



FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, THE CONTRACTOR SHALL DIAL 1-800-482-7171 OR 811 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO THE BEGINNING OF EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED.

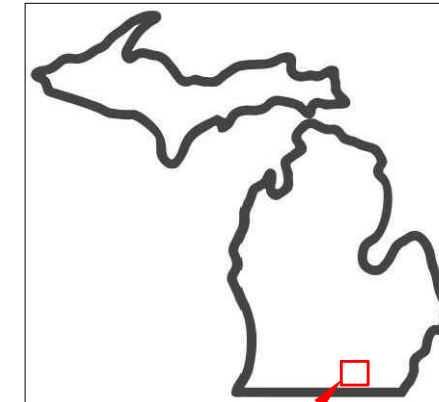
REFERENCES TO SPECIFICATIONS: THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE PROJECT DRAWINGS, NOTES, AND THE APPLICABLE SECTIONS OF THE 2012 MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE MOST CURRENT VERSION OF THE MICHIGAN MANUAL OF TRAFFIC CONTROL DEVICES

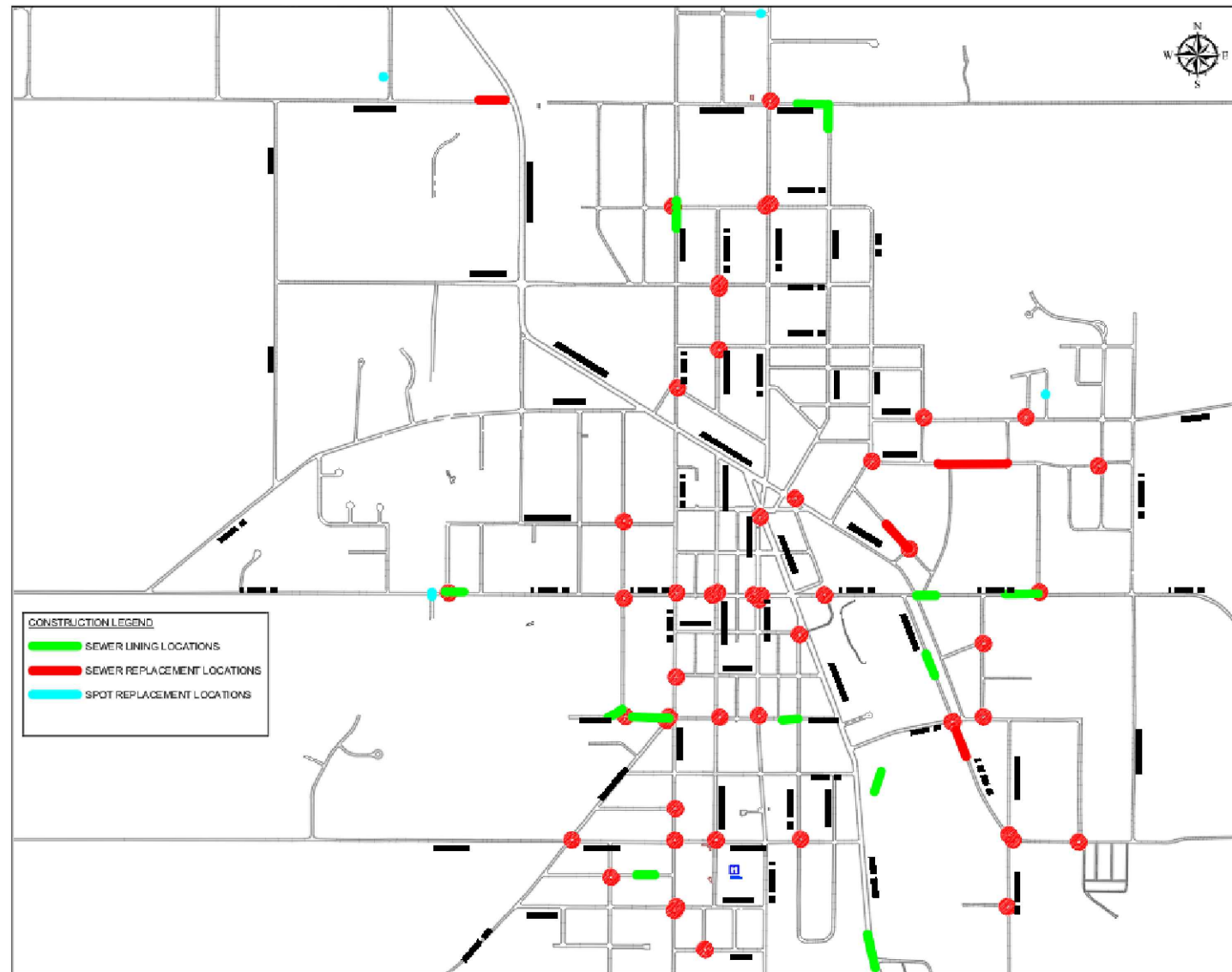
# CITY OF HILLSDALE

## WATER VALVE & SANITARY SEWER MAIN IMPROVEMENTS

### A COMMUNITY DEVELOPMENT BLOCK GRANT WATER-RELATED INFRASTRUCTURE GRANT PROJECT



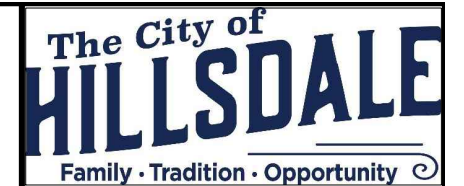
SITE LOCATION



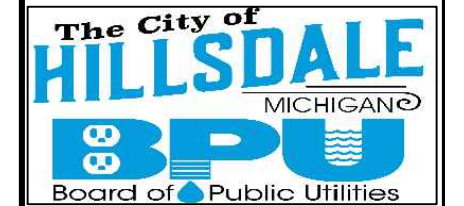
CONSTRUCTION LEGEND	
<span style="color: green;">—</span>	SEWER LINING LOCATIONS
<span style="color: red;">—</span>	SEWER REPLACEMENT LOCATIONS
<span style="color: blue;">●</span>	SPOT REPLACEMENT LOCATIONS

AREA MAP  
NOT TO SCALE

SHEET NO.	DESCRIPTION
CS	COVER SHEET
WL	WATER VALVE WORK LOCATIONS
W1	WATER VALVES
W2	WATER VALVES
W3	WATER VALVES
W4	WATER VALVES
W5	WATER VALVES
W6	WATER VALVES
W7	WATER VALVES
W8	WATER VALVES
W9	WATER VALVES
W10	WATER VALVES
W11	WATER VALVES
W12	WATER VALVES
W13	WATER VALVES
W14	W. ST. JOE WATER MAIN WORK
W15	WATER DETAILS TYPICAL
W16	WATER TRAFFIC CONTROL TYPICALS
SAN L	SEWER WORK LOCATIONS
SAN 1	WILLOW ST. SEWER REPLACEMENT
SAN 2	W. ST. JOE SEWER REPLACEMENT
SAN 3	MECHANIC ST. SEWER REPLACEMENT
SAN 4	MARION ST. FORCE MAIN PLAN & PROFILE
SAN 5	MARION ST. FORCE MAIN PLAN & PROFILE
SAN 6	SPOT REPLACEMENT LOCATIONS
SAN 7	SPOT REPLACEMENTS & LINING LOCATIONS
SAN 8	LINING LOCATIONS
SAN 9	LINING LOCATIONS
SAN 10	LINING LOCATIONS
SAN 11	SANITARY SEWER TYPICAL DETAILS
SAN 12	WILLOW & W. ST. JOE TRAFFIC CONTROL
SAN 13	MECHANIC TRAFFIC CONTROL
SAN 14	MARION TRAFFIC CONTROL
SAN 15	SPOT REP./LINING TRAFFIC CONTROL
SAN 16	MDOT TYPICAL TRAFFIC CONTROL
LS 1	LIFT STATION - SITE PLAN
LS 2	LIFT STATION - PLANS & SECTIONS
LS 3	LIFT STATION - CIVIL DETAILS
LS 4	LIFT STATION - ELECTRICAL LEGEND
LS 5	LIFT STATION - ELECTRICAL NOTES & DETAILS
LS 6	LIFT STATION - ELECTRICAL SITE PLAN
LS 7	LIFT STATION - ONE-LINE & SCHEMATICS
LS 8	LIFT STATION - P&ID & PANEL POWER
LS 9	LIFT STATION - I/O LAYOUT
LS 10	LIFT STATION - ELECTRICAL DETAILS



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	02/10/23
ISSUED FOR RE-BID	03/17/23

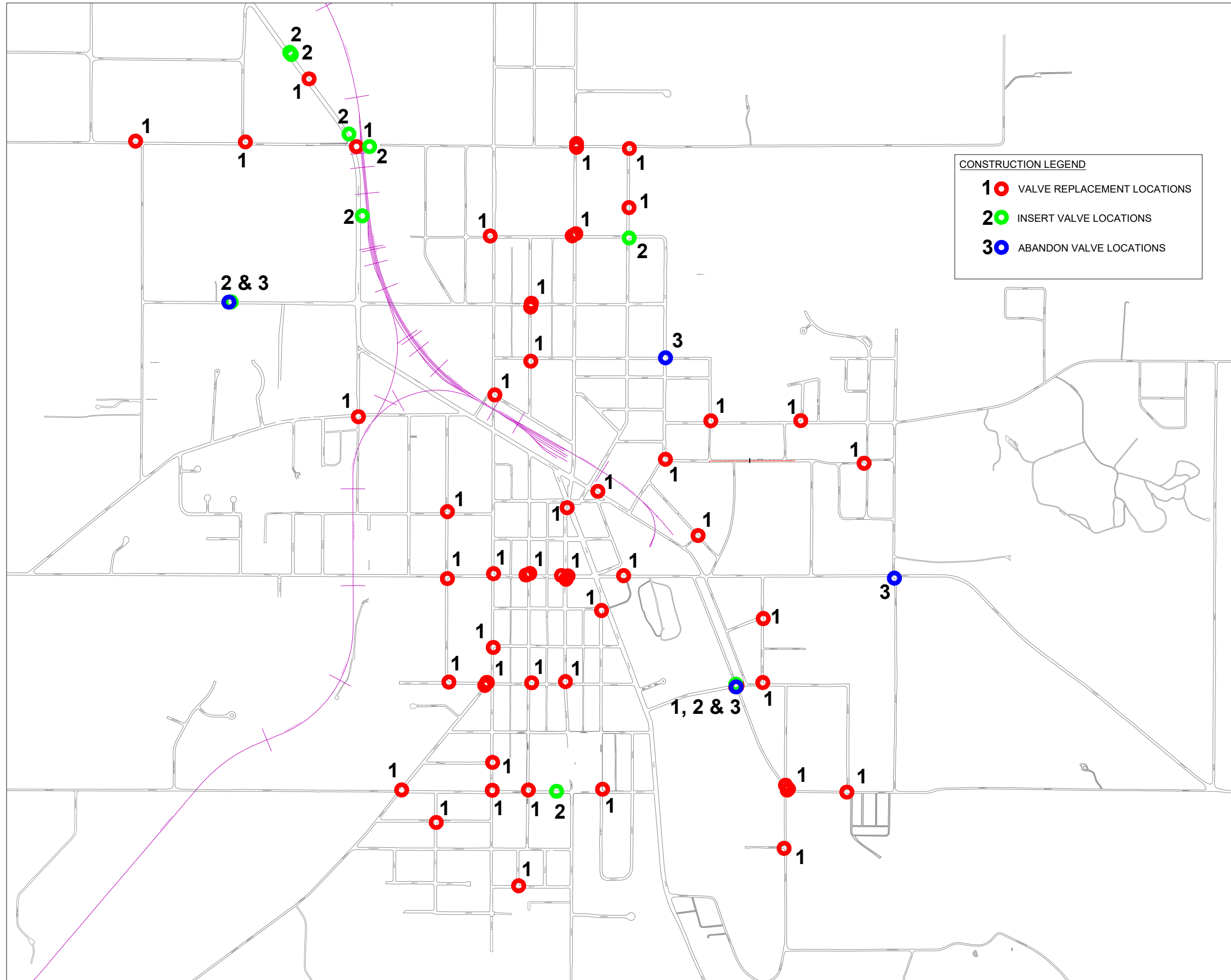
CITY OF HILLSDALE  
 HILLSDALE, MI  
 MORRY STREET  
 WATER MAIN IMPROVEMENTS  
 COVER SHEET

SCALE  
NTS

	NAME	DATE
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO.

**CS**



**CONSTRUCTION LEGEND**

- 1** ● VALVE REPLACEMENT LOCATIONS
- 2** ● INSERT VALVE LOCATIONS
- 3** ● ABANDON VALVE LOCATIONS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

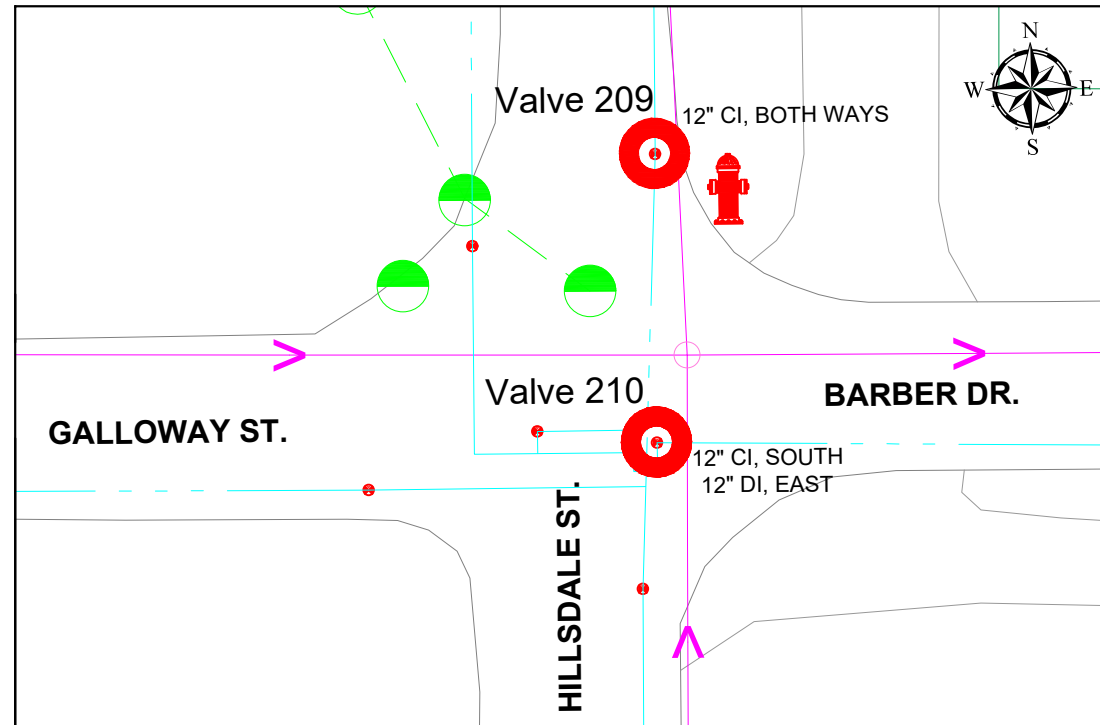
**CITY OF HILLSDALE**  
HILLSDALE, MI  
CITY WIDE  
WATER MAIN IMPROVEMENTS  
WATER VALVE WORK LOCATIONS

