CONTRACTOR SHALL PLUG ALL CAPPED CONNECTIONS WHICH ARE DISTURBED BY EXCAVATION.
- ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS.
- REPLACE EXISTING CURB AND PAVEMENT AS NECESSARY TO INSTALL STORM SEWERS AND CATCH BASINS.
- FROM @ STA. 4+80 TO @ STA. 6+94 THE LOCATIONS, NUMBER, AND STATUS OF SERVICE CONNECTIONS IS UNKNOWN. THE CONTRACTOR SHALL IDENTIFY SUCH CONNECTIONS AND RECONNECT THEM TO THE NEW SEWER IF THEY ARE ACTIVE. THE CONTRACTOR SHALL PLUG THEM IF THEY ARE INACTIVE. A QUANTITY OF 24 LF OF 6" VCP SAN HAS BEEN INCLUDED IN THE BID FORM FOR THE RECONNECTION OF LATERALS IN THIS AREA.
- SEE NOTE 6 ON SHEET P-4.



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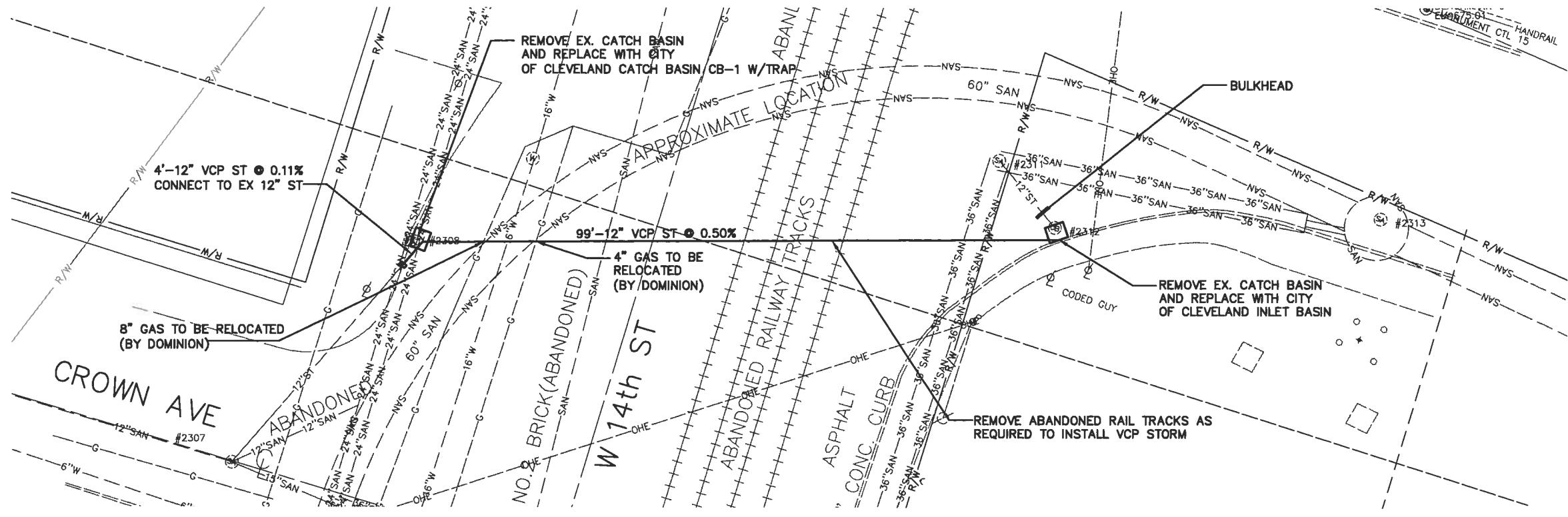


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WALWORTH RUN INTERCEPTOR REALIGNMENT

W15TH ST SANITARY SEWER PLAN & PROFILE STA 4+00 TO STA 8+00

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=20'H; 1"=5'V  
 SHEET NO.: P-5



SMH #2307  
 TOC=674.18  
 CR-02  
 INV 12" VCP NE=668.48  
 INV 12" VCP W=659.68  
 INV 15" VCP SE=659.73

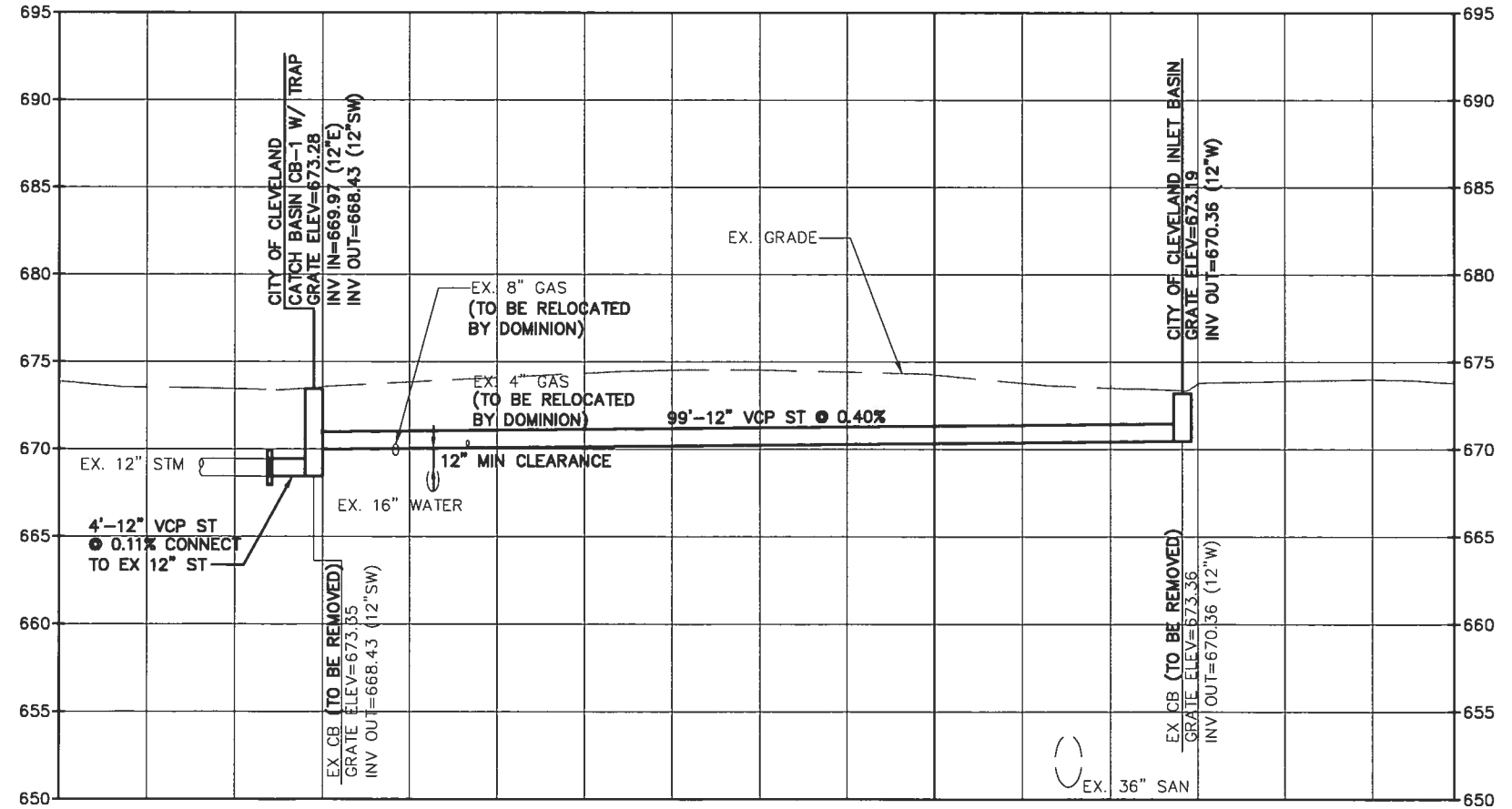
INCB #2308  
 TOC=673.35  
 INV 12" VCP SW=668.43

SMH #2311  
 TOC=673.97  
 UN-06  
 INV 38" BRICK NE=650.37  
 INV 38" BRICK SW=650.52  
 INV 12" VCP SE=669.97

IGR #2312  
 TOC=673.36  
 NO PIPES VISIBLE MEASUREMENT +/-  
 BOTTOM OF STRUCTURE=670.36



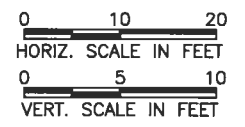
PLAN



PROFILE

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-11	TRENCH REPAIR DETAILS
C-13	SEWER DETAILS
C-14	CATCH BASIN DETAIL
C-15	INLET BASIN DETAIL

- NOTES:
- ALL CONNECTIONS TO EXISTING PIPES SHALL BE MADE USING FLEXIBLE PIPE COUPLINGS.
  - REPLACE EXISTING CURB AND PAVEMENT AS NECESSARY TO INSTALL STORM SEWERS AND CATCH BASINS.



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 CROSS CHK'D BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

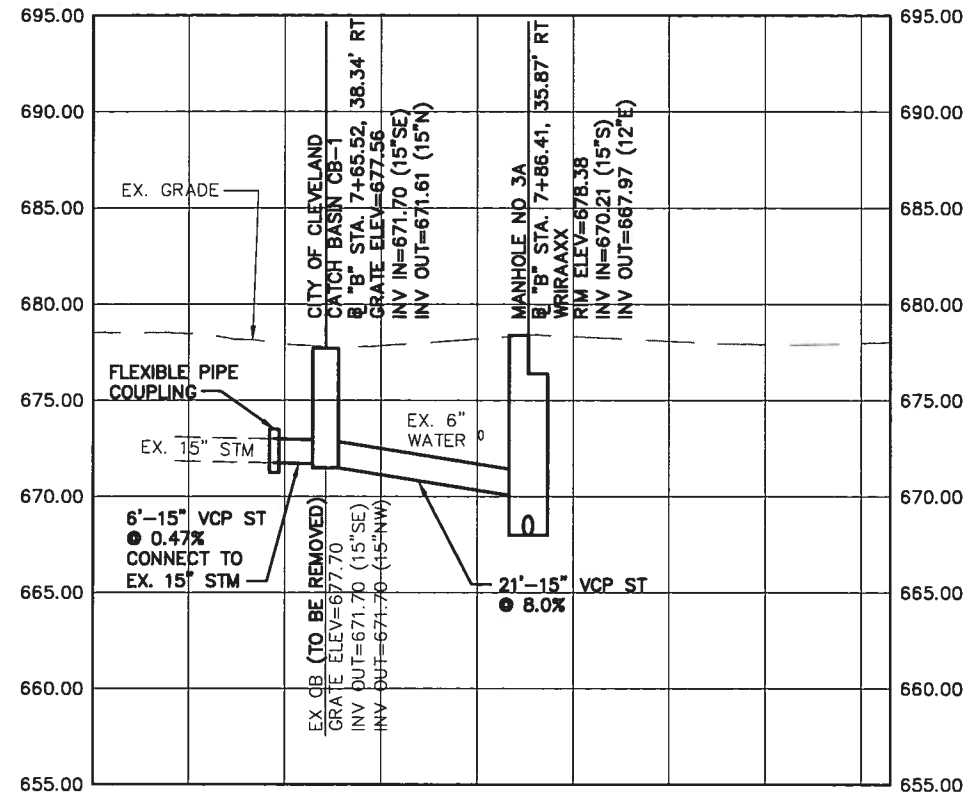


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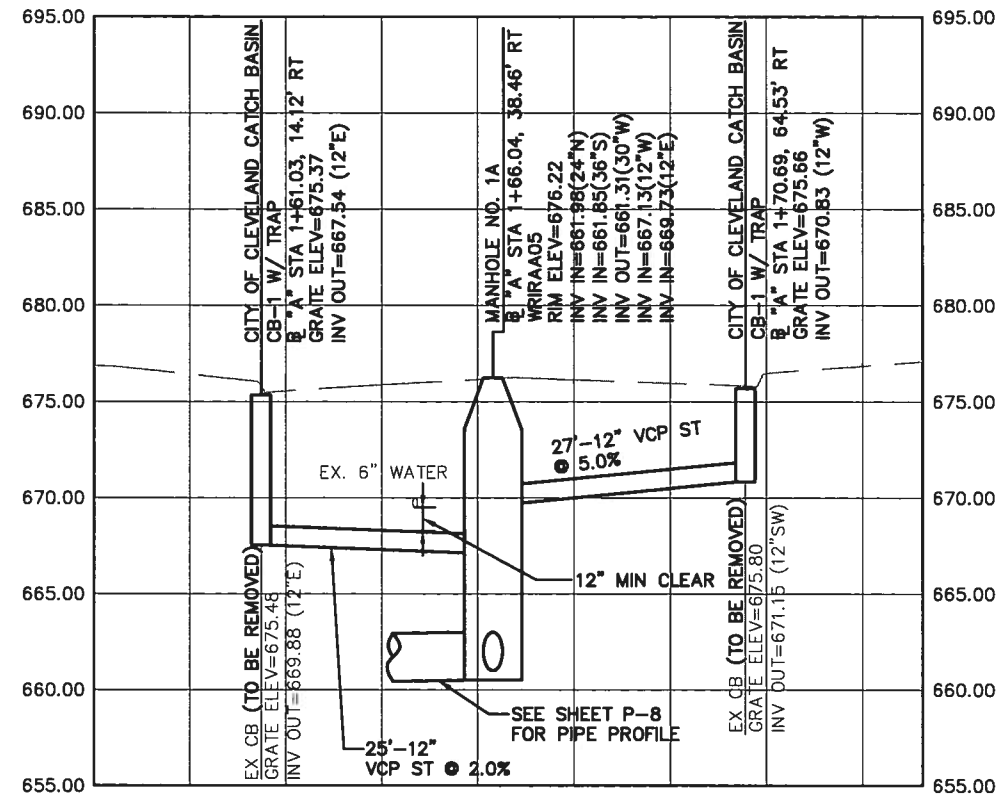
WALWORTH RUN INTERCEPTOR REALIGNMENT

CROWN AVE / W. 14TH ST. STORM SEWER CONNECTION PLAN & PROFILE

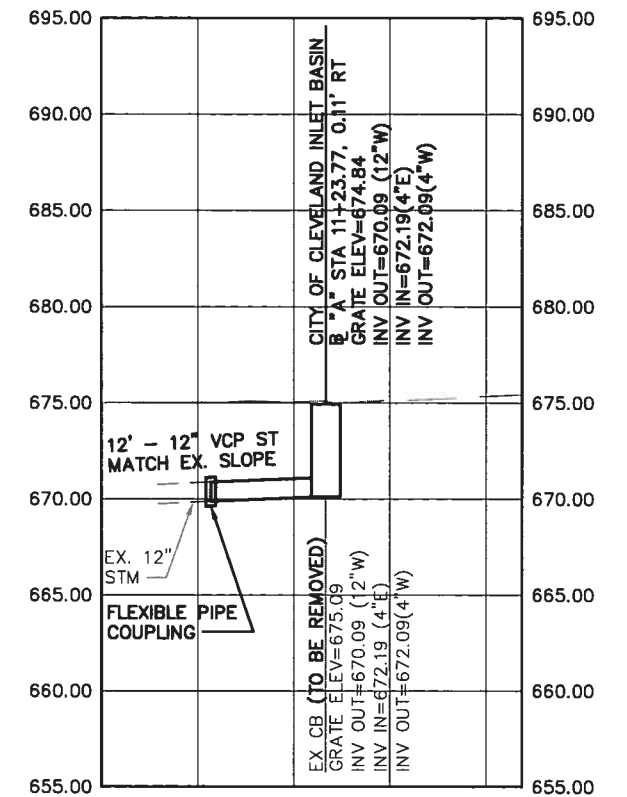
PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=10'H; 1"=5'V  
 SHEET NO.: P-6



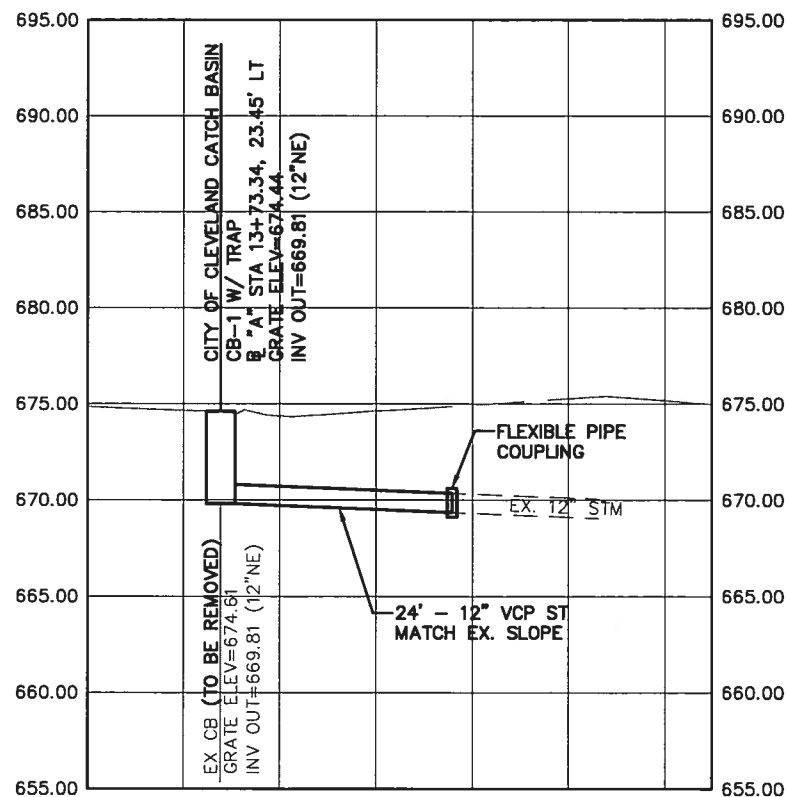
W 15TH AND ABBEY AVE CATCH BASIN CONNECTION



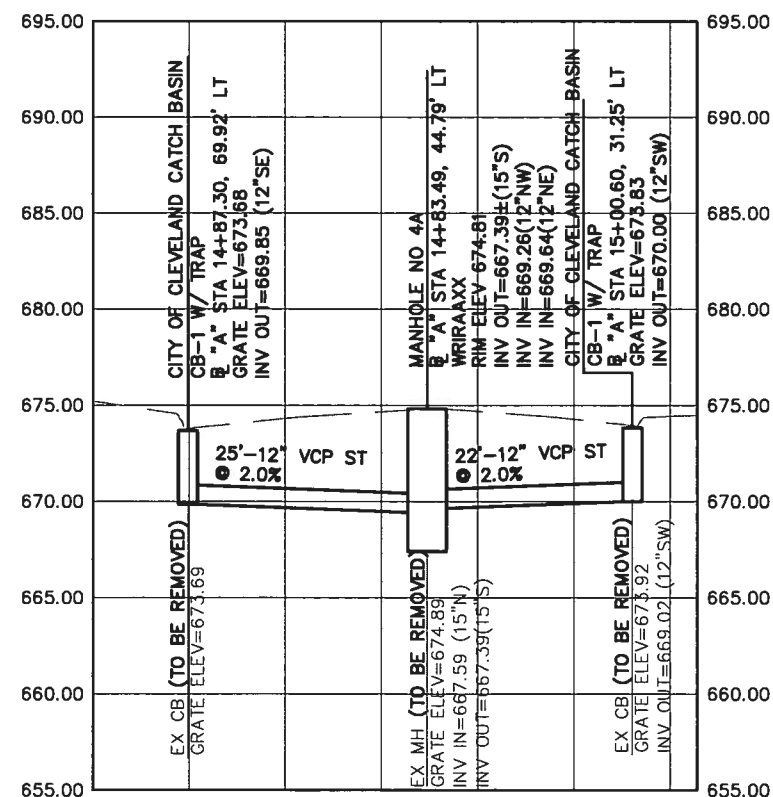
W 14TH AND FAIRFIELD AVE CATCH BASIN CONNECTIONS



W 13TH AND ABBEY AVE CATCH BASIN CONNECTIONS

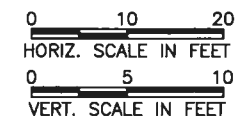


W 11TH AND ABBEY AVE CATCH BASIN CONNECTIONS



W 11TH AND UNIVERSITY AVE CATCH BASIN CONNECTIONS

NOTE: THE CONTRACTOR SHALL CUT EXISTING SHEETING AS NECESSARY TO CONSTRUCT CATCH BASIN CONNECTIONS.



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REV. NO.	DATE	ISSUE BY	REMARKS

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 DATE: \_\_\_\_\_



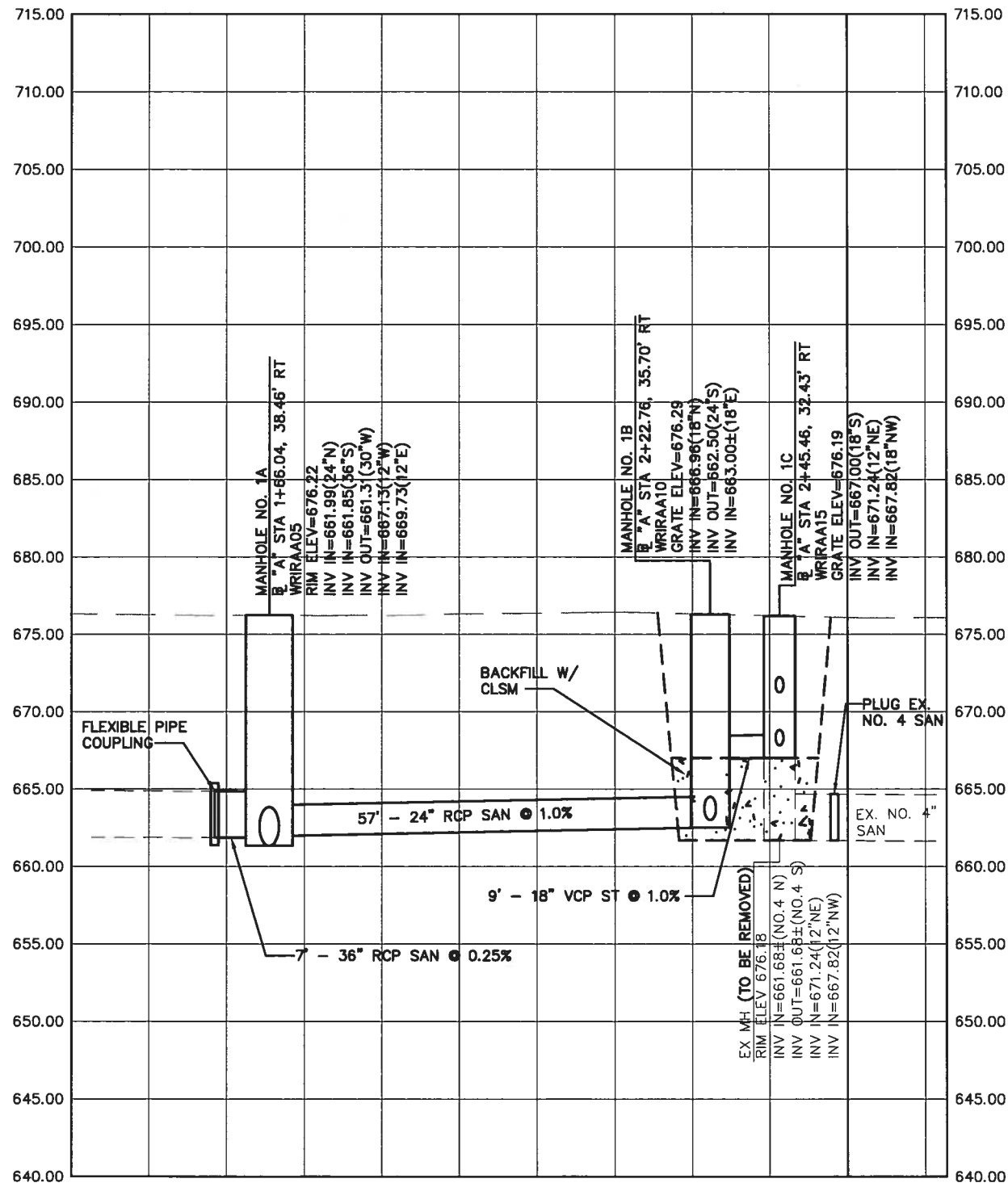
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WALWORTH RUN INTERCEPTOR REALIGNMENT

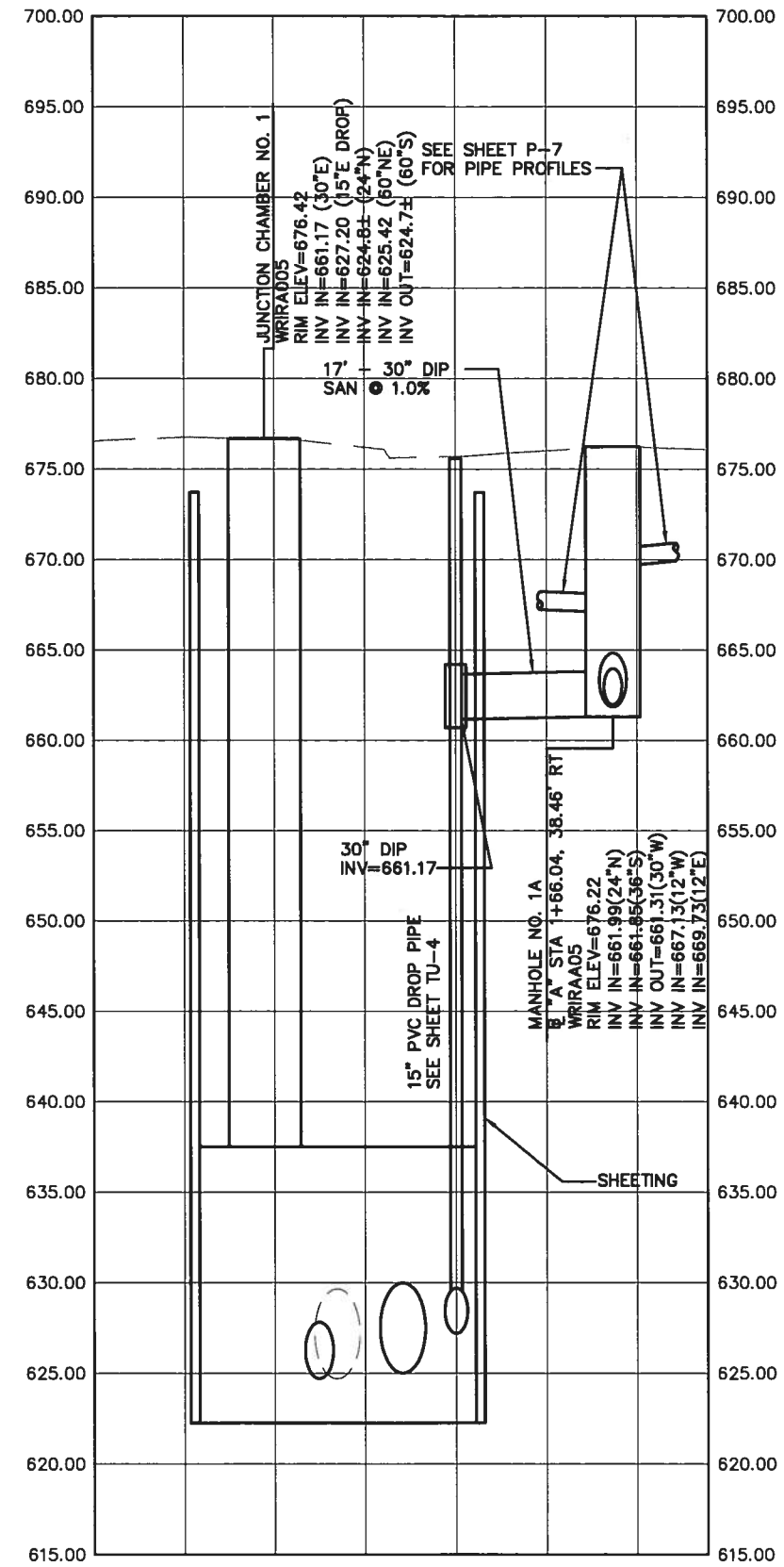
SEWER PROFILES

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=10'H; 1"=5'V  
 SHEET NO.: P-7

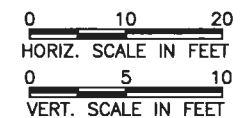




W 14TH ST. AND FAIRFIELD AVE - SEWER CONNECTION



W 14TH ST. AND FAIRFIELD AVE - CONNECTION TO JUNCTION CHAMBER 1



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0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWN BY:	
SHEET CHK'D BY:	
CROSS CHK'D BY:	
APPROVED BY:	
DATE:	

REV. NO.	DATE	ISSUE BY	REMARKS



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WALWORTH RUN INTERCEPTOR REALIGNMENT

SEWER PROFILES

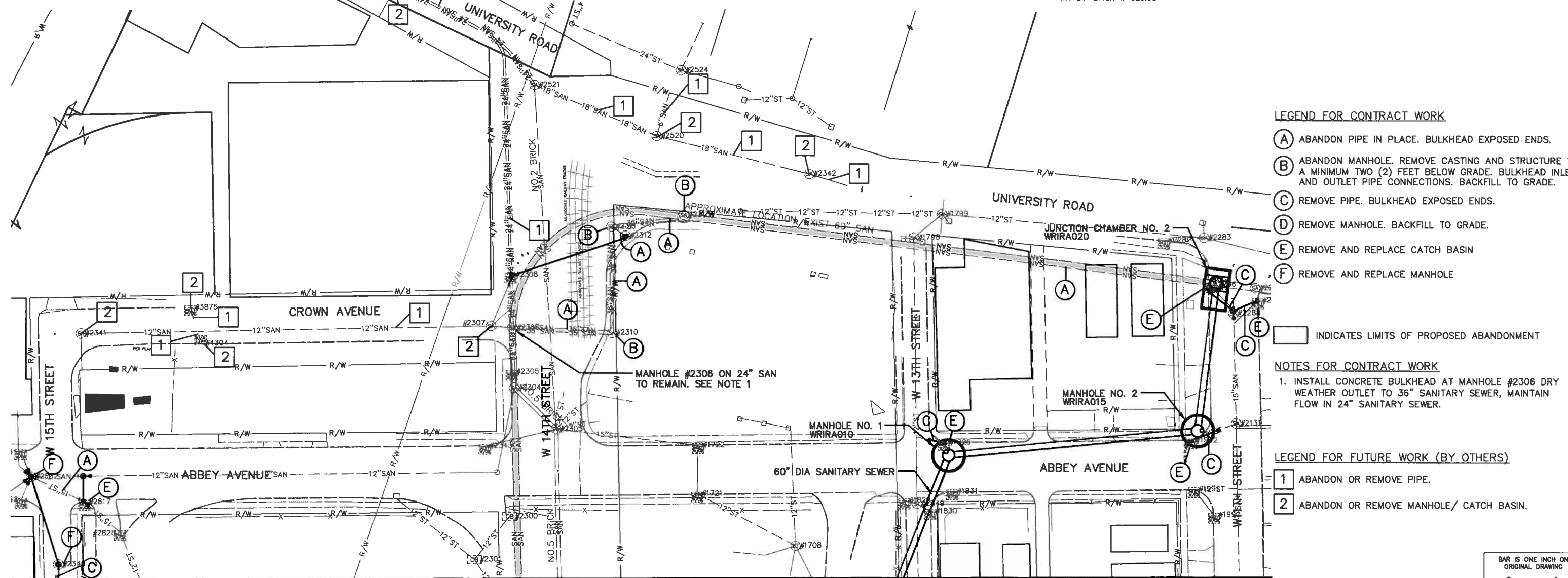
PROJECT NO.:

SHEET:

SCALE: 1"=10'H; 1"=5'V

SHEET NO.: P-8

<p>STMH #1708 TOC=675.75 INV 12" CMP S=672.15 INV 12" VCP SW=670.35 INV 12" VCP W=667.55 INV 12" VCP SE (TO #1677)=667.65 INV 12" VCP N=669.35</p> <p>INCB #1721 TOC=673.39 DARK - LITTLE LIGHT INV 12" RCP N (TO #1722)=666.94</p> <p>INCB #1722 TOC=673.55 DARK - LITTLE LIGHT INV 12" RCP S (TO #1721)=666.65 INV 15" RCP W (TO #2303)=666.55</p> <p>SMH #1798 TOC=674.53 W13-01 INV 12" VCP S (TO #1832)=663.68 INV 12" VCP NE (TO #1799)=663.59 INV 12" VCP E=666.56 INV 12" VCP W=666.38</p> <p>SMH #1799 TOC=674.42 UN-04 INV 12" VCP SW (TO #1798)=662.97 INV 15" VCP E (TO #2283)=662.67 INV 12" VCP SE=664.87 INV 12" VCP SE=669.62 INV 4" VCP NE=670.12 INV 12" VCP W=666.77</p>	<p>INCB #1826 TOC=675.09 INV 4" VCP W=672.09 INV 12" VCP W=670.09</p> <p>INCB #1829 TOC=675.22 INV 12" VCP SE (TO #2549)=670.57</p> <p>INCB #1830 TOC=675.09 INV 12" VCP NW (TO #2549)=670.09</p> <p>INCB #1831 TOC=675.11 INV 4" VCP E=672.61 INV 12" VCP W=671.31</p> <p>INCB #1990 TOC=674.82 MEASUREMENT +/- BOTTOM OF STRUCTURE=671.82</p> <p>INCB #1991 TOC=674.52 INV 12" VCP SE (TO #1990)=670.62 INV 12" VCP E=669.62</p> <p>INCB #1992 TOC=674.61 INV 12" VCP NE=669.81</p> <p>SMH #2086 TOC=677.41 FLOW NOT MOVING DEBRIS INV 2.25 x1.94" BRICK N (TO #2288)=665.36 INV 2.25 x1.94" BRICK S=665.36</p>	<p>SMH #2131 TOC=675.35 DID NOT OPEN - CRACKED LID</p> <p>SMH #2227 TOC=675.00 COULD NOT OPEN - SEALED SHUT</p> <p>INCB #2282 TOC=674.01 INV 12" VCP E (TO #2283)=669.46</p> <p>SMH #2283 TOC=674.64 UN-03 INV 18" VCP E (TO #2356)=661.94 INV 15" VCP W (TO #1799)=661.99 INV 12" VCP SW=667.99 INV 12" VCP NW=666.04</p> <p>INCB #2286 TOC=673.69 FILLED TO TOP OF STRUCTURE</p> <p>INCB #2287 TOC=673.92 INV 12" VCP SW=669.02</p> <p>SMH #2288 TOC=674.89 W11-01 INV 15" VCP N (TO #2131)=667.59 INV 15" VCP S (TO #?)=667.39</p>	<p>SMH #2289 TOC=674.25 UN-02 INV 60" BRICK SE (TO #?)=633.25 INV 60" BRICK NW (TO #2313)=633.15</p> <p>INCB #2290 TOC=673.93 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=667.38</p> <p>IGS #2300 TOC=675.20 FILLED TO TOP OF STRUCTURE</p> <p>IGS #2301 TOC=673.40 FILLED TO TOP OF STRUCTURE</p> <p>SMH #2302 TOC=678.88 AB-01 INV 12" VCP SW=668.23 INV 12" VCP E=668.33 INV 15" VCP SE=668.98 INV 12" VCP SW=674.33 INV 12" VCP NW=673.38 INV 6"(?) PVC NW=668.78</p> <p>INCB #2305 TOC=673.68 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=668.78</p> <p>SMH #2306 TOC=674.23 CR-03 INV 24" BRICK N=654.23 INV 24" BRICK S=654.53 INV 15" VCP W=658.63 INV 36" VCP E=651.93 (DWO)</p>	<p>SMH #2307 TOC=674.18 CR-02 INV 12" VCP NE=668.48 INV 12" VCP W=659.68 INV 15" VCP SE=659.73</p> <p>INCB #2308 TOC=673.35 INV 12" RCP SW=668.43</p> <p>SMH #2310 TOC=674.65 W14-03 INV 36" BRICK N (TO #?)=651.70 INV 36" BRICK SW (TO #2306)=652.00</p> <p>SMH #2311 TOC=673.97 UN-06 INV 38" BRICK NE=650.37 INV 38" BRICK SW=650.52 INV 12" VCP SE=669.97</p> <p>IGR #2312 TOC=673.36 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=670.36</p>	<p>SMH #2313 TOC=673.89 UN-05 INV 60" BRICK NE (TO #2289)=630.89 INV 60" BRICK NW=630.69 INV 12" RCP SW=649.89</p> <p>SMH #2340 TOC=678.10 W15-01 START OF RUN INV 15" VCP S (TO #2344)=667.90</p> <p>SMH #2341 TOC=676.99 CR-01 INV 12" VCP S (TO #?)=670.49 INV 12" VCP E (TO #2307)=669.49</p> <p>SMH #2342 TOC=673.66 UN-07 START OF RUN INV 18" VCP NW=666.46</p> <p>INCB #2343 TOC=674.81 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=670.46</p>	<p>SMH #2344 TOC=677.11 W15-02 INV 12" VCP N (TO #2340)=665.86 INV 15" VCP S (TO #W15-03 ?)=665.76 INV 12" VCP NW=667.46 INV 12" VCP NE=667.61</p> <p>SMH #2356 TOC=674.18 UN-01 INV 18" VCP W (TO #2283)=659.68 INV 18" VCP SE (TO #?)=659.78 INV 12" VCP SW=668.28 INV 10" VCP NE=664.78 INV 4" VCP N=669.58</p> <p>SMH #2520 TOC=661.01 UN-09 INV 18" VCP E=654.91 INV 6" VCP NE=658.81 INV 18" VCP W=654.91</p> <p>SMH #2521 TOC=651.79 UN-10 INV 18" VCP NE (TO #2520)=645.49 INV 27 x23.3" BRICK SE=638.21 INV 27 x23.3" BRICK NW=638.21</p> <p>SMH #2522 TOC=641.23 UN-11 INV 24" BRICK E (TO #2521)=626.98 INV 18" VCP S (TO #?)=627.28 INV 24" BRICK W=626.63</p>	<p>SMH #2523 TOC=634.47 UN-12 INV 24" VCP E (TO #2522)=619.02 INV 6" VCP S (TO #?)=623.87 INV 24" VCP W=618.77</p> <p>SMH #2524 TOC=648.48 UN-08 STRUCTURE NOT INSPECTED NO REPORT</p> <p>IGS #2548 TOC=675.82 FILLED TO TOP OF STRUCTURE</p> <p>STMH #2549 TOC=675.42 INV 12" VCP SE (TO #1830)=669.67 INV 12" VCP NW (TO #1829)=669.02 INV 12" VCP S (TO #1832)=664.92 INV 12" VCP N=664.92</p> <p>INCB #2761 TOC=678.51 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=676.01</p> <p>INCB #2762 TOC=678.56 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=675.56</p>	<p>INCB #2817 TOC=677.70 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=671.70</p> <p>INCB #2828 TOC=677.23 NO PIPES VISIBLE MEASUREMENT +/- BOTTOM OF STRUCTURE=673.23</p> <p>STMH #2963 TOC=677.75 OUTSIDE PROJECT LIMITS NO REPORT NEEDED</p> <p>STMH #2964 TOC=678.12 OUTSIDE PROJECT LIMITS NO REPORT NEEDED</p> <p>SMH #2965 TOC=678.17 14-B INV 60" BRICK N (TO #2966)=620.37 INV 60" BRICK S (TO #?)=620.32 INV 6" VCP SW=673.37</p> <p>SMH #2966 TOC=677.53 INV 60" BRICK N (TO #1353)=622.28 INV 60" BRICK S (TO #2965)=622.23</p>
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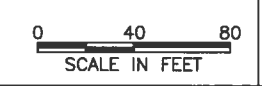
- LEGEND FOR CONTRACT WORK**
- (A) ABANDON PIPE IN PLACE. BULKHEAD EXPOSED ENDS.
  - (B) ABANDON MANHOLE. REMOVE CASTING AND STRUCTURE TO A MINIMUM TWO (2) FEET BELOW GRADE. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS. BACKFILL TO GRADE.
  - (C) REMOVE PIPE. BULKHEAD EXPOSED ENDS.
  - (D) REMOVE MANHOLE. BACKFILL TO GRADE.
  - (E) REMOVE AND REPLACE CATCH BASIN
  - (F) REMOVE AND REPLACE MANHOLE
- INDICATES LIMITS OF PROPOSED ABANDONMENT

**NOTES FOR CONTRACT WORK**

- INSTALL CONCRETE BULKHEAD AT MANHOLE #2306 DRY WEATHER OUTLET TO 36" SANITARY SEWER, MAINTAIN FLOW IN 24" SANITARY SEWER.

- LEGEND FOR FUTURE WORK (BY OTHERS)**
- 1 ABANDON OR REMOVE PIPE.
  - 2 ABANDON OR REMOVE MANHOLE/ CATCH BASIN.

MATCH LINE SEE SHEET C-2  
PLAN



DESIGNED BY:	
DRAWN BY:	
SHEET CHK'D BY:	
CROSS CHK'D BY:	
APPROVED BY:	
DATE:	



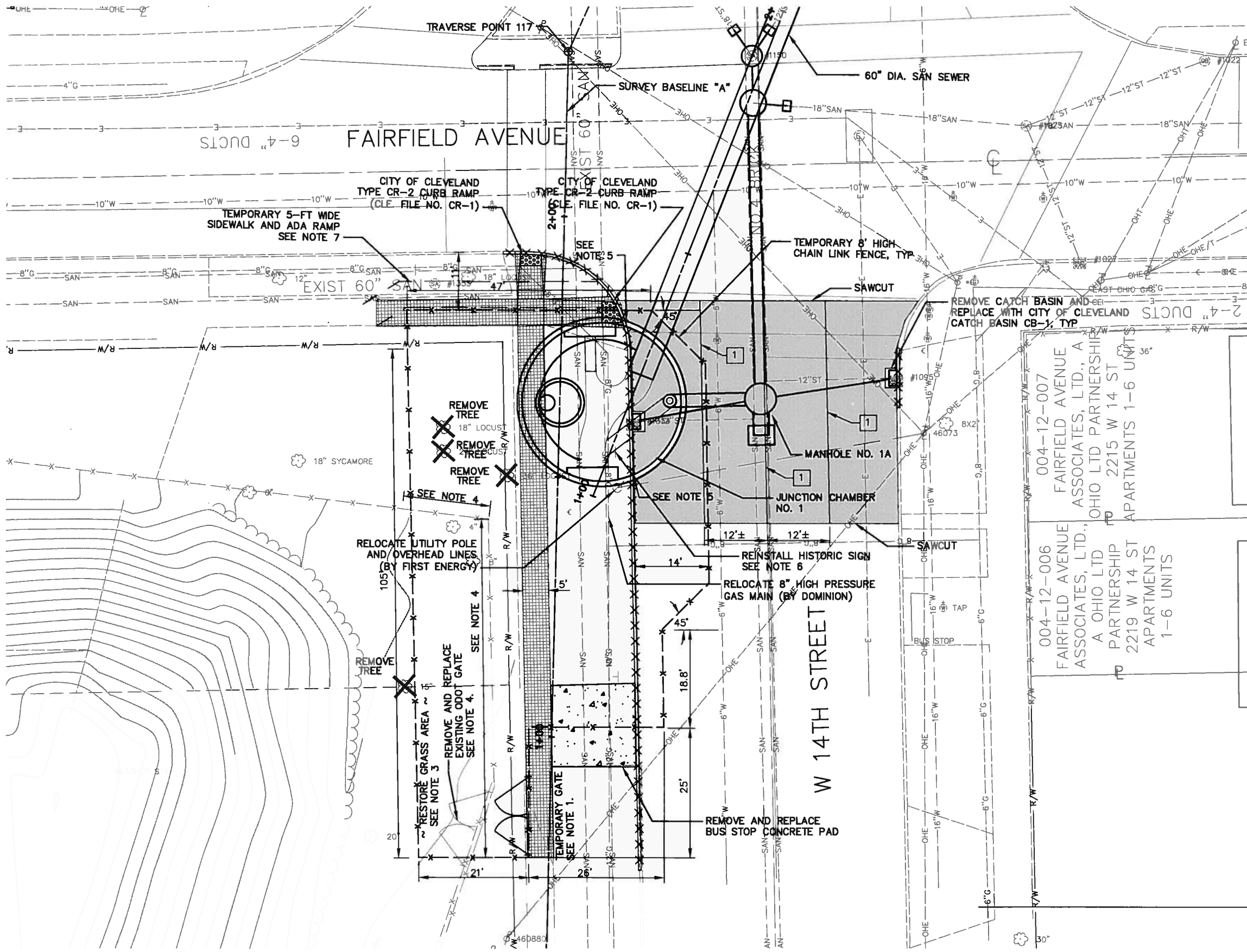
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**NORTHERN SEWER ABANDONMENT PLAN**

PROJECT NO.:  
SHEET: X  
SCALE: 1"=40'  
SHEET NO.: C-1



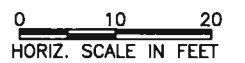


PLAN

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-12	PAVEMENT SECTIONS AND DETAILS
P-1	WRIR PLAN & PROFILE

- LEGEND**
- REMOVE AND REPLACE CURB
  - REMOVE AND REPLACE FULL-DEPTH ASPHALT PAVEMENT
  - REMOVE AND REPLACE SIDEWALK
  - LONGITUDINAL PAVEMENT JOINT

- NOTES:**
1. CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATE.
  2. CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATE AFTER CONSTRUCTION IS COMPLETE.
  3. CONTRACTOR SHALL SEED AND MULCH ALL GRASS AREAS DISTURBED DURING CONSTRUCTION.
  4. CONTRACTOR SHALL REMOVE EXISTING ODOT FENCE AND GATE DURING CONSTRUCTION. REPLACE FENCE WITH NEW ODOT TYPE CL FENCE (REF. ODOT DWG. F-1.1) UPON COMPLETION OF JUNCTION CHAMBER CONSTRUCTION. PROVIDE ONE 10-FT WIDE CHAIN LINK WALK GATE (REF. ODOT DWG. F-3.2) TO REPLACE EXISTING GATE.
  5. CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  6. CONTRACTOR SHALL REMOVE THE " TREMONT HISTORIC DISTRICT SIGN" AND FOUNDATION. STORE THE SIGN DURING CONSTRUCTION. INSTALL A NEW FOUNDATION AND REINSTALL THE EXISTING SIGN AT OR NEAR ITS FORMER LOCATION AFTER THE CHAMBER CONSTRUCTION IS COMPLETED.
  7. CONTRACTOR SHALL PROVIDE A TEMPORARY CONCRETE SIDEWALK WITH ADA RAMP DURING CONSTRUCTION. THE SIDEWALK AND RAMP SHALL BE REPLACED BY THE PERMANENT SIDEWALK AND ADA RAMP SHOWN.



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DRAWN BY:	
SHEET CHK'D BY:	
CROSS CHK'D BY:	
APPROVED BY:	
DATE:	

REV. NO.	DATE	ISSUE BY	REMARKS

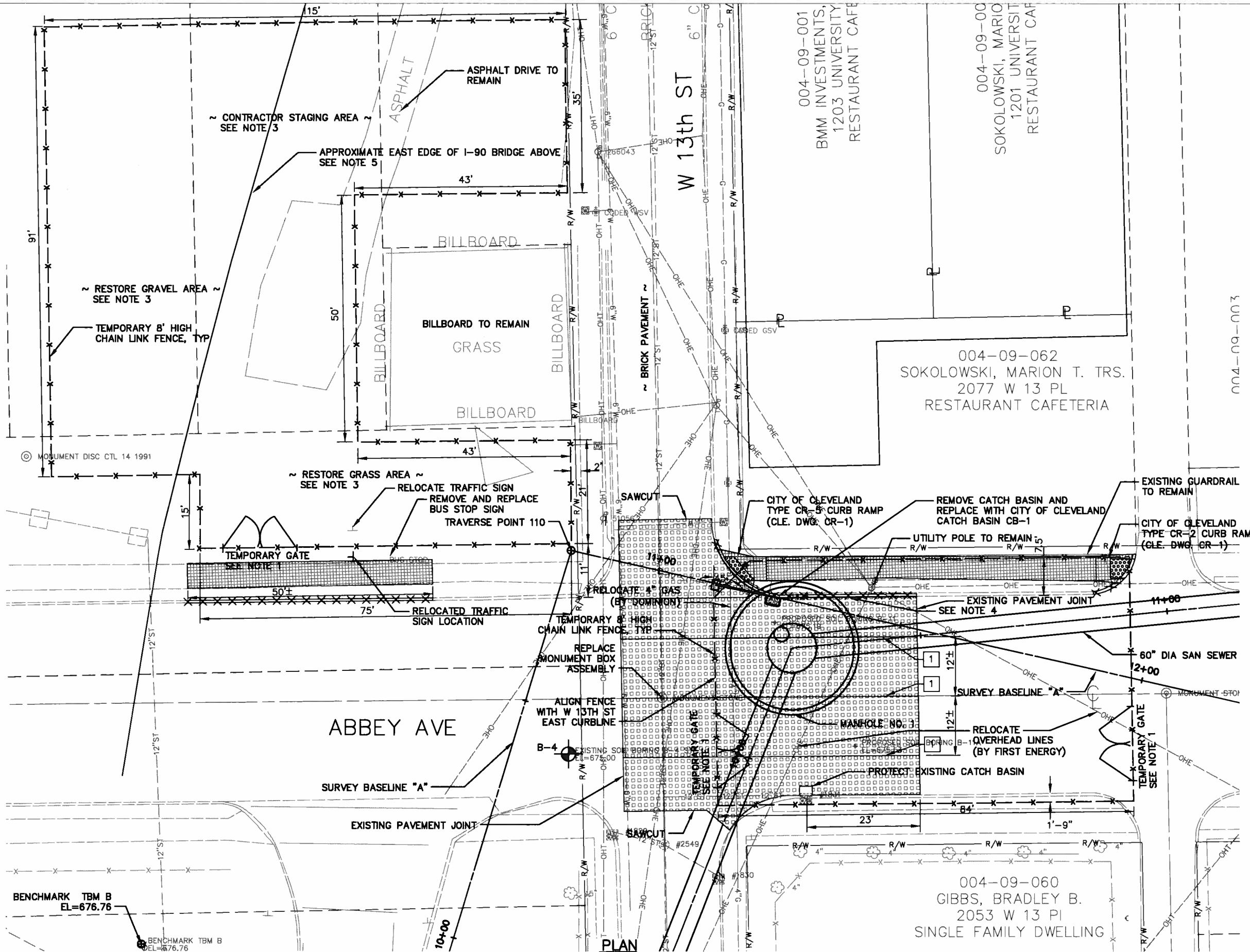


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WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1 SITE PLAN

PROJECT NO.:	
SHEET: X	
SCALE: 1"=10'	
SHEET NO.: C-3	

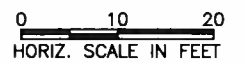


CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-12	PAVEMENT SECTIONS AND DETAILS
P-2	WRIR PLAN & PROFILE

**LEGEND**

- ✕✕✕ REMOVE AND REPLACE CURB
- [Grid Pattern] REMOVE AND REPLACE FULL-DEPTH CONCRETE PAVEMENT
- [Cross-hatch Pattern] REMOVE AND REPLACE SIDEWALK
- [Box with 1] LONGITUDINAL PAVEMENT JOINT

- NOTES:**
- CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATES.
  - CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATES AFTER CONSTRUCTION IS COMPLETE.
  - CONTRACTOR SHALL SEED AND MULCH ALL GRASS AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL GRAVEL AREAS DISTURBED DURING CONSTRUCTION.
  - CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  - CONTRACTOR SHALL LIMIT HIS OPERATIONS TO AVOID DAMAGE TO THE EXISTING I-90 BRIDGE. HEADROOM IS RESTRICTED BENEATH THE BRIDGE STRUCTURE.



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REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 SHEET CHK'D BY: \_\_\_\_\_  
 CROSS CHK'D BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_



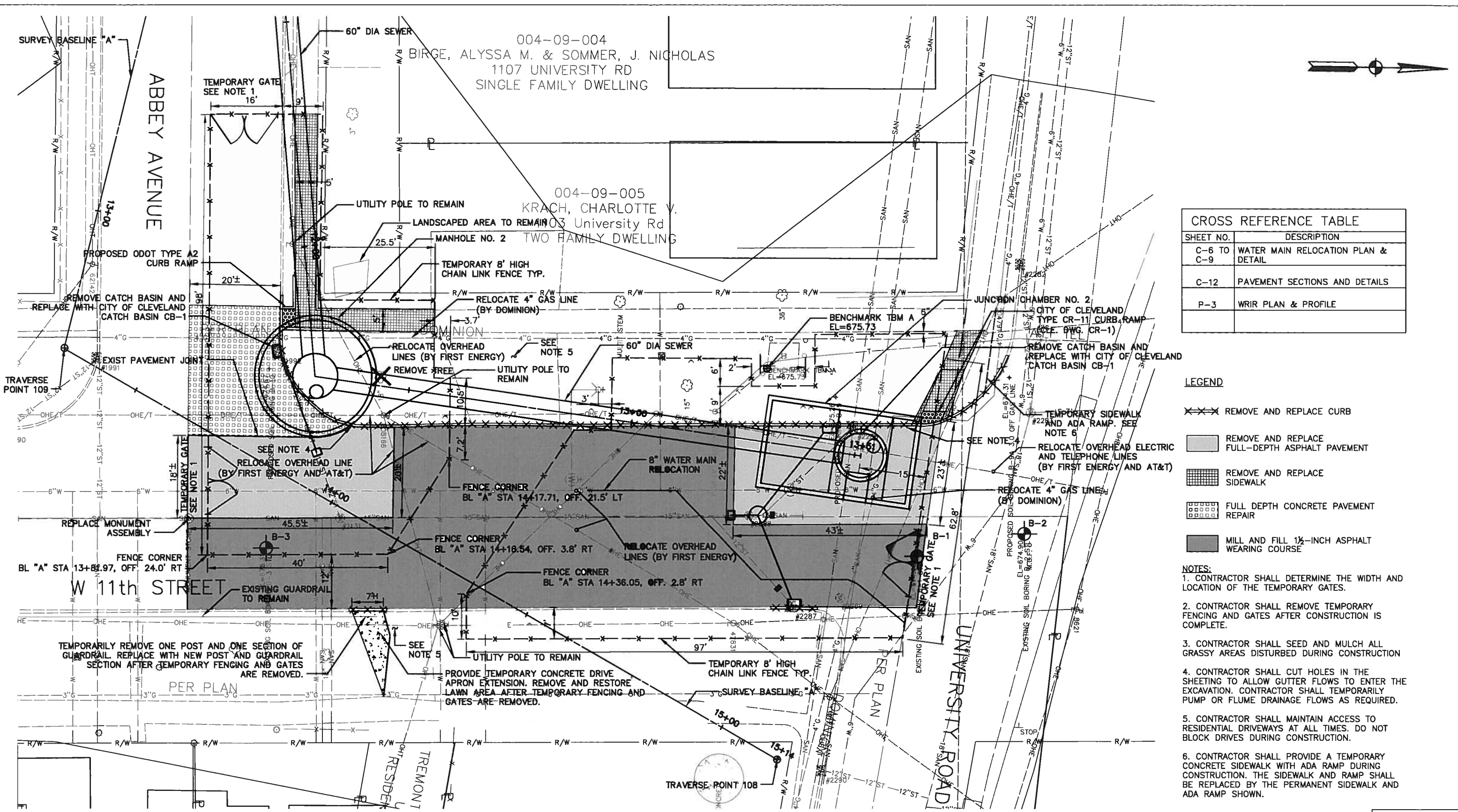
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**MANHOLE NO. 1 SITE PLAN**

PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: 1"=10'  
 SHEET NO.: C-4





PLAN

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-6 TO C-9	WATER MAIN RELOCATION PLAN & DETAIL
C-12	PAVEMENT SECTIONS AND DETAILS
P-3	WRIR PLAN & PROFILE

- LEGEND**
- REMOVE AND REPLACE CURB
  - REMOVE AND REPLACE FULL-DEPTH ASPHALT PAVEMENT
  - REMOVE AND REPLACE SIDEWALK
  - FULL DEPTH CONCRETE PAVEMENT REPAIR
  - MILL AND FILL 1/2-INCH ASPHALT WEARING COURSE

- NOTES:**
1. CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATES.
  2. CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATES AFTER CONSTRUCTION IS COMPLETE.
  3. CONTRACTOR SHALL SEED AND MULCH ALL GRASSY AREAS DISTURBED DURING CONSTRUCTION
  4. CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  5. CONTRACTOR SHALL MAINTAIN ACCESS TO RESIDENTIAL DRIVEWAYS AT ALL TIMES. DO NOT BLOCK DRIVES DURING CONSTRUCTION.
  6. CONTRACTOR SHALL PROVIDE A TEMPORARY CONCRETE SIDEWALK WITH ADA RAMP DURING CONSTRUCTION. THE SIDEWALK AND RAMP SHALL BE REPLACED BY THE PERMANENT SIDEWALK AND ADA RAMP SHOWN.

0 10 20  
HORIZ. SCALE IN FEET

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REV. NO.	DATE	ISSUE BY	REMARKS

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 DRAWN BY: \_\_\_\_\_  
 SHEET CHK'D BY: \_\_\_\_\_  
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 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_



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WALWORTH RUN INTERCEPTOR REALIGNMENT

MANHOLE NO. 2 AND JUNCTION CHAMBER NO. 2 SITE PLAN

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=10'  
 SHEET NO.: C-5



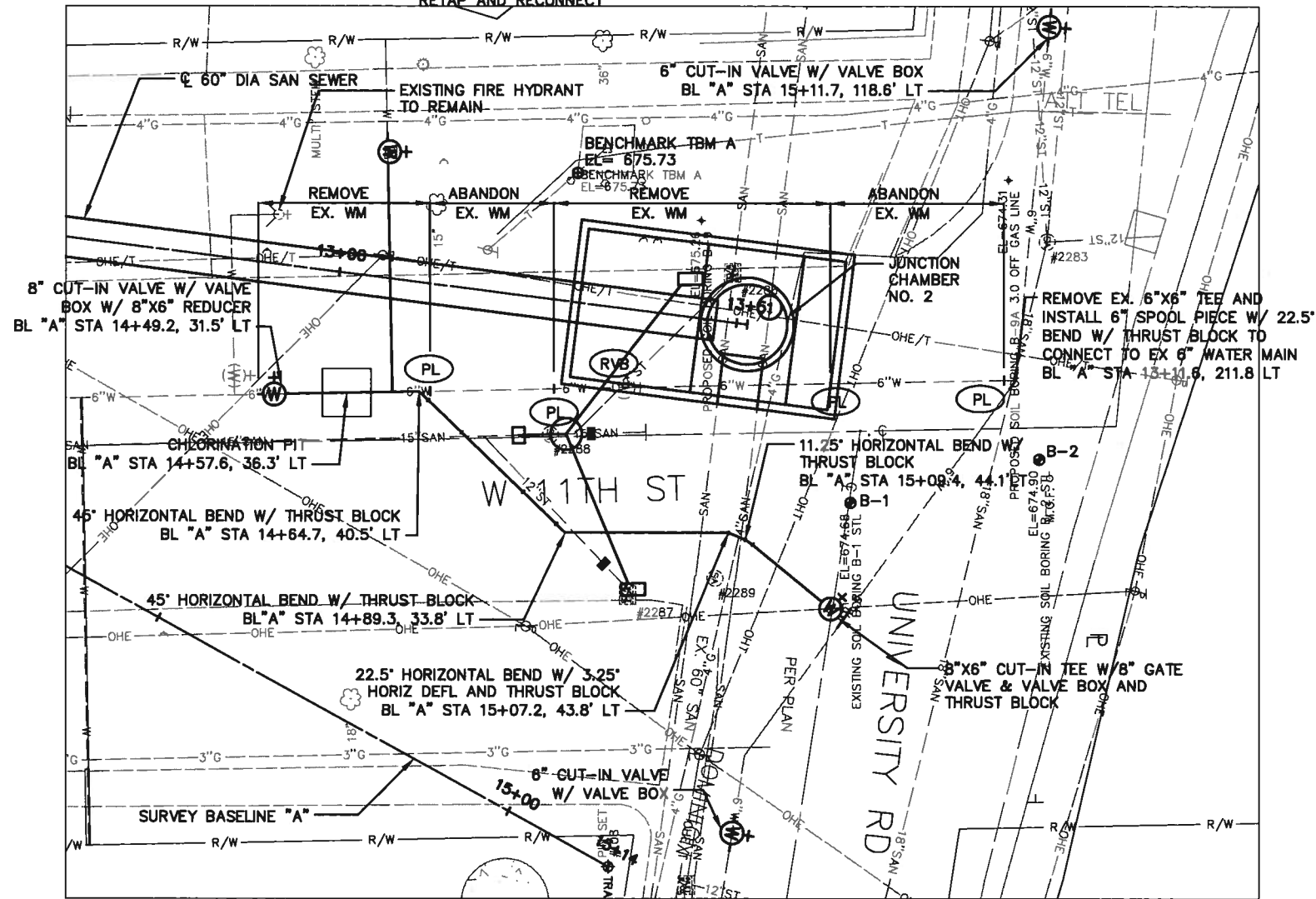
**CLEVELAND DIVISION OF WATER NOTES FOR NEW WATER MAIN INSTALLATION**

CONTRACTOR IS TO ABIDE BY THE MOST CURRENT VERSION OF THE CLEVELAND, DIVISION OF WATER NOTES AND DETAILS. THE MOST UP-TO-DATE VERSION CAN BE FOUND AT WWW.CLEVELANDWATER.COM.

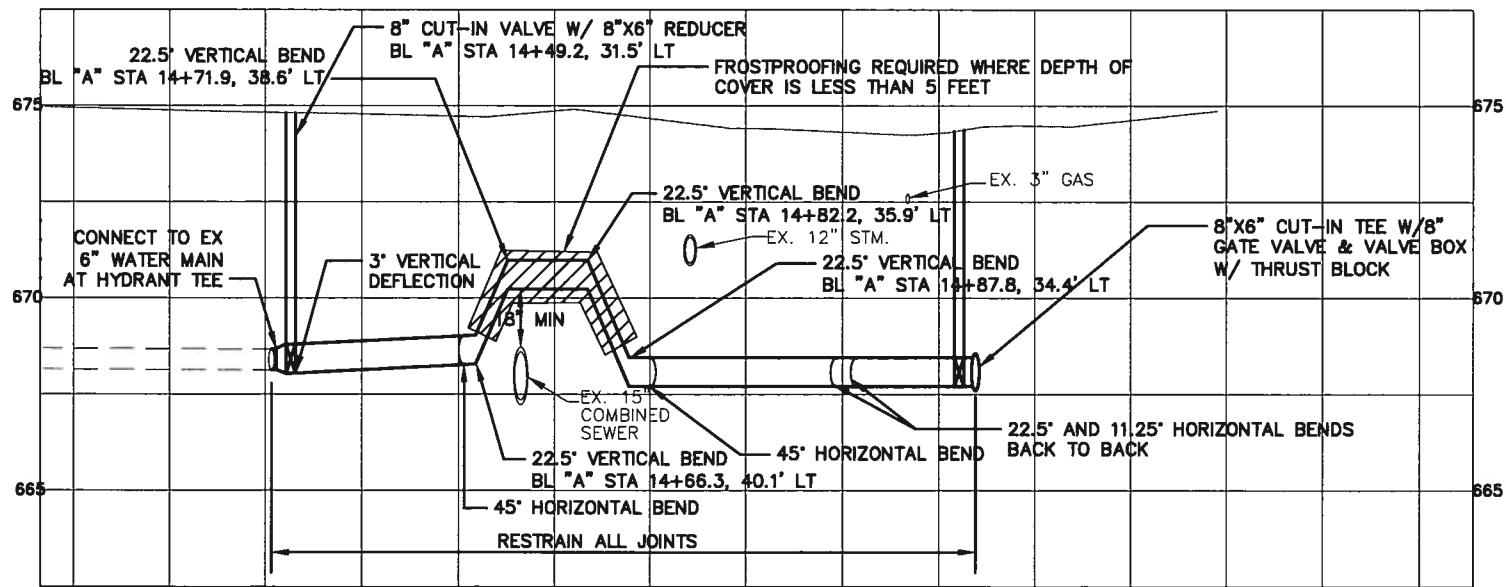
**GENERAL:**

1. THE INFORMATION SHOWN ON THE CLEVELAND DIVISION OF WATER'S SUMMARY OF WORK/CHARGE LETTER AND STRIP MAPS ARE TAKEN FROM EXISTING AVAILABLE RECORDS, AND THEIR ACCURACY IS NOT GUARANTEED.
2. CALL THE INSPECTION AND ENFORCEMENT UNIT AT 216-664-2342 TO SCHEDULE A PRECONSTRUCTION MEETING. THE OPERATION OF ANY VALVE OR ALTERATION OF ANY PART OF THE WATER SYSTEM BY CONTRACTORS OR THEIR EMPLOYEES IS PROHIBITED WITHOUT THE SUPERVISION OF THE CLEVELAND DIVISION OF WATER INSPECTOR.
3. THE MUNICIPALITY SHALL REQUIRE THAT THE PROJECT'S PROFESSIONAL ENGINEER OBTAIN ACTUAL FIELD MEASUREMENTS OF THE MAIN DURING INSTALLATION AND SHALL FURNISH THE CWD INSPECTOR WITH RECORD PRINTS IN A FORM ACCEPTABLE TO THE DIVISION OF WATER. THE CLEVELAND DIVISION OF WATER WILL REQUIRE THE DELIVERY AND ACCEPTANCE OF TWO COPIES OF RECORD (AS BUILT) PRINTS, STAMPED BY A PROFESSIONAL ENGINEER, BEFORE THE PRESSURE TEST AND CHLORINATION OF THE MAIN.
4. FOR THE PURPOSES OF CHLORINATION AND BACTERIOLOGICAL TESTING OF THE WATER MAINS THE CONTRACTOR SHALL PROVIDE AND INSTALL, AT EACH OF THE CHLORINATION PIT LOCATIONS SHOWN AND AT OTHER LOCATIONS DETERMINED BY THE DIVISION OF WATER, FLUSHING/SAMPLING TAPS OF SIZES TO BE DETERMINED BY THE DIVISION OF WATER. CHLORINATION PITS SHALL BE SIX (6) FOOT SQUARE MEETING OSHA STANDARDS.
5. A TWO YEAR WARRANTY, COMMENCING FROM THE DATE OF ACCEPTANCE OF THE FINAL CHLORINATION OF THE WATER MAIN INSTALLATION, SHALL BE PROVIDED BY THE BUILDER/DEVELOPER AND/OR CONTRACTOR FOR ALL WATER MAINS AND SERVICE CONNECTION WORK PERFORMED BY THE CONTRACTOR, INCLUDING RETAPS, SHOULD ANY LEAKS OCCUR AND REPAIRS BE REQUIRED DUE TO DEFECTIVE MATERIAL OR POOR WORKMANSHIP.
6. USE BACKFILL MATERIAL AS SPECIFIED AND COMPACT SUFFICIENTLY IN THOSE AREAS WHERE EXISTING MAINS AND WATER SERVICE CONNECTIONS ARE EXPOSED. (SEE DIVISION OF WATER STANDARD DETAIL STD-001).
7. ALL MATERIALS, INCLUDING BUT NOT LIMITED TO WATER MAINS, FIRE HYDRANTS, VALVES, CONNECTION MATERIALS AND OTHER WATER APPURTENANCES, SHALL BE NEW AND UNUSED AND SHALL CONFORM TO THE MOST CURRENT DIVISION OF WATER SPECIFICATIONS. ALL MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH DIVISION OF WATER'S STANDARDS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING WATER MAINS AND APPURTENANCES THEREOF WHEN CONNECTING THE NEW WATER MAIN FOR THE HYDROSTATIC TEST. ALL REPAIRS TO DAMAGED EXISTING FACILITIES SHALL BE MADE BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, TO THE SATISFACTION OF THE DIVISION OF WATER. (REFER TO THE ALTERNATE TEST DETAIL STD-002 AS NEEDED).
9. ALL HYDROSTATIC PRESSURE TESTING SHALL BE DONE BY THE CONTRACTOR IN THE PRESENCE OF THE DIVISION OF WATER'S INSPECTOR. THE HYDROSTATIC TEST PRESSURE SHALL BE 75 PSI ABOVE THE STATIC PRESSURE PREVAILING AT THE SITE, BUT IN NO CASE LESS THAN 150 PSI. THE PRESSURE TEST SHALL BE FOR A DURATION OF TWO (2) HOURS WITH THE PRESSURE BEING MAINTAINED WITHIN 5 PSI OF THE REQUIRED TEST PRESSURE. SHOULD THE PRESSURE TEST FAIL THE CONTRACTOR SHALL FIND AND CORRECT THE DEFICIENCY(IES) TO THE SATISFACTION OF THE DIVISION OF WATER AND REPEAT THE TWO (2) HOUR PRESSURE TEST.
- 10A. ALL PIPE, UNLESS OTHERWISE CALLED FOR, SHALL BE DUCTILE IRON, MINIMUM CLASS 52, CEMENT LINED HAVING PUSH-ON JOINTS WITH RADIALLY COMPRESSED RUBBER RING GASKET AND INSTALLED AS PER THE MOST CURRENT REVISION OF AWWA C600.
- 10B. ALL FITTINGS, UNLESS OTHERWISE CALLED FOR, SHALL BE APPROVED DUCTILE IRON, CLASS 350, CEMENT LINED OR FUSION BONDED EPOXY COATED. ALL FITTINGS AND PIPE CONNECTED TO FITTINGS SHALL BE RESTRAINED USING A "RETAINED" MECHANICAL JOINT CONFORMING TO THE MATERIAL AND PERFORMANCE REQUIREMENTS OF ANSI/AWWA C-110/A21.10 AND ANSI/AWWA C-111/A21.11, OR "COMPACT" FITTINGS IN ACCORDANCE WITH ANSI/AWWA C-153/A21.53. EXCEPT FOR ANCHOR TEES, REDUCERS OR OTHER SPECIAL CIRCUMSTANCES WHEN DIRECTED BY CLEVELAND DIVISION OF WATER, ALL FITTINGS ARE TO HAVE BELL ENDS.
- 10C. ALL BOLTS AND NUTS ON ALL "RETAINED" MECHANICAL JOINTS SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".
- 10D. WHERE SHOWN ON THE PLANS, OR WHEN OTHERWISE CALLED FOR, PIPE AND FITTINGS SHALL HAVE AN APPROVED "TYPE I" OR "TYPE II" BOLTLESS RESTRAINED PUSH-ON JOINTS TO THE LIMITS SHOWN ON THE DRAWINGS.

CR-1 ADDRESS #1103 UNIVERSITY  
1" WSC #4775  
RETAP AND RECONNECT



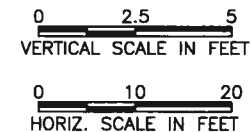
PLAN



PROFILE ALONG WATER MAIN/W 11TH ST

**LEGEND**

- (CR-1) REPLACE EXISTING CONNECTION, SHORT SIDE, (1" AND UNDER) WITH 1" COPPER CONNECTION, INCLUDING CURB VALVE AND VALVE BOX
- (PL) PLUG EXISTING WATER MAIN END
- (RVB) REMOVE VALVE AND VALVE BOX



BAR IS ONE INCH ON ORIGINAL DRAWING  
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DATE:	

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WALWORTH RUN INTERCEPTOR REALIGNMENT

WATER MAIN RELOCATION PLAN AND NOTES

PROJECT NO.:	
SHEET:	
SCALE:	1"=10'
SHEET NO.:	C-6

**CLEVELAND DIVISION OF WATER NOTES FOR NEW WATER MAIN INSTALLATION (CONTINUED)**

10E. AT THE END OF EACH WORKDAY, THE CONTRACTOR SHALL PLUG ALL OPEN PIPE ENDS WITH WATER TIGHT PLUGS AS PER THE "PREVENTITIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION" SECTION OF THE MOST CURRENT REVISION OF AWWA C-651 AS TO PREVENT THE INFILTRATION OR INTRUSION OF ANY FOREIGN OBJECTS OR MATERIALS. DATE STAMPED DIGITAL PHOTOS SHALL BE PROVIDED FOR EACH WORKDAY DEMONSTRATING THAT PROPER AWWA C-651 METHODS WERE USED TO PLUG ALL OPEN WATER MAIN ENDS. EACH PHOTO SHALL CLEARLY IDENTIFY THE STATION AT WHICH THE PIPE IS PLUGGED. THE STATIONING SHALL BE SHOWN BY THE USE OF A STATION MARKER PLACED AT THE PLUGGED PIPE END.

PHOTOS SHALL BE SUBMITTED ON A DAILY BASIS UNLESS OTHERWISE DEFINED BY THE CWD INSPECTOR OR ENGINEER. ALL PHOTOS TAKEN OVER THE COURSE OF THE PROJECT SHALL BE SUBMITTED BY THE CONTRACTOR AS PART OF THE AS-BUILT SUBMITTAL. AS-BUILTS SHALL BE CONSIDERED INCOMPLETE WITHOUT SAID COLLECTION OF DIGITAL PHOTOS.

11. IN ALL HYDRANT INSTALLATIONS THE CONTRACTOR SHALL FACE ALL HYDRANT'S 4" (STEAMER) NOZZLE TOWARD THE PAVEMENT PRIOR TO TESTING AND CHLORINATION OF WATER MAINS. CONTRACTOR SHALL CONSULT WITH THE LOCAL MUNICIPALITY'S ENGINEERING OR SERVICE DEPARTMENT TO OBTAIN HYDRANT MODEL AND NOZZLE THREAD REQUIREMENTS IF NOT INDICATED ON THE APPROVED PLANS.

12. ALL VALVES SHALL BE AN APPROVED MODEL RESILIENT SEATED GATE VALVES AS PER THE MOST CURRENT VERSION OF AWWA C509 OR C515.

**CONNECTIONS:**

13. WATER CONNECTIONS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY AND ARE NOT PART OF THE WATER MAIN APPROVAL. ADDITIONAL PERMITS FOR SERVICE CONNECTIONS MUST BE OBTAINED FROM THE DIVISION OF WATER PRIOR TO INSTALLATION OF ANY PORTION OF THE SERVICE CONNECTION(S). IT IS THE CONTRACTOR'S RESPONSIBILITY TO ARRANGE FOR PERMITS FOR ALL SIZE WATER SERVICE CONNECTIONS BEFORE PERFORMING ANY WORK. THE AMOUNT OF THE CHARGES CAN BE OBTAINED FROM THE DIVISION OF WATER, PERMITS AND SALES SECTION AT 216-664-2444 X5203.

14. ONE INCH SERVICE CONNECTIONS SHALL BE PERMITTED TO SERVICE HOMES BASED ON THE FOLLOWING CRITERIA:

- \* PEAK FLOW DEMANDS DO NOT EXCEED 25 GPM FOR AN INDIVIDUAL HOME/UNIT. INCLUSIVE OF ALL USAGE (FIRE, DOMESTIC AND/OR IRRIGATION) AND
- \* LENGTH OF ONE INCH CONNECTION DOES NOT EXCEED 75 FEET AS MEASURED FROM THE MAIN TO THE POINT OF ENTRY INTO THE PROPOSED HOME/UNIT.

ANY SERVICE REQUESTS DIFFERING FROM THE STATED CRITERIA SHALL REQUIRE THE SUBMITTAL OF A COMPLETE WATER SERVICE APPLICATION. PEAK DEMANDS ARE TO BE ASSESSED ON APPLICATION AND SETBACKS ARE TO SHOWN ON AN ACCOMPANYING SITE PLAN. SITE PLANS SHALL SHOW WATER METER VAULTS IN THE RIGHT OF WAY OR IN AN EASEMENT CONTIGUOUS TO THE RIGHT OF WAY FOR ANY HOMES/UNITS WITH SETBACKS GREATER THAN 150 FEET. EASEMENTS ARE TO BE PROVIDED WITH THE SERVICE CONNECTION APPLICATION SUBMITTAL.

15. ALL WATER MAIN CURB VALVE BOXES & METER VAULTS SHALL BE INSTALLED IN GRASS AREAS WHEN POSSIBLE.

**EMERGENCIES:**

16. IF A WATER MAIN OR SERVICE CONNECTION BREAK OCCURS DURING CONSTRUCTION AND EMERGENCY ASSISTANCE IS REQUIRED, PLEASE NOTIFY THE DIVISION OF WATER T 216-664-3060.

**UTILITIES:**

1. THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST TWO (2) WORKING DAYS (NOT INCLUDING SATURDAYS AND LEGAL HOLIDAYS) PRIOR TO CONSTRUCTION TO HAVE UTILITIES STAKED, MARKED OR OTHERWISE DESIGNATED IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OR LOCATION SHALL OCCUR APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.
2. THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS AND BELIEVED TO ESSENTIALLY CORRECT. THE LOCATIONS WERE OBTAINED FROM THE OWNERS OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C. NO GUARANTEE IS MADE RELATIVE TO THE COMPLETENESS OR ACCURACY AND THE CONTRACTOR IS REQUIRED TO CONTACT THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN ON THE PLANS AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION IN ANY AREA.
3. ALL EXISTING UTILITIES, SERVICES, POLES AND CONNECTIONS SHALL BE PROTECTED AT THE CONTRACTOR'S EXPENSE. IF DAMAGE IS CAUSED BY CONSTRUCTION TO ANY EXISTING UTILITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME AT HIS EXPENSE IN ACCORDANCE WITH DIRECTIONS OF THE ENGINEERS, AND FOR ANY RESULTING CONTINGENT DAMAGES. EXISTING UTILITIES INCLUDE, BUT ARE NOT LIMITED TO WATER MAINS, STORM SEWERS, SANITARY SEWERS, GAS, ELECTRICAL, TELEPHONE, FIBER OPTIC CABLE, TELEVISION CABLE, AND INDIVIDUAL SERVICE CONNECTIONS AND LATERALS.

**UTILITIES (CONTINUED)**

4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITIES, SERVICES, OR STRUCTURES TO VERIFY THE VERTICAL AND HORIZONTAL LOCATION OF THE UTILITY, SERVICE, OR STRUCTURE AND ITS EFFECT ON THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE UTILITY OWNER.
5. INDIVIDUAL STORM, SANITARY, GAS, WATER, ELECTRICAL, TELEPHONE AND CABLE SERVICE CONNECTIONS MAY NOT BE SHOWN. THE CONTRACTOR SHALL LOCATE AND PROTECT SERVICE CONNECTIONS THROUGHOUT THE COURSE OF THE WORK. IN THE EVENT SERVICE CONNECTIONS ARE BROKEN OR DISTURBED, THE CONTRACTOR SHALL REPAIR OR REPLACE THE SERVICE CONNECTIONS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL EXPECT EACH RESIDENCE/COMMERCIAL PROPERTY ALONG THE ROUTE TO HAVE AT LEAST ONE SERVICE CONNECTION FOR EACH UTILITY.
6. EXISTING LATERAL CONNECTIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE TO DETERMINE LOCATION AND NUMBER OF LATERALS. NOT ALL LATERALS MAY BE SHOWN.
7. STORM SEWER, SANITARY SEWER, AND CULVERT INVERTS SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY DEPTHS AND LOCATIONS PRIOR TO CONSTRUCTION.
8. THE CONTRACTOR SHALL REPAIR AT HIS OWN COST ANY DAMAGE TO TRAFFIC SIGNAL LOOP DETECTORS. CONTRACTOR SHALL FIELD VERIFY ALL LOOP DETECTORS WITHIN PROJECT AREA.

**PAVEMENTS AND WALKS:**

1. ROADWAYS, DRIVES, AND PAVEMENTS DISTURBED BY CONSTRUCTION SHALL BE REPLACED. SEE DETAILS ON PLANS AND SPECIFICATIONS. TEMPORARY PAVEMENT SHALL BE USED WHEN HOT MIX ASPHALT IS NOT AVAILABLE OR WHEN WEATHER FOR PAVEMENT IS UNACCEPTABLE. SIDEWALKS AND DRIVEWAY APRONS SHALL BE FLOAT FINISHED.
2. THE CONTRACTOR MAY DAMAGE EXISTING ROADWAY CURBING WHILE INSTALLING THE WATER MAIN. THE CONTRACTOR SHALL REPLACE ANY DAMAGED CURBING ALONG ALL ROADS WITH ODOT 609 CURBING. CURB REPLACEMENT SHALL MATCH EXISTING CURB, AND LIMITS OF REPLACEMENT SHALL BE TO THE NEAREST CONTROL JOINT ON EITHER SIDE OF THE AREA DAMAGED.
3. THE CONTRACTOR MAY DAMAGE EXISTING DRIVE APRONS WHILE INSTALLING THE WATER MAIN. DRIVE APRONS SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT. PAVEMENT TYPE AND THICKNESS SHALL MATCH EXISTING.
4. WHERE NECESSARY TO DISTURB PAVEMENTS OR DRIVES, PAVEMENT SHALL BE CUT IN NEAT, STRAIGHT LINES.

**SUPPLEMENTAL WATER MAIN NOTES:**


1. ALL NEW VALVES SHALL OPEN BY TURNING CLOCKWISE. VALVES SHALL BE SAME SIZE AS THE WATER MAIN. ALL VALVE BOXES SHALL BE INSTALLED FLUSH TO GRADE.
2. THE MAXIMUM TRENCH OPENING SHALL NOT EXCEED 100 LINEAL FEET. WHERE ACCESS TO DRIVES AND PARKING LOTS IS HINDERED OR BLOCKED FOR AN EXTENDED PERIOD OF TIME, THE CONTRACTOR SHALL PROVIDE TEMPORARY BITUMINOUS PAVEMENT TO MAINTAIN ACCESS. CONTRACTOR SHALL KEEP ALL WORK WITHIN THE RIGHT-OF-WAY.
3. UNLESS OTHERWISE NOTED, THE NEW WATER MAIN SHALL HAVE 6' MINIMUM COVER OVER THE TOP OF PIPE.
4. A MINIMUM OF 35 PSI SHALL BE MAINTAINED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.
5. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
6. PIPE JOINTS SHALL BE DEFLECTED TO MAINTAIN HORIZONTAL ALIGNMENT AND VERTICAL ELEVATIONS UNLESS OTHERWISE INDICATED. DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURERS RECOMMENDATIONS.
7. ALL COSTS ASSOCIATED WITH ABANDONING AND/OR REMOVING THE EXISTING WATER MAIN, LINE VALVES, OR SERVICE CONNECTIONS SHALL BE INCLUDED IN THE BID PRICE PER LINEAL FOOT OF WATER MAIN.
8. NEW FIRE HYDRANTS SHALL BE BAGGED UNTIL THE NEW WATER MAIN IS INSTALLED AND IN OPERATION.
9. THE WATER MAIN SHALL BE PRESSURE TESTED AND DISINFECTED PRIOR TO PERFORMING CORPORATION STOP TAPS.
10. FIRE HYDRANT PLACEMENT SHALL BE ESTABLISHED BY GOVERNING FIRE DEPARTMENT.
11. CONTRACTOR SHALL PRESSURE TEST AND DISINFECTION TEST WITHIN 15 DAYS OF WATER MAIN INSTALLATION.
12. ANY EXISTING UTILITIES OR APPURTENANCES INSIDE OR OUTSIDE OF THE CONSTRUCTION LIMITS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

13. GROUNDWATER CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE TIME THE EXCAVATION REACHES THE GROUNDWATER LEVEL TO MAINTAIN INTEGRITY OF THE IN-SITU MATERIALS. WHILE THE EXCAVATION IS OPEN, THE GROUNDWATER LEVEL SHALL BE MAINTAINED CONTINUOUSLY AT 2 FEET OR MORE BELOW THE WORKING LEVEL.
14. UNSTABLE OR UNSUITABLE PIPE FOUNDATION CONDITIONS THAT RESULT FROM INADEQUATE OR INAPPROPRIATE DEWATERING METHODS SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE OWNER.
15. ANY EXISTING PROPERTY CORNER PINS OR MONUMENTS DAMAGED OR DESTROYED BY THE CONSTRUCTION SHALL BE RESET BY A REGISTERED SURVEYOR UPON COMPLETION OF THE PROJECT PRIOR TO FINAL PAYMENT. A CERTIFICATION SHALL BE FURNISHED BY A REGISTERED SURVEYOR, STATING THAT SAID DAMAGES HAVE BEEN RESTORED. THE COST SHALL BE INCLUDED IN THE PRICE BID PER LINEAL FOOT OF WATER MAIN.
16. ACCESS TO ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
17. RIGHT-OF-WAY AND PROPERTY LINES SHOWN WERE PREPARED FROM RECORD INFORMATION AND DO NOT REPRESENT A BOUNDARY SURVEY.
18. CONTRACTOR SHALL CLEAN THE ROADWAY AT THE END OF EACH DAY OF OPERATION OR EVERY 500 FEET OF INSTALLED WATER MAIN. CLEANING SHALL BE PERFORMED USING A POWER BROOM OR HYDROSPRAYER, OR AS DIRECTED BY THE ENGINEER.
19. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED FOR CONSTRUCTION, INCLUDING BUT NOT LIMITED TO EXCAVATION AND ROAD OPENINGS. PERMITS SHALL BE OBTAINED FROM THE CITY ENGINEER AND FROM ANY LOCAL GOVERNMENTAL OFFICIALS IN WHICH THE WORK IS BEING PERFORMED.
20. CONTRACTOR SHALL NOT BE PERMITTED TO STORE MATERIALS, EQUIPMENT, OR VEHICLES ON PRIVATE PROPERTY.
21. THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER MAINS AND SERVICE CONNECTIONS PER SPECIFICATION SECTION 02660. TEMPORARY MAINS SHALL BE LAID IN THE GUTTERLINES AND SHALL CROSS THE STREETS AT INTERSECTIONS. TEMPORARY MAINS SHALL NOT BE LAID ON TREELAWNS.

**CONSTRUCTION SEQUENCE**

THE PROPOSED WATER MAIN SHALL BE CONSTRUCTED GENERALLY IN ACCORDANCE WITH THE FOLLOWING CONSTRUCTION SEQUENCE:

1. INSTALL AND OPERATIONALIZE TEMPORARY WATER SERVICE CONNECTION TO 1103 UNIVERSITY ROAD.
2. INSTALL 8-INCH CUT-IN VALVE WITH 8-INCH BY 6-INCH REDUCER AT BASELINE STATION 14+49.2, 13.5' LT AND 6-INCH CUT-IN VALVES ON UNIVERSITY ROAD.
3. CLOSE VALVES AT BASELINE STATION 14+49.2, 13.5' LT AND ON UNIVERSITY ROAD TO ISOLATE THE WATER MAIN ON W 11TH STREET BETWEEN BASELINE STATION 14+49.2, 13.5' LT AND UNIVERSITY ROAD.
4. BEGINNING AT BASELINE STATION 14+49.2, 13.5' LT, REMOVE EXISTING 6-INCH WATER MAIN AND INSTALL PROPOSED 8-INCH WATER MAIN. INSTALL TEMPORARY END CAPS, DO NOT CONNECT TO EXISTING MAIN AT UNIVERSITY ROAD.
5. REMOVE EXISTING 6-INCH BY 6-INCH TEE AND BEND AT BASELINE STATION 13+11.6, 211.8' LT AND INSTALL 22.5' BEND AND 6-INCH SPOOL PIECES TO CONNECT TO EXISTING WATER MAIN. PLUG ABANDONED WATER MAIN ENDS WHERE SHOWN ON PLANS.
6. COMPLETE HYDROSTATIC PRESSURE TESTING, DISINFECTION, BACTERIA TESTING, AND FLUSHING OF NEW MAIN.
7. INSTALL 6-INCH BY 8-INCH CUT-IN TEE WITH 8-INCH VALVE AT UNIVERSITY RD, AND COMPLETE CONNECTION AT UNIVERSITY RD.
8. OPEN LINE VALVES AND OPERATIONALIZE NEW WATER MAIN.
9. TAP NEW MAIN, AND REPLACE AND OPERATIONALIZE NEW SERVICE CONNECTION.
10. REMOVE TEMPORARY WATER MAIN SYSTEM.

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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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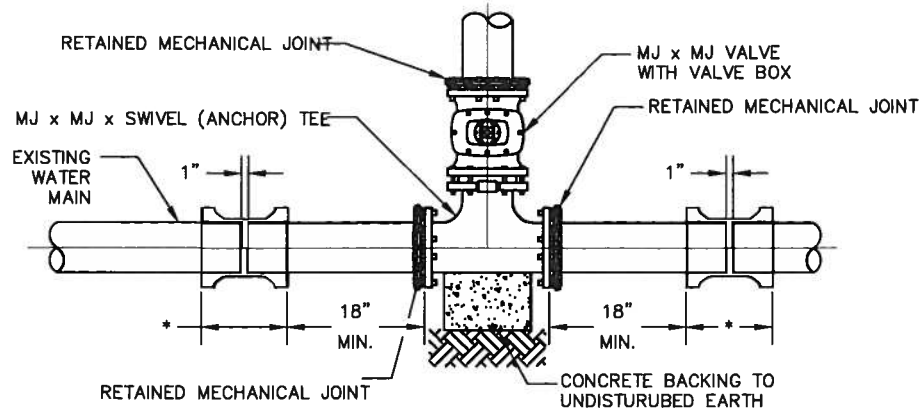


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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WATER MAIN NOTES**

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: NONE  
 SHEET NO.: C-7



**CUT-IN TEE DETAIL METHOD No.1**  
**STD-T01**  
 NOT TO SCALE

\*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.

COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.

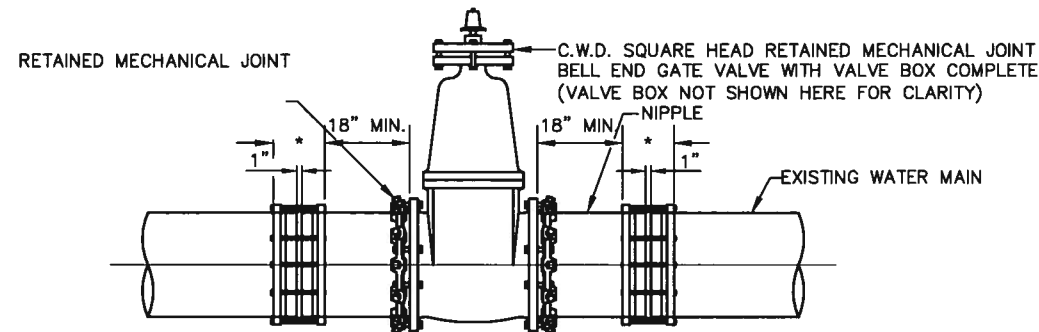
MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).

THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.

ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

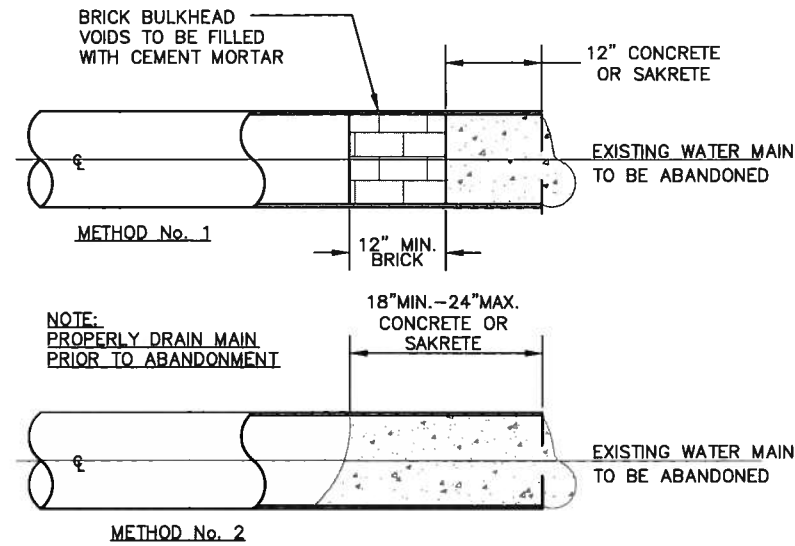
THE DIVISION OF WATER WILL DETERMINE THE FIELD LOCATION OF THE CUT-IN-VALVE ASSEMBLY. THE DIVISION OF WATER WILL ALSO SET THE TIME OF INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY.

THE CONTRACTOR SHALL DO ALL PIPE CUTTING AND INSTALLATION. HOWEVER, THE INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY SHALL BE DONE UNDER THE SUPERVISION OF THE DIVISION OF WATER.

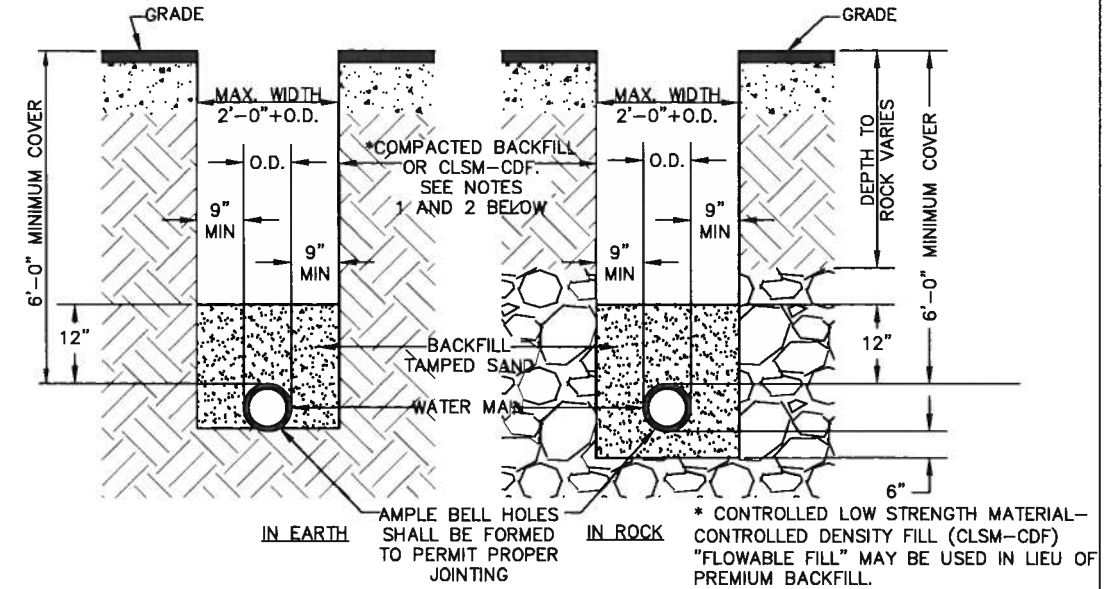


NOTE:  
 BEFORE CUTTING EXISTING WATER MAIN, THE NIPPLES SHALL BE CONNECTED TO THE MECHANICAL JOINT BELL END GATE VALVE. AFTER CUTTING PIPE, FINAL CONNECTIONS SHALL BE MADE WITH COUPLINGS/SOLID SLEEVES AS SPECIFIED.

**CUT-IN-VALVE DETAIL (STD-005)**  
 NOT TO SCALE

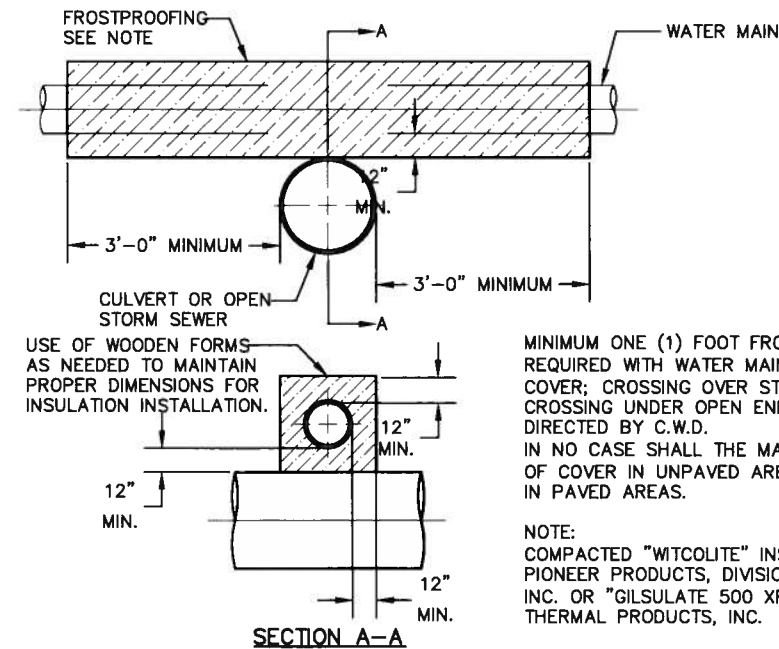


**PLUGGING ABANDONED WATER MAIN ENDS**  
**(STD-004)**  
 NOT TO SCALE



**WATER MAIN TRENCH DETAILS (STD-001)**  
 NOT TO SCALE

- NOTES:
- PREMIUM BACKFILL CONSISTING OF CONTROLLED LOW STRENGTH MATERIAL - CONTROLLED DENSITY FILL (CLSM-CDF) "FLOWABLE FILL" IS REQUIRED:
    - UNDER ALL EXISTING OR FUTURE PAVEMENTS, SIDEWALKS AND DRIVES
    - AT ALL LOCATIONS WITHIN THE CITY OF CLEVELAND CORPORATION LIMITS
    - AS SPECIFIED IN LOCAL MUNICIPALITIES SERVED BY CWD (SEE LOCAL REQUIREMENTS)
  - WHEN PREMIUM BACKFILL IS REQUIRED BY THE LOCAL MUNICIPALITY FOR CASES OTHER THAN THOSE LISTED IN NOTE 1 ABOVE, IT SHALL BE LIMESTONE GRADED PER ODOT 304.02 OR ODOT 411. NO SLAG IS PERMITTED.\*
  - CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
  - MINIMUM COMPACTION FOR ALL SAND BEDDING, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.
  - PAVEMENT, SIDEWALK OR DRIVES TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPALITY'S SPECIFICATIONS.



**TYPICAL FROSTPROOFING DETAIL**  
**(STD-009)**  
 NOT TO SCALE

MINIMUM ONE (1) FOOT FROSTPROOFING INSULATION ENVELOPE REQUIRED WITH WATER MAIN LAID WITH LESS THAN FIVE (5) FT. COVER; CROSSING OVER STORM SEWERS 24" AND LARGER; OR CROSSING UNDER OPEN END CULVERTS, OR OTHERWISE DIRECTED BY C.W.D.  
 IN NO CASE SHALL THE MAINS BE LAID WITH LESS THAN 3'-6" OF COVER IN UNPAVED AREAS & 3'-0" TO BOTTOM OF SLAB IN PAVED AREAS.

NOTE:  
 COMPACTED "WITCOLITE" INSULATION AS MANUFACTURED BY PIONEER PRODUCTS, DIVISION OF WITCO CHEMICAL COMPANY, INC. OR "GILSULATE 500 XR" AS MANUFACTURED BY AMERICAN THERMAL PRODUCTS, INC.

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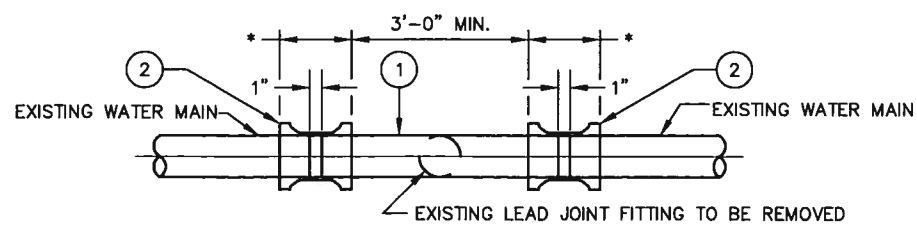
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WALWORTH RUN INTERCEPTOR REALIGNMENT

WATER MAIN DETAILS

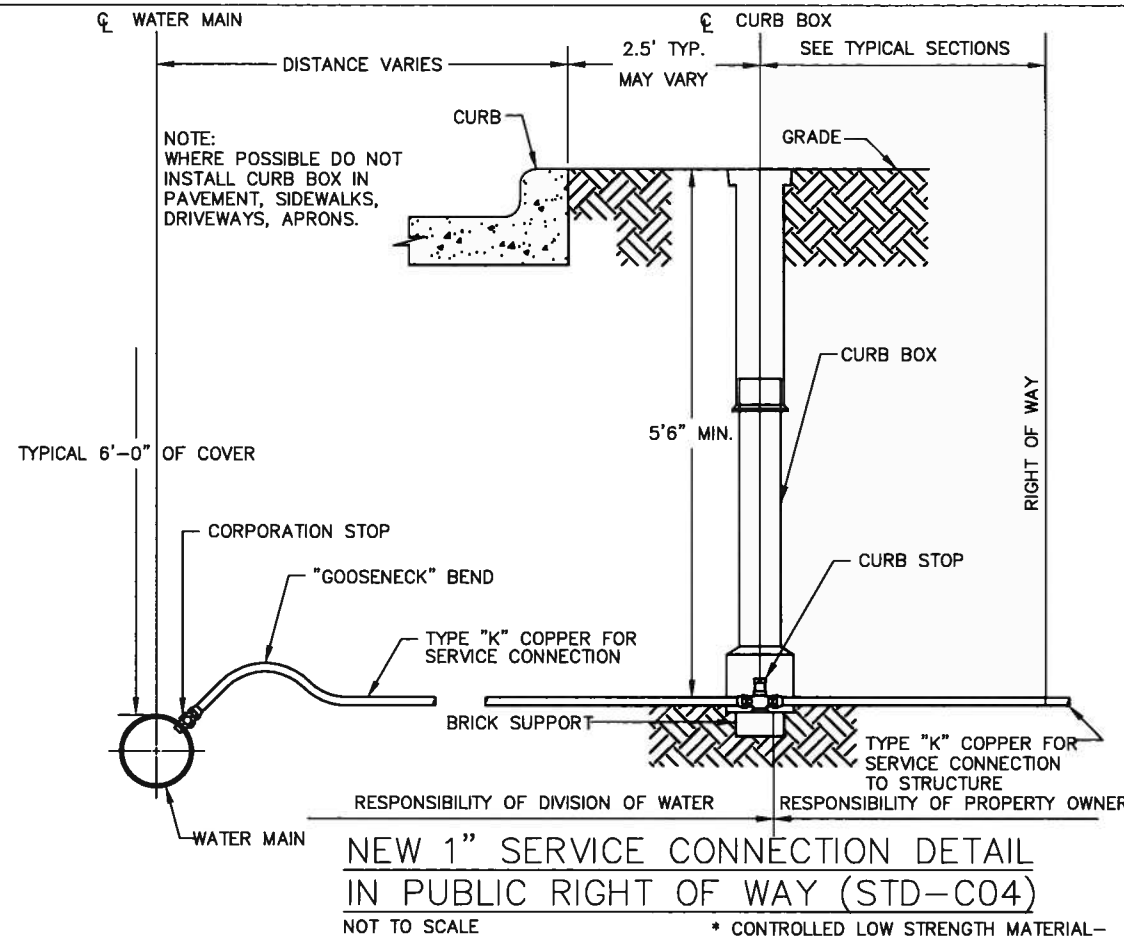
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- 1) PLAIN END x PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT TO SUIT).
- 2) \*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.  
 COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.  
 MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).  
 THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE) OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.
- 3) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

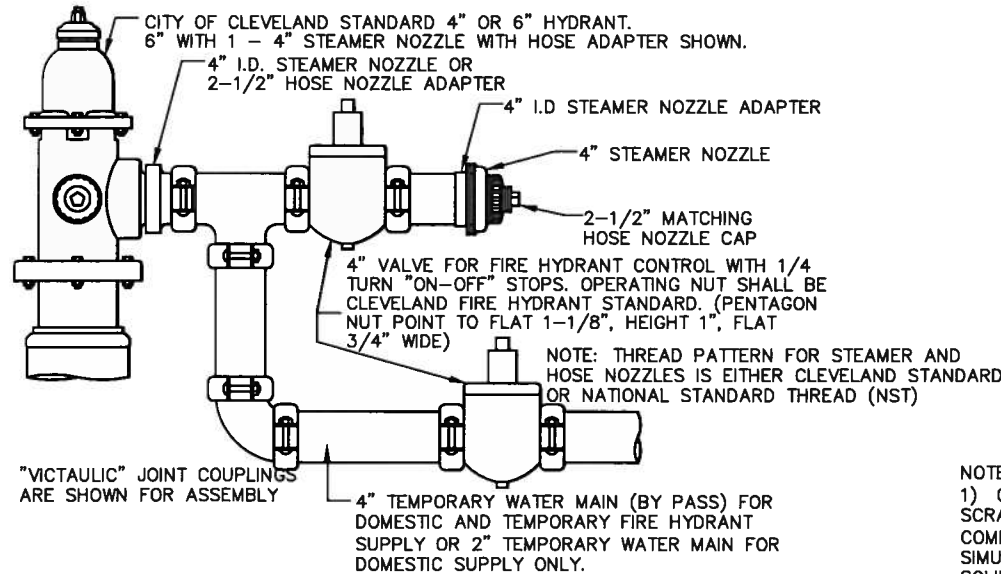
**SPOOL PIECE INSTALLATION DETAIL (STD-008)**  
NOT TO SCALE



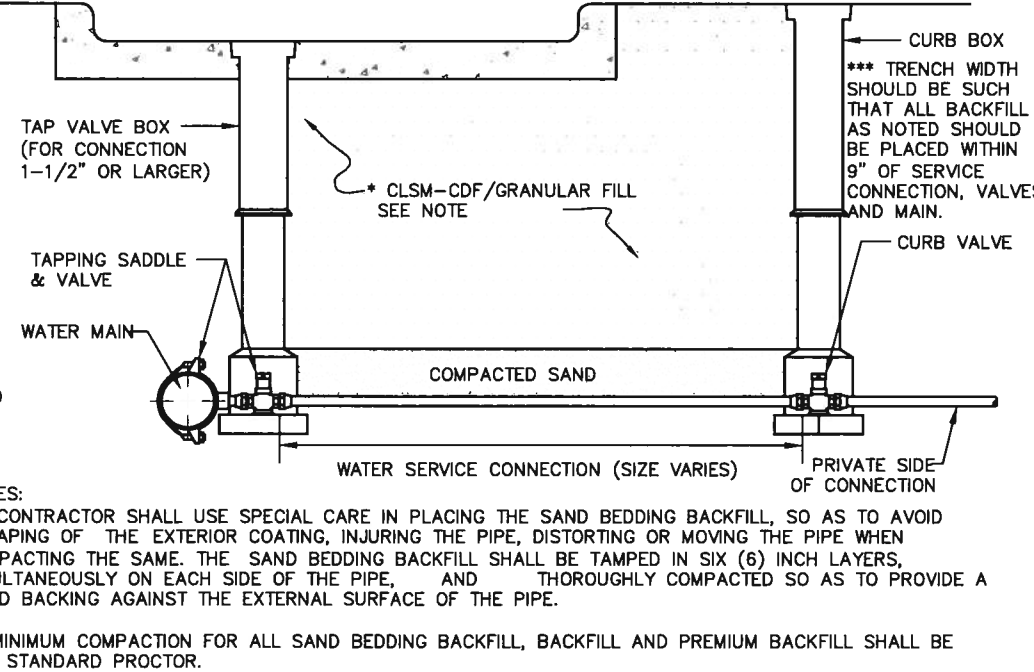
**NEW 1" SERVICE CONNECTION DETAIL IN PUBLIC RIGHT OF WAY (STD-C04)**  
NOT TO SCALE

\*\* CLEVELAND REQUIRED MIX DESIGN -  
 CEMENT - 50 LBS. PER CUBIC YARD  
 SAND - 2850 LBS. PER CUBIC YARD  
 WATER - 50 GALLONS PER CUBIC YARD  
 RHEOCELL 30MB - 3 OZ. PER CUBIC YARD

\* CONTROLLED LOW STRENGTH MATERIAL-  
 CONTROLLED DENSITY FILL (CLSM-CDF)  
 "FLOWABLE FILL" IS REQUIRED WITHIN THE  
 CITY OF CLEVELAND CORPORATION LIMITS  
 AND PERMITTED IN ALL COMMUNITIES  
 SERVICED BY CWD. CHECK LOCAL  
 REQUIREMENTS.

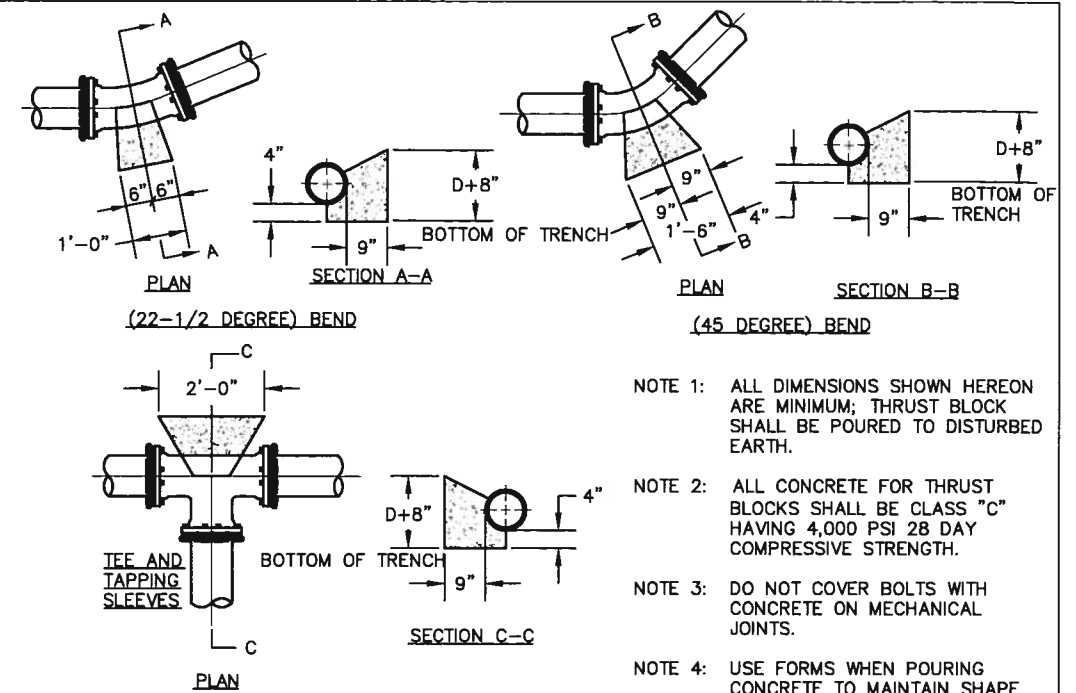


**TEMPORARY WATER MAIN & HYDRANT CONNECTION ASSEMBLY-A TO PROVIDE SIMULTANEOUS SERVICE IN EXISTING HYDRANT AND TEMPORARY BYPASS MAIN (STD-H14)**  
NOT TO SCALE

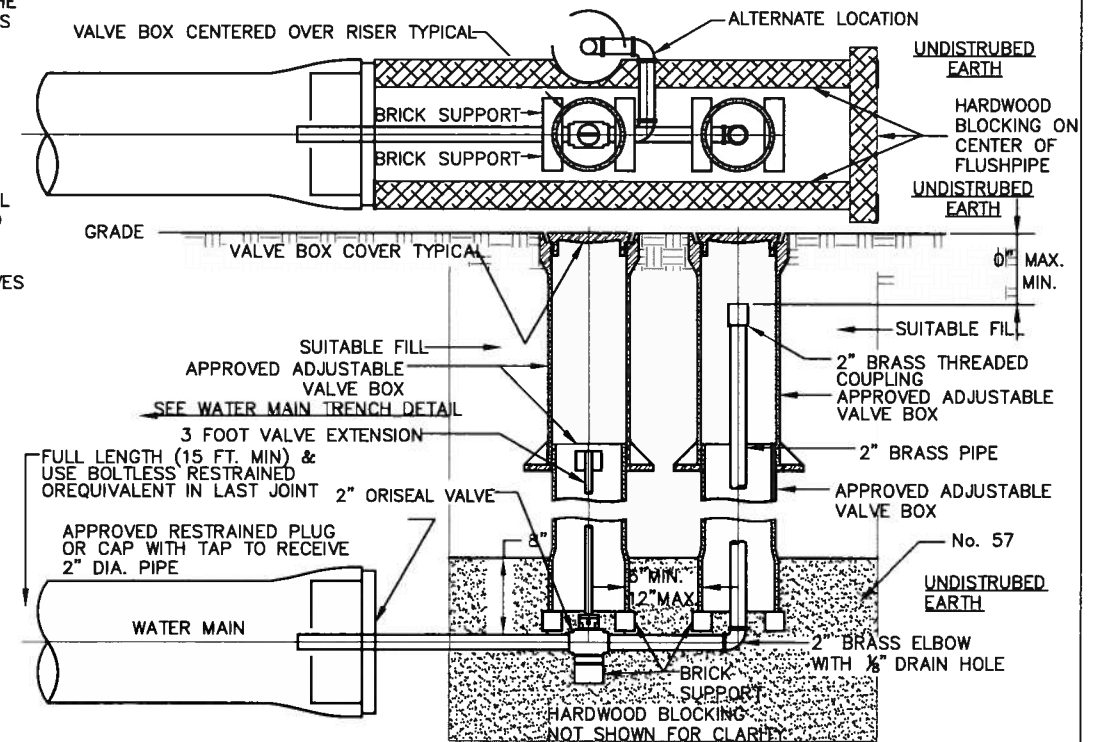


- NOTES:
- 1) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING BACKFILL, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
  - 2) MINIMUM COMPACTION FOR ALL SAND BEDDING BACKFILL, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.

**SERVICE CONNECTION BACKFILL DETAIL (STD-023)**  
NOT TO SCALE



**TYPICAL THRUST BLOCK DETAIL FOR HORIZONTAL DEFLECTION FOR PIPE UP TO 16" DIAMETER (STD-006)**  
NOT TO SCALE D = PIPE DIAMETER



**TYPICAL FLUSHING ASSEMBLY (STD-003)**  
NOT TO SCALE

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 0 1  
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WALWORTH RUN INTERCEPTOR REALIGNMENT

WATER MAIN DETAILS

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: NONE  
 SHEET NO.: C-9

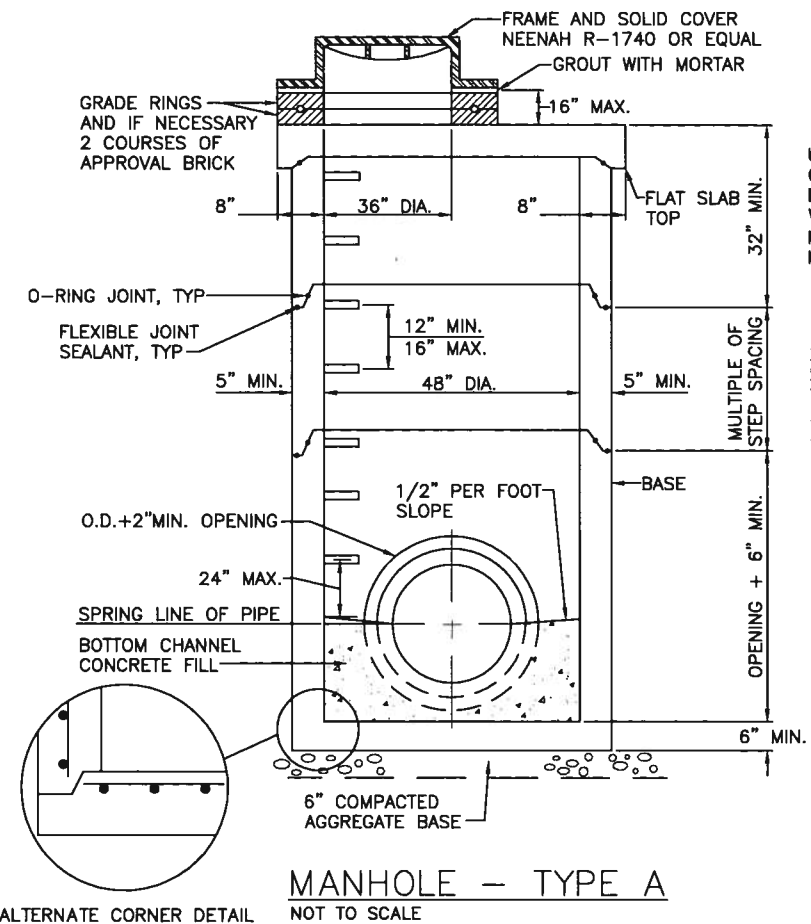


PRECAST MANHOLE SCHEDULE

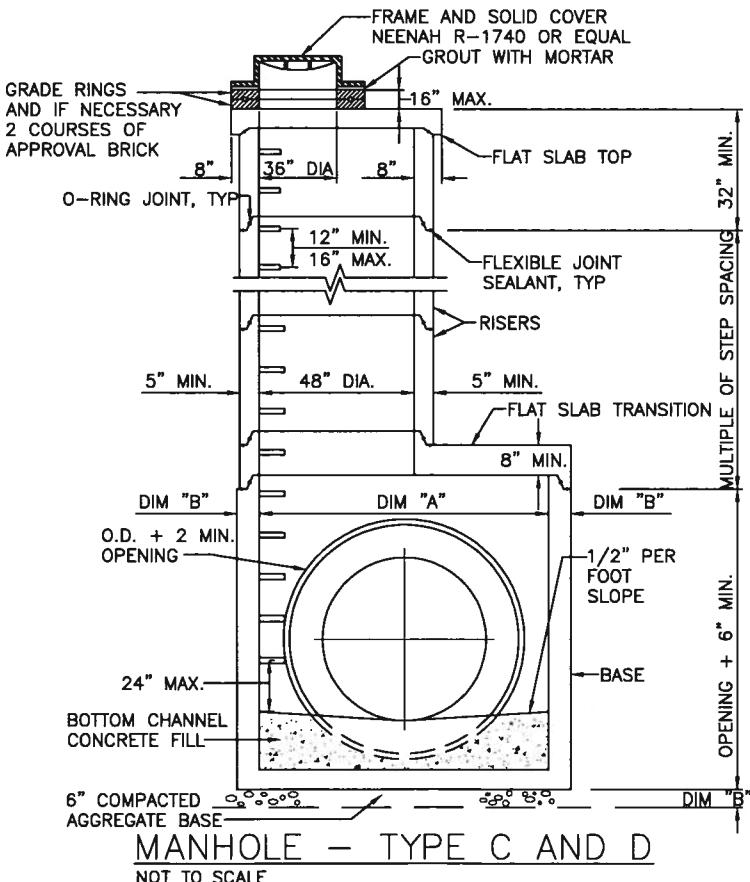
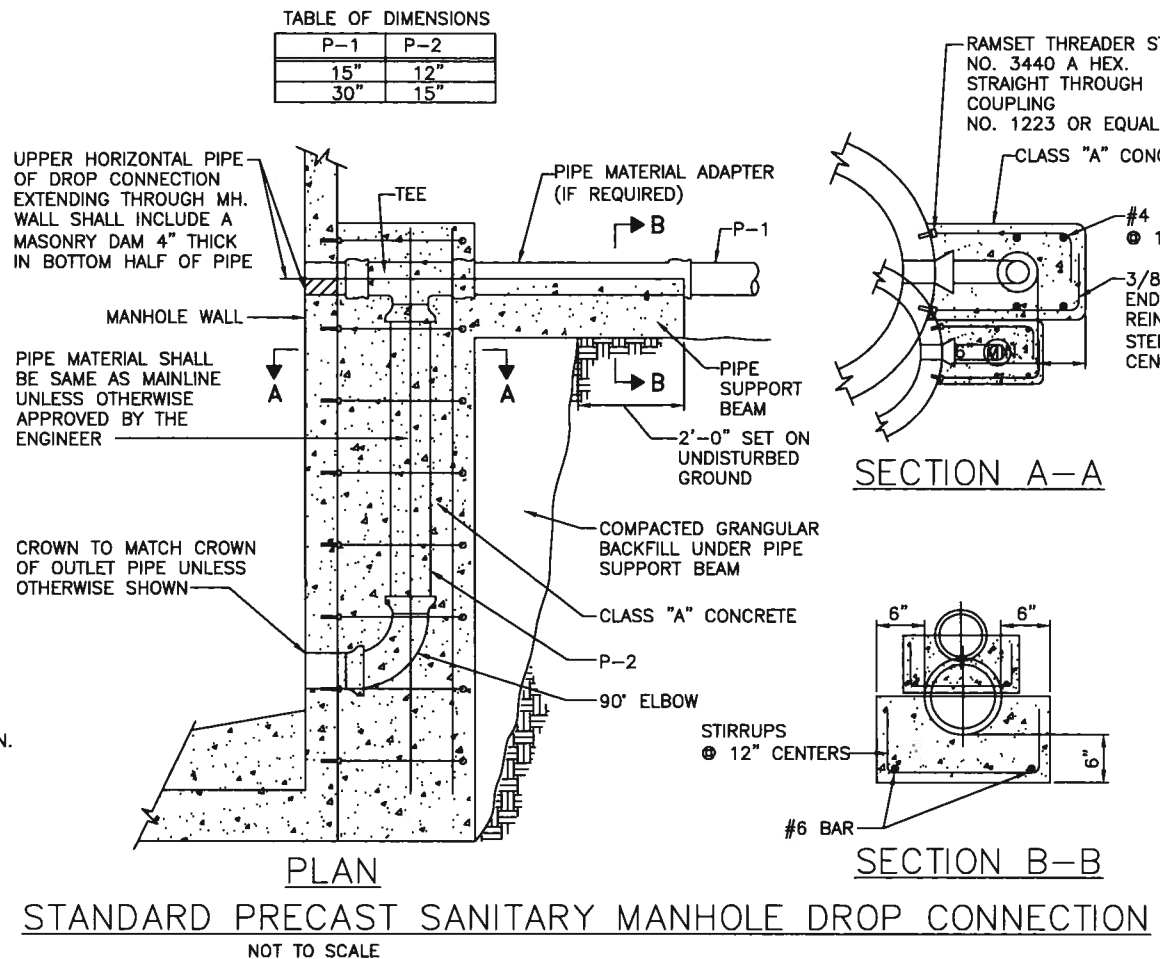
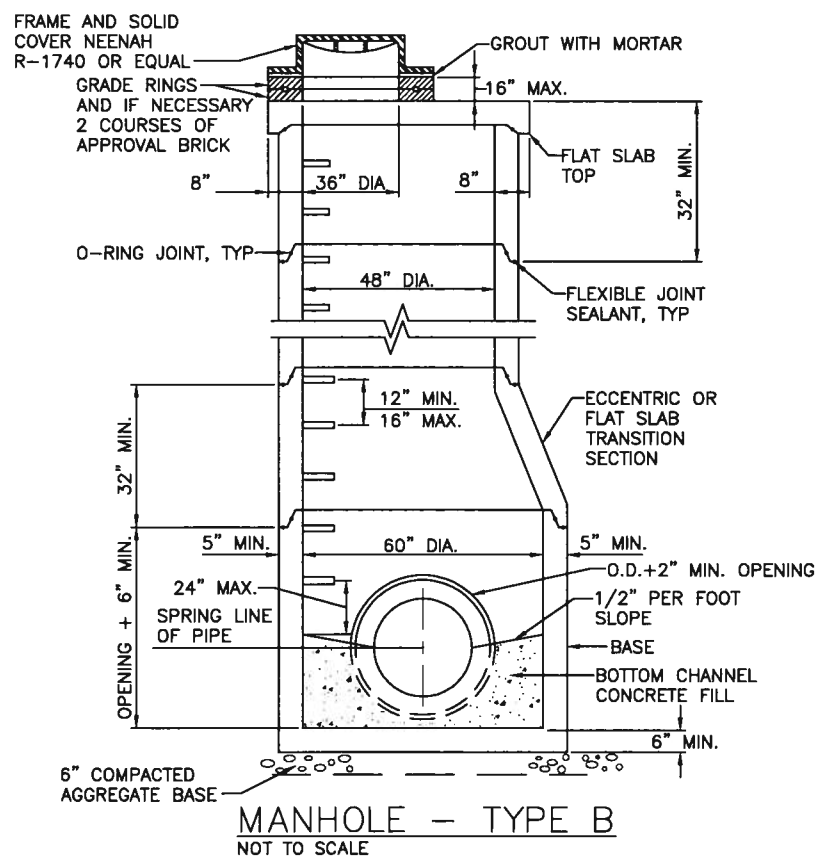
MANHOLE NUMBER	MANHOLE TYPE				COMMENTS
	TYPE A	TYPE B	TYPE C	TYPE D	
1				X	
2				X	
1A			X		
1B		X			
1C	X				
2A	X				DROP MANHOLE
2B	X				
2C	X				
2D	X				
2E	X				
2F	X				
3A	X				
4A	X				
TOTAL	9	1	1	2	

NOTES

- SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.
- BASES FOR MANHOLES ARE SHOWN WITH MONOLITHIC FLOOR AND RISERS WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED, EITHER WHEN THE UNIT IS CAST OR LATER, TO MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR INSTALLED BY FIELD CONSTRUCTION. FLOORS MAY ALSO BE POURED IN PLACE.
- OPENINGS IN RISER SECTIONS SHALL BE PREFABRICATED. FLEXIBLE CONNECTIONS SHALL BE PROVIDED FOR SANITARY AND STORM SEWERS. PREMIUM SEALS SHALL MEET ASTM C-923,
- JOINT SEALS BETWEEN PRECAST MANHOLE SECTIONS SHALL BE RESILIENT AND FLEXIBLE GASKET JOINTS. JOINTS SHALL MEET ASTM C-443, FEDERAL SPECIFICATION SS-S-00210 (210 A), AND AASHTO M-198.
- MANHOLE JOINTS SHALL BE SEALED BY A FLEXIBLE SEALANT, CONSEAL CS-202 AS MANUFACTURED BY CONSEAL CONCRETE SEALANTS, INC., OR APPROVED EQUAL.
- MANHOLE GRADE RINGS SHALL BE SEALED EXTERNALLY AND BETWEEN GRADE RINGS WITH A LAYER OF MASTIC COMPOUND SUCH AS FABERLITE, KENT SEAL, OR EQUAL.
- PRECAST MANHOLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
- SEAL ALL LIFT HOLES WITH APPROVED CONCRETE PLUGS.
- SEE PLANS FOR FRAME AND COVER ELEVATIONS.
- TOP MANHOLE STEP SHALL BE INSTALLED NOT MORE THAN 2' BELOW TOP OF FRAME.
- APPLY "THOROSEAL" BY THORO SYSTEM PRODUCTS, OR APPROVED EQUAL TO THE INSIDE EXPOSED SURFACES OF ALL MANHOLES.



ALTERNATE CORNER DETAIL



MH TYPE	DIM "A"	MIN DIM "B"
C	72"	6"
D	120"	10"

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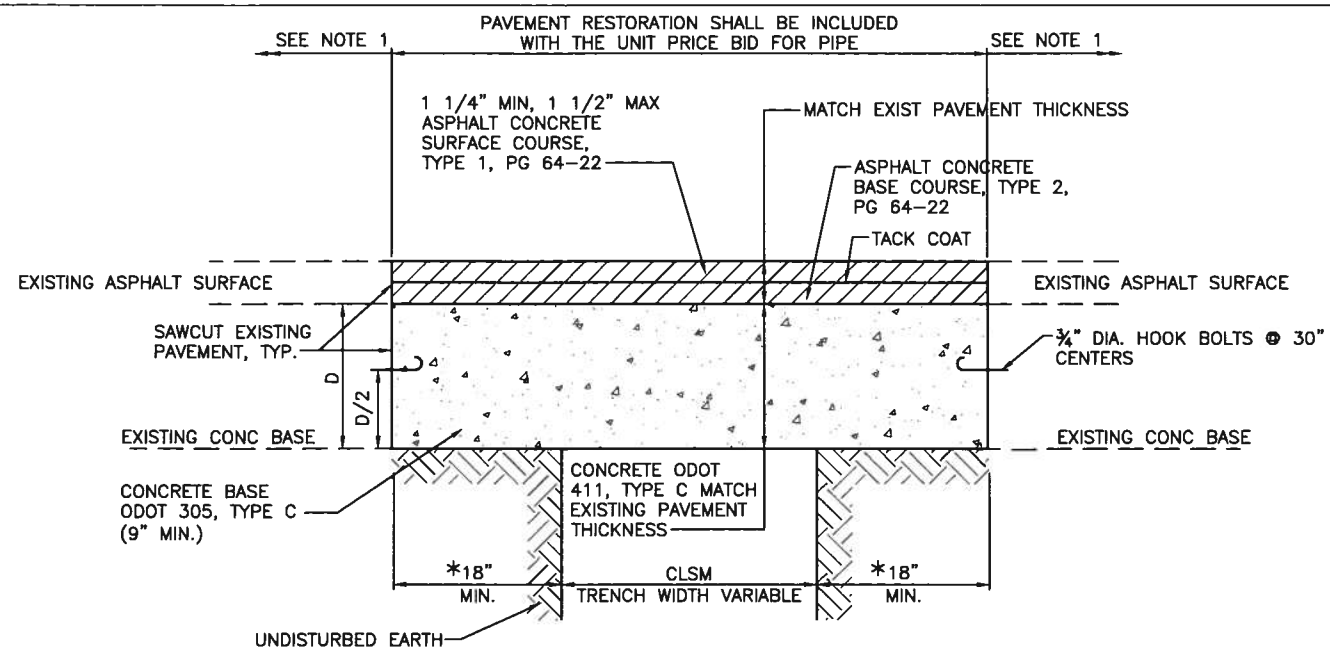


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WALWORTH RUN INTERCEPTOR REALIGNMENT

PRECAST CONCRETE MANHOLE DETAILS

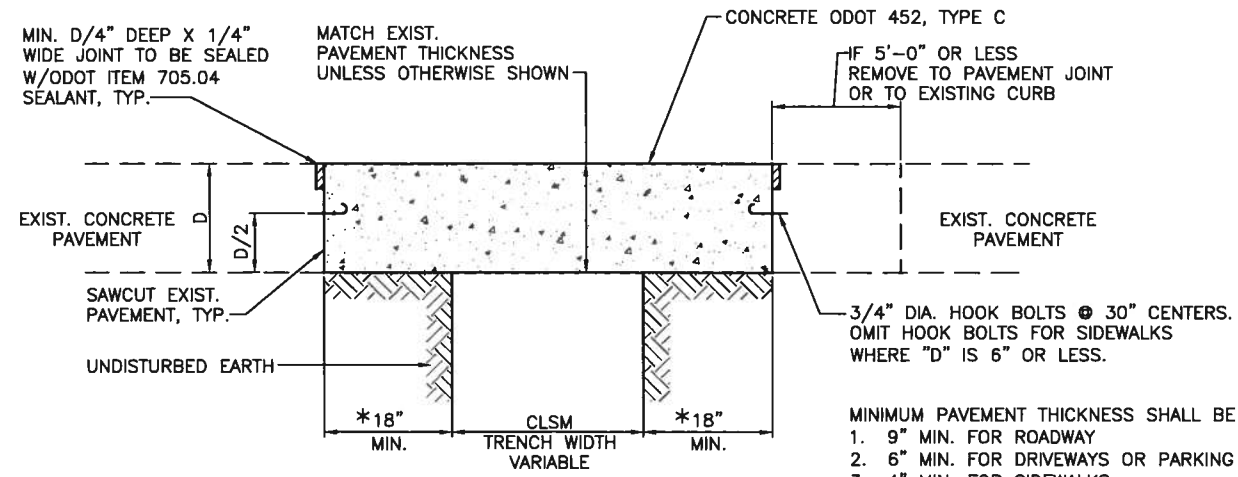
PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: NONE  
 SHEET NO.: C-10



\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

### TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH CONCRETE BASE

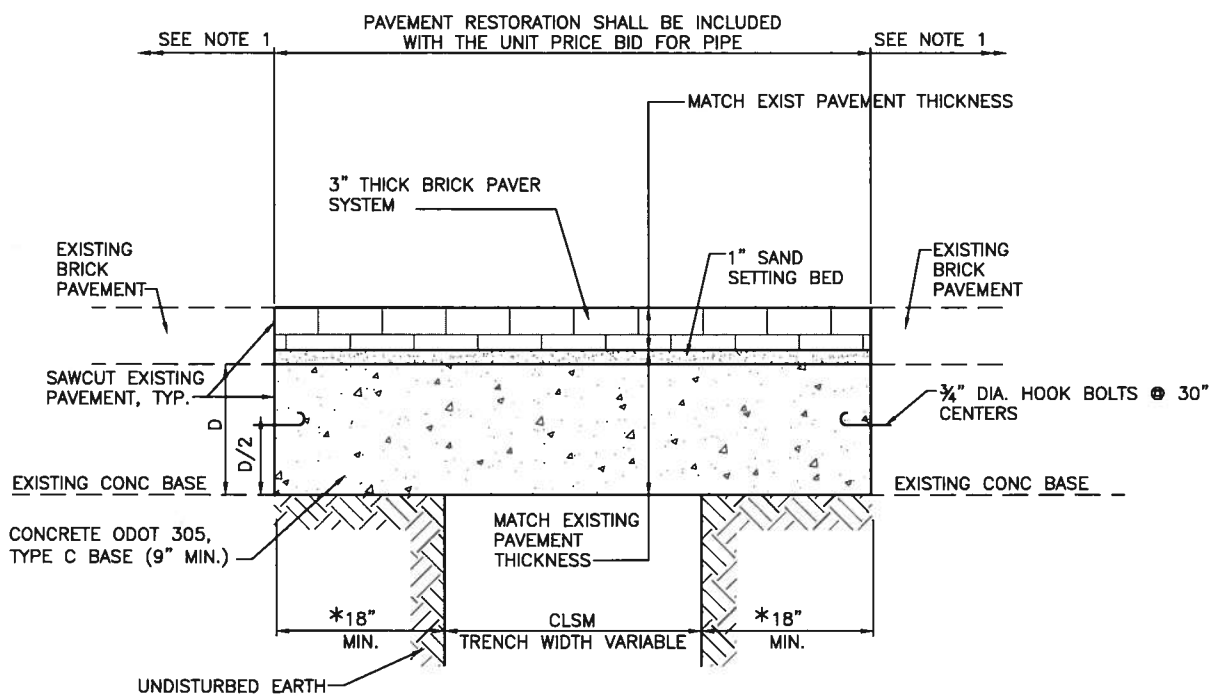
NOT TO SCALE



- MINIMUM PAVEMENT THICKNESS SHALL BE AS FOLLOWS:
1. 9" MIN. FOR ROADWAY
  2. 6" MIN. FOR DRIVEWAYS OR PARKING AREAS
  3. 4" MIN. FOR SIDEWALKS
- \*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

### TYPICAL TRENCH DETAIL FOR CONCRETE PAVEMENT

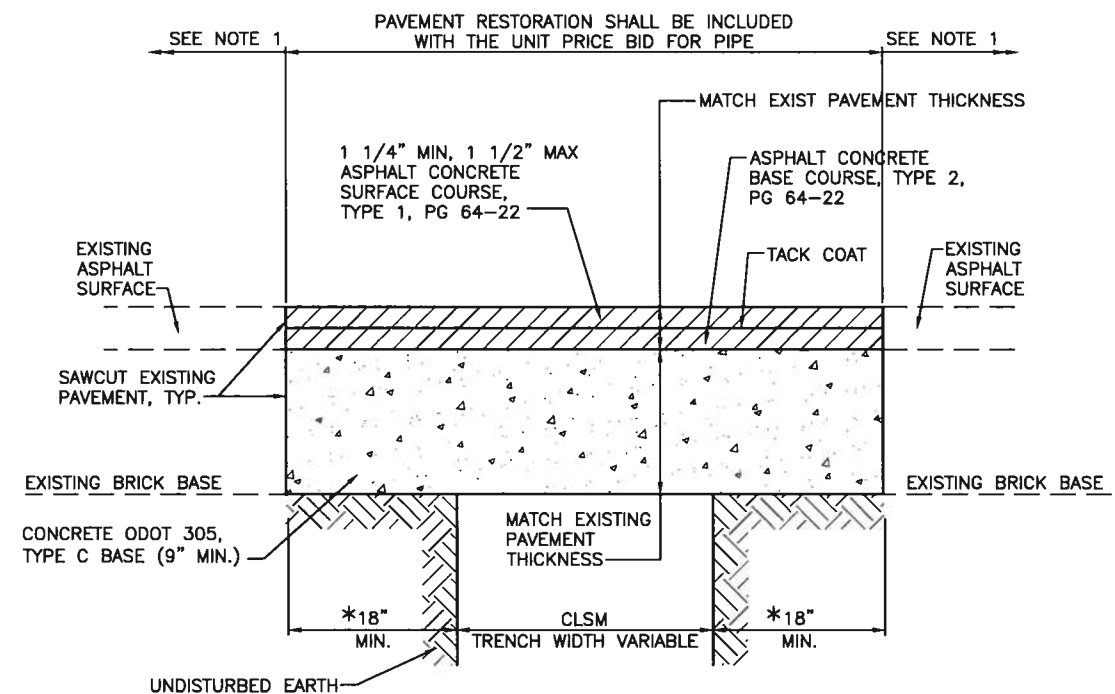
NOT TO SCALE



\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

### TYPICAL TRENCH DETAIL FOR BRICK PAVEMENT WITH CONCRETE BASE

NOT TO SCALE



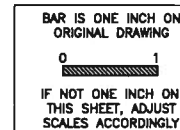
\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

### TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH BRICK BASE

NOT TO SCALE

**NOTE:**

1. MILL AND RESURFACE ASPHALT PAVEMENT WHERE SHOWN ON THE DRAWINGS. PAYMENT SHALL BE INCLUDED WITH THE UNIT PRICE BID FOR PAVEMENT MILLING AND RESURFACING



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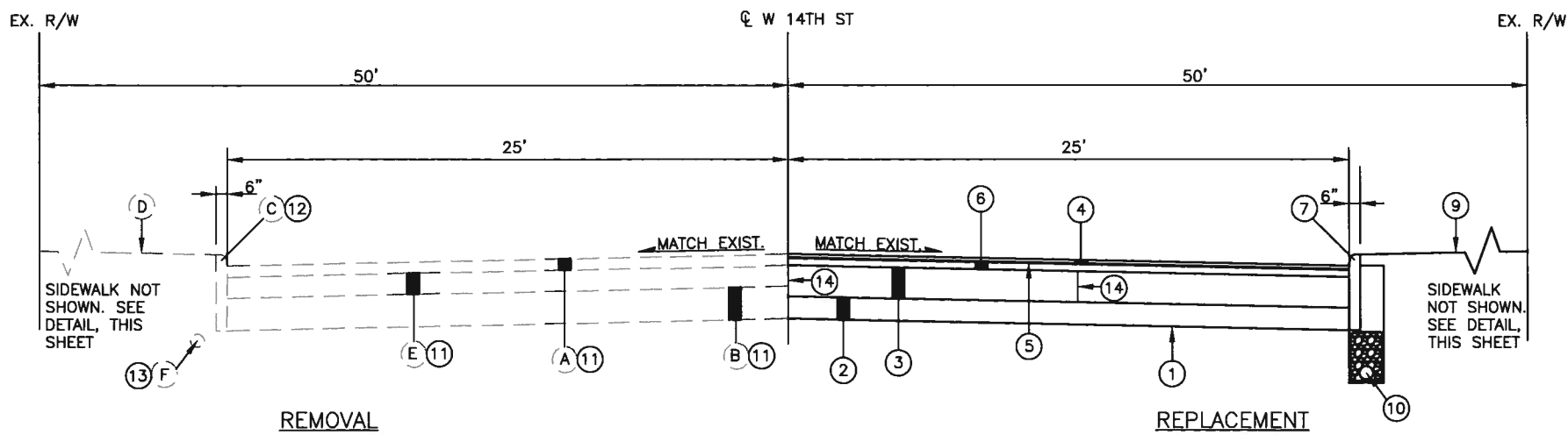
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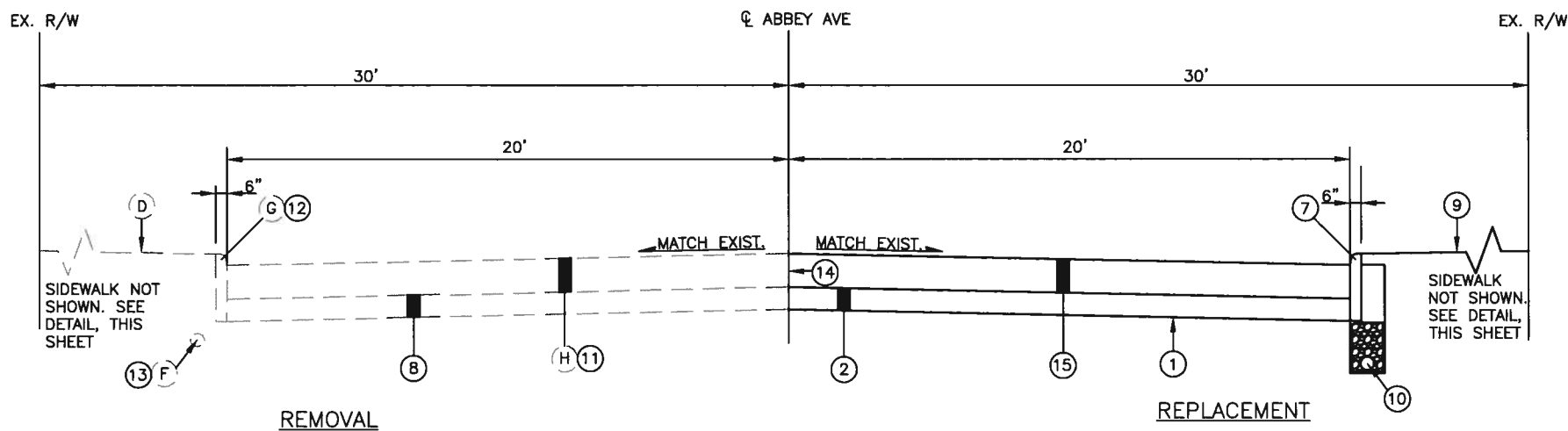
TRENCH REPAIR DETAILS

PROJECT NO.: \_\_\_\_\_  
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 SCALE: NONE  
 SHEET NO.: C-11

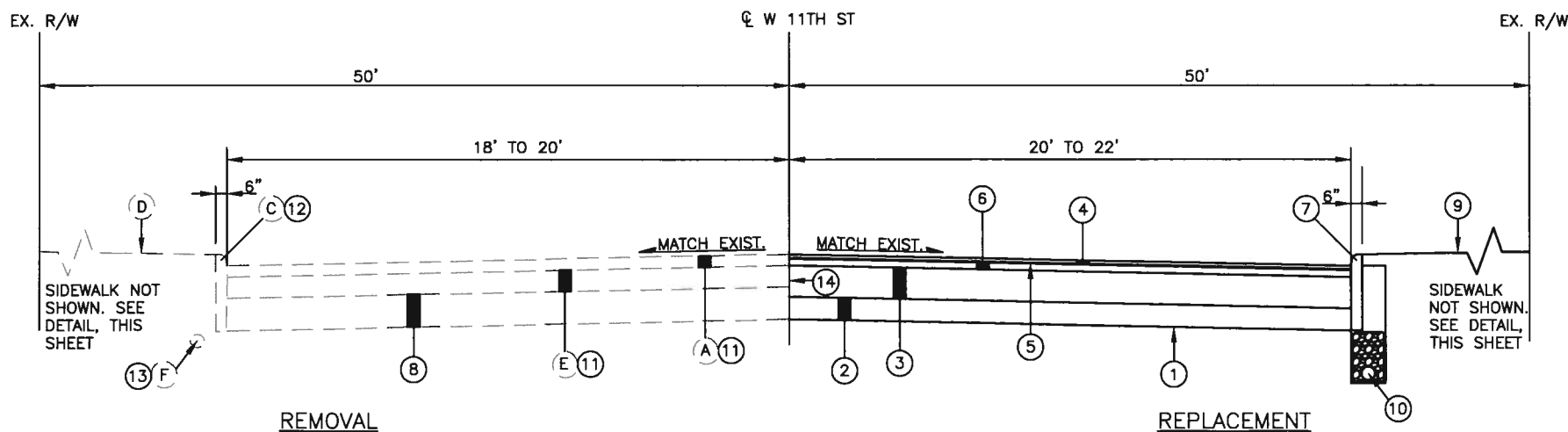




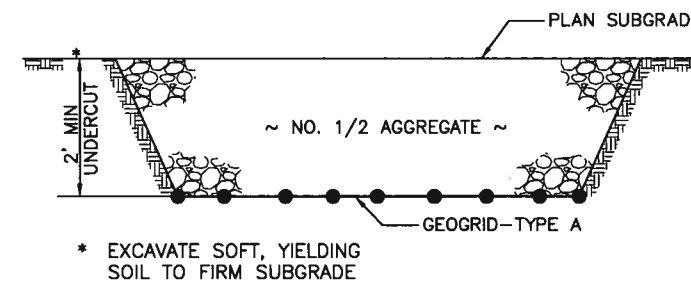
TYPICAL PAVEMENT SECTION-W 14TH ST AT JUNCTION CHAMBER NO.1  
NOT TO SCALE



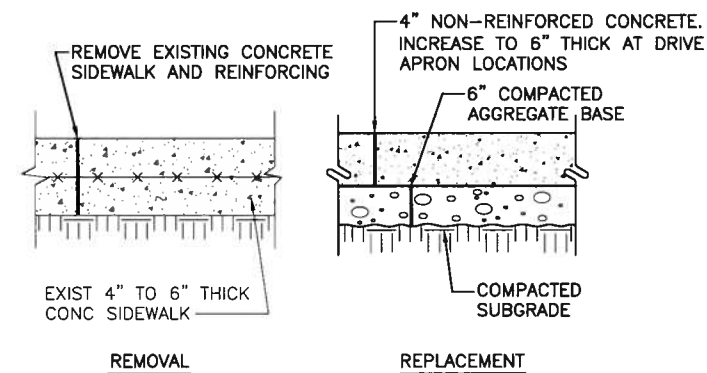
TYPICAL PAVEMENT SECTION-ABBAY AVE AT MANHOLE NO.1 AND NO.2  
NOT TO SCALE



TYPICAL PAVEMENT SECTION-W 11TH ST AT MANHOLE NO.2 AND JUNCTION CHAMBER NO.2  
SHOWING FULL DEPTH PAVEMENT REPLACEMENT  
NOT TO SCALE



SUBGRADE STABILIZATION DETAIL  
NOT TO SCALE



SIDEWALK REMOVAL AND REPLACEMENT  
NOT TO SCALE

LEGEND

- ① SUBGRADE COMPACTION
- ② 6" AGGREGATE BASE
- ③ 9" CONCRETE BASE, ODOT ITEM 305
- ④ 1 1/2" ASPHALT CONCRETE SURFACE COURSE TYPE 1, P664-22
- ⑤ TACK COAT (0.040 GAL/SY)
- ⑥ 1 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE 2, P664-22
- ⑦ CAST-IN-PLACE TYPE 6 CONCRETE CURB. SEE CITY OF CLEVELAND DWG CD-1
- ⑧ EXCAVATION TO SUBGRADE
- ⑨ SEEDING AND MULCHING
- ⑩ 4" UNDERDRAIN WITH AGGREGATE AND FILTER WRAP
- ⑪ ODOT ITEM 202-PAVEMENT REMOVED WHERE SHOWN ON PLANS
- ⑫ ODOT ITEM 202-CURB REMOVED WHERE SHOWN ON PLANS
- ⑬ UNDERDRAIN REMOVED
- ⑭ LONGITUDINAL JOINT WITH TIE BARS, SEE CITY OF CLEVELAND DWG CONC 1
- ⑮ 10" CONCRETE PAVEMENT, ODOT ITEM 452
- (A) EXISTING 4"± ASPHALT PAVEMENT
- (B) EXISTING 9"± CONCRETE BASE
- (C) EXISTING CONCRETE CURB
- (D) EXISTING TREE LAWN
- (E) EXISTING 5"± BRICK BASE
- (F) EXISTING 4" UNDERDRAIN
- (G) EXISTING SANDSTONE CURB
- (H) EXISTING 10" CONCRETE PAVEMENT

NOTES:  
1. FOR ITEMS ③ AND ⑮ PROVIDE TRANSVERSE PAVEMENT JOINTS PER CITY OF CLEVELAND STANDARD CONSTRUCTION DRAWING.

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0 1  
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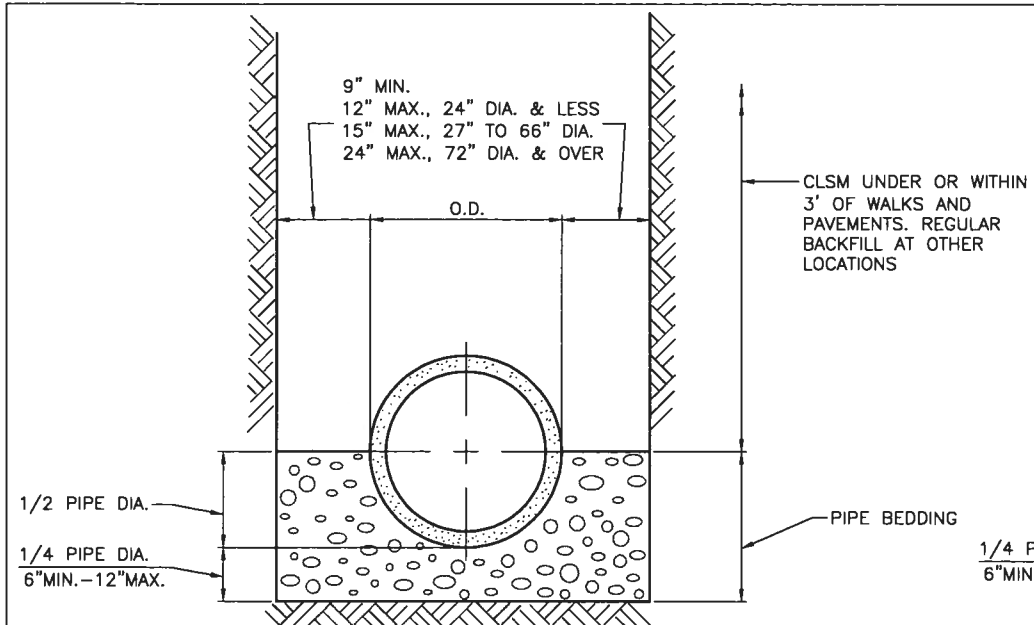


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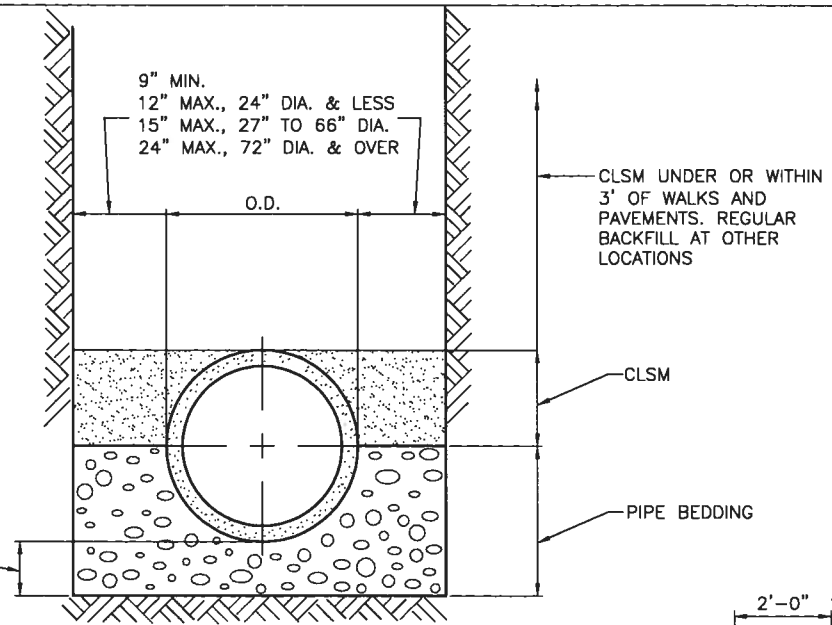
WALWORTH RUN INTERCEPTOR REALIGNMENT

PAVEMENT SECTIONS AND DETAILS

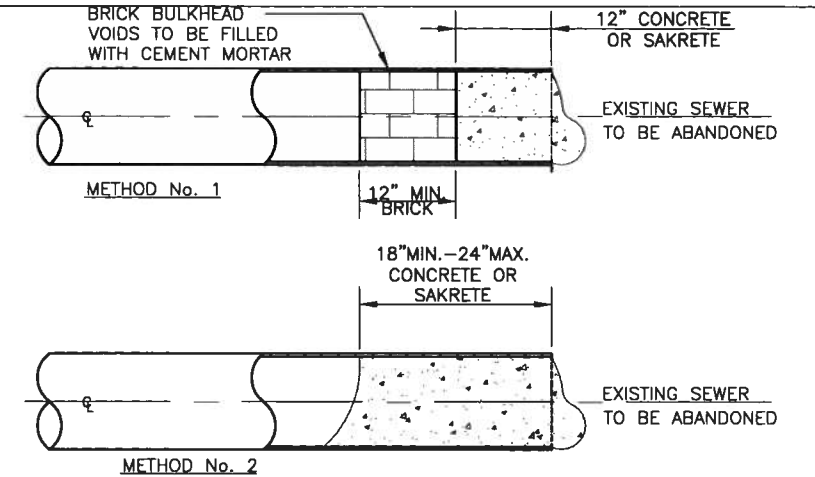
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 SHEET NO.: C-12



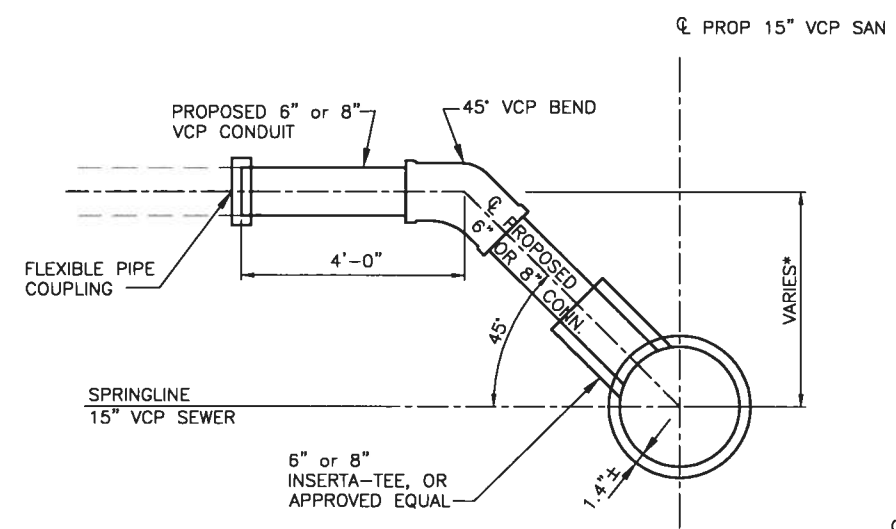
TYPICAL SEWER TRENCH FOR RCP STORM AND SANITARY AND VCP STORM SEWER  
NOT TO SCALE



TYPICAL SEWER TRENCH FOR VCP SANITARY SEWER  
NOT TO SCALE

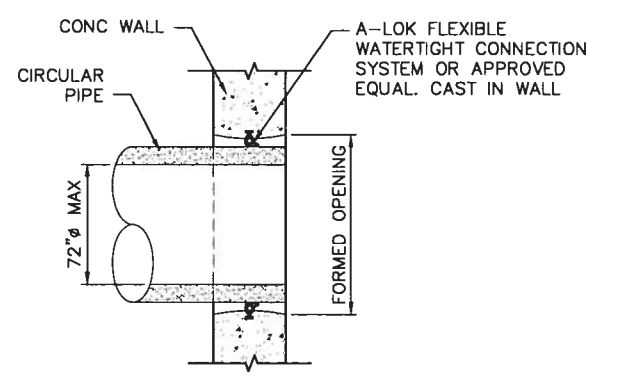


PLUGGING ABANDONED SEWER ENDS  
NOT TO SCALE

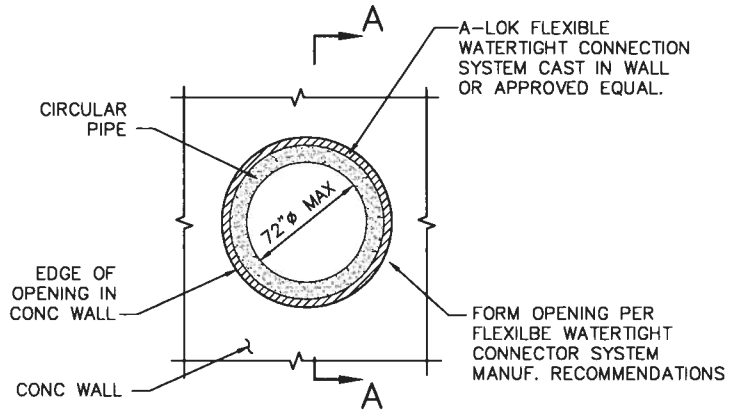


\* NOTE: ELEVATION OF 45° BEND TO BE PLACED ACCORDING TO ELEVATION OF EXISTING CONNECTION. CONTRACTOR SHALL REPLACE FOUR (4) FEET BEYOND 45° BEND TO CONNECT TO THE EXISTING PIPE.

SANITARY SERVICE CONNECTION DETAIL  
NOT TO SCALE

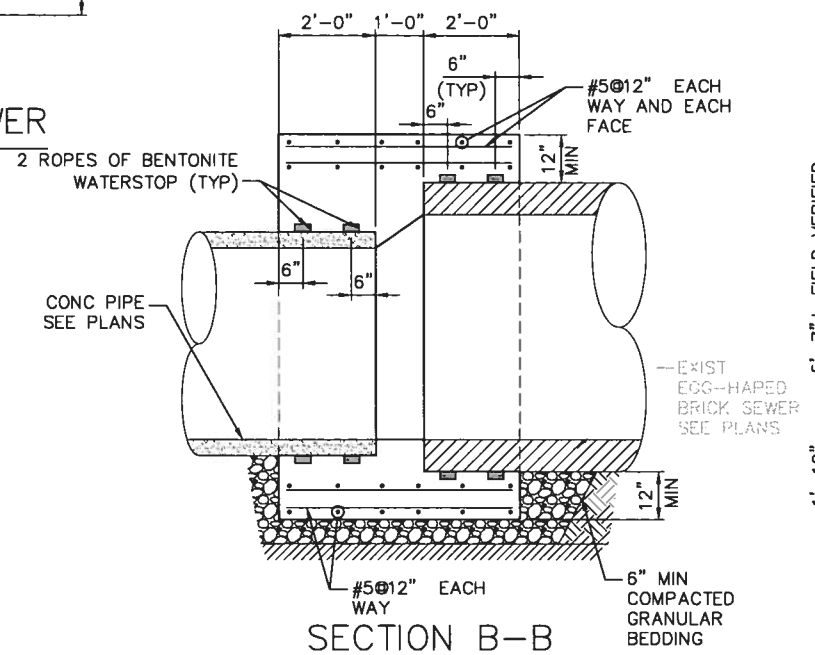


SECTION A-A

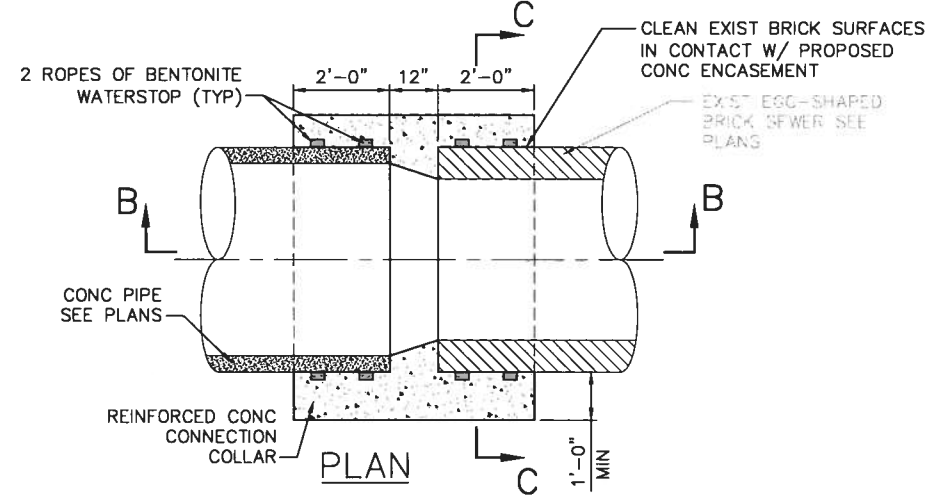


ELEVATION

TYPICAL PIPE-WALL PENETRATION DETAIL WITH A-LOK  
NOT TO SCALE

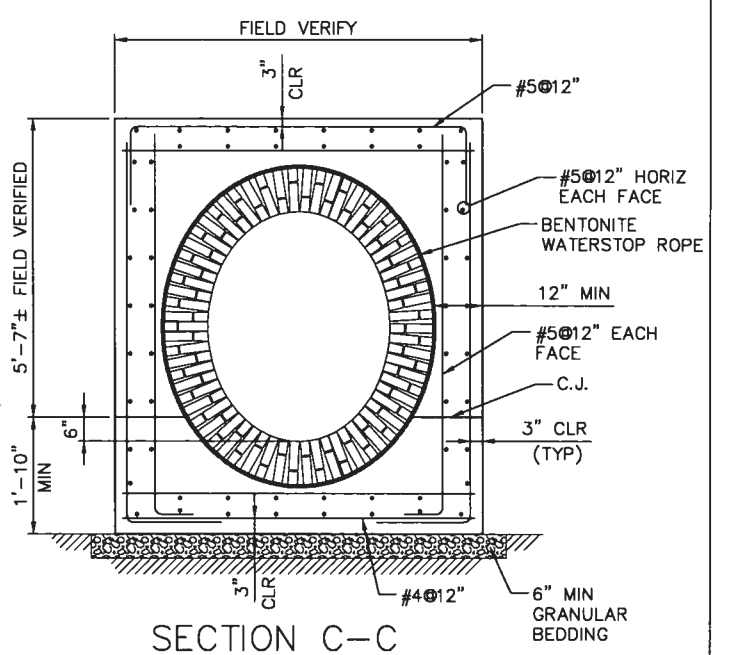


SECTION B-B



PLAN

TYPICAL RCP-TO-EXIST BRICK SEWER CONNECTION DETAIL  
NOT TO SCALE



SECTION C-C

REV. NO.	DATE	ISSUE BY	REMARKS

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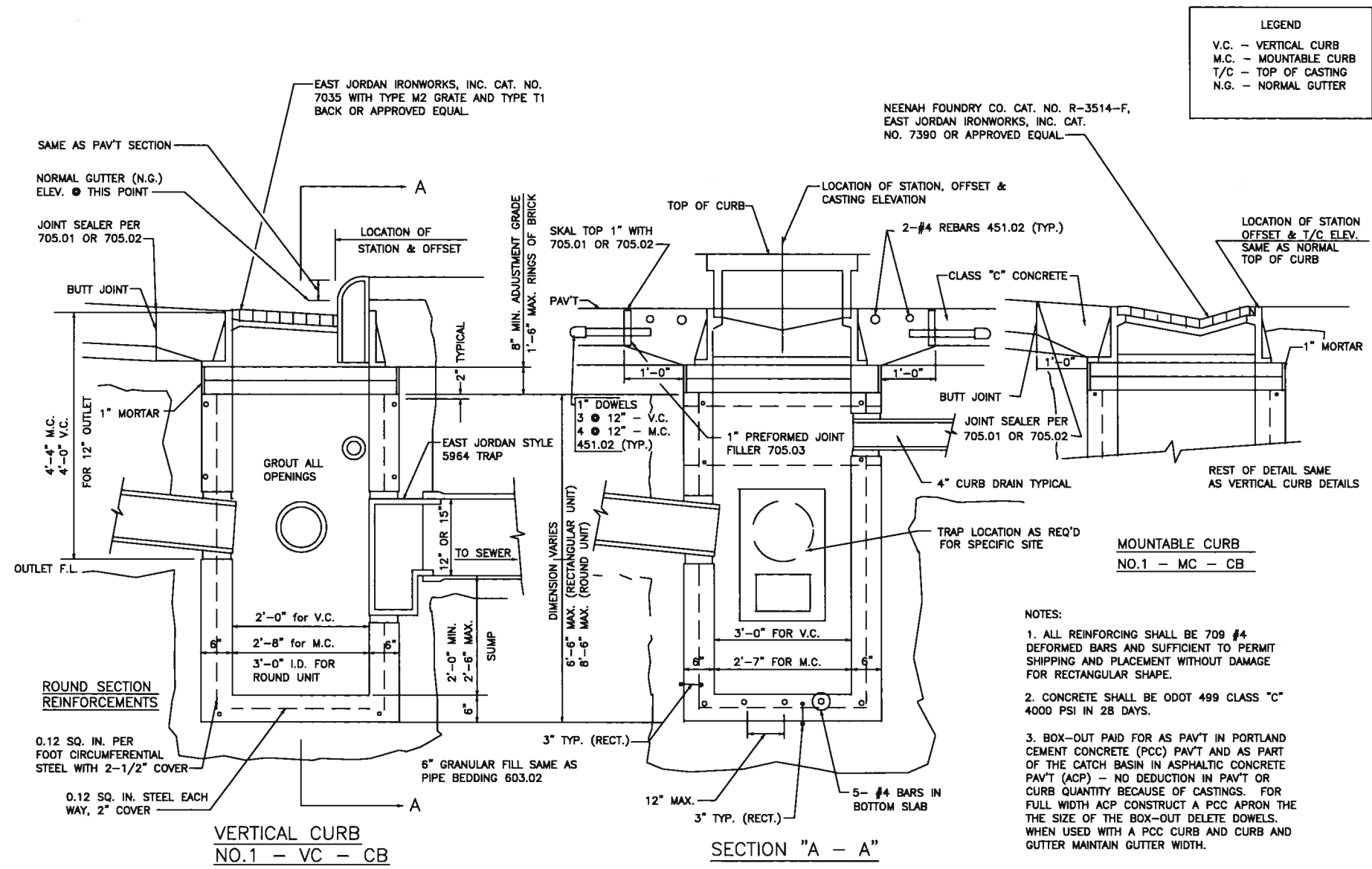


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SEWER DETAILS

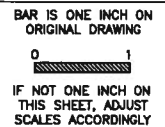
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 SCALE: NONE  
 SHEET NO.: C-13



**ALTERNATE BASIN SHAPE**

A ROUND PRECAST CONCRETE UNIT MAY BE USED IN LIEU OF RECTANGULAR UNIT. THE ROUND SECTION SHALL BE A 36" I.D. UNIT WITH INTEGRAL BASE AND PRECAST TOP TRANSITION (ROUND TO RECTANGULAR) SECTION TO FIT CASTING BEING USED. TRANSITION UNIT REQUIRES A #5 REBAR AT CORNERS OF RECTANGULAR SHAPED SECTION AND 3 x 8 W6 X X W5 WELDED WIRE FABRIC IN VERTICAL SECTION.

**CITY OF CLEVELAND STANDARD CATCH BASIN CB-1**  
NOT TO SCALE



REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: \_\_\_\_\_  
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

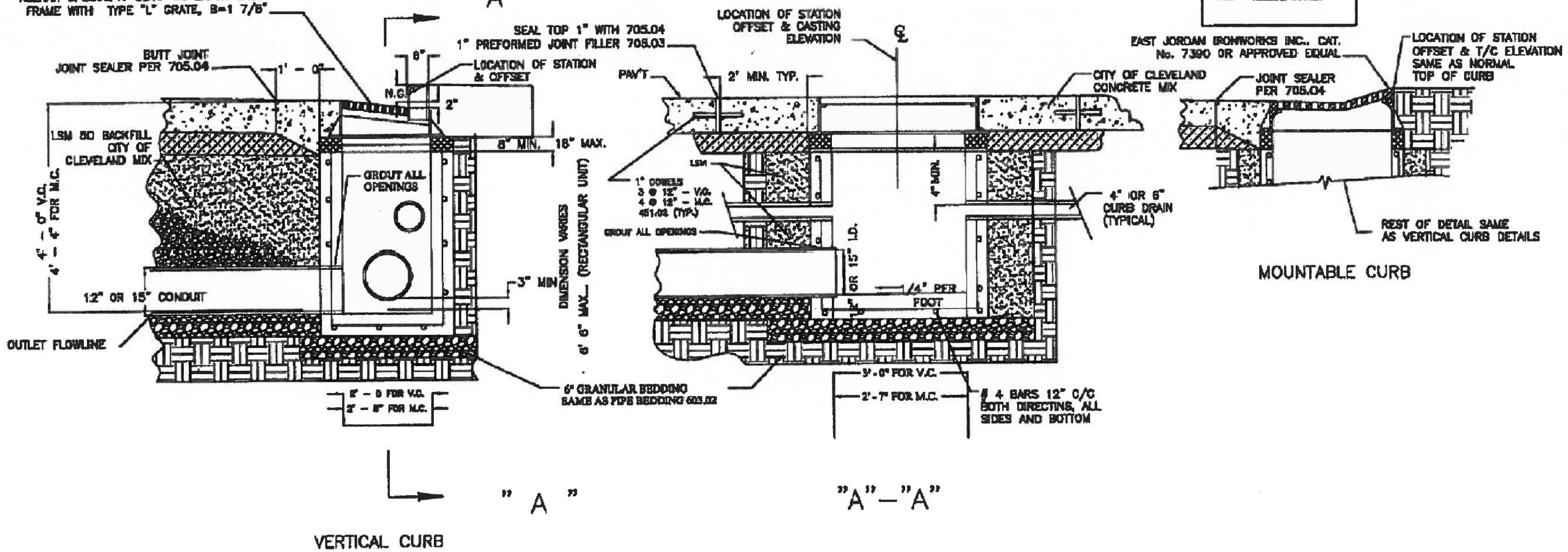
**CITY OF CLEVELAND CATCH BASIN CB-1 DETAIL**

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: NONE  
SHEET NO.: C-14

EAST JORDAN IRONWORKS INC., CAT. No. 7038  
 WITH TYPE M2 GRATE AND TYPE T1 BACK  
 OR APPROVED EQUAL  
 NEENAH SPECIAL R-3248-CL CATCH BASIN  
 FRAME WITH TYPE "L" GRATE, B=1 7/8"

# INLET BASIN

**LEGEND**  
 V.C. = VERTICAL CURB  
 M.C. = MOUNTABLE CURB  
 T/C = TOP OF CASTING  
 N.C. = NORMAL BUTTER



- NOTES**
1. ALL REINFORCING SHALL BE # 4 DEFORMED BARS, AS PER ODOT 709, AND SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE TO RECTANGULAR SHAPE.
  2. CONCRETE SHALL BE ODOT 489 CLASS "C" 4000 PSI IN 28 DAYS.
  3. BOX-OUT SHALL BE PAID FOR AS PAVEMENT IN PORTLAND CEMENT CONCRETE PAVEMENT AND AS PART OF THE CATCH BASIN IN ASPHALTIC CONCRETE PAVEMENT WITH NO REDUCTION IN PAVEMENT OR CURB QUANTITY BECAUSE OF CASTING.
  4. FOR FULL WIDTH ASPHALTIC CONCRETE PAVEMENT- CONSTRUCT A PORTLAND CEMENT CONCRETE APRON.
  5. MINIMUM WALL THICKNESS 8" FOR CAST IN PLACE AND 6" FOR PRECAST

**CITY OF CLEVELAND**  
 DEPARTMENT OF PUBLIC SERVICE  
 DIVISION OF ENGINEERING & CONSTRUCTION  
 JOMARIE WASK-DIRECTOR OF PUBLIC SERVICE  
 STANDARD CONSTRUCTION DRAWING  
 STANDARD RECTANGULAR PRECAST CONCRETE  
 INLET BASIN  
 NOT TO SCALE

DRAWN BY: R. PLIODZINSKAS DATE: 4/8/08  
 SUBMITTED BY: W. McLAUGHLIN DATE: 4/8/08  
 APPROVED: [Signature] DATE: 7-8-09  
 COMMISSIONER OF ENGINEERING & CONSTRUCTION

FILE NO. CB-1 SHEET 2/7 27

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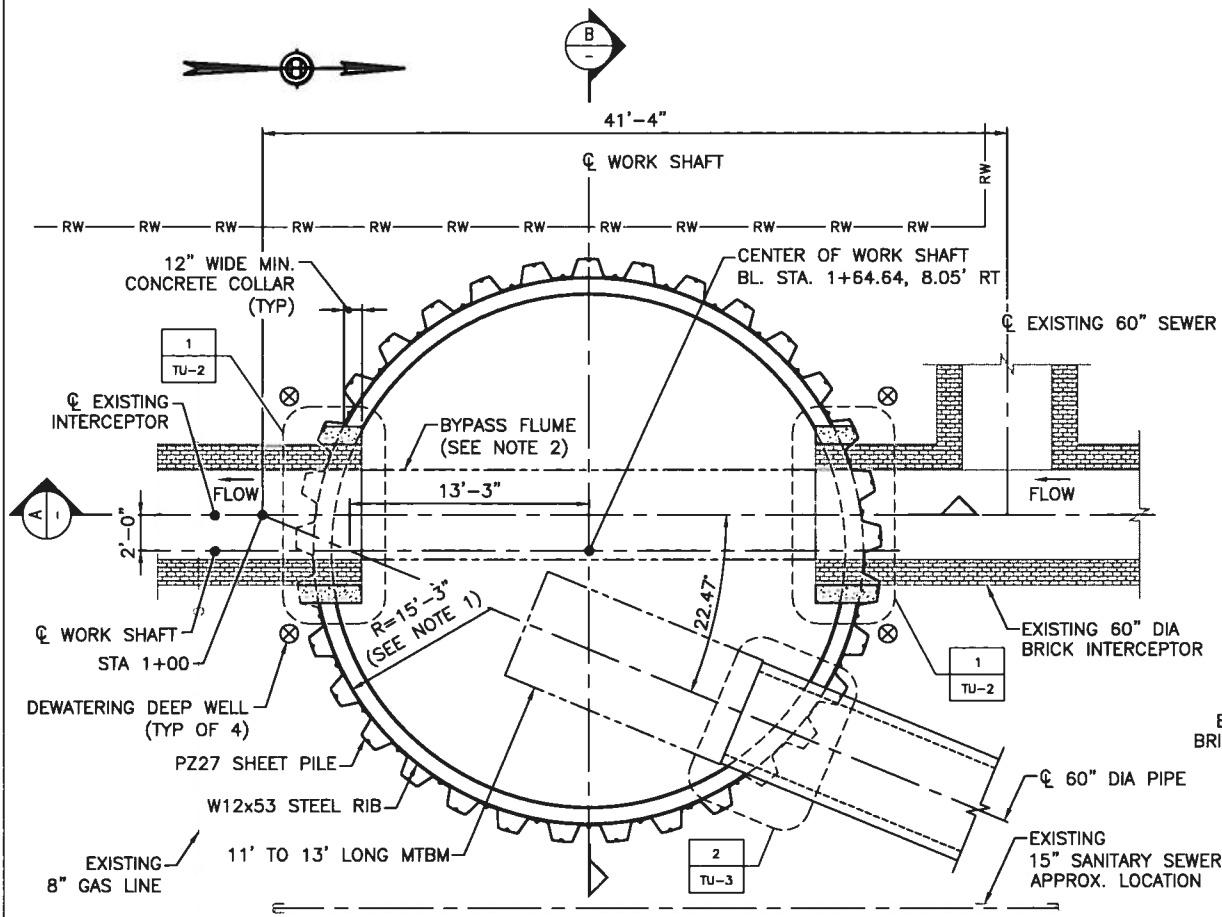


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CITY OF CLEVELAND INLET BASIN DETAIL

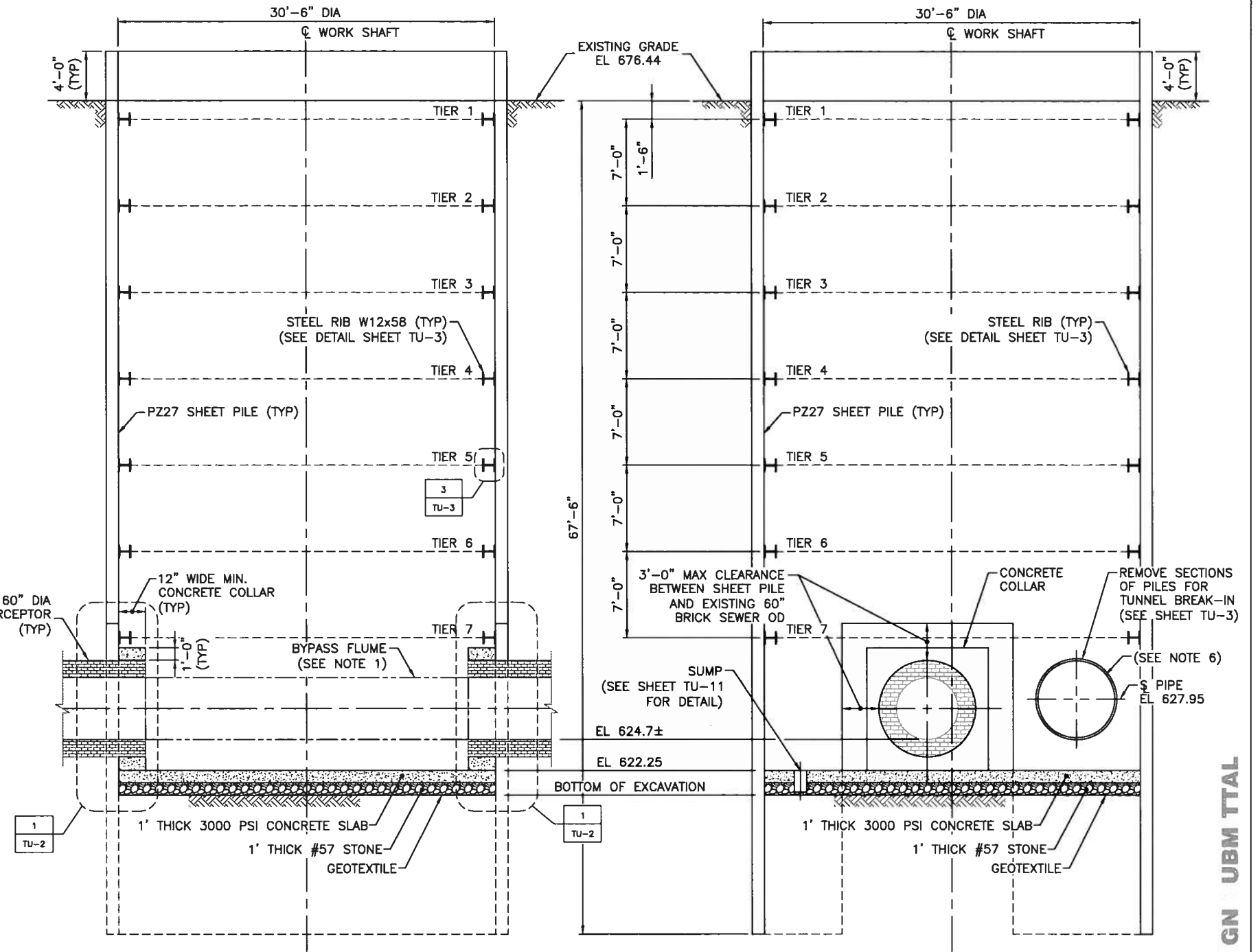
PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: NONE  
 SHEET NO.: C-15



**PLAN VIEW - TUNNEL LEVEL**  
SCALE: 3/16" = 1'-0"

**NOTES:**

- RADIUS BASED ON SHEET PILE MANUFACTURER'S REQUIREMENT - CIRCULAR SHEET PILING LAYOUT DETAILS PROVIDED BY SKYLINE STEEL LLC.
- DESIGN AND INSTALL FLOW BYPASS FLUME FOR 154 CFS CAPACITY.
- REFER TO SHAFT SITE PLANS FOR UTILITY INFORMATION.
- OVERHEAD UTILITIES NOT SHOWN. THEY WILL BE RELOCATED DURING CONSTRUCTION.
- REFER TO SHEET TU-3 FOR SUGGESTED MTBM BULLSEYE ARRANGEMENT AND MISCELLANEOUS DETAILS. FOR CLARITY, BULLSEYE CONCRETE NOT SHOWN ON SECTION VIEW.
- THE APPROXIMATE MTBM DIAMETER IS 64"± FOR CCFRPP AND 76"± FOR POLYMER CONCRETE PIPE.
- ALL STRUCTURAL STEEL MEMBERS INCLUDING SHEET PILES ARE Fy=50 KSI.
- USE E70XX ELECTRODES FOR ALL WELDS.
- THE MAX THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 50 TONS.
- SEE SHEET TU-2 FOR SEQUENCE OF CONSTRUCTION.



**SECTION A**

SCALE: 3/16" = 1'-0"

**SECTION B**

SCALE: 3/16" = 1'-0"



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90 D S GN UBM TTAL

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SHEET CHK'D BY: \_\_\_\_\_  
CROSS CHK'D BY: \_\_\_\_\_  
APPROVED BY: \_\_\_\_\_  
DATE: **APRIL 30, 2010**

**Dawn Underground Engineering, Inc.**  
Tunnel and Underground Structures Consultants  
10 Village Court - Hazlet - New Jersey 07730  
Tel: 732-739-8840 Fax: 732-739-8870

**Northeast Ohio Regional Sewer District**  
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER No. 1 INITIAL SUPPORTS**

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-1

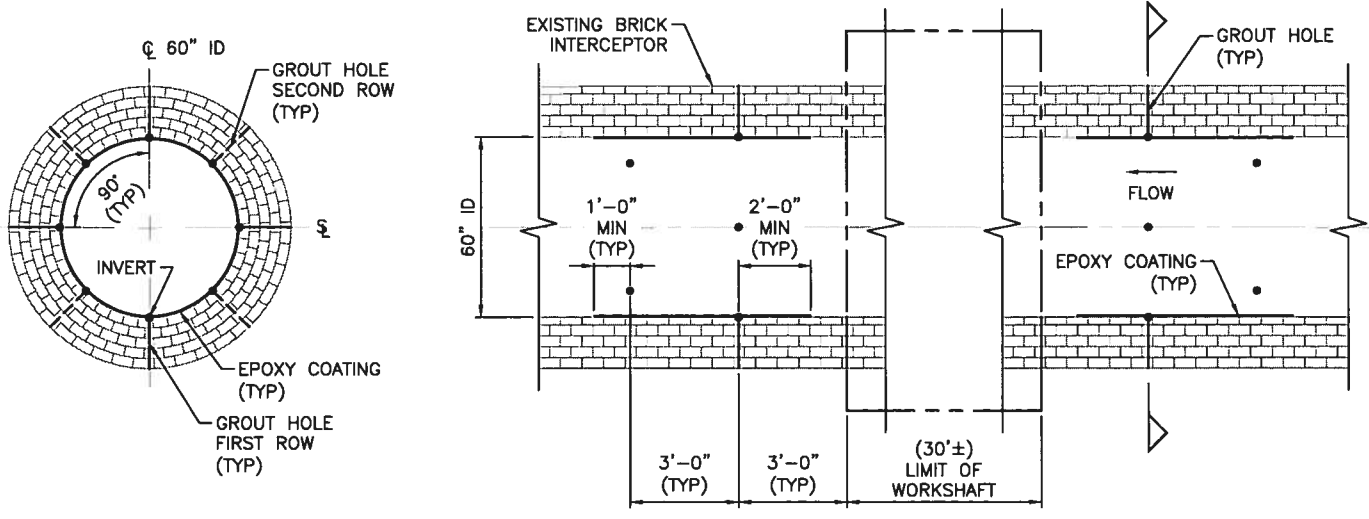
SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT JUNCTION CHAMBER NO. 1

1. INSTALL SHEET PILES TO THE DEPTH SHOWN. IN PROXIMITY OF THE EXISTING INTERCEPTOR, TERMINATE THE SHEET PILES MINIMUM THREE (3) FEET ABOVE AND ON BOTH SIDES OF THE INTERCEPTOR'S EXTERIOR LIMITS.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT THE TUNNEL BREAK-IN LOCATION WITHIN LIMITS INDICATED.
3. FROM WITHIN THE INTERIOR OF THE EXISTING INTERCEPTOR PERFORM CUT-OFF /CONTACT GROUTING OF THE INTERCEPTOR'S EXTERIOR IN A PATTERN SHOWN ON THE DRAWING.
4. INSTALL DEWATERING DEEP WELLS. LOCATE THE WELLS AS CLOSE AS PRACTICAL TO THE EXTERIOR OF THE SHEET PILING AND THE EXISTING INTERCEPTOR TO MINIMUM DEPTH OF TEN (10) FEET BELOW THE LIMIT OF EXCAVATION WITHIN THE WORK SHAFT.
5. START OPERATING DEWATERING WELLS ON 24 HOURS/DAY 7 DAYS/WEEK BASIS.
6. EXCAVATE WORK SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
7. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH BELOW EACH TIER LEVEL AND SUBSEQUENTLY INSTALL EACH TIER STEEL SUPPORTS (FROM TIER 2 THROUGH TIER 6).
8. AFTER INSTALLATION OF THE TIER 6, CONTINUE TO EXCAVATE THE SHAFT TO A MAXIMUM OF 2 FEET DEPTH BELOW TIER 7 LEVEL. DURING THE EXCAVATION EMPLOY STEEL POLLING AND LAGGING PLATES TO COVER THE GAP AND TO CONTROL SOIL INFLOW FROM WITHIN THE GAP BETWEEN THE SHEET PILING AND THE OUTSIDE OF EXISTING INTERCEPTOR. DRIVE THE PLATES BELOW THE EXCAVATION TO MAINTAIN STABLE CONDITIONS AT ALL TIMES. WELD STEEL POLLING/LAGGING PLATES TOGETHER AND TO SHEET PILING TO COMPLETELY CLOSE THE GAP. INSTALL TIER 7 STEEL SUPPORTS (STEEL RIB WALER).
9. CONTINUE TO EXCAVATE THE SHAFT TO THE SPRING LINE LEVEL OF THE EXISTING INTERCEPTOR BY INSTALLING STEEL LAGGING/POLING PLATES WITHIN THE GAP BETWEEN THE SHEET PILING AND EXISTING INTERCEPTOR TO CONTROL SOIL AND WATER INFILTRATION. PROVIDE WATER TIGHT SEAL AND FILL VOIDS IN THIS AREA BY EMPLOYING FOAM, CHEMICAL AND OTHER GROUTING METHODS. WELD ALL STEEL PLATES TOGETHER AND TO SHEET PILES.
10. DURING LOW FLOW CONDITION, SAW CUT THE INTERCEPTOR UP TO ITS SPRING LINE AT FUTURE CONCRETE COLLAR LIMIT AND DEMOLISH AND REMOVE THE TOP HALF OF EXISTING INTERCEPTOR. PROVIDE A FLOW BYPASS SYSTEM FOR THE SEWER FLOW.

11. CONTINUE TO EXCAVATE THE SHAFT TO THE BOTTOM OF THE EXCAVATION BY INSTALLING STEEL LAGGING/POLING PLATES WITHIN THE GAP BETWEEN THE SHEET PILING AND EXISTING INTERCEPTOR TO CONTROL SOIL AND WATER INFILTRATION. PROVIDE WATER TIGHT SEAL AND FILL VOIDS IN THIS AREA BY EMPLOYING FOAM, CHEMICAL AND OTHER GROUTING METHODS. WELD ALL STEEL PLATES TOGETHER AND TO SHEET PILES.
12. DEMOLISH BOTTOM HALF (BELOW SPRING LINE) OF THE EXISTING INTERCEPTOR. PROVIDE SUPPORT TO FLOW BYPASS SYSTEM AS NECESSARY. INSTALL STEEL POSTS ON BOTH SIDES OF THE EXISTING SEWER FROM TIER 7 INTO FUTURE CONCRETE SLAB AS SHOWN ON THE DRAWINGS. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE, CRUSHED STONE BASE AND CONCRETE SLAB.
13. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. PLACE CONCRETE COLLAR AROUND THE EXISTING INTERCEPTOR. ALLOW THE CONCRETE SLAB AND COLLAR TO GAIN THE DESIGN STRENGTH. STOP OPERATING DEWATERING WELLS. IF THE AREA AROUND THE EXISTING INTERCEPTOR SHOWS LEAKAGE, CORRECT THE PROBLEM BY WELDING, GROUTING AND SEALING UNTIL TOTAL STABILITY IS ASSURED.
14. CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

PROCEDURE FOR BREAK-IN FOR DRIVE 1

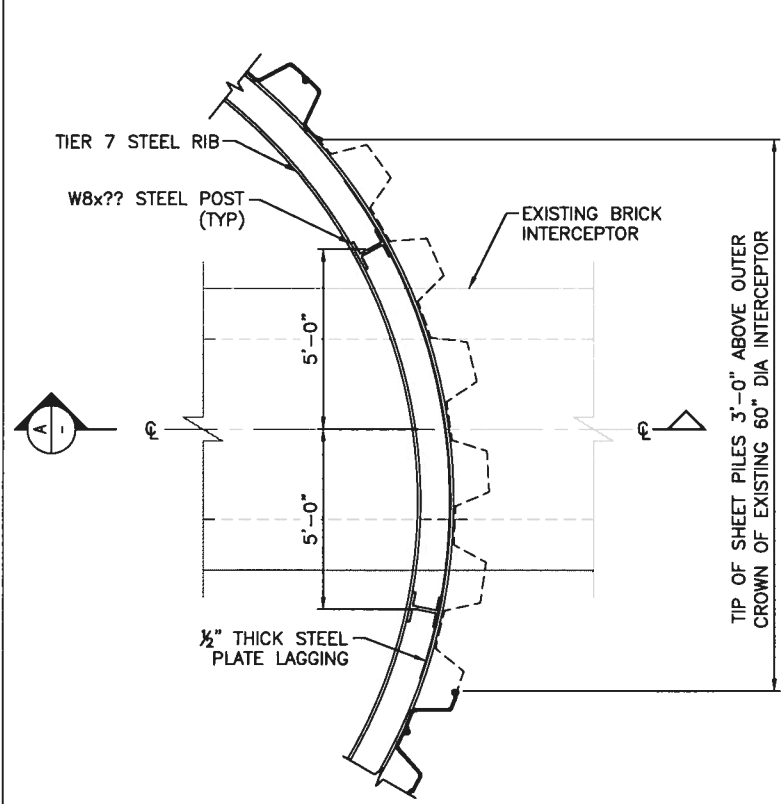
15. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN LOCATION TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULL'S EYE.
16. TEST THE BULL'S EYE AREA FOR WATER TIGHTNESS BY DRILLING TEST PORTS. PROVIDE ADDITIONAL GROUTING AS NECESSARY TO ELIMINATE ANY LEAKAGE. WHEN ACCEPTABLE, CUT THE MAIN SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AREA (BULL'S EYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL THE BULL'S EYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULL'S EYE ZONE.
17. PLACE CONCRETE FOR AND INSTALL STEEL BULL'S EYE SEAL PLATE AT THE TUNNEL BREAK-IN FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 1.
18. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE CARRIER PIPE THROUGH THE PIPE GROUT PORTS BEFORE THE SEALS ARE REMOVED AT BULL'S EYES OF THE DRIVE.



NOTE: GROUT HOLE PATTERN FOR CUT-OFF & CONTACT GROUTING FROM EXISTING INTERCEPTOR.

GROUT HOLE PATTERN

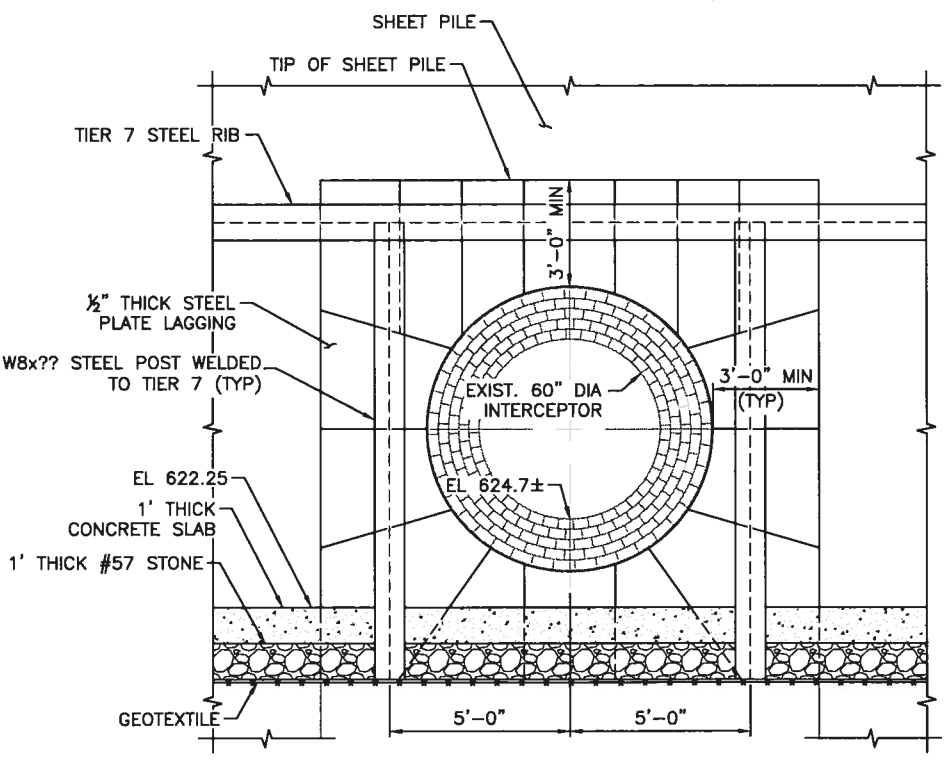
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PLAN VIEW

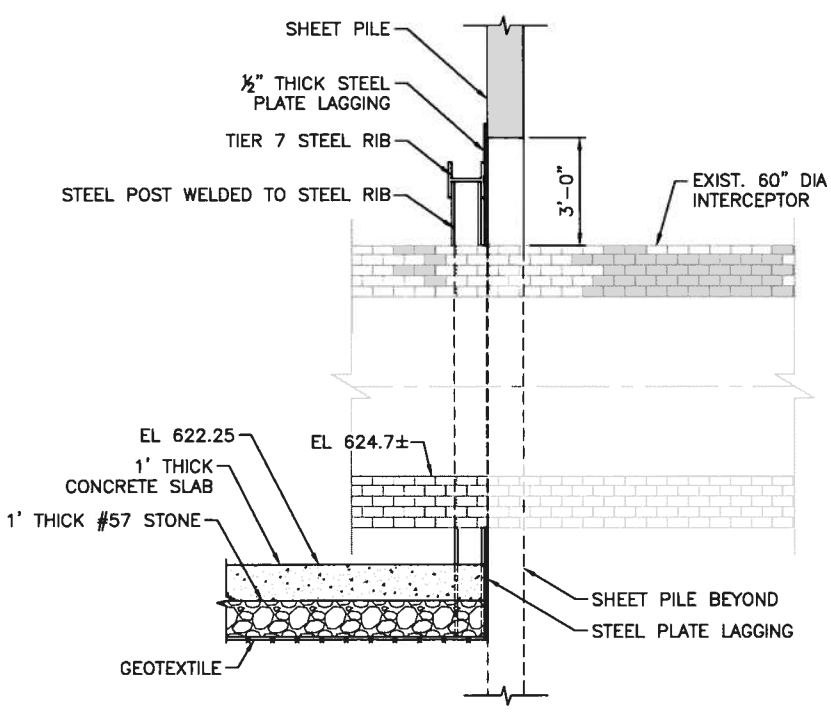
SCALE: 3/8" = 1'-0"

1  
TU-1



FRONT ELEVATION

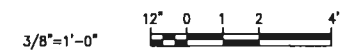
SCALE: 3/8" = 1'-0"



SECTION

SCALE: 3/8" = 1'-0"

A



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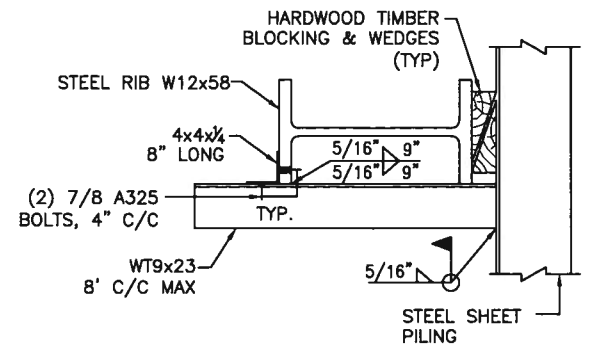
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WALWORTH RUN INTERCEPTOR REALIGNMENT

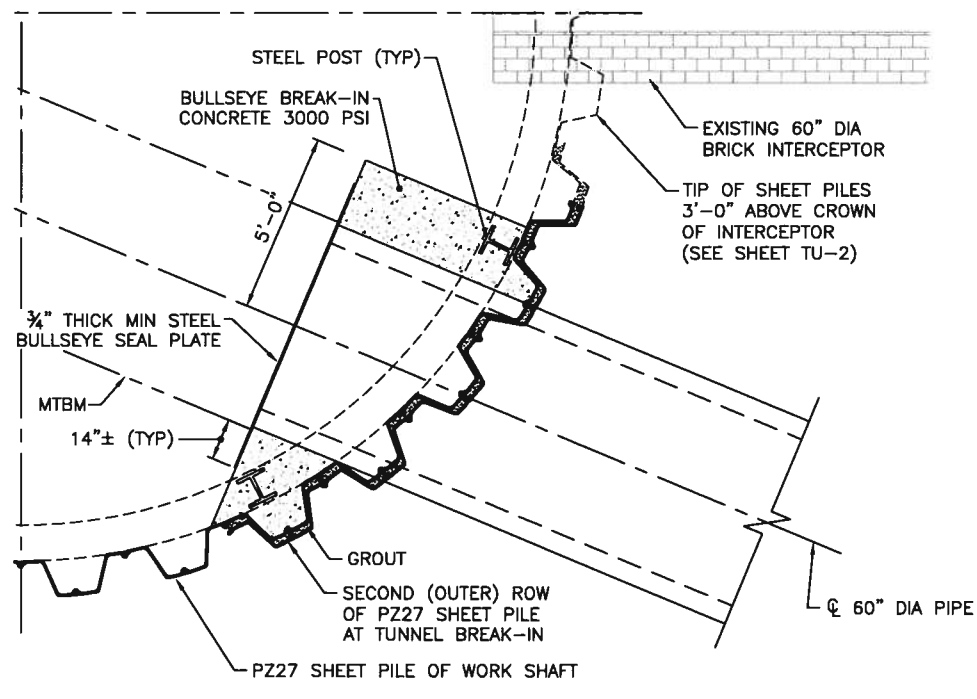
JUNCTION CHAMBER No. 1  
SUPPORTS AT EXISTING INTERCEPTOR

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-2

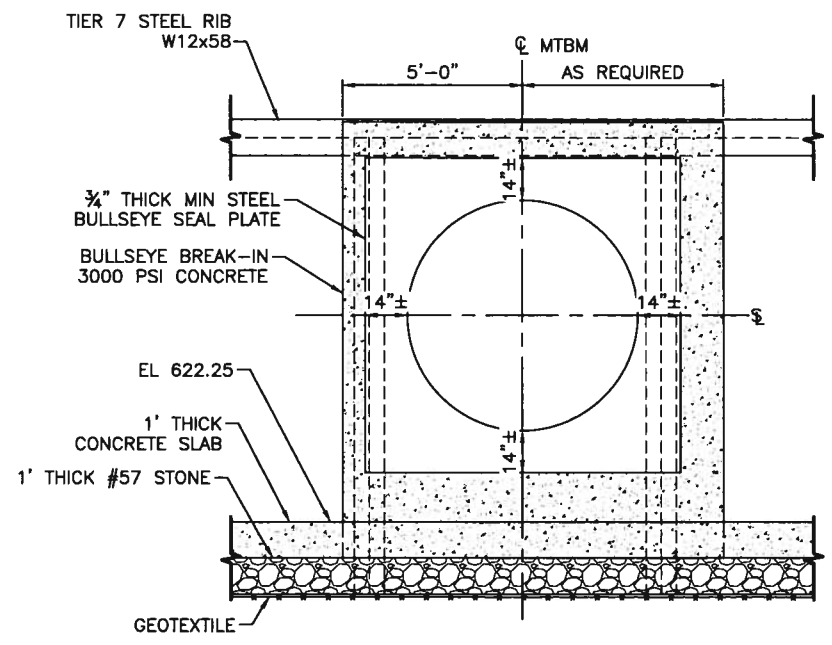




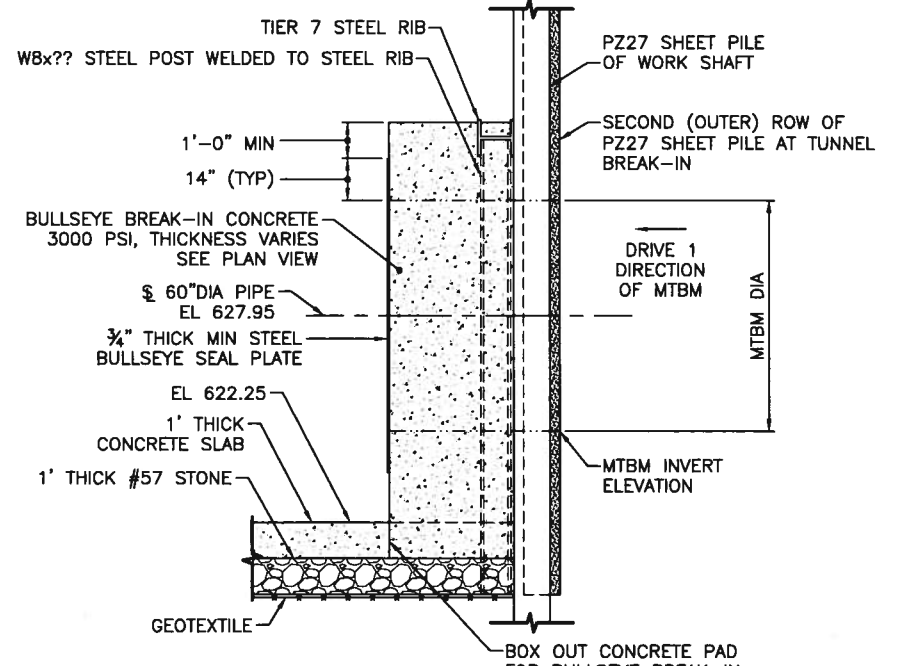
**RIB SEAT DETAIL**  
SCALE: N.T.S. 3  
TU-1



**PLAN VIEW  
TUNNEL BREAK-IN DETAIL** 2  
SCALE: 3/8" = 1'-0" TU-1

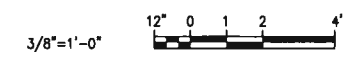


**ELEVATION  
TUNNEL BREAK-IN DETAIL**  
SCALE: 3/8" = 1'-0"



**SECTION  
TUNNEL BREAK-IN DETAIL**  
SCALE: 3/8" = 1'-0"

NOTE:  
NO DEWATERING IS REQUIRED FOR TUNNEL BREAK-IN.



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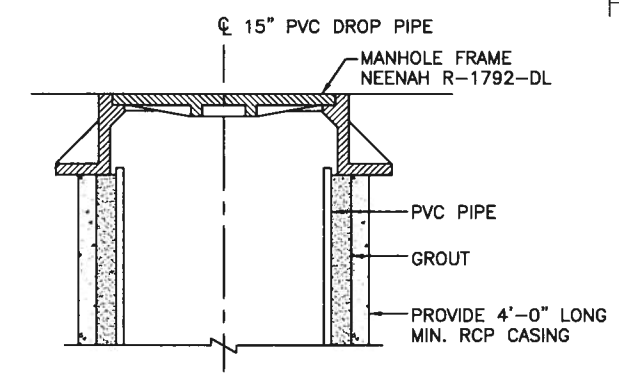
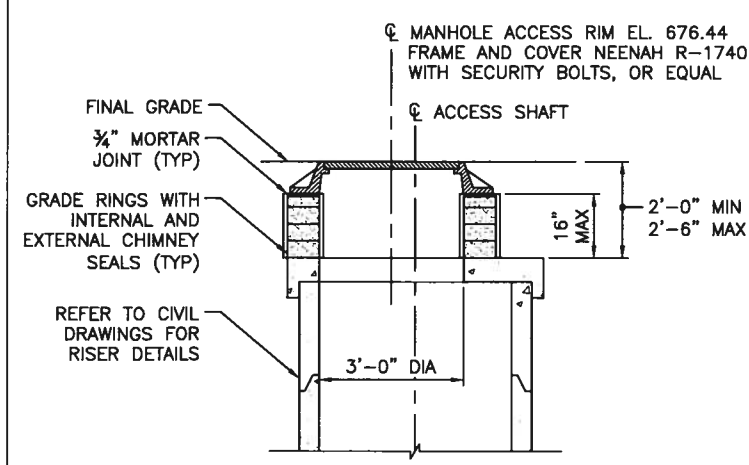
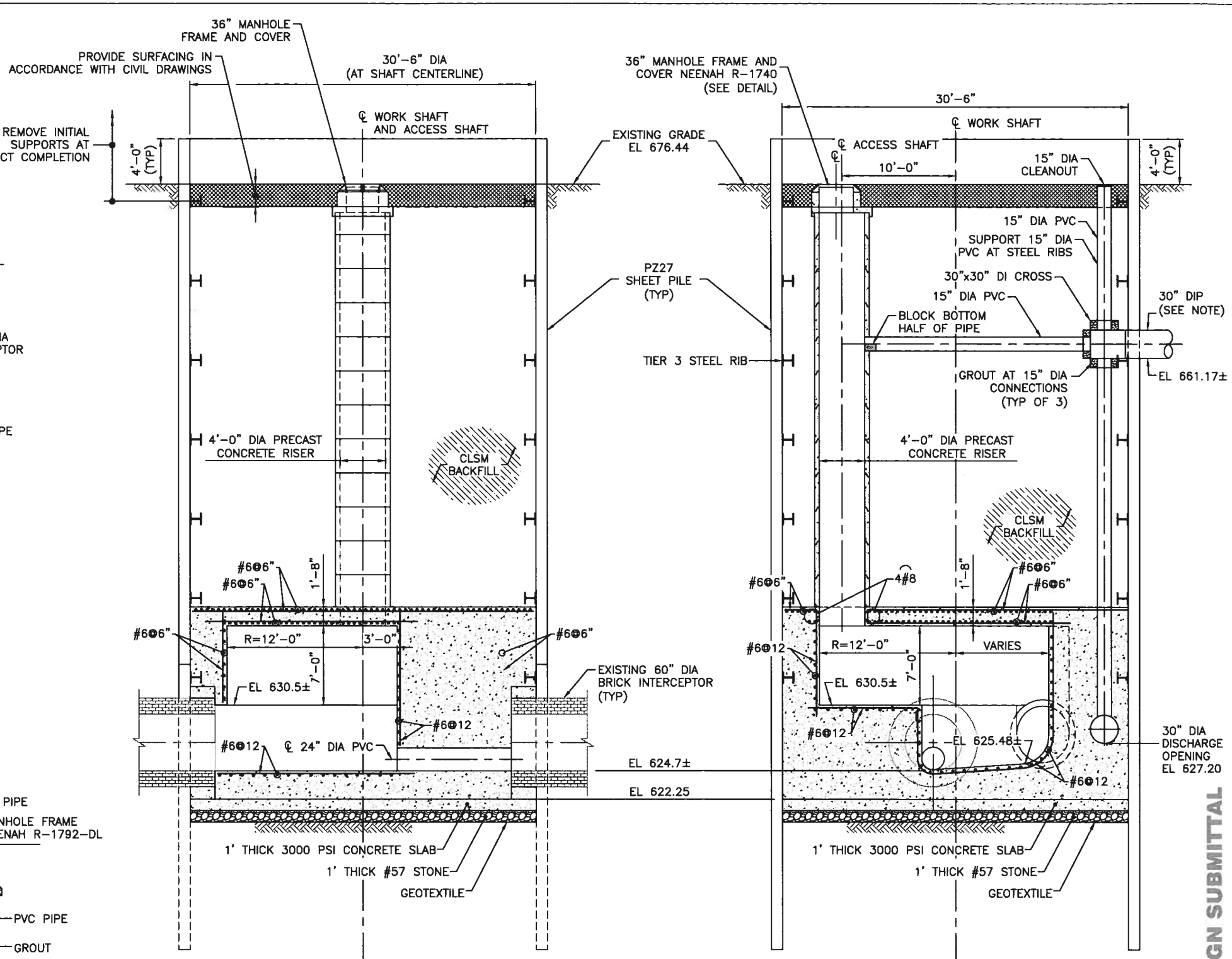
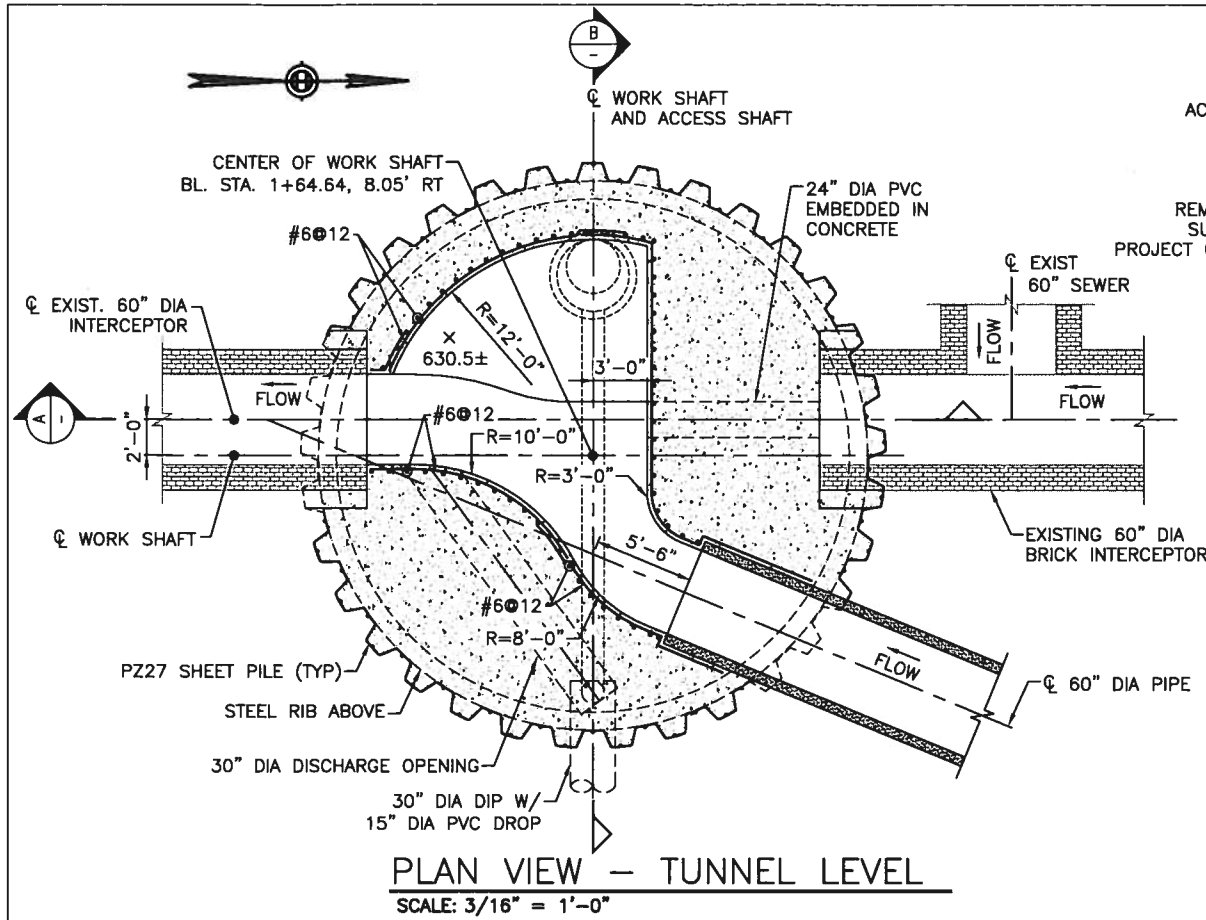
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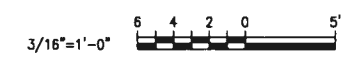
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**JUNCTION CHAMBER No. 1 BULLSEYE AND MISCELLANEOUS DETAILS**

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-3



NOTE: BEFORE INSTALLING 30" DIP AND 30"x30" CROSS, BACKFILL SHAFT TO 2 FT BELOW TIER 3 STEEL RIB. THEN REMOVE TIER 3 STEEL RIB AND INSTALL DI PIPING.



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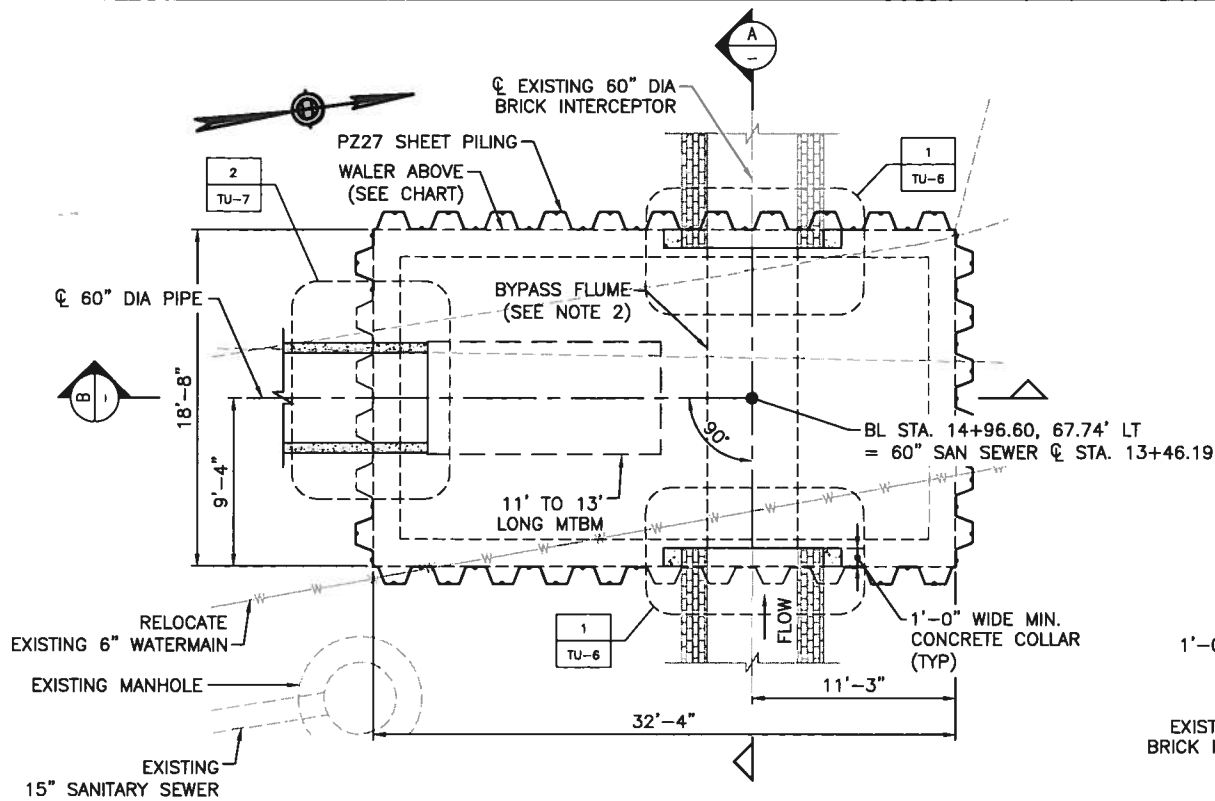
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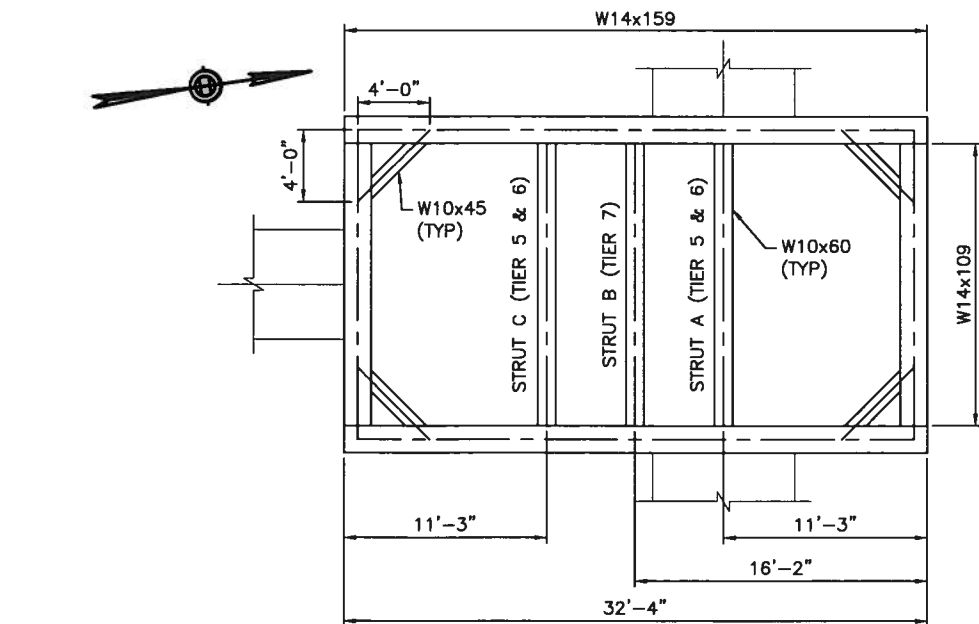
WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER No. 1 STRUCTURE DETAILS  
 PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 3/16"=1'-0"  
 SHEET NO.: TU-4

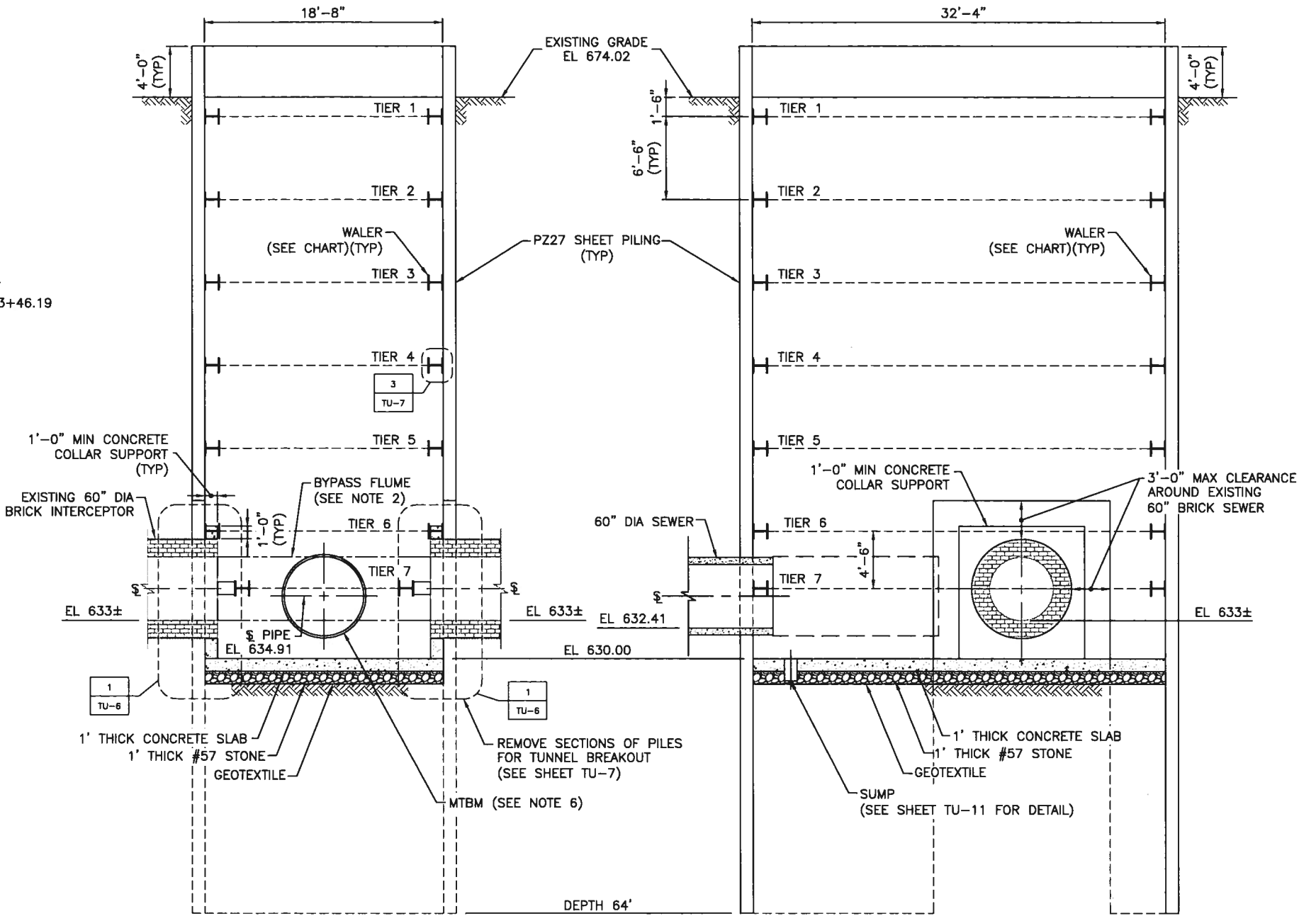
90% DESIGN SUBMITTAL



**PLAN VIEW - TUNNEL LEVEL**  
SCALE: 3/16" = 1'-0"



**WALER SIZE CHART**  
SCALE: N.T.S.



**SECTION A**  
SCALE: 3/16" = 1'-0"

**SECTION B**  
SCALE: 3/16" = 1'-0"

**NOTES:**

1. SUPPORT DIMENSIONS BASED ON SHEET PILE MANUFACTURER'S REQUIREMENT.
2. DESIGN AND INSTALL FLOW BYPASS FLUME FOR 154 CFS CAPACITY.
3. REFER TO SHAFT SITE PLANS FOR UTILITY INFORMATION.
4. OVERHEAD UTILITIES NOT SHOWN. THEY WILL BE RELOCATED DURING CONSTRUCTION.
5. REFER TO SHEET TU-3 FOR SUGGESTED MTBM BULLSEYE ARRANGEMENT AND MISCELLANEOUS DETAILS. FOR CLARITY, BULLSEYE CONCRETE NOT SHOWN ON SECTION VIEW.
6. THE APPROXIMATE MTBM DIAMETER IS 64"± FOR CCFRPP AND 76"± FOR POLYMER CONCRETE PIPE.
7. ALL STRUCTURAL STEEL MEMBERS INCLUDING SHEET PILES ARE F<sub>y</sub>=50 KSI.
8. USE E70XX ELECTRODES FOR ALL WELDS.
9. THE MAX THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 50 TONS.
10. SEE SHEET TU-6 FOR SEQUENCE OF CONSTRUCTION.



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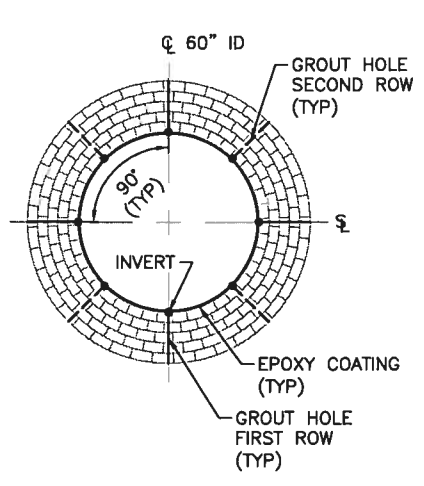
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER No. 2 INITIAL SUPPORTS**

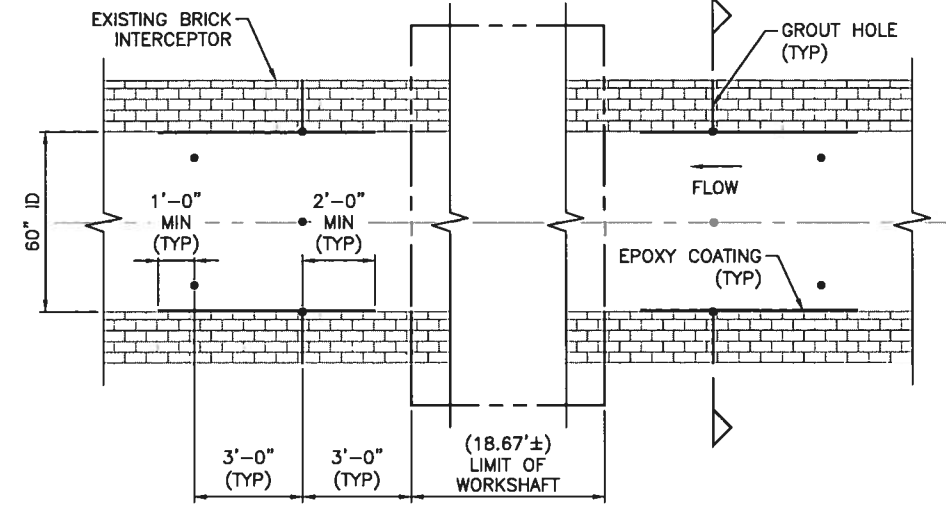
PROJECT NO.:	
SHEET:	
SCALE:	3/16"=1'-0"
SHEET NO.:	TU-5



NOTE: GROUT HOLE PATTERN FOR CUT-OFF & CONTACT GROUTING FROM EXISTING INTERCEPTOR.

**GROUT HOLE PATTERN**

SCALE: 3/8" = 1'-0"



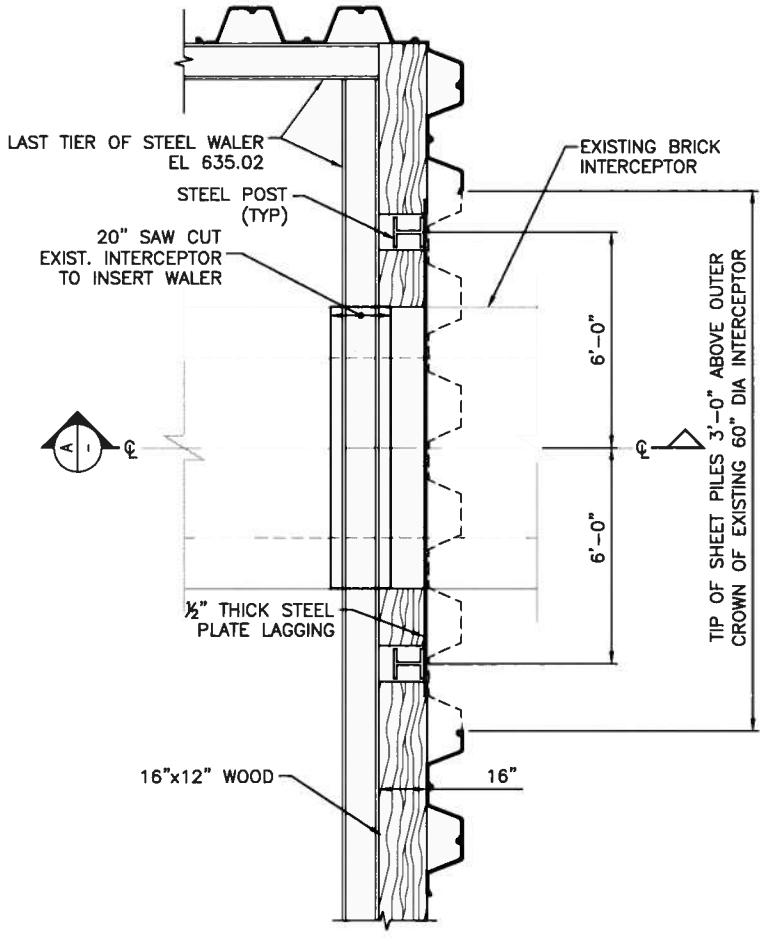
**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT JUNCTION CHAMBER NO. 2**

1. INSTALL SHEET PILES TO THE DEPTH SHOWN. IN PROXIMITY OF THE EXISTING INTERCEPTOR, TERMINATE THE SHEET PILES MINIMUM THREE (3) FEET ABOVE AND ON BOTH SIDES OF THE INTERCEPTOR'S EXTERIOR LIMITS.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT THE TUNNEL BREAK-IN LOCATION WITHIN LIMITS INDICATED.
3. FROM WITHIN THE INTERIOR OF THE EXISTING INTERCEPTOR PERFORM CUT-OFF /CONTACT GROUTING OF THE INTERCEPTOR'S EXTERIOR IN A PATTERN SHOWN ON THE DRAWING.
4. INSTALL DEWATERING DEEP WELLS. LOCATE THE WELLS AS CLOSE AS PRACTICAL TO THE EXTERIOR OF THE SHEET PILING AND THE EXISTING INTERCEPTOR WITH AND TO MINIMUM DEPTH OF TEN (10) FEET BELOW THE LIMIT OF EXCAVATION WITHIN THE WORK SHAFT.
5. START OPERATING DEWATERING WELLS ON 24 HOURS/DAY 7 DAYS/WEEK BASIS.
6. EXCAVATE WORK SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
7. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH BELOW EACH TIER LEVEL AND SUBSEQUENTLY INSTALL EACH TIER STEEL SUPPORTS (FROM TIER 2 THROUGH TIER 5). INSTALL ONLY STRUT A FOR TIER 5.
8. AFTER INSTALLATION OF TIER 5, CONTINUE TO EXCAVATE THE SHAFT TO A MAXIMUM OF 2 FEET DEPTH BELOW TIER 6 LEVEL. DURING THE EXCAVATION EMPLOY STEEL POLLING AND LAGGING PLATES TO COVER THE GAP AND TO CONTROL SOIL INFLOW FROM WITHIN THE GAP BETWEEN THE SHEET PILING AND THE OUTSIDE OF EXISTING INTERCEPTOR. DRIVE THE PLATES BELOW THE EXCAVATION TO MAINTAIN STABLE CONDITIONS AT ALL TIMES. WELD STEEL POLLING/LAGGING PLATES TOGETHER AND TO SHEET PILING TO COMPLETELY CLOSE THE GAP. INSTALL TIER 6 STEEL SUPPORTS (WALERS AND STRUTS). INSTALL ONLY STRUT A FOR TIER 6.
9. CONTINUE TO EXCAVATE THE SHAFT TO A MAXIMUM OF 2 FEET DEPTH BELOW TIER 7 LEVEL. DURING THE EXCAVATION EMPLOY STEEL POLLING AND LAGGING PLATES TO COVER THE GAP AND TO CONTROL SOIL INFLOW FROM WITHIN THE GAP BETWEEN THE SHEET PILING AND THE OUTSIDE OF EXISTING INTERCEPTOR. DRIVE THE PLATES BELOW THE EXCAVATION TO MAINTAIN STABLE CONDITIONS AT ALL TIMES. WELD STEEL POLLING/LAGGING PLATES TOGETHER AND TO SHEET PILING TO COMPLETELY CLOSE THE GAP.
10. DURING LOW FLOW CONDITION, SAW CUT THE INTERCEPTOR AT THE FUTURE CONCRETE COLLAR LIMIT JUST BELOW THE SPRING LINE OF INTERCEPTOR THAT CAN ACCOMMODATE TIER 7 STEEL SUPPORTS. DEMOLISH AND REMOVE THE SAW CUT TOP HALF OF EXISTING INTERCEPTOR. INSTALL TIER 7 STEEL SUPPORTS. INSTALL STRUT B FOR TIER 7. PROVIDE A FLOW BYPASS SYSTEM FOR THE SEWER FLOW.

11. CONTINUE TO EXCAVATE THE SHAFT TO THE LIMIT OF THE EXCAVATION BY INSTALLING STEEL LAGGING/POLING PLATES WITHIN THE GAP BETWEEN THE SHEET PILING AND EXISTING INTERCEPTOR TO CONTROL SOIL AND WATER INFILTRATION. PROVIDE WATER TIGHT SEAL AND FILL VOIDS IN THIS AREA BY EMPLOYING FOAM, CHEMICAL AND OTHER GROUTING METHODS. WELD ALL STEEL PLATES TOGETHER AND TO SHEET PILES.
12. DEMOLISH BOTTOM HALF (BELOW SPRING LINE) OF THE EXISTING INTERCEPTOR. PROVIDE SUPPORT TO FLOW BYPASS SYSTEM AS NECESSARY. INSTALL STEEL POSTS ON BOTH SIDES OF THE EXISTING SEWER FROM TIER 6 INTO FUTURE CONCRETE SLAB AS SHOWN ON THE DRAWINGS. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE, CRUSHED STONE BASE AND CONCRETE SLAB.
13. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. PLACE CONCRETE COLLAR AROUND THE EXISTING INTERCEPTOR. ALLOW THE CONCRETE SLAB AND COLLAR TO GAIN THE DESIGN STRENGTH. STOP OPERATING DEWATERING WELLS. IF THE AREA AROUND THE EXISTING INTERCEPTOR SHOWS LEAKAGE, CORRECT THE PROBLEM BY WELDING, GROUTING AND SEALING UNTIL TOTAL STABILITY IS ASSURED.
14. REMOVE STEEL SUPPORTS FOR TIER 7 (I.E., WALERS & STRUT B).
15. CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PROCEDURE FOR BREAK-IN FOR DRIVE 3**

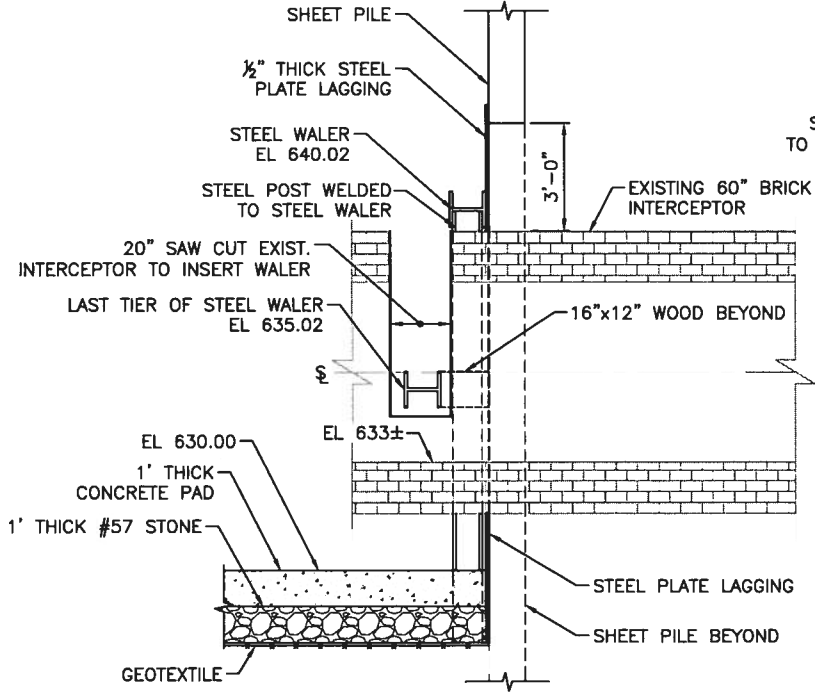
16. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN LOCATION TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULL'S EYE.
17. TEST THE BULL'S EYE AREA FOR WATER TIGHTNESS BY DRILLING TEST PORTS. PROVIDE ADDITIONAL GROUTING AS NECESSARY TO ELIMINATE ANY LEAKAGE. WHEN ACCEPTABLE, CUT THE MAIN SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AREA (BULL'S EYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL THE BULL'S EYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULL'S EYE ZONE.
18. PLACE CONCRETE FOR AND INSTALL STEEL BULL'S EYE SEAL PLATE AT THE TUNNEL BREAK-IN FOR DRIVE 3. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICRO TUNNEL BORING MACHINE (MTBM) FOR DRIVE 3.
19. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE CARRIER PIPE THROUGH THE PIPE GROUT PORTS BEFORE THE SEALS ARE REMOVED AT BULL'S EYES OF THE DRIVE.
20. AFTER RETRIEVING MTBM FROM WORK SHAFT, INSTALL STRUT C FOR TIER 5 AND TIER 6. SUBSEQUENTLY REMOVE STRUT A FOR TIER 5 AND TIER 6 TO FACILITATE REMAINING CONSTRUCTION OF JUNCTION CHAMBER.



**PLAN VIEW**

SCALE: 3/8" = 1'-0"

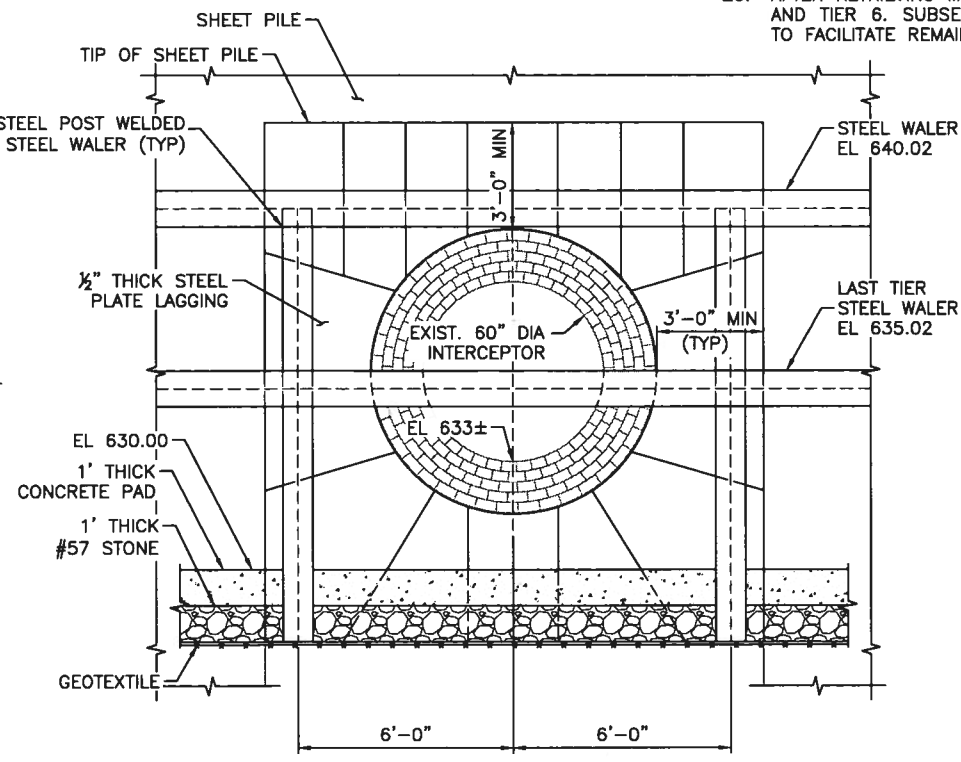
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TU-5



**SECTION**

SCALE: 3/8" = 1'-0"

A



**FRONT ELEVATION**

SCALE: 3/8" = 1'-0"



BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWN BY: \_\_\_\_\_  
SHEET CHK'D BY: \_\_\_\_\_  
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APPROVED BY: \_\_\_\_\_  
DATE: APRIL 30, 2010

**Dawn Underground Engineering, Inc.**  
Tunnel and Underground Structures Consultants  
10 Village Court - Hazlet - New Jersey 07730  
Tel: 732-739-8840 Fax: 732-739-8870

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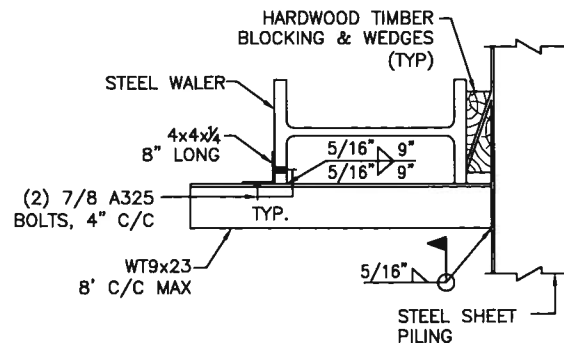
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**JUNCTION CHAMBER NO. 2 SUPPORTS AT EXISTING INTERCEPTOR**

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-6

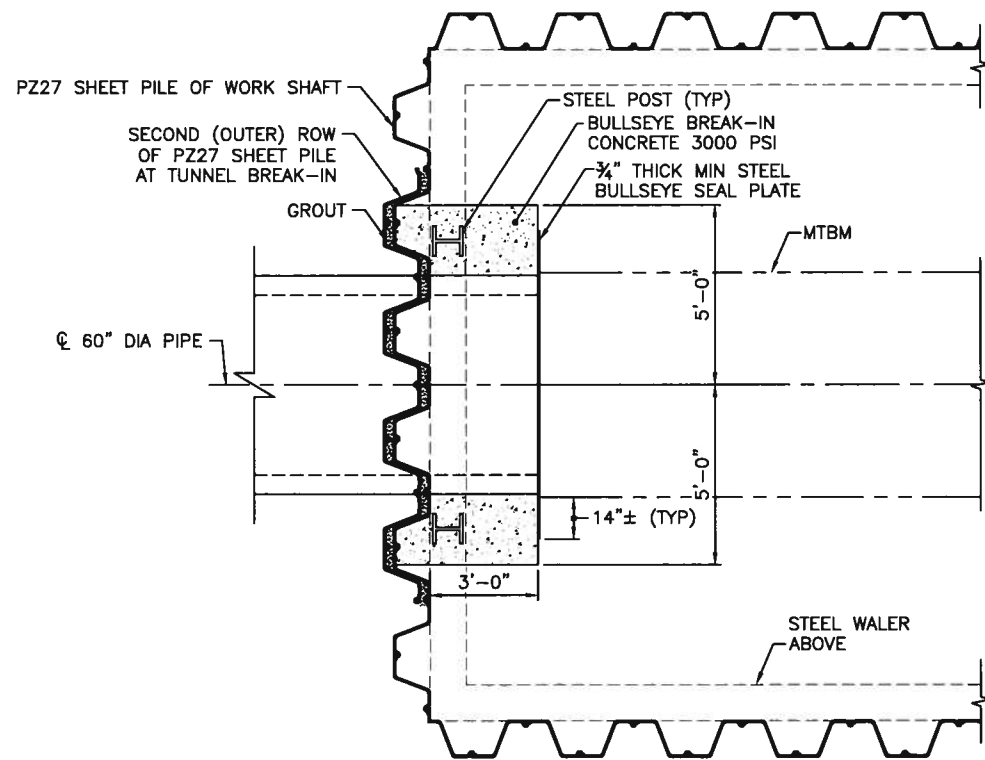
90 DESIGN SUBMITTAL



WALER SEAT DETAIL

SCALE: N.T.S.

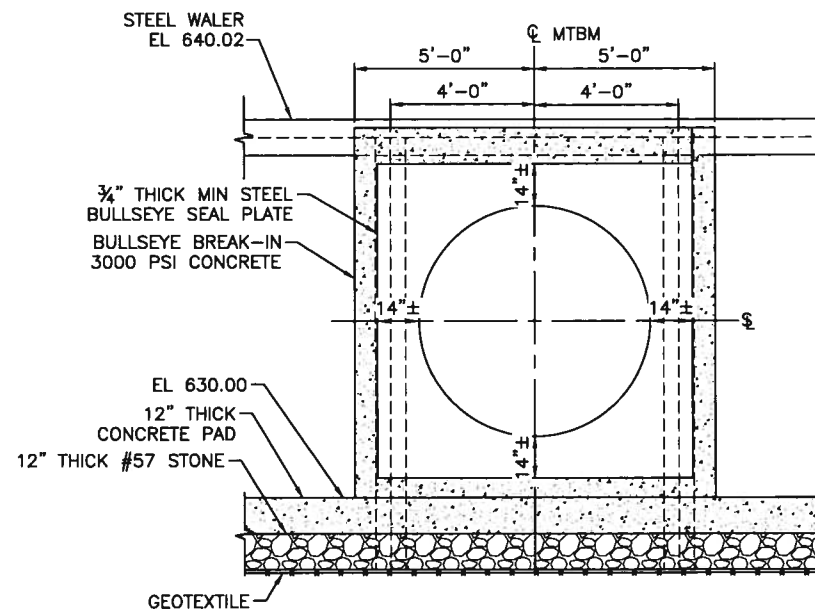
3  
TU-5



PLAN VIEW TUNNEL BREAK-IN DETAIL

SCALE: 3/8" = 1'-0"

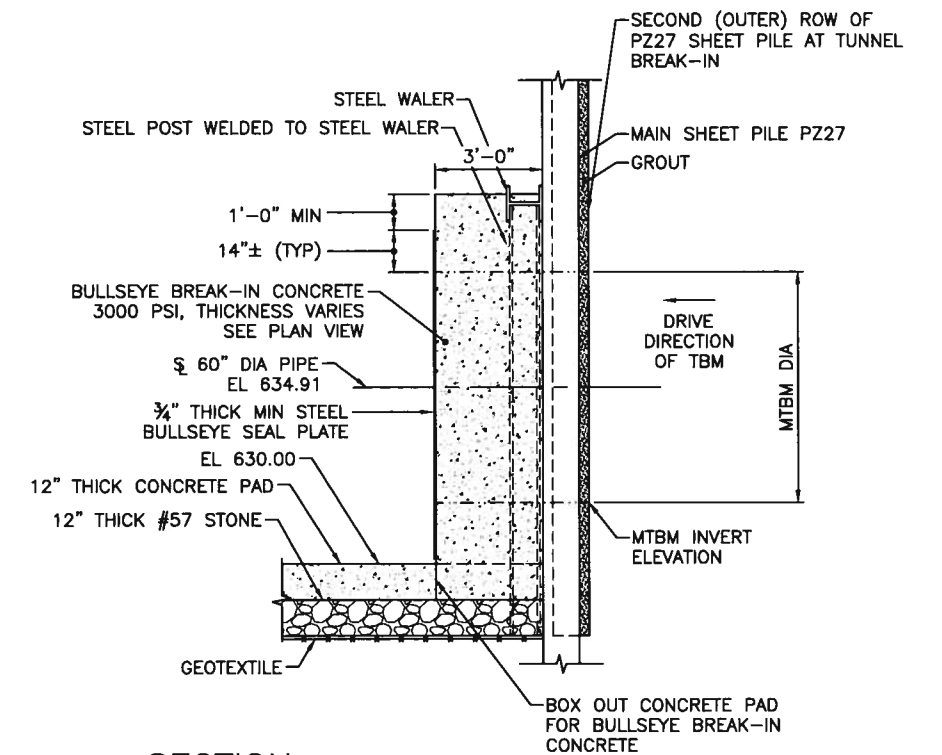
2  
TU-5



ELEVATION TUNNEL BREAK-IN DETAIL

SCALE: 3/8" = 1'-0"

NOTE:  
NO DEWATERING IS REQUIRED FOR TUNNEL BREAK-IN.



SECTION TUNNEL BREAK-IN DETAIL

SCALE: 3/8" = 1'-0"

3/8"=1'-0"



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 0 1  
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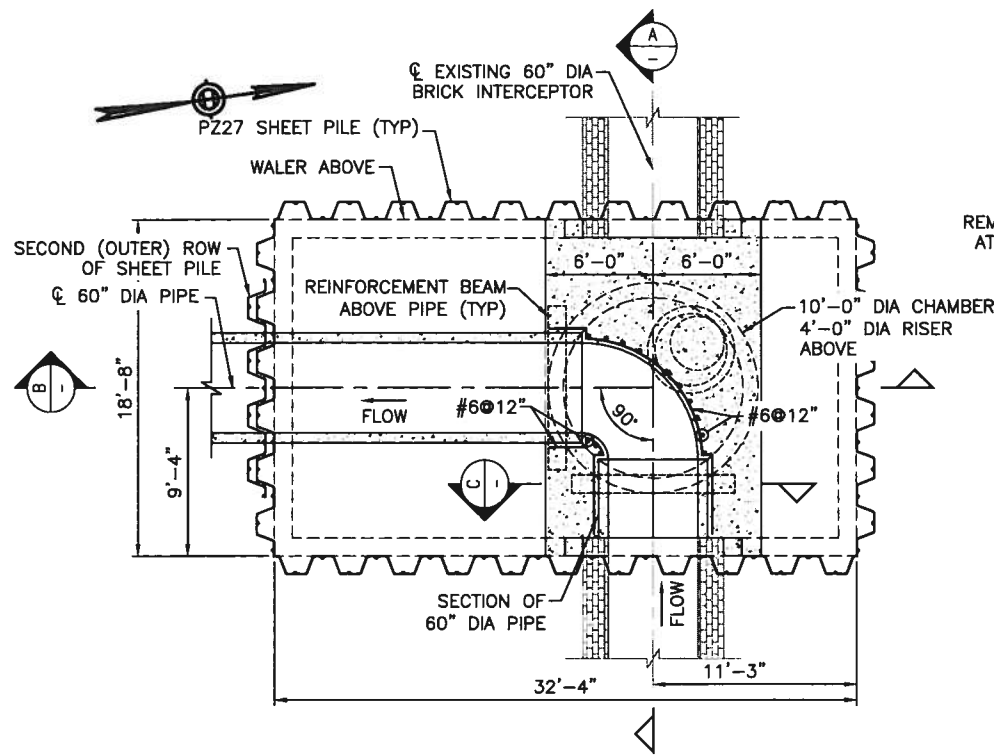
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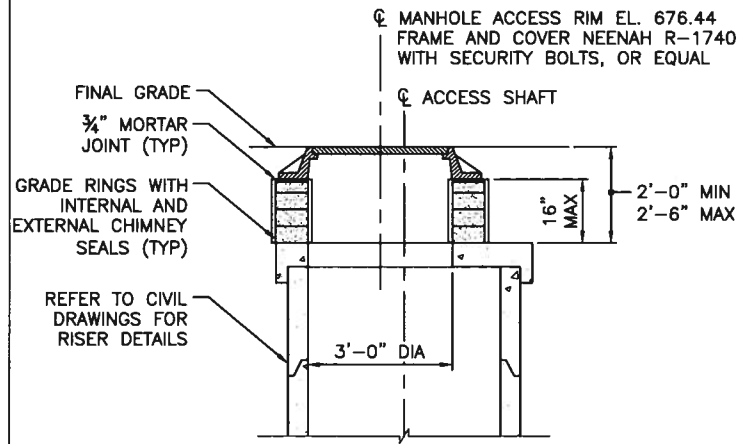
WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER No. 2 BULLSEYE AND MISCELLANEOUS DETAILS

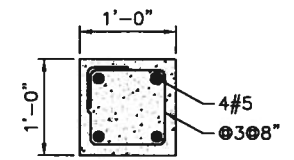
PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 3/16"=1'-0"  
 SHEET NO.: TU-7



**PLAN VIEW - TUNNEL LEVEL**  
SCALE: 3/16" = 1'-0"

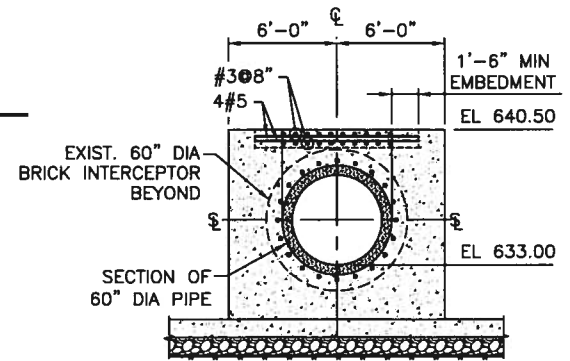


**FRAME AND COVER 36" MANHOLE DETAIL**  
SCALE: N.T.S.

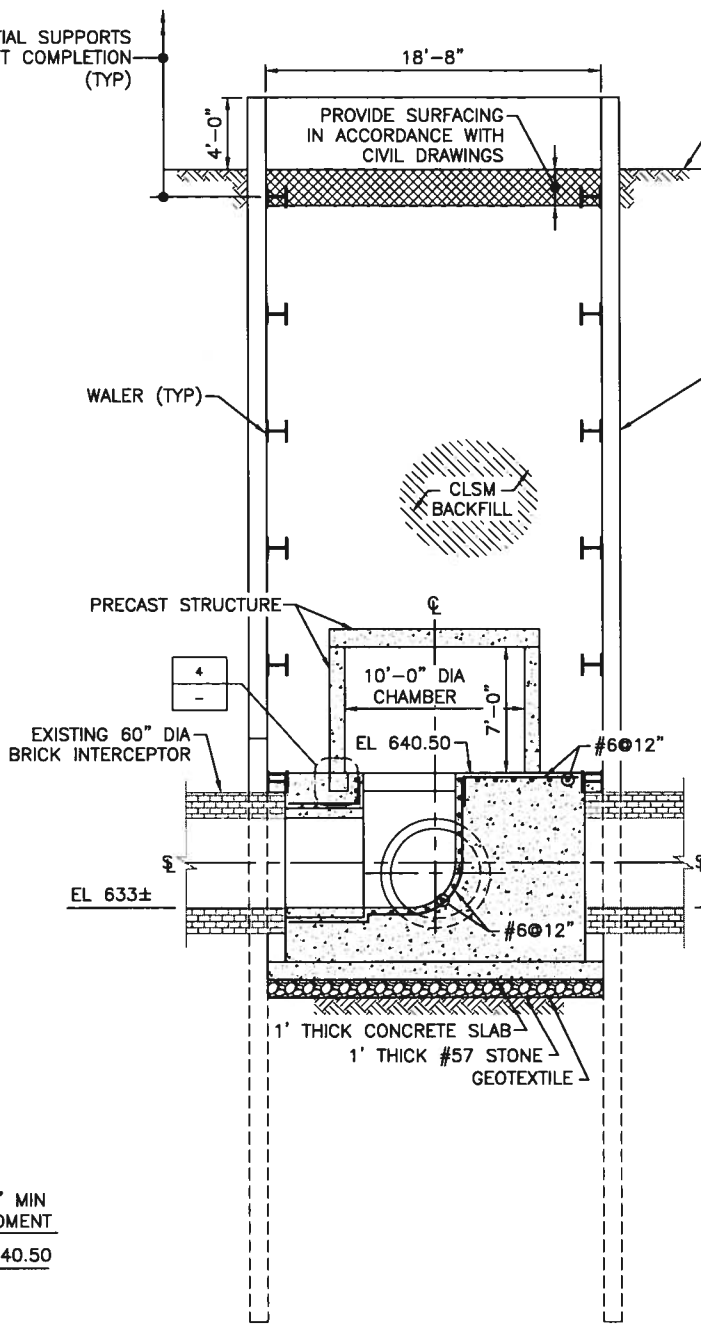


**REINFORCEMENT BEAM DETAIL**  
SCALE: N.T.S.

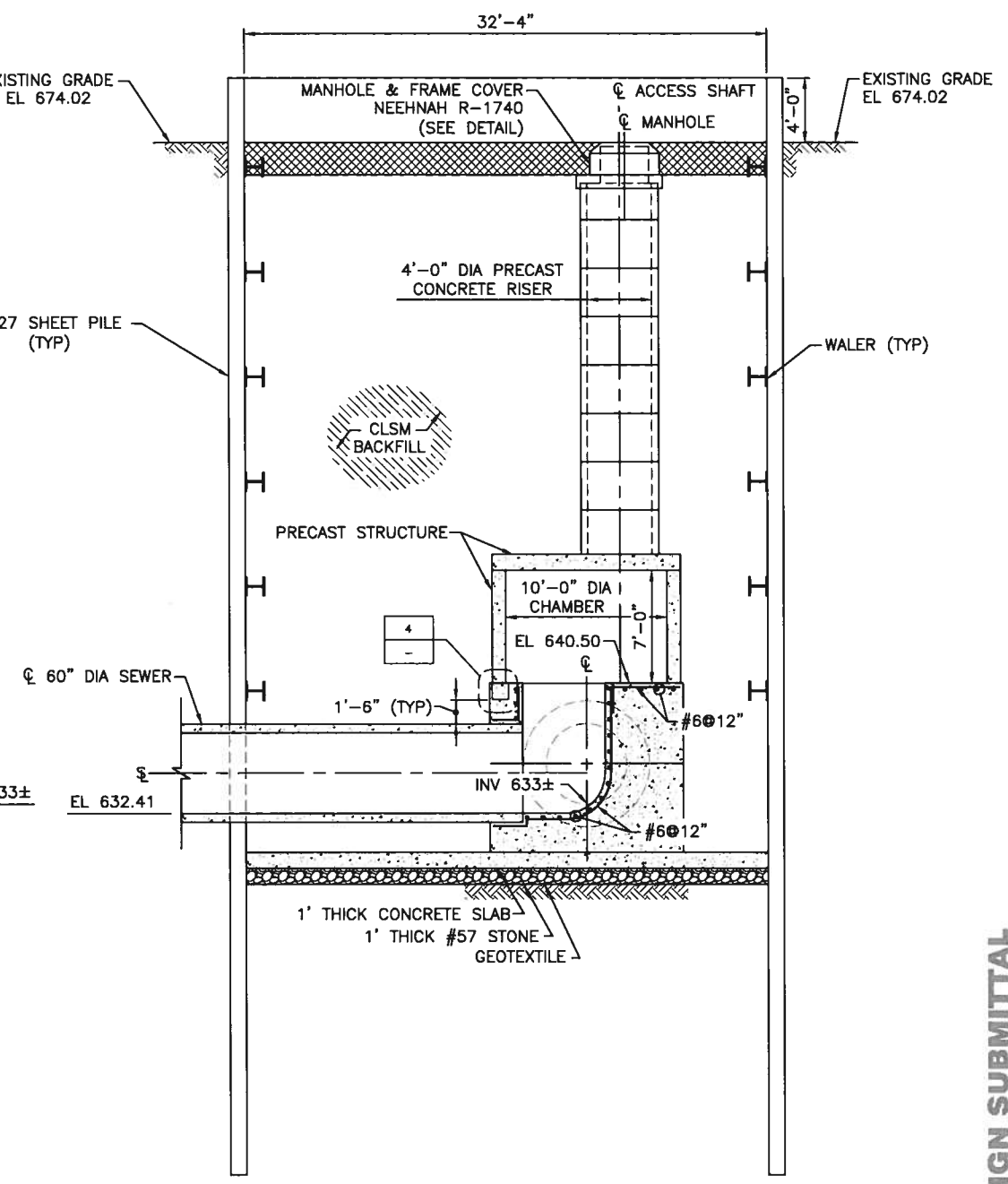
4	-
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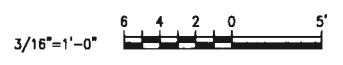
**SECTION C**  
SCALE: 3/16" = 1'-0"



**SECTION A**  
SCALE: 3/16" = 1'-0"



**SECTION B**  
SCALE: 3/16" = 1'-0"



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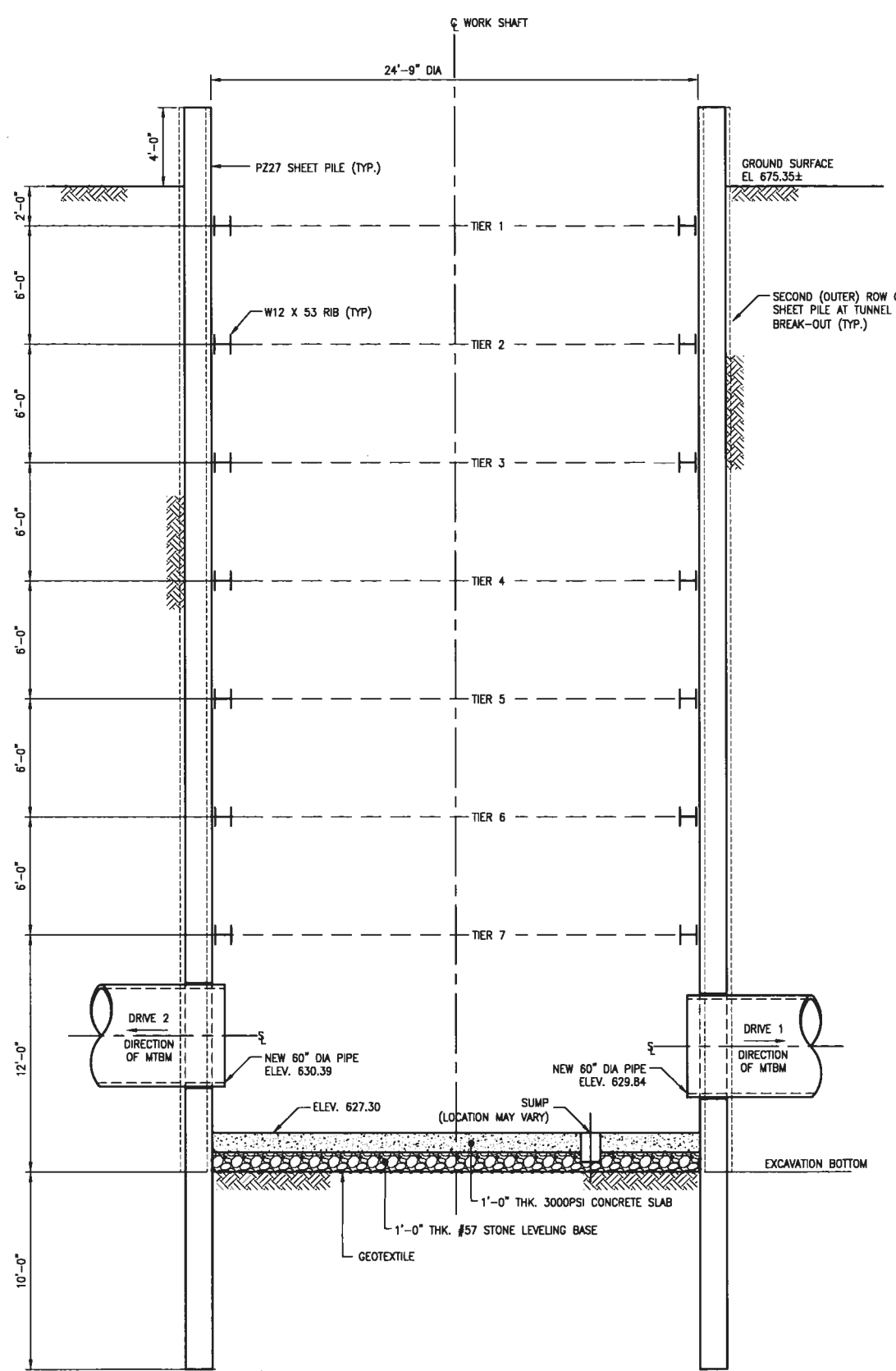
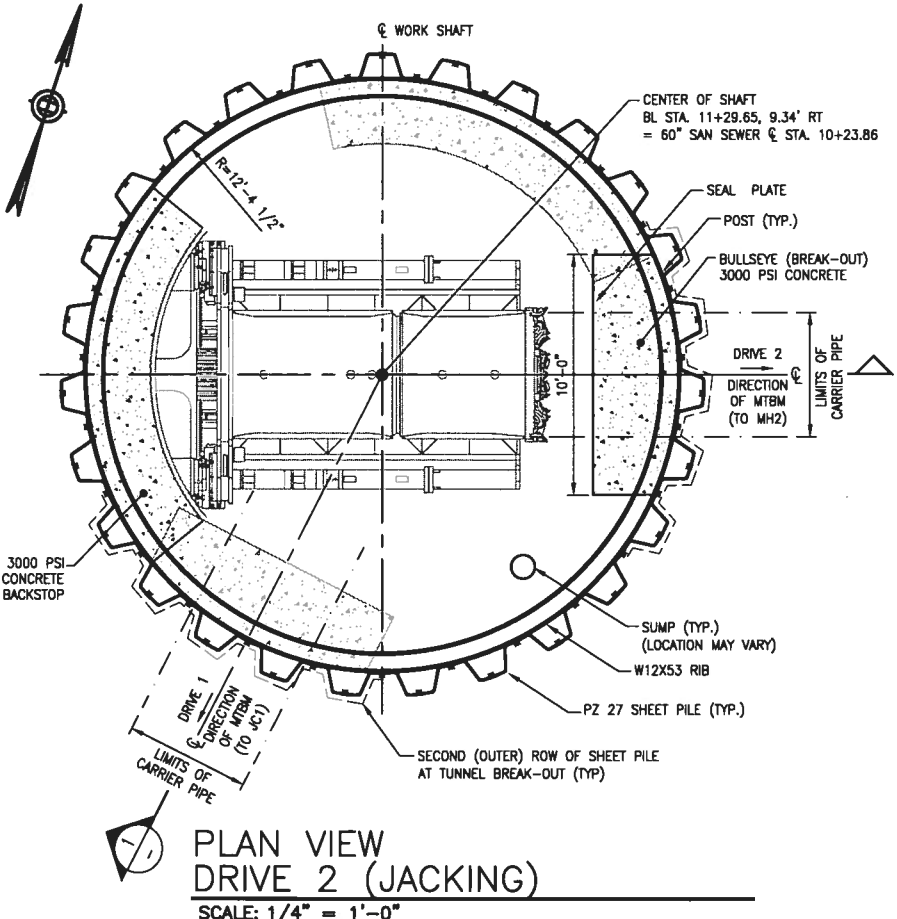
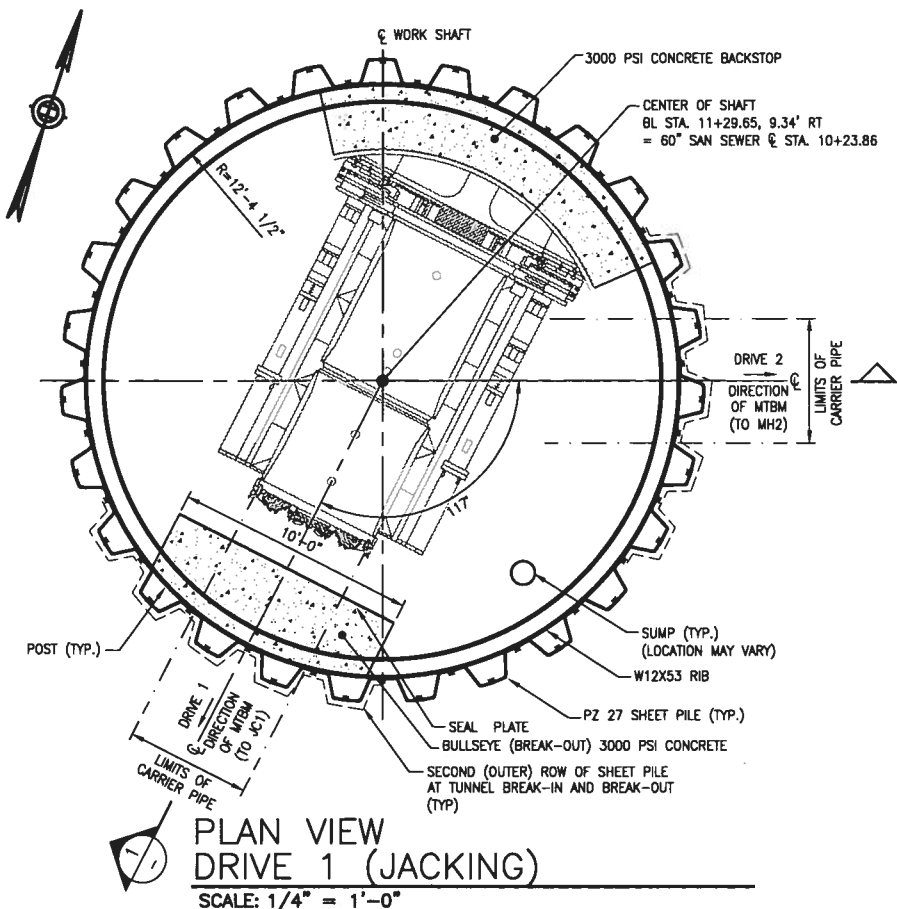
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT JUNCTION CHAMBER No. 2 STRUCTURAL DETAILS**

PROJECT NO.:	
SHEET:	
SCALE:	3/16"=1'-0"
SHEET NO.:	TU-8





**GENERAL NOTES:**

1. ALL STRUCTURAL STEEL MEMBERS ARE FY = 50 KSI.
2. SHEET PILING IS P227 OR EQUAL (FY = 50 KSI)
3. USE E70XX ELECTRODES FOR ALL WELDS.
4. THE MAX. THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 50 TONS.
5. CIRCULAR SHEET PILE LAYOUT PROVIDED BY SKYLINE STEEL LLC.
6. REFER TO SHEET TU-11 FOR BULLSEYE AND MISC. DETAILS.
7. FOR CLARITY BACKSTOP AND BULLSEYE CONCRETE IS NOT SHOWN.