SCALE  
NTS

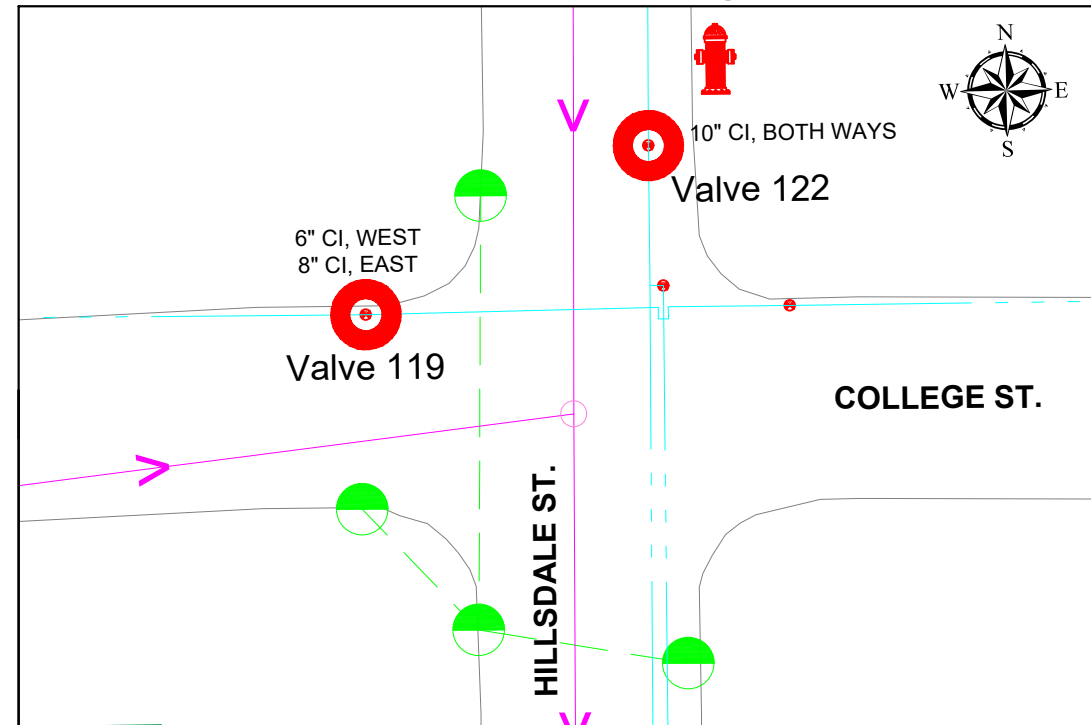
	NAME	DATE
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO.  
**WL**

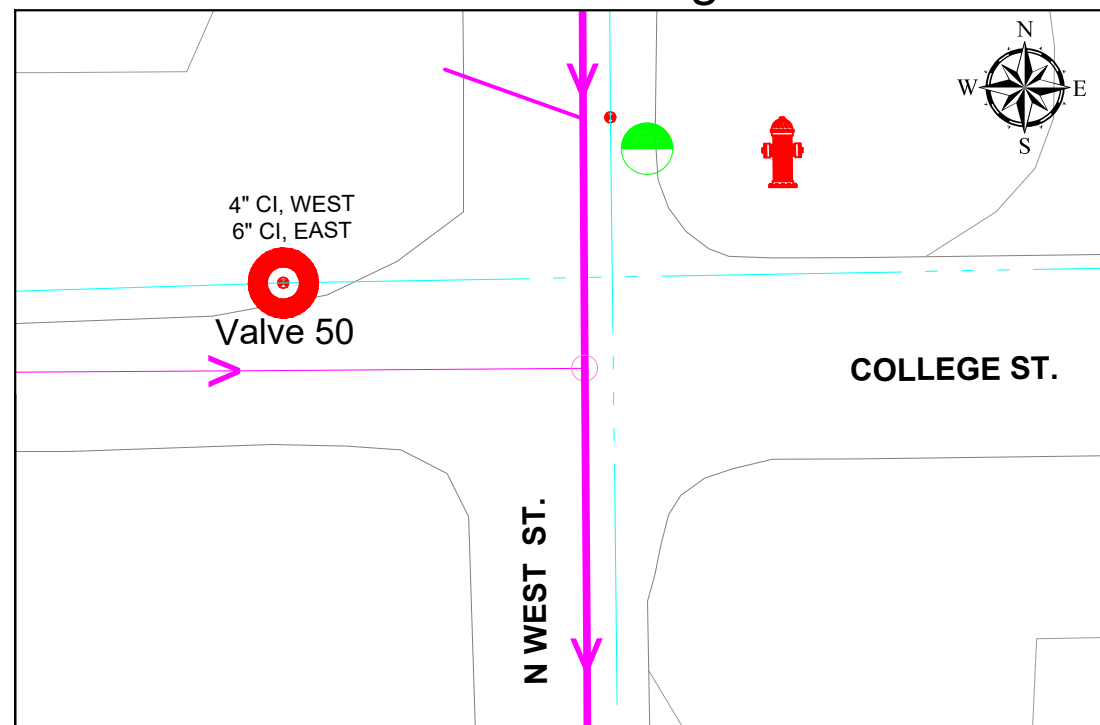
### Hillsdale / Barber



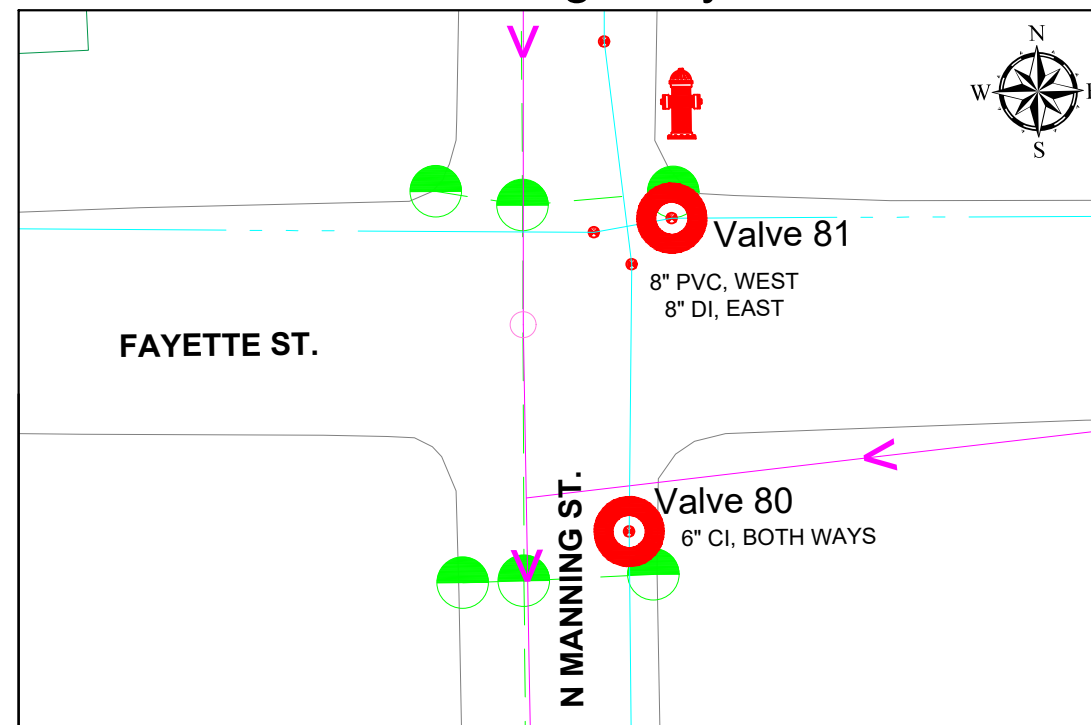
### Hillsdale / College



### N West / College



### N Manning / Fayette

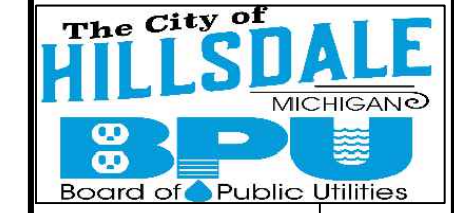


KEY	
SANITARY	→
WATER	—
STORM	- - -
VALVE REPLACEMENT LOCATION	●
VALVE INSERT LOCATION	○
VALVE ABANDON LOCATION	○

REFER TO W15 FOR TYPICAL CONSTRUCTION DETAILS AND W16 FOR TRAFFIC CONTROL TYPICALS



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

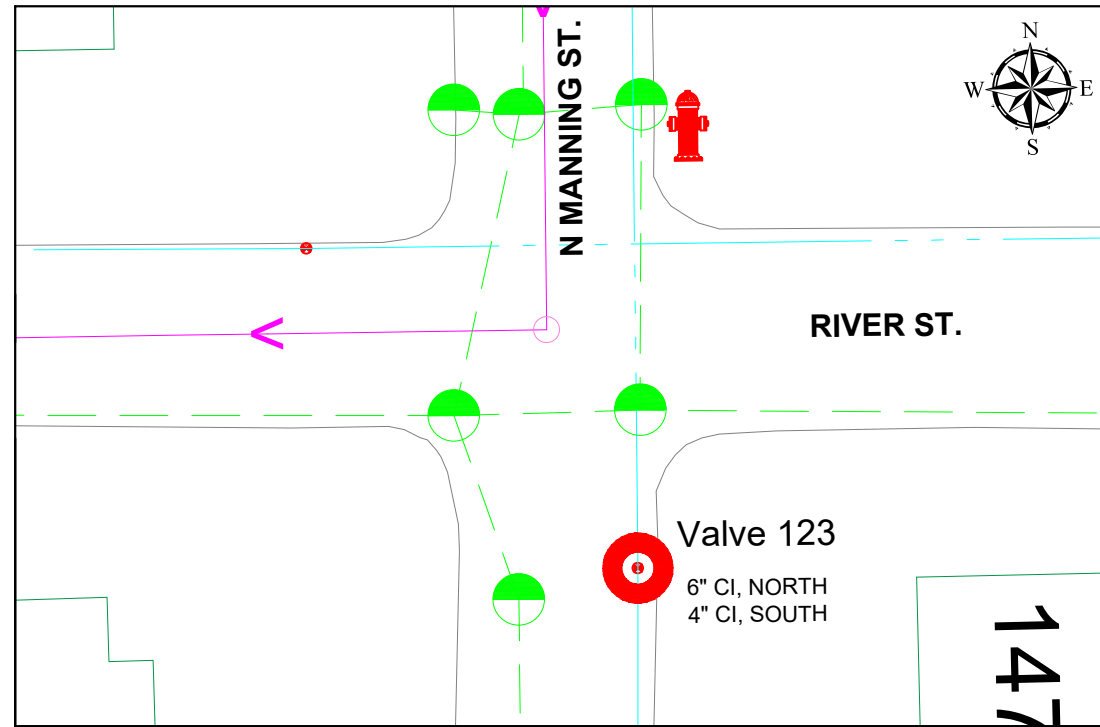
VALVES 50, 80, 81, 119, 122, 209, 210

DRAWING SCALE:  
NOT TO SCALE

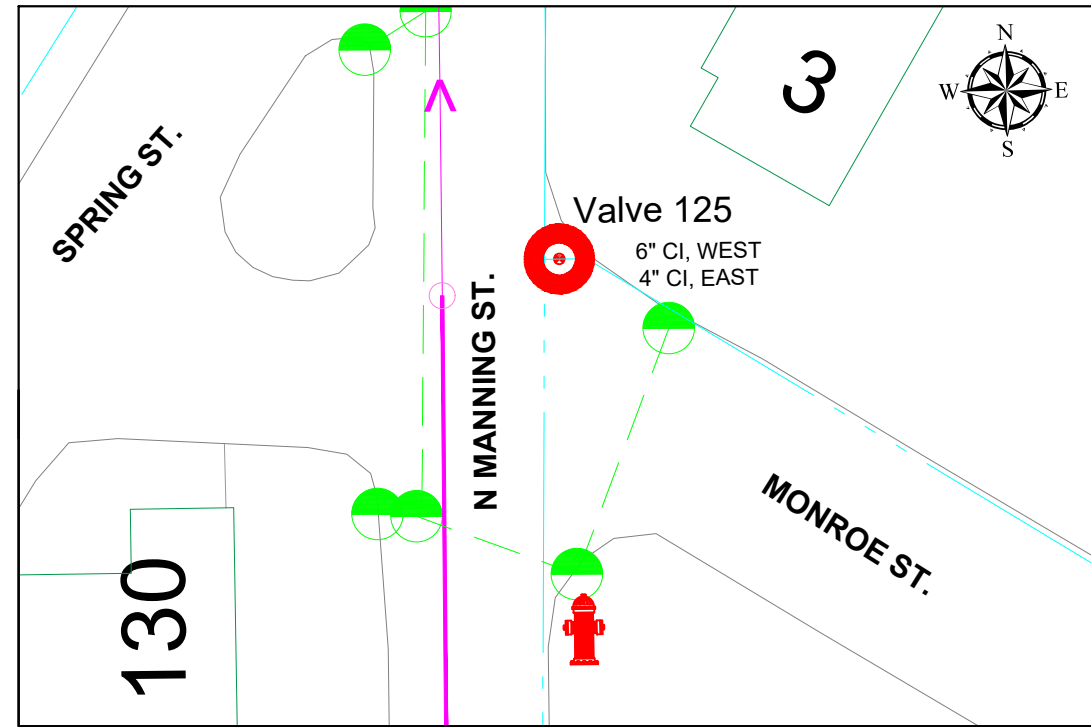
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W1**