**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MANHOLE NO. 1 (MH1)**

THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MH1 IS PREPARED CONSIDERING THAT MICROTUNNEL DRIVE 1 WILL BE COMPLETED FIRST AND THEN DRIVE 2 WILL BE COMPLETED.

TO MAINTAIN THE EXCAVATION AND SUPPORT STABILITY, THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR THE WORK SHAFT SHALL BE FOLLOWED:

1. INSTALL SHEET PILES TO THE DEPTH SHOWN FOR THE CIRCULAR SHAFT.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT TUNNEL BREAK-OUT LOCATIONS WITHIN LIMITS INDICATED.
3. EXCAVATE SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
4. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH FOR EACH OF THE REMAINING TIER LEVEL AND INSTALL REMAINING TIER STEEL SUPPORTS.
5. AFTER INSTALLATION OF THE LAST TIER, CONTINUE TO EXCAVATE THE SHAFT DOWN TO THE BOTTOM OF EXCAVATION.
6. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE FABRIC, CRUSHED STONE BASE AND CONCRETE SLAB. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. ALLOW THE CONCRETE SLAB TO GAIN THE DESIGN STRENGTH.
7. IF GROUND WATER IS IN-FILTERING INTO THE SUMP PIT, CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PREPARATION FOR BREAK-OUT FOR DRIVE 1 AND DRIVE 2**

8. PLACE SUITABLE GROUT BETWEEN TWO ROWS OF SHEETING AT TUNNEL BREAK-OUT LOCATIONS TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULLS EYE.
9. CUT THE SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-OUT AREAS (BULLSEYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL BULLSEYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULLSEYE ZONE.

**PROCEDURE FOR BREAK-OUT FOR DRIVE 1 AND DRIVE 2**

10. INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-OUT BETWEEN SEAL PLATE AND SHEET PILES FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICRO TUNNEL BORING MACHINE (MTBM) FOR DRIVE 1.
11. ON COMPLETION OF DRIVE 1, INSTALL BREAK-OUT FOR DRIVE 2 SIMILAR TO THE BREAK-OUT PROCEDURE FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 2.

**CONCRETE BACKSTOP CONSTRUCTION FOR DRIVE 1 AND DRIVE 2**

12. CONSTRUCT THE CONCRETE BACK STOP AS SHOWN ON THE DRAWING FOR DRIVE 1.
13. ON COMPLETION OF DRIVE 1, CONSTRUCT THE CONCRETE BACK STOP FOR DRIVE 2.



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 APPROVED BY: \_\_\_\_\_  
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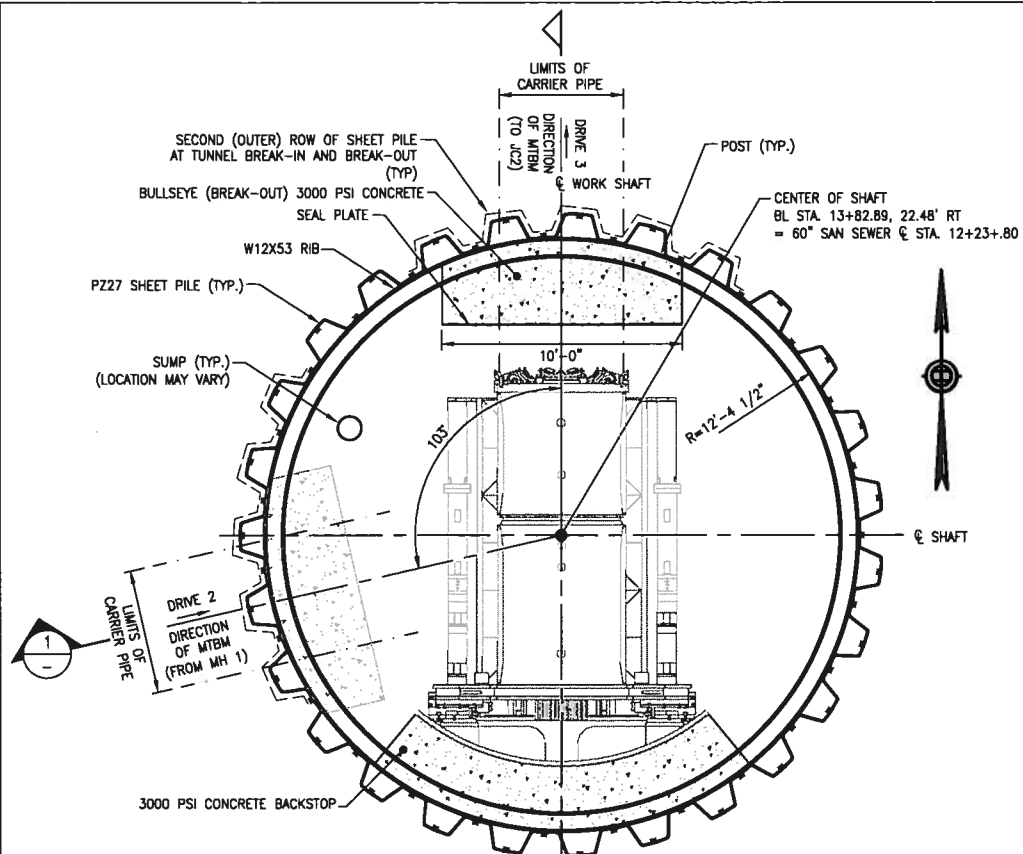
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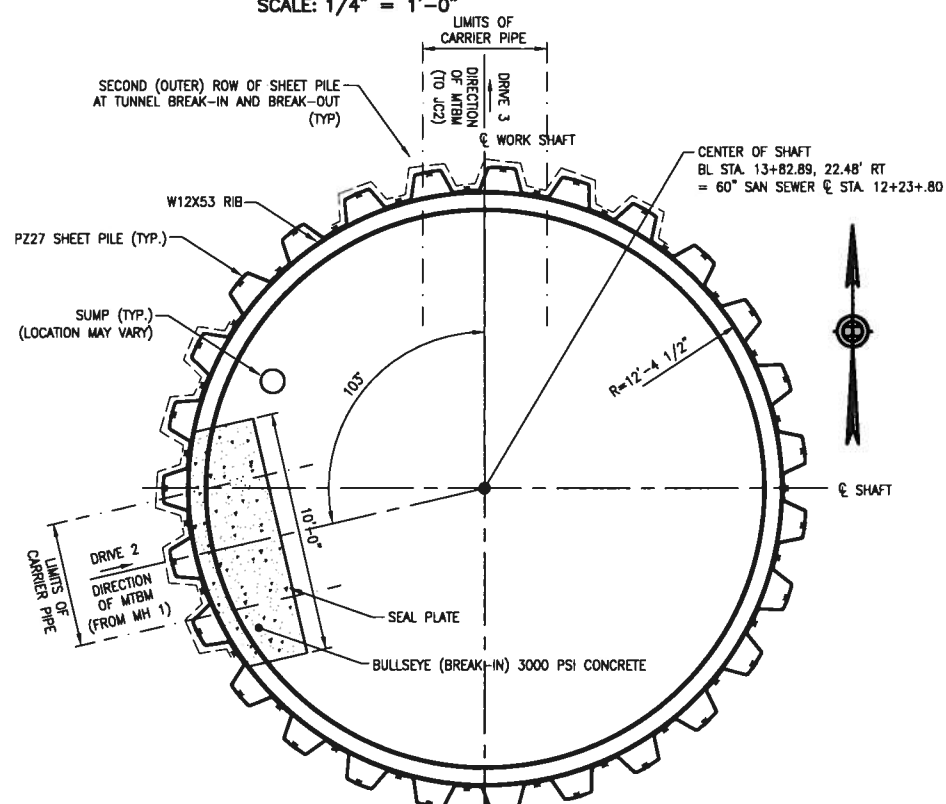
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT MANHOLE No.1 INITIAL SUPPORTS**

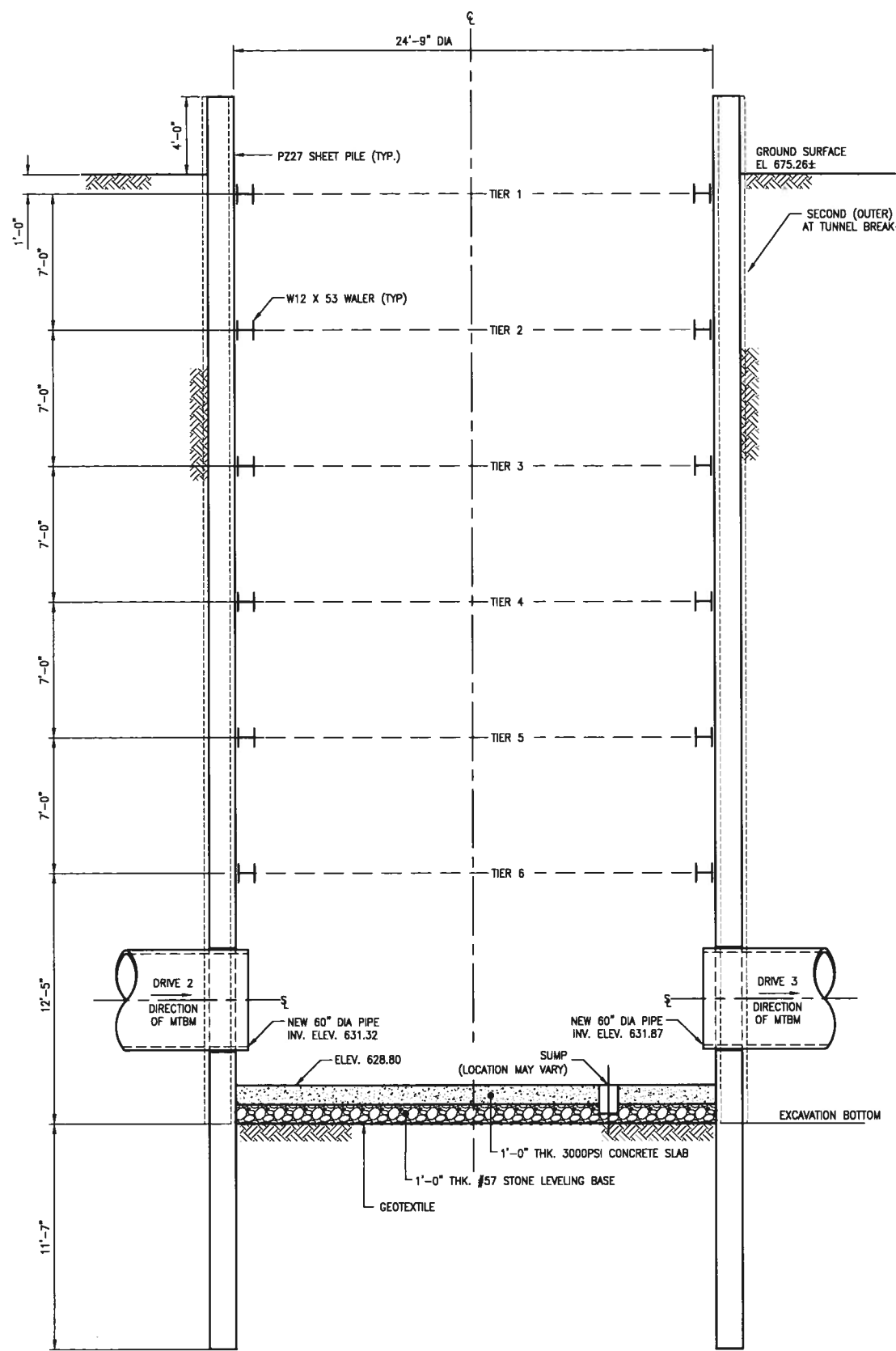
PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: AS NOTED  
 SHEET NO.: TU-9



PLAN VIEW  
DRIVE 3 (JACKING)  
SCALE: 1/4" = 1'-0"



PLAN VIEW  
DRIVE 2 (RECEIVING)  
SCALE: 1/4" = 1'-0"



SECTION  
SCALE: 1/4" = 1'-0"

- GENERAL NOTES:**
1. ALL STRUCTURAL STEEL MEMBERS ARE FY = 50 KSI.
  2. SHEET PILING IS P227 OR EQUAL (FY = 50 KSI)
  3. USE E70XX ELECTRODES FOR ALL WELDS.
  4. THE MAX. THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 50 TONS.
  5. CIRCULAR SHEET PILE LAYOUT PROVIDED BY SKYLINE STEEL LLC.
  6. REFER TO SHEET TU-11 FOR BULLSEYE AND MISC. DETAILS.
  7. FOR CLARITY BACKSTOP AND BULLSEYE CONCRETE IS NOT SHOWN.

- SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MANHOLE NO. 2 (MH2)**
- THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MH2 IS PREPARED CONSIDERING THAT MICROTUNNEL DRIVE 2 WILL BE COMPLETED FIRST AND THEN DRIVE 3 WILL BE COMPLETED.

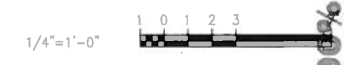
- TO MAINTAIN THE EXCAVATION AND SUPPORT STABILITY, THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR THE WORK SHAFT SHALL BE FOLLOWED:
1. INSTALL SHEET PILES TO THE DEPTH SHOWN FOR THE CIRCULAR SHAFT.
  2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT TUNNEL BREAK-IN AND BREAK-OUT LOCATION WITHIN LIMITS INDICATED.
  3. EXCAVATE SHAFT TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
  4. CONTINUE TO EXCAVATE SHAFT IN STEPS TO MAXIMUM OF 2 FEET DEPTH FOR EACH OF THE REMAINING TIER LEVEL AND INSTALL REMAINING TIER STEEL SUPPORTS.
  5. AFTER INSTALLATION OF THE LAST TIER, CONTINUE TO EXCAVATE THE SHAFT DOWN TO THE BOTTOM OF EXCAVATION.
  6. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE FABRIC, CRUSHED STONE BASE AND CONCRETE SLAB. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. ALLOW THE CONCRETE SLAB TO GAIN THE DESIGN STRENGTH.
  7. IF GROUND WATER IS IN-FILTERING INTO THE SUMP PIT, CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

- PREPARATION FOR BREAK-IN FOR DRIVE 2 AND BREAK-OUT FOR DRIVE 3**
8. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN AND BREAK-OUT LOCATIONS TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULLS EYE.
  9. CUT THE SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AND BREAK-OUT AREA (BULLSEYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL BULLSEYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULLSEYE ZONE.

- PROCEDURE FOR BREAK-IN FOR DRIVE 2**
10. INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-IN FOR DRIVE2. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 2.
  11. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE CARRIER PIPE THROUGH THE GROUT PORTS.

- PROCEDURE FOR BREAK-OUT FOR DRIVE 3**
12. ON COMPLETION OF DRIVE 2, INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-OUT FOR DRIVE 3. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. JUST BEFORE COMMENCING THE WORK ON MICROTUNNELING FOR DRIVE 3, PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 3.

- CONCRETE BACKSTOP CONSTRUCTION FOR DRIVE 3**
13. ON COMPLETION OF DRIVE 2, CONSTRUCT THE CONCRETE BACK STOP AS SHOWN ON THE DRAWING FOR DRIVE 3.



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 DATE: APRIL 30, 2010

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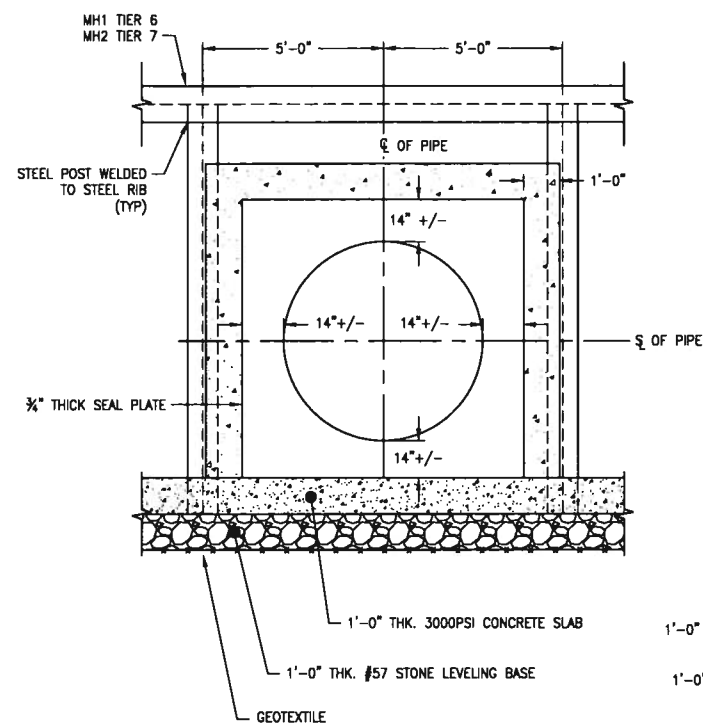
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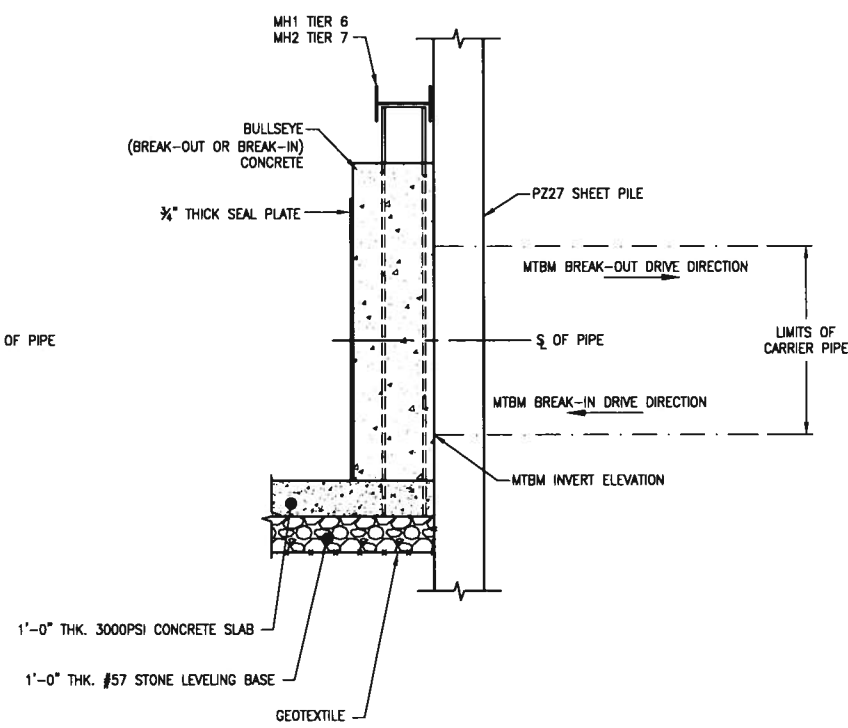
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**WORK SHAFT MANHOLE No.2 INITIAL SUPPORTS**

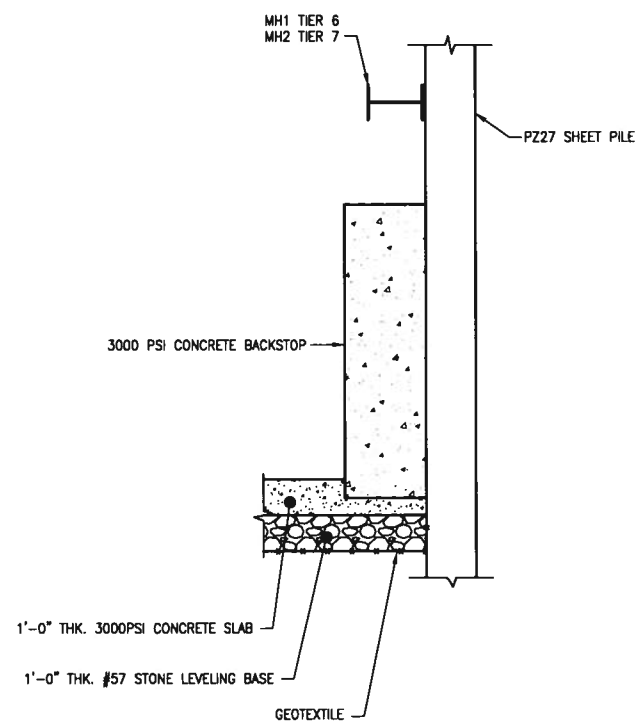
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 SHEET: \_\_\_\_\_  
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 SHEET NO.: TU-10



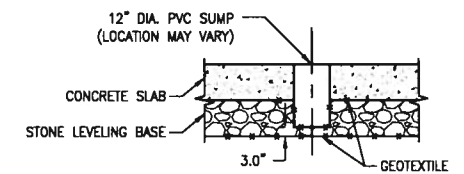
**BULLSEYE DETAIL**  
SCALE: N.T.S.



**BACKSTOP DETAIL**  
SCALE: N.T.S.



**SUMP DETAIL**  
SCALE: N.T.S.



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APPROVED BY: \_\_\_\_\_  
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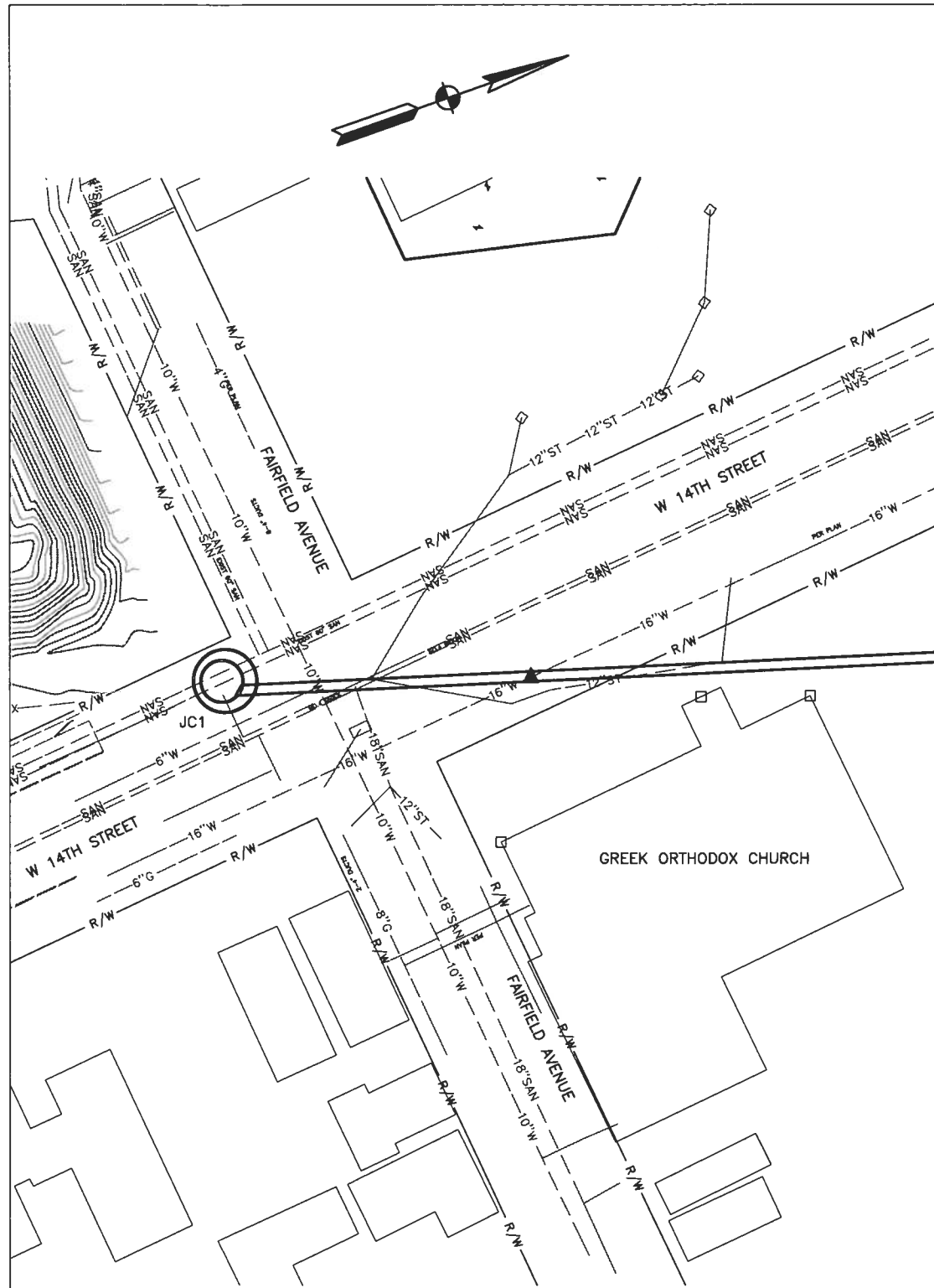
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**MANHOLE No. 1 AND MANHOLE No. 2  
BREAK-IN, BREAK-OUT, BACKSTOP  
AND SUMP DETAILS**

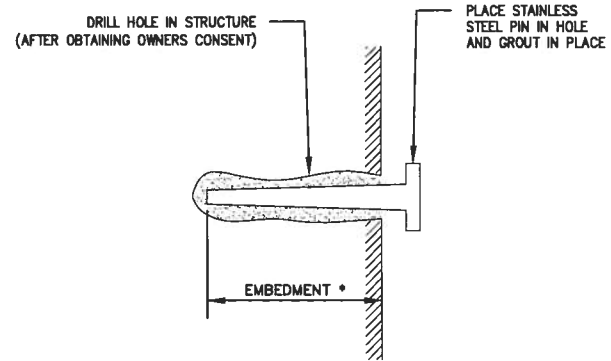
PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: AS NOTED  
SHEET NO.: TU-11



**PLAN VIEW  
MONITORING AT JC1**

**LEGEND**

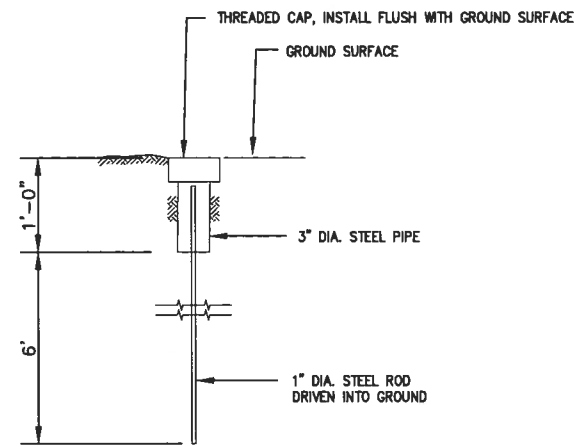
- ⊕ - GROUND SETTLEMENT POINT
- - STRUCTURE SETTLEMENT POINT
- ▲ - UTILITY SETTLEMENT POINT



\* EMBED TO A DEPTH AS NECESSARY TO PROVIDE A RIGID IMMOVABLE POINT

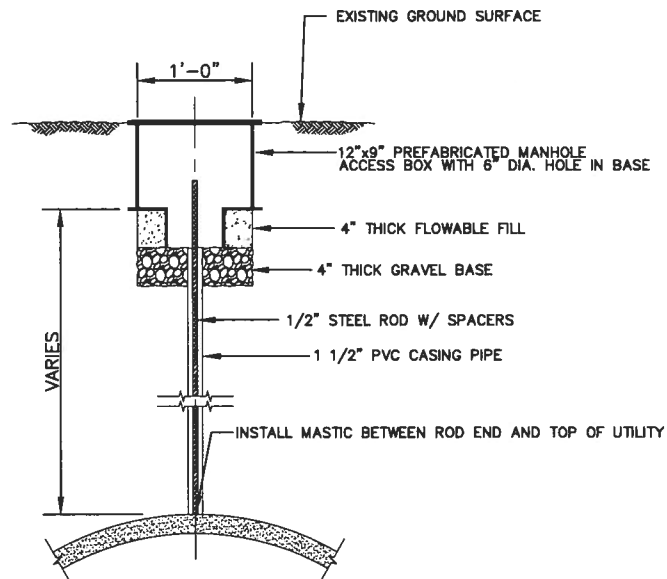
**STRUCTURE SETTLEMENT POINT**

N.T.S.



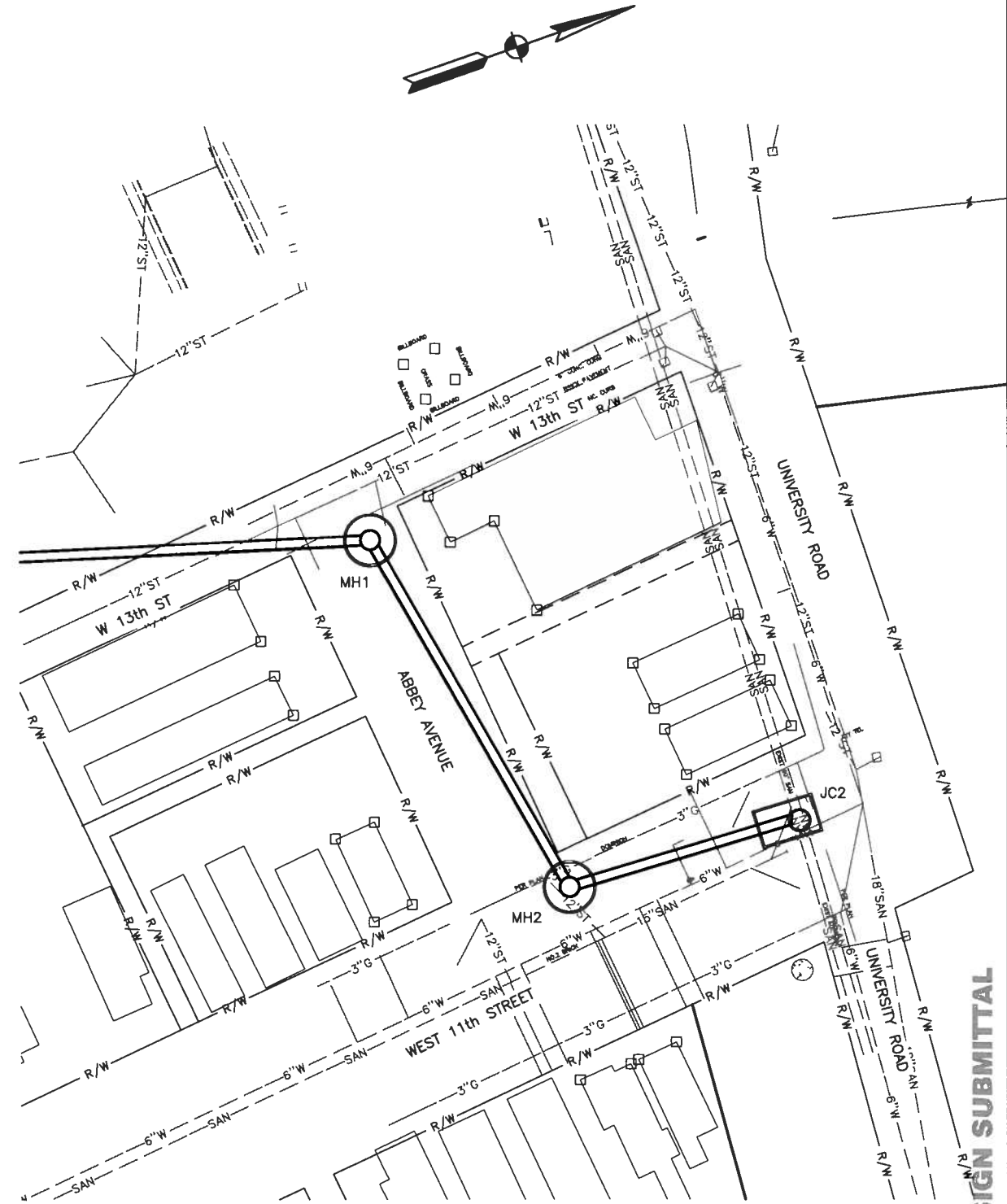
**GROUND SETTLEMENT POINT**

N.T.S.



**UTILITY SETTLEMENT POINT**

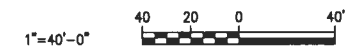
N.T.S.



**PLAN VIEW  
MONITORING AT MH1, MH2 & JC2**

**NOTES:**

1. THE LOCATIONS OF CRACK MONITORS WILL BE DETERMINED DURING THE EXISTING STRUCTURES INSPECTIONS AS OUTLINED IN SPECIFICATION SECTION 01379.
2. INSTALL SETTLEMENT POINTS ON THE FOUNDATION OF THE BILLBOARD STRUCTURE LOCATED NORTH OF THE MH1 WORK SHAFT.



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DRAWN BY:	
SHEET CHK'D BY:	
CROSS CHK'D BY:	
APPROVED BY:	
DATE:	APRIL 30, 2010

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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**MONITORING**

PROJECT NO.:  
SHEET:  
SCALE: 1" = 40'  
SHEET NO.: TU-12

**GENERAL**

1. QUALITY OF CONSTRUCTION REQUIRED, PERFORMANCE LEVELS OF WORKMANSHIP, MANUFACTURING AND INDUSTRY STANDARDS, STRENGTH AND PHYSICAL REQUIREMENTS OF MATERIALS, CONFORMANCE TO CODES AND REGULATIONS, GUARANTEES AND OTHER PROJECT REQUIREMENTS ARE SPECIFIED IN THE SPECIFICATIONS.
2. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED, OR NOTED SHALL BE PROVIDED.
3. PERFORM ALL WORK IN COORDINATION WITH ALL DRAWINGS AND INFORMATION RELATED TO STRUCTURAL WORK.
4. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS THAT MAY BE NECESSARY. SUCH TEMPORARY MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER COMPLETION OF THE PROJECT.
5. FACILITIES HAVE BEEN DESIGNED FOR DESIGN LOADS SHOWN OR SPECIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FACILITIES SUBJECT TO CONSTRUCTION LOADS EXCEEDING THE DESIGN LOADS AND SHALL NOTIFY THE ENGINEER OF ANY SUCH ADDITIONAL LOADS.
6. DURING CONSTRUCTION, STRUCTURE MAY BE BUOYANT WHEN EMPTY. IN THE EVENT THAT THE EXCAVATION BECOMES FLOODED OR THE SURROUNDING GROUND BECOMES SATURATED, ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT FLOATATION OF THE STRUCTURE.

**FOUNDATIONS**

1. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SURVEY AND THE SUBSURFACE INVESTIGATION REPORT BEFORE BEGINNING CONSTRUCTION.
2. NOTIFY THE ENGINEER AS SOON AS POSSIBLE OF ANY UNUSUAL SOIL CONDITIONS, OR SOIL CONDITIONS IN VARIANCE WITH TEST BORINGS, SUCH AS UNEXPECTED SPRING OR SEEPAGE WATER, MATERIAL DIFFERING FROM TEST BORINGS, OR SOIL OF QUESTIONABLE BEARING CAPACITY.
3. SET FOUNDATIONS AT ELEVATIONS SHOWN. THE CONTRACTOR SHALL VERIFY WITH THE ENGINEER THAT EACH FOOTING PLACED IS BEARING ON DESIGN MATERIAL.
4. LEVELS OF BACKFILL AGAINST CONCRETE WALLS SHALL NOT DIFFER BY MORE THAN 2'-0" ON EITHER SIDE OF WALLS UNLESS ADEQUATELY BRACED OR ALL FLOOR FRAMING IS IN PLACE UP TO AND INCLUDING GRADE LEVEL SLABS.
5. PROTECT EXCAVATION FROM FLOODING UNTIL ALL WALLS AND FLOOR FRAMING UP TO AND INCLUDING GRADE LEVEL FLOORS ARE IN PLACE AND BACKFILLING HAS BEGUN. WATER LEVEL SHALL BE MAINTAINED BELOW EXCAVATION AT ALL TIMES.

**STANDARD HOOKS**

1. UNLESS OTHERWISE SHOWN OR NOTED, ALL 90°, 135° AND 180° HOOKS FOR REINFORCING SHALL BE IN ACCORDANCE WITH THE STANDARD HOOK DETAILS SHOWN IN ACI DETAILING MANUAL.

**CAST-IN-PLACE CONCRETE**

1. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:
  - 3,000 psi
  - 5,000 psi
2. ALL CONCRETE WORK NOT COVERED UNDER ACI 350 SHALL BE IN ACCORDANCE WITH "THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" ACI 318. TOLERANCES SHALL BE IN ACCORDANCE WITH ACI 347, SECTION 3.3.1, TOLERANCES FOR REINFORCED CONCRETE BUILDINGS.
3. ALL REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM-615 GRADE 60.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185 DELIVERED IN FLAT SHEETS.
5. ALL REINFORCING DETAILS SHALL CONFORM TO "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI 315, UNLESS DETAILED OTHERWISE ON THE STRUCTURAL DRAWINGS.
6. CONTRACTOR SHALL REVIEW ALL DRAWINGS FOR SIZE AND LOCATION OF EMBEDDED ITEMS, SLEEVES, SLAB DEPRESSIONS. THESE ITEMS SHALL BE FURNISHED AND INSTALLED PRIOR TO PLACEMENT OF CONCRETE.
7. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANCHOR HOOK, IF REQUIRED, IS NOT INCLUDED.
8. ALL BEAMS, SPANDRELS AND SLABS SHALL BE CAST MONOLITHICALLY, EXCEPT FOR REQUIRED CONSTRUCTION JOINTS. CONTRACTOR SHALL SUBMIT ANY AND ALL ALTERNATE AND ADDITIONAL CONSTRUCTION JOINT LOCATIONS AND DETAILS.
9. CONSTRUCTION JOINTS REQUIRED BY THE ENGINEER ARE SHOWN ON THE DRAWINGS. ADDITIONAL CONSTRUCTION JOINTS SHALL BE PROVIDED AS OUTLINED IN SPECIFICATIONS. REINFORCEMENT SHALL BE CONTINUOUS ACROSS CONSTRUCTION JOINTS. SUBMIT ALL CONSTRUCTION JOINT LOCATIONS WITH REINFORCING STEEL SHOP DRAWINGS.
10. CONTRACTOR SHALL PROVIDE 3/4" INCH CHAMFER USING WOOD CHAMFER STRIPS ON ALL EXPOSED CORNERS OF COLUMNS, BEAMS AND WALLS, OR AS REQUIRED TO MATCH EXISTING.
11. CLEARANCES FOR REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING:
 

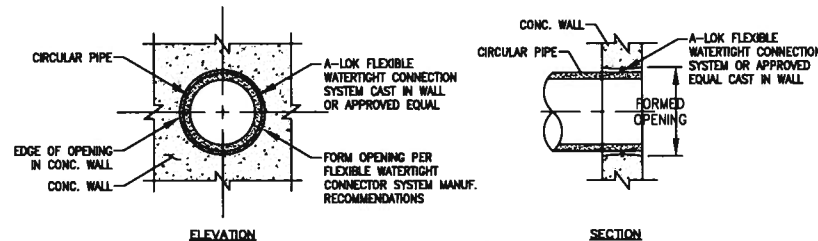
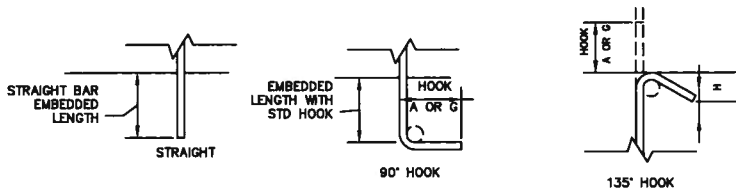
TYPICAL REINFORCING BAR CLEARANCE TABLE	
CONCRETE CAST AGAINST EARTH	3"
SLAB REINF. TO CLEAR WATER STOP	3"
SURFACES EXPOSED TO LIQUIDS	2"
SURFACES EXPOSED TO EARTH OR WEATHER	3"
12. PROVIDE WATERSTOPS AT ALL CONSTRUCTION JOINTS IN SLABS AND WALLS.
  - PROVIDE 6" WIDE PVC WATERSTOP AT ALL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS IN SLABS AND WALLS OF NEW CONCRETE CONSTRUCTION.
  - PROVIDE BENTONITE (HYDROPHILIC) WATERSTOP AT PIPE-WALL-PENETRATIONS, PRECAST CONCRETE RISERS AND AT JOINTS BETWEEN EXISTING STRUCTURE AND NEW CONCRETE CONSTRUCTION.
13. ALL EXPANSION JOINTS SHALL HAVE WATERSTOPS, UNLESS NOTED OTHERWISE.
14. WELDING OF REINFORCING STEEL IS NOT PERMITTED, UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
15. CALCIUM CHLORIDE SHALL NOT BE PERMITTED NOR SHALL ANY ADMIXTURE CONTAINING CALCIUM CHLORIDE BE PERMITTED THAT RESULTS IN A TOTAL CONCRETE MIX IN WHICH THE PRESENCE OF CHLORIDE IONS EXCEED 0.15 PERCENT BY WEIGHT OF CEMENT.
16. CONCRETE SHALL BE DISCHARGED AT THE SITE WITHIN 90 MINUTES AFTER WATER HAS BEEN ADDED TO THE CEMENT AND AGGREGATES. ADDITION OF WATER TO THE MIX AT THE PROJECT SITE WILL NOT BE ALLOWED. ALL WATER MUST BE ADDED AT THE BATCH PLANT.
17. REINFORCING BARS REQUIRED FOR PROPER SUPPORT OF PRINCIPAL REINFORCING SHALL BE DETAILED AND SUPPLIED BY THE CONTRACTOR WHETHER OR NOT THEY ARE INDICATED ON THE DRAWINGS.
18. ONLY MOISTURE CURING METHODS SHALL BE USED ON CONCRETE WHICH WILL BE COVERED WITH WATERPROOFING SYSTEM, A CONCRETE TOPPING, OR A MATERIAL SET IN A MORTAR BED, BOTH OF WHICH REQUIRE A BOND TO THE FIRST CAST CONCRETE.
19. REINFORCING BAR LAP SPICES AND ANCHORAGE LENGTH SHALL CONFORM WITH "LAP SPICE AND EMBEDMENT LENGTH TABLE".
20. POSITIVE CONNECTION SPICES: MECHANICAL CONNECTIONS SHALL DEVELOP 125 PERCENT OF THE YIELD STRENGTH OF THE REINFORCING BAR. ALL SPICES WILL BE VISUALLY INSPECTED BY THE ENGINEER TO VERIFY THAT THE SPICE HAS BEEN MADE PROPERLY.
21. BOND BREAKER MATERIAL SHALL BE 15 POUNDS FELT PAPER, UNLESS NOTED OTHERWISE.

**REINFORCEMENT BAR DEVELOPMENT**

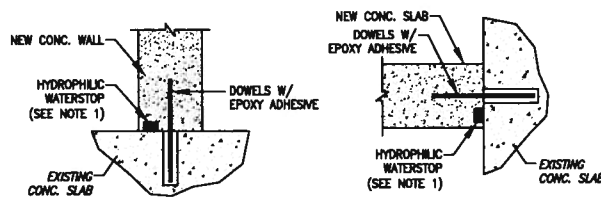
1. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, REINFORCING BARS SHALL BE DEVELOPED AND/OR SPICED IN ACCORDANCE WITH THE FOLLOWING TABLE:

BAR SIZE	REINFORCEMENT LAP SPICE, EMBEDMENT LENGTH AND STANDARD HOOKS										
	MIN. LAP LENGTHS FOR BEAMS*		MIN. LAP LENGTHS FOR SLABS AND WALLS**		MIN. LAP LENGTHS FOR COLUMNS		STRAIGHT BARS*		MIN. STD. HOOKS		
	CLASS B		CLASS B		CLASS B		WITH STANDARD HOOKS		90°		
	TOP***	OTHERS	TOP***	OTHERS	TOP***	OTHERS	TOP***	OTHERS	A OR G	A OR G	
#3	25	19	16	18	12	19	15	5	6	4	2.5
#4	33	25	20	18	15	25	19	7	8	4.5	3
#5	41	31	25	19	19	31	24	9	10	5.5	3.75
#6	49	37	29	23	23	37	29	10	12	8	4.5
#7	71	54	43	33	27	54	42	12	14	9	5.25
#8	81	62	49	37	30	62	48	14	16	10.5	6
#9	91	70	54	43	34	70	54	15	19	-	-
#10	102	79	62	51	39	79	61	17	22	-	-
#11	114	87	69	57	43	87	67	19	24	-	-

2. REINFORCEMENT LAP SPICE, EMBEDMENT LENGTH AND STANDARD HOOKS TABLE IS BASED ON A MINIMUM CONCRETE COMPRESSIVE STRENGTH OF 4000 PSI AND 60,000 PSI REINFORCEMENT (WITH NO EPOXY COATING).
3. ALL LAP SPICES SHALL BE CLASS B SPICES.
  - \* THE MINIMUM LAP LENGTH FOR BEAMS AND STRAIGHT EMBEDMENTS ARE BASED ON A 3 BAR DIAMETER MINIMUM CENTER TO CENTER BAR SPACING AND A 2 INCH BAR COVER. IF THE SPICE AND/OR EMBEDMENT DOES NOT CONFORM TO THESE REQUIREMENTS, THEN CONTRACTOR SHALL APPLY APPROPRIATE FACTORS IN COMPLIANCE WITH ACI 318 WITH APPROVAL BY ENGINEER.
  - \*\* THE MINIMUM LAP LENGTH FOR SLABS AND WALLS IS BASED ON A 6 INCH BAR SPACING AND A 2 INCH BAR COVER. IF THE LAP CONDITION DOES NOT CONFORM TO THESE REQUIREMENTS, THEN USE BEAM LAP LENGTHS; OR COMPLY WITH LAP REQUIREMENTS OF ACI 318 WITH APPROVAL BY ENGINEER.
  - \*\*\* TOP BARS ARE DEFINED AS ALL HORIZONTAL BARS, EXCLUDING WALL BARS, WITH 12" OR MORE FRESH CONCRETE BENEATH.
4. WHERE SPICES ARE INDICATED BETWEEN BARS OF DIFFERENT SIZES, THE SPICE LENGTH SHALL BE BASED ON THE SMALLER BAR SIZE.

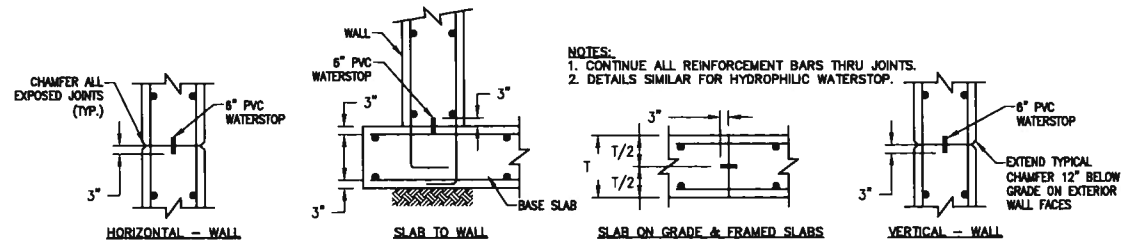


TYPICAL PIPE-WALL PENETRATION DETAIL WITH A-LOK  
SCALE: N.T.S.

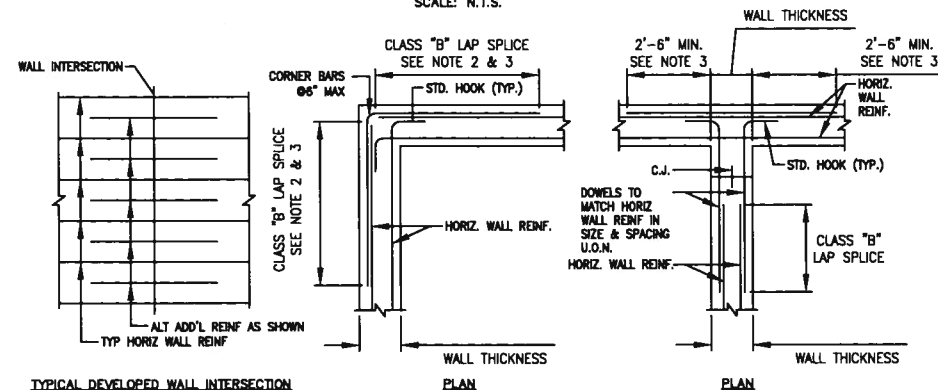


TYPICAL CONSTRUCTION JOINT DETAILS AT NEW TO EXISTING  
SCALE: N.T.S.

- NOTES:
1. PROVIDE HYDROPHILIC WATERSTOP AT ALL NEW CONCRETE TO EXISTING CONCRETE CONSTRUCTION JOINTS BELOW GRADE AND IN WATER CONTAINING STRUCTURES.

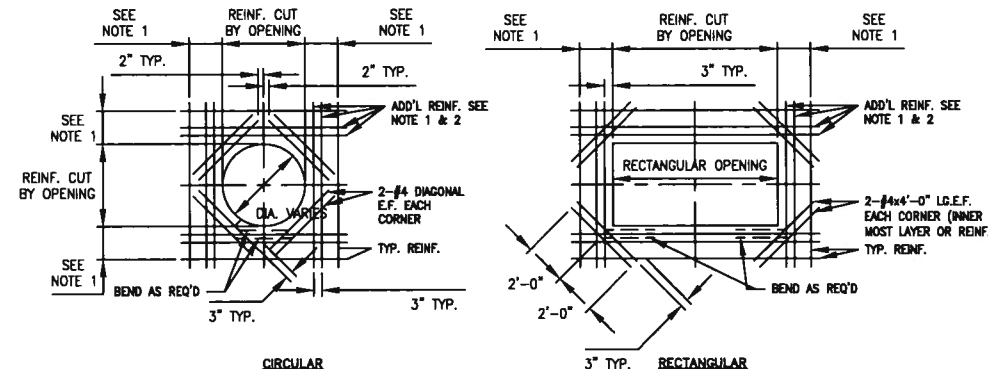


TYPICAL CONSTRUCTION JOINT DETAILS  
SCALE: N.T.S.



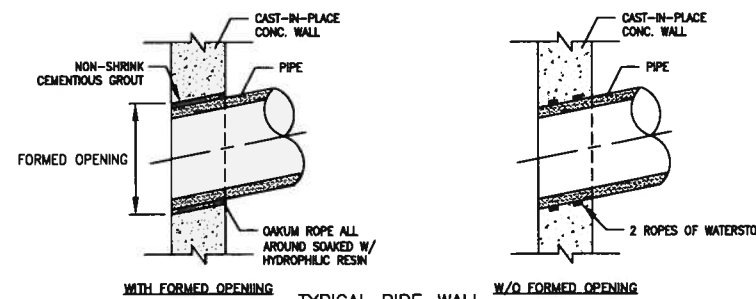
TYPICAL REINFORCEMENT DETAIL AT WALL INTERSECTIONS  
SCALE: N.T.S.

- NOTES:
1. PROVIDE ADDITIONAL REINFORCING AT WALL INTERSECTIONS AS SHOWN ABOVE UNLESS NOTED OTHERWISE ON DRAWINGS.
  2. PROVIDE CORNER BAR REINFORCING AT SIX INCHES SPACING, UNLESS OTHERWISE NOTED ON DRAWINGS, AT ALL CORNERS. CORNER BAR REINFORCEMENT SHALL MATCH TYPICAL HORIZONTAL WALL REINFORCEMENT IN SIZE, DIMENSIONS SHALL BE 0.25 TIMES THE CLEAR SPAN DISTANCE BETWEEN WALL INTERSECTIONS MEASURED HORIZONTALLY, BUT SHALL NOT BE LESS THAN TYPE "B" LAP SPICE NOR GREATER THAN 8'-0".
  3. ADDITIONAL REINFORCEMENT SHALL MATCH SIZE AND SPACING OF WALL HORIZONTAL REINFORCEMENT, UNLESS OTHERWISE NOTED. ALTERNATE ADDITIONAL REINFORCEMENT WITH HORIZONTAL WALL REINFORCEMENT.



TYPICAL REINFORCEMENT AROUND OPENING IN WALL AND SLAB  
SCALE: N.T.S.

- NOTES:
1. PROVIDE ADDITIONAL REINFORCEMENT AT ALL OPENINGS EQUAL IN AREA TO TYPICAL REINFORCEMENT CUT BY OPENING IN EACH DIRECTION. ADDITIONAL REINFORCEMENT TO MATCH SIZE AND LENGTH OF TYPICAL REINFORCEMENT (MIN. 2 BARS E.F. EACH CORNER) AND PLACED BETWEEN TYPICAL REINFORCEMENT ON EACH SIDE OF OPENING.
  2. PROVIDE MATCHING DOWELS, WHERE REQUIRED TO PROVIDE CLASS "B" LAP WITH ADDITIONAL REINFORCEMENT.



TYPICAL PIPE-WALL PENETRATION DETAIL WITH WATERSTOP  
SCALE: N.T.S.

BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

90% DESIGN SUBMITTAL

DESIGNED BY: _____	DATE: APRIL 30, 2010		
DRAWN BY: _____			
SHEET CHK'D BY: _____			
CROSS CHK'D BY: _____			
APPROVED BY: _____			
REVISIONS:			
REV. NO.	DATE	ISSUE BY	REMARKS

**Dawn Underground Engineering, Inc.**  
Tunnel and Underground Structures Consultants  
10 Village Court - Hazlet - New Jersey 07730  
Tel: 732-739-8840 Fax: 732-739-8870

**Northeast Ohio Regional Sewer District**  
Protecting Your Health and Environment

This document was originally issued by xxxxxxxx on xxx/xx/09. This document is not considered a sealed document.

WALWORTH RUN INTERCEPTOR REALIGNMENT

STRUCTURAL DETAILS AND NOTES

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-13

# NORTHEAST OHIO REGIONAL SEWER DISTRICT

## WALWORTH RUN INTERCEPTOR REALIGNMENT (WRIR)

WRIR

NORTHEAST OHIO REGIONAL SEWER DISTRICT

BOARD OF TRUSTEES

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GARY W. STARR, VICE PRESIDENT  
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MAYOR JACK BACCI  
SHEILA J. KELLY  
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RONALD D. SULIK

JULIUS CIACCIA, JR., EXECUTIVE DIRECTOR

ACCEPTED BY :

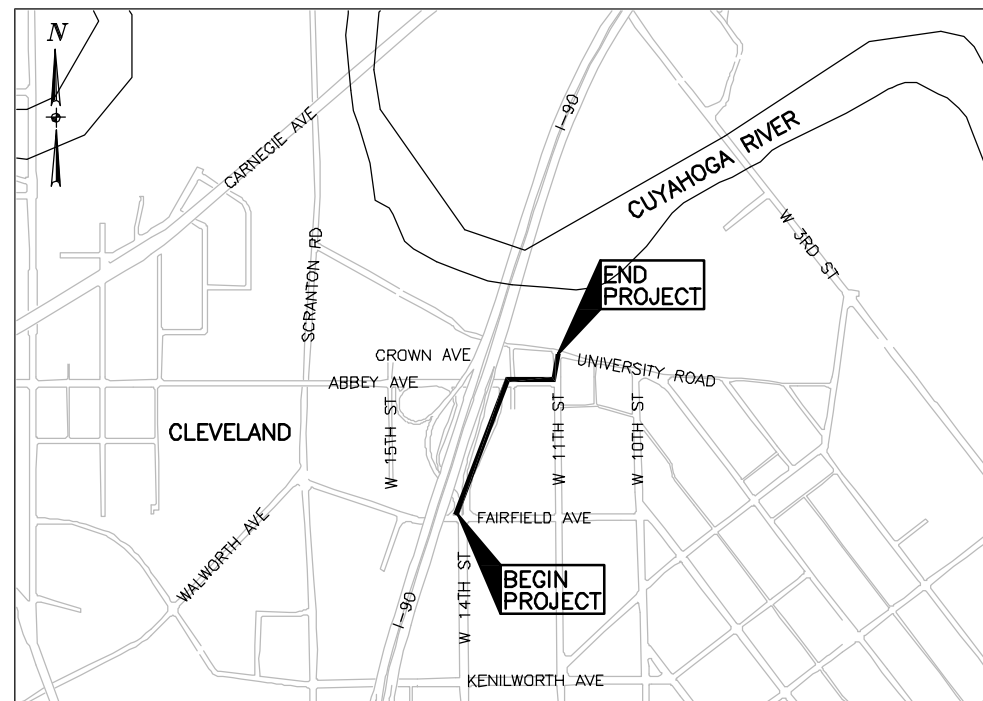
\_\_\_\_\_  
**JULIUS CIACCIA, JR.**  
EXECUTIVE DIRECTOR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
**KELLIE C. ROTUNNO**  
DIRECTOR OF ENGINEERING  
AND CONSTRUCTION

\_\_\_\_\_  
DATE

NORTHEAST OHIO REGIONAL SEWER DISTRICT

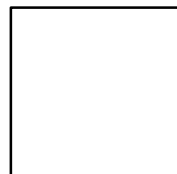


LOCATION MAP  
SCALE: 1"=500'

SUBMITTED BY :

\_\_\_\_\_  
DLZ OHIO, INC

\_\_\_\_\_  
DATE



\_\_\_\_\_  
DLZ OHIO, INC.



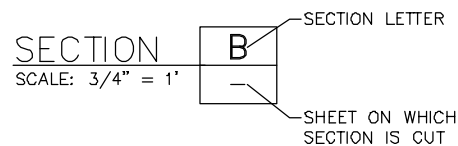
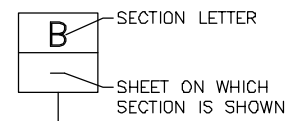
**NOTES**

1. BASIS OF BEARING AND ELEVATION: HORIZONTAL AND VERTICAL CONTROL IS BASED ON THE OHIO NORTH ZONE STATE PLANE COORDINATE SYSTEM NAD 83 AND THE NAVD 88 VERTICAL DATUM.
2. EXISTING STRUCTURES, GRADES, PIPING ETC., ARE SHOWN IN APPROXIMATE LOCATIONS ON THE PLANS. THE INFORMATION SHOWN IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. THE DATA SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
3. THE CONTRACTOR SHALL COORDINATE HIS OPERATIONS WITH THE WORK OF THE UTILITY OWNERS OR OTHERS WHO MAY RELOCATE EXISTING UTILITIES, AND SHALL NOTIFY OWNERS OF THE UTILITIES OF HIS SCHEDULE SUFFICIENTLY IN ADVANCE TO PERMIT THEM TO MAKE THE NECESSARY ALTERATIONS.
4. INFORMATION ON EXISTING UTILITIES AND OTHER SUB-STRUCTURES WAS OBTAINED FROM APPROPRIATE AGENCIES. EXISTING UTILITIES SHALL BE MAINTAINED IN PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS OR STATED IN THE SPECIFICATIONS. THE LOCATIONS OF EXISTING UTILITIES AND SUB-STRUCTURES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY EXACT LOCATIONS, ELEVATIONS, AND DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION IN THE AREA OF THE SPECIFIC SUB-STRUCTURE.
5. THE LENGTH OF PIPE SHOWN ON THE DRAWINGS IS GIVEN FROM CENTER-TO-CENTER OF STRUCTURE FOR STRUCTURES UP TO 6-FT INSIDE DIAMETER, AND TO THE INSIDE FACE OF STRUCTURE FOR STRUCTURES OVER 6-FT INSIDE DIAMETER.

**LEGEND**

- |   |                             |   |                               |
|---|-----------------------------|---|-------------------------------|
| ⊙ | - EXISTING MANHOLE          | • | - POST (SQUARE)               |
| ⊚ | - EXISTING CATCH BASIN      | ⊙ | - POST (ROUND)                |
| ⊚ | - EXISTING HYDRANT          | ⊙ | - TREE                        |
| ⊙ | - EXISTING/PROPOSED VALVE   | ⊙ | - SHRUB                       |
| ⊙ | - LIGHT POLE                | ⊙ | - BENCH MARK                  |
| ⊙ | - TELEPHONE POLE            | X | - CHISELED BENCH MARK         |
| ⊙ | - POWER POLE                | ⊙ | - EXISTING MONUMENT BOX       |
| ⊙ | - UTILITY POLE              | ⊙ | - IRON PIN/PIPE FOUND         |
| ⊙ | - TELEPHONE & POWER POLE    | ⊙ | - IRON PIN/PIPE SET           |
| ⊙ | - TELEPHONE & LIGHT POLE    | ⊙ | - TACKED HUB                  |
| ⊙ | - GUY ANCHOR                | ⊙ | - DRILL HOLE                  |
| ⊙ | - SIGN (1 POST)             | • | - PKNAIL                      |
| ⊙ | - SIGN (2 POST)             | • | - RAILROAD SPIKE              |
| ⊙ | - EXISTING SANITARY MANHOLE | ⊙ | - ELECTRICAL BOX              |
| ⊙ | - STORM INLET/ CATCH BASIN  | ⊙ | - EXISTING ELECTRICAL MANHOLE |
| ⊙ | - STORM INLET/ CATCH BASIN  | ⊙ | - BORING LOCATION             |
- 
- |  |          |  |                   |
|--|----------|--|-------------------|
|  | CONCRETE |  | SCREENED GRAVEL   |
|  | GROUT    |  | UNDISTURBED EARTH |

**SECTION CUTS**



**ABBREVIATIONS**

- |  |                           |                                 |
|--|---------------------------|---------------------------------|
| ADH. - ADHESIVE  | E.W. - EACH WAY           | ℙ - PROPERTY LINE/PLATE         |
| AB - ANCHOR BOLT   | EQ - EQUAL                | PROP - PROPOSED                 |
| ADD'L - ADDITIONAL   | EXIST - EXISTING          | PSI - POUNDS PER SQUARE INCH    |
| ALT. - ALTERNATE   | EXP - EXPANSION           | PSF - POUNDS PER SQUARE FOOT    |
| ALUM - ALUMINUM  | EXT - EXTERIOR            | PVC - POLYVINYL CHLORIDE        |
| & - AND  | FDN. - FOUNDATION         | R. - RISER                      |
| ASS'Y - ASSEMBLY   | FIN - FINISH              | RCP - REINFORCED CONCRETE PIPE  |
| ⊙ - AT   | FL - FINISH LINE          | REINF - REINFORCING             |
| BITUM. - BITUMINOUS  | FLR - FLOOR               | REQ'D. - REQUIRED               |
| B/ - BOTTOM OF   | FF - FAR FACE             | REQ'MTS. - REQUIREMENTS         |
| OR BOT/  | FTG - FOOTING             | RO - ROUGH OPENING              |
| ℙ - BASE LINE  | G - GAS                   | RT - RIGHT                      |
| BLDG. - BUILDING   | GA. - GAGE                | R/W - RIGHT-OF-WAY              |
| BLK. - BLOCK   | GR. - GRADE               | SAN - SANITARY SEWER            |
| BOT - BOTTOM   | GRD. - GROUND             | SCHED - SCHEDULE                |
| B PL - BASE PLATE  | HORIZ - HORIZONTAL        | SECT - SECTION                  |
| BRG. - BEARING   | HP - HIGH POINT           | SF - SQUARE FEET                |
| BT PL. - BENT PLATE  | HHP - HIGH HIGH POINT     | SHT. - SHEET                    |
| CCFRMP - CENTRIFUGALLY CAST FIBER-REINFORCED POLYMER MORTAR PIPE | HR. - HANDRAIL            | SIM - SIMILAR                   |
| C/C - CENTER TO CENTER   | HS - HIGH STRENGTH        | SJ - STEEL JOIST                |
| C.J. - CONSTRUCTION JOINT  | I.F. - INSIDE FACE        | SLBB - SHORT LEG BACK-TO-BACK   |
| ⊙ - CENTERLINE   | INT - INTERIOR            | SLV - SHORT LEG VERTICAL        |
| CIRC - CIRCULAR  | INSUL. - INSULATION       | SPA. - SPACES OR SPACING        |
| CLR - CLEAR  | INV. - INVERT             | SPRD. - SPREAD                  |
| CLSM - CONTROLLED LOW-STRENGTH MATERIAL                          | JT - JOINT                | SQ OR ◻ - SQUARE                |
| CMU - CONCRETE MASONRY UNIT                                      | K. - KIP (1000 POUNDS)    | ST - STORM SEWER                |
| COL - COLUMN   | LL - LIVE LOAD            | STA. - STATION                  |
| COMB. - COMBINED   | LLB - LONG LEG            | ST. STL. - STAINLESS STEEL      |
| CONC - CONCRETE  | LLH - LONG LEG HORIZONTAL | STD - STANDARD                  |
| CONT - CONTINUOUS  | LLV - LONG LEG VERTICAL   | STL. - STEEL                    |
| CONTL. - CONTROL   | LONG. - LONGITUDINAL      | STR. - STRUCTURAL               |
| CPP - CLEVELAND PUBLIC POWER                                     | LP - LOW POINT            | SUP. - SUPPORT                  |
| DEFL - DEFLECTION  | LT - LEFT                 | SWO - STORMWATER OVERFLOW       |
| DEPR. - DEPRESSION   | LW - LIGHT WEIGHT         | T. - TREAD                      |
| DET - DETAIL   | MAS - MASONRY             | T/ - TOP OF                     |
| DI(DIP) - DUCTILE IRON PIPE                                      | MAX - MAXIMUM             | OR TOP/                         |
| DIA - DIAMETER   | MH - MANHOLE              | T&B - TOP AND BOTTOM            |
| ⊙ - DIAMETER   | MID. - MIDDLE             | TEMP - TEMPORARY                |
| DIM - DIMENSION  | MIN - MINIMUM             | THK. - THICK                    |
| DL - DEAD LOAD   | MK. - MARK                | TOM - TOP OF MASONRY            |
| DIST. - DISTANCE   | MO - MASONRY OPENING      | TYP - TYPICAL                   |
| DWL/DWLS - DOWEL(S)  | N/A - NOT APPLICABLE      | U.O.N. - UNLESS OTHERWISE NOTED |
| DWO - DRY WEATHER OUTLET   | N.F. - NEAR FACE          | VCP - VITRIFIED CLAY PIPE       |
| EE - EACH END  | NO. - NUMBER              | VERT - VERTICAL                 |
| E.F. - EACH FACE   | OC - ON CENTER            | W - WATER                       |
| E.J. - EXPANSION JOINT   | O/H E - OVERHEAD EXISTING | W/ - WITH                       |
| E. - EAST  | OPP. - OPPOSITE           | W/ - WEST                       |
| ELEV.(EL.) - ELEVATION   | OPNG - OPENING            | W/M - WATER MAIN                |
| ELEC - ELECTRIC  | +/- - PLUS OR MINUS       | W/O - WITHOUT                   |
| EMBD. - EMBEDDED   | PC - PRECAST              | WP - WORK POINT                 |
|  |                           | WS - WATERSTOP                  |
|  |                           | WWF - WELDED WIRE FABRIC        |

**SHEET INDEX**

SHEET NO.	SHEET TITLE
G-1	LEGEND, SHEET INDEX, AND GENERAL NOTES
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<b>MAINTENANCE OF TRAFFIC</b>	
<b>PLAN &amp; PROFILE</b>	
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P-2	WALWORTH RUN INTERCEPTOR STA 5+00 TO STA 10+00
P-3	WALWORTH RUN INTERCEPTOR STA 10+00 TO STA 15+00
P-4	WEST 15TH ST SEWER CONNECTION
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C-2	SOUTHERN SEWER ABANDONMENT PLAN
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C-4	MANHOLE NO. 1 SITE PLAN
C-5	MANHOLE NO. 2 AND JUNCTION CHAMBER NO.2 SITE PLAN
C-6	WATER MAIN RELOCATION PLAN AND NOTES
C-7	WATER MAIN NOTES AND DETAILS
C-8	WATER MAIN DETAILS
C-9	PRECAST CONCRETE MANHOLE DETAILS
C-10	TRENCH REPAIR DETAILS
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TU-2	JUNCTION CHAMBER NO.1 FINAL SUPPORTS
TU-3	WORK SHAFT JUNCTION CHAMBER NO.2 INITIAL SUPPORTS
TU-4	JUNCTION CHAMBER NO.2 FINAL SUPPORTS
TU-5	WORK SHAFT MANHOLE NO.1 INITIAL SUPPORTS
TU-6	WORK SHAFT MANHOLE NO.2 INITIAL SUPPORTS
TU-7	BREAK-IN, BREAK-OUT, BACKSTOP AND SUMP DETAIL

BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DESIGNED BY: _____
DRAWN BY: _____
SHEET CHK'D BY: _____
CROSS CHK'D BY: _____
APPROVED BY: _____
DATE: _____
REV. NO.    DATE    ISSUE BY    REMARKS

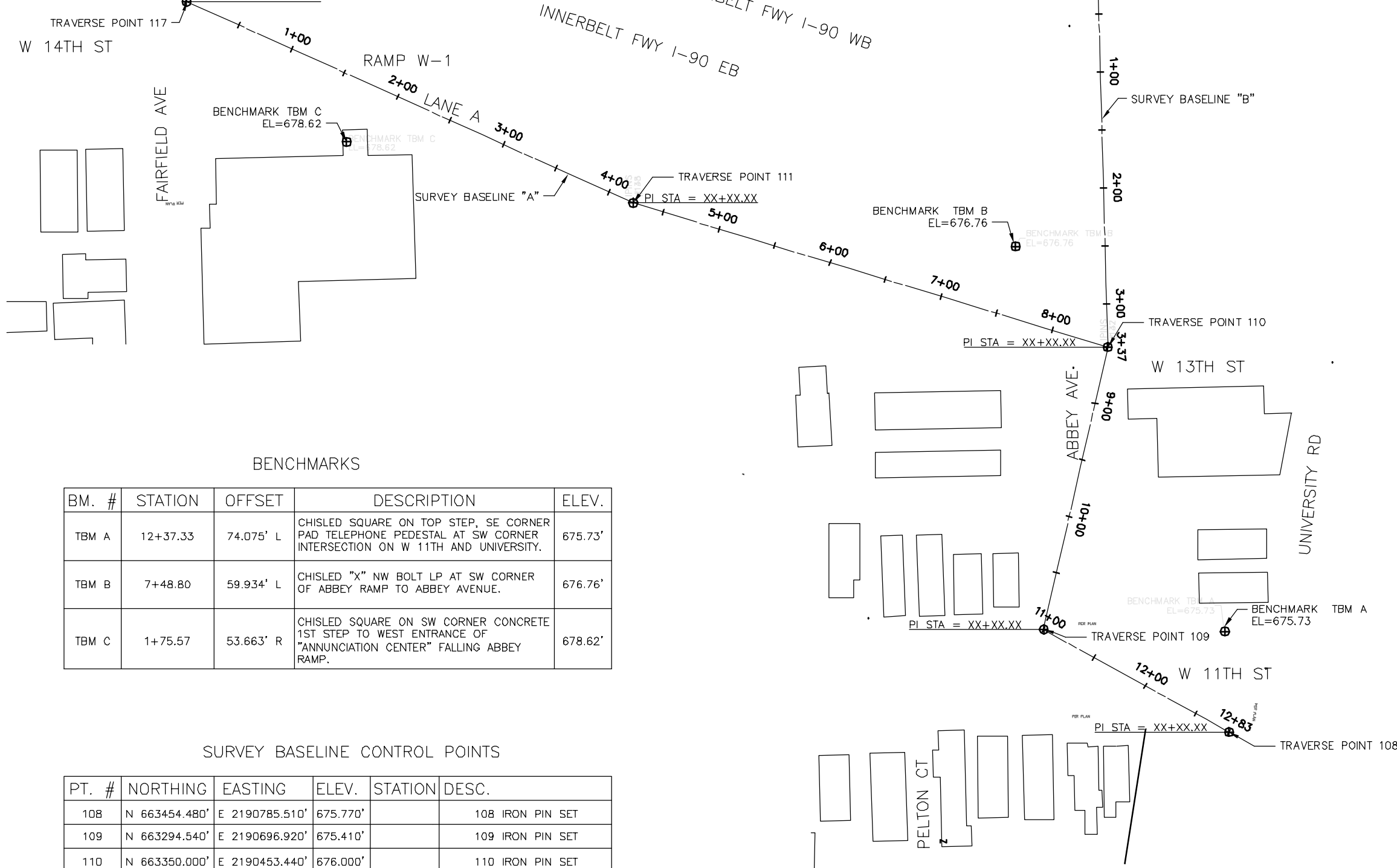
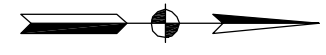
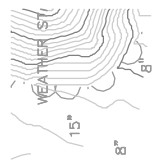


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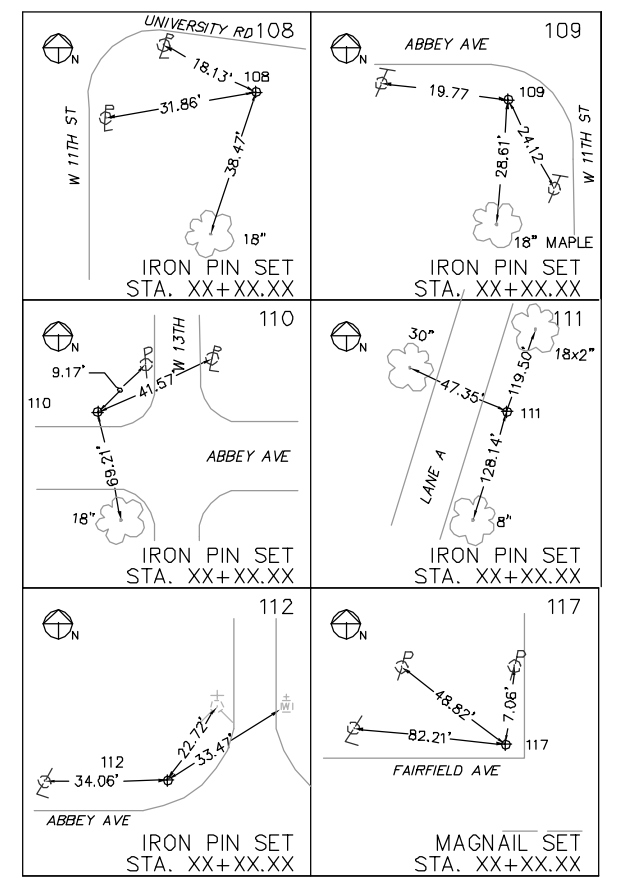
WALWORTH RUN INTERCEPTOR REALIGNMENT

LEGEND, SHEET INDEX, AND GENERAL NOTES

PROJECT NO.:  
SHEET: X  
SCALE: 1"=10'  
SHEET NO.: G-1



SURVEY BASELINE CONTROL POINT LOCATIONS

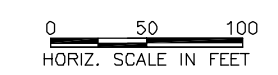


BENCHMARKS

BM. #	STATION	OFFSET	DESCRIPTION	ELEV.
TBM A	12+37.33	74.075' L	CHISLED SQUARE ON TOP STEP, SE CORNER PAD TELEPHONE PEDESTAL AT SW CORNER INTERSECTION ON W 11TH AND UNIVERSITY.	675.73'
TBM B	7+48.80	59.934' L	CHISLED "X" NW BOLT LP AT SW CORNER OF ABBEY RAMP TO ABBEY AVENUE.	676.76'
TBM C	1+75.57	53.663' R	CHISLED SQUARE ON SW CORNER CONCRETE 1ST STEP TO WEST ENTRANCE OF "ANNUNCIATION CENTER" FALLING ABBEY RAMP.	678.62'

SURVEY BASELINE CONTROL POINTS

PT. #	NORTHING	EASTING	ELEV.	STATION	DESC.
108	N 663454.480'	E 2190785.510'	675.770'		108 IRON PIN SET
109	N 663294.540'	E 2190696.920'	675.410'		109 IRON PIN SET
110	N 663350.000'	E 2190453.440'	676.000'		110 IRON PIN SET
111	N 662940.790'	E 2190329.240'	679.670'		111 IRON PIN SET
112	N 663340.790'	E 2190116.180'	675.230'		112 IRON PIN SET
117	N 662555.680'	E 2190155.420'	675.940'		117 MAGNAIL SET



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 DATE: \_\_\_\_\_

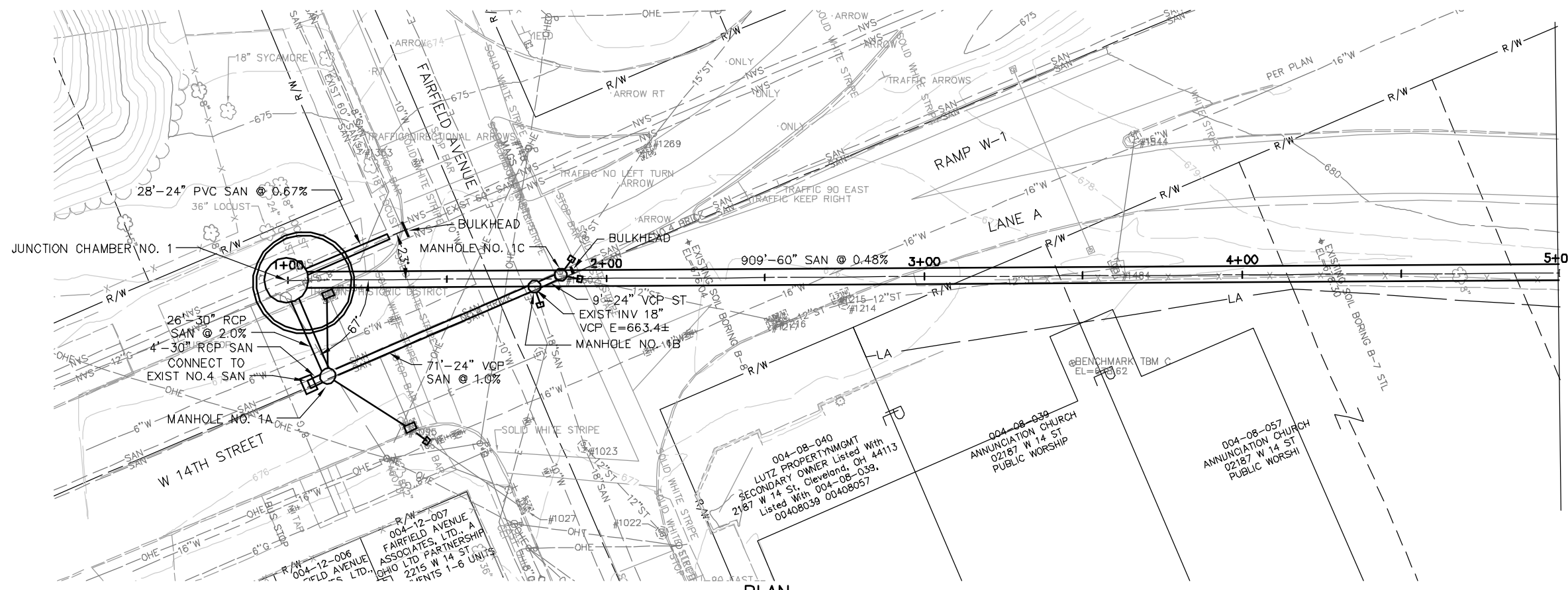


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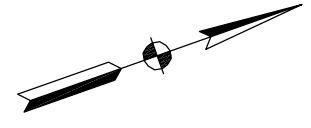
SURVEY CONTROL

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=50'  
 SHEET NO.: G-2

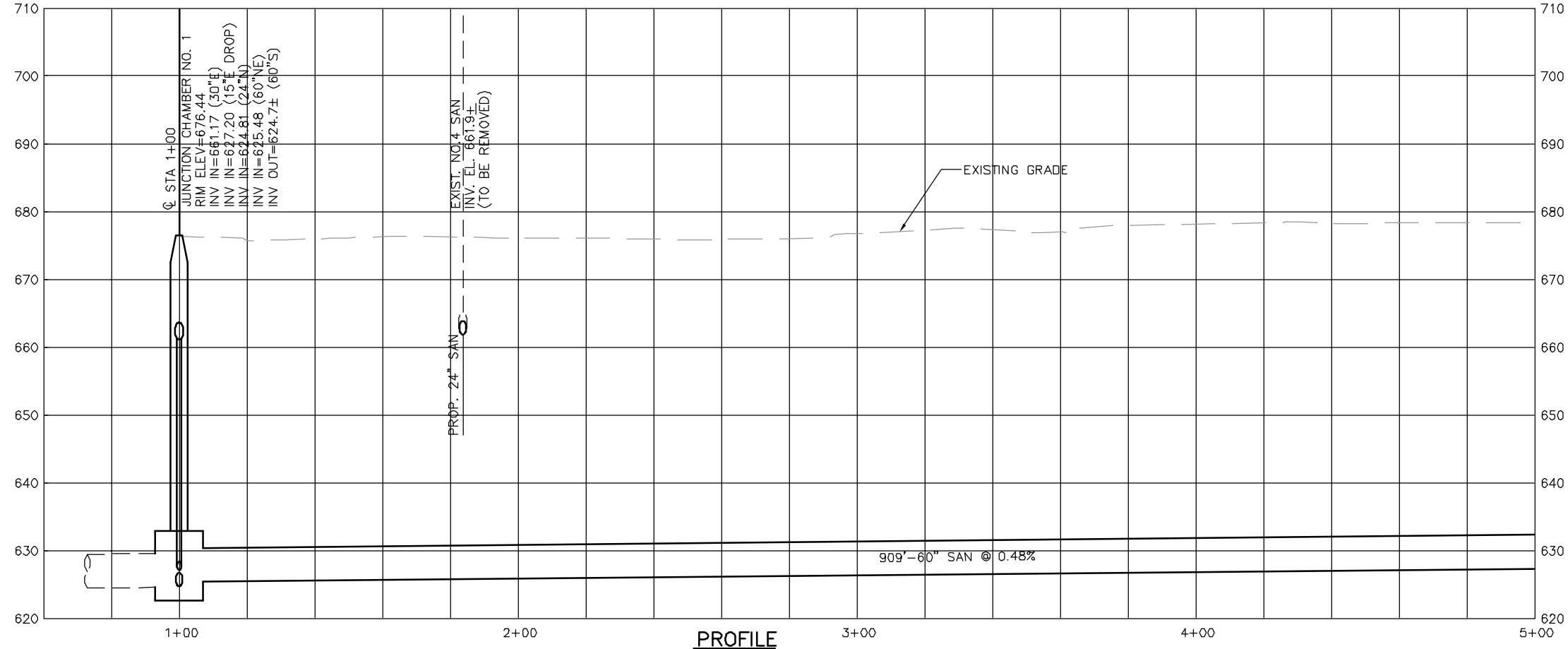


PLAN

MATCH LINE STA. 5+00

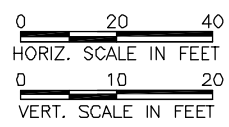


CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
	JUNCTION CHAMBER NO. 1 SITE PLAN
	JUNCTION CHAMBER NO. 1 STRUCTURAL PLANS AND DETAILS



PROFILE

- IGR #1022  
TOC=677.19  
INV 12" RCP SW (TO #1023)=674.19
- SMH #1023  
TOC=676.91  
FAIR-02  
INV 18" VCP E=663.56  
INV 18" VCP W=663.65  
INV 12" CP NE=673.01  
INV 15" VCP NE=666.31
- INCB #1027  
TOC=676.62  
INV 12" VCP NE=672.32
- INCB #1095  
TOC=675.80  
NO PIPES VISIBLE  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.15
- SMH #1150  
TOC=676.18  
INV 12" RCP NE=671.24  
INV 18" RCP NW=667.82  
BOTTOM OF STRUCTURE=661.88
- STMH #1214  
TOC=676.35  
INV 12" RCP N=672.35  
INV 12" RCP S=672.35
- IN #1215  
TOC=675.79  
CURB INLET WINDOW
- INCB #1216  
TOC=675.52  
INV 12" RCP SW (TO #1150)=672.32
- INCB #1217  
TOC=675.53
- INCB #1269  
TOC=675.69  
INV 18" VCP S (TO #1150)=668.04
- INCB #1334  
TOC=675.48  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=669.88
- SMH #1353  
TOC=675.52  
FAIR-04  
INV 60" BRICK E=625.27  
INV 60" BRICK W=625.12
- IGS #1484  
TOC=676.52  
FILLED TO GRATE  
NO PIPES VISIBLE
- STMH #1544  
TOC=679.26  
FILLED TO GRATE  
NO PIPES VISIBLE



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 DATE: \_\_\_\_\_

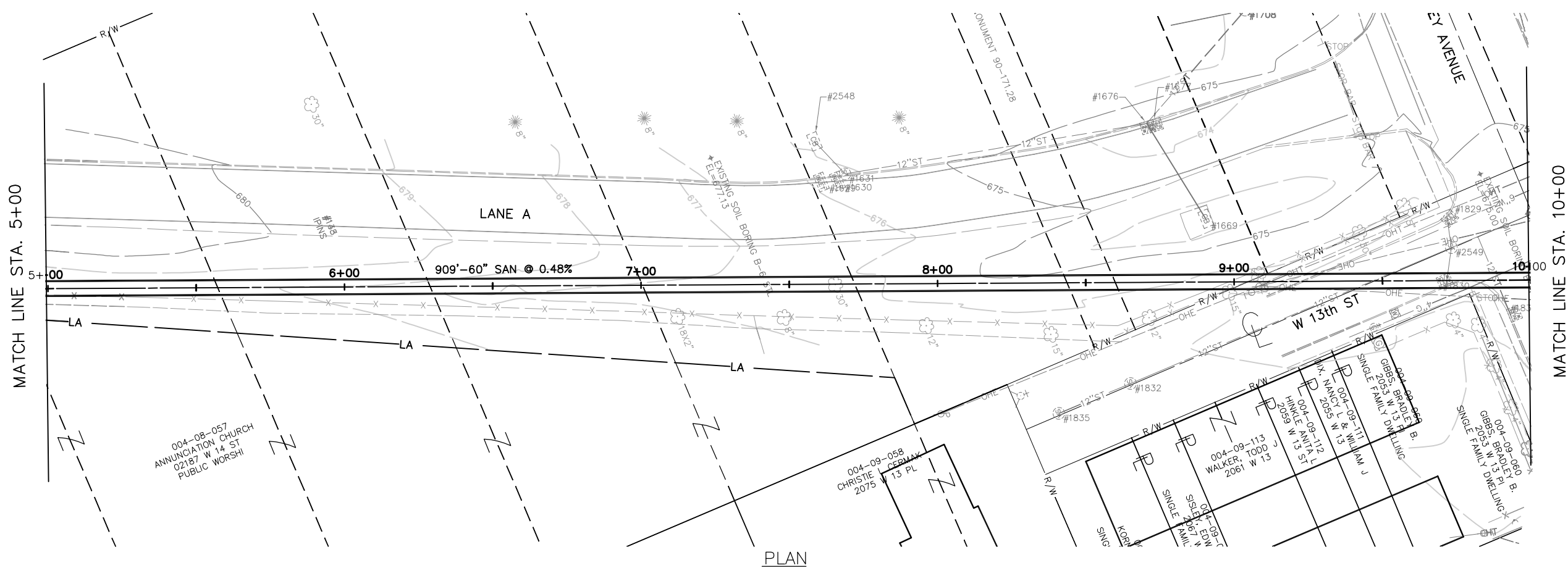
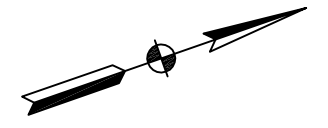


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WALWORTH RUN INTERCEPTOR REALIGNMENT