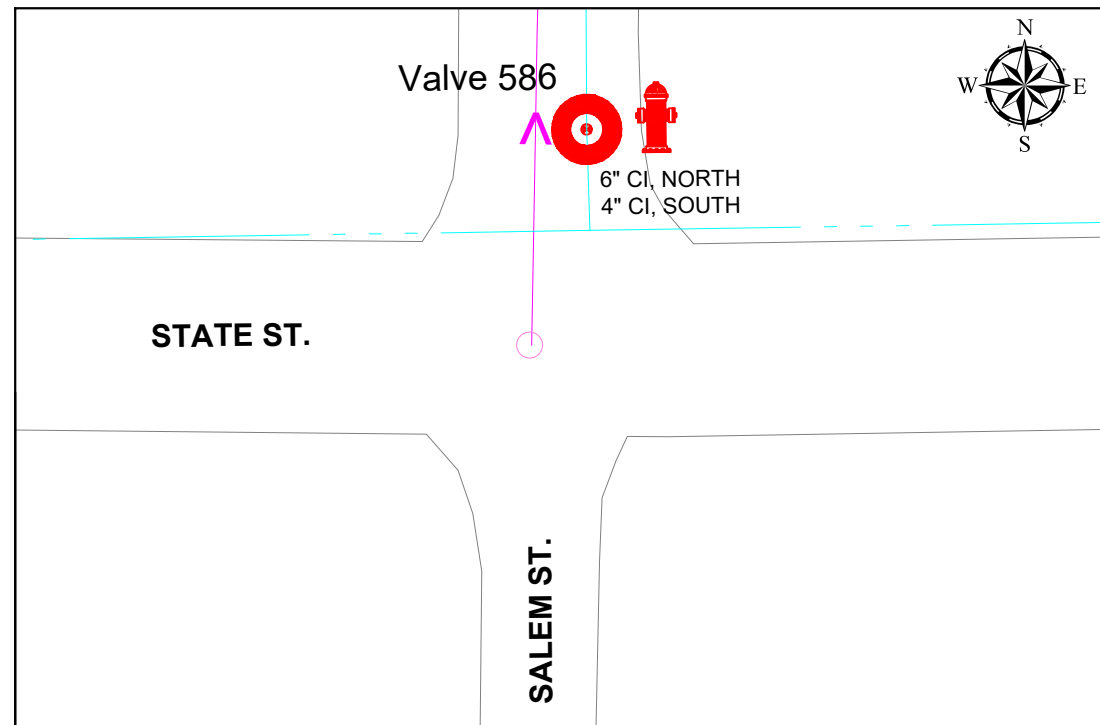
### N Manning / River



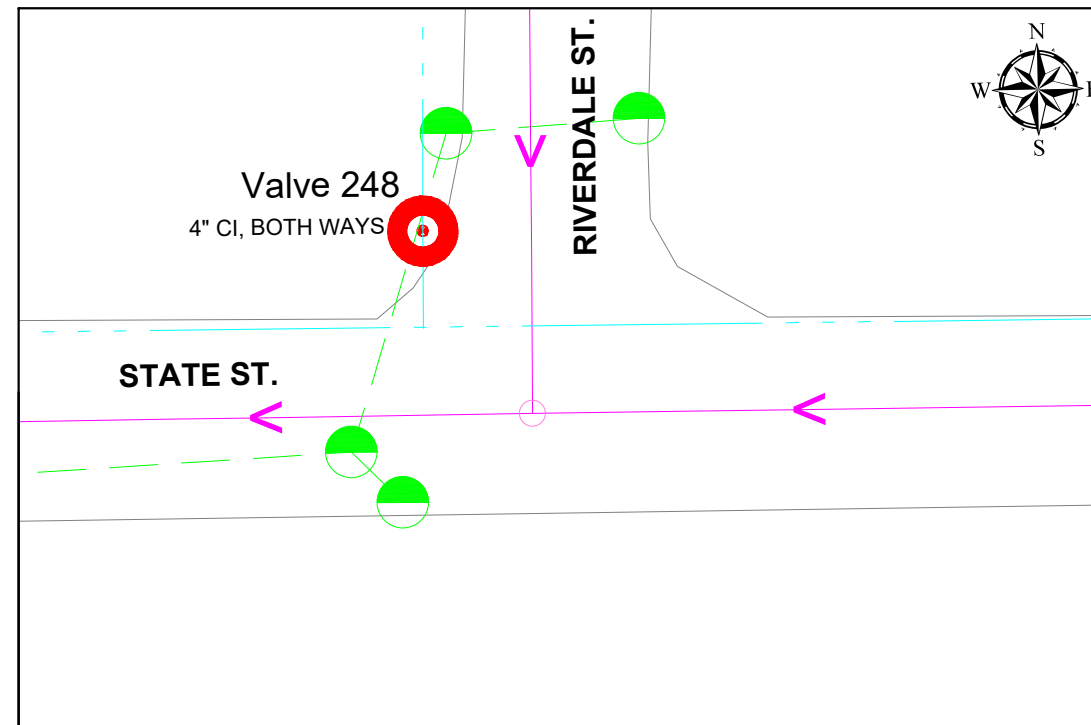
### N West / Monroe



### State / Salem



### State / Riverdale



KEY	
SANITARY	→
WATER	---
STORM	- - -
VALVE REPLACEMENT LOCATION	●
VALVE INSERT LOCATION	○
VALVE ABANDON LOCATION	○

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
WATER VALVE REPLACEMENTS  
VALVES 123, 125, 248, 586

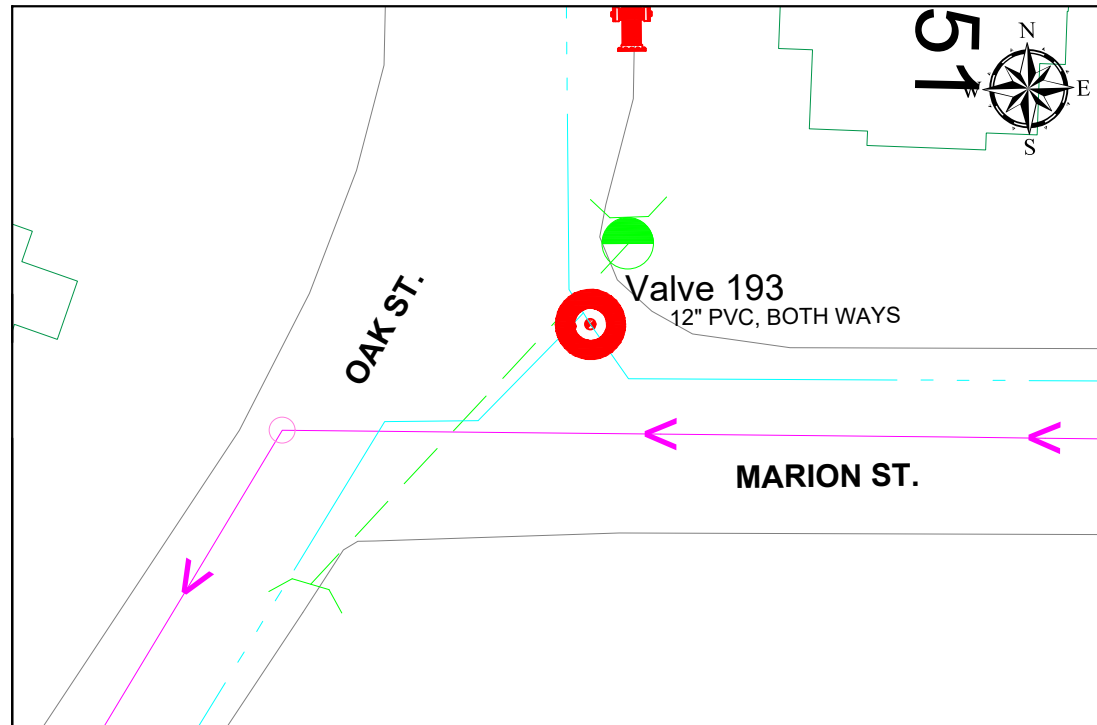
DRAWING SCALE:  
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DESIGNED	KLK	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

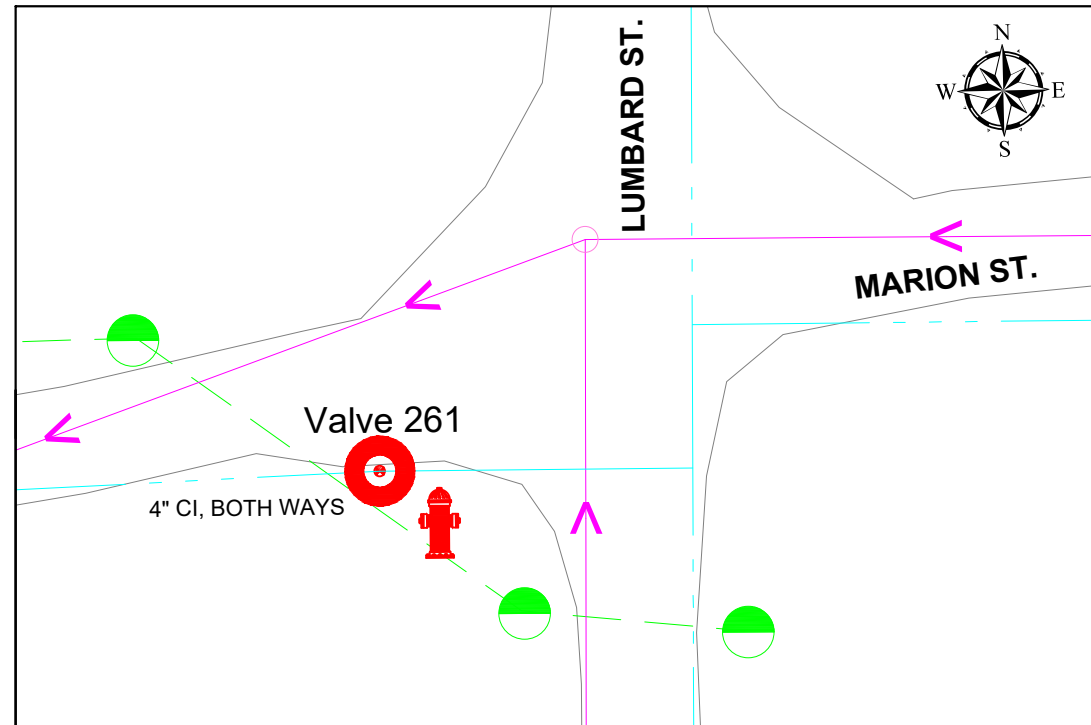
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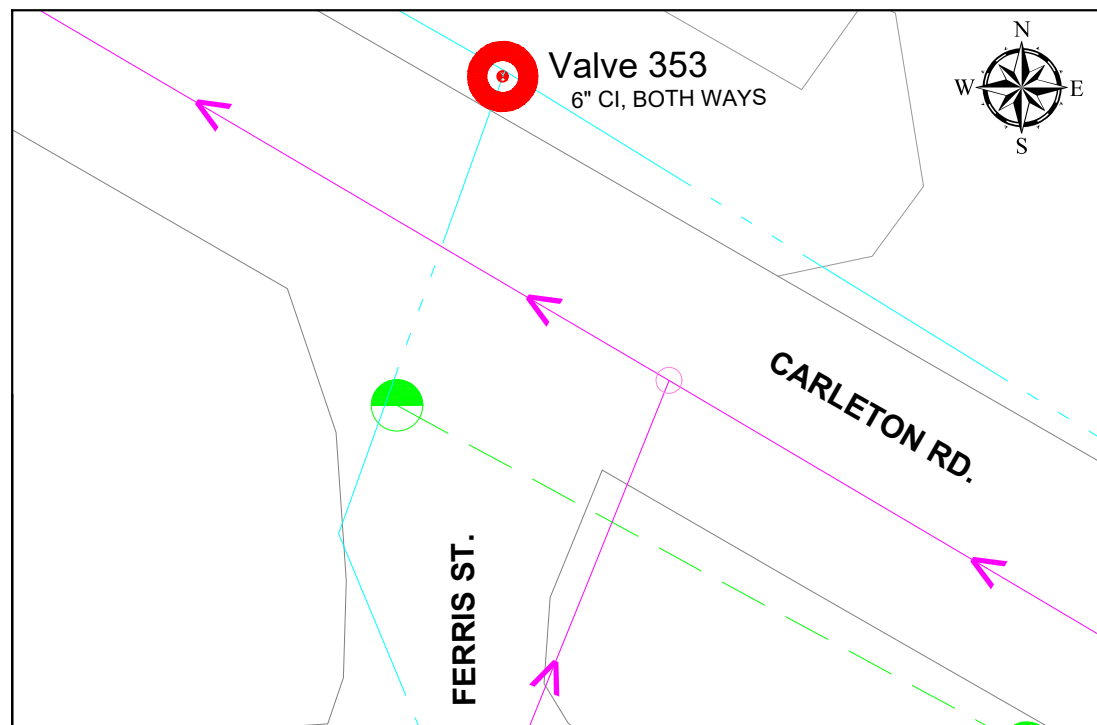
Marion / Oak



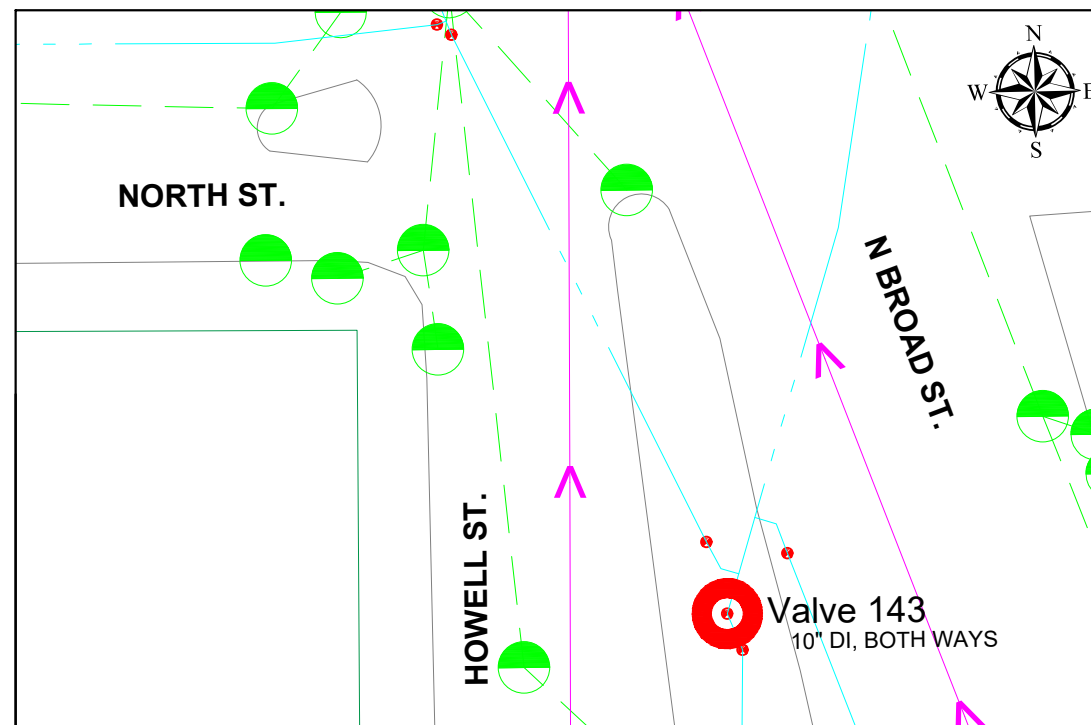
Marion / Lumbard



Carleton / Ferris



Howell / North



KEY			
SANITARY	→	VALVE REPLACEMENT LOCATION	●
WATER	- - -	VALVE INSERT LOCATION	●
STORM	- - -	VALVE ABANDON LOCATION	●

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

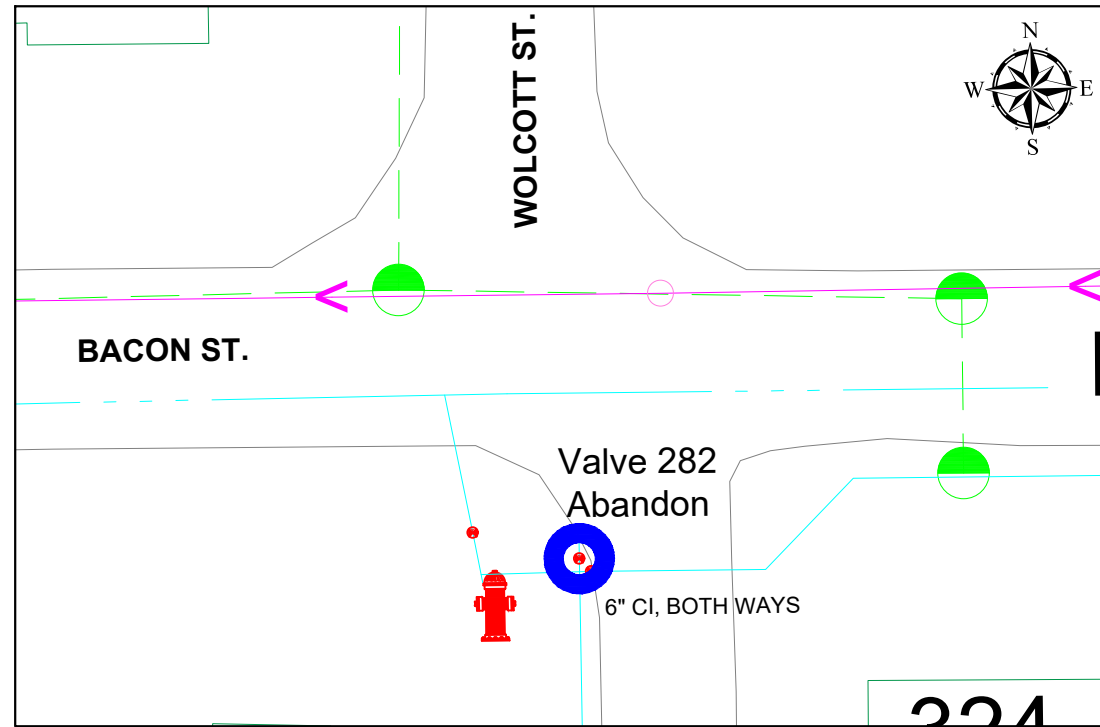
CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
WATER VALVE REPLACEMENTS  
VALVES 143, 193, 261, 353

DRAWING SCALE:  
NOT TO SCALE

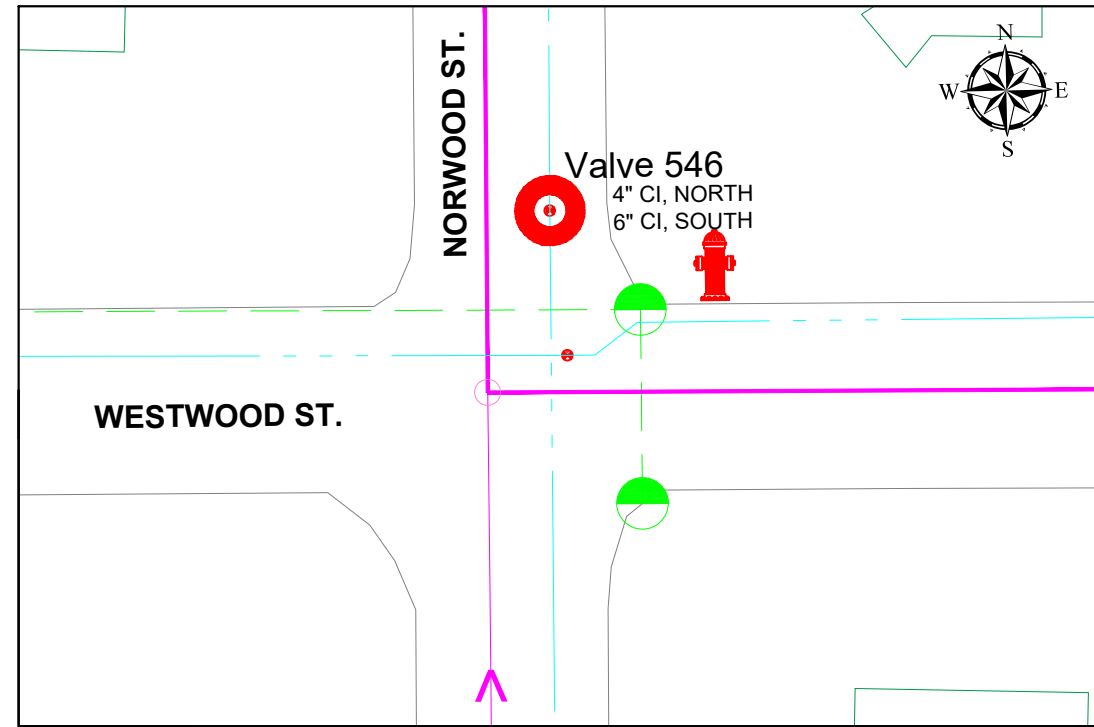
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W3**

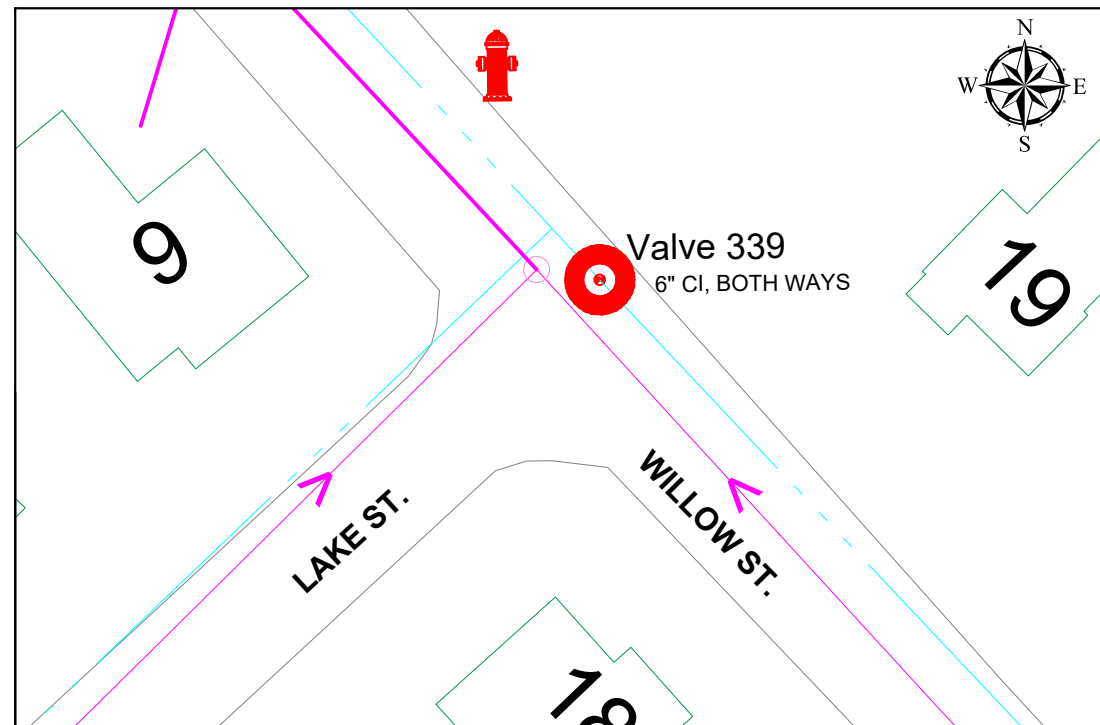
### Bacon / Wolcott



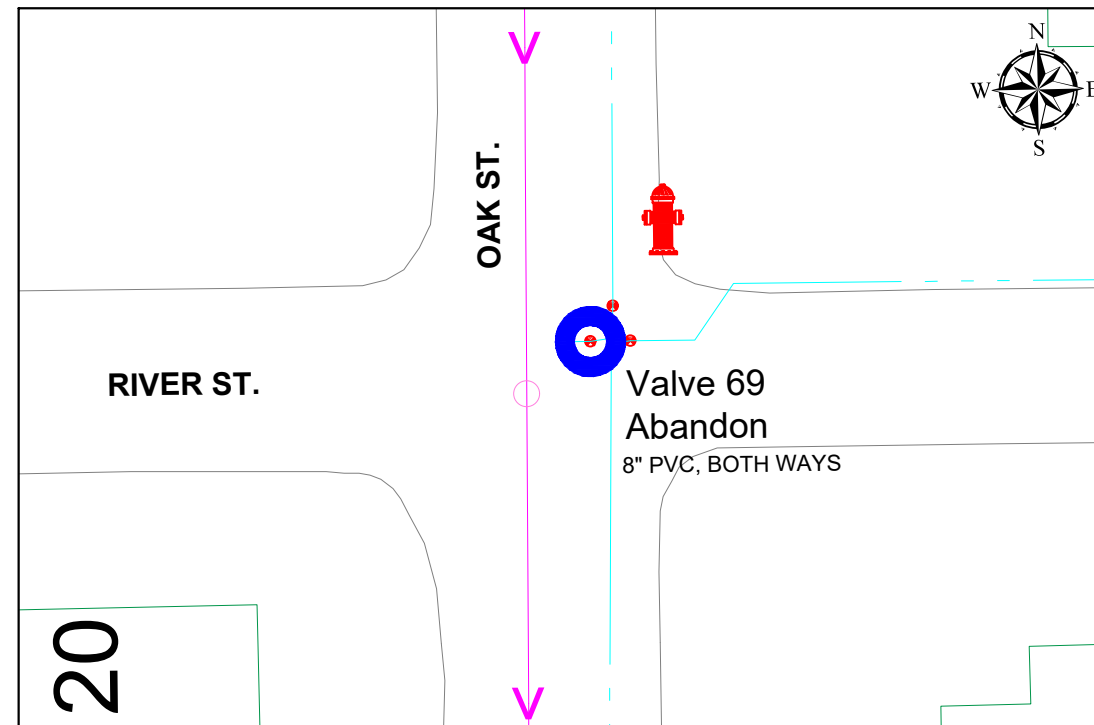
### Westwood / Norwood



### Lake / Willow



### Oak / River



KEY	
SANITARY	→ → →
WATER	— · — · — ·
STORM	- - - - -
VALVE REPLACEMENT LOCATION	● (Red)
VALVE INSERT LOCATION	● (Green)
VALVE ABANDON LOCATION	● (Blue)

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

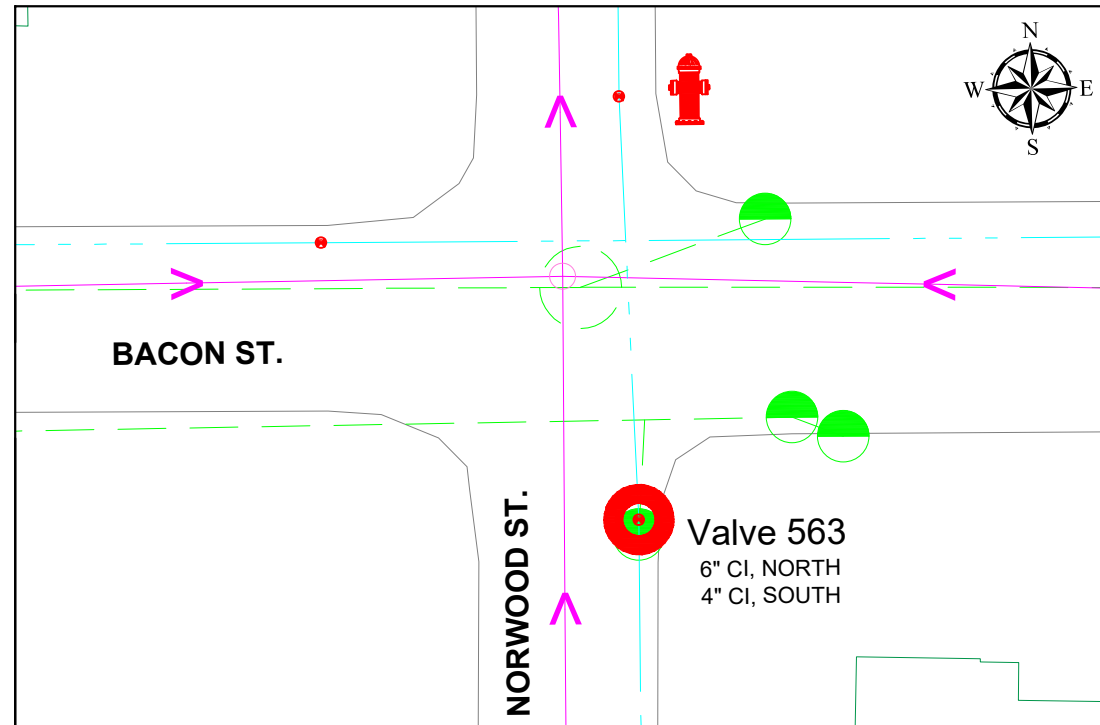
VALVES 69, 282, 339, 546

DRAWING SCALE:  
NOT TO SCALE

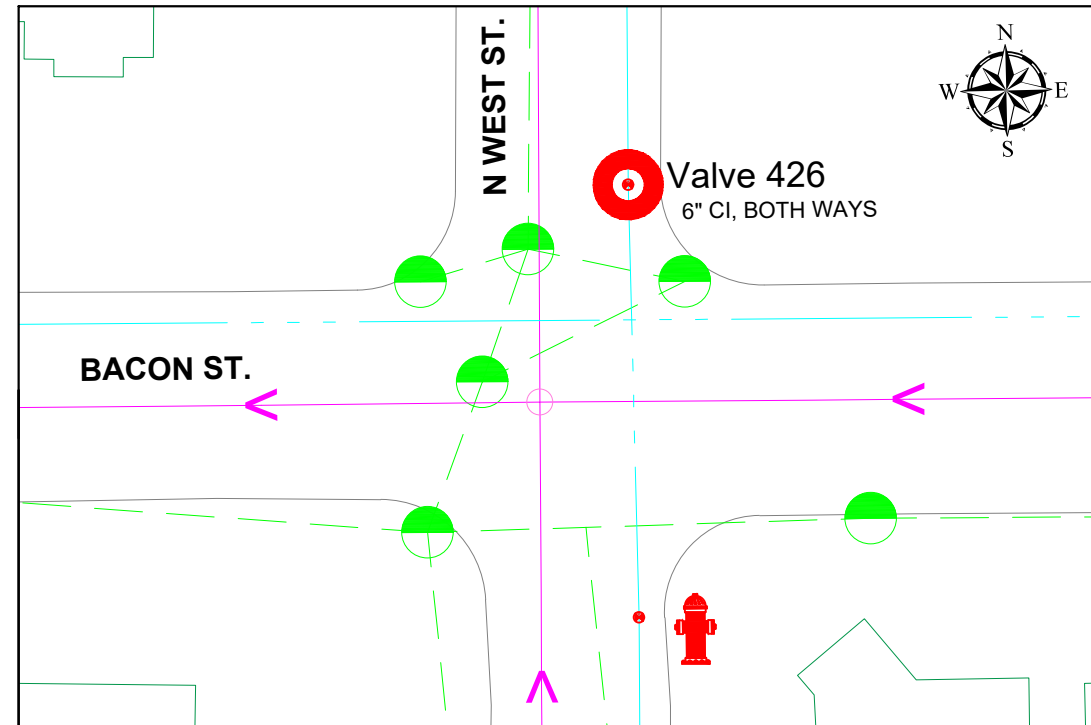
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W4**