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=20'H; 1"=10'V  
 SHEET NO.: P-1

PLAN & PROFILE  
 STA. 1+00 TO STA. 5+00

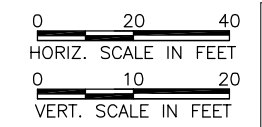
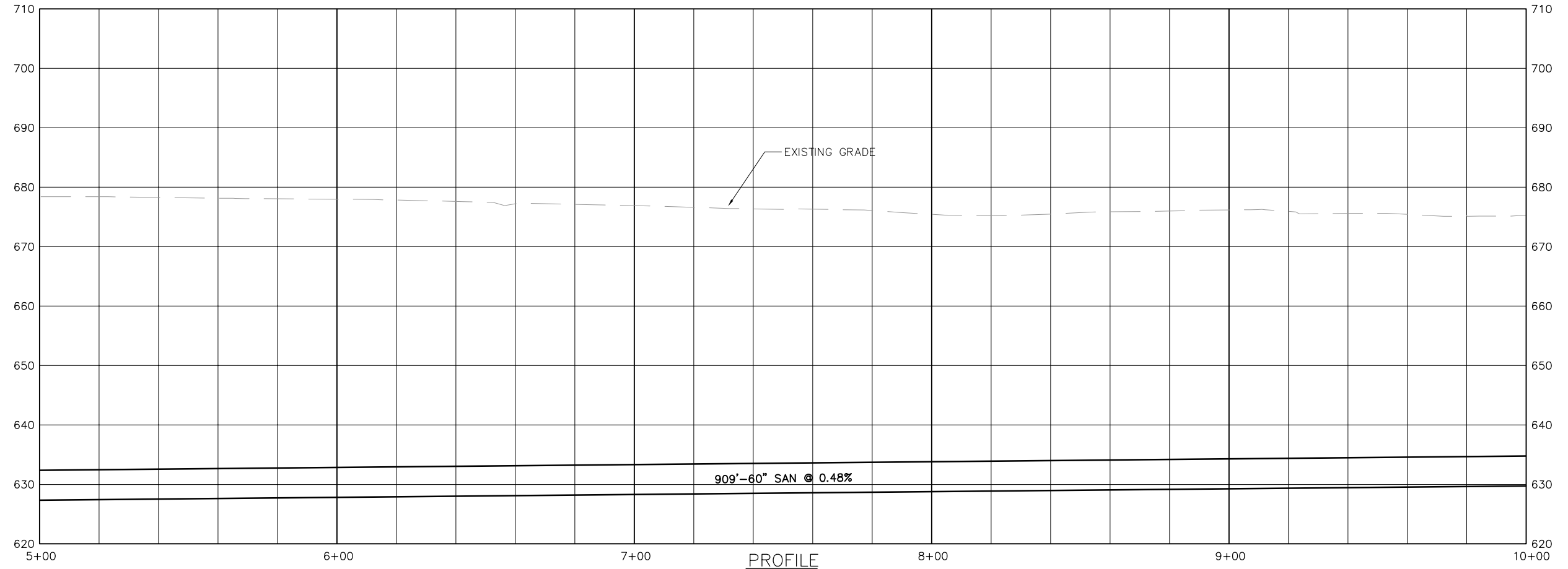


MATCH LINE STA. 10+00

MATCH LINE STA. 5+00

CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION

- IN #1629  
TOC=675.88  
CURB INLET WINDOW
- IN #1630  
TOC=675.78  
CURB INLET WINDOW
- STMH #1631  
TOC=676.19  
INV 12" RCP N (TO #1676)=670.99  
INV 12" RCP W (TO #2548)=671.09
- IGS #1669  
TOC=673.26  
NO PIPES VISIBLE
- INCB #1676  
TOC=673.38  
INV 12" RCP E (TO #1669)=668.58  
INV 12" VCP NW (TO #1708)=668.48  
INV 12" RCP SW (TO #1631)=668.68
- INCB #1677  
TOC=673.38
- INCB #1829  
TOC=675.22  
INV 12" VCP SE (TO #2549)=670.57
- INCB #1830  
TOC=675.09  
INV 12" VCP NW (TO #2549)=670.09
- INCB #1831  
TOC=675.11  
NO PIPES VISIBLE  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.91
- IGS #2548  
TOC=675.82  
FILLED TO TOP OF STRUCTURE
- STMH #2549  
TOC=675.42  
INV 12" VCP SE (TO #1830)=669.67  
INV 12" VCP NW (TO #1829)=669.02  
INV 12" VCP S (TO #1832)=664.92  
INV 12" VCP N=664.92



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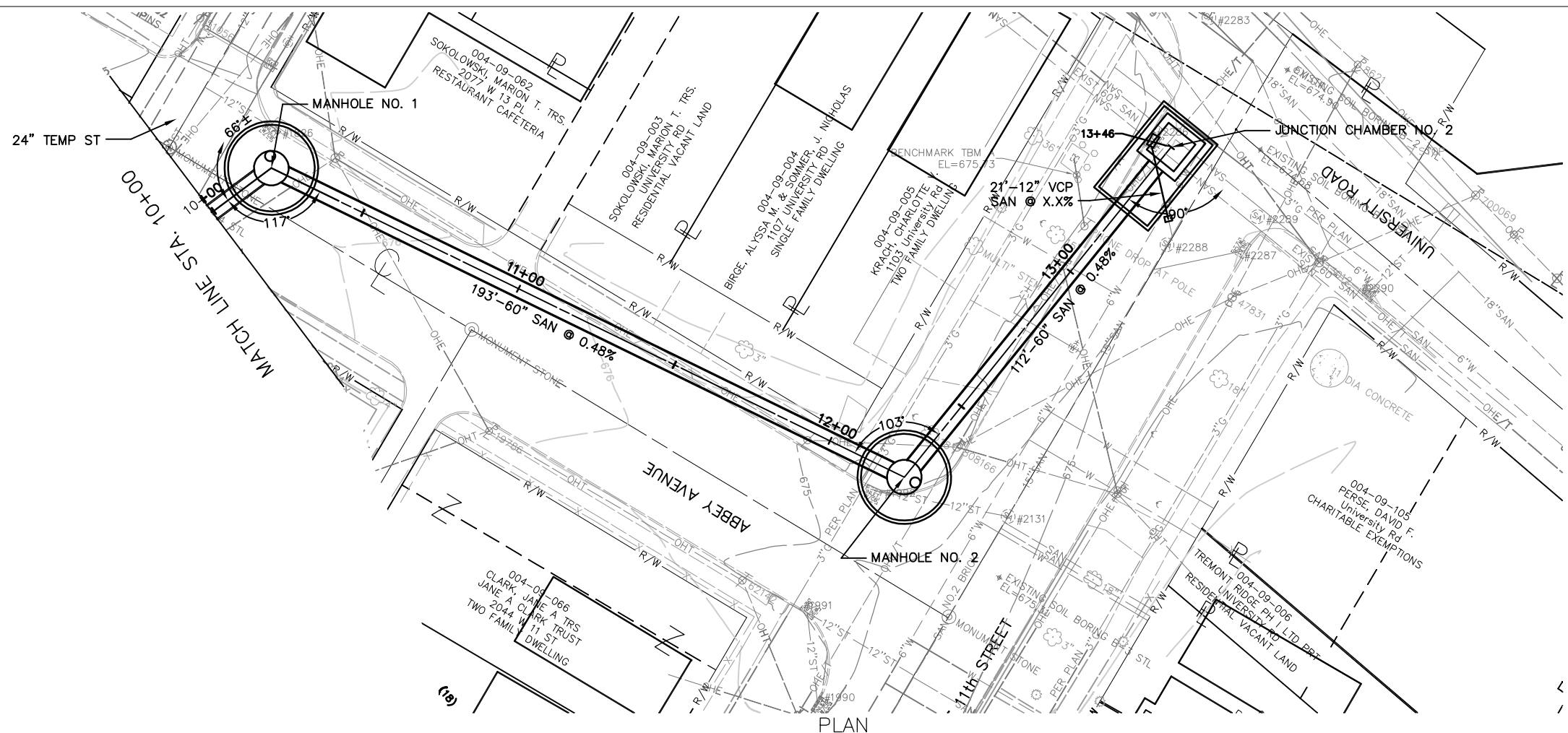
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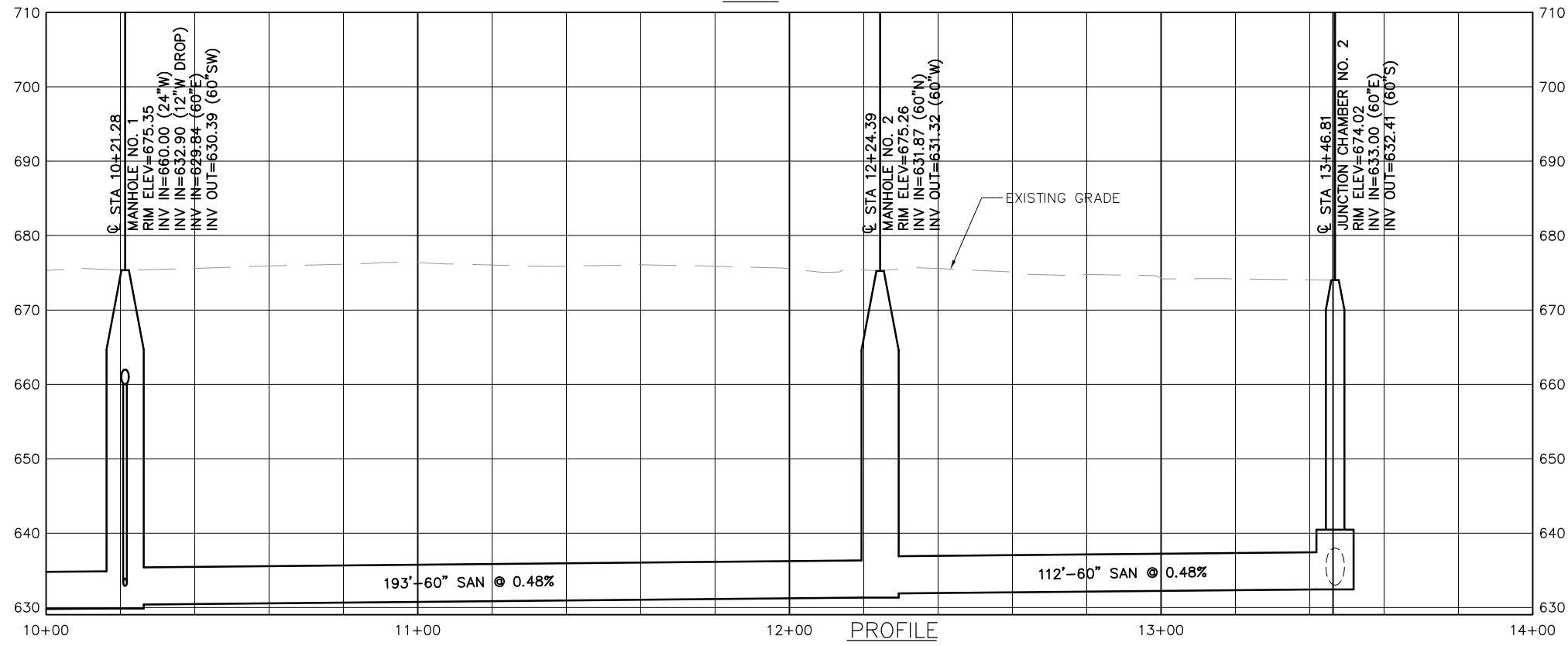
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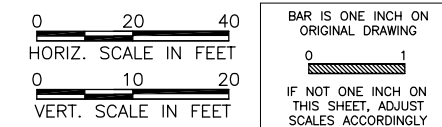
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 SHEET: \_\_\_\_\_  
 SCALE: 1"=20'H; 1"=10'V  
 SHEET NO.: P-2



CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION
C-2	MH NO. 1 SITE PLAN
C-3	MANHOLE NO. 2 & JUNCTION CHAMBER NO. 2 SITE PLAN



- INCB #1826  
TOC=675.09  
FILLED WITH WATER MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.09
- INCB #1990  
TOC=674.82  
MEASUREMENT +/-  
BOTTOM OF STRUCTURE=671.82
- INCB #1991  
TOC=674.52  
INV 12" VCP SE (TO #1990)=670.62  
INV 12" VCP E=669.62
- INCB #1992  
TOC=674.61  
INV 12" VCP NE=669.81
- SMH #2131  
TOC=675.35  
DID NOT OPEN - CRACKED LID
- SMH #2283  
TOC=674.64  
UN-03  
INV 18" VCP E (TO #2356)=661.94  
INV 15" VCP W (TO #1799)=661.99  
INV 12" VCP SW=667.99  
INV 12" VCP NW=666.04
- INCB #2286  
TOC=673.69  
FILLED TO TOP OF STRUCTURE
- INCB #2287  
TOC=673.92  
FILLED TO TOP OF STRUCTURE
- SMH #2288  
TOC=674.89  
W11-01  
INV 15" VCP N (TO #2131)=667.59  
INV 15" VCP S (TO #?)=667.39
- SMH #2289  
TOC=674.25  
UN-02  
INV 60" BRICK SE (TO #?)=633.25  
INV 60" BRICK NW (TO #2313)=633.15
- INCB #2290  
TOC=673.93  
NO PIPES VISIBLE MEASUREMENT +/-  
BOTTOM OF STRUCTURE=667.38



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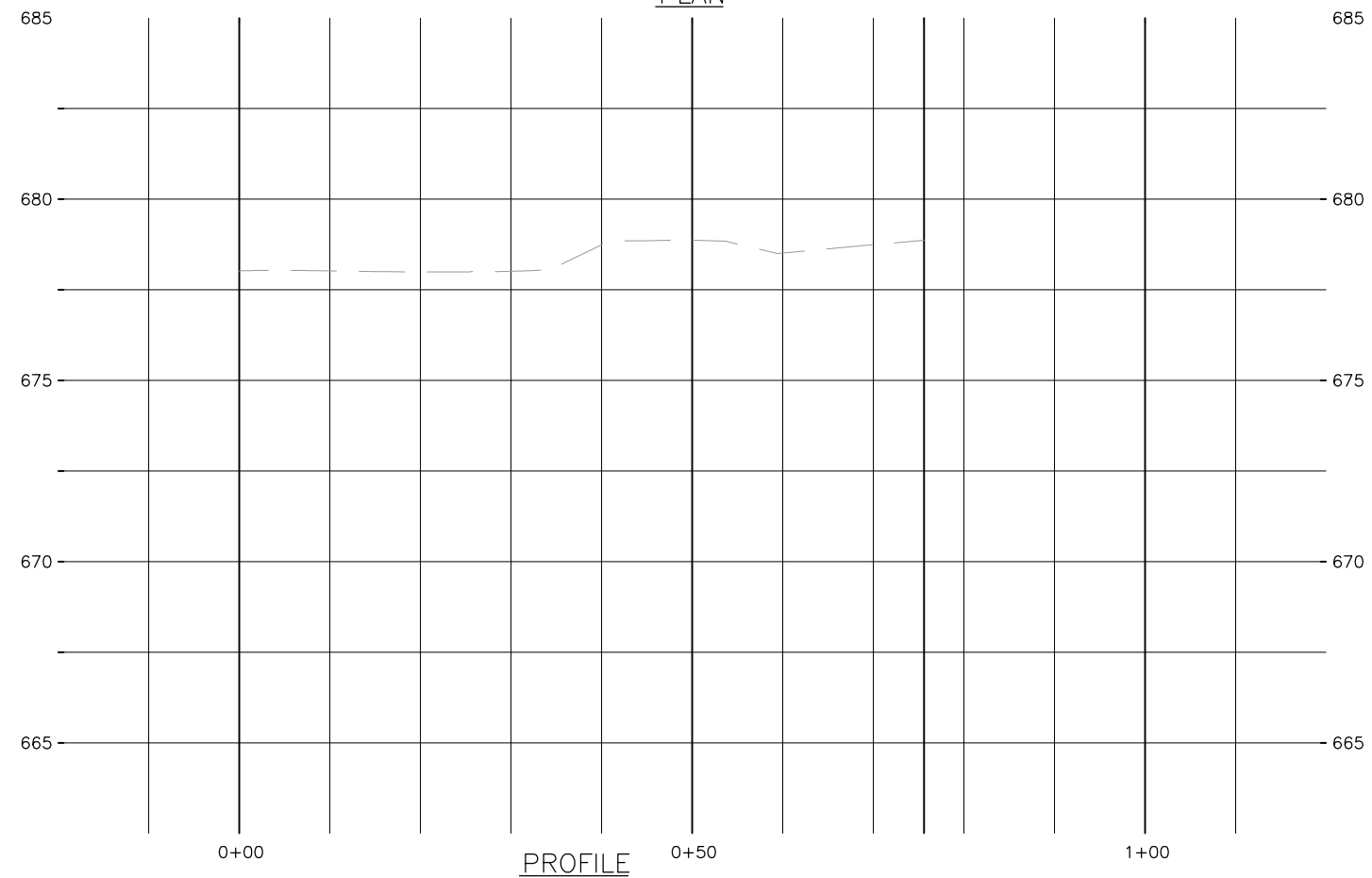
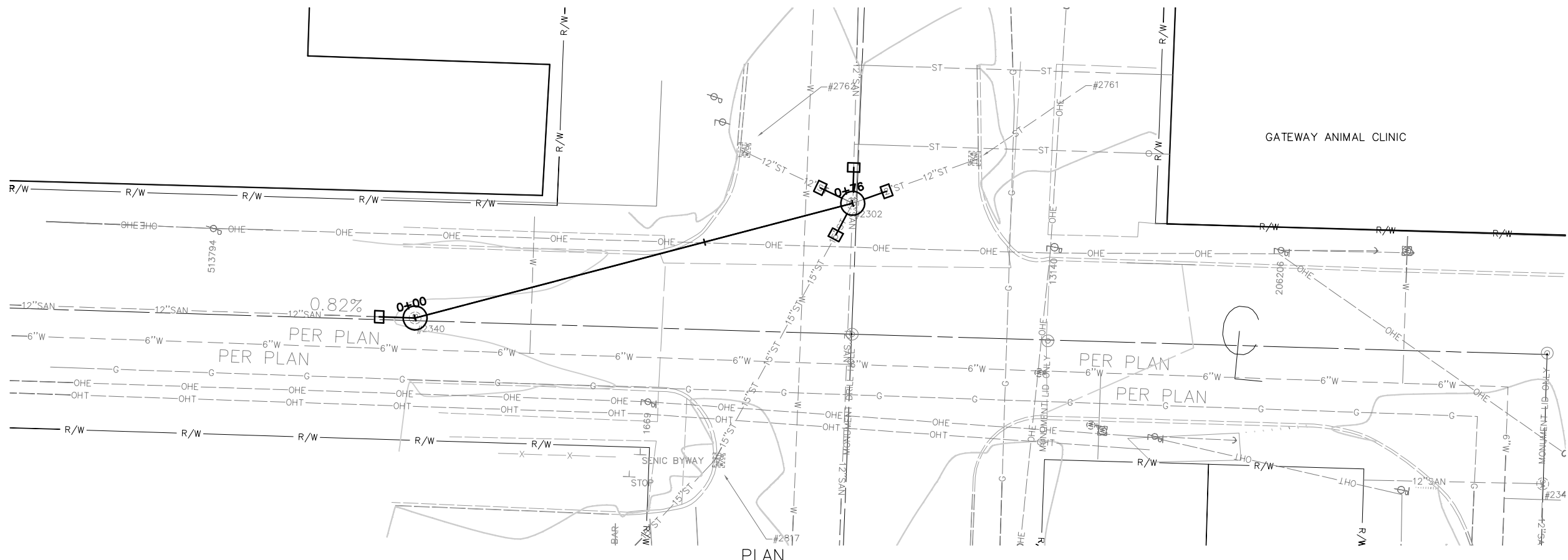


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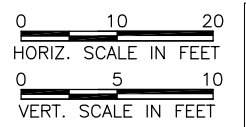
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**PLAN & PROFILE  
 STA. 10+00 TO STA. 15+00**

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=20'H; 1"=10'V  
 SHEET NO.: P-3



CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION



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 CROSS CHK'D BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_



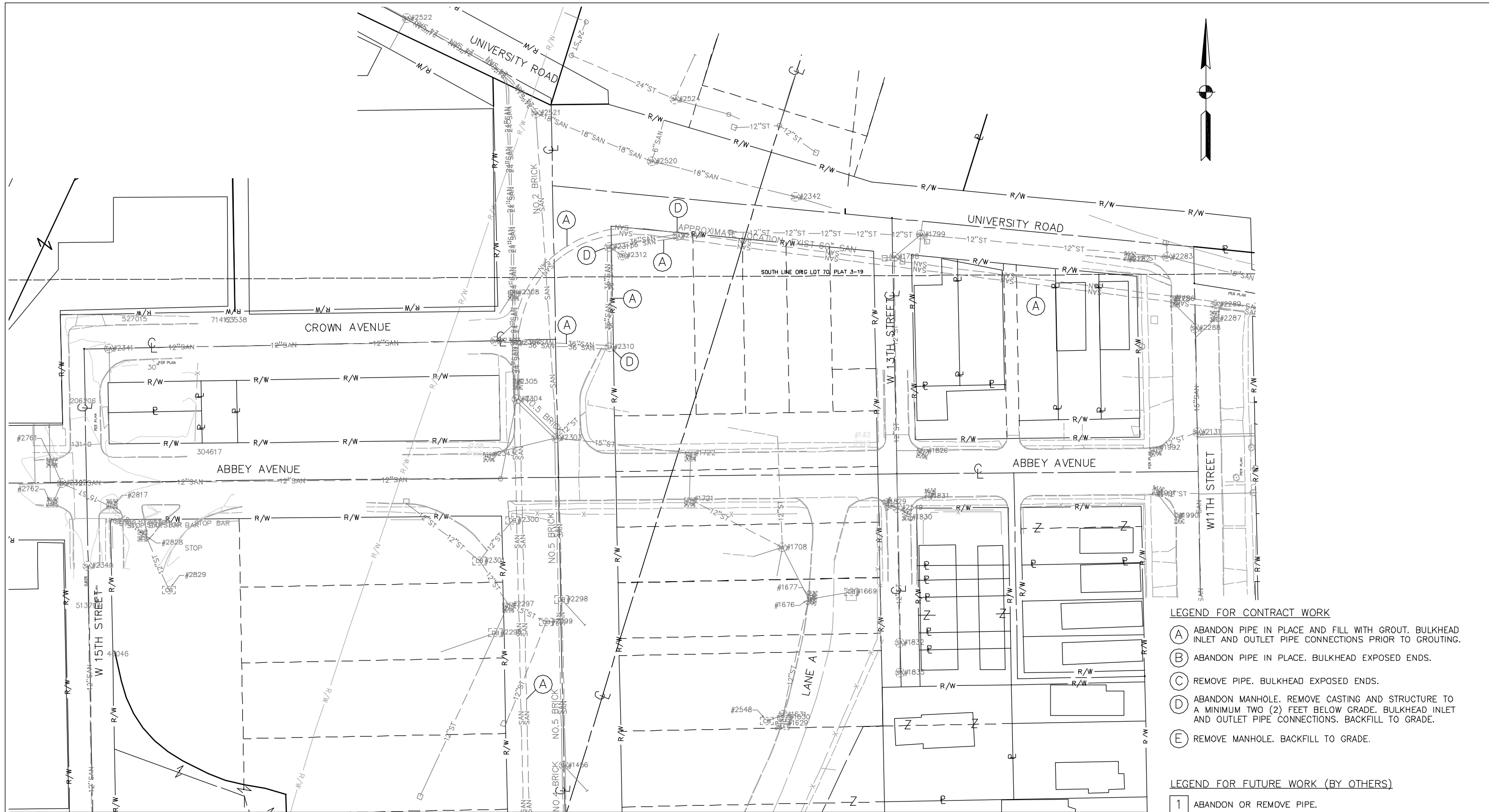
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WALWORTH RUN INTERCEPTOR REALIGNMENT

W15TH ST SEWER CONNECTION PLAN & PROFILE

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=10'H; 1"=5'V  
 SHEET NO.: P-4





MATCH LINE SEE SHEET C-5

**PLAN**

**LEGEND FOR CONTRACT WORK**

- (A) ABANDON PIPE IN PLACE AND FILL WITH GROUT. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS PRIOR TO GROUTING.
- (B) ABANDON PIPE IN PLACE. BULKHEAD EXPOSED ENDS.
- (C) REMOVE PIPE. BULKHEAD EXPOSED ENDS.
- (D) ABANDON MANHOLE. REMOVE CASTING AND STRUCTURE TO A MINIMUM TWO (2) FEET BELOW GRADE. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS. BACKFILL TO GRADE.
- (E) REMOVE MANHOLE. BACKFILL TO GRADE.

**LEGEND FOR FUTURE WORK (BY OTHERS)**

- 1 ABANDON OR REMOVE PIPE.
- 2 ABANDON OR REMOVE MANHOLE.

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0 40 80  
 SCALE IN FEET

REV. NO.	DATE	ISSUE BY	REMARKS

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 SHEET CHK'D BY: \_\_\_\_\_  
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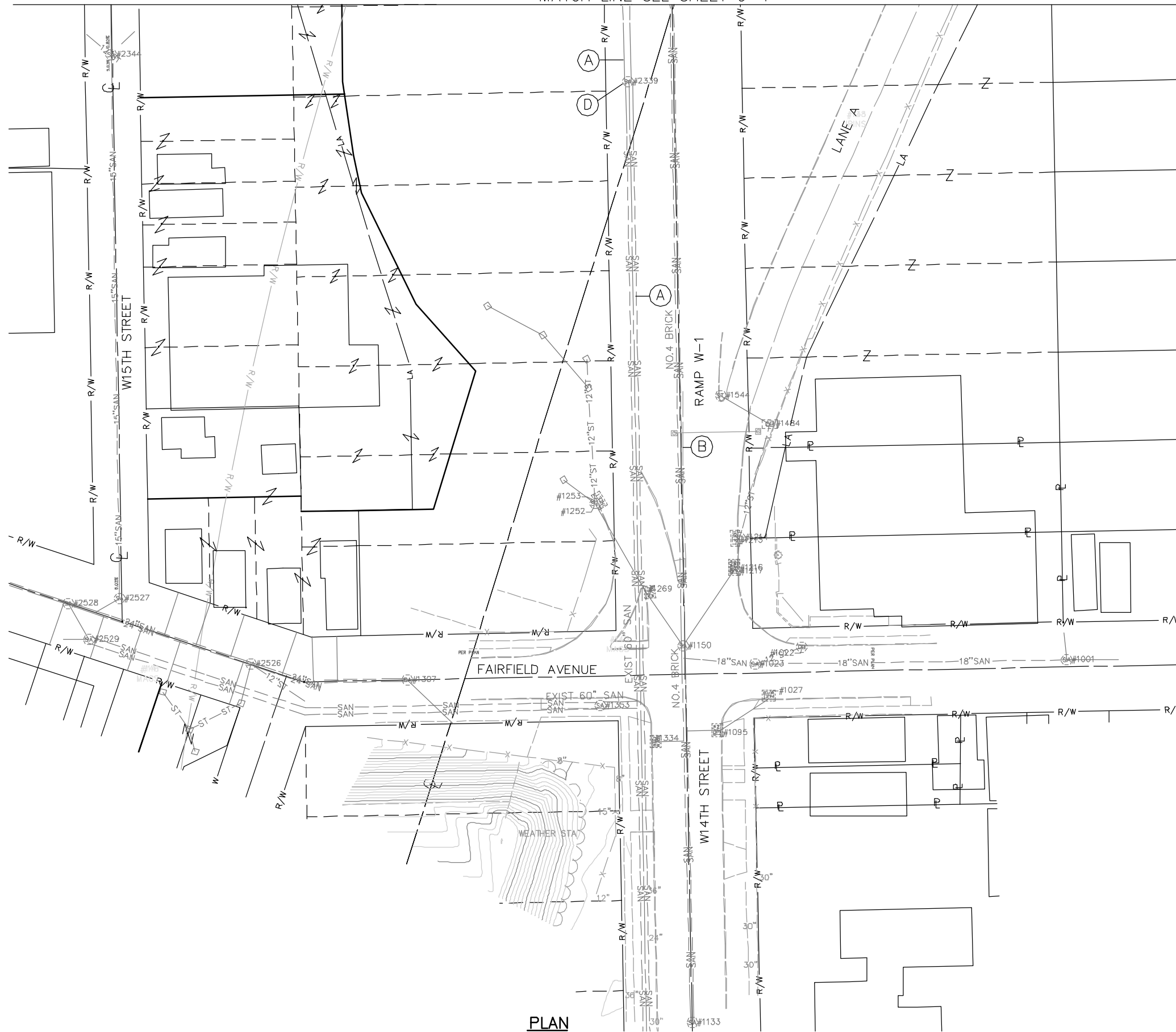
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**NORTHERN SEWER ABANDONMENT PLAN**

PROJECT NO.:  
 SHEET: X  
 SCALE: 1"=40'  
 SHEET NO.: C-1

MATCH LINE SEE SHEET C-4



PLAN

**LEGEND FOR CONTRACT WORK**

- (A) ABANDON PIPE IN PLACE AND FILL WITH GROUT. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS PRIOR TO GROUTING.
- (B) ABANDON PIPE IN PLACE. BULKHEAD EXPOSED ENDS.
- (C) REMOVE PIPE. BULKHEAD EXPOSED ENDS.
- (D) ABANDON MANHOLE. REMOVE CASTING AND STRUCTURE TO A MINIMUM TWO (2) FEET BELOW GRADE. BULKHEAD INLET AND OUTLET PIPE CONNECTIONS. BACKFILL TO GRADE.
- (E) REMOVE MANHOLE. BACKFILL TO GRADE.

**LEGEND FOR FUTURE WORK (BY OTHERS)**

- 1 ABANDON OR REMOVE PIPE.
- 2 ABANDON OR REMOVE MANHOLE.



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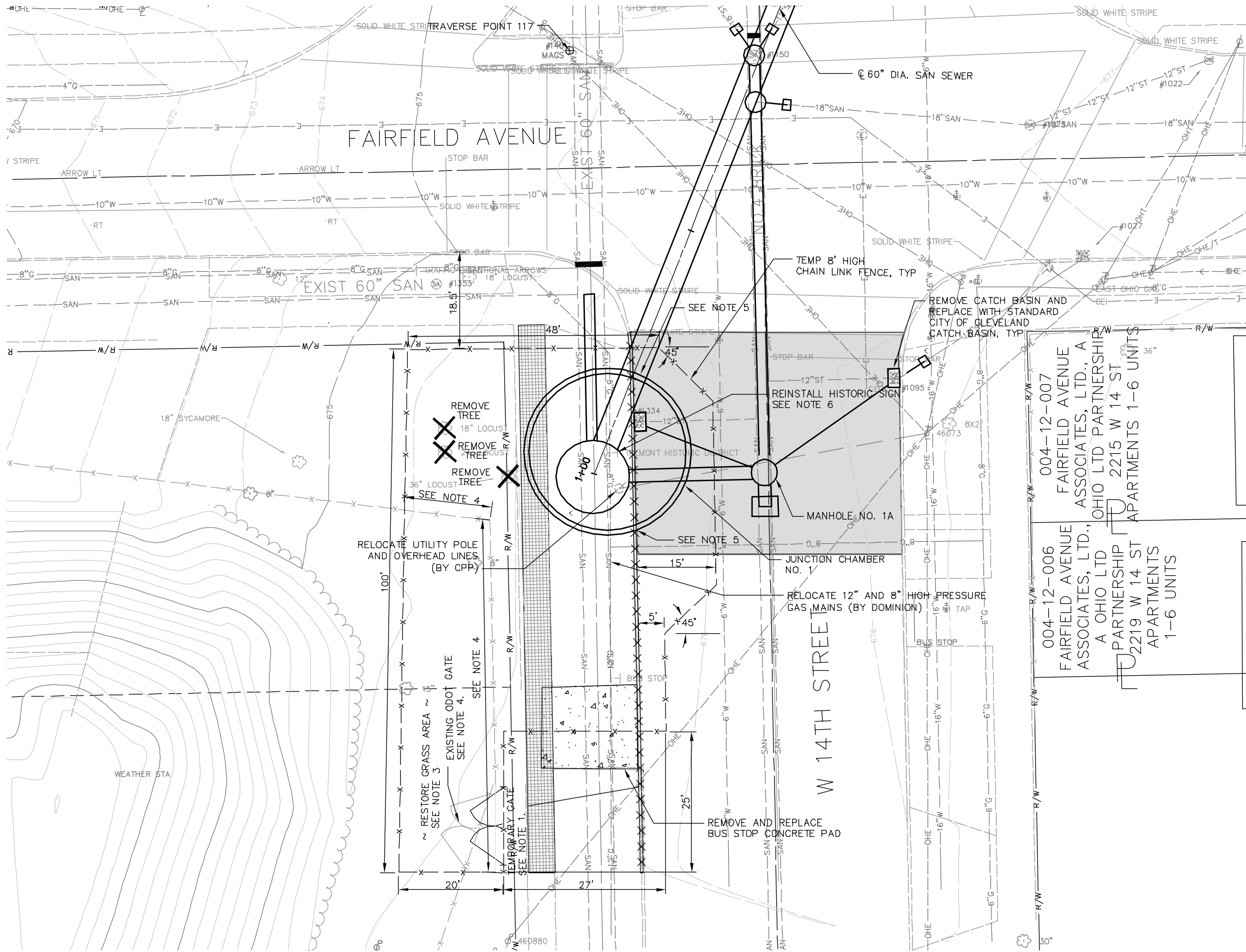


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WALWORTH RUN INTERCEPTOR REALIGNMENT

SOUTHERN SEWER ABANDONMENT PLAN

PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: 1"=40'  
 SHEET NO.: C-2



CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION

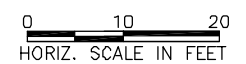
**LEGEND**

- XXX REMOVE AND REPLACE CURB
- [Hatched Box] FULL DEPTH ASPHALT PAVEMENT REPAIR
- [Grid Box] REMOVE AND REPLACE SIDEWALK

**NOTES:**

1. CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATE.
2. CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATE AFTER CONSTRUCTION IS COMPLETE.
3. CONTRACTOR SHALL SEED AND MULCH ALL GRASSY AREAS DISTURBED DURING CONSTRUCTION.
4. CONTRACTOR SHALL REMOVE EXISTING ODOT FENCE AND GATE DURING CONSTRUCTION. REPLACE WITH NEW ODOT TYPE CL FENCE UPON COMPLETION OF JUNCTION CHAMBER CONSTRUCTION. PROVIDE ONE 10 FT WIDE CHAIN LINK WALK GATE TO REPLACE EXISTING GATE.
5. CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
6. CONTRACTOR SHALL REMOVE THE " TREMONT HISTORIC DISTRICT SIGN" AND FOUNDATION. STORE THE SIGN DURING CONSTRUCTION. INSTALL A NEW FOUNDATION AND REINSTALL THE EXISTING SIGN AT OR NEAR ITS FORMER LOCATION AFTER THE CHAMBER CONSTRUCTION IS COMPLETED.

PLAN



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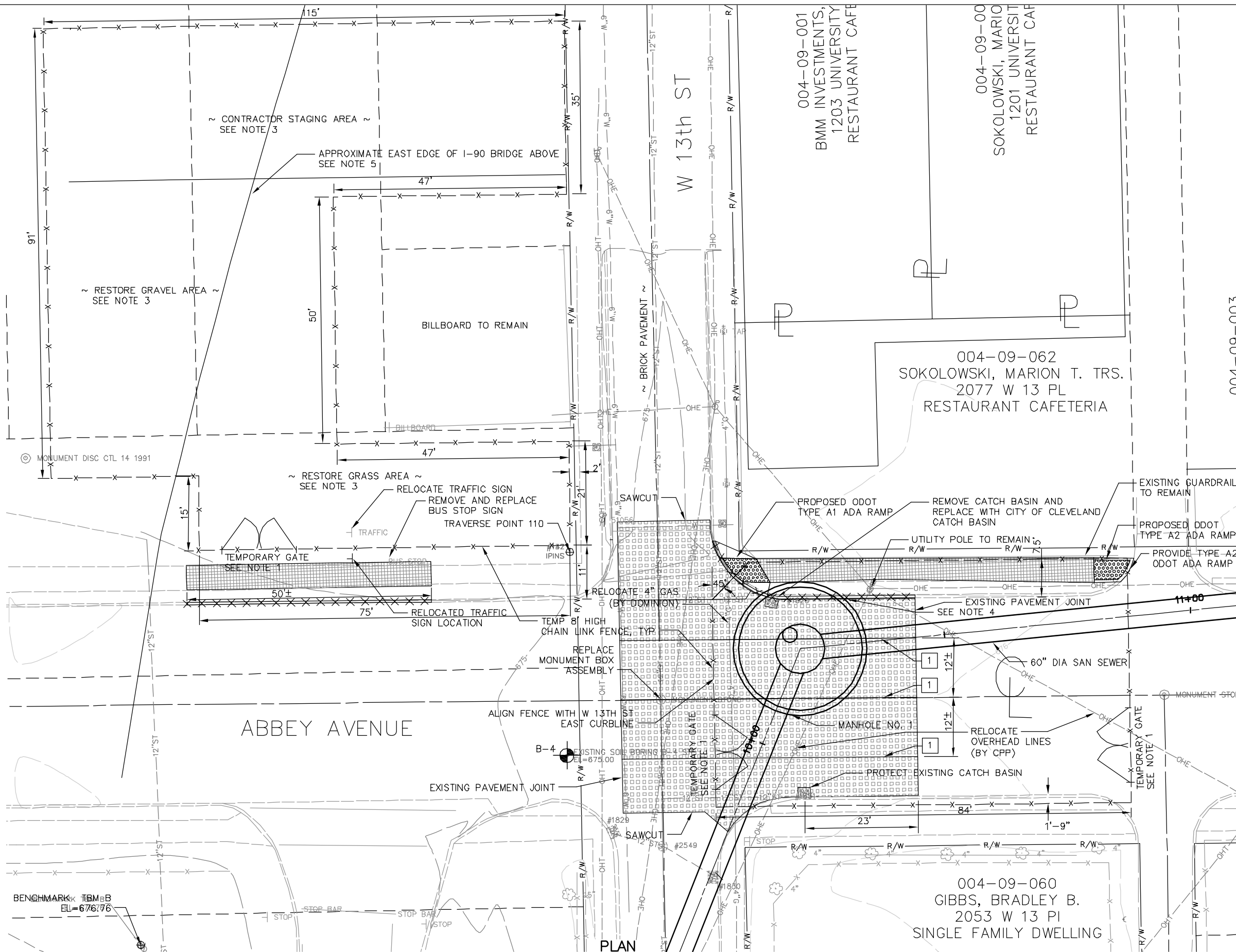


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WALWORTH RUN INTERCEPTOR REALIGNMENT

JUNCTION CHAMBER NO. 1 SITE PLAN

PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: 1"=10'  
 SHEET NO.: C-3



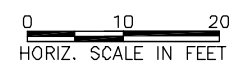
CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION

**LEGEND**

- REMOVE AND REPLACE CURB
- FULL DEPTH CONCRETE PAVEMENT REPAIR
- REMOVE AND REPLACE SIDEWALK
- LONGITUDINAL PAVEMENT JOINT

**NOTES:**

1. CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATES.
2. CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATES AFTER CONSTRUCTION IS COMPLETE.
3. CONTRACTOR SHALL SEED AND MULCH ALL GRASSY AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL GRAVEL AREAS DISTURBED DURING CONSTRUCTION.
4. CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
5. CONTRACTOR SHALL LIMIT HIS OPERATIONS TO AVOID DAMAGE TO THE EXISTING I-90 BRIDGE. HEADROOM IS RESTRICTED BENEATH THE BRIDGE STRUCTURE.



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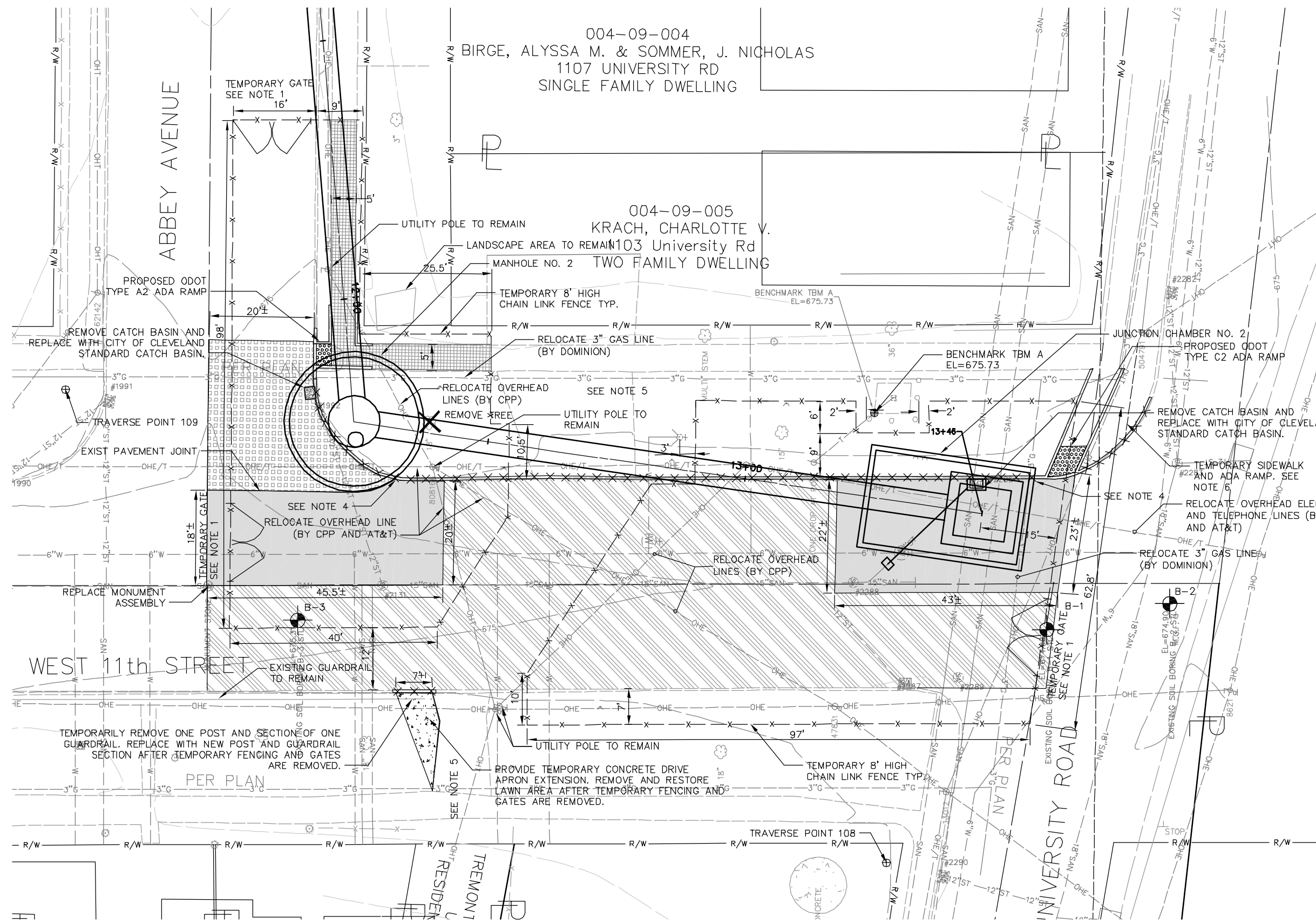
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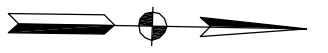
**WALWORTH RUN INTERCEPTOR REALIGNMENT**

**MANHOLE NO. 1 SITE PLAN**  
 PROJECT NO.: \_\_\_\_\_  
 SHEET: X  
 SCALE: 1"=10'  
 SHEET NO.: C-4



004-09-004  
 BIRGE, ALYSSA M. & SOMMER, J. NICHOLAS  
 1107 UNIVERSITY RD  
 SINGLE FAMILY DWELLING

004-09-005  
 KRACH, CHARLOTTE V.  
 103 University Rd  
 TWO FAMILY DWELLING

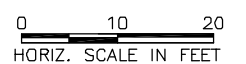


CROSS REFERENCE TABLE	
SHEET NO.	DESCRIPTION

- LEGEND**
- XXXX REMOVE AND REPLACE CURB
  - [Hatched Box] FULL DEPTH ASPHALT PAVEMENT REPAIR
  - [Grid Box] REMOVE AND REPLACE SIDEWALK
  - [Dotted Box] FULL DEPTH CONCRETE PAVEMENT REPAIR
  - [Diagonal Lines Box] MILL AND FILL ASPHALT WEARING COURSE

- NOTES:**
- CONTRACTOR SHALL DETERMINE THE WIDTH AND LOCATION OF THE TEMPORARY GATES.
  - CONTRACTOR SHALL REMOVE TEMPORARY FENCING AND GATES AFTER CONSTRUCTION IS COMPLETE.
  - CONTRACTOR SHALL SEED AND MULCH ALL GRASSY AREAS DISTURBED DURING CONSTRUCTION
  - CONTRACTOR SHALL CUT HOLES IN THE SHEETING TO ALLOW GUTTER FLOWS TO ENTER THE EXCAVATION. CONTRACTOR SHALL TEMPORARILY PUMP OR FLUME DRAINAGE FLOWS AS REQUIRED.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO RESIDENTIAL DRIVEWAYS AT ALL TIMES. DO NOT BLOCK DRIVES DURING CONSTRUCTION.
  - CONTRACTOR SHALL PROVIDE A TEMPORARY CONCRETE SIDEWALK WITH ADA RAMP DURING CONSTRUCTION. THE SIDEWALK AND RAMP SHALL BE REPLACED BY THE PERMANENT SIDEWALK AND ADA RAMP SHOWN.

PLAN



BAR IS ONE INCH ON ORIGINAL DRAWING  
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 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REV. NO.	DATE	ISSUE BY	REMARKS

DESIGNED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 SHEET CHK'D BY: \_\_\_\_\_  
 CROSS CHK'D BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_



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WALWORTH RUN INTERCEPTOR REALIGNMENT

MANHOLE NO. 2 AND JUNCTION CHAMBER NO. 2 SITE PLAN

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 1"=10'  
 SHEET NO.: C-5



**CLEVELAND DIVISION OF WATER NOTES FOR NEW WATER MAIN INSTALLATION**

CONTRACTOR IS TO ABIDE BY THE MOST CURRENT VERSION OF THE CLEVELAND DIVISION OF WATER NOTES AND DETAILS. THE MOST UP-TO-DATE VERSION CAN BE FOUND AT WWW.CLEVELANDWATER.COM.

**GENERAL:**

- THE INFORMATION SHOWN ON THE CLEVELAND DIVISION OF WATER'S SUMMARY OF WORK/CHARGE LETTER AND STRIP MAPS ARE TAKEN FROM EXISTING AVAILABLE RECORDS, AND THEIR ACCURACY IS NOT GUARANTEED.
- CALL THE INSPECTION AND ENFORCEMENT UNIT AT 216-664-2342 TO SCHEDULE A PRECONSTRUCTION MEETING. THE OPERATION OF ANY VALVE OR ALTERATION OF ANY PART OF THE WATER SYSTEM BY CONTRACTORS OR THEIR EMPLOYEES IS PROHIBITED WITHOUT THE SUPERVISION OF THE CLEVELAND DIVISION OF WATER INSPECTOR.
- THE MUNICIPALITY SHALL REQUIRE THAT THE PROJECT'S PROFESSIONAL ENGINEER OBTAIN ACTUAL FIELD MEASUREMENTS OF THE MAIN DURING INSTALLATION AND SHALL FURNISH THE CWD INSPECTOR WITH RECORD PRINTS IN A FORM ACCEPTABLE TO THE DIVISION OF WATER. THE CLEVELAND DIVISION OF WATER WILL REQUIRE THE DELIVERY AND ACCEPTANCE OF TWO COPIES OF RECORD (AS BUILT) PRINTS, STAMPED BY A PROFESSIONAL ENGINEER, BEFORE THE PRESSURE TEST AND CHLORINATION OF THE MAIN.
- FOR THE PURPOSES OF CHLORINATION AND BACTERIOLOGICAL TESTING OF THE WATER MAINS THE CONTRACTOR SHALL PROVIDE AND INSTALL, AT EACH OF THE CHLORINATION PIT LOCATIONS SHOWN AND AT OTHER LOCATIONS DETERMINED BY THE DIVISION OF WATER, FLUSHING/SAMPLING TAPS OF SIZES TO BE DETERMINED BY THE DIVISION OF WATER. CHLORINATION PITS SHALL BE SIX (6) FOOT SQUARE MEETING OSHA STANDARDS.
- A TWO YEAR WARRANTY, COMMENCING FROM THE DATE OF ACCEPTANCE OF THE FINAL CHLORINATION OF THE WATER MAIN INSTALLATION, SHALL BE PROVIDED BY THE BUILDER/DEVELOPER AND/OR CONTRACTOR FOR ALL WATER MAINS AND SERVICE CONNECTION WORK PERFORMED BY THE CONTRACTOR, INCLUDING RETAPS, SHOULD ANY LEAKS OCCUR AND REPAIRS BE REQUIRED DUE TO DEFECTIVE MATERIAL OR POOR WORKMANSHIP.
- USE BACKFILL MATERIAL AS SPECIFIED AND COMPACT SUFFICIENTLY IN THOSE AREAS WHERE EXISTING MAINS AND WATER SERVICE CONNECTIONS ARE EXPOSED. (SEE DIVISION OF WATER STANDARD DETAIL STD-001).
- ALL MATERIALS, INCLUDING BUT NOT LIMITED TO WATER MAINS, FIRE HYDRANTS, VALVES, CONNECTION MATERIALS AND OTHER WATER APPURTENANCES, SHALL BE NEW AND UNUSED AND SHALL CONFORM TO THE MOST CURRENT DIVISION OF WATER SPECIFICATIONS. ALL MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH DIVISION OF WATER'S STANDARDS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING WATER MAINS AND APPURTENANCES THEREOF WHEN CONNECTING THE NEW WATER MAIN FOR THE HYDROSTATIC TEST. ALL REPAIRS TO DAMAGED EXISTING FACILITIES SHALL BE MADE BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, TO THE SATISFACTION OF THE DIVISION OF WATER. (REFER TO THE THE ALTERNATE TEST DETAIL STD-002 AS NEEDED).
- ALL HYDROSTATIC PRESSURE TESTING SHALL BE DONE BY THE CONTRACTOR IN THE PRESENCE OF THE DIVISION OF WATER'S INSPECTOR. THE HYDROSTATIC TEST PRESSURE SHALL BE 75 PSI ABOVE THE STATIC PRESSURE PREVAILING AT THE SITE, BUT IN NO CASE LESS THAN 150 PSI. THE PRESSURE TEST SHALL BE FOR A DURATION OF TWO (2) HOURS WITH THE PRESSURE BEING MAINTAINED WITHIN 5 PSI OF THE REQUIRED TEST PRESSURE. SHOULD THE PRESSURE TEST FAIL THE CONTRACTOR SHALL FIND AND CORRECT THE DEFICIENCY(IES) TO THE SATISFACTION OF THE DIVISION OF WATER AND REPEAT THE TWO (2) HOUR PRESSURE TEST.
- ALL PIPE, UNLESS OTHERWISE CALLED FOR, SHALL BE DUCTILE IRON, MINIMUM CLASS 52, CEMENT LINED HAVING PUSH-ON JOINTS WITH RADIALLY COMPRESSED RUBBER RING GASKET AND INSTALLED AS PER THE MOST CURRENT REVISION OF AWWA C600.
- ALL FITTINGS, UNLESS OTHERWISE CALLED FOR, SHALL BE APPROVED DUCTILE IRON, CLASS 350, CEMENT LINED OR FUSION BONDED EPOXY COATED. ALL FITTINGS AND PIPE CONNECTED TO FITTINGS SHALL BE RESTRAINED USING A "RETAINED" MECHANICAL JOINT CONFORMING TO THE MATERIAL AND PERFORMANCE REQUIREMENTS OF ANSI/AWWA C-110/A21.10 AND ANSI/AWWA C-111/A21.11, OR "COMPACT" FITTINGS IN ACCORDANCE WITH ANSI/AWWA C-153/A21.53. EXCEPT FOR ANCHOR TEES, REDUCERS OR OTHER SPECIAL CIRCUMSTANCES WHEN DIRECTED BY CLEVELAND DIVISION OF WATER, ALL FITTINGS ARE TO HAVE BELL ENDS.
- ALL BOLTS AND NUTS ON ALL "RETAINED" MECHANICAL JOINTS SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".
- WHERE SHOWN ON THE PLANS, OR WHEN OTHERWISE CALLED FOR, PIPE AND FITTINGS SHALL HAVE AN APPROVED "TYPE I" OR "TYPE II" BOLTLESS RESTRAINED PUSH-ON JOINTS TO THE LIMITS SHOWN ON THE DRAWINGS.
- AT THE END OF EACH WORKDAY, THE CONTRACTOR SHALL PLUG ALL OPEN PIPE ENDS WITH WATER TIGHT PLUGS AS PER THE "PREVENTITIVE AND CORRECTIVE MEASURES DURING CONSTRUCTION" SECTION OF THE MOST CURRENT REVISION OF AWWA C-651 AS TO PREVENT THE INFILTRATION OR INTRUSION OF ANY FOREIGN OBJECTS OR MATERIALS. DATE STAMPED DIGITAL PHOTOS SHALL BE PROVIDED FOR EACH WORKDAY DEMONSTRATING THAT PROPER AWWA C-651 METHODS WERE USED TO PLUG ALL OPEN WATER MAIN ENDS. EACH PHOTO SHALL CLEARLY IDENTIFY THE STATION AT WHICH THE PIPE IS PLUGGED. THE STATIONING SHALL BE SHOWN BY THE USE OF A STATION MARKER PLACED AT THE PLUGGED PIPE END.

PHOTOS SHALL BE SUBMITTED ON A DAILY BASIS UNLESS OTHERWISE DEFINED BY THE CWD INSPECTOR OR ENGINEER. ALL PHOTOS TAKEN OVER THE COURSE OF THE PROJECT SHALL BE SUBMITTED BY THE CONTRACTOR AS PART OF THE AS-BUILT SUBMITTAL. AS-BUILTS SHALL BE CONSIDERED INCOMPLETE WITHOUT SAID COLLECTION OF DIGITAL PHOTOS.

**HYDRANTS:**

- IN ALL HYDRANT INSTALLATIONS THE CONTRACTOR SHALL FACE ALL HYDRANT'S 4" (STEAMER) NOZZLE TOWARD THE PAVEMENT PRIOR TO TESTING AND CHLORINATION OF WATER MAINS. CONTRACTOR SHALL CONSULT WITH THE LOCAL MUNICIPALITY'S ENGINEERING OR SERVICE DEPARTMENT TO OBTAIN HYDRANT MODEL AND NOZZLE THREAD REQUIREMENTS IF NOT INDICATED ON THE APPROVED PLANS.
- ALL VALVES SHALL BE AN APPROVED MODEL RESILIENT SEATED GATE VALVES AS PER THE MOST CURRENT VERSION OF AWWA C509 OR C515.

**CONNECTIONS:**

- WATER CONNECTIONS SHOWN ON THESE DRAWINGS ARE FOR REFERENCE ONLY AND ARE NOT PART OF THE WATER MAIN APPROVAL. ADDITIONAL PERMITS FOR SERVICE CONNECTIONS MUST BE OBTAINED FROM THE DIVISION OF WATER PRIOR TO INSTALLATION OF ANY PORTION OF THE SERVICE CONNECTION(S). IT IS THE CONTRACTORS RESPONSIBILITY TO ARRANGE FOR PERMITS FOR ALL SIZE WATER SERVICE CONNECTIONS BEFORE PERFORMING ANY WORK. THE AMOUNT OF THE CHARGES CAN BE OBTAINED FROM THE DIVISION OF WATER, PERMITS AND SALES SECTION AT 216-664-2444 X5203.
- ONE INCH SERVICE CONNECTIONS SHALL BE PERMITTED TO SERVICE HOMES BASED ON THE FOLLOWING CRITERIA:
  - PEAK FLOW DEMANDS DO NOT EXCEED 25 GPM FOR AN INDIVIDUAL HOME/UNIT. INCLUSIVE OF ALL USAGE (FIRE, DOMESTIC AND/OR IRRIGATION) AND
  - LENGTH OF ONE INCH CONNECTION DOES NOT EXCEED 75 FEET AS MEASURED FROM THE MAIN TO THE POINT OF ENTRY INTO THE PROPOSED HOME/UNIT.

**EMERGENCIES:**

- IF A WATER MAIN OR SERVICE CONNECTION BREAK OCCURS DURING CONSTRUCTION AND EMERGENCY ASSISTANCE IS REQUIRED, PLEASE NOTIFY THE DIVISION OF WATER AT 216-664-3060.

**UTILITIES:**

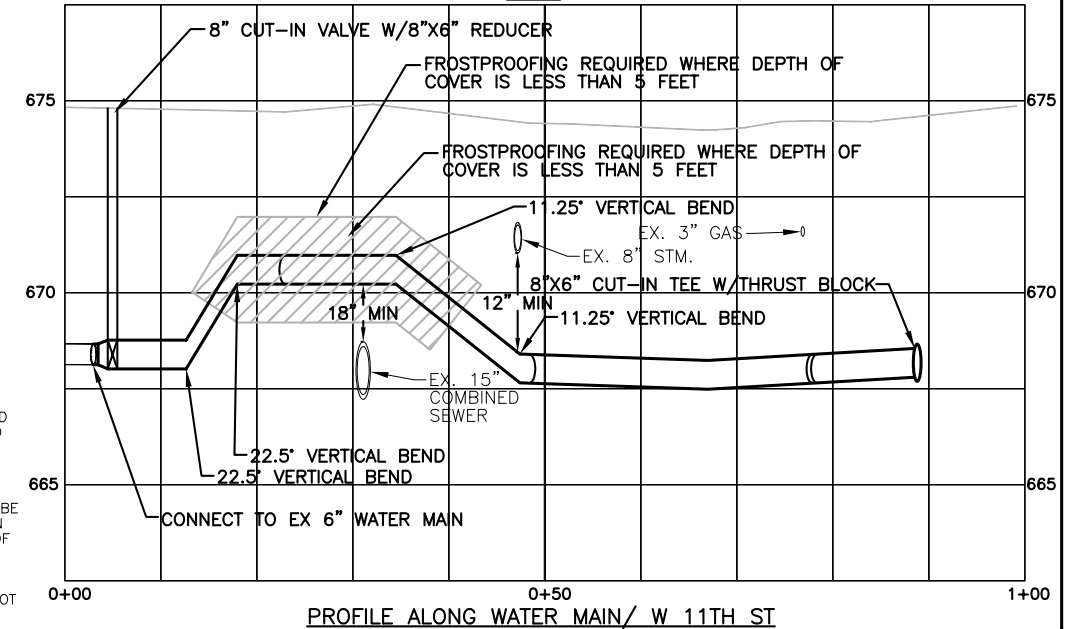
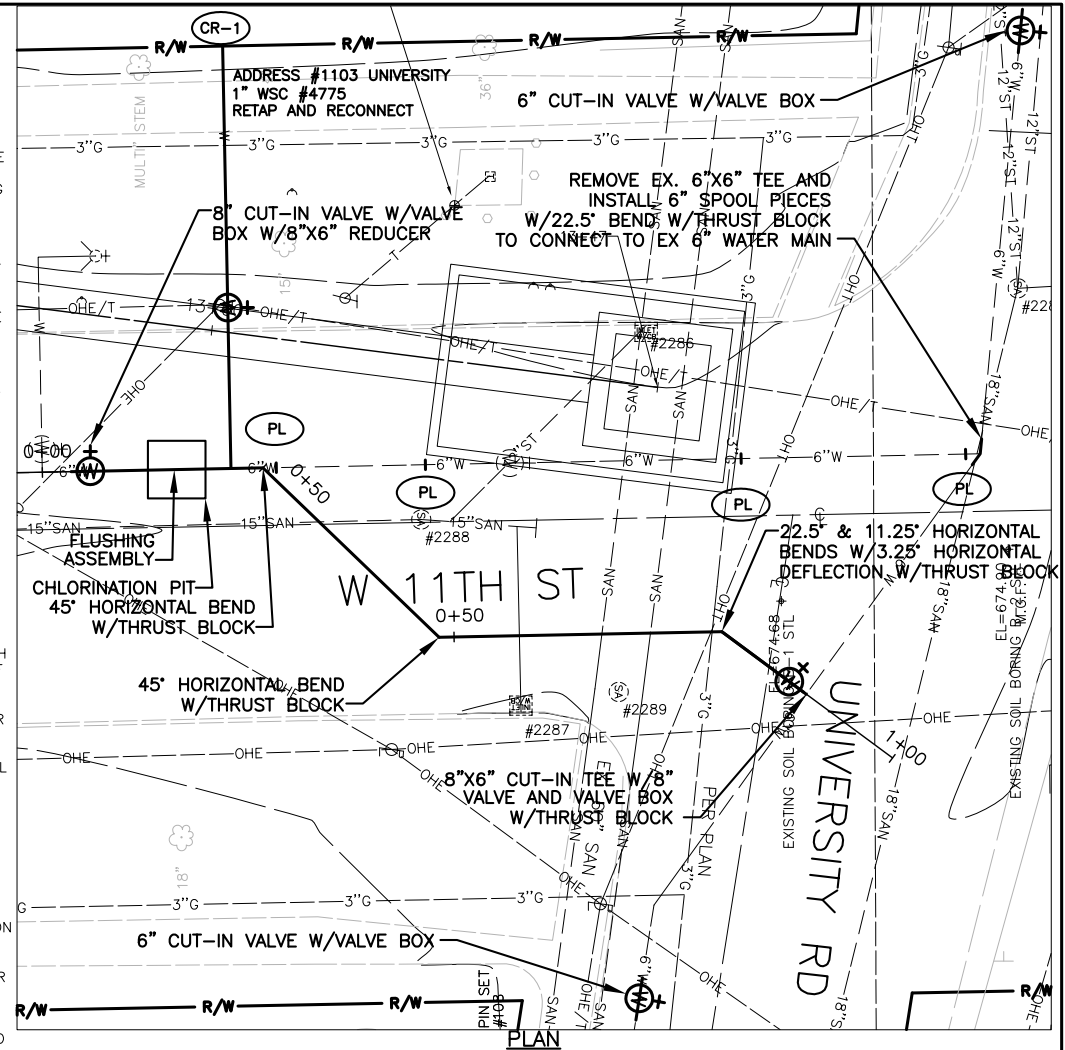
- THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES AT LEAST TWO (2) WORKING DAYS (NOT INCLUDING SATURDAYS AND LEGAL HOLIDAYS) PRIOR TO CONSTRUCTION TO HAVE UTILITIES STAKED, MARKED OR OTHERWISE DESIGNATED IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING OR LOCATION SHALL OCCUR APPROXIMATELY TWO DAYS AHEAD OF THE PLANNED CONSTRUCTION.
  - OHIO UTILITIES PROTECTION SERVICE (800) 362-2764
  - CITY OF SHAKER HEIGHTS SERVICE DEPARTMENT (216) 491-1490
  - CLEVELAND WATER - ROBERT SMITH (216) 664-2444
  - NORTHEAST OHIO REGIONAL SEWER DISTRICT (216) 881-6600
  - AT&T - ERIC WESTERBURG (216) 476-6142
  - DOMINION EAST OHIO GAS - JOE HINTON (800) 362-7557
  - TIME WARNER CABLE - LARRY BOCK (440) 974-3401
  - AMERICAN FIBER SYSTEMS - BRYCE BASISTA (419) 756-7117
  - THE ILLUMINATING COMPANY - JASON R. STEC (440) 717-6808
  - XO COMMUNICATIONS (800) 421-3872
- THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS AND BELIEVED TO ESSENTIALLY CORRECT. THE LOCATIONS WERE OBTAINED FROM THE OWNERS OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C. NO GUARANTEE IS MADE RELATIVE TO THE COMPLETENESS OR ACCURACY AND THE CONTRACTOR IS REQUIRED TO CONTACT THE REGISTERED UTILITY PROTECTION SERVICE AND THE OWNERS OF EACH UNDERGROUND UTILITY FACILITY SHOWN ON THE PLANS AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION IN ANY AREA.
- ALL EXISTING UTILITIES, SERVICES, POLES AND CONNECTIONS SHALL BE PROTECTED AT THE CONTRACTOR'S EXPENSE. IF DAMAGE IS CAUSED BY CONSTRUCTION TO ANY EXISTING UTILITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME AT HIS EXPENSE IN ACCORDANCE WITH DIRECTIONS OF THE ENGINEERS, AND FOR ANY RESULTING CONTINGENT DAMAGES. EXISTING UTILITIES INCLUDE, BUT ARE NOT LIMITED TO WATER MAINS, STORM SEWERS, SANITARY SEWERS, GAS, ELECTRICAL, TELEPHONE, FIBER OPTIC CABLE, TELEVISION CABLE, AND INDIVIDUAL SERVICE CONNECTIONS AND LATERALS.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITIES, SERVICES, OR STRUCTURES TO VERIFY THE VERTICAL AND HORIZONTAL LOCATION OF THE UTILITY, SERVICE, OR STRUCTURE AND ITS EFFECT ON THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE UTILITY OWNER.
- INDIVIDUAL STORM, SANITARY, GAS, WATER, ELECTRICAL, TELEPHONE AND CABLE SERVICE CONNECTIONS MAY NOT BE SHOWN. THE CONTRACTOR SHALL LOCATE AND PROTECT SERVICE CONNECTIONS THROUGHOUT THE COURSE OF THE WORK. IN THE EVENT SERVICE CONNECTIONS ARE BROKEN OR DISTURBED, THE CONTRACTOR SHALL REPAIR OR REPLACE THE SERVICE CONNECTIONS TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL EXPECT EACH RESIDENCE/COMMERCIAL PROPERTY ALONG THE ROUTE TO HAVE AT LEAST ONE SERVICE CONNECTION FOR EACH UTILITY.
- EXISTING LATERAL CONNECTIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL FIELD LOCATE TO DETERMINE LOCATION AND NUMBER OF LATERALS. NOT ALL LATERALS MAY BE SHOWN.
- THE COST OF RELOCATION AND/OR SECURING ANY UTILITY POLES AS NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE BID PRICE PER LINEAL FOOT OF WATER MAIN. THE UTILITY MUST BE INFORMED BY THE CONTRACTOR OF THE PROPOSED METHODS BEFOREHAND TO VERIFY THE ADEQUACY OF SUCH SUPPORTS. NOTE THE OSHA REGULATIONS PROHIBIT CRANE/ BACKHOE OPERATIONS WITHIN TEN FEET OF THE ENERGIZED PRIMARY CONDUCTORS. CONTRACTOR MAY ELECT TO PAY THE UTILITY TO PERFORM THIS WORK AT NO ADDITIONAL COST TO OWNER.
- STORM SEWER, SANITARY SEWER, AND CULVERT INVERTS SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY DEPTHS AND LOCATIONS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL REPAIR AT HIS OWN COST ANY DAMAGE TO TRAFFIC SIGNAL LOOP DETECTORS. CONTRACTOR SHALL FIELD VERIFY ALL LOOP DETECTORS WITHIN PROJECT AREA.
- THE CONTRACTOR MAY DAMAGE EXISTING CATCH BASINS WHILE INSTALLING THE WATER MAIN. THE CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED CATCH BASINS TO THE SATISFACTION OF THE CITY OF SHAKER HEIGHTS.

**PAVEMENTS AND WALKS:**

- ROADWAYS, DRIVES, AND PAVEMENTS DISTURBED BY CONSTRUCTION SHALL BE REPLACED. SEE DETAILS ON PLANS AND SPECIFICATIONS. TEMPORARY PAVEMENT SHALL BE USED WHEN HOT MIX ASPHALT IS NOT AVAILABLE OR WHEN WEATHER FOR PAVEMENT IS UNACCEPTABLE. SIDEWALKS AND DRIVEWAY APRONS SHALL BE FLOAT FINISHED.
- THE CONTRACTOR MAY DAMAGE EXISTING ROADWAY CURBING WHILE INSTALLING THE WATER MAIN. THE CONTRACTOR SHALL REPLACE ANY DAMAGED CURBING ALONG ALL ROADS WITH ODOT 609 CURBING. CURB REPLACEMENT SHALL MATCH EXISTING CURB, AND LIMITS OF REPLACEMENT SHALL BE TO THE NEAREST CONTROL JOINT ON EITHER SIDE OF THE AREA DAMAGED.
- THE CONTRACTOR MAY DAMAGE EXISTING DRIVE APRONS WHILE INSTALLING THE WATER MAIN. DRIVE APRONS SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT. PAVEMENT TYPE AND THICKNESS SHALL MATCH EXISTING.
- EXISTING SANDSTONE WALKS THAT MAY BE AFFECTED BY CONSTRUCTION SHALL BE SALVAGED AND RESET. IF STONE WALKS ARE DAMAGED DURING CONSTRUCTION, THEY SHALL BE REMOVED TO THE NEAREST JOINT AND REPLACED IN KIND WITH NEW SANDSTONE WALKS.
- WHERE NECESSARY TO DISTURB PAVEMENTS OR DRIVES, PAVEMENT SHALL BE CUT IN NEAT, STRAIGHT LINES.

**SUPPLEMENTAL WATER MAIN NOTES:**

- ALL NEW VALVES SHALL OPEN BY TURNING CLOCKWISE. VALVES SHALL BE SAME SIZE AS THE WATER MAIN. ALL VALVE BOXES SHALL BE INSTALLED FLUSH TO GRADE.
- THE MAXIMUM TRENCH OPENING SHALL NOT EXCEED 100 LINEAL FEET. WHERE ACCESS TO DRIVES AND PARKING LOTS IS HINDERED OR BLOCKED FOR AN EXTENDED PERIOD OF TIME, THE CONTRACTOR SHALL PROVIDE TEMPORARY BITUMINOUS PAVEMENT TO MAINTAIN ACCESS. CONTRACTOR SHALL KEEP ALL WORK WITHIN THE RIGHT-OF-WAY.
- THE CONTRACTOR SHALL INSTALL DETECTABLE TRACER TAPE IN THE SAME TRENCH WITH ALL WATER MAINS. TAPE SHALL BE 3" WIDE, BLUE CODED POTABLE ON BOTH SIDES. TRACER TAPE SHALL BE INCLUDED IN THE PRICE BID PER LINEAL FOOT OF WATER MAIN.
- UNLESS OTHERWISE NOTED, THE NEW WATER MAIN SHALL HAVE 6' MINIMUM COVER OVER THE TOP OF PIPE.
- A MINIMUM OF 35 PSI SHALL BE MAINTAINED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.
- BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
- PIPE JOINTS SHALL BE DEFLECTED TO MAINTAIN HORIZONTAL ALIGNMENT AND VERTICAL ELEVATIONS UNLESS OTHERWISE INDICATED. DEFLECTIONS SHALL NOT EXCEED THE PIPE MANUFACTURERS RECOMMENDATIONS.
- CONTRACTOR SHALL ESTABLISH AND STAKE OUT THE WATER MAIN ALIGNMENT FOR CONSTRUCTION FROM THE HORIZONTAL AND VERTICAL CONTROL AS REFERENCED ON THE DRAWINGS.
- ALL COSTS ASSOCIATED WITH ABANDONING AND/OR REMOVING THE EXISTING WATER MAIN, LINE VALVES, OR SERVICE CONNECTIONS SHALL BE INCLUDED IN THE BID PRICE PER LINEAL FOOT OF WATER MAIN.
- NEW FIRE HYDRANTS SHALL BE BAGGED UNTIL THE NEW WATER MAIN IS INSTALLED AND IN OPERATION.
- THE WATER MAIN SHALL BE PRESSURE TESTED AND DISINFECTED PRIOR TO PERFORMING CORPORATION STOP TAPS.
- FIRE HYDRANT PLACEMENT SHALL BE ESTABLISHED BY GOVERNING FIRE DEPARTMENT.
- CONTRACTOR SHALL PRESSURE TEST AND DISINFECTION TEST WITHIN 15 DAYS OF WATER MAIN INSTALLATION.
- ANY EXISTING UTILITIES OR APPURTENANCES INSIDE OR OUTSIDE OF THE CONSTRUCTION LIMITS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- GROUNDWATER CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE TIME THE EXCAVATION REACHES THE GROUNDWATER LEVEL TO MAINTAIN INTEGRITY OF THE IN-SITU MATERIALS. WHILE THE EXCAVATION IS OPEN, THE GROUNDWATER LEVEL SHALL BE MAINTAINED CONTINUOUSLY AT 2 FEET OR MORE BELOW THE WORKING LEVEL.
- UNSTABLE OR UNSUITABLE PIPE FOUNDATION CONDITIONS THAT RESULT FROM INADEQUATE OR INAPPROPRIATE DEWATERING METHODS SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL REMOVE ALL GUARDRAIL AND FENCE AS NECESSARY TO FACILITATE CONSTRUCTION OF THE PROPOSED WATER MAIN. ANY GUARDRAIL OR FENCE DAMAGED DURING CONSTRUCTION BY THE CONTRACTOR SHALL BE REPLACED IN COMPLETE LENGTH AND KIND BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- ANY EXISTING PROPERTY CORNER PINS OR MONUMENTS DAMAGED OR DESTROYED BY THE CONSTRUCTION SHALL BE RESET BY A REGISTERED SURVEYOR UPON COMPLETION OF THE PROJECT PRIOR TO FINAL PAYMENT. A CERTIFICATION SHALL BE FURNISHED BY A REGISTERED SURVEYOR, STATING THAT SAID DAMAGES HAVE BEEN RESTORED. THE COST SHALL BE INCLUDED IN THE PRICE BID PER LINEAL FOOT OF WATER MAIN.
- CONTRACTOR SHALL GRADE AND RESLOPE ALL DITCHES DISTURBED DURING CONSTRUCTION. THE COST SHALL BE INCLUDED IN THE PRICE BID PER LINEAL FOOT OF WATER MAIN.
- ACCESS TO ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.
- UNLESS MARKED FOR REMOVAL, SPECIAL CARE SHALL BE TAKEN TO AVOID DAMAGE TO TREES AND THEIR ROOT SYSTEMS. IN GENERAL, WHERE THE TRENCH FALLS WITHIN THE LIMITS OF THE LIMB SPREAD, THE LEAVING OF HEADERS ACROSS TO PROTECT ROOTS WILL BE REQUIRED. THE OPERATION OF ALL EQUIPMENT, PARTICULARLY WHEN EMPLOYING BOOMS, THE STORAGE OF MATERIALS, AND DEPOSITION OF EXCAVATION SHALL BE CONDUCTED IN A MANNER WHICH WILL NOT INJURE TREE TRUNKS, BRANCHES, OR ROOTS UNLESS SUCH TREES ARE DESIGNATED BY THE MUNICIPALITY'S SUPERINTENDENT OF FORESTRY FOR REMOVAL.



**LEGEND**

- CR-1** REPLACE EXISTING CONNECTION, SHORT SIDE, (1" AND UNDER) WITH 1" COPPER CONNECTION, INCLUDING CURB VALVE AND VALVE BOX
- PL** PLUG EXISTING WATER MAIN END

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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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DRAWN BY: _____	SHEET:		
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APPROVED BY: _____			
DATE: _____			
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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

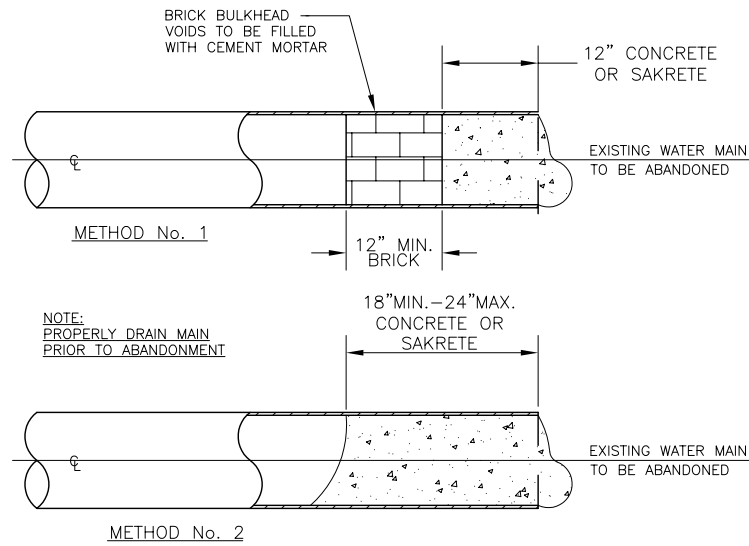
**WATER MAIN RELOCATION PLAN AND NOTES**



**SUPPLEMENTAL WATER MAIN NOTES: (CONTINUED)**

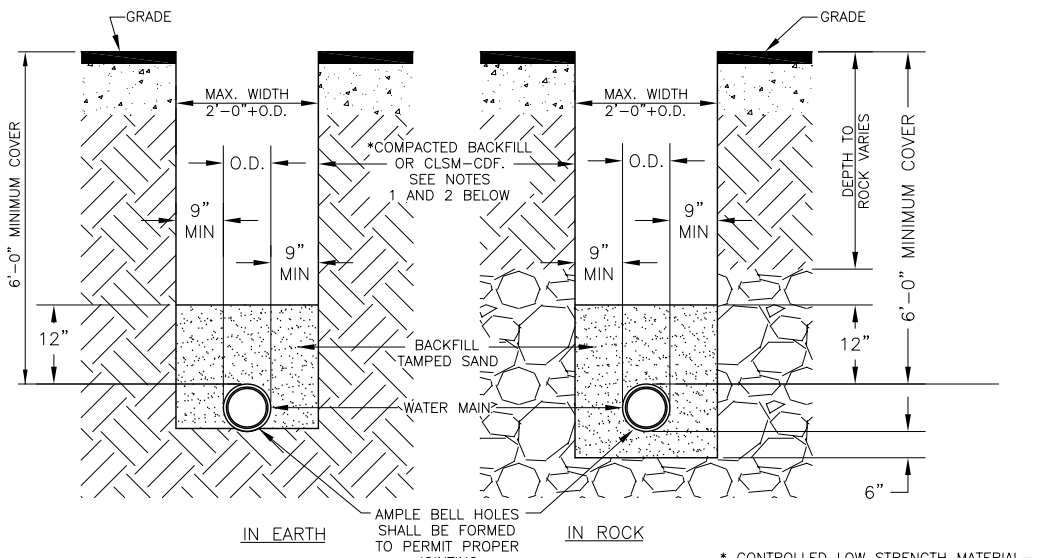
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING MAIL SERVICE IN THE CONSTRUCTION AREA. PRIOR TO DISTURBING ANY MAIL BOXES, THE CONTRACTOR SHALL CONTACT THE POSTAL AUTHORITIES AND SHALL TEMPORARILY RELOCATE MAIL BOXES IN ACCORDANCE WITH THEIR REQUIREMENTS. THE CONTRACTOR SHALL RESTORE MAIL BOXES TO THEIR ORIGINAL CONDITION AND LOCATION. COST OF SAME SHALL BE INCLUDED IN THE UNIT PRICE PER LINEAL FOOT OF WATER MAIN.
23. RIGHT-OF-WAY AND PROPERTY LINES SHOWN WERE PREPARED FROM RECORD INFORMATION AND DO NOT REPRESENT A BOUNDARY SURVEY.
24. THE BIDDER SHALL MAKE HIS OWN INVESTIGATIONS OF THE SITE CONDITIONS PRIOR TO SUBMITTING HIS PROPOSAL. IF THE BIDDER DESIRES TO OBTAIN ADDITIONAL INFORMATION AS TO SOIL CONDITIONS, HE MUST DO SO AT HIS OWN EXPENSE AND SECURE ALL APPLICABLE APPROVALS AND PERMITS.
25. CONTRACTOR SHALL KEEP ALL WORK WITHIN THE RIGHT-OF-WAYS AND EASEMENTS.
26. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL CONSTRUCTION DEBRIS INCLUDING BUT NOT LIMITED TO EXCESS SOIL, ROCK, OR ANY OTHER TYPE OF MATERIALS. THE CONTRACTOR SHALL NOT FILL ANY WETLANDS, LOWLANDS, FLOOD PLAINS, OR DRAINAGE WAYS WITH SAID DEBRIS.
27. THE CONTRACTOR SHALL REMOVE AND REINSTALL CULVERT AND/OR DRAINAGE PIPE AS NECESSARY TO FACILITATE CONSTRUCTION OF THE PROPOSED WATER MAIN. PROPER DRAINAGE MUST BE MAINTAINED AT ALL TIMES. ANY CULVERT OR DRAINAGE PIPE DAMAGED OR BROKEN DURING THE CONSTRUCTION BY THE CONTRACTOR SHALL BE REPLACED, COMPLETE IN LENGTH AND KIND BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
28. CONTRACTOR SHALL CLEAN THE ROADWAY AT THE END OF EACH DAY OF OPERATION OR EVERY 500 FEET OF INSTALLED WATER MAIN. CLEANING SHALL BE PERFORMED USING A POWER BROOM OR HYDROSPRAYER, OR AS DIRECTED BY THE ENGINEER.
29. THE CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED FOR CONSTRUCTION, INCLUDING BUT NOT LIMITED TO EXCAVATION AND ROAD OPENINGS. PERMITS SHALL BE OBTAINED FROM THE CITY ENGINEER AND FROM ANY LOCAL GOVERNMENTAL OFFICIALS IN WHICH THE WORK IS BEING PERFORMED.
30. CONTRACTOR SHALL PERFORM ALL CLEAN-UP, ROCK REMOVAL, FINAL GRADING, AND SEEDING TO AREAS DISTURBED BY WORK ASSOCIATED WITH INSTALLATION OF NEW WATER MAIN.
31. CONTRACTOR SHALL PROPERLY NOTIFY PROPERTY OWNERS OF CONSTRUCTION ACTIVITIES THAT WILL IMPACT THEM.
32. CONTRACTOR SHALL NOT BE PERMITTED TO STORE MATERIALS, EQUIPMENT, OR VEHICLES ON PRIVATE PROPERTY.
33. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING LANDSCAPE ITEMS SUCH AS SHRUBBERY, RAILROAD TIES, ETC. IN A MANNER SUITABLE FOR REPLANTING OR RELOCATION BY THE CONTRACTOR, OR AT THE OPTION OF THE PROPERTY OWNER, SHALL REMOVE AND DISPOSE OF THE LANDSCAPE ITEMS. THE COST FOR THE ABOVE RESTORATION SHALL BE INCLUDED IN THE BID PRICE PER LINEAL FOOT OF WATER MAIN.
34. THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER MAINS AND SERVICE CONNECTIONS PER SPECIFICATION SECTION D-45. TEMPORARY MAINS SHALL BE LAID IN THE GUTTERLINES AND SHALL CROSS THE STREETS AT INTERSECTIONS. TEMPORARY MAINS SHALL NOT BE LAID ON TREELAWNS.

**CONSTRUCTION SEQUENCE**



**PLUGGING ABANDONED WATER MAIN ENDS (STD-004)**

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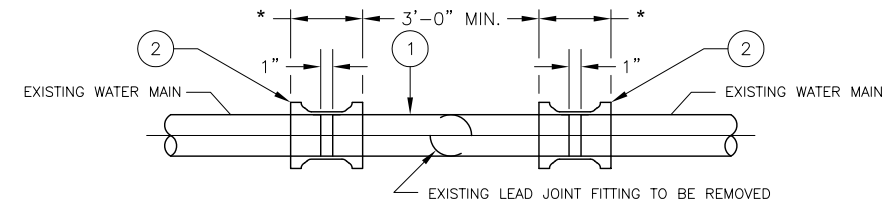


**WATER MAIN TRENCH DETAILS (STD-001)**

- NOT TO SCALE -

**NOTES:**

- 1) PREMIUM BACKFILL CONSISTING OF CONTROLLED LOW STRENGTH MATERIAL - CONTROLLED DENSITY FILL (CLSM-CDF) "FLOWABLE FILL" IS REQUIRED:
  - A) UNDER ALL EXISTING OR FUTURE PAVEMENTS, SIDEWALKS AND DRIVES
  - B) AT ALL LOCATIONS WITHIN THE CITY OF CLEVELAND CORPORATION LIMITS
  - C) AS SPECIFIED IN LOCAL MUNICIPALITIES SERVED BY CWD (SEE LOCAL REQUIREMENTS)
- 2) WHEN PREMIUM BACKFILL IS REQUIRED BY THE LOCAL MUNICIPALITY FOR CASES OTHER THAN THOSE LISTED IN NOTE 1 ABOVE, IT SHALL BE LIMESTONE GRADED PER ODOT 304.02 OR ODOT 411. NO SLAG IS PERMITTED.\*
- 3) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
- 4) MINIMUM COMPACTION FOR ALL SAND BEDDING, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.
- 5) PAVEMENT, SIDEWALK OR DRIVES TO BE INSTALLED IN ACCORDANCE WITH LOCAL MUNICIPALITY'S SPECIFICATIONS.



**SPOOL PIECE INSTALLATION DETAIL (STD-008)**

-NOT TO SCALE-

- 1) PLAIN END x PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT TO SUIT).
- 2) \*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.  
  
COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.  
  
MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).  
  
THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.
- 3) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

\*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.

COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.

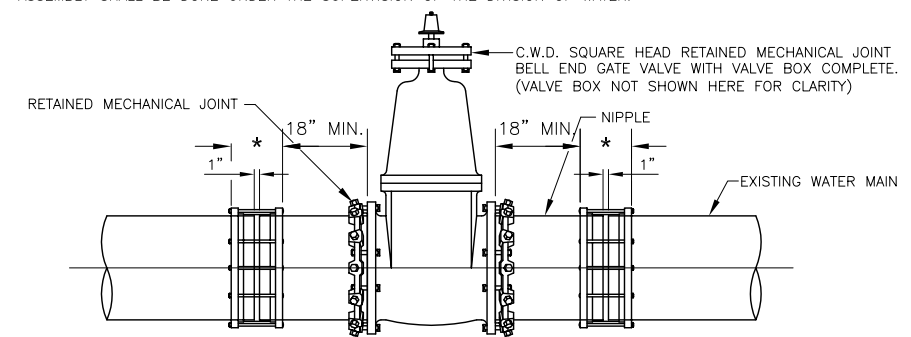
MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).

THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.

ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

THE DIVISION OF WATER WILL DETERMINE THE FIELD LOCATION OF THE CUT-IN-VALVE ASSEMBLY. THE DIVISION OF WATER WILL ALSO SET THE TIME OF INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY.

THE CONTRACTOR SHALL DO ALL PIPE CUTTING AND INSTALLATION. HOWEVER, THE INSTALLATION OF THE CUT-IN-VALVE ASSEMBLY SHALL BE DONE UNDER THE SUPERVISION OF THE DIVISION OF WATER.



**NOTES:**  
BEFORE CUTTING EXISTING WATER MAIN, THE NIPPLES SHALL BE CONNECTED TO THE MECHANICAL JOINT BELL END GATE VALVE. AFTER CUTTING PIPE, FINAL CONNECTIONS SHALL BE MADE WITH COUPLINGS/SOLID SLEEVES AS SPECIFIED.