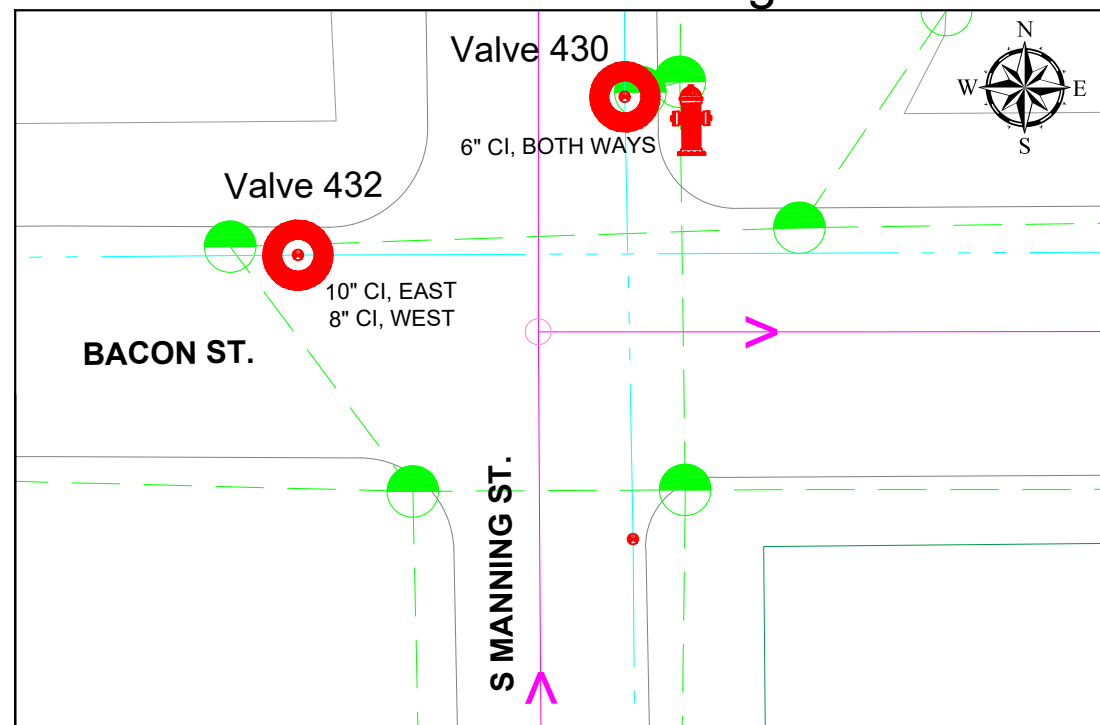
### Bacon / Norwood



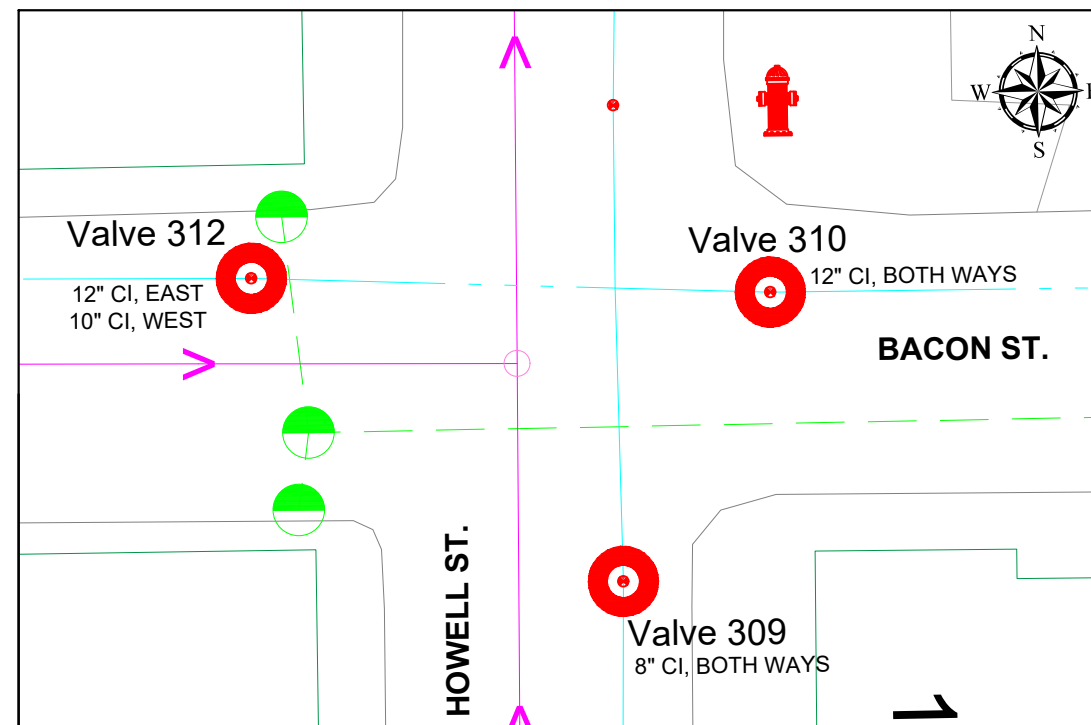
### Bacon / West



### Bacon / Manning



### Bacon / Howell



KEY	
SANITARY	→ → →
WATER	— · — · —
STORM	- - - - -
VALVE REPLACEMENT LOCATION	● (Red)
VALVE INSERT LOCATION	● (Green)
VALVE ABANDON LOCATION	● (Blue)

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

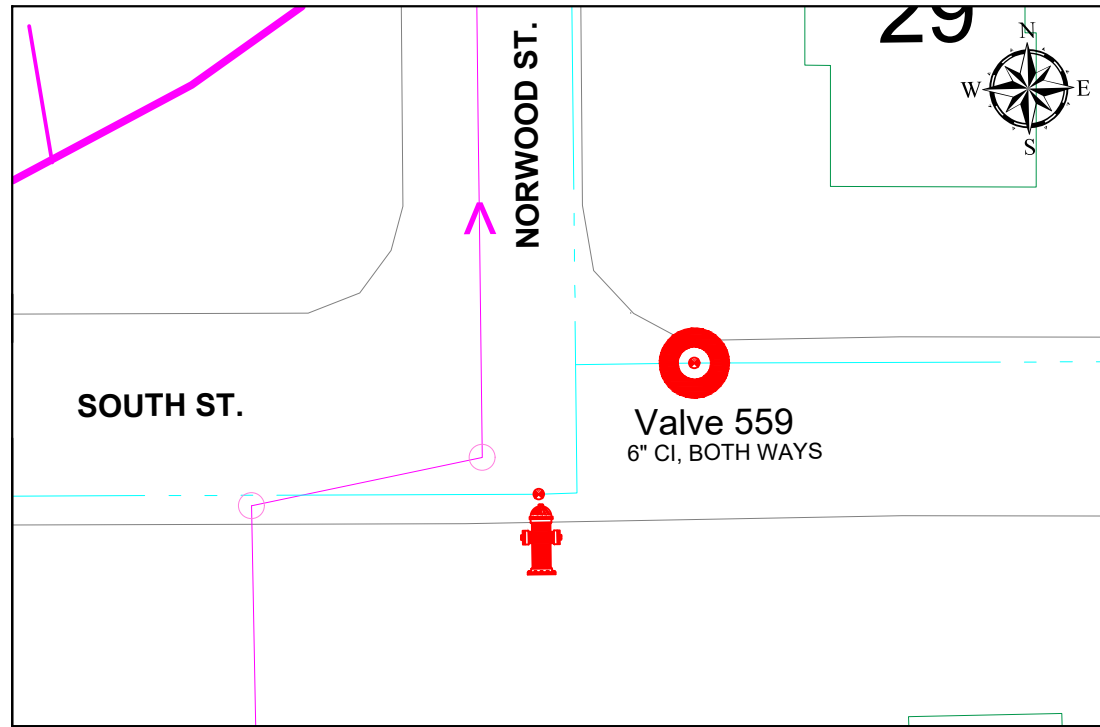
VALVES 309, 310, 312, 426, 430, 432, 563

DRAWING SCALE:  
NOT TO SCALE

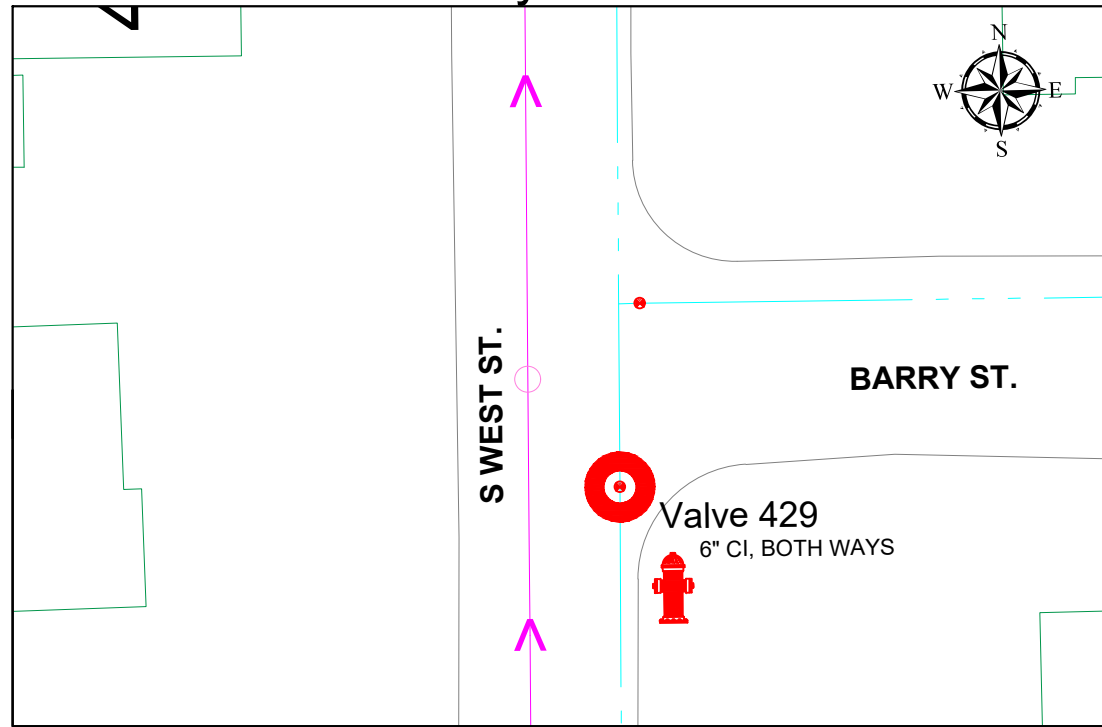
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W5**

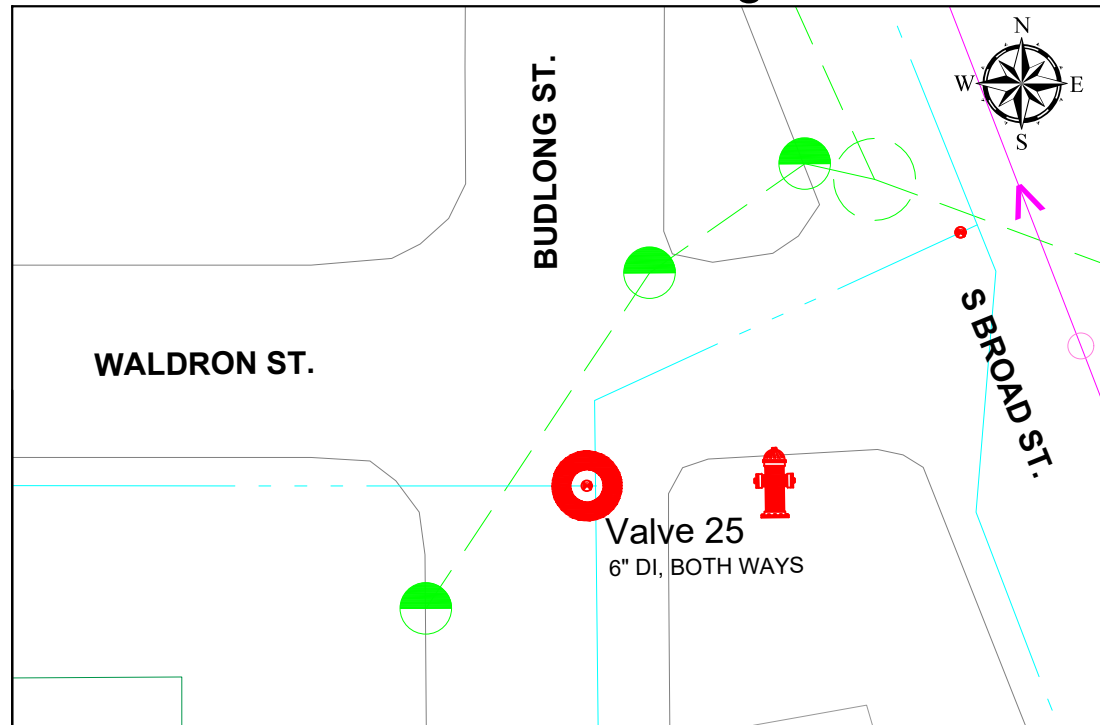
South / Norwood



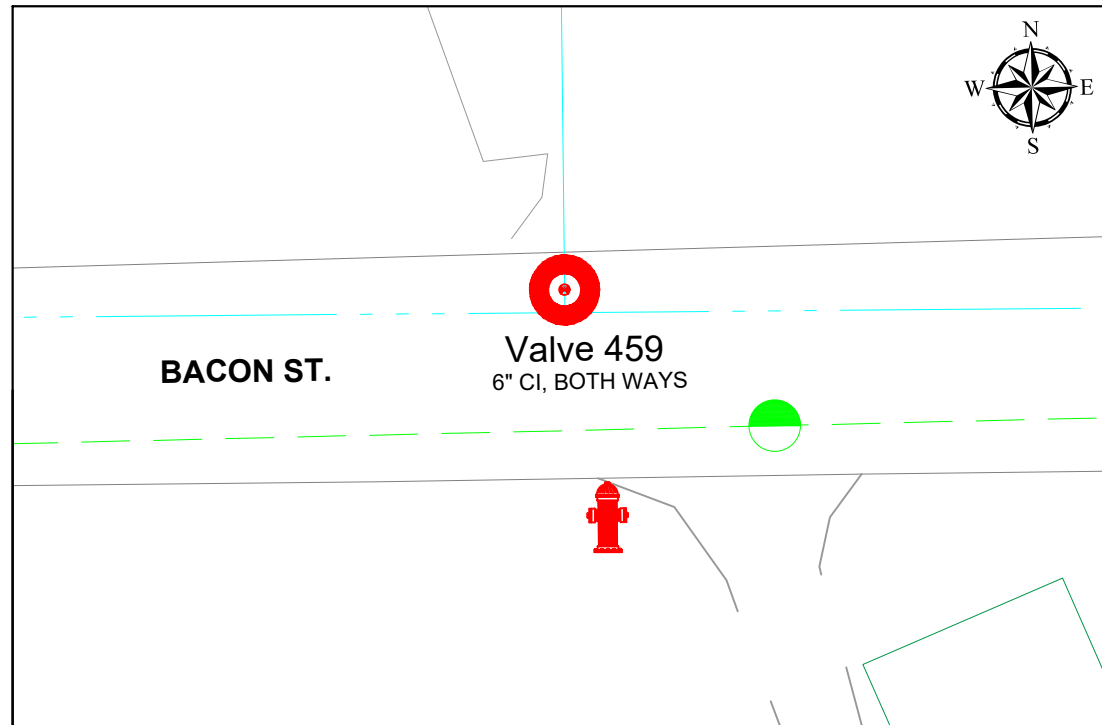
Barry / West



Waldron / Budlong



Bacon / E of Broad



KEY	
SANITARY	→ → →
WATER	- - - - -
STORM	- - - - -
VALVE REPLACEMENT LOCATION	●
VALVE INSERT LOCATION	●
VALVE ABANDON LOCATION	●

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

VALVES 25, 429, 459, 559

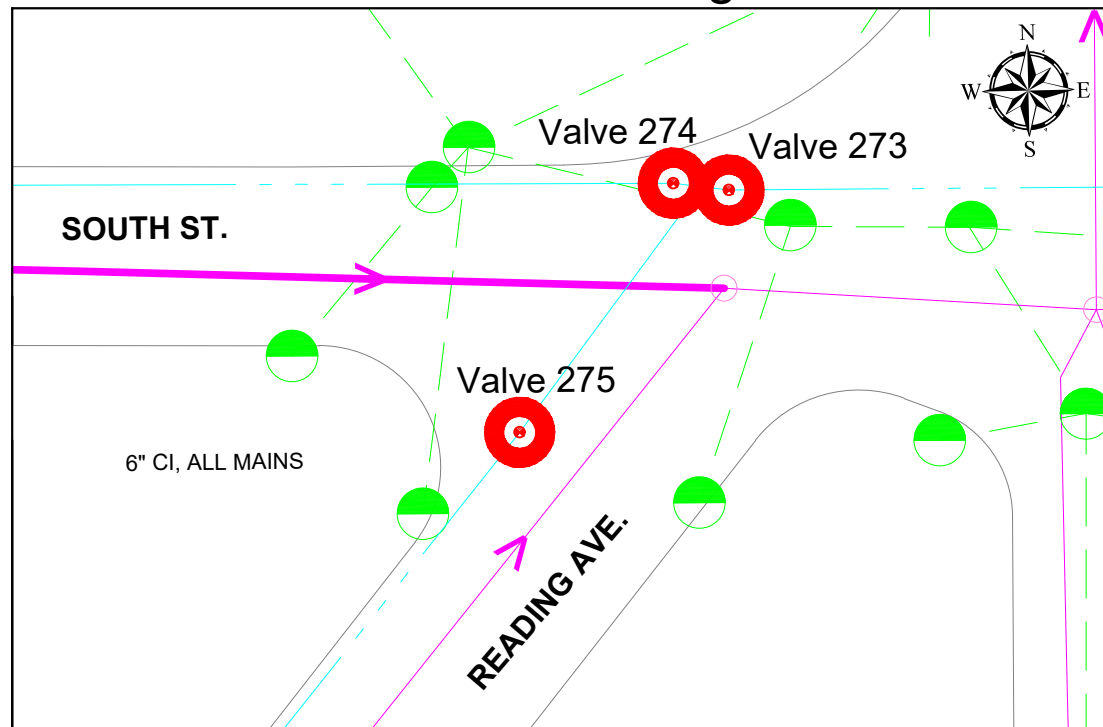
DRAWING SCALE:  
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DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

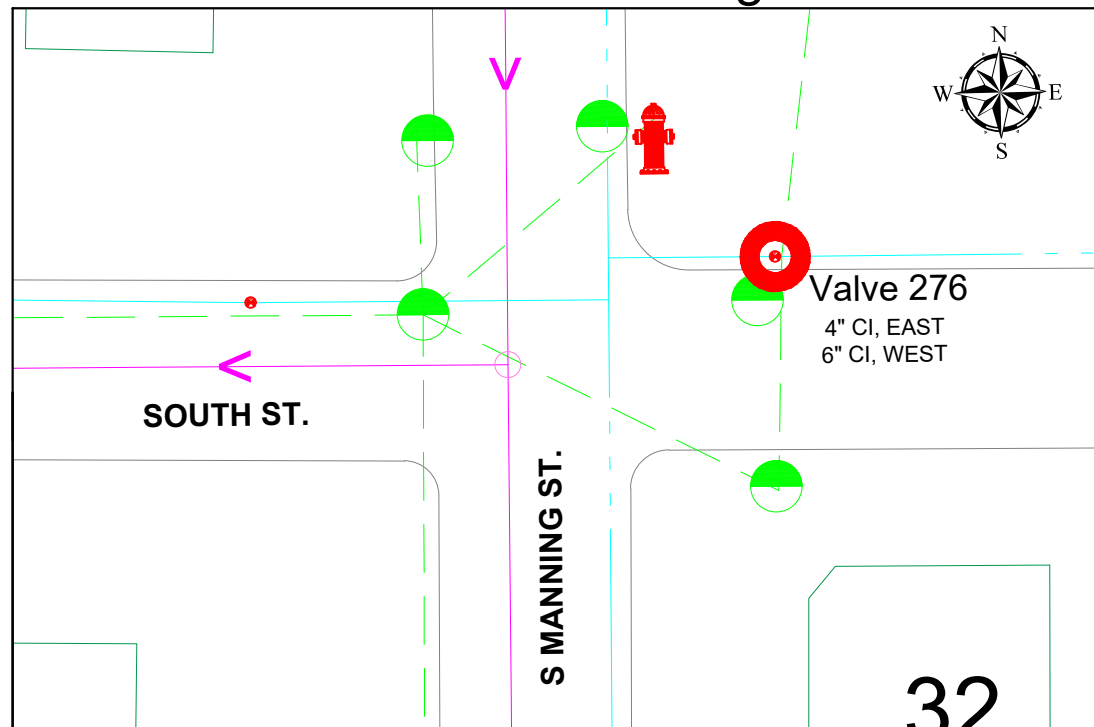
DRAWING NO. **W6**



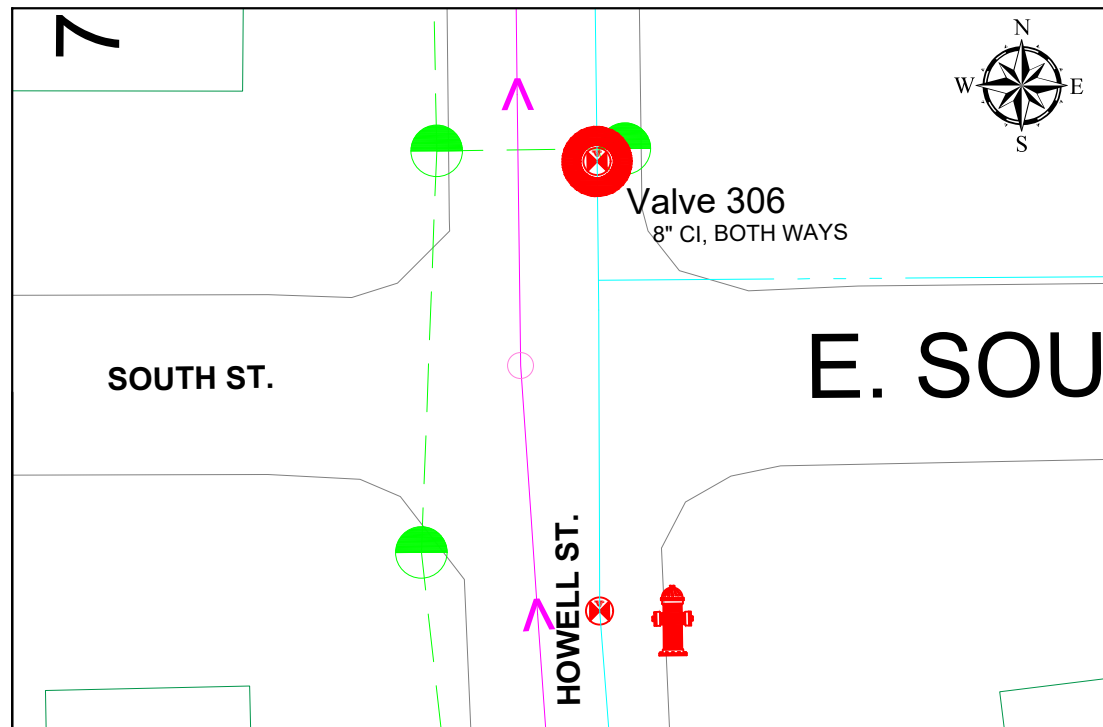
### South / Reading



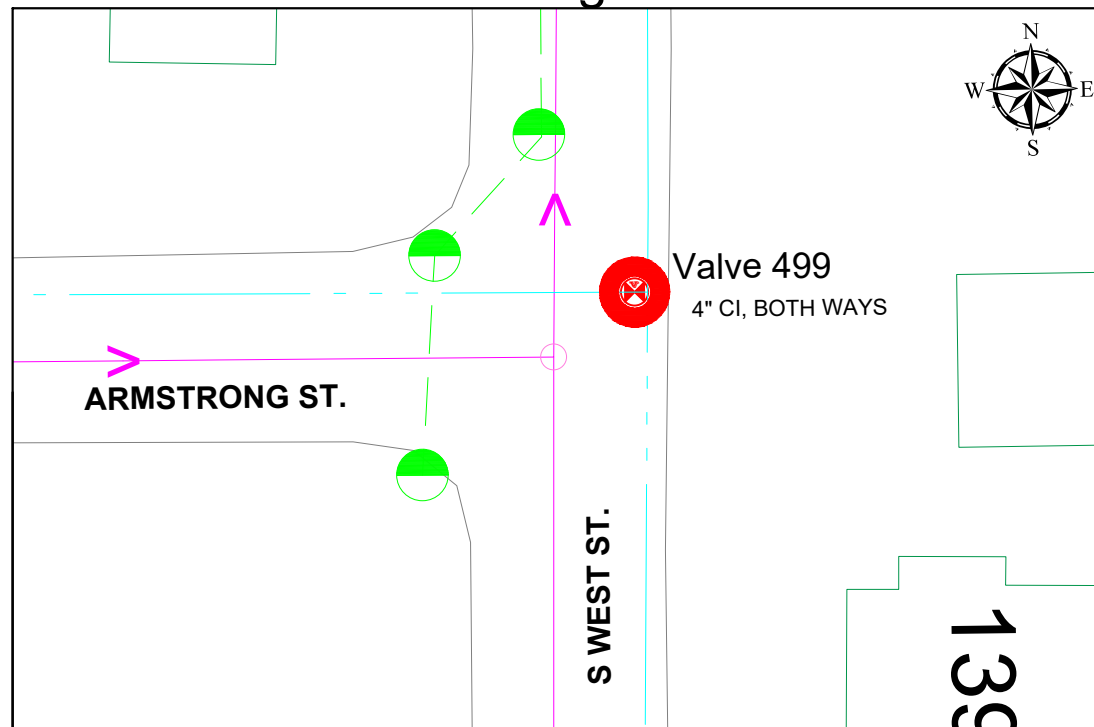
### South / Manning



### South / Howell



### Armstrong / West



KEY	
SANITARY	→
WATER	- - -
STORM	- - -
VALVE REPLACEMENT LOCATION	●
VALVE INSERT LOCATION	○
VALVE ABANDON LOCATION	○

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

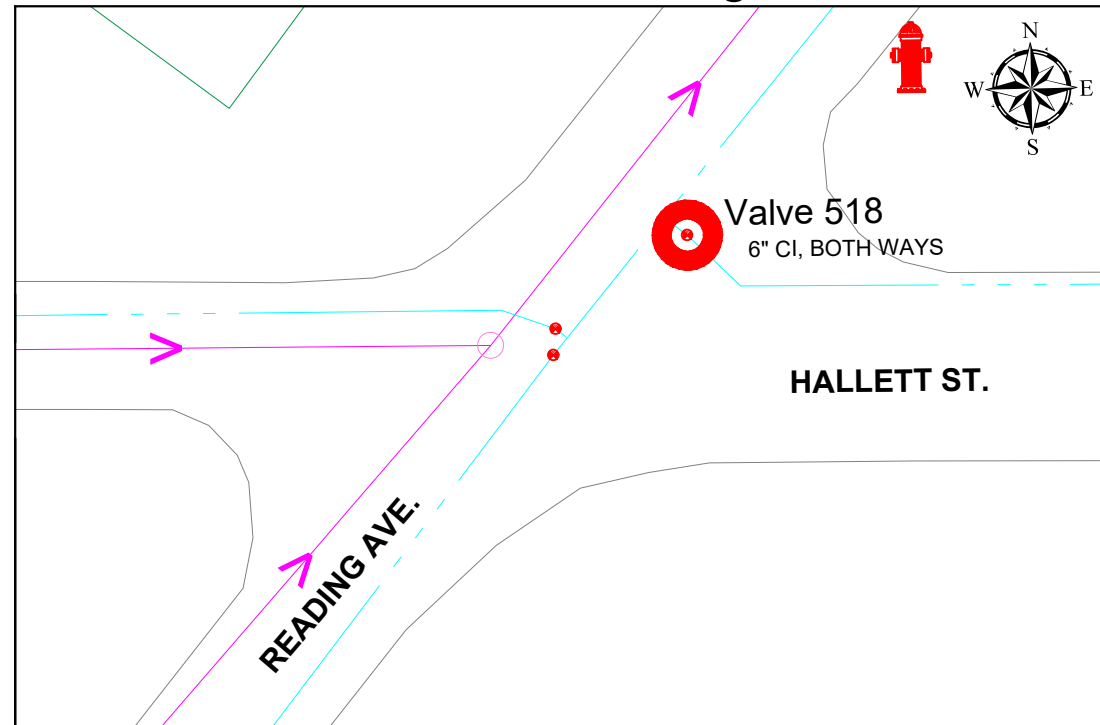
VALVES 273, 274, 275, 276, 306, 499

DRAWING SCALE:  
NOT TO SCALE

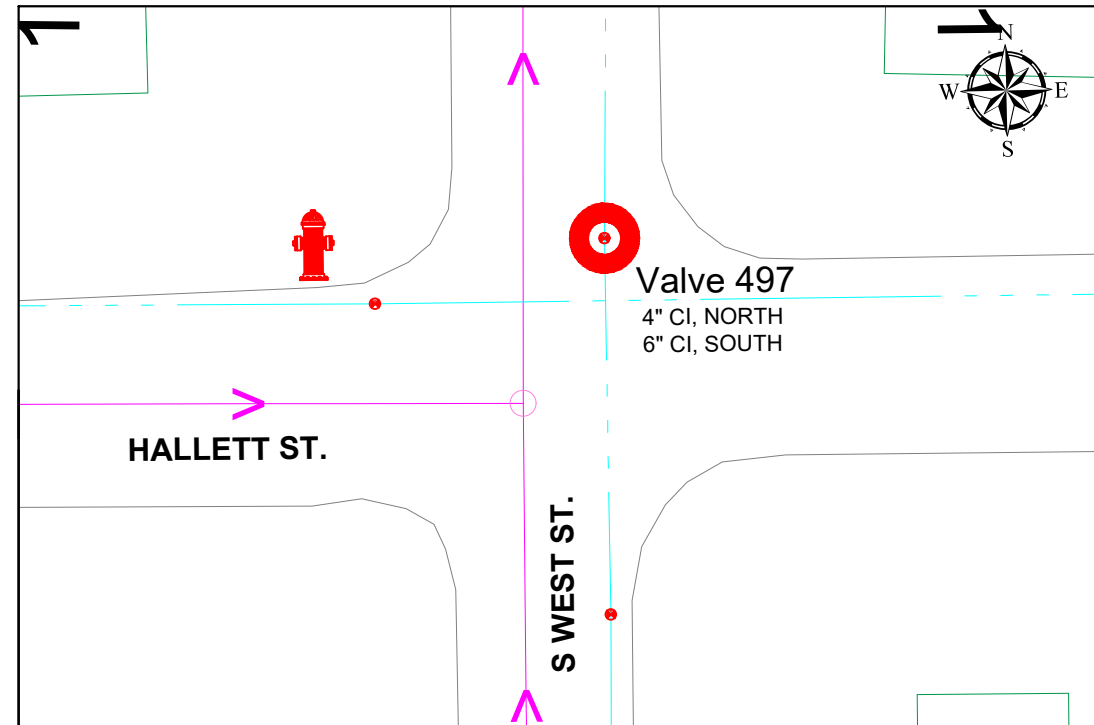
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W7**