**CUT-IN-VALVE DETAIL (STD-005)**

- NOT TO SCALE -

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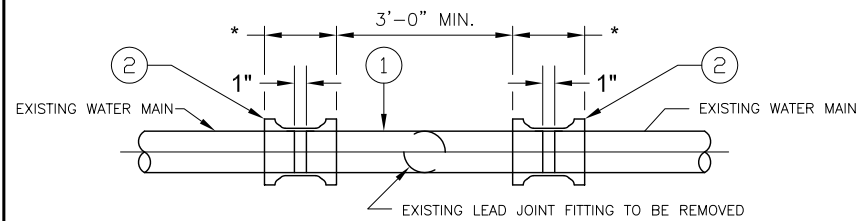


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**WALWORTH RUN INTERCEPTOR REALIGNMENT**

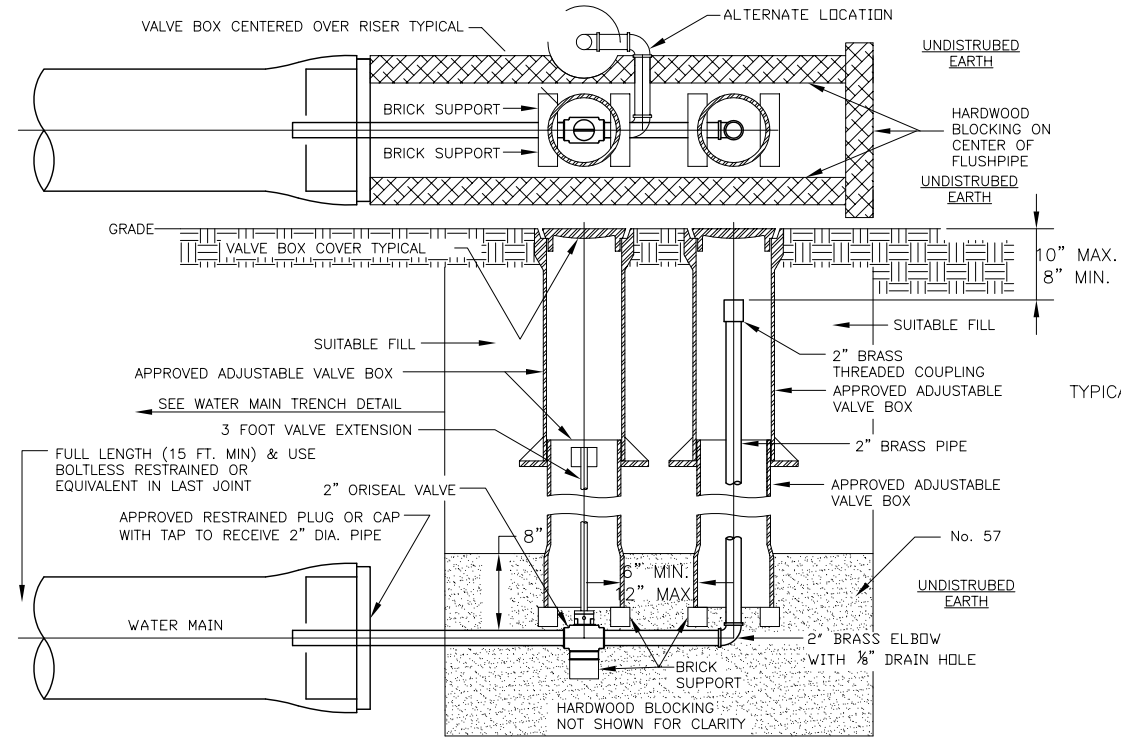
**WATER MAIN NOTES AND DETAILS**

PROJECT NO.:	
SHEET:	
SCALE:	NTS
SHEET NO.:	C-7

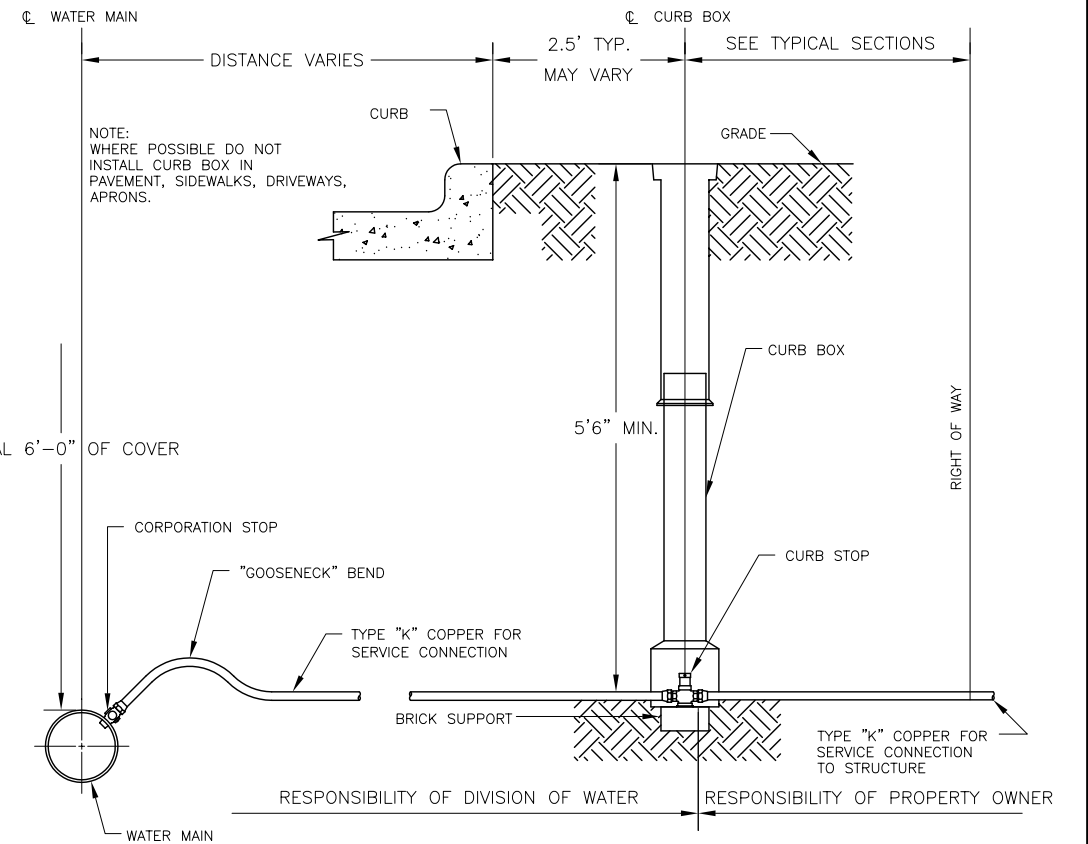


- 1) PLAIN END x PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT TO SUIT).
- 2) \*CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.  
COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.  
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- 3) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".

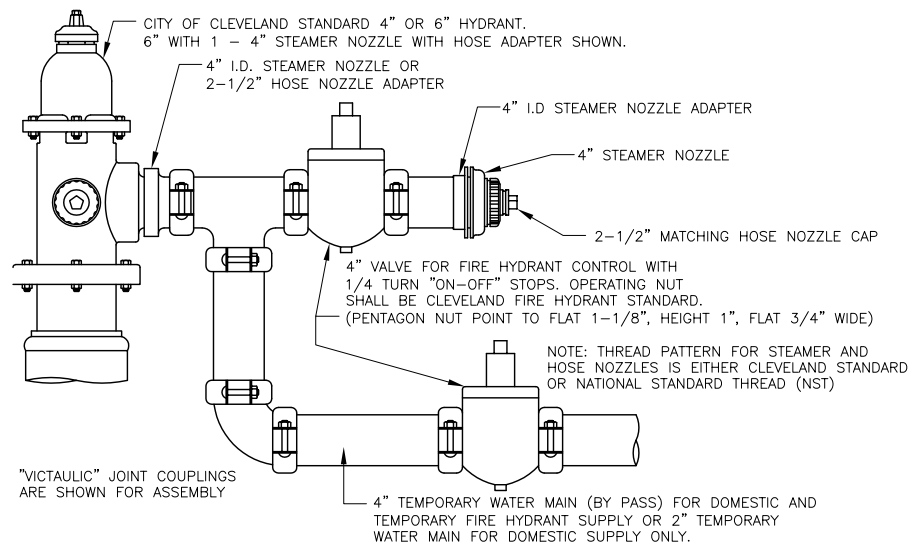
SPOOL PIECE INSTALLATION DETAIL (STD-008)  
- NOT TO SCALE -



TYPICAL FLUSHING ASSEMBLY  
- NOT TO SCALE -

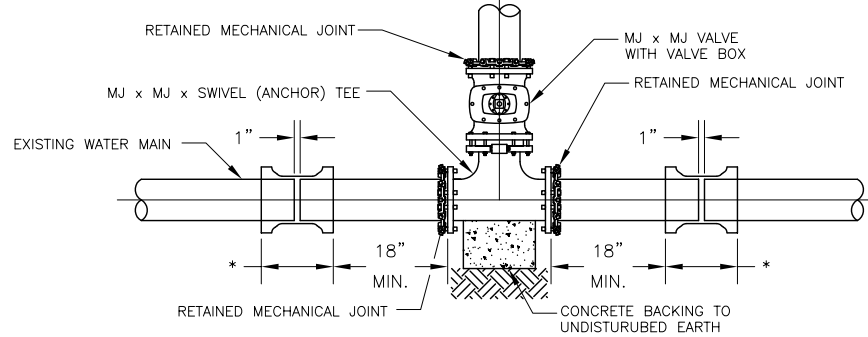


NEW 1" SERVICE CONNECTION DETAIL IN PUBLIC RIGHT OF WAY (STD-C04)  
- NOT TO SCALE -

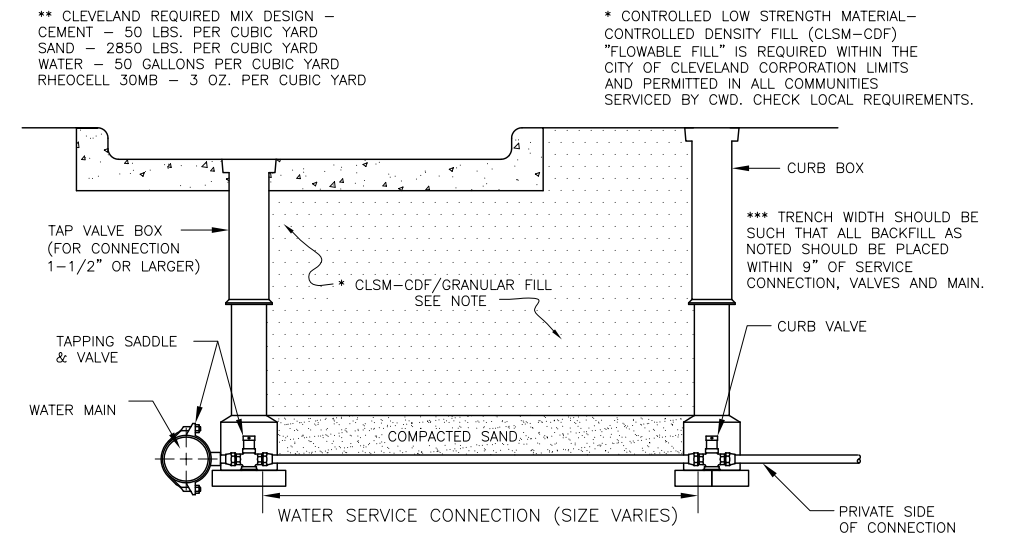


TEMPORARY WATER MAIN & HYDRANT CONNECTION ASSEMBLY-A  
TO PROVIDE SIMULTANEOUS SERVICE IN EXISTING HYDRANT AND  
TEMPORARY BYPASS MAIN (STD-H14)  
- NOT TO SCALE -

- \* CONNECTION SHALL BE MADE WITH RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT OR LONG PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 OR COMPRESSION COUPLINGS.
- COMPRESSION COUPLINGS SHALL BE OF A GASKETED, SLEEVE TYPE WITH DIAMETERS TO PROPERLY FIT PLAIN END IRON PIPE. EACH COUPLING SHALL CONSIST OF ONE (1) MIDDLE RING, WITHOUT STOPS; TWO (2) FOLLOWER GLANDS; TWO (2) RUBBER-COMPOUND BUNA-N BLEND, WEDGE SECTION GASKETS; AND SUFFICIENT TRACKHEAD STAINLESS STEEL BOLTS AND NUTS (ASTM A276/A193/A194, TYPE 304, EXTRA HEAVY HEX) TO PROPERLY COMPRESS THE GASKETS.
- MIDDLE RING AND FOLLOWER GLANDS SHALL BE OF EITHER STEEL OR DUCTILE IRON (ASTM-A536).
- THE COMPRESSION COUPLING SHALL BE WITHOUT STOPS AND BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI AND SHALL BE EQUAL TO THE DRESSER STYLE No's 38, 138 OR 162 (TRANSITION TYPE), OR SMITH-BLAIR 441 STRAIGHT AND TRANSITION COUPLINGS.
- ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS, INCLUDING THOSE ON THE "RETAINED" TYPE, SHALL HAVE FIELD APPLIED ONE (1) COAT OF BITUMASTIC PAINTING FOLLOWED BY AN ENCASEMENT OF POLYETHYLENE WRAPPING IN ACCORDANCE WITH ANSI/AWWA C-105/A21.5-88, CLASS "C", METHOD "B".



CUT-IN TEE DETAIL METHOD No.1 STD-T01  
NOT TO SCALE



- NOTES:
- 1) CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THE SAND BEDDING BACKFILL, SO AS TO AVOID SCRAPING OF THE EXTERIOR COATING, INJURING THE PIPE, DISTORTING OR MOVING THE PIPE WHEN COMPACTING THE SAME. THE SAND BEDDING BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
  - 2) MINIMUM COMPACTION FOR ALL SAND BEDDING BACKFILL, BACKFILL AND PREMIUM BACKFILL SHALL BE 95% STANDARD PROCTOR.

SERVICE CONNECTION BACKFILL DETAIL (STD-023)  
- NOT TO SCALE -

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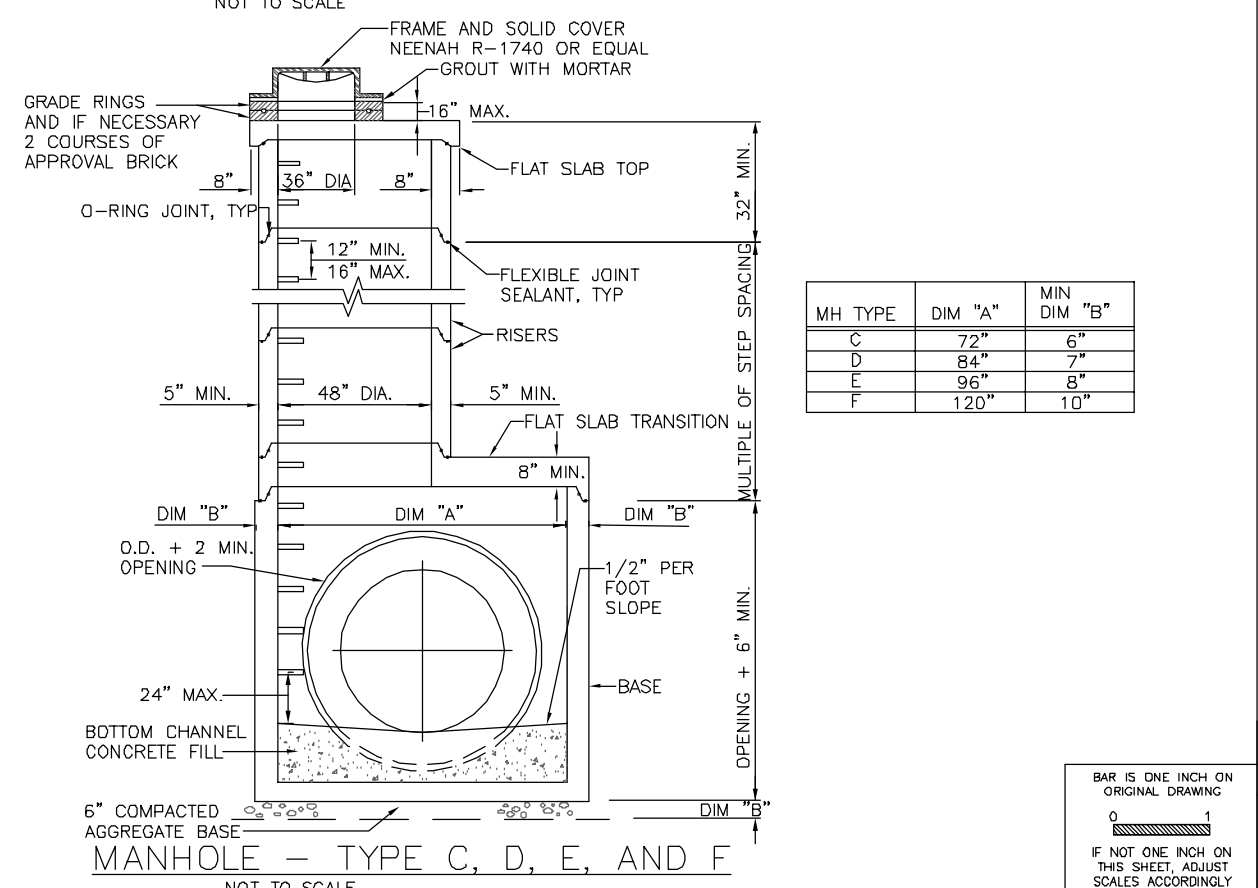
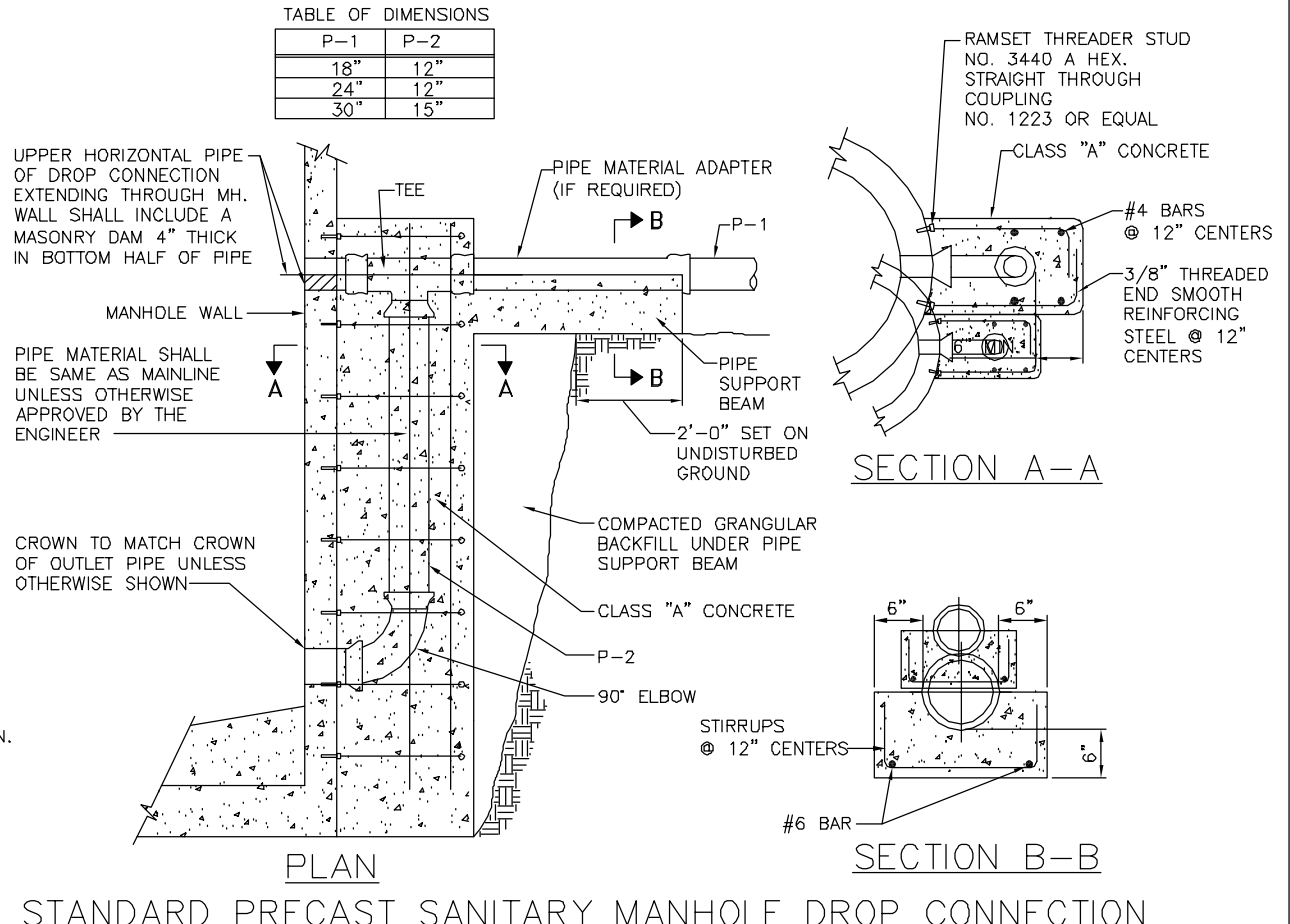
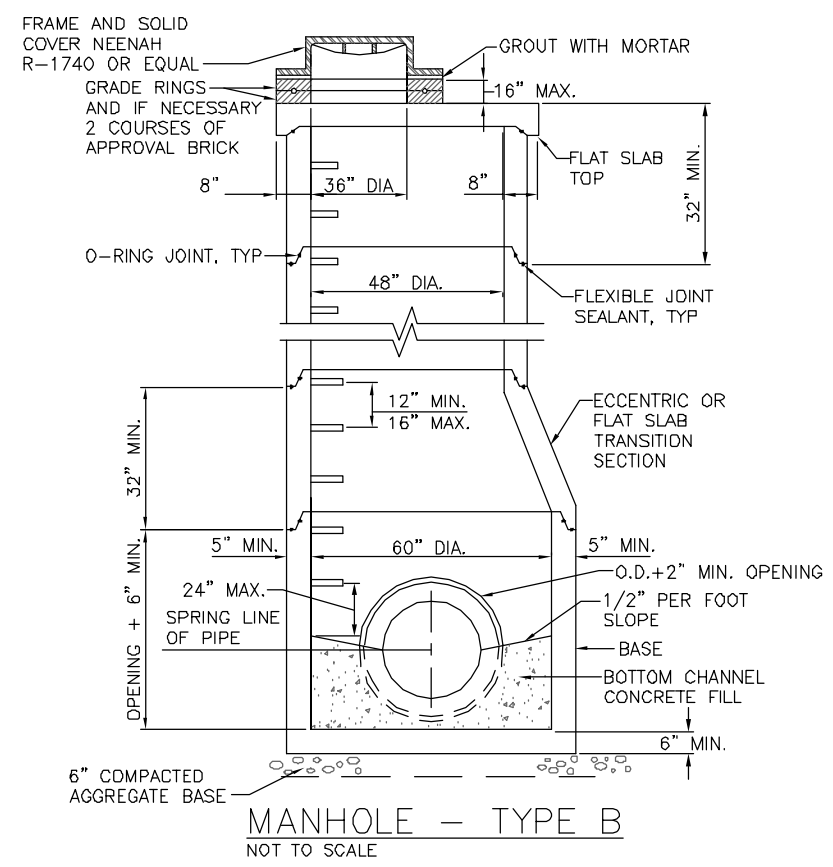
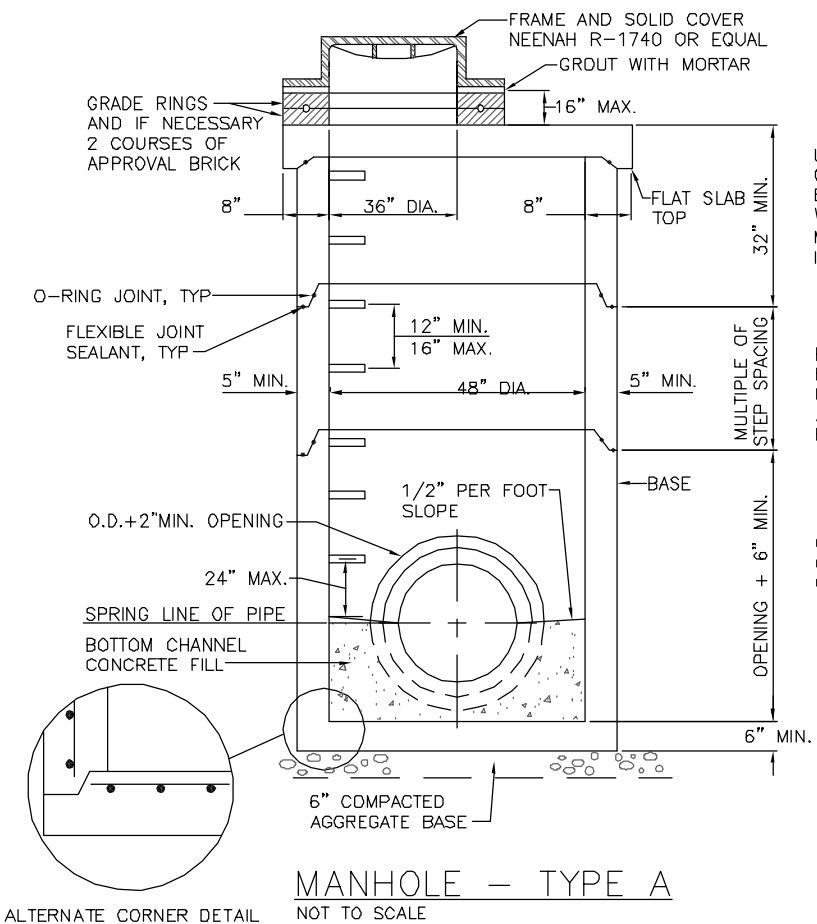
WALWORTH RUN INTERCEPTOR REALIGNMENT

WATER MAIN RELOCATION DETAILS

PROJECT NO.:	
SHEET:	
SCALE:	NTS
SHEET NO.:	C-8

PRECAST MANHOLE SCHEDULE								
MANHOLE NUMBER	MANHOLE TYPE						SPECIAL	COMMENTS
	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F		
1								
1A								
1B								
1C								
2								
TOTAL								

- NOTES**
- SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.
  - BASES FOR MANHOLES ARE SHOWN WITH MONOLITHIC FLOOR AND RISERS WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED, EITHER WHEN THE UNIT IS CAST OR LATER, TO MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR INSTALLED BY FIELD CONSTRUCTION. FLOORS MAY ALSO BE POURED IN PLACE.
  - OPENINGS IN RISER SECTIONS SHALL BE PREFABRICATED. FLEXIBLE CONNECTIONS SHALL BE PROVIDED FOR SANITARY AND STORM SEWERS. PREMIUM SEALS SHALL MEET ASTM C-923.
  - JOINT SEALS BETWEEN PRECAST MANHOLE SECTIONS SHALL BE RESILIENT AND FLEXIBLE GASKET JOINTS. JOINTS SHALL MEET ASTM C-443, FEDERAL SPECIFICATION SS-S-00210 (210 A), AND AASHTO M-198.
  - MANHOLE JOINTS SHALL BE SEALED BY A FLEXIBLE SEALANT, CONSEAL CS-202 AS MANUFACTURED BY CONSEAL CONCRETE SEALANTS, INC., OR APPROVED EQUAL.
  - MANHOLE GRADE RINGS SHALL BE SEALED EXTERNALLY AND BETWEEN GRADE RINGS WITH A LAYER OF MASTIC COMPOUND SUCH AS FABERLITE, KENT SEAL, OR EQUAL.
  - PRECAST MANHOLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
  - SEAL ALL LIFT HOLES WITH APPROVED CONCRETE PLUGS.
  - SEE PLANS FOR FRAME AND COVER ELEVATIONS.
  - TOP MANHOLE STEP SHALL BE INSTALLED NOT MORE THAN 2' BELOW TOP OF FRAME.
  - APPLY "THOROSEAL" BY THORO SYSTEM PRODUCTS, OR APPROVED EQUAL TO THE INSIDE EXPOSED SURFACES OF ALL MANHOLES.



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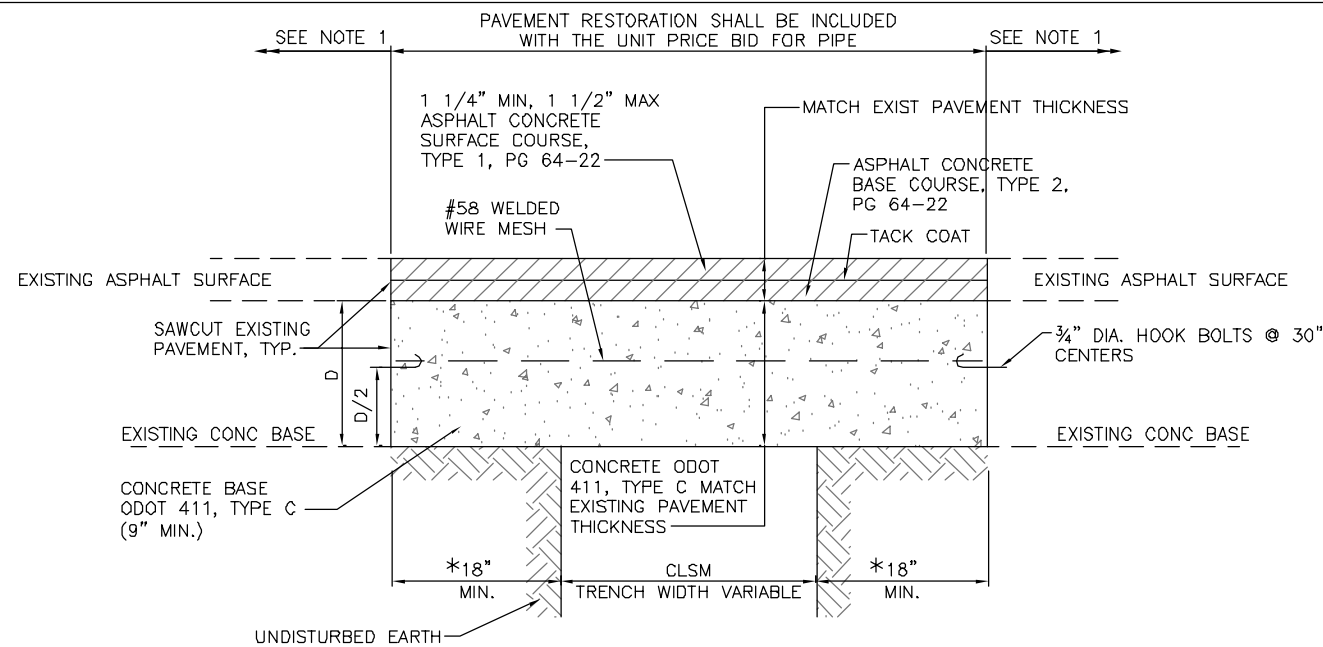


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PRECAST CONCRETE MANHOLE DETAILS

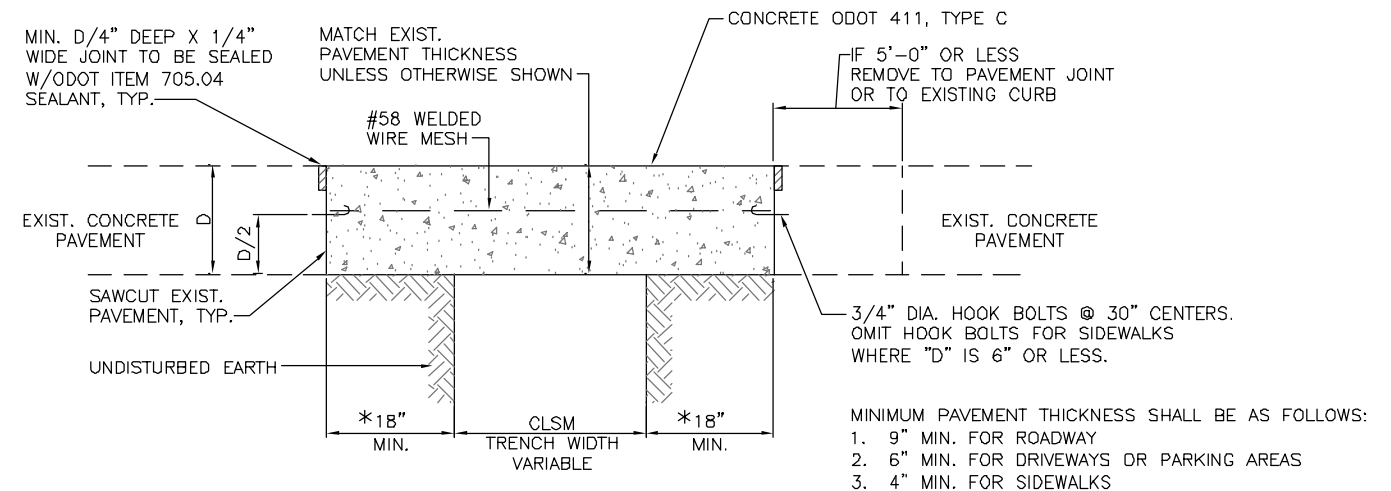
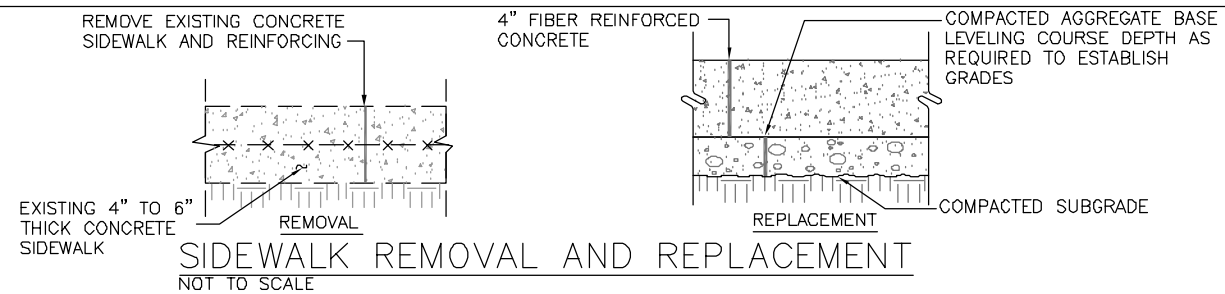
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SHEET: \_\_\_\_\_  
SCALE: NONE  
SHEET NO.: C-9



TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH CONCRETE BASE

NOT TO SCALE

\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

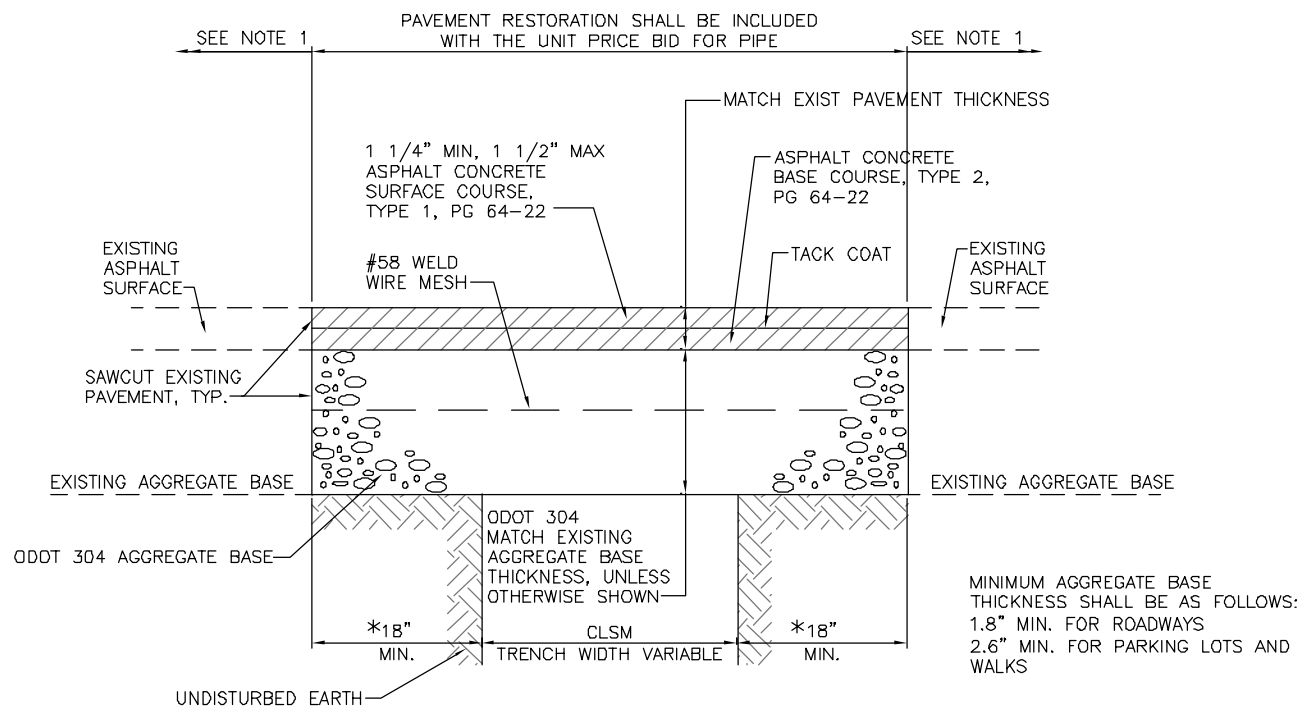


TYPICAL TRENCH DETAIL FOR CONCRETE PAVEMENT

NOT TO SCALE

- MINIMUM PAVEMENT THICKNESS SHALL BE AS FOLLOWS:
- 9" MIN. FOR ROADWAY
  - 6" MIN. FOR DRIVEWAYS OR PARKING AREAS
  - 4" MIN. FOR SIDEWALKS

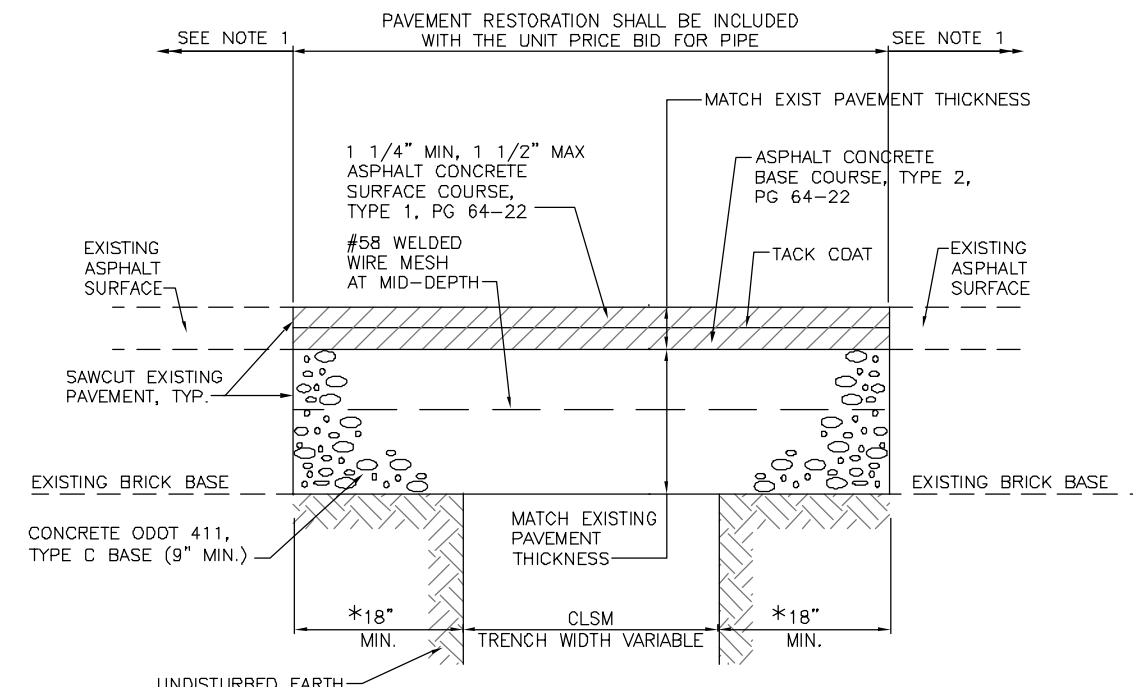
\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB



TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH AGGREGATE BASE

NOT TO SCALE

\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB



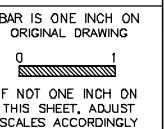
TYPICAL TRENCH DETAIL FOR ASPHALT PAVEMENT WITH BRICK BASE

NOT TO SCALE

\*CONTINUE PAVEMENT REPLACEMENT TO CURB WHERE SAWCUT OCCURS LESS THAN 3' FROM FACE OF CURB

NOTE:

- MILL AND RESURFACE ASPHALT PAVEMENT WHERE SHOWN ON THE DRAWINGS. PAYMENT SHALL BE INCLUDED WITH THE UNIT PRICE BID FOR PAVEMENT MILLING AND RESURFACING



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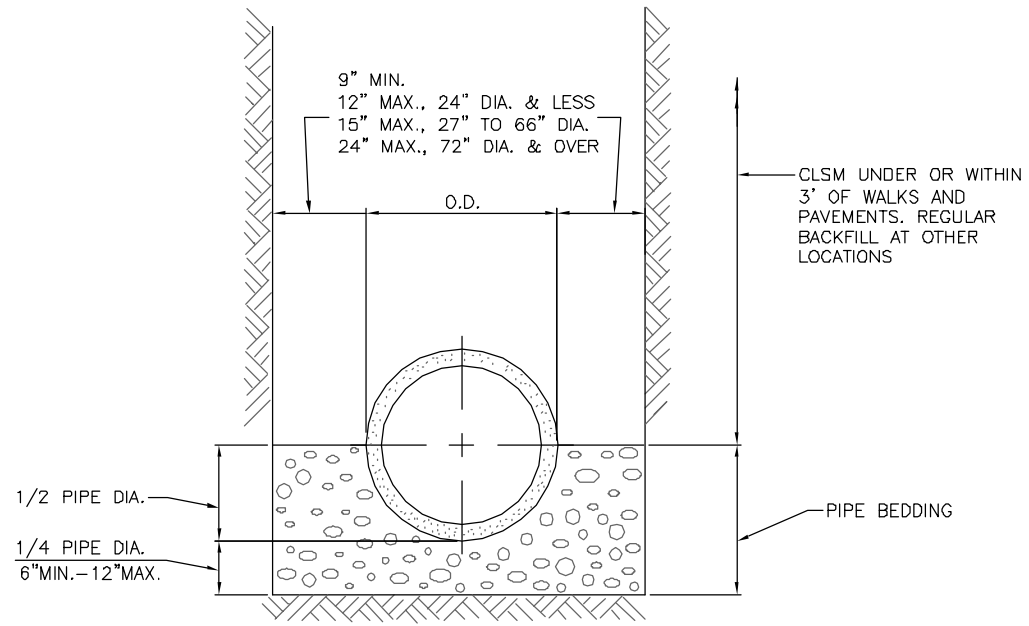


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TRENCH REPAIR DETAILS

PROJECT NO.: \_\_\_\_\_  
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 SCALE: NONE  
 SHEET NO.: C-10



TYPICAL SEWER TRENCH  
FOR RCP AND VCP  
NOT TO SCALE

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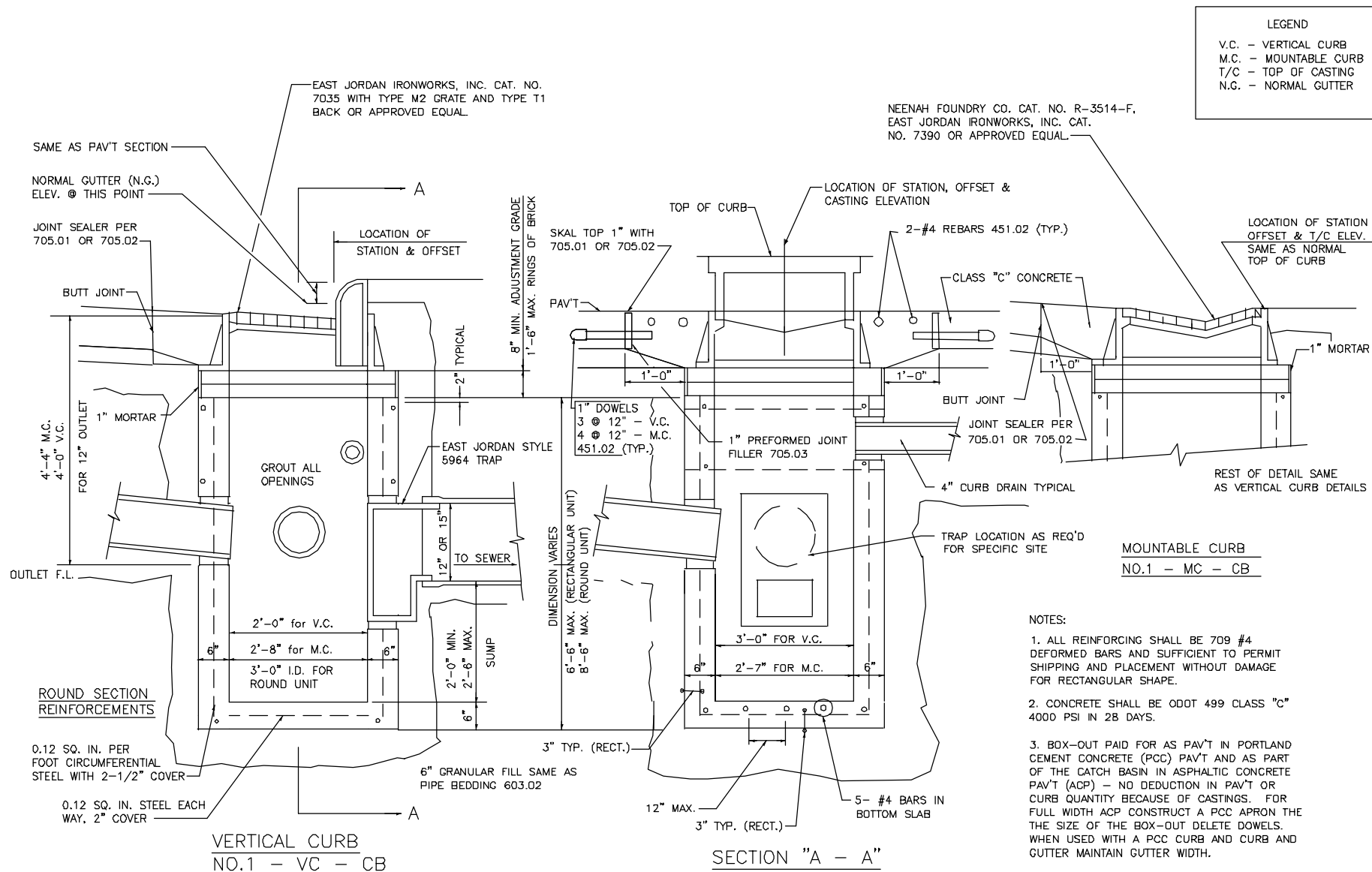


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CIVIL DETAILS

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SCALE: NONE  
SHEET NO.: C-11

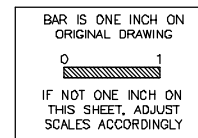


MOUNTABLE CURB  
NO.1 - MC - CB

- NOTES:
1. ALL REINFORCING SHALL BE 709 #4 DEFORMED BARS AND SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE FOR RECTANGULAR SHAPE.
  2. CONCRETE SHALL BE ODOT 499 CLASS "C" 4000 PSI IN 28 DAYS.
  3. BOX-OUT PAID FOR AS PAV'T IN PORTLAND CEMENT CONCRETE (PCC) PAV'T AND AS PART OF THE CATCH BASIN IN ASPHALTIC CONCRETE PAV'T (ACP) - NO DEDUCTION IN PAV'T OR CURB QUANTITY BECAUSE OF CASTINGS. FOR FULL WIDTH ACP CONSTRUCT A PCC APRON THE THE SIZE OF THE BOX-OUT DELETE DOWELS. WHEN USED WITH A PCC CURB AND CURB AND GUTTER MAINTAIN GUTTER WIDTH.

ALTERNATE BASIN SHAPE  
A ROUND PRECAST CONCRETE UNIT MAY BE USED IN LIEU OF RECTANGULAR UNIT. THE ROUND SECTION SHALL BE A 36" I.D. UNIT WITH INTEGRAL BASE AND PRECAST TOP TRANSITION (ROUND TO RECTANGULAR) SECTION TO FIT CASTING BEING USED. TRANSITION UNIT REQUIRES A #5 REBAR AT CORNERS OF RECTANGULAR SHAPED SECTION AND 3 x 8 W6 X X W5 WELDED WIRE FABRIC IN VERTICAL SECTION.

CITY OF CLEVELAND STANDARD CATCH BASIN  
NOT TO SCALE



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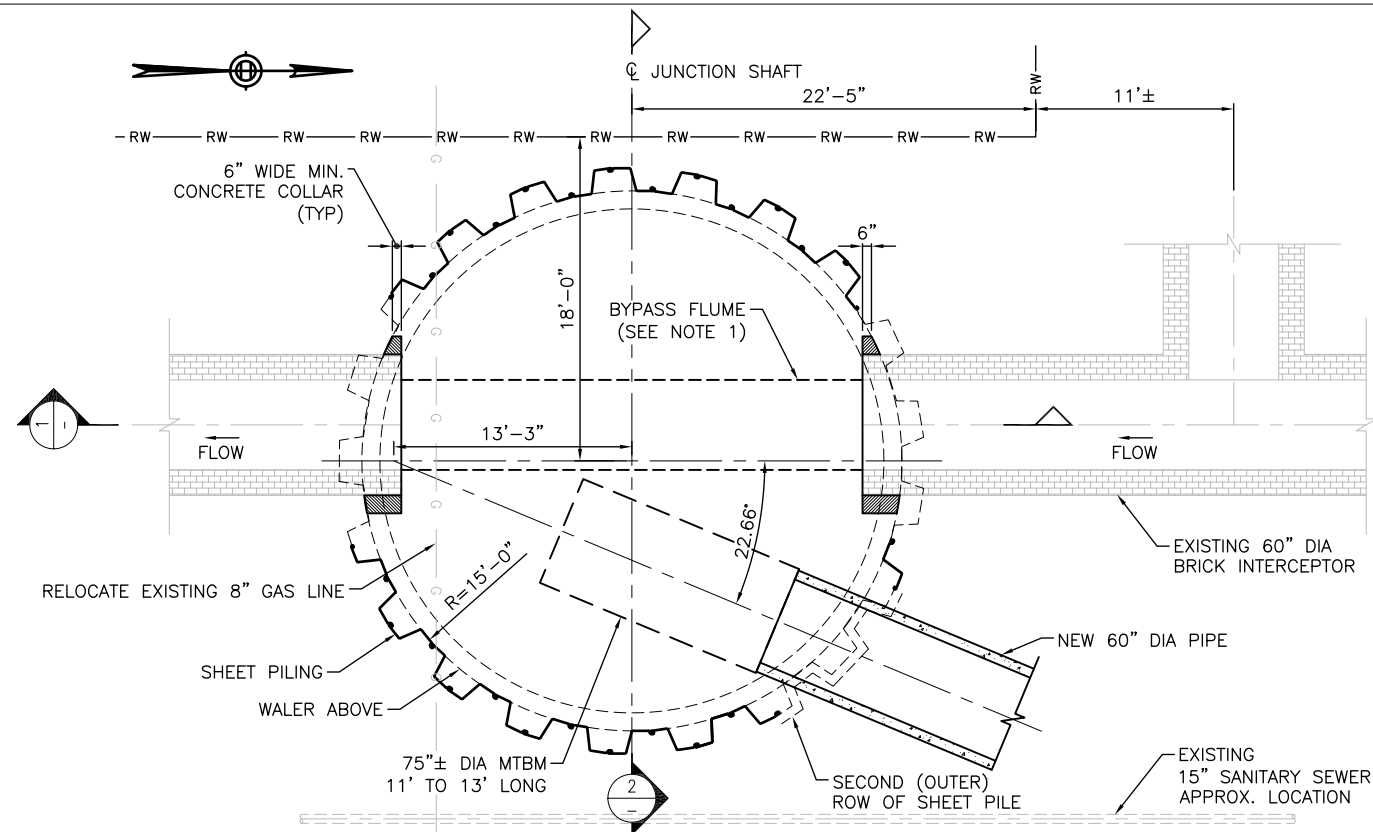
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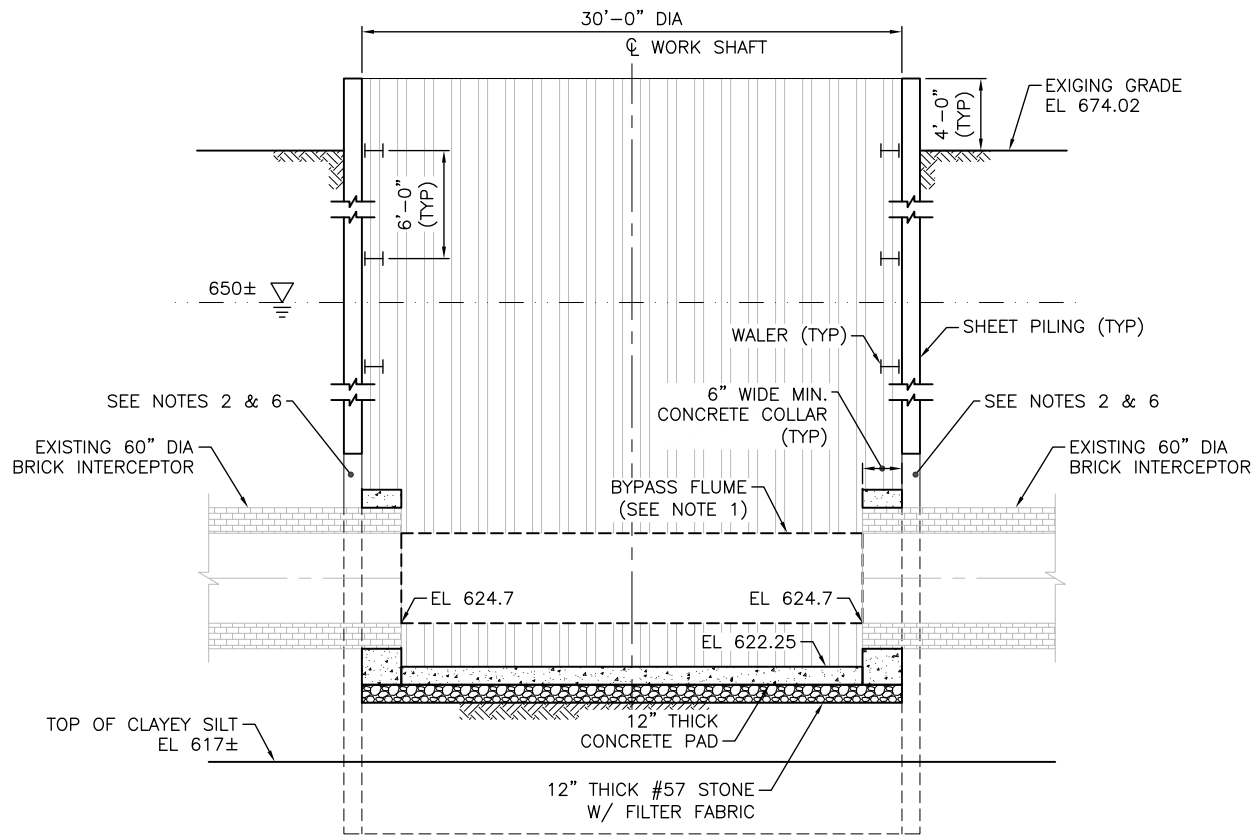
CITY OF CLEVELAND CATCH BASIN DETAIL

PROJECT NO.:	
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SCALE:	NONE
SHEET NO.:	C-12

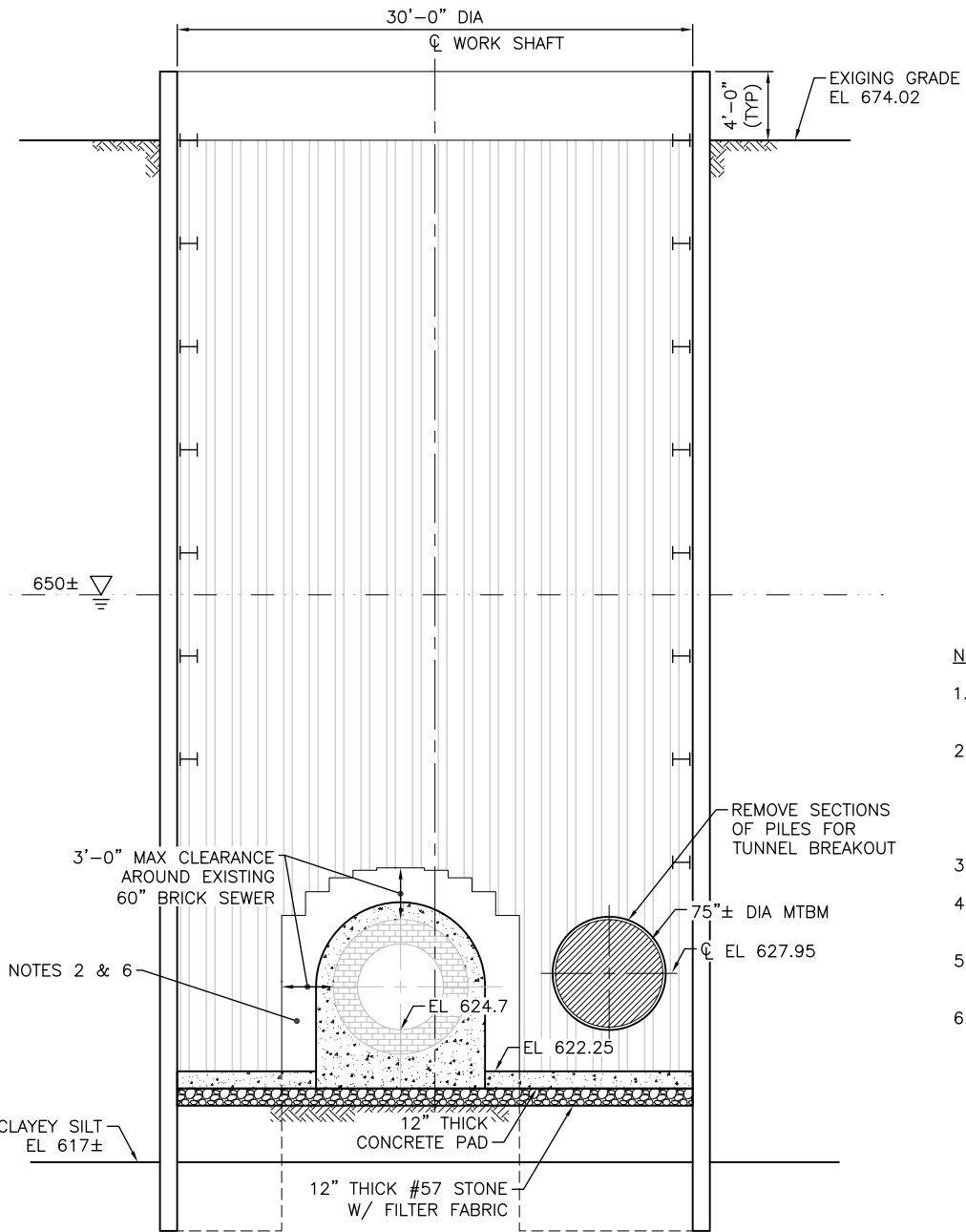




**PLAN VIEW – TUNNEL LEVEL**  
SCALE: 3/16" = 1'-0"

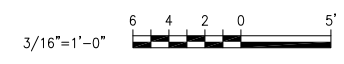


**SECTION 1**  
SCALE: 3/16" = 1'-0"



**SECTION 2**  
SCALE: 3/16" = 1'-0"

- NOTES:**
- DESIGN AND INSTALL FLOW BYPASS FLUME FOR 154 CFS CAPACITY.
  - TYPE OF GROUT WILL BE DETERMINED BASED ON SOIL TESTING RESULTS – JET GROUTING OR CHEMICAL GROUTING IS STILL UNDER CONSIDERATION. ALSO, DEWATERING BY TWO WELLS IS UNDER CONSIDERATION PENDING SOIL SAMPLE TESTING RESULTS.
  - REFER TO SHAFT SITE PLANS FOR UTILITY INFORMATION.
  - OVERHEAD UTILITIES NOT SHOWN. THEY WILL BE RELOCATED DURING CONSTRUCTION.
  - REFER TO SHEET \_\_\_\_\_ FOR SUGGESTED MTBM BULLSEYE ARRANGEMENT.
  - DESCRIBE FOREPOLING AT EXISTING SEWER – CLOSE ALL GAPS.



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**Dawn Underground Engineering, Inc.**  
Tunnel and Underground Structures Consultants  
10 Village Court - Hazlet - New Jersey 07730  
Tel: 732-739-8840 Fax: 732-739-8870

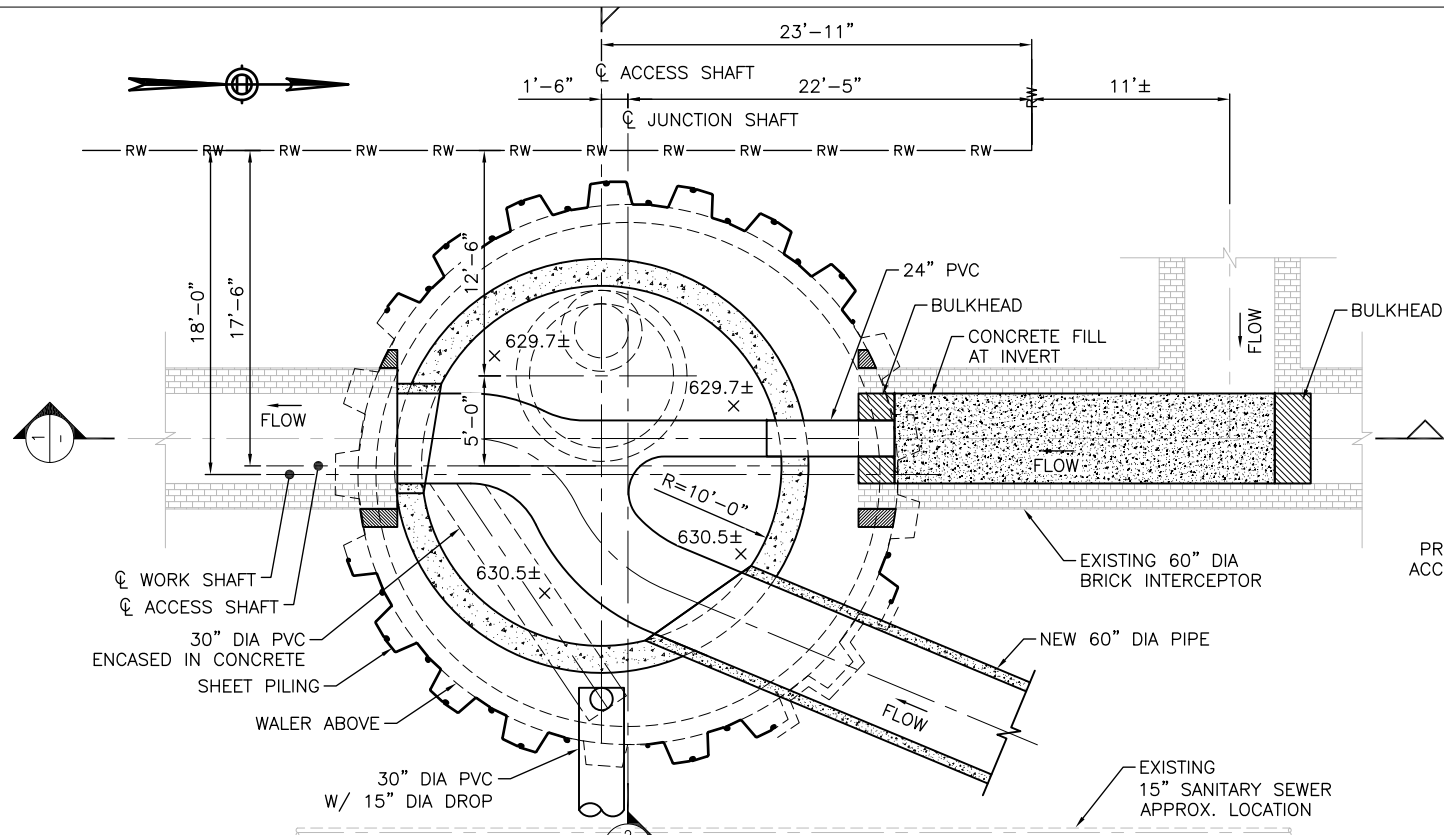
**Northeast Ohio Regional Sewer District**  
Protecting Your Health and Environment

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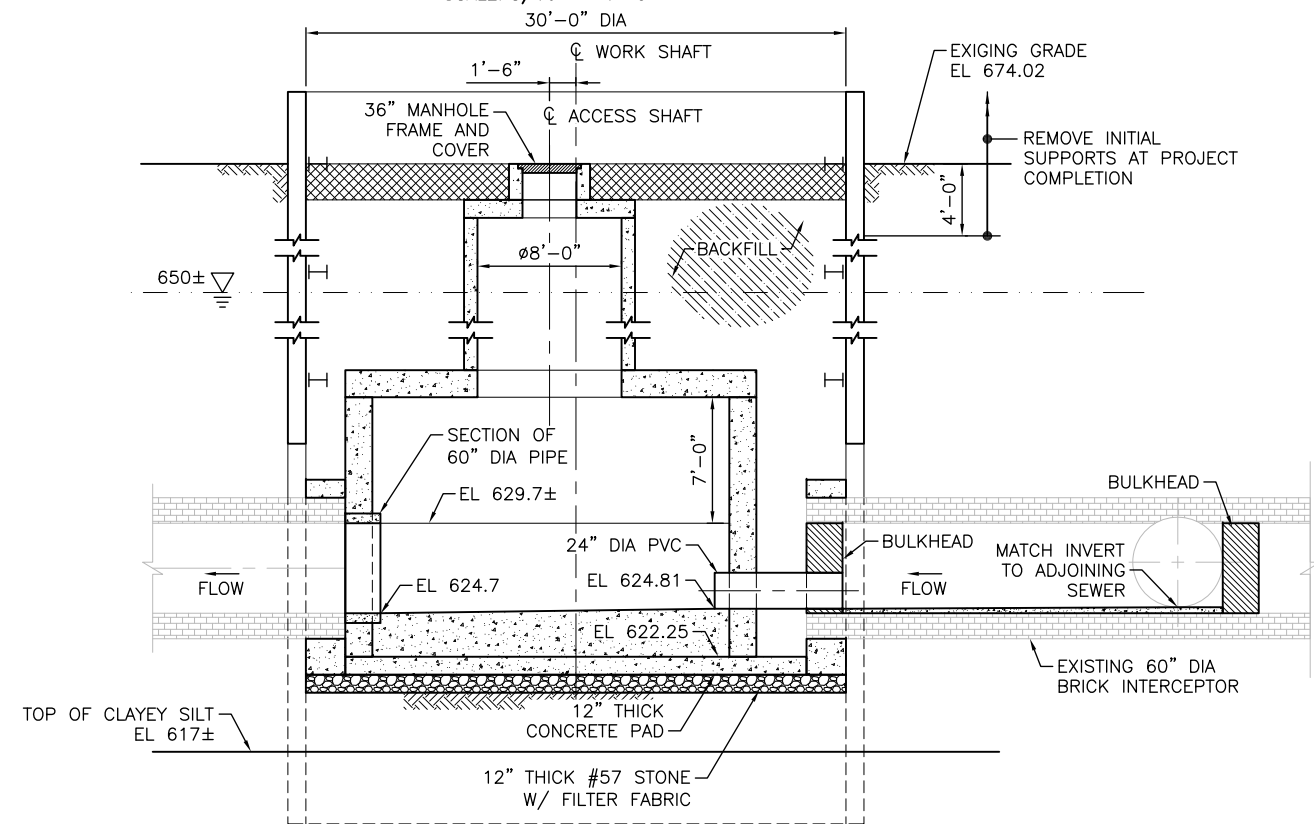
**WORK SHAFT JUNCTION CHAMBER No. 1 INITIAL SUPPORTS**

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: 3/16"=1'-0"  
SHEET NO.: TU-1



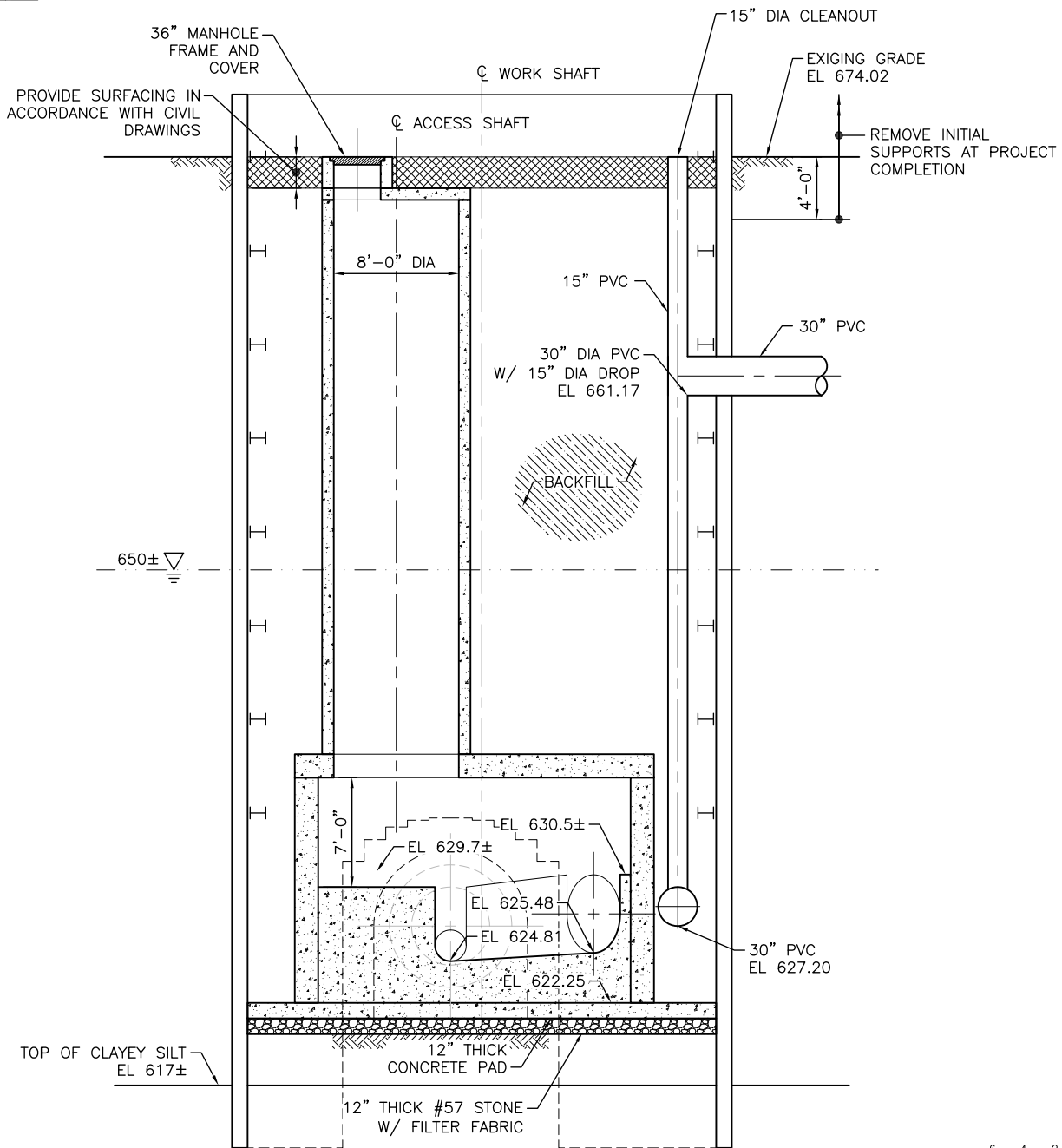
PLAN VIEW - TUNNEL LEVEL

SCALE: 3/16" = 1'-0"



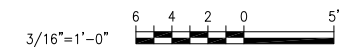
SECTION 1

SCALE: 3/16" = 1'-0"



SECTION 2

SCALE: 3/16" = 1'-0"



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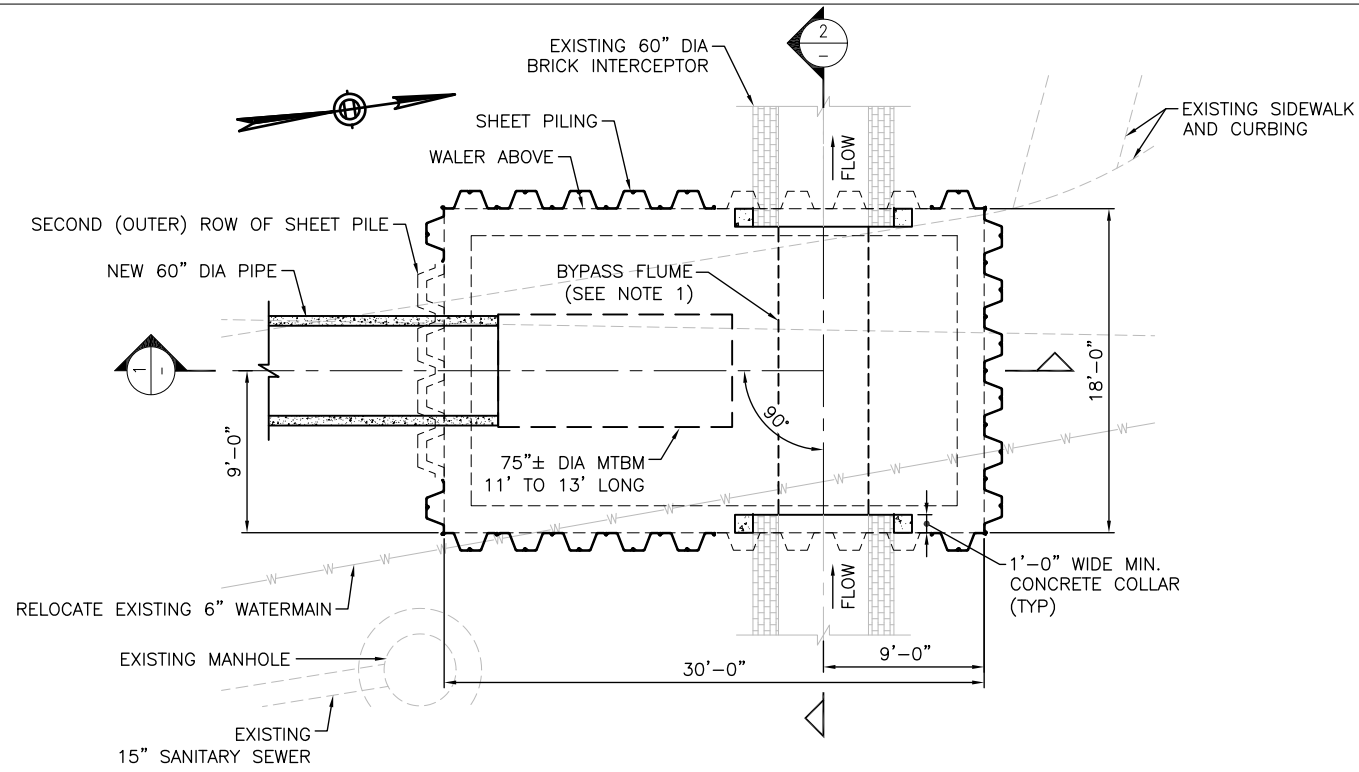
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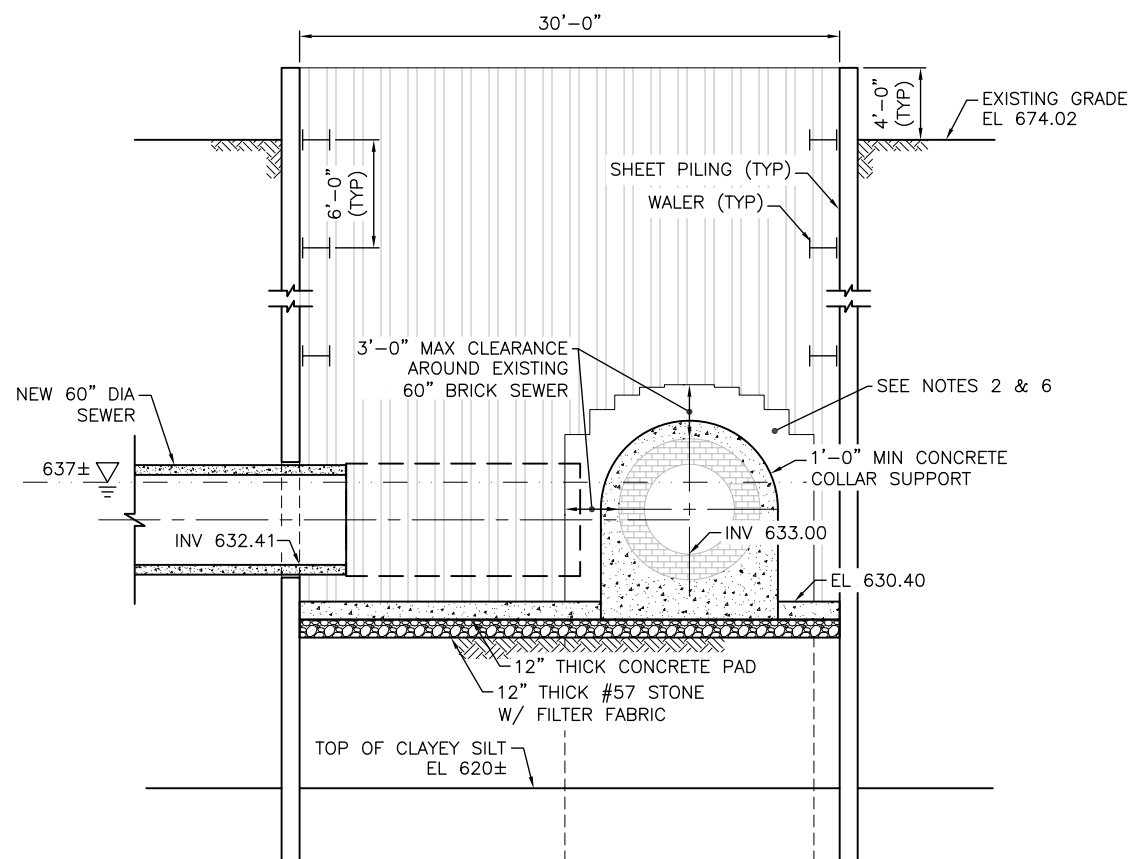
JUNCTION CHAMBER No. 1 FINAL SUPPORTS

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 3/16" = 1'-0"  
 SHEET NO.: TU-2



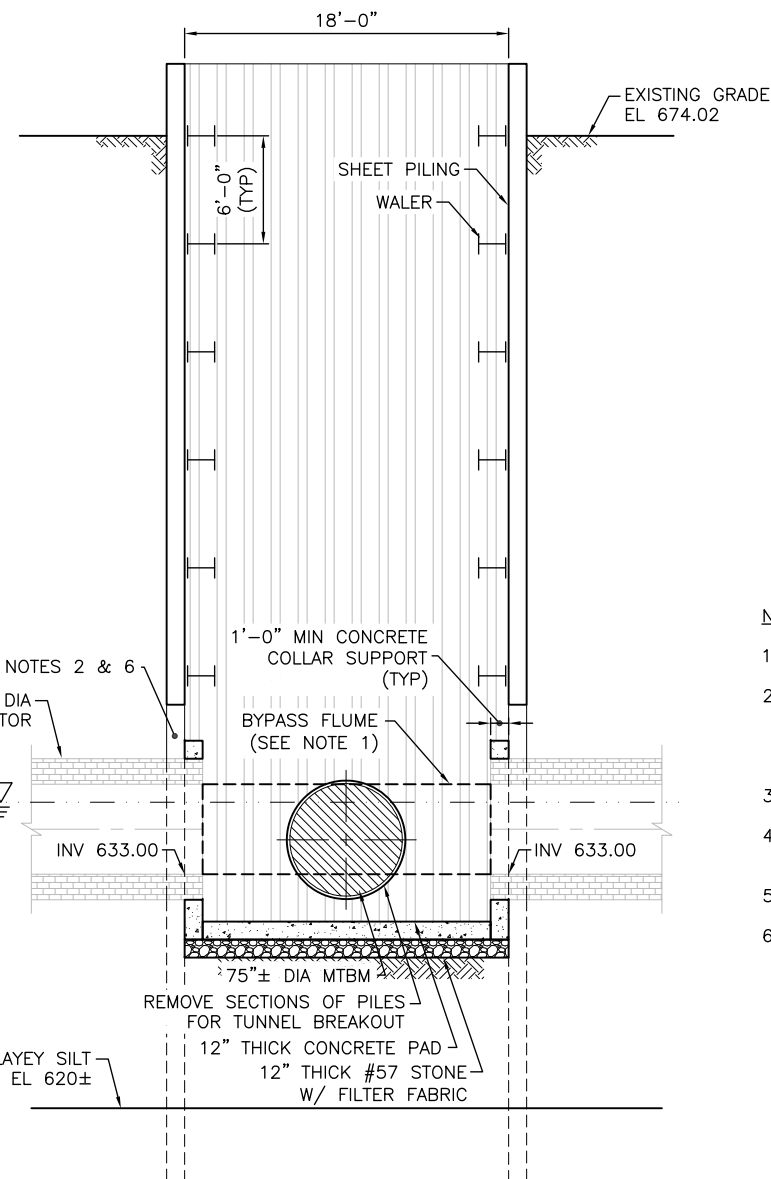
PLAN VIEW — TUNNEL LEVEL

SCALE: 3/16" = 1'-0"



SECTION 1

SCALE: 3/16" = 1'-0"

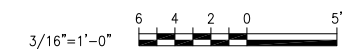


SECTION 2

SCALE: 3/16" = 1'-0"

NOTES:

- DESIGN AND INSTALL FLOW BYPASS FLUME FOR 154 CFS CAPACITY.
- TYPE OF GROUT WILL BE DETERMINED BASED ON SOIL TESTING RESULTS — JET GROUTING OR CHEMICAL GROUTING IS STILL UNDER CONSIDERATION. ALSO, DEWATERING BY TWO WELLS IS UNDER CONSIDERATION PENDING SOIL SAMPLE TESTING RESULTS.
- REFER TO SHAFT SITE PLANS FOR UTILITY INFORMATION.
- OVERHEAD UTILITIES NOT SHOWN. THEY WILL BE RELOCATED DURING CONSTRUCTION.
- REFER TO SHEET \_\_\_ FOR SUGGESTED MTBM BULLSEYE ARRANGEMENT.
- DESCRIBE FOREPOLING AT EXISTING SEWER — CLOSE ALL GAPS.