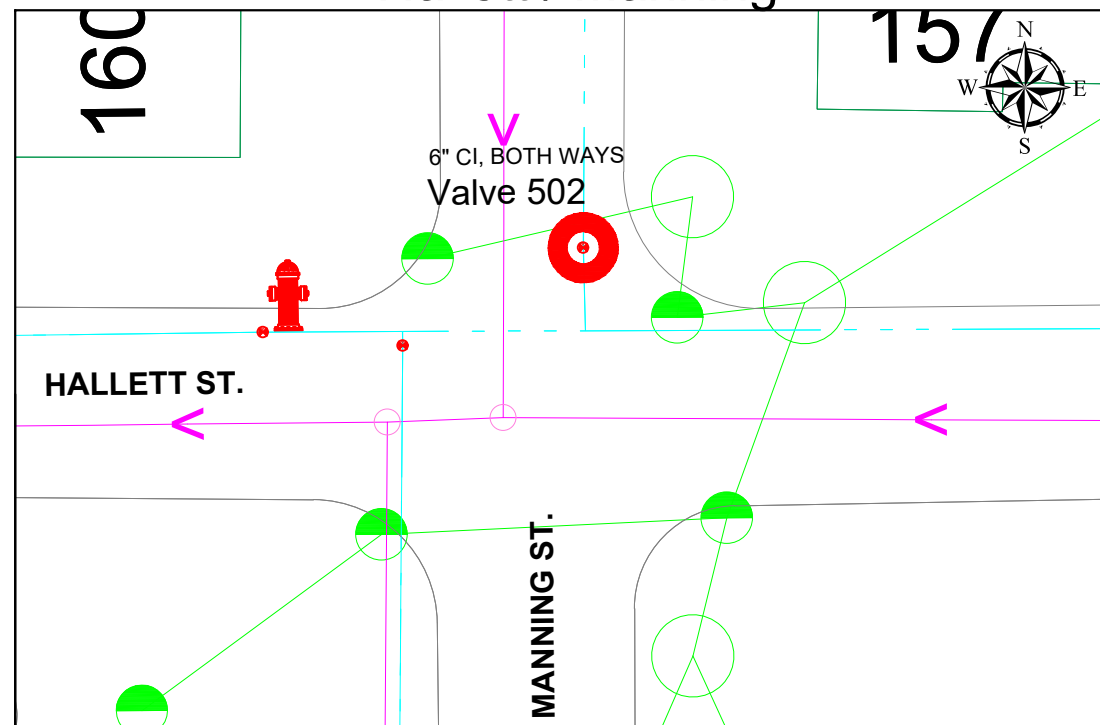
### Hallett / Reading



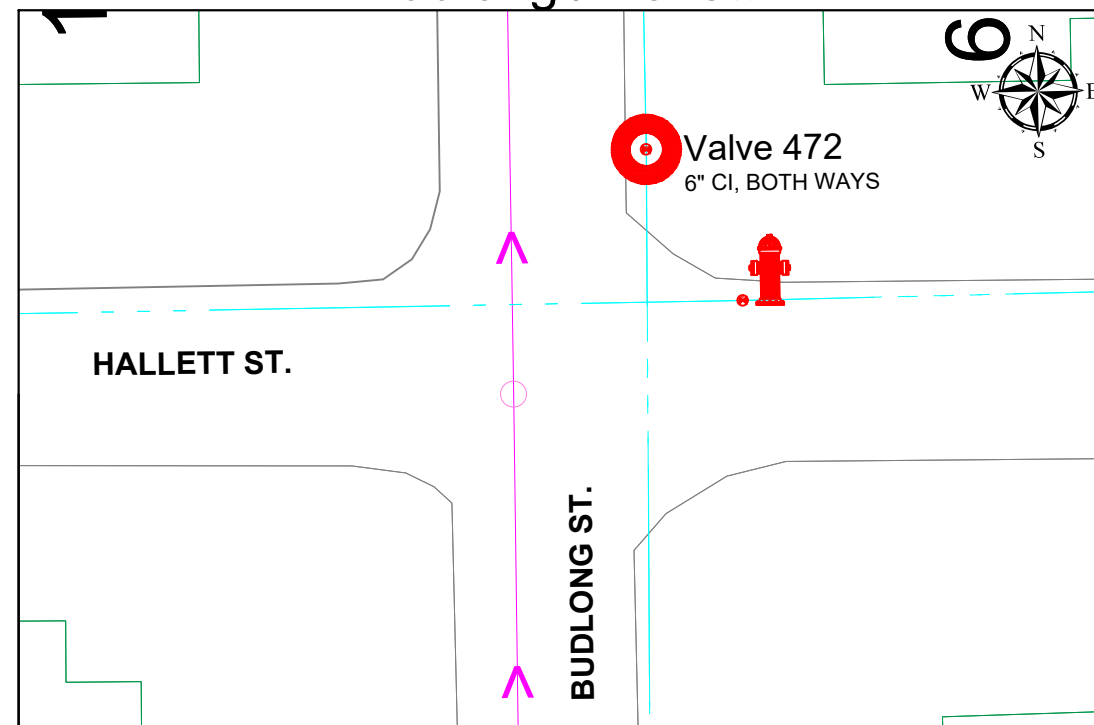
### Hallett / West



### Hallett / Manning



### Budlong / Hallett



KEY			
SANITARY	→	VALVE REPLACEMENT LOCATION	●
WATER	- - -	VALVE INSERT LOCATION	●
STORM	- - -	VALVE ABANDON LOCATION	●

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

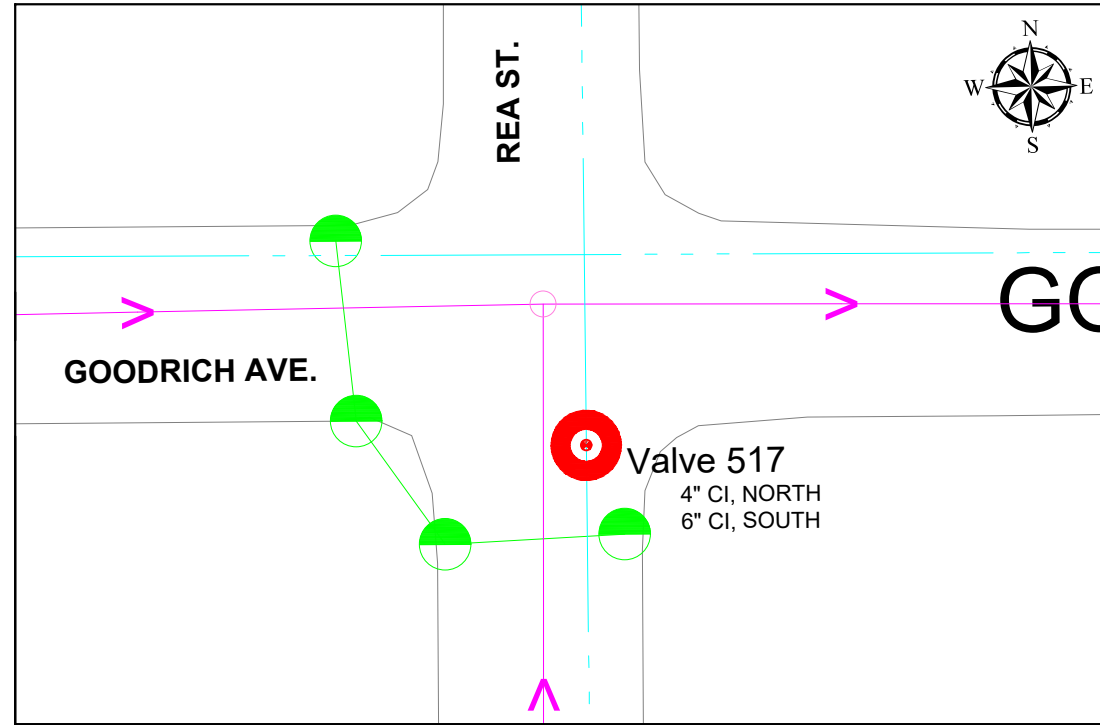
VALVES 472, 497, 502, 518

DRAWING SCALE:  
NOT TO SCALE

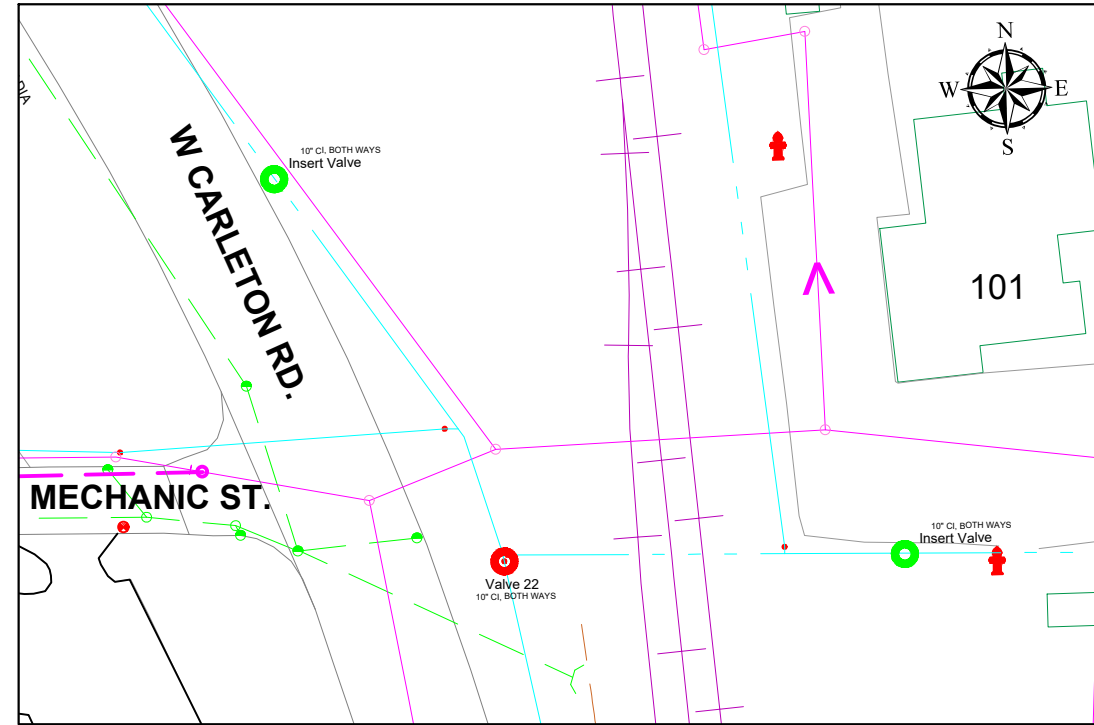
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W8**

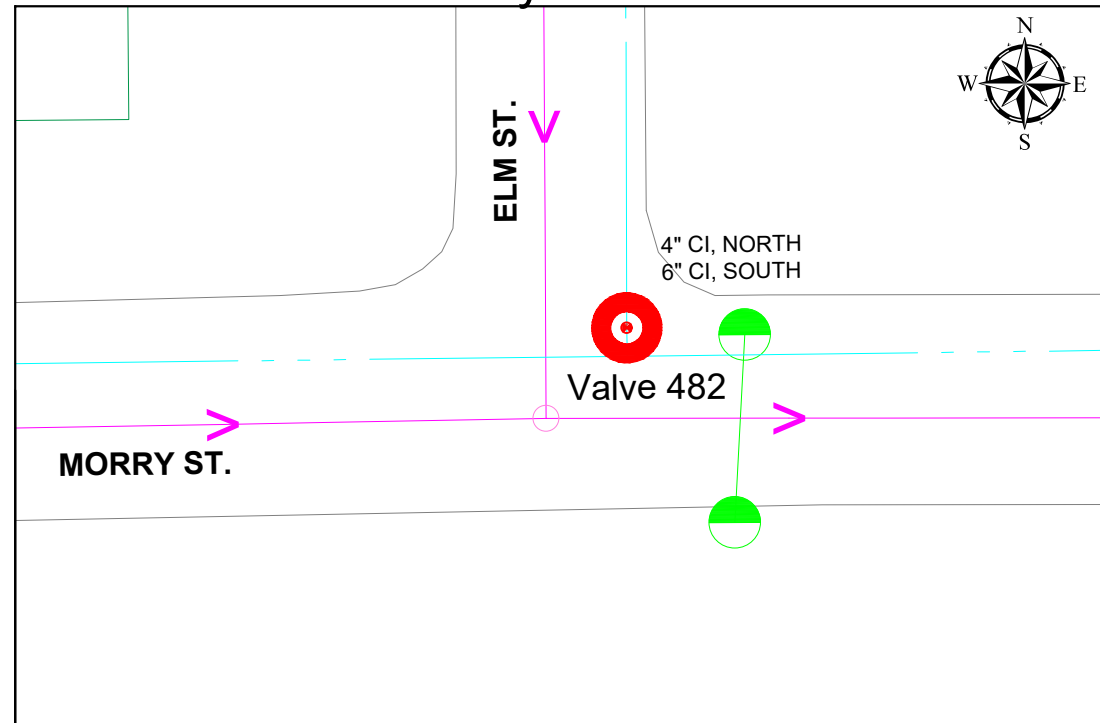
Goodrich / Rea



Mechanic / W Carleton



Morry / Elm



Lopresto / Griswold



KEY	
SANITARY	→ → →
WATER	- - - - -
STORM	- - - - -
VALVE REPLACEMENT LOCATION	● (Red)
VALVE INSERT LOCATION	● (Green)
VALVE ABANDON LOCATION	● (Blue)

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
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ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