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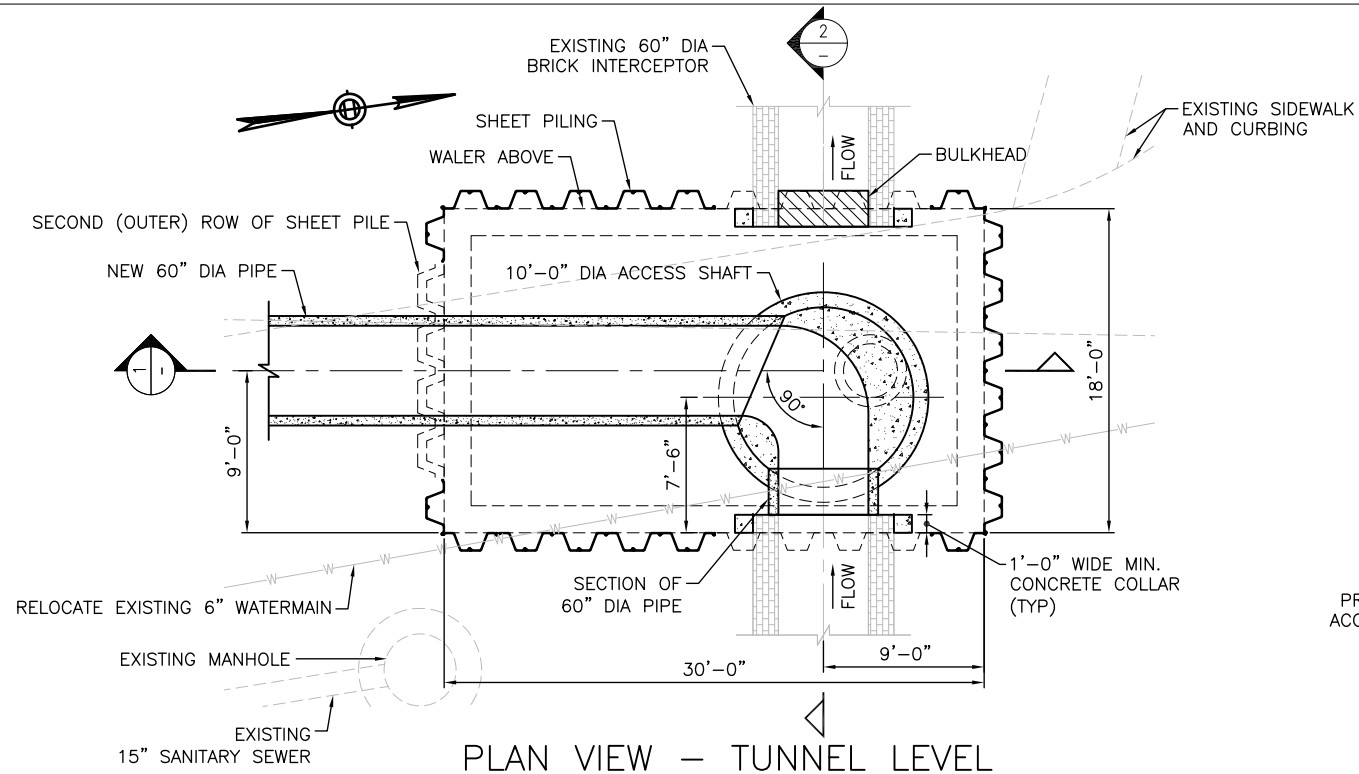
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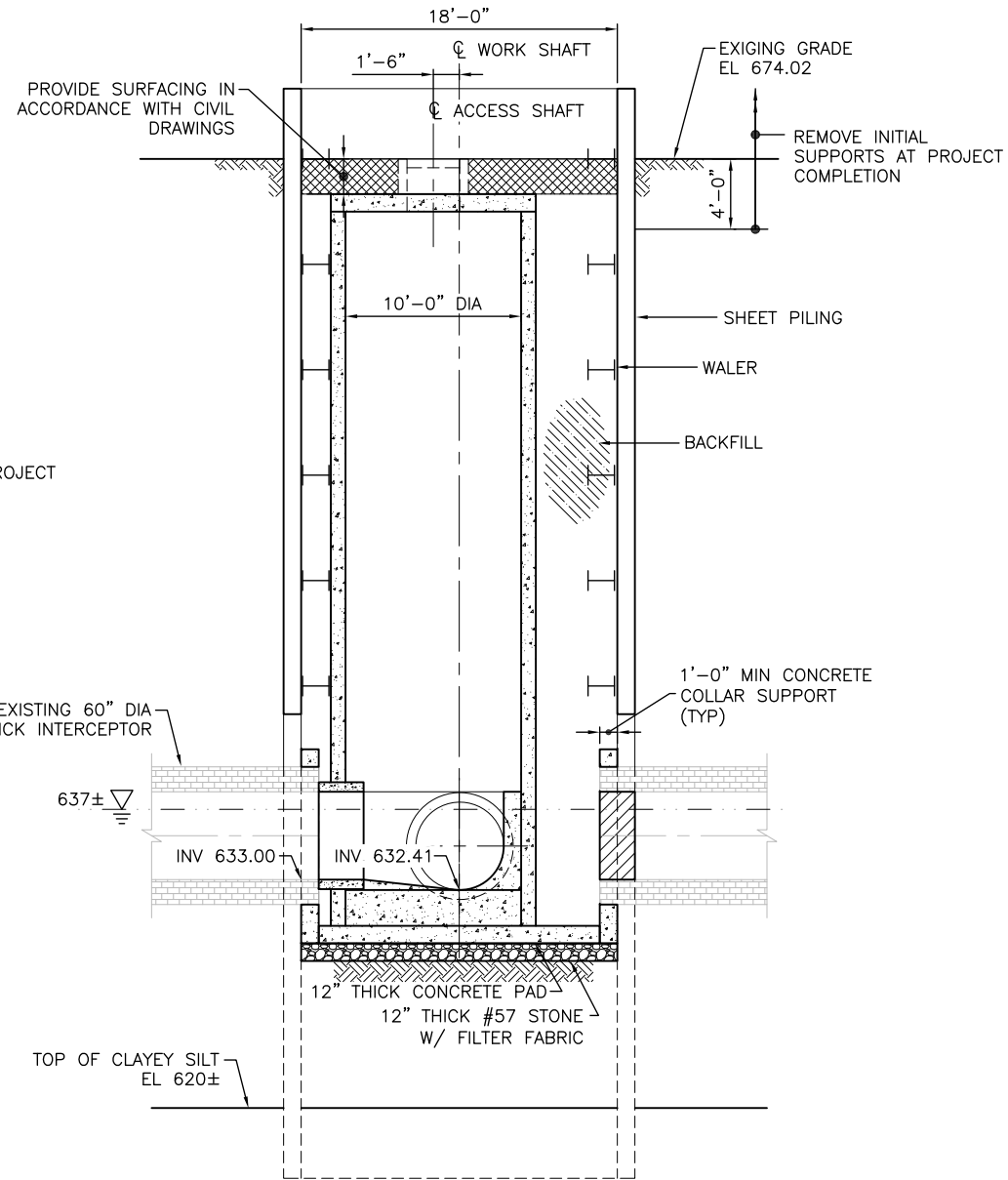
WORK SHAFT JUNCTION CHAMBER No. 2 INITIAL SUPPORTS

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SCALE: 3/16"=1'-0"  
SHEET NO.: TU-3



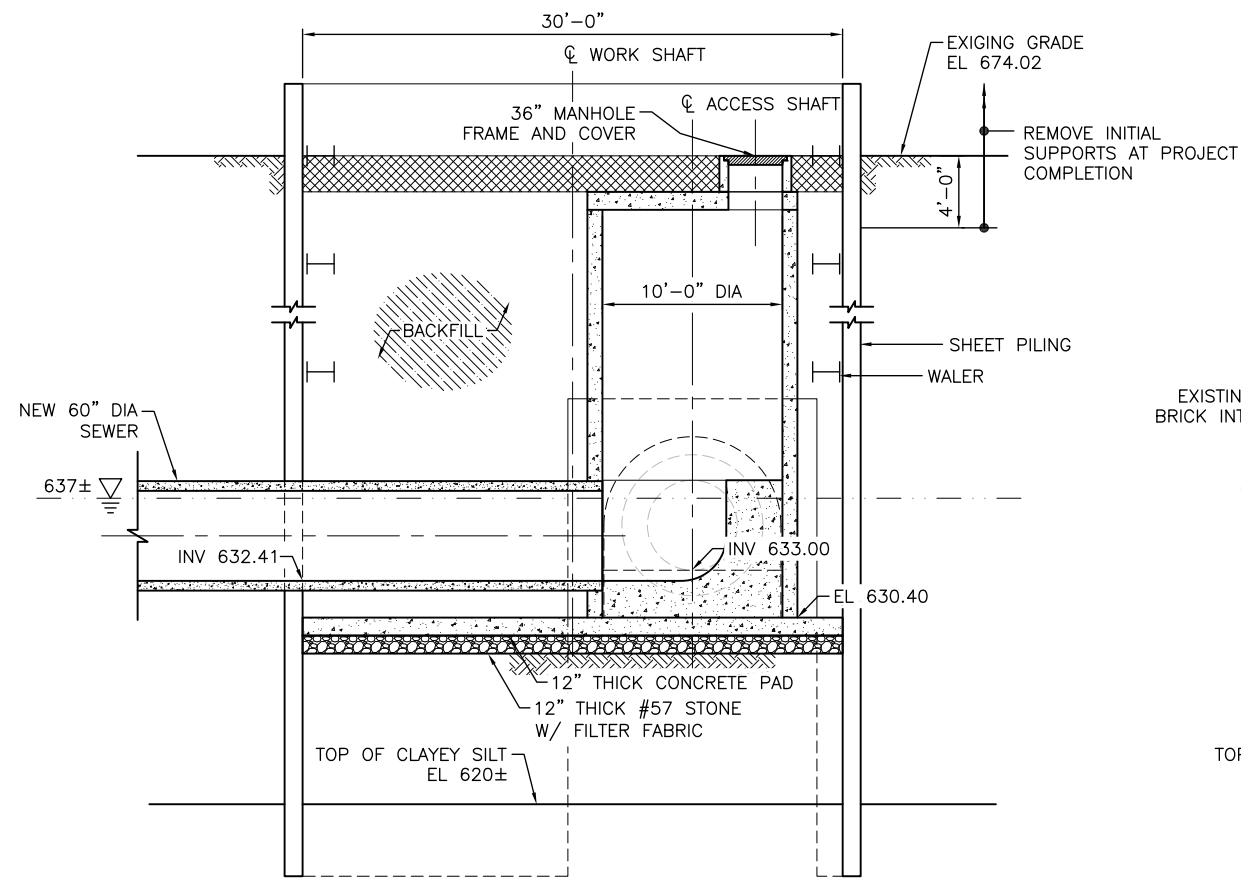
PLAN VIEW - TUNNEL LEVEL

SCALE: 3/16" = 1'-0"



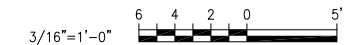
SECTION 2

SCALE: 3/16" = 1'-0"



SECTION 1

SCALE: 3/16" = 1'-0"



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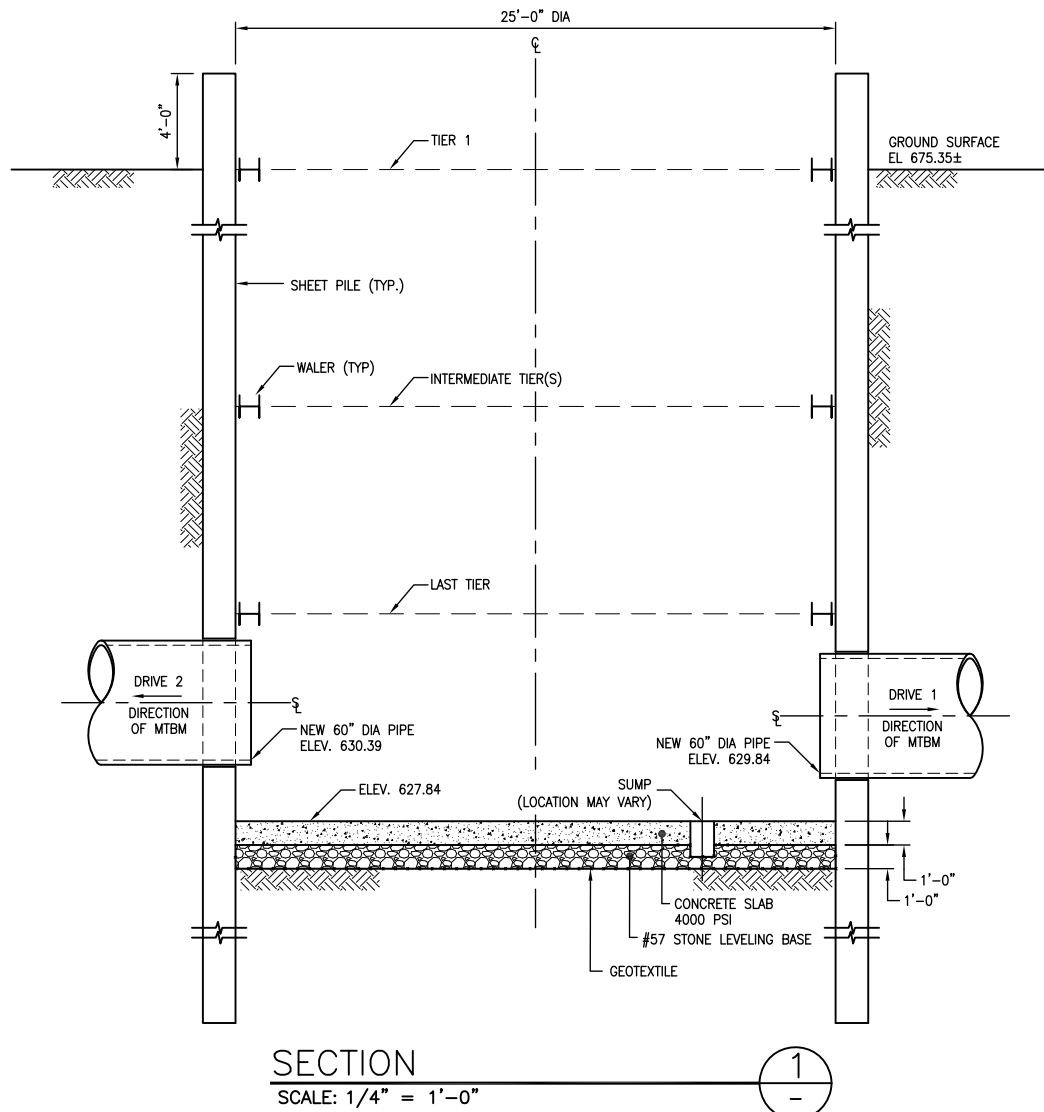
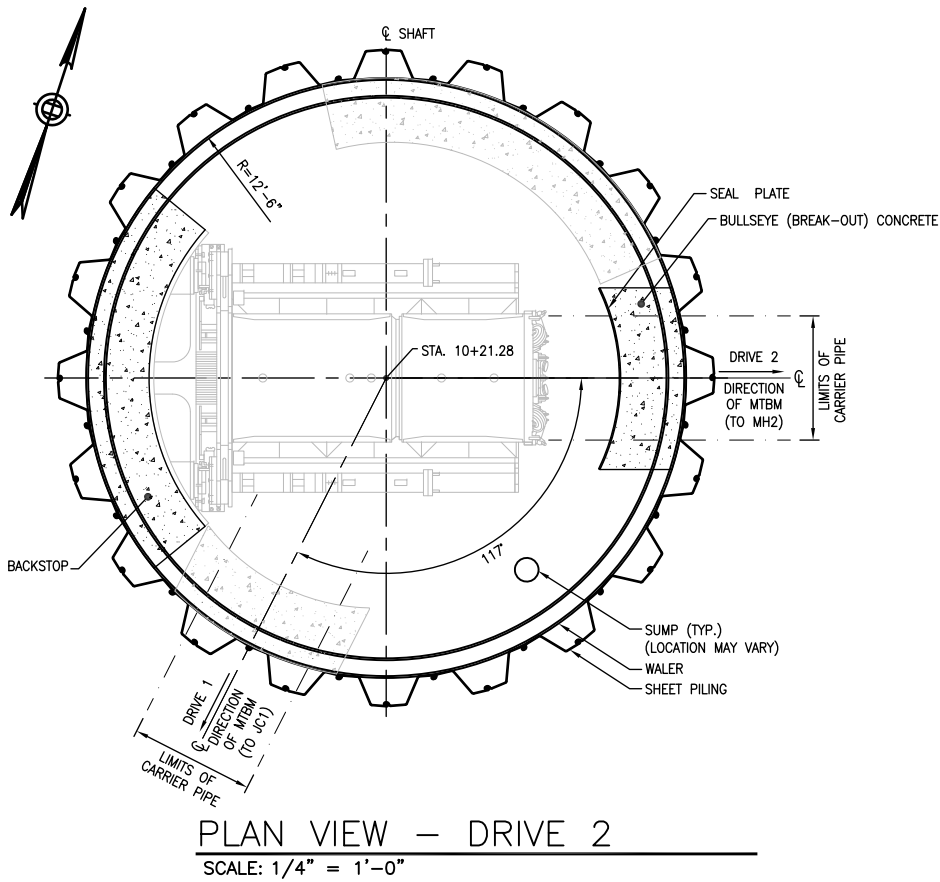
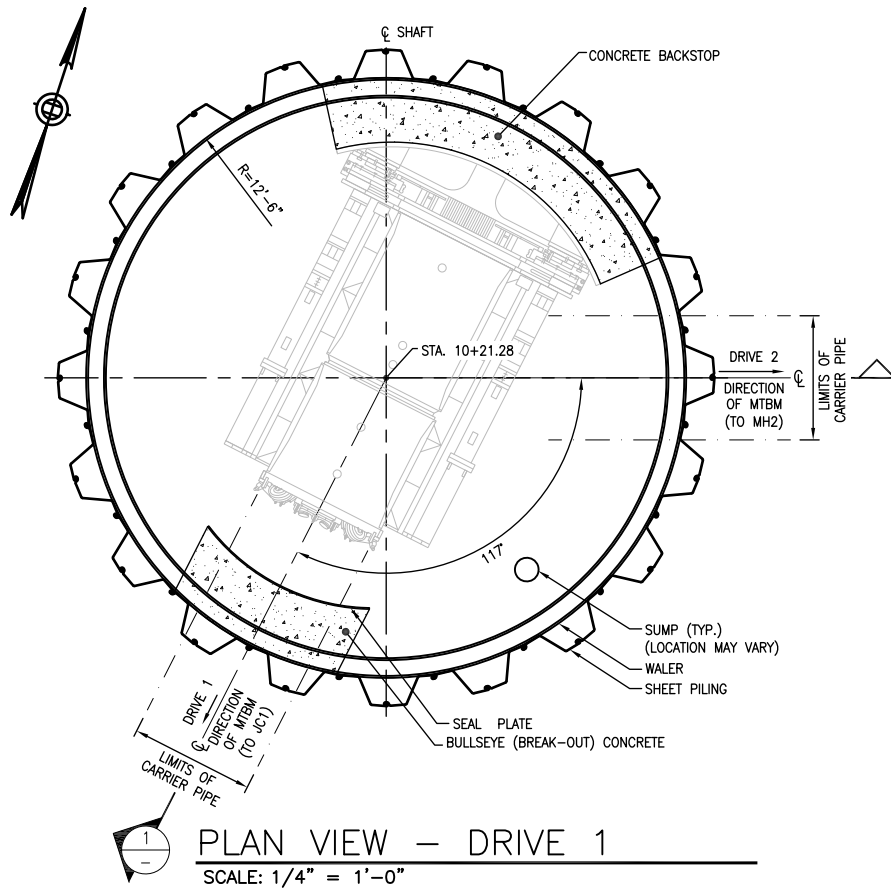
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JUNCTION CHAMBER No. 2 FINAL SUPPORTS

PROJECT NO.: \_\_\_\_\_  
 SHEET: \_\_\_\_\_  
 SCALE: 3/16"=1'-0"  
 SHEET NO.: TU-4



**GENERAL NOTES:**

1. ALL STRUCTURAL STEEL MEMBERS ARE FY = 50 KSI.
2. STEEL SHEETING IS PZ27 OR EQUAL (FY = 50 KSI)
3. USE E70XX ELECTRODES FOR ALL WELDS.
4. THE MAX. THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 50 TONS.

**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MANHOLE NO. 1 (MH1)**

THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MH1 IS PREPARED CONSIDERING THAT MICROTUNNEL DRIVE 1 WILL BE COMPLETED FIRST AND THEN DRIVE 2 WILL BE COMPLETED.

TO MAINTAIN THE EXCAVATION AND SUPPORT STABILITY, THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR THE WORK SHAFT SHALL BE FOLLOWED:

1. INSTALL SHEET PILES TO THE DEPTH SHOWN FOR THE CIRCULAR SHAFT.
  2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT TUNNEL BREAK-OUT LOCATIONS WITHIN LIMITS INDICATED.
  3. EXCAVATE PIT "IN DRY" TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
  4. CONTINUE TO EXCAVATE PIT "IN DRY" IN STEPS TO MAXIMUM OF 2 FEET DEPTH FOR EACH OF THE REMAINING TIER LEVEL AND INSTALL REMAINING TIER STEEL SUPPORTS.
  5. AFTER INSTALLATION OF THE LAST TIER, CONTINUE TO EXCAVATE THE PIT "IN DRY" DOWN TO THE BOTTOM OF EXCAVATION.
  6. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE FABRIC, CRUSHED STONE BASE AND CONCRETE SLAB.
  7. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. ALLOW THE CONCRETE SLAB TO GAIN THE DESIGN STRENGTH.
  8. IF GROUND WATER IS IN-FILTERING INTO THE SUMP PIT, CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.
- PREPARATION FOR BREAK-OUT FOR DRIVE 1 AND DRIVE 2**
9. PLACE SUITABLE GROUT BETWEEN TWO ROWS OF SHEETING AT TUNNEL BREAK-OUT LOCATIONS TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULLS EYE.
  10. CUT THE SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-OUT AREAS (BULLSEYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL BULLSEYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULLSEYE ZONE.

**PROCEDURE FOR BREAK-OUT FOR DRIVE 1 AND DRIVE 2**

11. INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-OUT BETWEEN SEAL PLATE AND SHEET PILES FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICRO TUNNEL BORING MACHINE (MTBM) FOR DRIVE 1.
12. ON COMPLETION OF DRIVE 1, INSTALL BREAK-OUT FOR DRIVE 2 SIMILAR TO THE BREAK-OUT PROCEDURE FOR DRIVE 1. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 2.

**CONCRETE BACKSTOP CONSTRUCTION FOR DRIVE 1 AND DRIVE 2**

13. CONSTRUCT THE CONCRETE BACK STOP AS SHOWN ON THE DRAWING FOR DRIVE 1.
14. ON COMPLETION OF DRIVE 1, CONSTRUCT THE CONCRETE BACK STOP FOR DRIVE 2.



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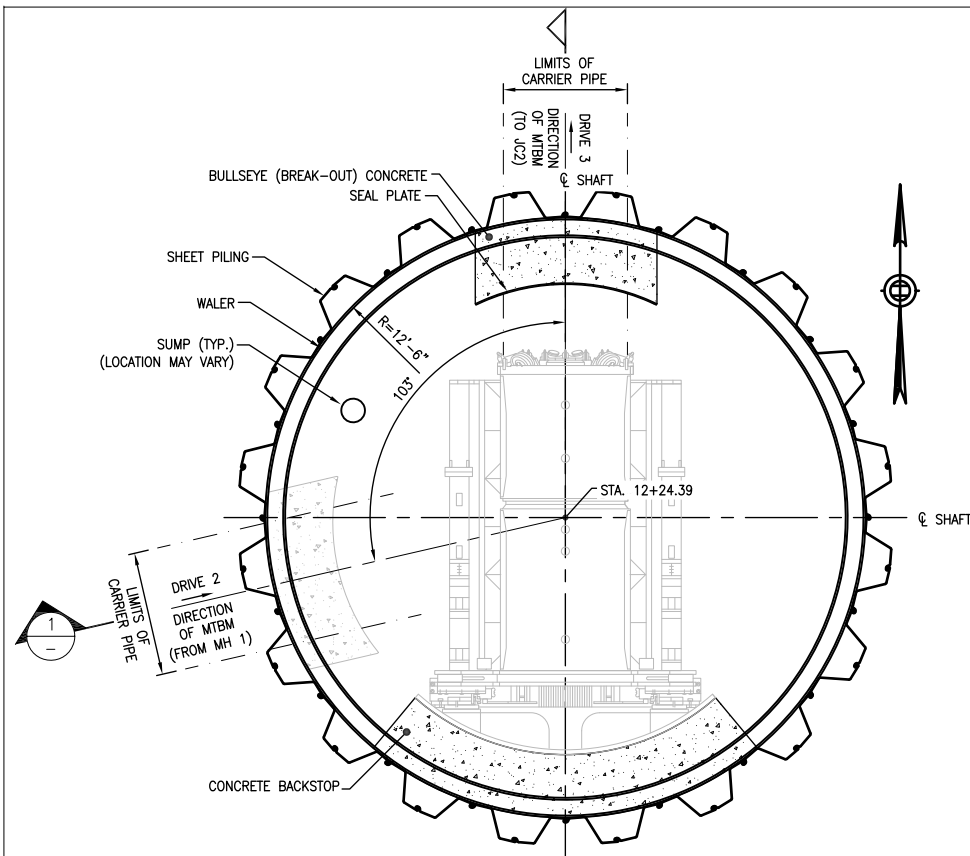
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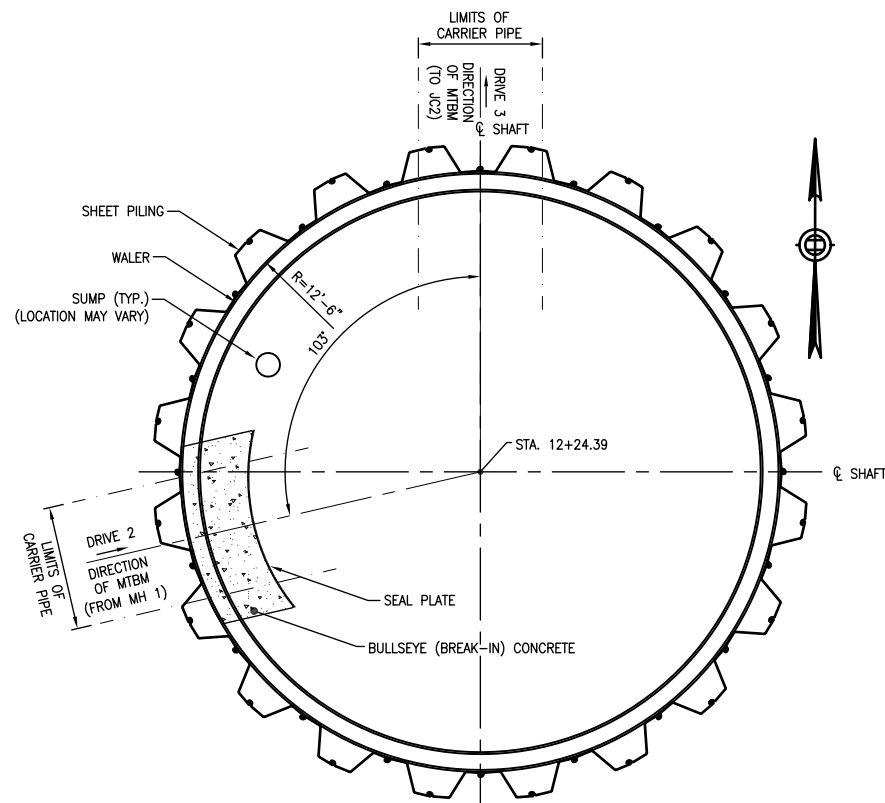
**WORK SHAFT MANHOLE No.1 INITIAL SUPPORTS**

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SCALE: AS NOTED  
SHEET NO.: TU-5



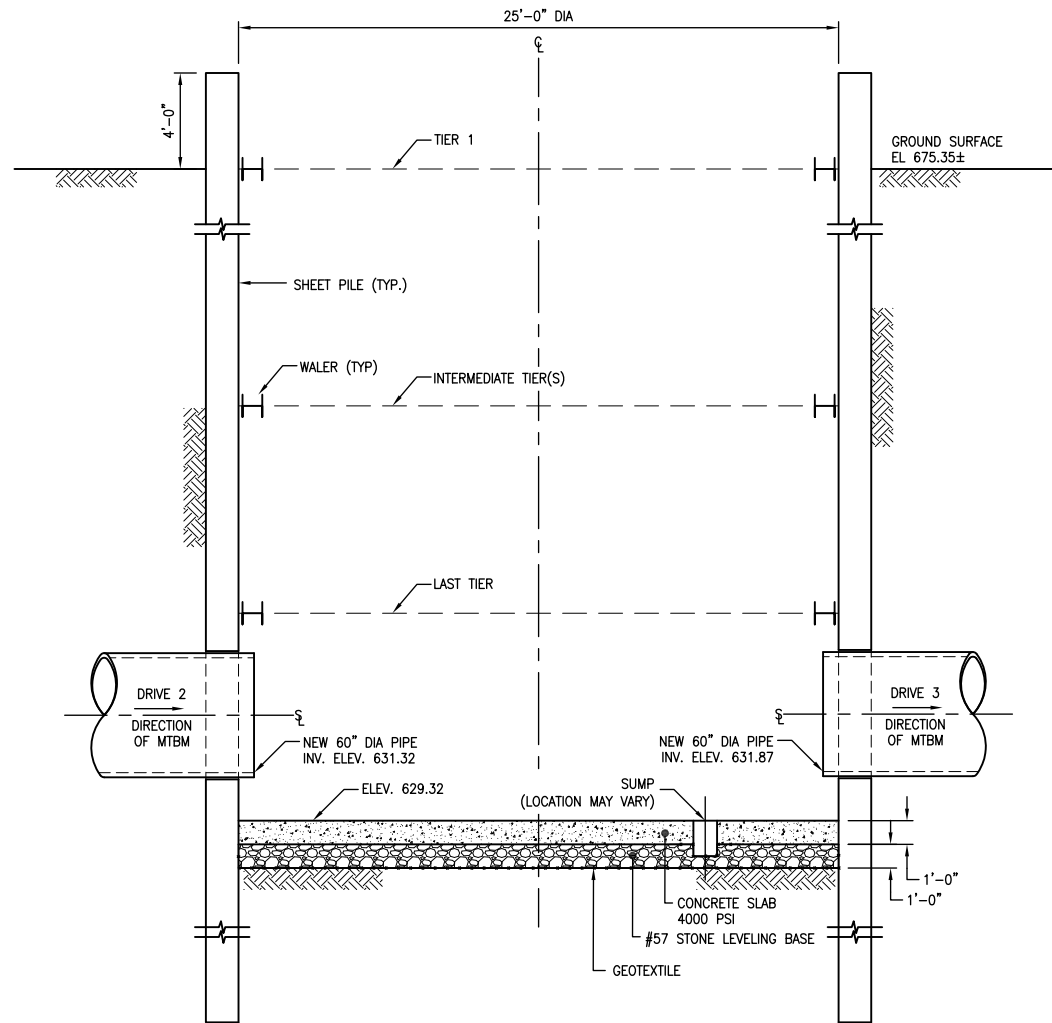
PLAN VIEW - DRIVE 3

SCALE: 1/4" = 1'-0"



PLAN VIEW - DRIVE 2

SCALE: 1/4" = 1'-0"



SECTION

SCALE: 1/4" = 1'-0"

**GENERAL NOTES:**

1. ALL STRUCTURAL STEEL MEMBERS ARE FY = 50 KSI.
2. STEEL SHEETING IS P227 OR EQUAL (FY = 50 KSI)
3. USE E70XX ELECTRODES FOR ALL WELDS.
4. THE MAX. THRUST LOAD FROM MTBM ON TUNNEL BREAK-IN CONCRETE SHALL NOT EXCEED 50 TONS.

**SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MANHOLE NO. 2 (MH2)**

THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR WORK SHAFT AT MH2 IS PREPARED CONSIDERING THAT MICROTUNNEL DRIVE 2 WILL BE COMPLETED FIRST AND THEN DRIVE 3 WILL BE COMPLETED.

TO MAINTAIN THE EXCAVATION AND SUPPORT STABILITY, THE FOLLOWING SEQUENCE OF CONSTRUCTION FOR THE WORK SHAFT SHALL BE FOLLOWED:

1. INSTALL SHEET PILES TO THE DEPTH SHOWN FOR THE CIRCULAR SHAFT.
2. INSTALL SECOND (OUTER) ROW OF SHEET PILES AT TUNNEL BREAK-IN AND BREAK-OUT LOCATION WITHIN LIMITS INDICATED.
3. EXCAVATE PIT "IN DRY" TO MAXIMUM OF 2 FEET DEPTH BELOW TIER 1 LEVEL AND INSTALL TIER 1 STEEL SUPPORTS.
4. CONTINUE TO EXCAVATE PIT "IN DRY" IN STEPS TO MAXIMUM OF 2 FEET DEPTH FOR EACH OF THE REMAINING TIER LEVEL AND INSTALL REMAINING TIER STEEL SUPPORTS.
5. AFTER INSTALLATION OF THE LAST TIER, CONTINUE TO EXCAVATE THE PIT "IN DRY" DOWN TO THE BOTTOM OF EXCAVATION.
6. CLEAN THE BOTTOM OF EXCAVATION AND PLACE GEOTEXTILE FABRIC, CRUSHED STONE BASE AND CONCRETE SLAB. PROVIDE SUMP PIT AS SHOWN ON THE DRAWINGS. ALLOW THE CONCRETE SLAB TO GAIN THE DESIGN STRENGTH.
7. IF GROUND WATER IS IN-FILTERING INTO THE SUMP PIT, CONTINUOUSLY PUMP OUT THE WATER FROM THE SUMP PIT FOR THE ENTIRE DURATION OF WORK.

**PREPARATION FOR BREAK-IN FOR DRIVE 2 AND BREAK-OUT FOR DRIVE 3**

8. PLACE SUITABLE GROUT BETWEEN THE TWO ROWS OF SHEET PILING AT TUNNEL BREAK-IN AND BREAK-OUT LOCATIONS TO PREVENT GROUNDWATER OR SOIL INFILTRATION WHEN MAIN SHEET PILES ARE CUT FOR MICROTUNNEL BORING MACHINE (MTBM) BULLS EYE.
9. CUT THE SHEET PILES (INSTALLED FOR THE SHAFT) IN THE MICROTUNNEL BREAK-IN AND BREAK-OUT AREA (BULLSEYE). IF DURING CUTTING OF SHEET PILES, GROUNDWATER OR SOIL INFILTRATION IS OBSERVED, PROVIDE SECONDARY GROUT TO COMPLETELY SEAL BULLSEYE ZONE AS NECESSARY. APPLY A BOND BREAKER AGAINST SHEET PILES IN THE BULLSEYE ZONE.

**PROCEDURE FOR BREAK-IN FOR DRIVE 2**

10. INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-IN FOR DRIVE2. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 2.
11. RECEIVE THE MTBM IN THE SHAFT AND GROUT THE ANNULUS AROUND THE CARRIER PIPE THROUGH THE GROUT PORTS.

**PROCEDURE FOR BREAK-OUT FOR DRIVE 3**

12. ON COMPLETION OF DRIVE 2, INSTALL STEEL BULLSEYE SEAL PLATE AND PLACE CONCRETE FOR THE TUNNEL BREAK-OUT FOR DRIVE 3. ALLOW THE CONCRETE TO GAIN THE DESIGN STRENGTH. JUST BEFORE COMMENCING THE WORK ON MICROTUNNELING FOR DRIVE 3, PULL UP THE SECOND (OUTER) ROW OF SHEET PILES JUST ENOUGH TO CLEAR THE MICROTUNNEL BORING MACHINE (MTBM) FOR DRIVE 3.

**CONCRETE BACKSTOP CONSTRUCTION FOR DRIVE 3**

13. ON COMPLETION OF DRIVE 2, CONSTRUCT THE CONCRETE BACK STOP AS SHOWN ON THE DRAWING FOR DRIVE 3.

1/4"=1'-0"



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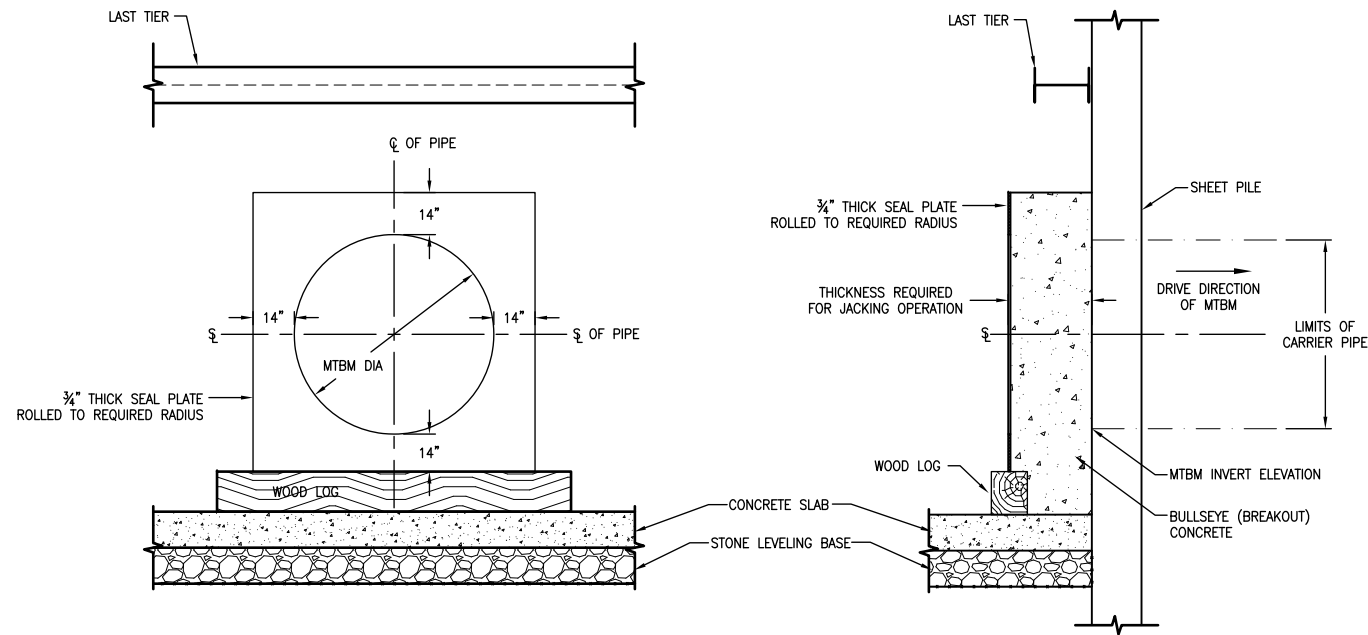
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WORK SHAFT MANHOLE No.2 INITIAL SUPPORTS

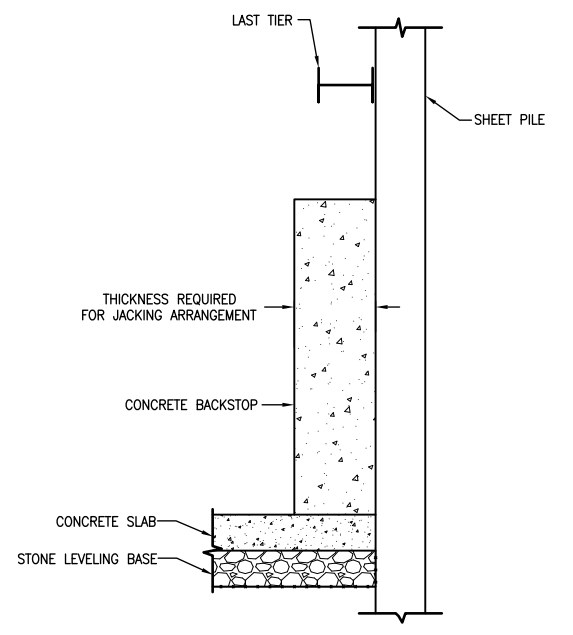
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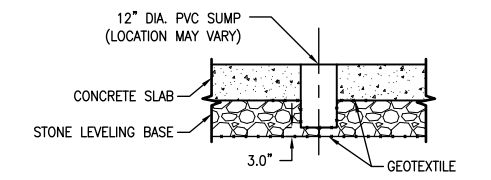




SEAL PLATE DETAIL  
SCALE: N.T.S.



BACKSTOP DETAIL  
SCALE: N.T.S.



SUMP DETAIL  
SCALE: N.T.S.

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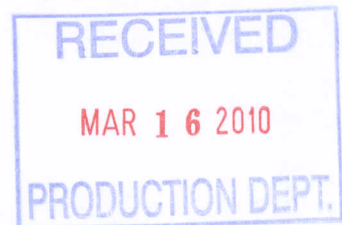
WALWORTH RUN INTERCEPTOR REALIGNMENT

BREAK-IN, BREAK-OUT, BACKSTOP AND SUMP DETAIL

PROJECT NO.: \_\_\_\_\_  
SHEET: \_\_\_\_\_  
SCALE: AS NOTED  
SHEET NO.: TU-7



## WALWORTH RUN INTERCEPTOR REALIGNMENT PROJECT - CONTRACT WRIR



# DRAFT BASIS OF DESIGN REPORT

February 4, 2010

Prepared for

Northeast Ohio Regional Sewer District

Prepared by

DLZ Ohio, Inc. in Conjunction with  
Dawn Underground Engineering, Inc.

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## 1.0 Background

### 1.1 General

This Basis of Design Report summarizes the features of the Walworth Run Interceptor Realignment (WRIR) Project. This project involves the relocation of the Walworth Run Interceptor (WRI) to accommodate the future Interstate 90 Innerbelt Bridge Project by the Ohio Department of Transportation (ODOT). The affected segment of the WRI commences at Regulator WR-27A at the intersection of University Road and West 10<sup>th</sup> Street. The section to be realigned is from Regulator WR-27A to Regulator WR-24 at Fairfield Avenue. The relocated WRI will be constructed entirely within the City of Cleveland.

### 1.2 Background Information

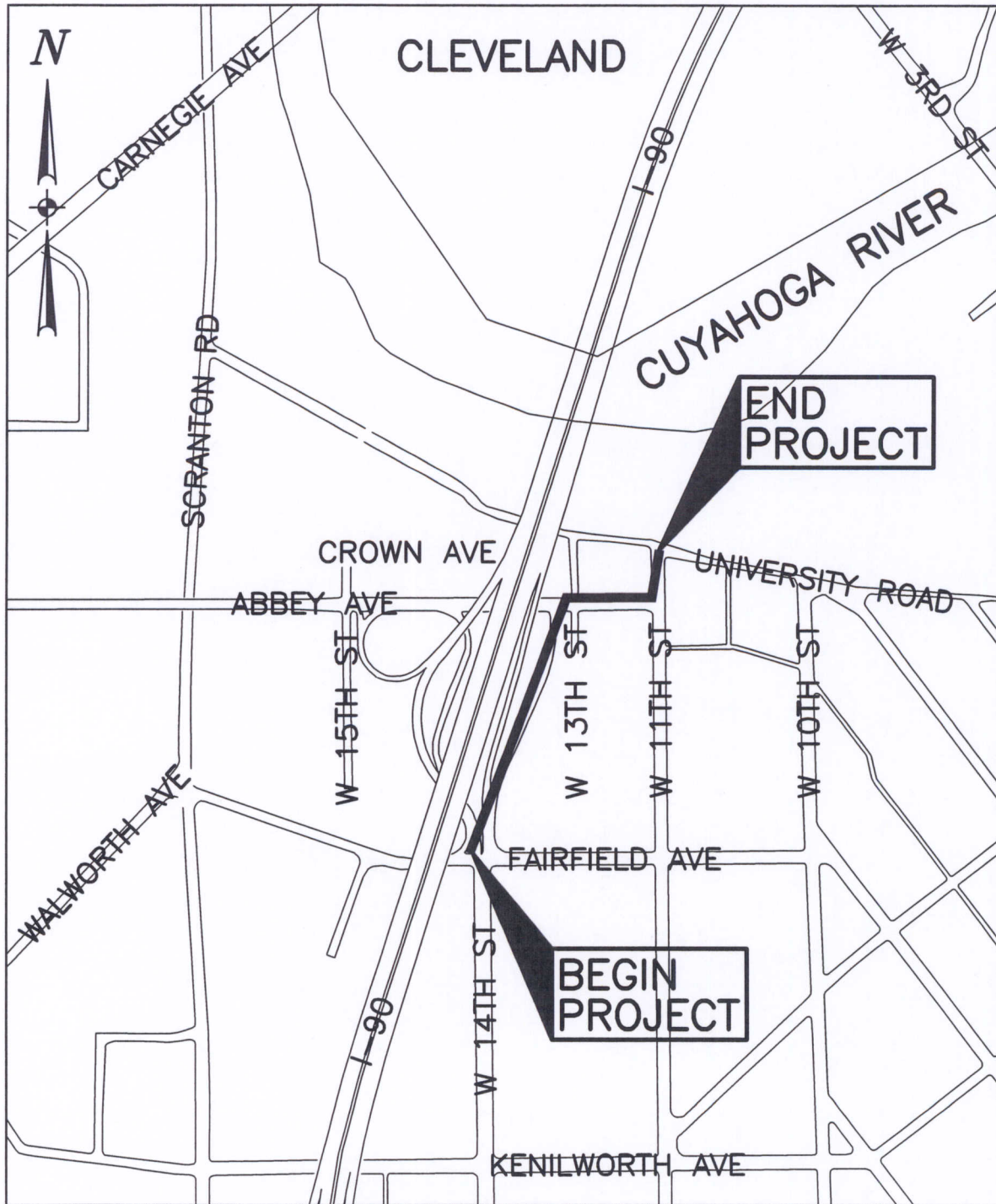
The Interstate 90 Innerbelt Bridge Project provides for the phased replacement of the existing Central Viaduct (Innerbelt Bridge) through the construction of a new westbound bridge to the north of the existing bridge, followed by the construction of a new eastbound bridge on essentially the same alignment as the existing bridge. The project requires the relocation of the 5 ft diameter Walworth Run Interceptor (WRI) and several local sewer utilities in the area of the new I-90 bridge replacement. Figure 1 shows the general location of the WRI relocation.

The area where the I-90 bridge replacement will impact the NEORS D utilities is located at the west bank of the Cuyahoga River under the existing Innerbelt Bridge, approximately north of Fairfield Avenue between West 15<sup>th</sup> and West 11<sup>th</sup> Streets.

In general, the new I-90 Innerbelt Bridge is to be located approximately 210 ft west of the existing I-90 bridge at the west bank of the Cuyahoga River. ODOT anticipates one of the first construction activities being the slope stabilization of the west bank of the Cuyahoga River. The stabilization consists of cutting and benching the existing slope starting just north of Abbey Avenue between West 13<sup>th</sup> and West 15<sup>th</sup> Streets.

Figure 2 depicts the proposed re-grading plan of the west bank of the Cuyahoga River at the I-90 Bridge.

BASIS OF DESIGN  
FOR THE  
WALWORTH RUN INTERCEPTOR  
REALIGNMENT (WRIR)



VICINITY PLAN  
SCALE: 1"=500'



FIGURE 1



→N

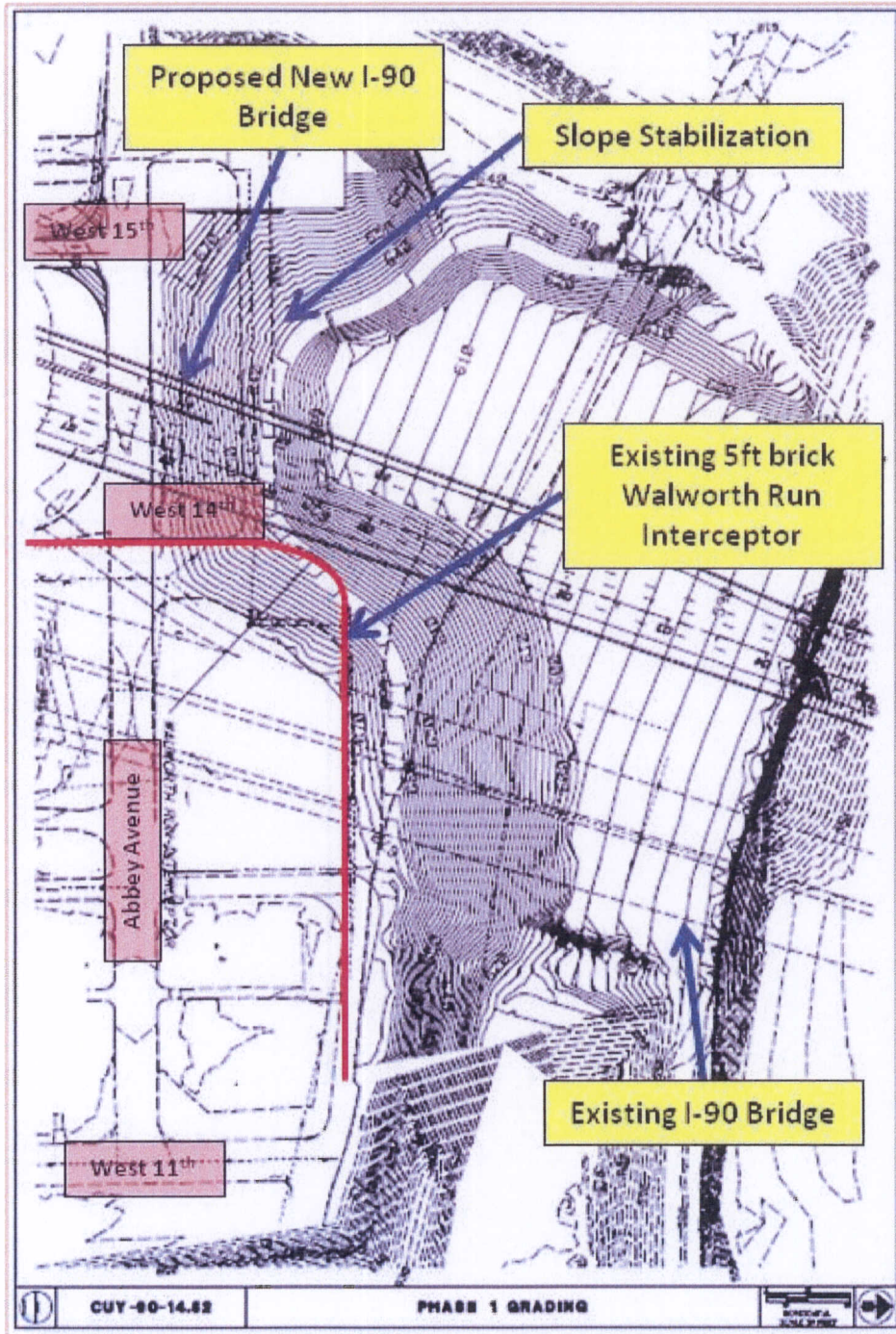


FIGURE 2

PROPOSED FUTURE WORK AT WEST BANK OF CUYAHOGA RIVER AT THE I-90 BRIDGE





## 1.3 Existing Walworth Run Interceptor (WRI)

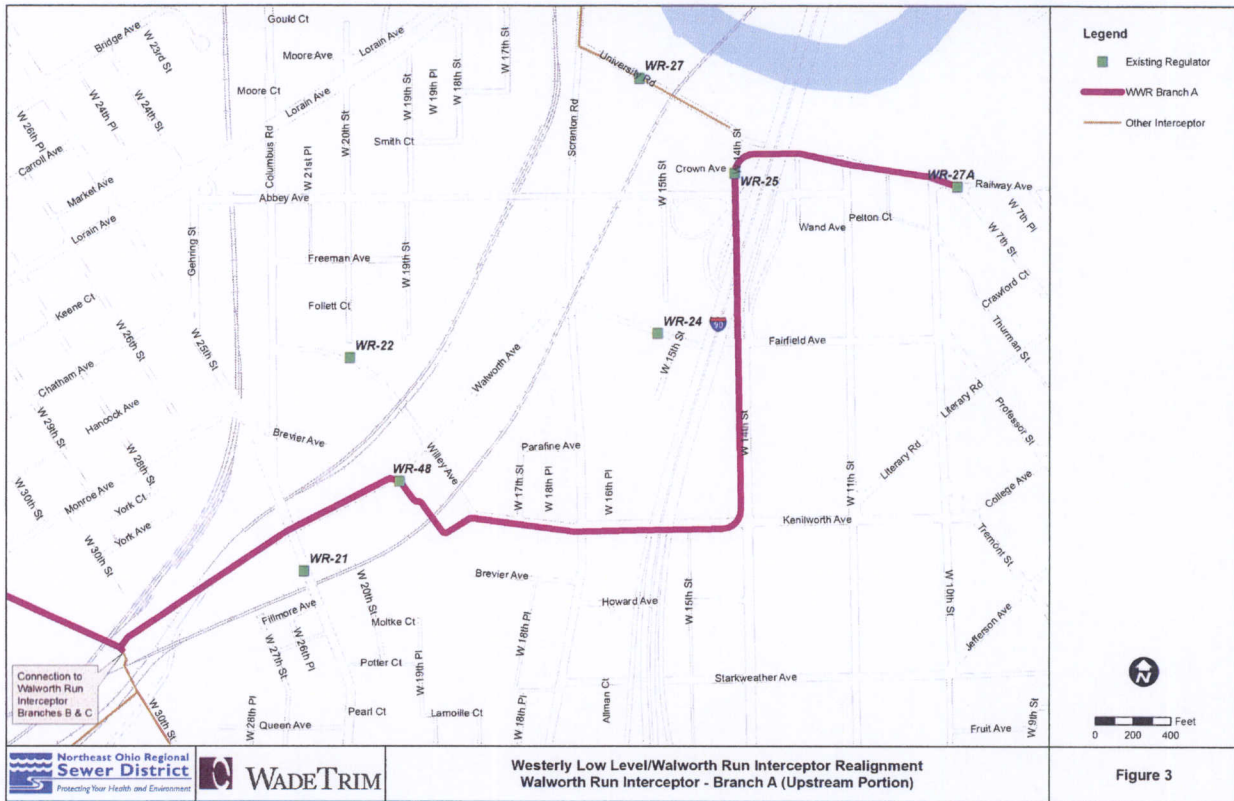
### 1.3.1 Alignment

Most of the combined sewer overflow during both dry and wet weather goes to the WRI. The WRI is the oldest of the four interceptors in the Westerly District. The initial purpose of the interceptor was to collect the combined sewer overflow from the local sewers and transport that flow to the Cuyahoga River.

The affected WRI segment begins at the dry weather outlet Regulator WR-27A. The regulator directs flow from the Tremont Bluff area to either the head of the WRI or CSO 81. The interceptor runs down University Road as a 5 ft tunnel to West 14th Street. After turning south on West 14th Street, flow from the local sewer drops in at Crown Avenue through the leaping weir regulator WR-25. The interceptor continues on West 14th Street to Kenilworth Avenue. WRI then turns west onto Kenilworth Avenue, crosses Scranton Avenue, where Kenilworth Avenue becomes Willey Avenue and heads down the hill. Near the Animal Protective League facility, the interceptor turns south and then west along the route that used to be Shay Court and Brevier Avenue. The interceptor then turns west continuing to Train Avenue.

WRI reaches the bottom of the hill and turns southwest, crossing over the larger Walworth Run Overflow sewer (CSO 080). A 24 inch pipe connects the interceptor and the overflow pipe at the turn. The connection was constructed to relieve surcharging in the interceptor.

Once on Train Avenue, the interceptor decreases from a 5 ft circular sewer to a No 4 egg-shaped sewer and accepts dry weather flow from the regulator WR-22. The WRI continues on a southerly path, picking up flow from regulator WR-21 on West 25th Street. The interceptor stays on Train Avenue until turning north at West 30th Street. WRI enters the intersection of Train Avenue and West 30th Street and combines with dry weather flows from other sewer branches. Figure 3 shows the alignment of the WRI within Branch A of the sewer system.



**FIGURE 3**

**WALWORTH RUN INTERCEPTOR - BRANCH A**

Table 1.3.1 summarizes existing design criteria for the Walworth Run Interceptor.

**Table 1.3.1 – Existing WRI Design Criteria**

Interior Diameter	5 ft
Maximum Flow (manning's full pipe capacity)	185 cfs flowing full
10-yr, 6-hr flow <sup>(1)</sup>	109 cfs
Dry Weather Flow (DWF) flow <sup>(1)</sup>	6.85 cfs
Slope	0.43%
Pipe Material	Brick
Average Invert Depth at the Project Area	Approx. 45 ft

<sup>(1)</sup> Estimates based on Westerly CSO Phase II Facilities Plan models (Feb 2000)





## **1.4 Walworth Run Interceptor Realignment (WRIR)**

### **1.4.1 Option Evaluation**

Five (5) conceptual relocation options for a portion of the WRIR were considered to accommodate the future design of the Interstate 90 Innerbelt Bridge. Options 1 and 2 were presented by NEORSRD during the proposal stage. Options 3 through 5 were developed by DLZ as potential alternates and included in the proposal submission. Based on project goals, cost and schedule, DLZ concurred with the original NEORSRD recommendation that Option 2 be selected as the preferred alternate for the WRIR. The updated WRIR Draft Technical Memorandum dated January 11, 2010 and February 4, 2010 (Revision No. 1), prepared by DLZ, is included as Appendix A.

### **1.4.2 Alignment**

The WRIR begins by connecting to the existing WRI at the intersection of University Road and West 11<sup>th</sup> Street. Approximately 140' of 60" tunneled pipe runs southbound from the connection point along West 11<sup>th</sup> Street to an installed manhole at the intersection of Abbey Avenue. The alignment of the 60" tunneled pipe then runs westbound approximately 275' along Abbey Avenue to an installed manhole at the West 14<sup>th</sup> Street intersection. From this point, the alignment of the 60" tunneled pipe proceeds along the West 14<sup>th</sup> connector ramp within the ODOT limited access (LA) for approximately 900' to the intersection of West 14<sup>th</sup> Street and Fairfield Avenue. At this point, the 60" tunneled pipe connects to the existing WRI with a connecting structure.



**FIGURE 4**

**WRIR GENERAL ROUTE**

### 1.4.3 Interceptor and Regulator Structures

The WRIR design includes four (4) major interceptor structures to be constructed within tunnel/work shafts. Two of the structures will be cast in place concrete junction chambers constructed to temporarily bypass flow from WRI. The junction chambers will be located at University Road and West 11<sup>th</sup> Street and Fairfield Avenue and West 14<sup>th</sup> Street. The two remaining structures at the turning points will be manholes and will be located at Abbey Avenue & West 11<sup>th</sup> Street and at Abbey Avenue & West 14<sup>th</sup> Street. DLZ will determine if the manholes will be entirely pre-cast or have cast-in-place components. Additionally, Regulator WR-25 at Crown Avenue & West 14<sup>th</sup> Street will be abandoned and Regulator WR-24 on Fairfield Avenue will be rebuilt.

Table 1.4.3 shows the proposed design summary for the Walworth Run Interceptor Realignment Project.





Table 1.4.3 – Proposed WRIR Design Summary

Interior Diameter <sup>(1)</sup>	60 inches
Full Flow Capacity <sup>(2)</sup>	187 cfs
Design Slope <sup>(3)</sup>	0.51%
Pipe Material	To be determined
Average Invert Depth at the Project Area	Approximately 45 ft

- <sup>(1)</sup> Interior diameter may need to increase if surveyed inverts are different than what has been presented in the RFP.
- <sup>(2)</sup> Full Flow Capacity is based on 60" diameter pipe with a Manning's  $n=0.013$ , and 0.51% slope.
- <sup>(3)</sup> Design Slope is based on inverts determined by field investigation and record data. Additional field information is necessary at the WRI downstream connection point for verification of all design assumptions.





## 2.0 Permits

### 2.1 General

The WRIR alignment will require significant permitting coordination. Construction permits will be required from the City of Cleveland for work located within city street right-of-way such as University Road, West 11<sup>th</sup> Street, Abbey Avenue, Crown Avenue, West 14<sup>th</sup> Street, and Fairfield Avenue. These construction permits will require considerations for traffic control and other potential construction disturbances.

In addition to permitting coordination normally associated with the City of Cleveland, there will be activity associated with acquiring a permit from ODOT. All portions of the WRIR in the Interstate 90 LA will require the acquisition of an ODOT MR 509 Permit for permission to perform the necessary work.

Additional permitting will be necessary to meet the Ohio EPA regulations for the Permit to Install, and it may become necessary to apply for coverage under a National Pollutant Discharge Elimination System (NPDES) general permit if one or more acres of land is disturbed. Additional agencies may become involved as the work is better defined.



## 3.0 Local Sewers and Hydraulics

### 3.1 Local Sewers

Local sewers are impacted by the proposed Innerbelt work. Table 3.1 lists the impacted sewers and their disposition. DLZ will contact the appropriate agencies to coordinate the necessary work on the impacted sewers. This work will require the re-direction of flows at MH No. 5 and at the Crown Avenue Animal Hospital, and the assessment of pipe capacities.

Table 3.1 – WRIR Sewer Impacts

Identification	Impacted Section
No 4 - No 5 existing 48" diameter brick combined sewer running north along West 14 <sup>th</sup> Street.	Remove or Abandon from MH 5 located at the intersection West 14 <sup>th</sup> Street and Fairfield Avenue to regulator WR 27 located at intersection of University Road and the Walworth Run overflow sewer (CSO 080).
12" diameter existing combined sewer running east along Abbey Avenue from approximately West 15 <sup>th</sup> to West 14 <sup>th</sup> Street.	The complete sewer line is to be abandoned.
12" diameter existing combined sewer running east along Crown Avenue from approximately West 15 <sup>th</sup> to West 14 <sup>th</sup> Street.	The complete sewer line is to be abandoned.
36" diameter existing combined sewer - Running west along University Road.	Remove or abandoned from MH located at the intersection of West 13 <sup>th</sup> and University Road. to regulator WR-25 located at the intersection of West 14 <sup>th</sup> Street and Crown Avenue.
Existing Storm sewer draining into MH 5 located at the intersection of West 14 <sup>th</sup> Street and Fairfield Avenue.	Abandon or remove all of this sewer line. This storm sewer runs in a southeast direction and ends at MH 5.
Existing 12" storm sewer draining into MH 3. This storm sewer runs in a northwest direction and ends at MH 3.	Abandon or remove the complete sewer line.
Existing storm sewers running east and draining into MH 2.	Abandon or remove all the storm sewers connected to MH 2.





Table 3.1 – WRIR Sewer Impacts (Continued)

Identification	Impacted Section
Existing 12" storm sewer running west and draining into MH 2.	Abandon or remove all the storm sewers connected to MH 2.
Existing 15" storm sewer running west along Abbey Avenue and draining into MH 1.	Abandon or remove all of this sewer line.
Existing 18" storm sewer running west along University Road. This 18" storm line connects to the 24" combined sewer at the intersection of West 14 <sup>th</sup> Street and University Road.	To be removed by the stabilization works of the east bank slope.
Existing storm sewers north of the intersection between West 14 <sup>th</sup> Street and University Road discharging on the Cuyahoga River.	These sewers v. will be removed during the stabilization of the Cuyahoga River west bank.
Dry weather outlet from WR-24 to West 14 <sup>th</sup> Street.	May need to be upsized.
Combined sewer on Fairfield Avenue connecting to Regulator WR-24.	May need to be upsized.

### 3.2 Local Sewer Regulators

There are two regulators in the project area that are impacted by the Innerbelt Bridge project.

Table 3.2 – WRI Regulator Impacts

Regulator ID	Location	DWO Destination	Wet Weather Destination	Regulator Type	Proposed Dispensation
WR-24	West 15 <sup>th</sup> Place – 1515 Fairfield Avenue	WRI – Branch A	Regulator WR-27	Leaping Weir	Modify and Rebuild
WR-25	Crown Ave at West 14 <sup>th</sup> Street	WRI – Branch A	Westerly Low Level Interceptor	Leaping Weir	Abandon



Regulator WR-24



Regulator WR-25

### 3.3 Flow Characteristics

The relocated segment of Walworth Run Interceptor is required to convey the flows contained in Table 1.2 of the RFP including the maximum flow of 185 cfs. The surveying work has been completed, and the inverts and slopes of the existing Walworth Run Interceptor have been confirmed, except at the proposed downstream connection point. Apparently, there is no existing structure at the connection of the 60" overflow from WR-24 at the Interceptor. Based on the confirmed inverts, a conservative approximation of the invert of the proposed connection point using existing drawings, and an anticipated length of 1,315 lineal feet, it has been determined that the relocated segment of Walworth Run Interceptor can be designed at a slope of 0.51% (6.81 feet of drop over 1,315 lineal feet), which is greater than the slope of 0.47% that was listed in the RFP. The full-flow capacity of the relocated segment using a Manning's n-factor of 0.013 would be approximately 187 cfs, which is greater than the maximum design flow of 185 cfs. Once the proposed connection point invert is confirmed, the design slope will be updated accordingly.





## 4.0 Geotechnical Considerations

### 4.1 Project Geologic Setting

The Walworth Interceptor Realignment Project (WRIR) is within the northern section of the Cuyahoga River Valley. Geologically, most of this area is classified as "made land" composed of fill materials of variable source, composition and depth.

A total of eight (8) soil borings have been taken along the Option 2 alignment at this writing. Figure 5 shows the locations of the borings. The draft boring logs are included as Appendix "B." The borings reveal that the fill layer varies from a couple of feet to as much as 19 feet (Boring B-7). Brick pieces were recovered while sampling the fill layer in this boring. Beneath the fill materials, alluvium deposits extend consisting mostly of very loose to medium dense sands and silts; and medium stiff silty clay lenses (Boring B-3 and B-8). Most of the deposits show a stratified or inter-layered structure containing fine sands and silts. The alluvium materials were deposited prior to the Cuyahoga River. Beneath the alluvium deposits, lacustrine deposits start approximately 55 feet below the surface and consist mostly of medium stiff to very stiff silty clays stratified with silt layers.

Based on preliminary information, the ground water table has been estimated to be between 30 to 35 feet below ground surface.

### 4.2 Subsurface Conditions Along the Tunnel

The proposed tunnel construction will be below ground water and through sandy and silty soils. In the past, these soil deposits were most troublesome for tunneling projects in Cleveland. In the WRIR case, soils within the tunnel zone will be dense to very dense and below ground water. This setting will make the soil susceptible to uncontrollable flow unless proper tunnel techniques for supporting the tunnel



Microtunneling from a caisson

face are employed. Slurry shields with one-pass concrete segmental linings or microtunneling





with pipe jacking will be evaluated given the subsurface conditions anticipated at the site. Based on the short length of the project and the 90 degree turns required to negotiate the alignment, it appears that microtunneling will be the most cost effective solution.

Shafts for the WRIR will be constructed through all of the soil deposits mentioned above. Shafts at Borings B-1, B-3 and B-4 will terminate in silt deposits and the Shaft at B-8 (the down stream connection) will terminate in silty clay or clay. Excavating shafts below the water table through the upper deposits of loose sands and silts may present unstable side and bottom conditions unless water tight supports are employed. These supports must be pre-installed ahead of the shaft excavations and extend deep enough to prevent boiling and bottom heave. Currently, the design team is investigating the use of pre-driven steel sheet piles, secant piles, precast concrete caissons, slurry walls and jet grouting as methods for excavating the shafts.

A soil profile of the WRIR is shown on Sheets 1-6 of 6 following Section 4.5 of this report. A jacking pit concept plan is also included following Section 4.5.

### 4.3 Tunnel Support

Based on microtunneling appearing to be the most effective tunneling method for the replacement sewer installation, reinforced concrete pipe, centrifugally cast fiberglass reinforced polymer mortar pipe (CCFRPM) such as produced by HOBAS, and clay pipe can be suitable candidates for this project since they are all specifically designed and produced for installation by jacking. Microtunneling methods of tunneling provide immediate initial support for the tunnel since the final carrier pipes are jacked behind a TBM or MTBM.



CCFRPM Pipe



Reinf. Conc. Jacking Pipe



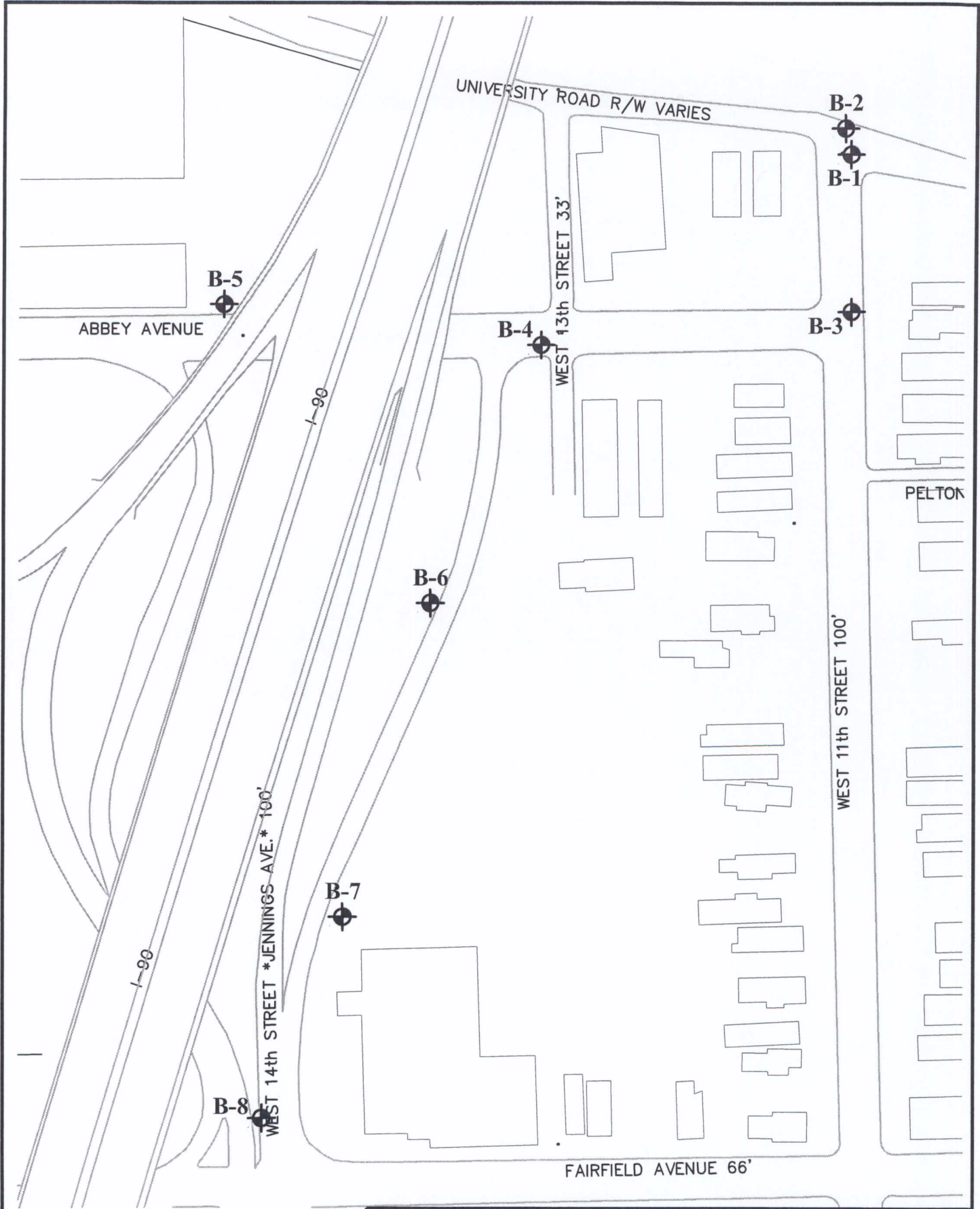


#### **4.4 Additional Borings**

Boring B-7 shows 19 feet of fill. Two adjacent borings (B-6 and B-8) show only a couple feet of fill. This indicates that the fill depth may vary greatly within the project area. Currently it is contemplated that the downstream connection may be moved to the south-west corner of the Fairfield Avenue and West 14<sup>th</sup> Street intersection. This will require the shaft construction to place a connection structure and also to retrieve the MTBM or TBM. If the connection point is moved, DUE recommends that an additional boring be taken near the new location. Sampling in this boring may only extend to the bottom of fill or the first 25 feet (whichever is greater) and the remainder of the boring extended only for placement of the piezometer.

#### **4.5 Long-Term Ground Water Observation**

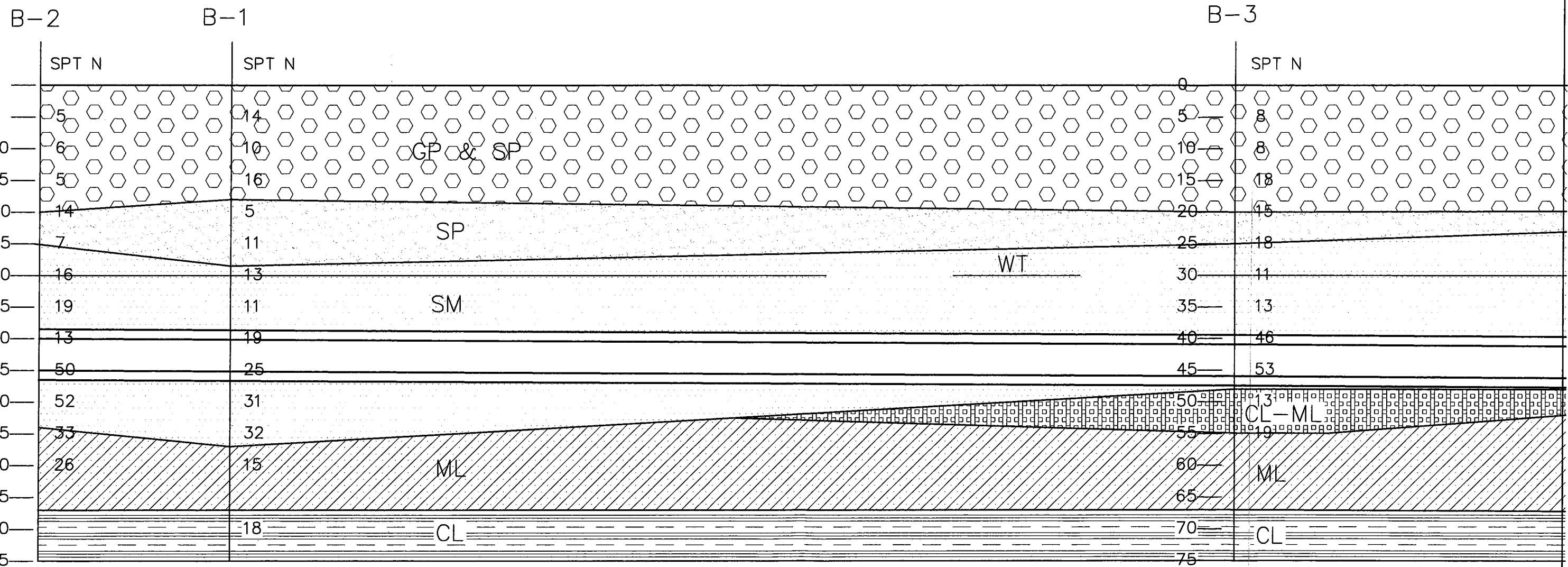
The Design Team recommends that long term observation of ground water levels be conducted at each shaft location. Currently there are only two piezometers at the site – one near boring B-3 marked W-1 and one near boring B-5 marked W-2. Additional piezometers should be installed near the planned connection point on University Road, near Boring B-4 and near the connection point downstream at Fairfield Avenue and W 14<sup>th</sup> Street (three additional piezometers). The piezometers should be located where they will not be damaged later by construction. This will allow the Design Team to monitor the ground water during construction should the need arise to confirm design assumptions. Water levels should be monitored on a monthly basis until the project bidding period. The Design Team will coordinate the location of the piezometer tip elevations and location of the screens.



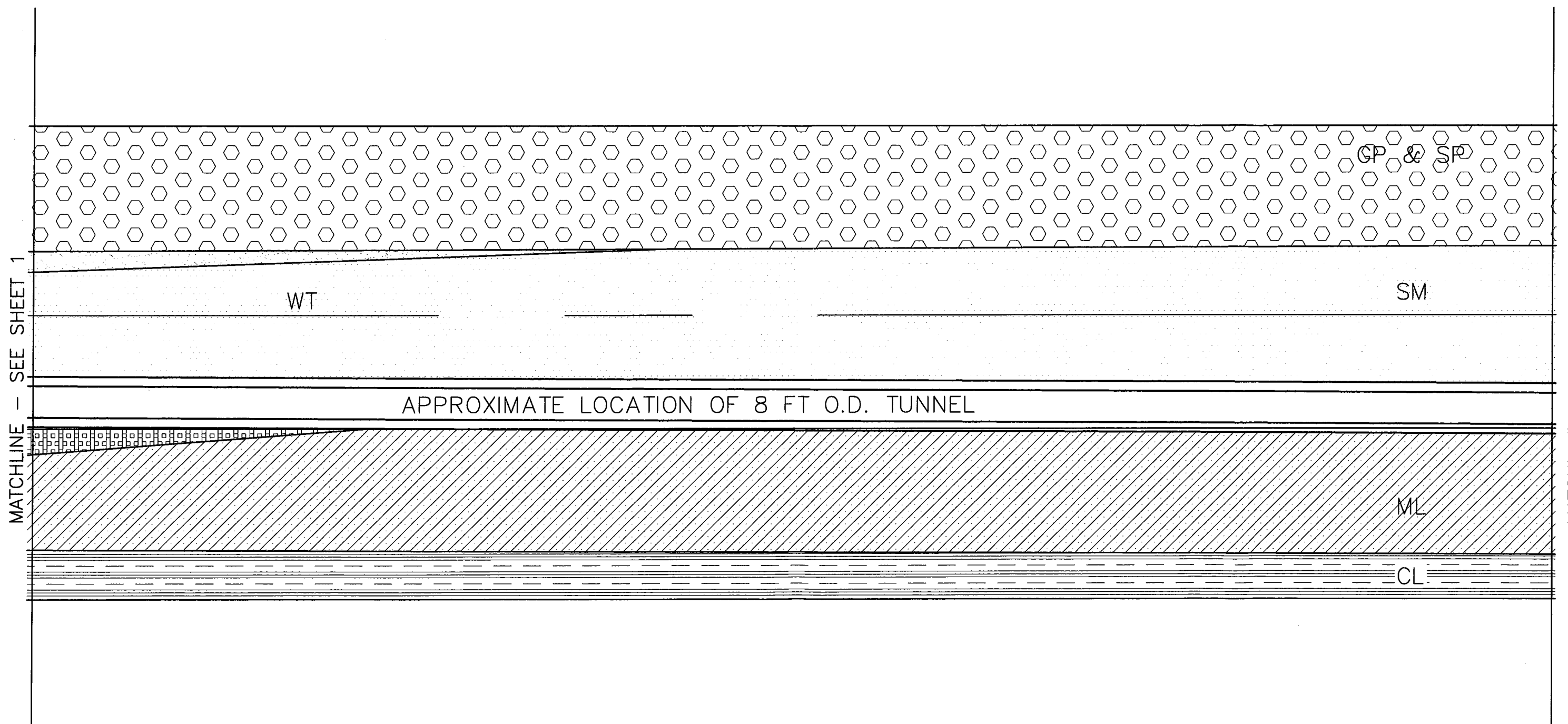
WRIR  
BORING LOCATION MAP

FIGURE 5

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MATCHLINE - SEE SHEET 2



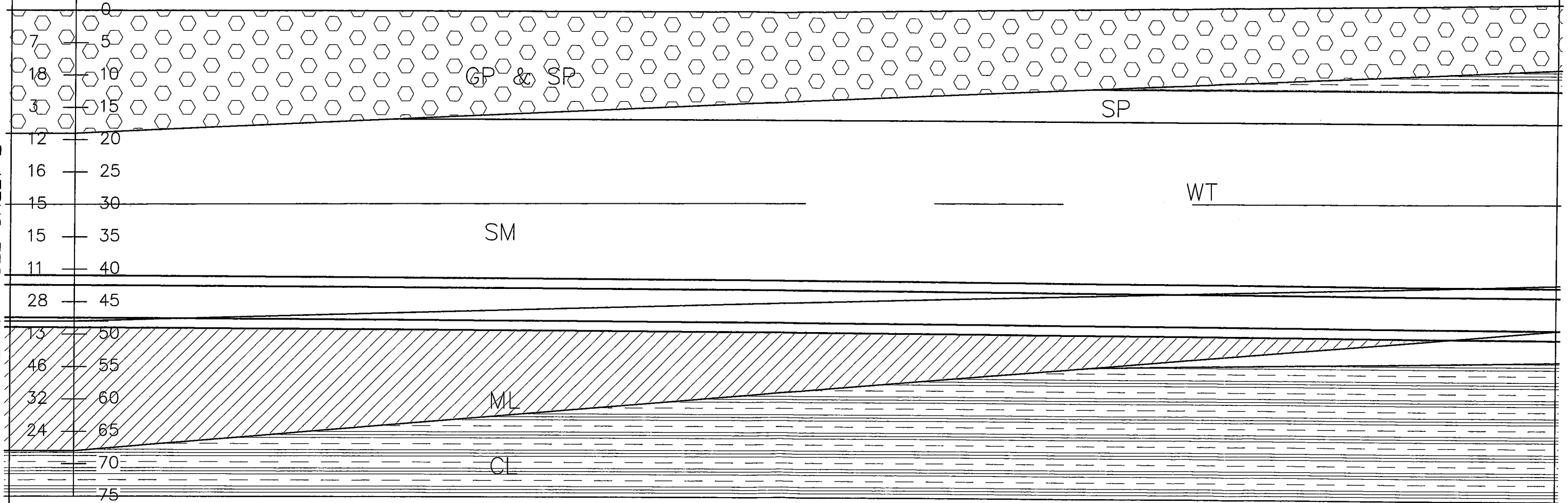


B-4

SPT N

MATCHLINE - SEE SHEET 2

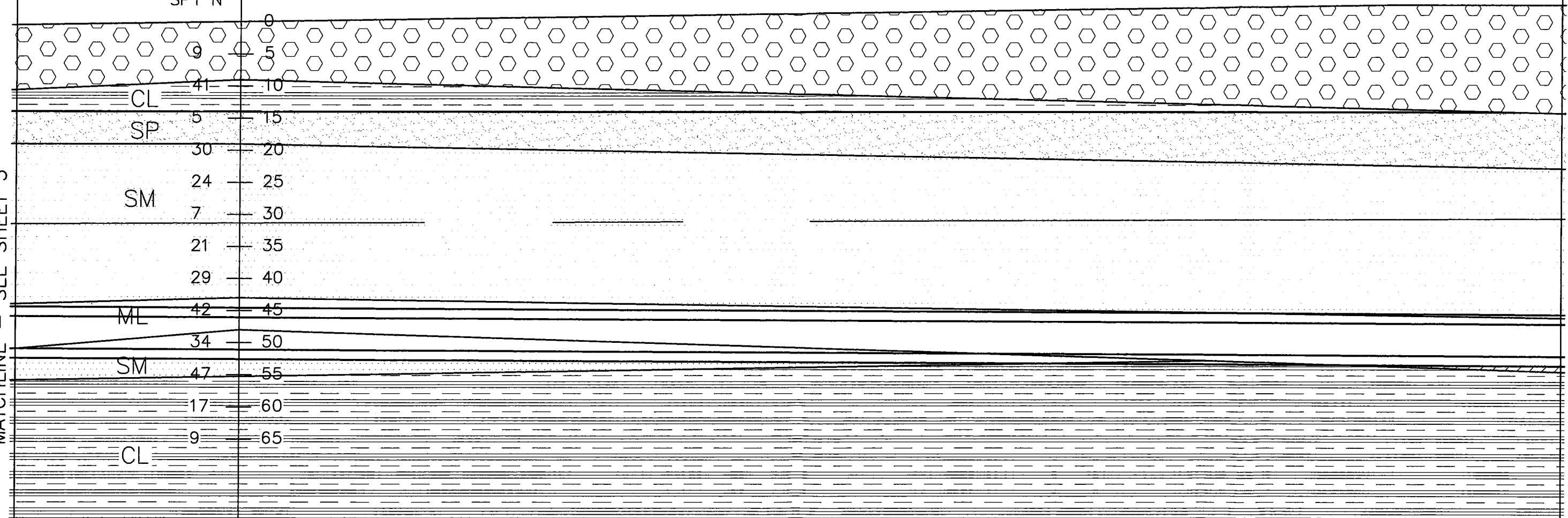
MATCHLINE - SEE SHEET 4





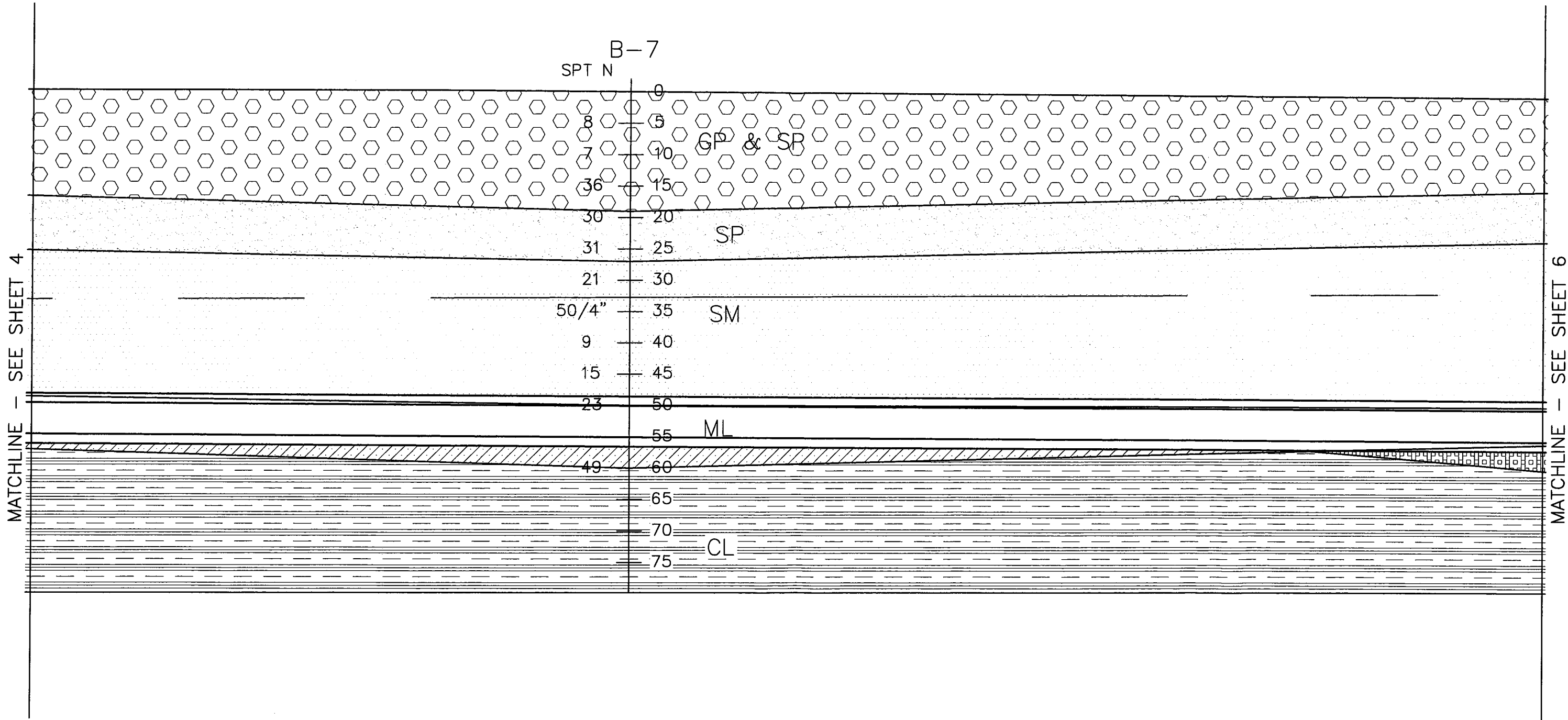
### B-6

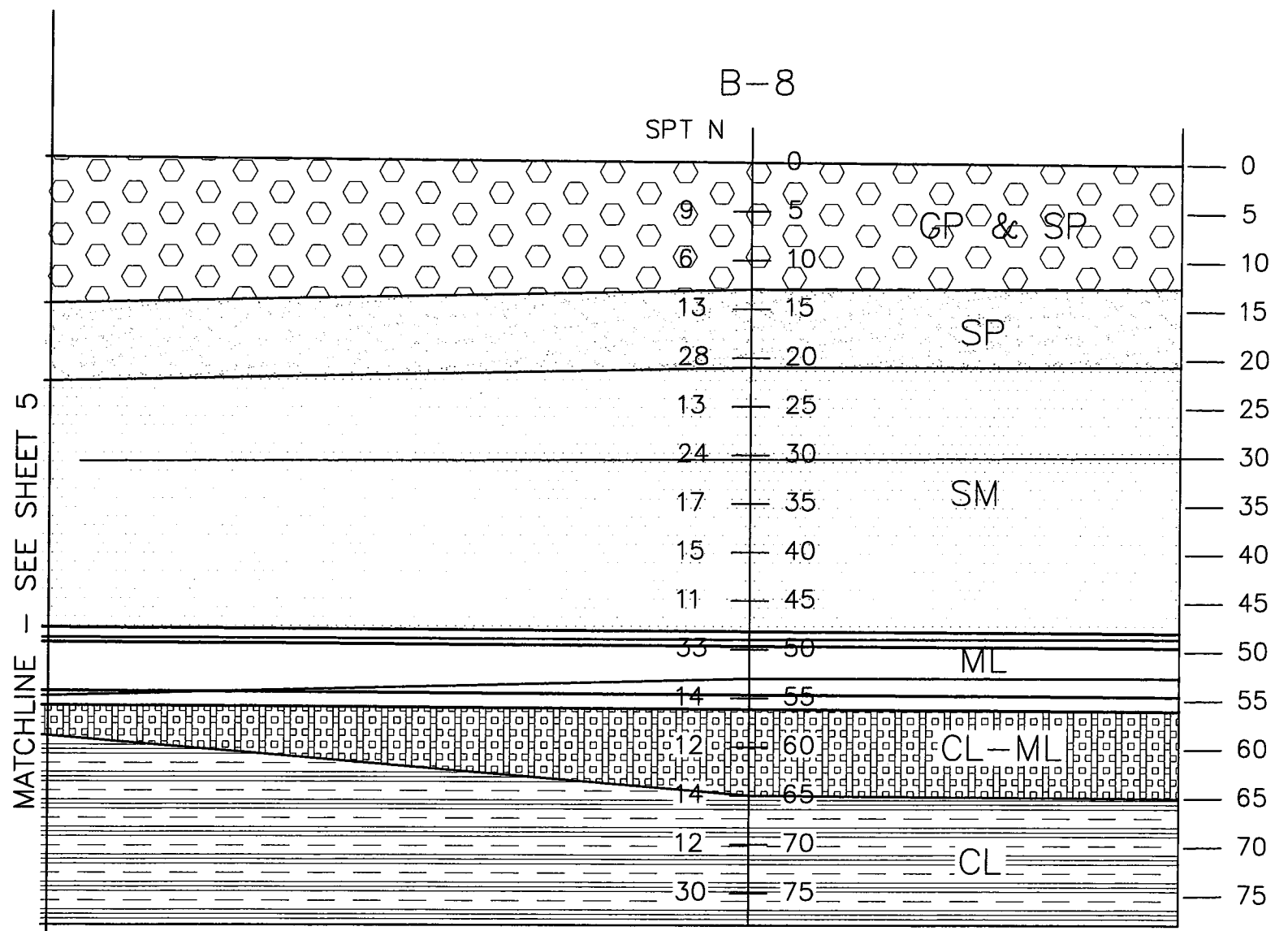
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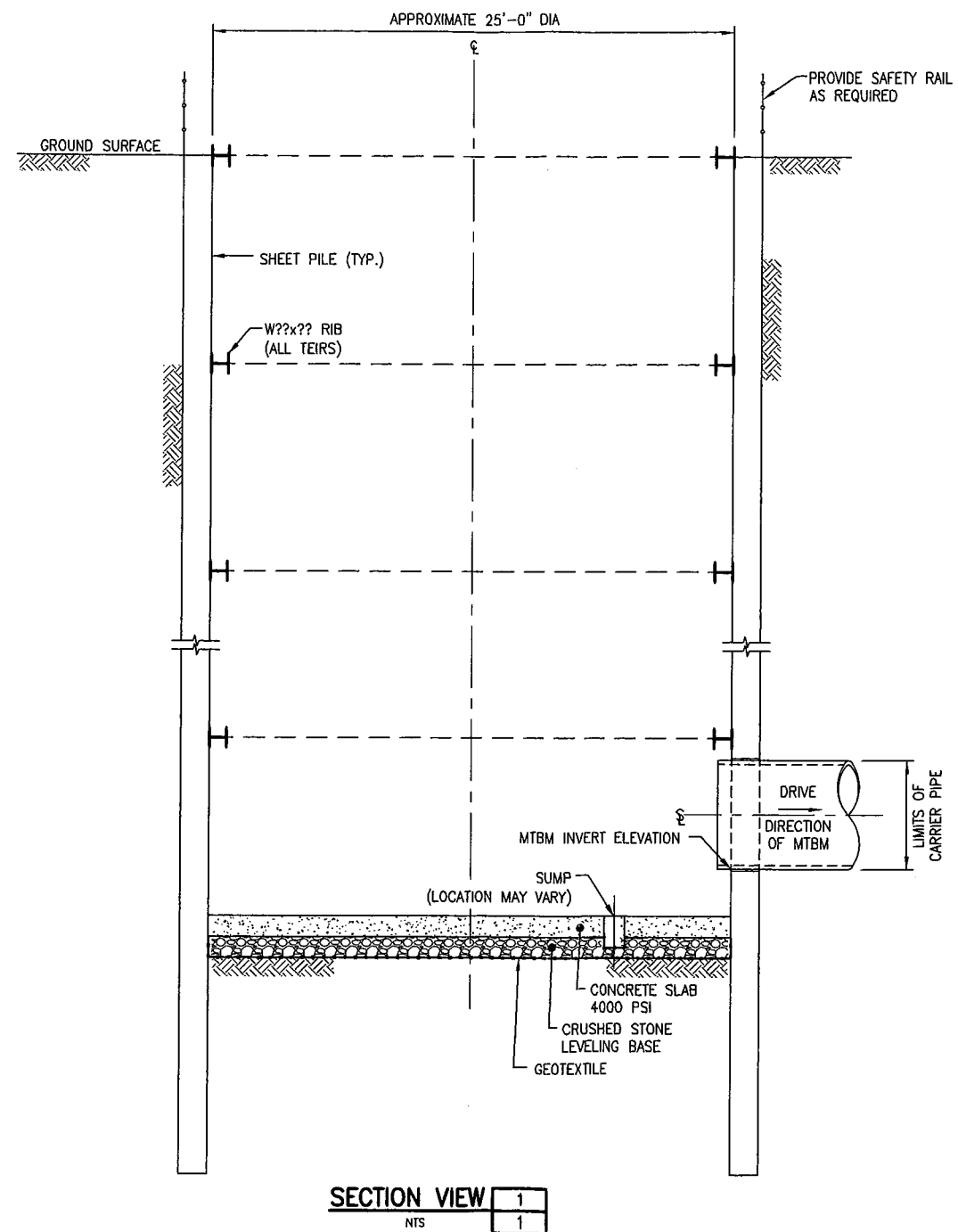
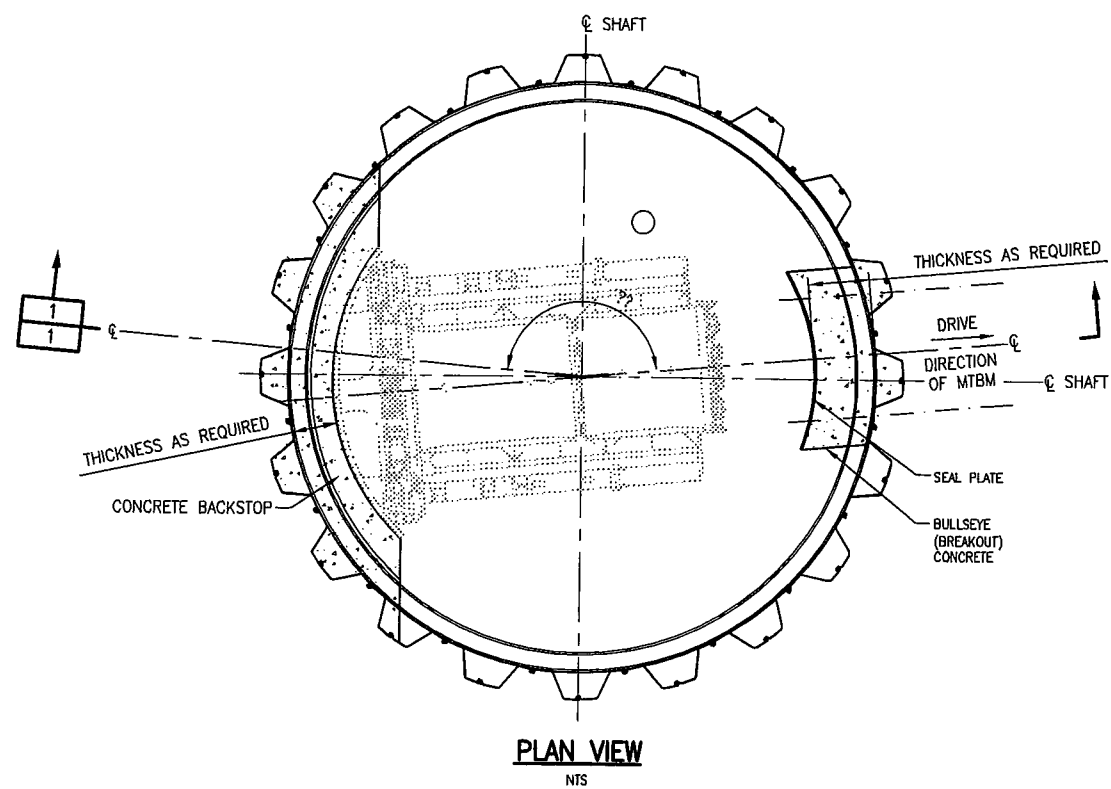


MATCHLINE - SEE SHEET 3

MATCHLINE - SEE SHEET 5







**CONCEPT OF JACKING PIT  
 PLAN AND SECTION**

**WALWORTH RUN INTERCEPTOR REALIGNMENT**

## APPENDIX "A"

Draft Technical Memorandum



## DRAFT TECHNICAL MEMORANDUM

**To:** Mr. Brian Page, PE  
**From:** Mr. Thomas Hessler, PE, PS  
**Date:** January 11, 2010 (1<sup>st</sup> Issue)  
February 4, 2010 (Revision No. 1)  
**Subject:** Walworth Run Interceptor Relocation Alignment Option Evaluation

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### Section 1 - Project Description

The Ohio Department of Transportation (ODOT) is designing the future Interstate 90 Innerbelt Bridge Project. The design of the new westbound structure adversely impacts the existing Walworth Run Interceptor (WRI) and several local storm and sanitary sewers in the project area. The new Innerbelt Bridge will require the regrading of the west bank of the Cuyahoga River. This regrading work requires the relocation of the WRI. ODOT is also evaluating several options with respect to the existing Innerbelt Bridge that will impact the WRI relocation.

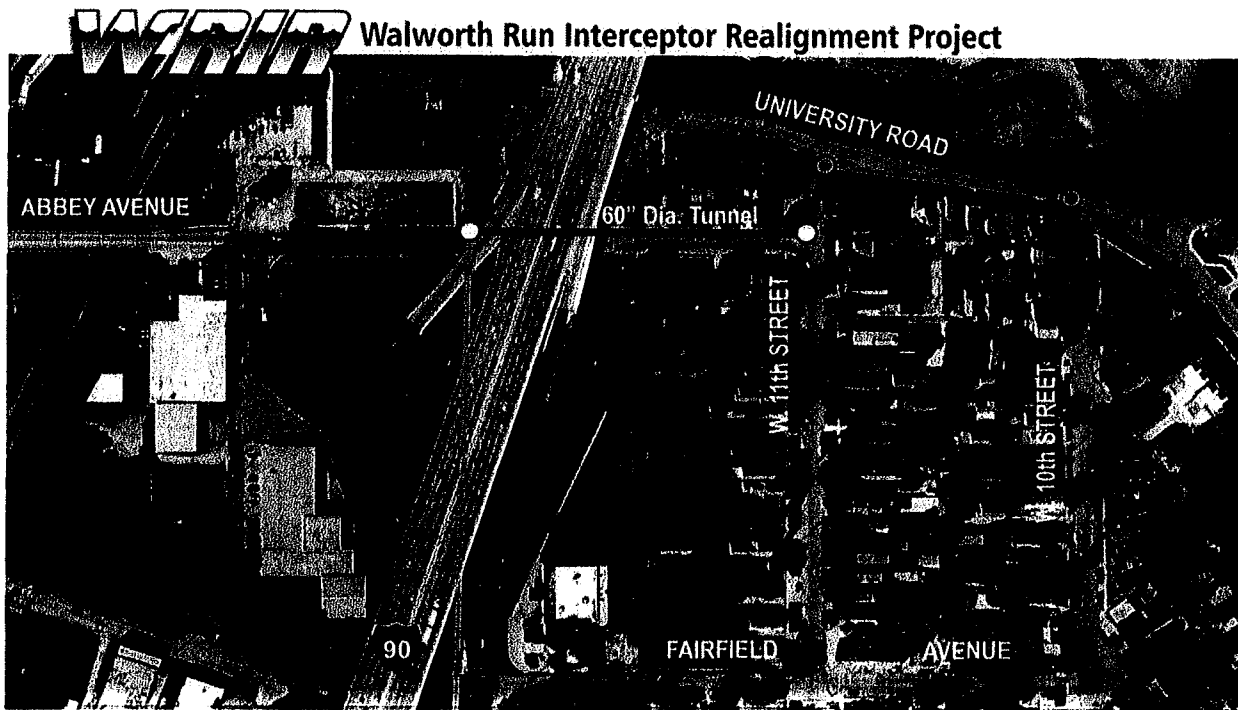
The WRI is divided into three (3) branches; A, B, and C. This project involves the relocation of a section of Branch A. Branch A commences at Regulator WR-27A at the intersection of University Road and West 10<sup>th</sup> Street. The area to be evaluated is from Regulator WR-27A to Regulator WR-24 at Fairfield Avenue.

### Section 2 - Option Evaluations

The relocation options for a portion of the WRI Branch A must consider the future design of the Interstate 90 Innerbelt Bridge. Five (5) conceptual options are discussed in this section. Options 1 and 2 were presented by NEORS D during the proposal stage. Options 3 through 5 were developed by DLZ as potential alternates and included in our proposal submission.

## 2.1 Option 1

Conceptual Option 1, shown in Figure A, consists of approximately 900' of 60" diameter tunneled pipe and three (3) major interceptor structures. This option would begin at a connection to the existing WRI at the intersection of University Road and West 11<sup>th</sup> Street. Approximately 200' of 60" tunneled pipe would run southbound from the connection point along West 11<sup>th</sup> Street to the intersection of Abbey Avenue where a manhole would be installed. The 60" tunneled pipe alignment would then run westbound for a distance of approximately 700' along Abbey Avenue to the West 14<sup>th</sup> Street intersection. At this point, it would tap into the existing WRI alignment with a connecting structure.



**Figure A - Conceptual Option 1**

Several local sewers will be removed or abandoned with this option. Additionally, Regulator WR-25 at Crown Avenue and West 14<sup>th</sup> Street would be abandoned and Regulator WR-24 on Fairfield Avenue would be rebuilt. The existing 190' run of 12" sanitary sewer on Crown

Avenue for the Animal Hospital will be relocated. Also, the combined sewer on Fairfield Avenue connecting to Regulator WR-24 may need to be upsized. The dry weather outlet from Regulator WR-24 to West 14<sup>th</sup> Street may also need to be upsized.

Option 1 removes the WRI from the westbound Innerbelt bridge slope regrading area, and provides a relatively short relocation run of tunnel to the connection at Abbey Avenue and West 14<sup>th</sup> Street. However, a significant portion of the relocated WRI is still in the footprint of the eastbound Innerbelt Bridge and passes under the current Innerbelt alignment. This alignment maintains a section of existing WRI along West 14<sup>th</sup> Street under the current Innerbelt Bridge and therefore limits options regarding the potential alignment or subsurface needs of a future eastbound bridge.

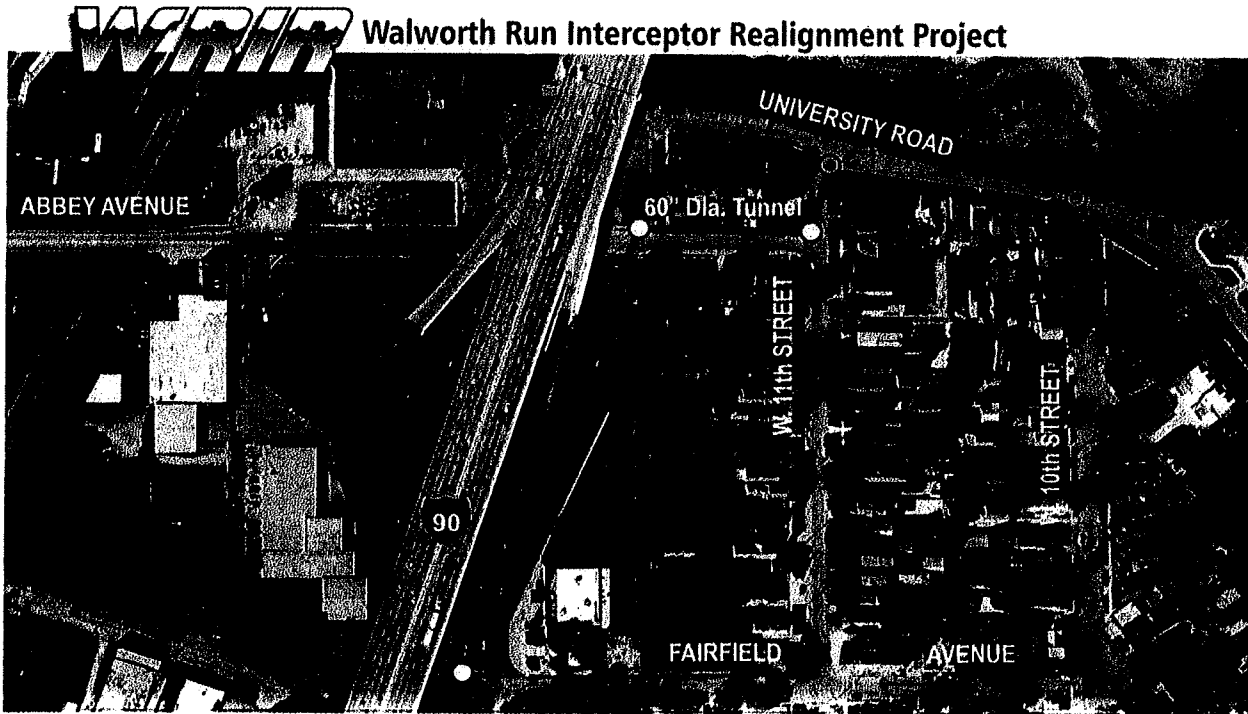
## **2.2 Option 2**

Conceptual Option 2 is shown in Figure B. This option consists of approximately 1,400' of 60" diameter tunneled pipe and four (4) major interceptor structures. This option would begin by connecting to the existing WRI at the intersection of University Road and West 11<sup>th</sup> Street. Approximately 140' of 60" tunneled pipe would run southbound from the connection point along West 11<sup>th</sup> Street to the intersection of Abbey Avenue where a manhole would be installed. The alignment of the 60" tunneled pipe would then run westbound approximately 275' along Abbey Avenue to the West 14<sup>th</sup> Street intersection where a manhole would be installed. From this point, the alignment of the 60" tunneled pipe would proceed along the West 14<sup>th</sup> connector ramp within the ODOT limited access for approximately 900' to the intersection of West 14<sup>th</sup> Street and Fairfield Avenue. At this point, the 60" tunneled pipe would connect to the existing WRI at a connecting structure.

As with Option 1, several local sewers will be removed or abandoned. Additionally, Regulator WR-25 at Crown Avenue and West 14<sup>th</sup> Street would be abandoned and Regulator WR-24 on Fairfield Avenue would be rebuilt. The existing 190' run of 12" sanitary sewer on Crown

Avenue for the Animal Hospital will be relocated. Also, the combined sewer on Fairfield Avenue connecting to Regulator WR-24 may need to be upsized. The dry weather outlet from Regulator WR-24 to West 14<sup>th</sup> Street may also need to be upsized.

Option 2 provides for the complete removal of the WRI from the Innerbelt project footprint. The relocated WRI will not be in conflict with any slope modifications that may be necessary for the existing eastbound Innerbelt Bridge along Abbey Avenue or West 13<sup>th</sup> Street. This Option meets the objectives of the WRI relocation.



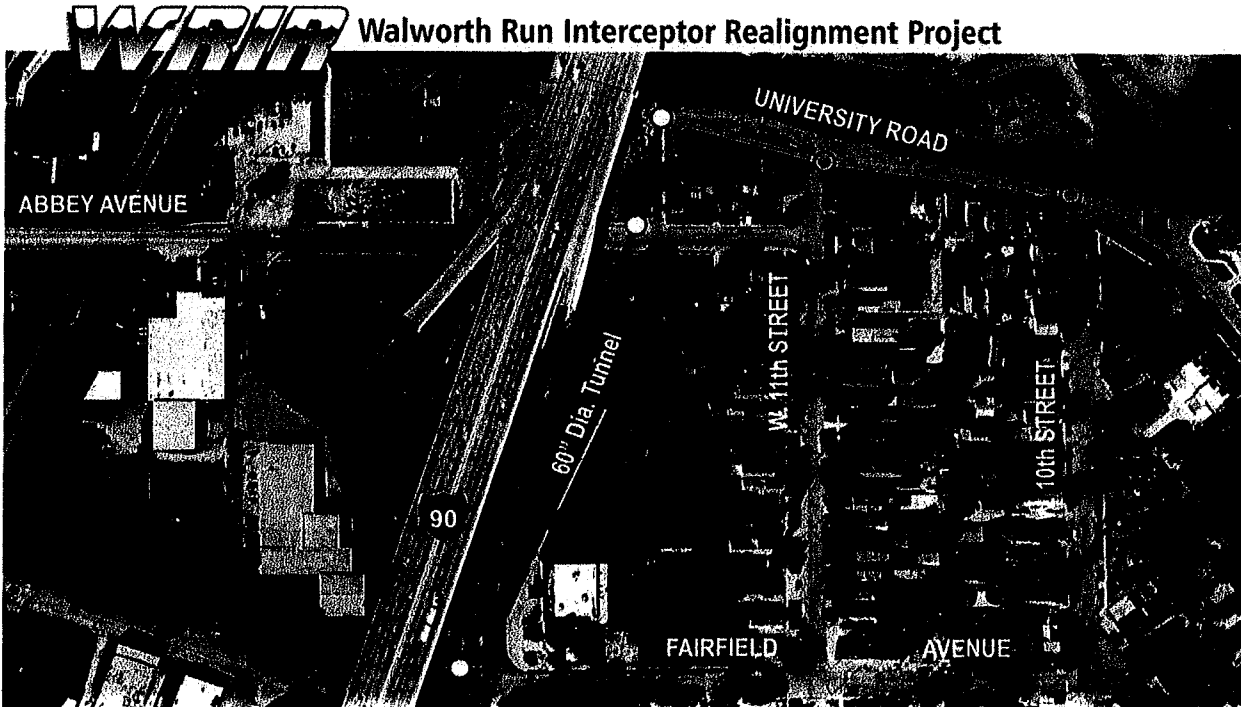
**Figure B - Conceptual Option 2**

**2.3 Option 3**

Figure C shows Conceptual Option 3, which is a variation of Option 2. This option consists of approximately 1,000' of 60" diameter tunneled pipe and three (3) major interceptor structures. It would begin at a connection to the existing WRI on University Road near West 13<sup>th</sup> Street. The alignment of the 60" tunneled pipe would then run south approximately 200' to the

intersection of Abbey Avenue and West 14<sup>th</sup> Street where a work shaft and a manhole would be installed. The 60" tunneled pipe would then run southwest along the West 14<sup>th</sup> St. / Abbey Avenue access ramp for a distance of approximately 800' to the intersection of Fairfield Avenue and West 14<sup>th</sup> Street where it would connect to the existing WRI with a connecting structure.

As with Options 1 and 2, several sewer pipes would be removed or abandoned with this option. Additionally, Regulator WR-25 at Crown Avenue and West 14<sup>th</sup> Street would be abandoned and Regulator WR-24 on Fairfield Avenue would be rebuilt. The existing 190' run of 12" sanitary sewer on Crown Avenue for the Animal Hospital will be relocated. Also, the combined sewer on



**Figure C - Conceptual Option 3**

Fairfield Avenue connecting to Regulator WR-24 may need to be upsized. The dry weather outlet from Regulator WR-24 to West 14<sup>th</sup> Street may also need to be upsized.

The major advantage of Option 3 is only one shaft is needed as the drive shaft for the microtunnel (tunnel) operation. This shaft would be located at Abbey Avenue. Also, this option



only has two (2) tunnel shafts, therefore reducing the number of tunnel shafts necessary for the run when compared to the other options. Option 3 meets the requirement to remove the WRI from the future Innerbelt Project area. This alternative also has less traffic conflicts.

However, there are some disadvantages with Conceptual Option 3. The existing WRI would remain along a longer portion of University Road, which may be a concern regarding future slope failures or movements. Another disadvantage is that the starting point of Option 3 is very close to the final Innerbelt grading at the corner of University Road and West 13<sup>th</sup> Street and may conflict with the future grading plan for the eastbound bridge.

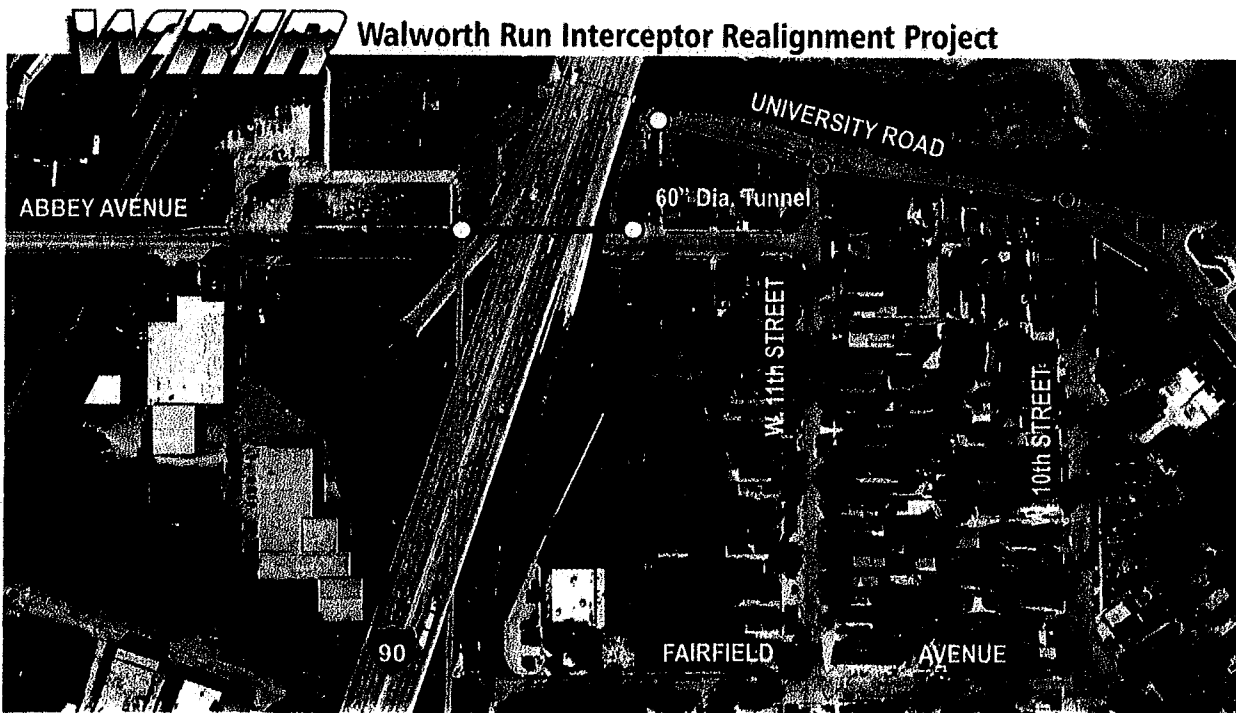
#### **2.4 Option 4**

Conceptual Option 4 is shown in Figure D, and is a variation of Option 1. Conceptual Option 4 consists of 500' of 60" diameter tunneled pipe and three (3) structures. The 60" tunneled pipe would begin by connecting to the existing WRI at University Road and West 13<sup>th</sup> Street and run south approximately 200' to Abbey Avenue near West 13<sup>th</sup> Street in to a manhole. The alignment would then travel westbound along Abbey Avenue for a distance of approximately 300' to the intersection of Abbey Avenue and West 14<sup>th</sup> Street. At this point, the 60" tunneled pipe would connect to the existing WRI with a connecting structure.

As with the other options, several sewer pipes would be removed or abandoned with this option. Additionally, Regulator WR-25 at Crown Avenue and West 14<sup>th</sup> Street would be abandoned and Regulator WR-24 on Fairfield Avenue would be rebuilt. The existing 190' run of 12" sanitary sewer on Crown Avenue for the Animal Hospital will be relocated. Also, the combined sewer on Fairfield Avenue connecting to Regulator WR-24 may need to be upsized. The dry weather outlet from Regulator WR-24 to West 14<sup>th</sup> Street may also need to be upsized.

Option 4 removes the WRI from the westbound Innerbelt Bridge slope regrading area, and similar to Option 1 provides a relatively short relocation run of tunnel to the connection at Abbey Avenue and West 14<sup>th</sup> Street. However, a significant portion of the relocated WRI is still

in the footprint of the eastbound Innerbelt Bridge and passes under the current Innerbelt alignment. This alignment maintains a section of existing WRI along West 14<sup>th</sup> Street under the current Innerbelt Bridge and therefore limits options regarding the potential alignment or subsurface needs of a future eastbound bridge. The existing WRI would remain along a longer portion of University Road, which may be a concern regarding future slope failures or movements. Another disadvantage is that the starting point of Option 4 is very close to the final Innerbelt grading at the corner of University Road and West 13<sup>th</sup> Street and may conflict with the future grading plan for the eastbound bridge.

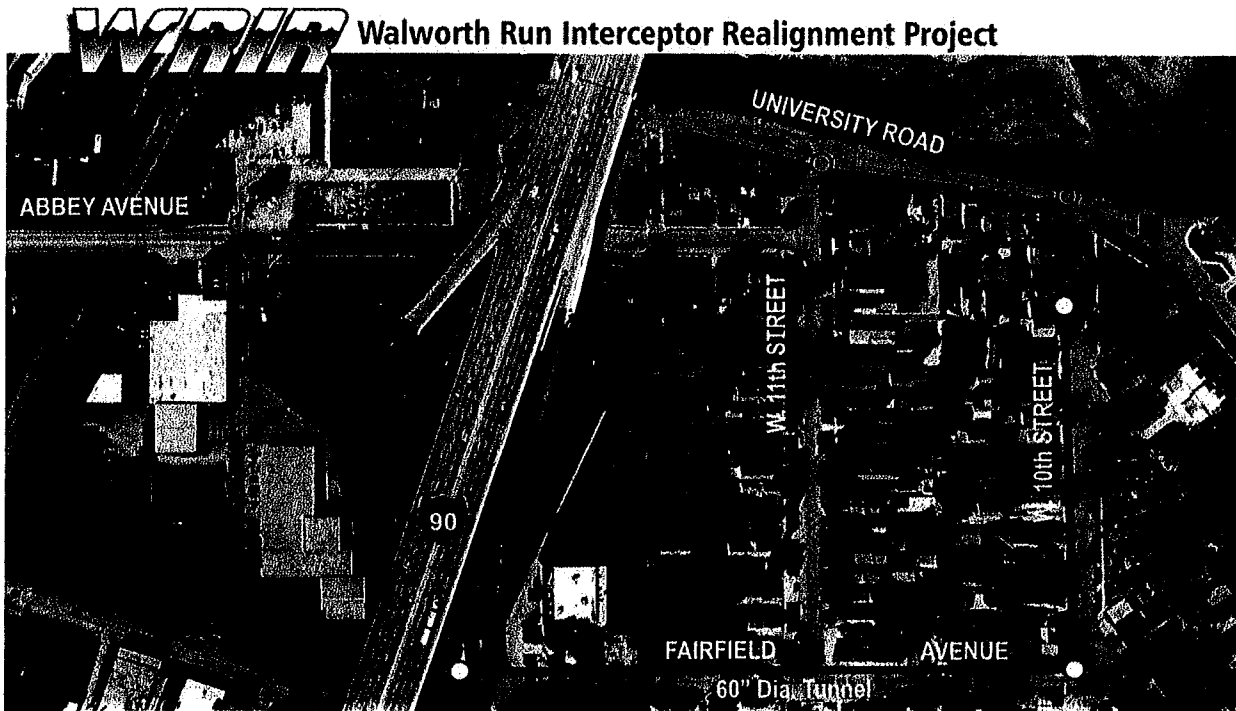


**Figure D - Conceptual Option 4**

## 2.5 Option 5

Conceptual Option 5 is shown in Figure E. This option consists of approximately 1,900' of 60" diameter tunneled pipe and four (4) major interceptor structures. The 60" tunneled pipe would begin by connecting to the existing WRI near Regulator WR-27A located on University Road, close to West 10<sup>th</sup> Street. From this point, the alignment would run southwest for

approximately 200' in to a manhole located on West 10<sup>th</sup> Street. From this point, the 60" tunneled pipe alignment would run southward along West 10<sup>th</sup> Street for a distance of approximately 600' to the intersection of West 10<sup>th</sup> Street and Fairfield Avenue. At this intersection, a manhole would be installed. From this structure, the alignment would run westbound for approximately 1,100' along Fairfield Avenue to the connection point at the intersection of Fairfield Avenue and West 14<sup>th</sup> Street. At this point, the 60" tunneled pipe would connect to the existing WRI with a connecting structure. As with the other options, several sewer pipes would be removed or abandoned with this option. Additionally, Regulator WR-25 at Crown Avenue and West 14<sup>th</sup> Street would be abandoned and Regulator WR-24 on Fairfield Avenue would be rebuilt. The existing 190' run of 12" sanitary sewer on Crown Avenue for the Animal Hospital will be relocated. Also, the combined sewer on Fairfield Avenue connecting to Regulator WR-24 may need to be upsized. The dry weather outlet from Regulator WR-24 to West 14<sup>th</sup> Street may also need to be upsized.



**Figure E - Conceptual Option 5**

Option 5 completely removes the WRI from the University Road area, which may be a long term slope failure concern. There could also be a possible reduction in flow to CSO-081, near the Cuyahoga River, based on favorable hydraulic evaluations. In addition, Option 5 meets the requirement to remove the WRI from the future Innerbelt Project area.

Option 5 is estimated to be the most costly option. It has a total length of 1,900 feet. Because the beginning and ending inverts are controlled by the existing WRI sewer, the proposed pipe may need to be larger than 60" diameter due to a lesser slope. The proposed diameter of the pipe would need to be evaluated. Additional soil borings would be required, adding to the total design cost. Also, two of the work shafts for Option 5 would be located in the Tremont neighborhood and may have stakeholder concerns. This option exceeds the original intent of the WRI relocation project.

### **Section 3 – Table 3.1 - Estimate of Probable Construction Cost (2010 Dollars)**

Table 3.1 on the following pages lists estimated probable construction costs for the proposed WRI construction options. These costs are preliminary budgetary estimates based on comparison with recently completed projects. They do not include design engineering, construction administration, field inspection, legal review, easement acquisition, or property procurements costs that may be associated with the construction project.

<b>Option 1</b>	<b>Qty.</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
Mobilization	1	LS	\$200,000	\$200,000
Tunnel Shaft w/Junction Chamber No. 1	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/ Manhole	1	Ea.	\$400,000	\$400,000
Tunnel Shaft w/Junction Chamber No. 2	1	Ea.	\$750,000	\$750,000
60" Tunneled Pipe	900	LF	\$2,500	\$2,250,000
Utility Relocations	1	LS	\$250,000	\$250,000
Remove / Abandon Sewer Pipes 24" & Smaller	3,400	LF	\$100	\$340,000
Remove / Abandon Sewer Pipes 30" & Larger	1,100	LF	\$200	\$220,000
Remove / Abandon Exist. 64" WRI	800	LF	\$500	\$400,000
Abandon Regulator WR-25	1	Ea.	\$20,000	\$20,000
Rebuild Existing Regulator WR-24	1	Ea.	\$30,000	\$30,000
Upsize WR-24 DWO Alignment	450	LF	\$200	\$90,000
Relocate Exist. 12" Sanitary to Animal Hospital	190	LF	\$150	\$28,500
Upsize Combined Sewer to WR-24	260	LF	\$200	\$52,000
Subtotal				\$5,780,500
Contingency (30%)				\$1,734,150
<b>Option 1 Total</b>				\$7,514,650
			<b>USE</b>	<b>\$7.5 M</b>

<b>Option 2</b>	<b>Qty.</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
Mobilization	1	LS	\$200,000	\$200,000
Tunnel Shaft w/Junction Chamber No. 1	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/Junction Chamber No. 2	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/ Manhole No. 1	1	Ea.	\$400,000	\$400,000
Tunnel Shaft w/ Manhole No. 2	1	Ea.	\$400,000	\$400,000
60" Tunneled Pipe	1,400	LF	\$2,500	\$3,500,000
Utility Relocations	1	LS	\$250,000	\$250,000
Remove / Abandon Sewer Pipes 24" & Smaller	3,400	LF	\$100	\$340,000
Remove / Abandon Sewer Pipes 30" & Larger	1,100	LF	\$200	\$220,000
Remove / Abandon Exist. 64" WRI	1,500	LF	\$500	\$750,000
Abandon Regulator WR-25	1	Ea.	\$20,000	\$20,000
Rebuild Existing Regulator WR-24	1	Ea.	\$30,000	\$30,000
Upsize WR-24 DWO Alignment	450	LF	\$200	\$90,000
Relocate Exist. 12" Sanitary to Animal Hospital	190	LF	\$150	\$28,500
Upsize Combined Sewer to WR-24	260	LF	\$200	\$52,000
Subtotal				\$7,780,500
Contingency (30%)				\$2,334,150
<b>Option 2 Total</b>				\$10,114,650
			<b>USE</b>	<b>\$10.1 M</b>



<b>Option 3</b>	<b>Qty.</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
Mobilization	1	LS	\$200,000	\$200,000
Tunnel Shaft w/Junction Chamber No. 1	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/Junction Chamber No. 2	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/ Manhole	1	Ea.	\$400,000	\$400,000
60" Tunneled Pipe	1,000	LF	\$2,500	\$2,500,000
Utility Relocations	1	LS	\$250,000	\$250,000
Remove / Abandon Sewer Pipes 24" & Smaller	3,400	LF	\$100	\$340,000
Remove / Abandon Sewer Pipes 30" & Larger	1,100	LF	\$200	\$220,000
Remove / Abandon Exist. 64" WRI	1,200	LF	\$500	\$600,000
Abandon Regulator WR-25	1	Ea.	\$20,000	\$20,000
Rebuild Existing Regulator WR-24	1	Ea.	\$30,000	\$30,000
Upsize WR-24 DWO Alignment	450	LF	\$200	\$90,000
Relocate Exist. 12" Sanitary to Animal Hospital	190	LF	\$150	\$28,500
Upsize Combined Sewer to WR-24	260	LF	\$200	\$52,000
Subtotal				\$6,230,500
Contingency (30%)				\$1,869,150
<b>Option 3 Total</b>				<b>\$8,099,650</b>
			<b>USE</b>	<b>\$8.1 M</b>

<b>Option 4</b>	<b>Qty.</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
Mobilization	1	LS	\$200,000	\$200,000
Tunnel Shaft w/Junction Chamber No. 1	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/Junction Chamber No. 2	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/ Manhole	1	Ea.	\$400,000	\$400,000
60" Tunneled Pipe	500	LF	\$2,500	\$1,250,000
Utility Relocations	1	LS	\$250,000	\$250,000
Remove / Abandon Sewer Pipes 24" & Smaller	3,400	LF	\$100	\$340,000
Remove / Abandon Sewer Pipes 30" & Larger	1,100	LF	\$200	\$220,000
Remove / Abandon Exist. 64" WRI	400	LF	\$500	\$200,000
Abandon Regulator WR-25	1	Ea.	\$20,000	\$20,000
Rebuild Existing Regulator WR-24	1	Ea.	\$30,000	\$30,000
Upsize WR-24 DWO Alignment	450	LF	\$200	\$90,000
Relocate Exist. 12" Sanitary to Animal Hospital	190	LF	\$150	\$28,500
Upsize Combined Sewer to WR-24	260	LF	\$200	\$52,000
Subtotal				\$4,580,500
Contingency (30%)				\$1,374,150
<b>Option 4 Total</b>				<b>\$5,954,650</b>
			<b>USE</b>	<b>\$6.0 M</b>

<b>Option 5</b>	<b>Qty.</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total</b>
Mobilization	1	LS	\$200,000	\$200,000
Tunnel Shaft w/Junction Chamber No. 1	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/Junction Chamber No. 2	1	Ea.	\$750,000	\$750,000
Tunnel Shaft w/ Manhole No. 1	1	Ea.	\$400,000	\$400,000
Tunnel Shaft w/ Manhole No. 2	1	Ea.	\$400,000	\$400,000
60" Tunneled Pipe	1,900	LF	\$2,500	\$4,750,000
Utility Relocations	1	LS	\$250,000	\$250,000
Remove / Abandon Sewer Pipes 24" & Smaller	3,400	LF	\$100	\$340,000
Remove / Abandon Sewer Pipes 30" & Larger	1,100	LF	\$200	\$220,000
Remove / Abandon Exist. 64" WRI	2,000	LF	\$500	\$1,000,000
Abandon Regulator WR-25	1	Ea.	\$20,000	\$20,000
Rebuild Existing Regulator WR-24	1	Ea.	\$30,000	\$30,000
Upsize WR-24 DWO Alignment	450	LF	\$200	\$90,000
Relocate Exist. 12" Sanitary to Animal Hospital	190	LF	\$150	\$28,500
Upsize Combined Sewer to WR-24	260	LF	\$200	\$52,000
Subtotal				\$9,280,500
Contingency (30%)				\$2,784,150
<b>Option 5 Total</b>				\$12,064,650
			<b>USE</b>	<b>\$12.1 M</b>

#### **Section 4 – Comparison of Sewer Construction Options**

Five (5) general WRI construction options were described and evaluated. Table 4.1 summarizes these options and presents estimated probable construction costs, advantages, and disadvantages associated with each option.

**Table 4.1 – Summary of WRI Construction Options**

Description	Estimated Probable Construction Cost (2010 Dollars)	Advantages	Disadvantages
Option 1	\$7.5 Million	<ul style="list-style-type: none"> <li>❖ Removes WRI from westbound bridge grading area.</li> <li>❖ Relatively short tunnel run</li> <li>❖ Meets required schedule</li> </ul>	<ul style="list-style-type: none"> <li>❖ Relocated WRI is in the eastbound Innerbelt Bridge footprint and may conflict with future eastbound bridge needs.</li> </ul>
Option 2	\$10.1 Million	<ul style="list-style-type: none"> <li>❖ Relocated WRI is completely removed from the Innerbelt footprint</li> <li>❖ Meets required schedule</li> </ul>	<ul style="list-style-type: none"> <li>❖ Longer project length with respect to other options (except Option 5)</li> </ul>
Option 3	\$8.1 Million	<ul style="list-style-type: none"> <li>❖ Relocated WRI is completely removed from the Innerbelt footprint.</li> <li>❖ Only 2 tunnel shafts necessary</li> <li>❖ Only 1 drive shaft needed</li> <li>❖ Minimal traffic conflicts</li> <li>❖ Meets required schedule</li> </ul>	<ul style="list-style-type: none"> <li>❖ Long length of existing WRI run on University Rd. may be future concern for slope failures</li> <li>❖ Connection point very close to final Innerbelt grading at University Rd. and West 13<sup>th</sup> St.</li> </ul>
Option 4	\$6.0 Million	<ul style="list-style-type: none"> <li>❖ Removes WRI from westbound bridge grading area.</li> <li>❖ Minimal traffic conflicts</li> <li>❖ Meets required schedule</li> </ul>	<ul style="list-style-type: none"> <li>❖ Long length of existing WRI run on University Rd. may be future concern for slope failures</li> <li>❖ Connection point very close to final Innerbelt grading at University Rd. and West 13<sup>th</sup> St.</li> </ul>
Option 5	\$12.0 Million	<ul style="list-style-type: none"> <li>❖ WRI not in conflict with future Innerbelt Project area</li> <li>❖ Completely removes WRI from University Rd. area, thus easing future slope failure concern</li> <li>❖ Possible reduction in flow to CSO-081 based on favorable hydraulic evaluation</li> <li>❖ Most likely will have schedule implications</li> </ul>	<ul style="list-style-type: none"> <li>❖ 2 work shafts located in Tremont neighborhood may have Stakeholder concerns</li> <li>❖ May need larger diameter pipe than 60" due to long length of run and pipe grades.</li> <li>❖ Additional soil borings required</li> <li>❖ Most costly option</li> </ul>

## Section 5 – ODOT’s Comments and Concerns

ODOT reviewed DLZ’s Technical Memorandum dated Jan 11, 2010 and provided comments. DLZ’s responses are as follows:

### ODOT District 12 Comments (By David Lastovka):

Comments Dated 1/20/2010

#### 1. Alignment Recommendation

Comment 1A: ODOT concurs with the recommended Option #2 alignment (University-W11th-Abbey-frontage road between Abbey & Fairfield)

DLZ Response: *Comment Noted.*

#### 2. Phasing

Comment 2A: During detail design, ODOT requests consideration for project phasing that considers earlier abandonment/removal of the Westerly Low Level Interceptor between Abbey and the NS overpass in the project construction schedule. If the Westerly Low Level Interceptor can be abandoned early, then the ODOT project can begin removal of the Cold Storage building, along with initial slope excavation, in advance of completion of the Walworth Run Interceptor relocation. This strategy would allow some overlap in both ODOT’s and NEORS D’s construction schedules.

DLZ Response: *DLZ will investigate the hydraulic impacts of abandoning or removing the Westerly Low Level Interceptor between Abbey Avenue and the NS overpass as an early phase of construction. Please note that earlier abandonment/removal would require an elaborate bypass pumping plan.*

#### 3. Right of Way

Comment 3A: As previously discussed, early identification of any needed project right of way is critical to maintaining the project schedule.

DLZ Response: *DLZ understands that early identification of any needed project right-of-way is critical to maintaining the project schedule. As of this report, it appears that the main sewer tunnel will be constructed without the need of right-*

*of-way. However, it should be noted that as the project progresses it may become necessary to obtain additional right-of-way for construction staging areas or other reasons.*

Comment 3B: Additionally, since this relocation is within the Tremont Historic District, any additional RW needs may require additional Environmental coordination with the Federal Highway Administration (FHWA). If at all possible, the relocation work should be designed within the existing public right of way.

DLZ Response: *Comment Noted.*

Comment 3C: ODOT's record right of way plans were emailed to DLZ on 1-15-2010.

DLZ Response: *DLZ has received ODOT's record right of way plans.*

#### 4. Access Shaft Locations

Comment 4A: Maintenance of Traffic (MOT) - During detail design, consideration should be given to minimizing local traffic impacts.

DLZ Response: *DLZ will investigate ways to minimize local traffic impacts. One example is the relocation of the downstream connection away from the Fairfield Avenue/West 14<sup>th</sup> Street intersection to a location in the ODOT property on the southwest corner.*

Comment 4B: W14th/Fairfield Shaft Location - ODOT's record information for the existing 60" Walworth run interceptor reflects that the sewer is east of the location shown on the Conceptual Plan graphic. Depending on the exact location of the existing sewer, consideration should be given to moving the access shaft either north or south of the Fairfield/W14th intersection, in order to minimize the work area's impact on traffic. See attached screen capture from the project's DGN basemap file.

DLZ Response: *The field survey recently completed by DLZ shows the WRI on the west side of West 14<sup>th</sup> Street in the tree lawn. Currently it is contemplated that the downstream connection may be moved to the southwest corner of the Fairfield Avenue and West 14<sup>th</sup> Street intersection.*

## 5. City of Cleveland Coordination

Comment 5A: The Innerbelt project has had significant coordination with Cleveland Engineering & Construction (Rob Mavec), Traffic (Andy Cross), and Water Pollution Control (Rachid Zoghaib). These offices should be coordinated with during project development.

DLZ Response: *Coordinating with the aforementioned offices is standard operating procedure. DLZ is very familiar with the City of Cleveland and will coordinate as necessary.*

## 6. Interim Condition

Comment 6A: There is a need to coordinate the existing I90 and local storm drainage (mainly west of W13th and north of Fairfield) with the proposed work. As you progress in detail design we will need to determine the disposition of this storm water, both in the interim condition and permanently.

DLZ Response: *DLZ will address this issue during the design phase and work with ODOT.*

## 7. Survey Control

Comment 7A: Confirmation that both projects are on the same survey control and all questions related to this topic are resolved.

DLZ Response: *DLZ's survey will show elevations and horizontal coordinates referenced to the Ohio State Plane North Zone NAD 83 and NAVD 88 Datums as the primary system with the Cleveland Regional Geodetic Survey (CRGS) Datum as the secondary system.*

## 8. As-Built Plans

Comment 8A: Does NEORS D have as-built plans created for projects? Coordination between the as-constructed NEORS D project and the ODOT design-build team will be very important.

DLZ Response: *Yes, the design team will provide ODOT with all available as-builts at the completion of the project.*



## 9. Haul Roads for NEORS D Project

Comment 9A: In coordination with Cleveland, our Design-Build project is not allowing Scranton or West 14<sup>th</sup> to be project haul roads. These same restrictions should be in place for the NEORS D project.

DLZ Response: *DLZ will take these restrictions into account.*

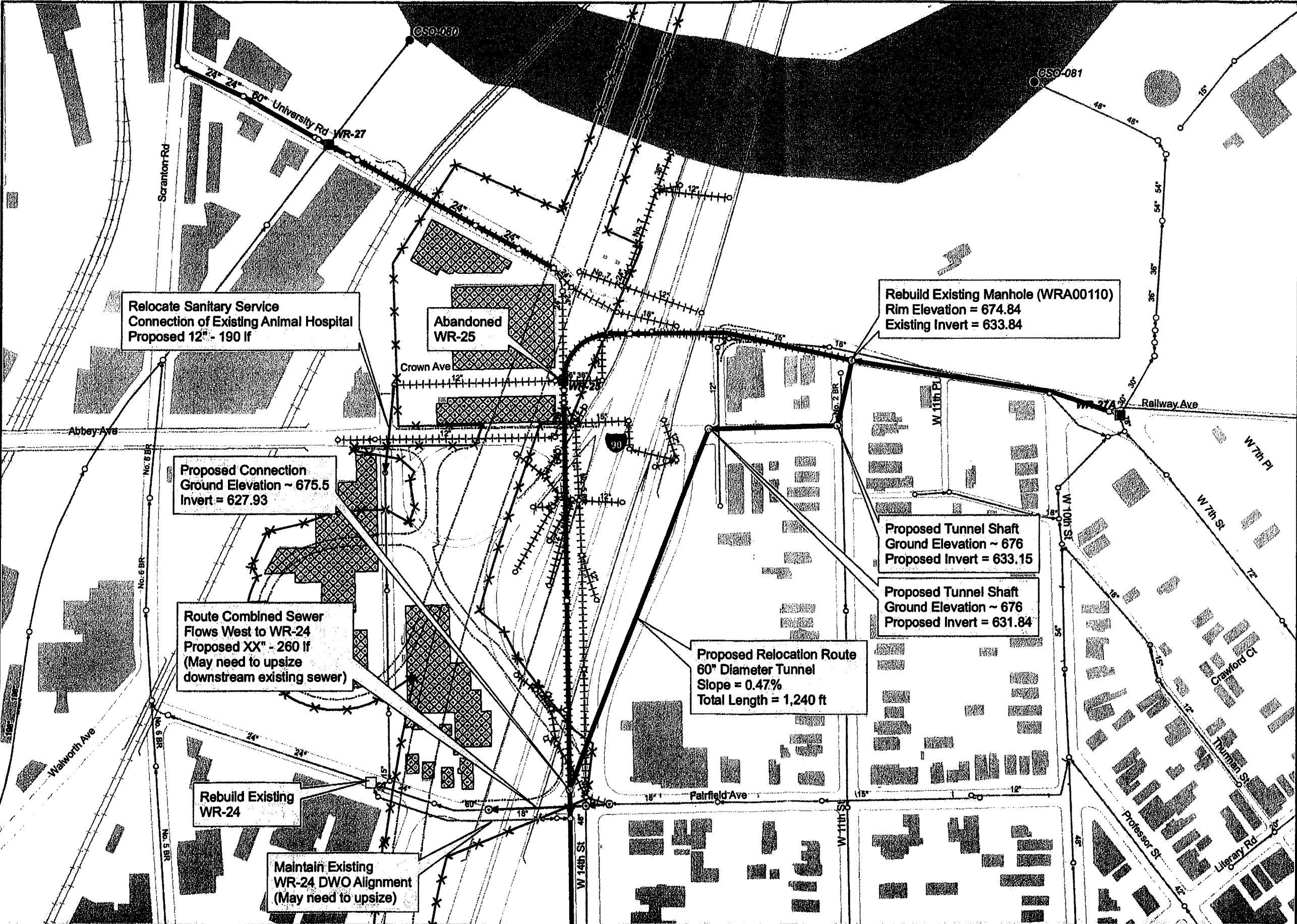
## 10. Vibration Monitoring

Comment 10A: We recommend requiring vibration monitoring of properties adjacent to the NEORS D work locations. Section 9.3.4 of the Design-Build scope addresses ODOT's approach to Vibration Monitoring and Control. This scope language can be provided upon request.

DLZ Response: *DLZ will investigate vibration monitoring of properties adjacent to the NEORS D work locations.*

## Section 6 – Recommendation

Based on the evaluation of the above options, considering the project goals, cost and schedule, DLZ concurs with the original NEORS D recommendation that **Option 2** be selected as the preferred alternate for the WRIR. The estimated probable construction cost for the recommended sewer construction plan is \$10,100,000 (2010 Dollars). This plan is shown on the attached plan view exhibit previously prepared by NEORS D and Wade Trim. This estimate should be regarded as a budgetary planning estimate. The estimate will be revised and updated throughout the project's design as more detailed design information becomes available.



- Legend**
- ⊙ Proposed Manhole
  - ⊙ Proposed Tunnel Shaft
  - Rebuild Regulator
  - ➔ Proposed Interceptor
  - ➔ Proposed Local Sewer
  - ||||| To Be Abandoned
  - Proposed Road Work
  - ✕✕ Construction Limits
  - ▨ To Be Demolished
  - NEORSO CSO Outfall
  - Existing Regulator
  - Existing Interceptor Manhole
  - Existing Local Manhole
  - ➔ Existing Interceptor
  - ➔ Existing Combined
  - ➔ Existing Sanitary
  - ➔ Existing Storm
  - ▨ Existing Building

Relocate Sanitary Service Connection of Existing Animal Hospital  
Proposed 12" - 190 lf

Abandoned  
WR-25

Rebuild Existing Manhole (WRA00110)  
Rim Elevation = 674.84  
Existing Invert = 633.84

Proposed Connection  
Ground Elevation ~ 675.5  
Invert = 627.93

Proposed Tunnel Shaft  
Ground Elevation ~ 676  
Proposed Invert = 633.15

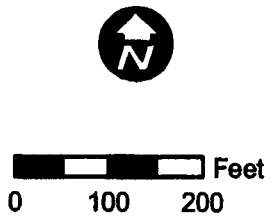
Route Combined Sewer Flows West to WR-24  
Proposed XX" - 260 lf  
(May need to upsize downstream existing sewer)

Proposed Tunnel Shaft  
Ground Elevation ~ 676  
Proposed Invert = 631.84

Proposed Relocation Route  
60" Diameter Tunnel  
Slope = 0.47%  
Total Length = 1,240 ft

Rebuild Existing  
WR-24

Maintain Existing  
WR-24 DWO Alignment  
(May need to upsize)



**APPENDIX "B"**

Draft Soil Boring Logs

ADD ~~PP~~ PUSHING PRESSURES. (SHELOY)  
PP READINGS WHERE APPLICABLE.



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**BORING NUMBER B-1**

PAGE 1 OF 2

CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/18/09 COMPLETED 11/18/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION W. 11th & University  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek  $\nabla$  WATER ON ENCOUNTER 38.8 ft  
 NOTES \_\_\_\_\_  $\nabla$  WATER ON COMPLETION 38.8 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: --

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0				3" ASPHALT, 4" BRICK.								
0.6				SOLIDIFIED BASE.								
1.4				FILL: Brown SAND, little gravel, trace silt, brick.	(Moist) 4-4-5 (9)							
5.0	SS			Loose to medium dense brown medium to fine SAND, little gravel, trace silt.	11-17-7-6 (24)		4.7					
	SS			4" layer of SILTY CLAY at 7.3'. 4" layer of SILTY CLAY at 7.7'. <i>-GRAINED</i>	2-3-4-4 (7)							
	SS				4-5-6-9 (11)							
10	SS	SP			3-2-3-4 (5)							
	SS				4-4-6-7 (10)							
15	SS				5-8-8-9 (16)							
	SS				8-6-8-7 (14)		4.2					
17.0	SM			Loose brown FINE SAND, <del>little gravel</del> . <i>SILTY SAND</i>	(Moist) 2-2-3-4 (5)							
19.0	SS			Loose to medium dense brown MEDIUM SAND, little gravel, trace silt. <i>-GRAINED</i>	(Moist) 4-4-4-4 (8)		6.7					
	SS	SP			3-4-7-9 (11)							
	SS				6-7-6-8 (13)							
25	SS			Medium dense brown FINE SAND, <del>some silt</del> , few sandy silt layers. <i>SILTY SAND</i>	(Moist) 4-5-6-6 (11)							
	SS				5-6-5-7 (11)							
30	SM				6-6-5-6 (11)		9.4					
	SS				6-6-7-7 (13)							
	SS				6-6-6-7 (12)							





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**BORING NUMBER B-1**  
 PAGE 2 OF 2

CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35				<b>SILTY SAND</b>								
35-37.0	SS	SM		Medium dense brown FINE SAND, some silt, few sandy silt layers. (continued)	(Moist) 6-8-9-10 (17)							
37.0-39.0	SS	SP		Medium dense brown medium to fine SAND, trace silt. <b>GRAINED</b>	(Wet) 7-5-6-7 (11)							
39.0-40.0	SS			Medium dense to dense gray <b>SILTY FINE SAND</b>	(Moist) 9-9-10-11 (19)		20.7					
40.0-41.0	SS	SM		<b>SILTY SAND.</b>	10-15-21-27 (38)							
41.0-42.0	SS				10-12-13-18 (25)							
42.0-43.0	SS			<b>BECOMES MEDIUM DENSE WITH</b>								
43.0-44.0	SS	SM		Medium dense gray <b>SILTY FINE SAND</b> , few silt interlayers.	(Moist) 7-10-11-15 (21)							
44.0-45.0	SS	SM		<b>DENSE GRAY FINE SAND</b> , little silt.	(Moist) 16-23-27-29 (50)							
45.0-46.0	SS			<b>BECOMES DENSE</b>								
46.0-47.0	SS				12-14-17-21 (31)							
47.0-48.0	SS				3-7-9-11 (18)							
48.0-49.0	SS	SM-ML		Medium dense to dense gray <b>SILTY FINE SAND</b> , clayey silt interlayers (stratified).	(Wet) 10-14-18-20 (32)							
49.0-50.0	SS				12-18-20-25 (38)							
50.0-51.0	SS			<b>CHECK ??</b>								
51.0-52.0	SS			<b>SILTY SAND TO SILT. ??</b>								
52.0-53.0	SS				7-8-9-11 (17)							
53.0-54.0	SS				4-6-9-10 (15)		24.9			25	5	20
54.0-55.0	SS	ML		<b>CL-ML SILTY CLAY</b>	(Wet) 4-5-7-9 (12)							
55.0-56.0	SS			<b>(TESTING CLASSIFIES AS CL-M)</b>	(Moist) 8-9-10-12 (19)							
56.0-57.0	SS											
57.0-58.0	SS											
58.0-59.0	SS											
59.0-60.0	SS											
60.0-61.0	SS											
61.0-62.0	SS											
62.0-63.0	SS											
63.0-64.0	ST											
64.0-65.0	SS											
65.0-66.0	SS											
66.0-67.0	SS											
67.0-68.0	SS											
68.0-69.0	SS											
69.0-70.0	SS											
70.0-71.0	SS											
71.0-72.0	SS											
72.0-73.0	SS											
73.0-74.0	SS											
74.0-75.0	SS											
75.0	SS											

Bottom of hole at 75.0 feet.





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# BORING NUMBER B-1

PAGE 2 OF 2

CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS				
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT		
35														
	SS	SM		Medium dense brown FINE SAND, some silt, few sandy silt layers. (continued)	(Moist) 6-8-9-10 (17)									
	SS	SP		Medium dense brown medium to fine SAND, trace silt.	(Wet) 7-5-6-7 (11)									
40	SS	SM			Medium dense to dense gray SILTY FINE SAND.	(Moist) 9-9-10-11 (19)		20.7						
	SS				10-15-21-27 (36)									
	SS				10-12-13-16 (25)									
45	SS	SM		45.0	Medium dense gray SILTY FINE SAND, few silt interlayers.	(Moist) 7-10-11-15 (21)								
	SS	SM		47.0	Dense gray FINE SAND, little silt.	(Moist) 16-23-27-29 (50)								
50	SS	SM-ML			Medium dense to dense gray SILTY FINE SAND, silt and clayey silt interlayers (stratified).	(Wet) 12-14-17-21 (31)								
	SS				3-7-9-11 (16)									
	SS				(Moist) 10-14-18-20 (32)									
55	SS		(Wet) 12-18-20-25 (38)											
	SS		57.0		Medium dense gray SILT, little sand, trace clay, few silty clay interlayers (stratified).	(Moist) 7-8-9-11 (17)								
60	SS	ML			(Moist) 4-6-9-10 (15)		24.9							
	SS			(Wet) 4-5-7-9 (12)										
	SS			(Moist) 8-9-10-12 (19)										
65	ST		67.0	Stiff to very stiff gray SILTY CLAY, little sand, few silt interlayers (laminated).	(Moist) 6-9-9-11 (18)		23							
70	SS	CL			8-11-12-14 (23)									
	SS			6-7-7-9 (14)				25.7						
	SS			5-6-7-9 (13)										
75			75.0											

Bottom of hole at 75.0 feet.

MISSING SOME OF THE SOIL TESTING



Solar Testing Laboratories, Inc.  
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**BORING NUMBER B-2**

PAGE 1 OF 2

CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/19/09 COMPLETED 11/19/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION W. 11th & University  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY C. Bangarter DRILLER J. Deranek  WATER ON ENCOUNTER 37.0 ft  
 NOTES \_\_\_\_\_  WATER ON COMPLETION 37.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 2.25 I.D. WATER AFTER \_\_\_\_\_ HRS: \_\_\_\_\_

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0				5" ASPHALT, 4 1/4" BRICK PAVER, 3" BASE, 6" CONCRETE.								
1.6				FILL: CINDERS & SAND.	9-6-5 (11)							
2.5	SS			Loose brown SAND, little gravel, trace silt, few silty clay interlayers. (Moist)	4-2-3 (5)							
5	SS				4-4-4 (8)							
10	SS				3-3-3 (6)		7.7					
15	SS				3-3-2 (5)		6.8					
18.5	SS			Medium dense brown SAND, trace silt. <b>TRACESILT</b> (Moist)	5-6-8 (14)		5.5					
23.5	SS			Loose brown SAND, little gravel, trace silt, few silty clay interlayers. (Moist)	2-3-4 (7)		11.9					
28.5	SS			Medium dense brown FINE SAND, trace silt. (Moist)	5-7-9 (16)							
35	SS			<b>SILTY SAND.</b>	7-8-11 (19)							







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# BORING NUMBER B-2

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CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35				Medium dense brown FINE SAND, little silt. <i>(continued)</i> (Moist)								
		SM	▼ 37.0	Medium dense brown FINE SAND, trace silt. (Wet)								
40	SS				3-5-8 (13)							
		SP										
45	SS		43.5	Dense to very dense gray SILTY FINE SAND. (Moist)	15-22-28 (50)		23.3					
		SM										
50	SS				16-22-30 (52)							
		SM										
55	SS		54.0	Medium dense to dense gray SILT, some sand, few thin silty clay interlayers. (Moist)	11-16-17 (33)							
		ML										
60	SS		60.0	Bottom of hole at 60.0 feet.	10-15-11 (26)		19.8					







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# BORING NUMBER B-3

PAGE 1 OF 2

CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/20/09 COMPLETED 11/23/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION W. 11th & Abbey  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek ▽ WATER ON ENCOUNTER 32.5 ft  
 NOTES \_\_\_\_\_ ▽ WATER ON COMPLETION 60.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: --

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0				2 3/4" ASPHALT, 4 3/4" BRICK PAVER, 4" Gray CLAYEY SILT.								
1.0				Loose to medium dense brown SAND & GRAVEL, trace silt. (Moist)	4-4-4-3 (8)							
5	SS	SP-GP			3-4-4-6 (8)							
7.0				Loose to medium dense brown MEDIUM SAND, little gravel, trace silt, few silty clay interlayers. (Moist)	7-9-12-10 (21)		4.4					
10	SS	SP			3-3-3-5 (6)							
13.0				Loose to medium dense brown MEDIUM SAND, little gravel, trace silt, few silty clay interlayers. (Wet)	2-3-5-5 (8)							
15	SS	SP-GP		Medium dense brown SAND & GRAVEL, trace silt. (Moist)	3-6-6-10 (12)							
20	SS	SP		Medium dense brown FINE SAND, trace gravel, silt. (Moist)	7-7-11-8 (18)							
25	SS	SM		Medium dense brown SILTY FINE SAND, few thin interlayers of sandy silt. (Moist)	5-8-9-9 (17)		4.8					
30	SS	ML-SP		Medium dense to dense brown SANDY SILT, interlayers of FINE SAND, trace silt, stratified. (Wet)	6-7-8-10 (15)							
31.0					7-7-8-11 (15)							
35	SS				8-9-11-12 (20)							
	SS				7-9-9-10 (18)							
	SS				10-11-12-13 (23)							
	SS				8-8-8-10 (16)							
	SS				5-5-6-11 (11)							
	SS				6-8-9-11 (17)							
	SS				4-5-8-9 (13)							



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**BORING NUMBER B-3**

PAGE 2 OF 2

CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS			
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT	
35	SS	ML-SP		Medium dense to dense brown SANDY SILT, interlayers of FINE SAND, trace silt, stratified. (continued)	(Wet) 7-8-23-27 (31)								
	SS			Dense gray SILTY FINE SAND, few silt interlayers.	(Moist) 12-20-29-38 (49)								
40	SS	SM		SILTY SAND (SM)	13-20-26-32 (46)								
	SS	SP		Very dense gray MEDIUM SAND, trace silt.	(Moist) 9-24-32-39 (56)		18.4				NP	NP	NP
	SS			Medium dense to very dense gray SILT, some sand, with SILTY SAND interlayers.	(Moist) 20-25-28-31 (53)								
45	SS	ML-SM			17-25-31-34 (56)								
	SS				10-14-16-22 (30)								
50	SS	CL-ML		Medium dense to dense gray SILT, little clay, sand.	(Moist) 5-6-7-9 (13)		22				24	5	19
	SS			SILTY CLAY	5-6-8-9 (14)								
	SS				4-6-13-14 (19)								
55	ST	ML		→ PUSHING PRESSURES							NP	NP	NP
	SS				10-9-11-14 (20)								
60	SS				10-15-17-20 (32)		17						
	SS				9-12-16-19 (28)								
	SS	SP		Dense gray SAND, trace silt.	(Moist) 20-19-28-34 (47)								
65	SS	ML		Dense gray SANDY SILT.	(Moist) 15-20-23-30 (43)								
	SS			SILT	6-7-8-9 (15)		23						
70	SS	CL		Stiff to very stiff gray SILTY CLAY, little sand, stratified, few silt interlayers.	(Moist) 7-9-12-14 (21)								
	SS			LEAN CLAY	6-9-11-12 (20)								
	SS				6-7-11-13 (18)		25.6						
75													

Bottom of hole at 75.0 feet.



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# BORING NUMBER B-3

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CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35	SS	ML-SP		Medium dense to dense brown SANDY SILT, interlayers of FINE SAND, trace silt, stratified. (continued) (Wet)	7-8-23-27 (31)							
	SS			Dense gray SILTY FINE SAND, few silt interlayers. (Moist)	12-20-29-38 (49)							
40	SS	SM			13-20-26-32 (46)							
	SS			Very dense gray MEDIUM SAND, trace silt. (Moist)	9-24-32-39 (56)		18.4					
45	SS	SP			20-25-28-31 (53)							
	SS			Medium dense to very dense gray SILT, some sand, with SILTY SAND interlayers. (Moist)	17-25-31-34 (56)							
	SS	ML-SM			10-14-16-22 (30)							
50	SS			Medium dense to dense gray SILT, little clay, sand. (Moist)	5-6-7-9 (13)		22					
	SS				5-6-8-9 (14)							
	SS				4-6-13-14 (19)							
55	ST	ML			10-9-11-14 (20)							
	SS				10-15-17-20 (32)		17					
60	SS				9-12-16-19 (28)							
	SS			Dense gray SAND, trace silt. (Moist)	20-19-28-34 (47)							
65	SS	SP			15-20-23-30 (43)							
	SS			Dense gray SANDY SILT. (Moist)	6-7-8-9 (15)							
	SS	ML			7-9-12-14 (21)							
70	SS			Stiff to very stiff gray SILTY CLAY, little sand, stratified, few silt interlayers. (Moist)	6-9-11-12 (20)		23					
	SS				6-7-11-13 (18)							
	SS	CL					25.6					
75												

Bottom of hole at 75.0 feet.

ADD PP WHERE APPLICABLE



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**BORING NUMBER B-4**

PAGE 1 OF 2

CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/30/09 COMPLETED 11/30/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION Abbey at W. 14th Ramp  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek  WATER ON ENCOUNTER 34.0 ft  
 NOTES \_\_\_\_\_  WATER ON COMPLETION 34.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: \_\_\_\_\_

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0												
0.8				9" CONCRETE.								
1.5				FILL: Brown SAND, little gravel (BASE). POSSIBLE FILL: Loose to medium dense brown SAND & GRAVEL, trace silt.	4-7-8-7 (15)							
5	SS	SP-GP		<i>CHECK</i>	3-4-3-4 (7)							
6.0				POSSIBLE FILL: Medium dense brown SAND, little gravel, silt, trace clay.	5-7-9 (16)							
8.5				<i>SILTY SAND</i> Very loose to medium dense brown medium to coarse SAND & GRAVEL, trace silt, organics, thin silty clay layer.	6-8-10 (18)		6.4					
10	SS											
15	SS	SP-GP		<i>CHECK</i>	2-1-2 (3)		7.6					
20	SS	ML		19.2 Medium dense brown SILT, little sand, clay. 20.0 Medium dense brown <del>FINE SAND</del> SAND, little silt.	5-5-7 (12)		21.8					
25	SS			<i>SILTY SAND</i>	5-6-10 (16)		10.1					
30	SS	SM		<i>SILTY SAND</i>	7-7-8 (15)							
35	SS	ML-SM		33.8 Medium dense brown SILT, little sand, interlayers of silty fine sand.	5-6-9 (15)							

SOIL DISTRIBUTION  
 → B-4 23.5 to 25 ft  
 % GRAVEL 0.4  
 % SAND 79.1  
 SAND

PLEASE MATCH SOIL TESTING WITH BORING.



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# BORING NUMBER B-4

PAGE 1 OF 2

CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/30/09 COMPLETED 11/30/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION Abbey at W. 14th Ramp  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek  WATER ON ENCOUNTER 34.0 ft  
 NOTES \_\_\_\_\_  WATER ON COMPLETION 34.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0				9% CONCRETE.								
0.8				FILL: Brown SAND, little gravel (BASE).								
1.5				POSSIBLE FILL: Loose to medium dense brown SAND & GRAVEL, trace silt. (Moist)	4-7-8-7 (15)							
5	SS	SP-GP			3-4-3-4 (7)							
6.0				POSSIBLE FILL: Medium dense brown SAND, little gravel, silt, trace clay. (Moist)	5-7-9 (16)							
8.5				Very loose to medium dense brown medium to coarse SAND & GRAVEL, trace silt, organics, thin silty clay layer. (Moist)	6-8-10 (18)		6.4					
10	SS	SM										
15	SS	SP-GP			2-1-2 (3)		7.6					
20	SS	ML		Medium dense brown SILT, little sand, clay. (Moist)	5-5-7 (12)		21.8					
				Medium dense brown FINE SAND, little silt. (Moist)								
25	SS	SM			5-6-10 (16)		10.1					
30	SS	SM			7-7-8 (15)							
35	SS	ML-SM		Medium dense brown SILT, little sand, interlayers of silty fine sand. (Wet)	5-6-9 (15)							



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# BORING NUMBER B-4

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CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (ROD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35				Medium dense brown SILT, little sand, interlayers of silty fine sand. (continued) (Wet)								
			ML-SM									
			37.0	Medium dense gray SILTY FINE SAND, few silt interlayers. (Wet)								
40	SS				2-4-7 (11)		29.3					
			SM									
45	SS				8-12-16 (28)							
			48.0	Medium dense to dense gray SILT, little sand, trace clay, some clayey silt interlayers. (Wet)								
50	SS				5-5-8 (13)							
			ST								NP	NP
55	SS				17-19-27 (46)		18.6					
			ML									
60	SS				13-15-17 (32)		19					
			65									
65	SS				13-14-10 (24)		16.9					
			70									
70	ST										28	9
			72.0	Very stiff gray SILTY CLAY, little sand. (Wet)								
			CL									
75	SS				7-11-14 (25)		22.6					

CHECK

ACCORDING TO TESTING @ 68 FT.

SHELBY PUSHING PRESSURES.

LEAN CLAY

Bottom of hole at 75.0 feet.





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# BORING NUMBER B-4

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CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35				Medium dense brown SILT, little sand, interlayers of silty fine sand. (continued) (Wet)								
		ML-SM										
			37.0	Medium dense gray SILTY FINE SAND, few silt interlayers. (Wet)								
40	SS				2-4-7 (11)		29.3					
		SM										
45	SS				8-12-16 (28)							
			48.0	Medium dense to dense gray SILT, little sand, trace clay, some clayey silt interlayers. (Wet)								
50	SS				5-5-8 (13)							
		ST										
55	SS				17-19-27 (46)		18.6					
60	SS				13-15-17 (32)		19					
		ML										
65	SS				13-14-10 (24)		16.9					
		ST										
70												
			72.0	Very stiff gray SILTY CLAY, little sand. (Wet)								
		CL										
75	SS		75.0		7-11-14 (25)		22.6					

Bottom of hole at 75.0 feet.



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# BORING NUMBER B-5

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CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/23/09 COMPLETED 11/27/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION W. 14th & Abbey  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek  WATER ON ENCOUNTER 32.0 ft  
 NOTES \_\_\_\_\_  WATER ON COMPLETION 48.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: \_\_\_\_\_

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (ROD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0												
0.6				3" ASPHALT, 4" BRICK PAVER.								
	SS			FILL: Brown SAND, little silt, trace gravel, coal, few thin silty clay layers. (Moist)	11-9-8 (17)							
	SS			4.5': STORM SEWER at edge of hole. Could not auger past. Moved hole 2 feet east.	4-3-4-4 (7)							
5	SS			5.0 FILL Brown SAND & GRAVEL, trace silt, few thin silty clay layers. (Moist)	4-3-3-3 (6)							
	SS			8.5': Abandoned METAL PIPE.	1-1-1-50/2"							
10	SS			Loose to medium dense brown medium to coarse SAND, some gravel, trace silt. (Moist)	5-7-4-3 (11)							
	SS			11.3': 8-inch-thick layer of SILTY CLAY. <i>GRAINED</i>	3-4-6-7 (10)							
	SS			<i>AT THIS DEP. ST OR SW?</i>	3-6-9-9 (15)		5.9					
15	SS			Loose to medium dense brown fine to medium SAND, trace silt. <i>BECOMES MEDIUM DENSE, TRACES SILT</i>	7-7-9-13 (16)							
	SS			<i>BECOMES LOOSE</i>	7-5-4-4 (9)							
20	SS			Loose brown SILTY SAND, trace gravel. (Moist)	6-5-5-6 (10)							
	SS			Loose to medium dense brown fine to medium SAND, trace silt. (Moist)	6-8-8-9 (16)							
	SS			23.0 Loose brown fine to medium SAND, little gravel, trace silt. (Moist)	4-3-4-4 (7)							
25	SS			25.0 Loose to medium dense brown FINE SAND, little silt, trace gravel. (Moist)	4-3-5-5 (8)							
	SS			<i>SILTY SAND</i>	3-4-6-6 (10)							
30	SS				6-9-10-12 (19)							
	SS			<input checked="" type="checkbox"/> Loose to medium dense brown FINE SAND, trace silt. (Moist) (Wet)	3-2-3-5 (5)							
35	SS				8-10-12-15 (22)							

*SP ACCORDING TO GRAN DISTRIBUTION TEST.*





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# BORING NUMBER B-5

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CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (ROD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS			
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT	
35													
	SS	SP		Loose to medium dense brown FINE SAND, trace silt. (continued)	(Moist) 5-8-10-11 (18)								
	SS			38' Heaving SAND.	(Wet) 4-7-9-12 (16)								
			38.2										
	SS			Medium dense gray SILT, some sand, interlayers of wet FINE SAND, trace silt, stratified.	(Moist) 5-7-11-13 (18)								
40	SS												
	SS	SM ML			6-9-10-11 (19)								
	SS				3-6-8-9 (14)								
45	SS												
	SS	SM		Medium dense gray SILTY FINE SAND.	(Moist) 9-12-14-17 (26)								
			45.0										
	SS				4-6-9-11 (15)								
			48.0										
	SS			Medium dense gray SILT, some sand, few silty sand interlayers.	(Moist)								
50	ST										22	3	19
	SS	ML			8-9-15-19 (24)								
	SS				12-15-19-23 (34)								
55	SS												
	SS			Dense gray SILT, little sand, clay.	(Moist) 11-16-19-26 (35)		20.1						
			55.0										
	ST										NP	NP	NP
60	SS	ML			16-19-21-26 (40)								
	SS				14-17-20-25 (37)		17.6						
	SS				14-11-15-16 (26)								
65	SS			Stiff to very stiff gray SILTY CLAY, little sand, interlayers of SILT, stratified.	(Moist)								
	SS				(Wet) 5-6-8-10 (14)								
	SS												
70	ST	CL-ML									29	9	20
	SS				8-11-14-18 (25)		22						
	SS				7-9-12-14 (21)		22.5						
75													

IS THIS OK??  
 CHECK

PUSHING PRESSURES

PUSHING PRESSURES

69-71 — LEAN CLAY

Bottom of hole at 75.0 feet.



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# BORING NUMBER B-5

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CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS			
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT	
35	SS	SP		Loose to medium dense brown FINE SAND, trace silt. (continued)	5-8-10-11 (18)								
	SS			38': Heaving SAND.	4-7-9-12 (16)								
	SS			Medium dense gray SILT, some sand, interlayers of wet FINE SAND, trace silt, stratified.	5-7-11-13 (18)								
	SS	SM-ML			6-9-10-11 (19)								
	SS				3-6-8-9 (14)								
	SS	SM			Medium dense gray SILTY FINE SAND.	9-12-14-17 (26)							
	SS			48.0 ▼	Medium dense gray SILT, some sand, few silty sand interlayers.	4-6-9-11 (15)							
	ST	ML				8-9-15-19 (24)							
	SS					12-15-19-23 (34)							
	SS			55.0	Dense gray SILT, little sand, clay.	11-16-19-26 (35)		20.1					
	ST	ML			16-19-21-26 (40)								
	SS				14-17-20-25 (37)		17.6						
	SS		63.0	Stiff to very stiff gray SILTY CLAY, little sand, interlayers of SILT, stratified.	14-11-15-16 (26)								
	SS				5-6-8-10 (14)								
	SS					0							
	ST	CL-ML			8-11-14-18 (25)		22						
	SS				7-9-12-14 (21)		22.5						
75			75.0										

Bottom of hole at 75.0 feet.







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# BORING NUMBER B-6

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CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
 DATE STARTED 11/28/09 COMPLETED 11/28/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION W. 14th Ramp to Abbey (south end)  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek ▽ WATER ON ENCOUNTER 29.0 ft  
 NOTES \_\_\_\_\_ ▽ WATER ON COMPLETION 54.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: ---

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0												
0.3				4" TOPSOIL. FILL: Brown SAND, little silt. (Moist)	2-1-2-3 (3)							
2.5				FILL: Gray SILTY FINE SAND, trace organics. (Moist)								
2.8				Loose brown SAND & GRAVEL, trace silt. (Moist)	3-4-5 (9)							
5	SS	SP GP		Medium dense brown fine to medium SAND, trace silt, gravel. (Moist)	6-8-7 (15)		7.2					
10	SS	SP		Hard brown SILTY CLAY, little sand, trace CaCO <sub>3</sub> . (Moist)	11-18-23 (41)							
15	SS	CL		Loose brown MEDIUM SAND, some gravel, trace silt. (Moist)	3-2-3 (5)							
20	SS	SP		Medium dense brown FINE SAND, little silt, few silty clay lenses, trace gravel. (Moist)	11-16-14 (30)		10.9					
25	SS	SM			13-10-14 (24)							
30	SS			Loose to medium dense brown SANDY SILT, interlayers of SAND. (Wet)	12-3-4 (7)		30					
35	SS	ML-SP			3-8-13 (21)							



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# BORING NUMBER B-6

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CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S. GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (ROD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
									LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35			Loose to medium dense brown SANDY SILT, interlayers of SAND. (continued) (Wet)								
37.0			Medium dense to dense gray SILTY FINE SAND. (Wet)								
40	SS		<b>SILTY SAND</b>	7-13-16 (29)		22.6					
45	SS		<b>SILT (ML)</b>	7-16-26 (42)		21.2			NP	NP	NP
48.0			Dense gray FINE SAND, trace silt. (Moist)								
50	SS		<b>(SM) SILTY SAND</b>	8-10-24 (34)		22.3			NP	NP	NP
54.0			Dense gray SILT, little sand. (Moist)	13-19-28 (47)		18					
57.0			Very stiff gray CLAYEY SILT, little sand. (Moist)								
60	SS			7-8-9 (17)		21.1			24	5	19
63.5			Stiff gray SILTY CLAY, little sand, few silt interlayers. (Moist)	4-4-5 (9)		28.6					
65.0			Bottom of hole at 65.0 feet.								

CHECK

**SILT (ML)**

**(SM) SILTY SAND**

LEAN CLAY

REVISE THIS BORING LOG

THIS TEST IS MISSING





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# BORING NUMBER B-7

PAGE 1 OF 2

CLIENT Northest Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project  
 PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey; W 14th Streets, Cleveland, Ohio  
 DATE STARTED 12/3/09 COMPLETED 12/3/09 GROUND ELEVATION \_\_\_\_\_  
 DRILLING CONTRACTOR Solar Testing Laboratories, Inc. BORING LOCATION W. 14th Ramp to Abbey (north end)  
 DRILLING METHOD Hollow Stem Auger GROUND WATER LEVELS:  
 LOGGED BY R. Spellacy DRILLER J. Deranek  WATER ON ENCOUNTER 27.0 ft  
 NOTES \_\_\_\_\_  WATER ON COMPLETION 27.0 ft  
 HOLE SIZE \_\_\_\_\_ AUGER SIZE 4.25 I.D. WATER AFTER \_\_\_\_\_ HRS: --

DEPTH (ft)	SAMPLE TYPE	U.S.C.S. GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (ROD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
									LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0			10" TOPSOIL.	2-2-3-4 (5)							
0.8			FILL: Brown SAND, little silt, trace gravel, brick. (Moist)								
3.5			FILL: Brown SAND & GRAVEL, trace silt, brick. (Moist)	3-3-5 (8)							
4-3-3 (6)											
3-3-4 (7)						7					
10-16-20 (36)						5					
19.0			Medium dense brown SILTY SAND. (Moist)	9-13-17 (30)		14.5					
19.5	SM		Medium dense brown SILT, little sand. (Moist)								
20.5	ML		Dense brown fine to medium SAND, trace silt. (Moist)								
12-15-16 (31)											
27.0			Loose to very dense brown FINE SAND, little silt, few thin silt layers. (Wet)	9-9-12 (21)		22.1					
18-19-50/4"											

SILTY SAND



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# BORING NUMBER B-7

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**CLIENT** Northeast Ohio Regional Sewer District **PROJECT NAME** Walworth Run Interceptor Realignment (WRIR) Project  
**PROJECT NUMBER** A09570x10 **PROJECT LOCATION** W 11th, Abbey, W 14th Streets, Cleveland, Ohio  
**DATE STARTED** 12/3/09 **COMPLETED** 12/3/09 **GROUND ELEVATION** \_\_\_\_\_  
**DRILLING CONTRACTOR** Solar Testing Laboratories, Inc. **BORING LOCATION** W. 14th Ramp to Abbey (north end)  
**DRILLING METHOD** Hollow Stem Auger **GROUND WATER LEVELS:**  
**LOGGED BY** R. Spellacy **DRILLER** J. Deranek  **WATER ON ENCOUNTER** 27.0 ft  
 **WATER ON COMPLETION** 27.0 ft  
**NOTES** \_\_\_\_\_  
**HOLE SIZE** \_\_\_\_\_ **AUGER SIZE** 4.25 I.D. **WATER AFTER** \_\_\_\_\_ **HRS:** --

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
0												
0.8				10" TOPSOIL.								
0.8 - 3.5	SS		[Cross-hatched pattern]	FILL: Brown SAND, little silt, trace gravel, brick. (Moist)	2-2-3-4 (5)							
3.5 - 5	SS		[Cross-hatched pattern]	FILL: Brown SAND & GRAVEL, trace silt, brick. (Moist)	3-3-5 (8)							
5 - 6	SS		[Cross-hatched pattern]		4-3-3 (6)							
6 - 10	SS		[Cross-hatched pattern]		3-3-4 (7)		7					
10 - 15	SS		[Cross-hatched pattern]		10-16-20 (36)		5					
15 - 19.0	SS		[Cross-hatched pattern]									
19.0 - 19.5	SM		[Dotted pattern]	Medium dense brown SILTY SAND. (Moist)	9-13-17 (30)		14.5					
19.5 - 20.5	ML		[Vertical lines pattern]	Medium dense brown SILT, little sand. (Moist)								
20.5 - 25	SP		[Dotted pattern]	Dense brown fine to medium SAND, trace silt. (Moist)								
25 - 27.0	SS		[Dotted pattern]		12-15-16 (31)							
27.0 - 30	SS		[Dotted pattern]	Loose to very dense brown FINE SAND, little silt few thin silt layers. (Wet)								
30 - 35	SM		[Dotted pattern]		9-9-12 (21)		22.1					
35 - 35	SS		[Dotted pattern]		18-19-50/4"							



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CLIENT Northeast Ohio Regional Sewer District PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10 PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35				Loose to very dense brown FINE SAND, little silt few thin silt layers. (continued) (Wet)								
40	SS	SM		SILTY SAND.	3-4-5 (9)							
45	SS			SILTY SAND	5-6-9 (15)		25.3					
47.0				Medium dense gray FINE SAND/ little silt. (Wet)								
49.8	SS	SM		Dense gray SILT, little sand, clay. (Wet)	7-10-13 (23)							
55	ST	ML		(PP=4.5+)		13	18.1			24	4	20
60	SS			Bottom of hole at 60.0 feet.	16-24-25 (49)		21.2			23	3	20











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CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS		
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT
35	SS	SM	36.0	Medium dense brown fine to medium SAND, trace silt, few silt layers. Heaving Sand.	(Wet) 5-8-13-15 (21)		18.8					
	SS	SP			5-7-9-8 (16)							
40	SS		41.0	Medium dense brown FINE SAND, little silt.	(Wet) 4-9-6-7 (15)							
	SS				9-12-11-16 (23)							
	SS				4-5-6-4 (11)							
45	SS	SM			4-5-6-4 (11)							
	SS				6-7-10-11 (17)							
50	SS		49.5	Dense gray SILT, little sand.	(Wet) 9-15-18-21 (33)		20.5			NP	NP	NP
	SS	ML			14-19-25-28 (44)							
	SS	ST	53.0	Stiff gray CLAYEY SILT, little sand.	(Wet)					24	4	20
55	SS	CL-ML										
	SS				5-6-8-10 (14)		19.3					
60	SS		59.0	Stiff gray SILT, little sand, interlayers of SILT, stratified.	(Wet) 4-5-7-7 (12)							
	SS	ST								25	5	20
	SS				5-7-7-8 (14)							
65	SS		65.0	Stiff gray SILTY CLAY, little sand, laminated.	(Wet) 3-4-4-5 (8)		24.1					
	SS	CL			5-6-6-8 (12)							
70	SS	ST								30	10	20
	SS				9-10-14-16 (24)		21.1					
	SS	ML	71.0	Very stiff gray CLAYEY SILT, little sand.	(Wet) 10-14-16-17 (30)							
75	SS		75.0				20.2					

Bottom of hole at 75.0 feet.

*Handwritten annotations:*

- SILTY SAND** (circled) with arrow pointing to the 41.0 ft depth.
- SILTY CLAY** (circled) with arrow pointing to the 53.0 ft depth.
- LEAN CLAY** (circled) with arrow pointing to the 65.0 ft depth.
- CHECK THIS** (circled) with arrow pointing to the 71.0 ft depth.
- CL-ML** (circled) at the bottom of the log.
- PRESSURES** (written twice) with arrows pointing to the 53.0 ft and 65.0 ft depths.



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CLIENT Northeast Ohio Regional Sewer District

PROJECT NAME Walworth Run Interceptor Realignment (WRIR) Project

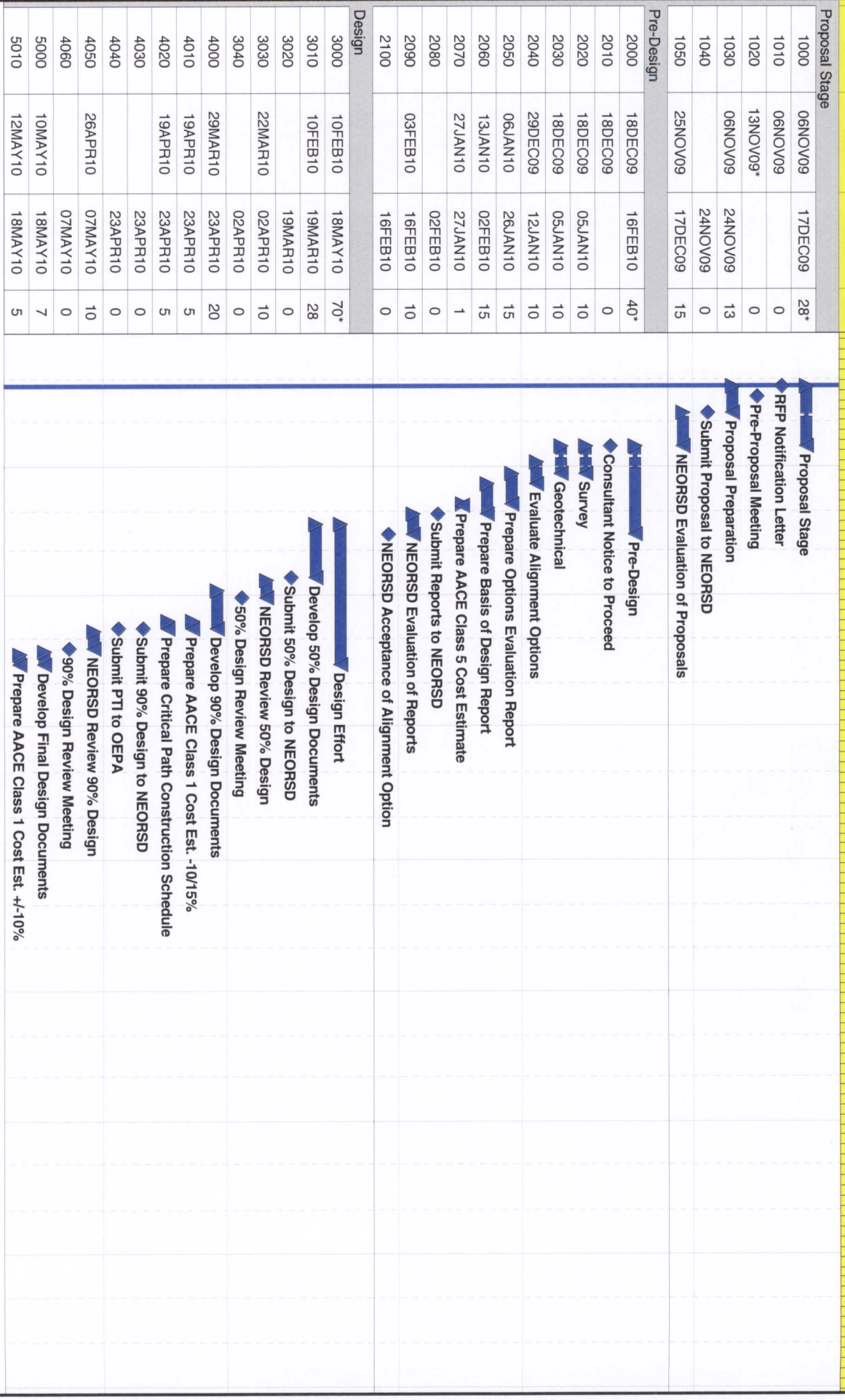
PROJECT NUMBER A09570x10

PROJECT LOCATION W 11th, Abbey, W 14th Streets, Cleveland, Ohio

DEPTH (ft)	SAMPLE TYPE	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	BLOW COUNTS (N VALUE)	RECOVERY % (RQD)	MOISTURE CONTENT (%)	UN. COMP. STRENGTH (tsf)	DRY UNIT WT. (pcf)	ATTERBERG LIMITS				
										LIQUID LIMIT	PLASTICITY INDEX	PLASTIC LIMIT		
35														
36.0	SS	SM	[Dotted pattern]	Medium dense brown fine to medium SAND, trace silt, few silt layers. Heaving Sand.	(Wet) 5-8-13-15 (21)		18.8							
	SS				5-7-9-8 (16)									
40	SS	SP			4-9-6-7 (15)									
41.0				Medium dense brown FINE SAND, little silt.	(Wet) 9-12-11-16 (23)									
45	SS		[Dotted pattern]	Medium dense brown FINE SAND, little silt.	4-5-6-4 (11)									
	SS				4-5-6-4 (11)									
	SS				6-7-10-11 (17)									
50	SS	SM			49.5								Dense gray SILT, little sand.	(Wet) 9-15-18-21 (33)
	SS				14-19-25-28 (44)									
53.0				Stiff gray CLAYEY SILT, little sand.	(Wet)									
55	ST		[Vertical lines]	Stiff gray CLAYEY SILT, little sand.			19.3							
	SS	ML			5-6-8-10 (14)									
60	SS				59.0								Stiff gray SILTY CLAY, little sand, interlayers of SILT, stratified.	(Wet) 4-5-7-7 (12)
65	SS	CL-ML	[Diagonal lines]	Stiff gray SILTY CLAY, little sand, laminated.	5-7-7-8 (14)		24.1							
	ST													3-4-4-5 (8)
	SS				65.0									5-6-6-8 (12)
70	SS	CL	[Diagonal lines]	Very stiff gray CLAYEY SILT, little sand.	(Wet) 9-10-14-16 (24)		21.1							
	SS				71.0									10-14-16-17 (30)
75	SS	ML			75.0									

Bottom of hole at 75.0 feet.

Activity ID	Early Start	Early Finish	Orig Dur	2009	2010	2011
				OCT	NOV	DEC
				JAN	FEB	MAR
				APR	MAY	JUN
				JUL	AUG	SEP
				OCT	NOV	DEC
				JAN	FEB	MAR
				APR	MAY	JUN
				JUL	AUG	SEP



Start Date: 06NOV09  
 Finish Date: 17AUG11  
 Data Date: 06NOV09  
 Run Date: 23MAR10 10:20



WRIR  
 NEORSD  
 Walworth Run Interceptor  
 Classic Schedule Layout

Sheet 1 of 2

Date	Revision	Checked	Approved



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Red 3/23/2010