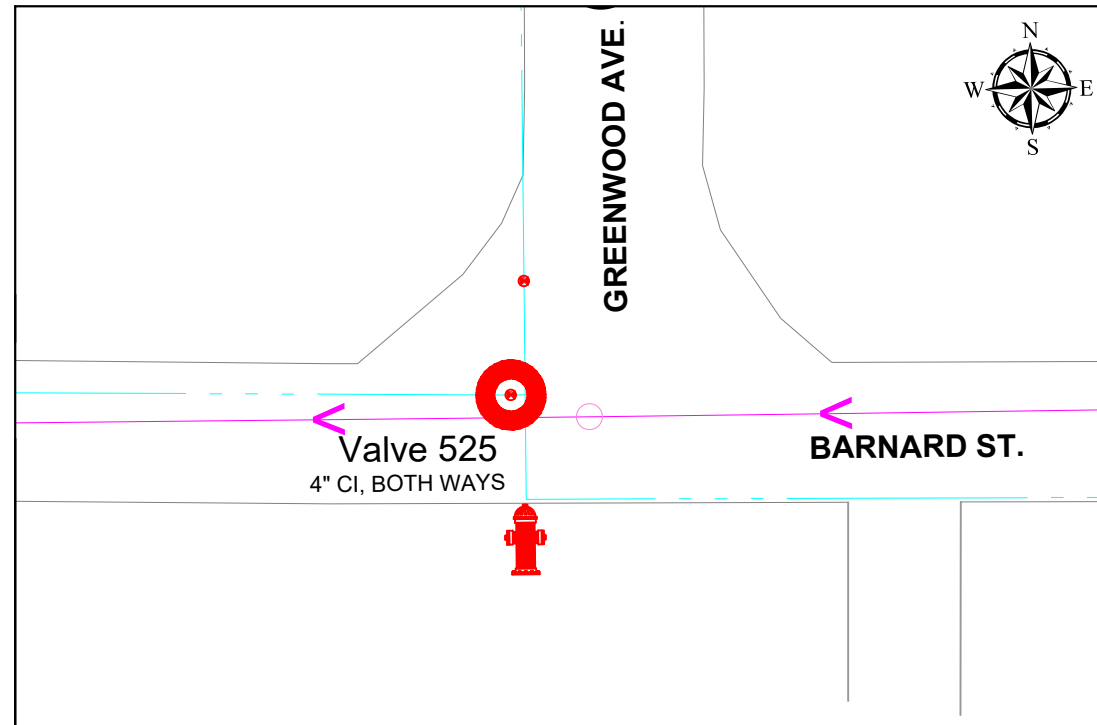
VALVES 22, 336, 482, 517

DRAWING SCALE:  
NOT TO SCALE

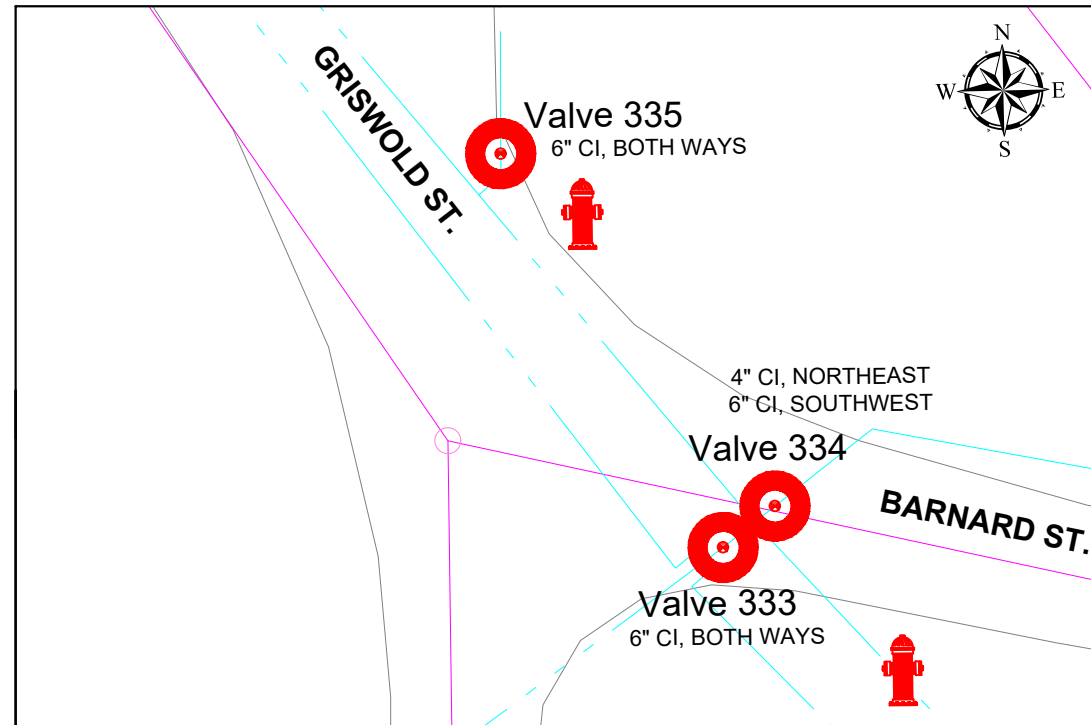
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DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W9**

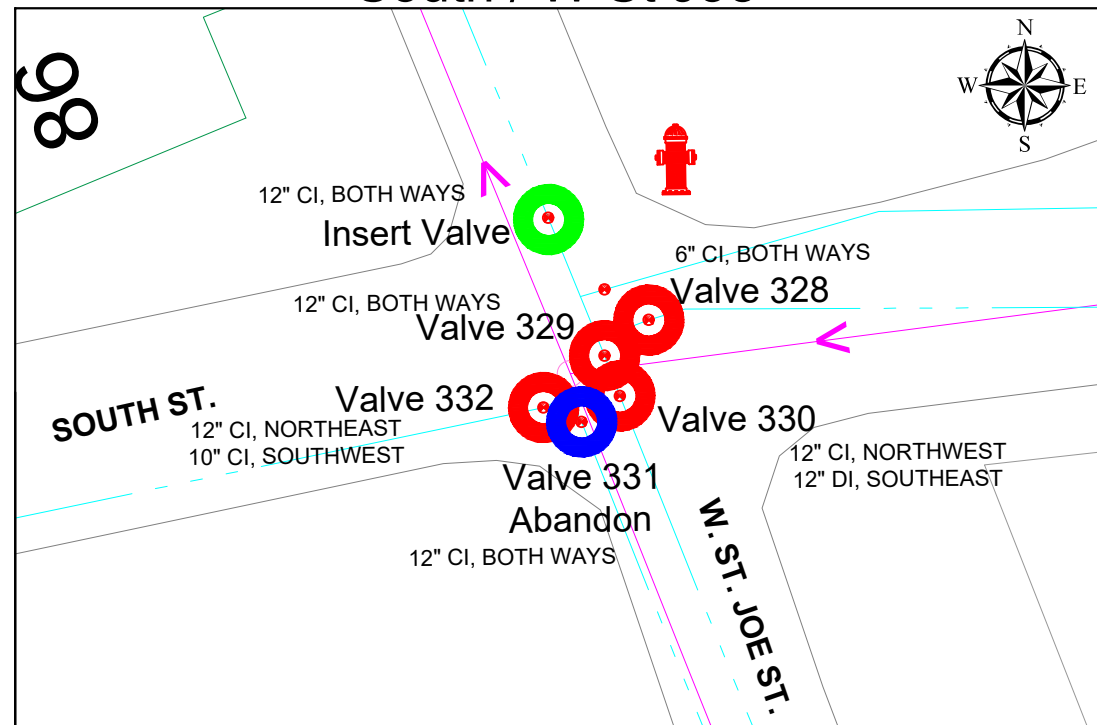
### Greenwood / Barnard



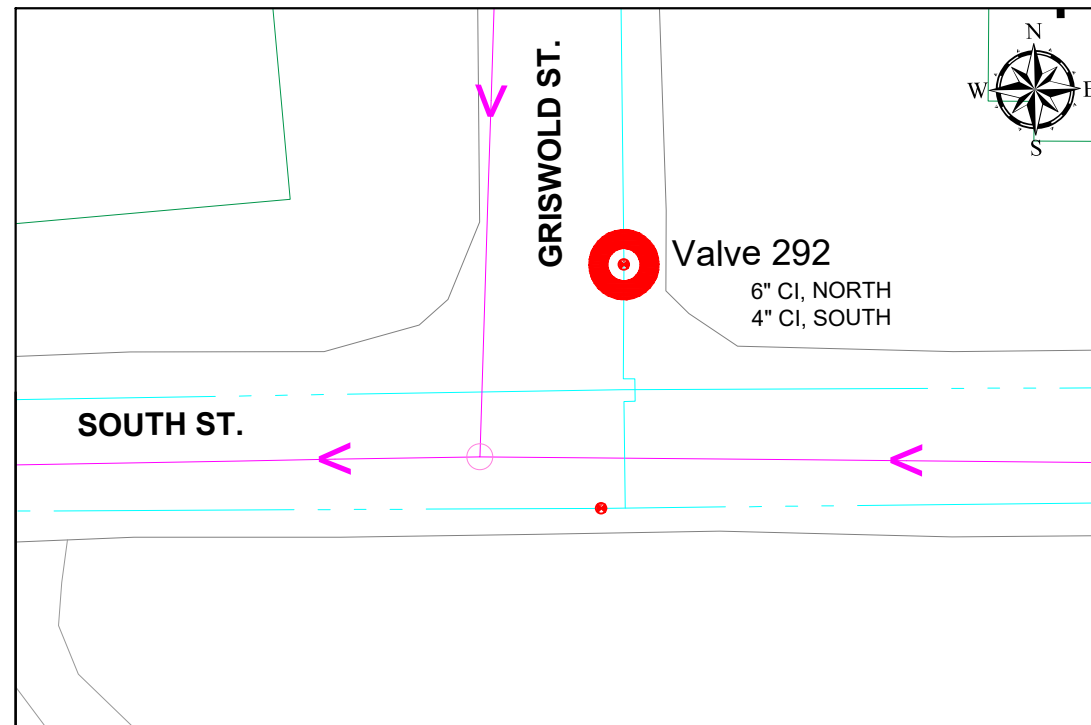
### Barnard / Griswold



### South / W St Joe



### South / Griswold



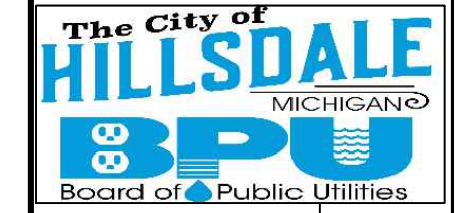
KEY	
SANITARY	→ → →
WATER	- - - - -
STORM	- - - - -
	○ (red)
	○ (green)
	○ (blue)

VALVE REPLACEMENT LOCATION  
 VALVE INSERT LOCATION  
 VALVE ABANDON LOCATION

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS



45 MONROE ST.  
 HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI

CITY WIDE  
 WATER VALVE REPLACEMENTS

VALVES 292, 328, 329, 330, 331, 332, 333, 334, 335, 525

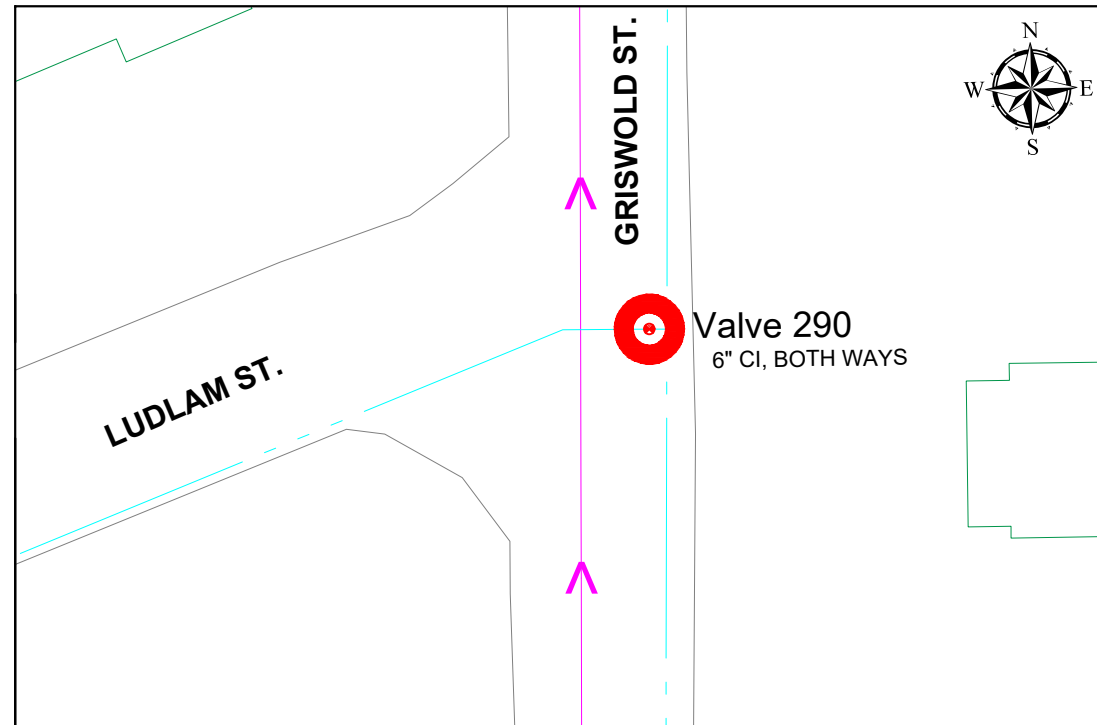
DRAWING SCALE:  
 NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

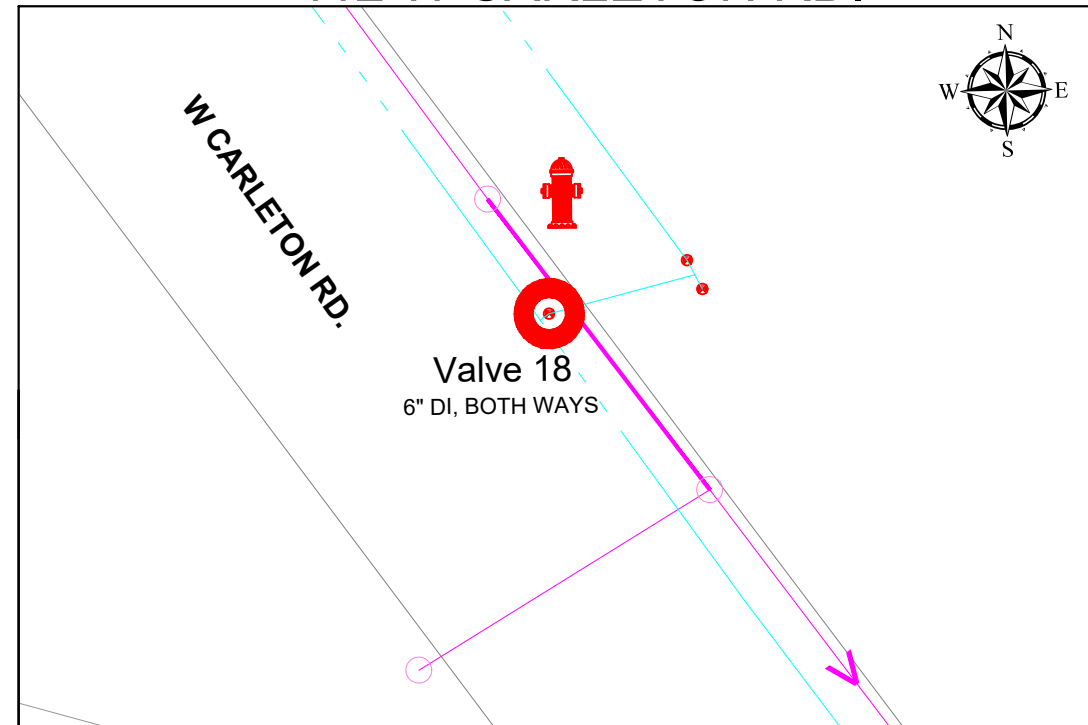
DRAWING NO. **W10**



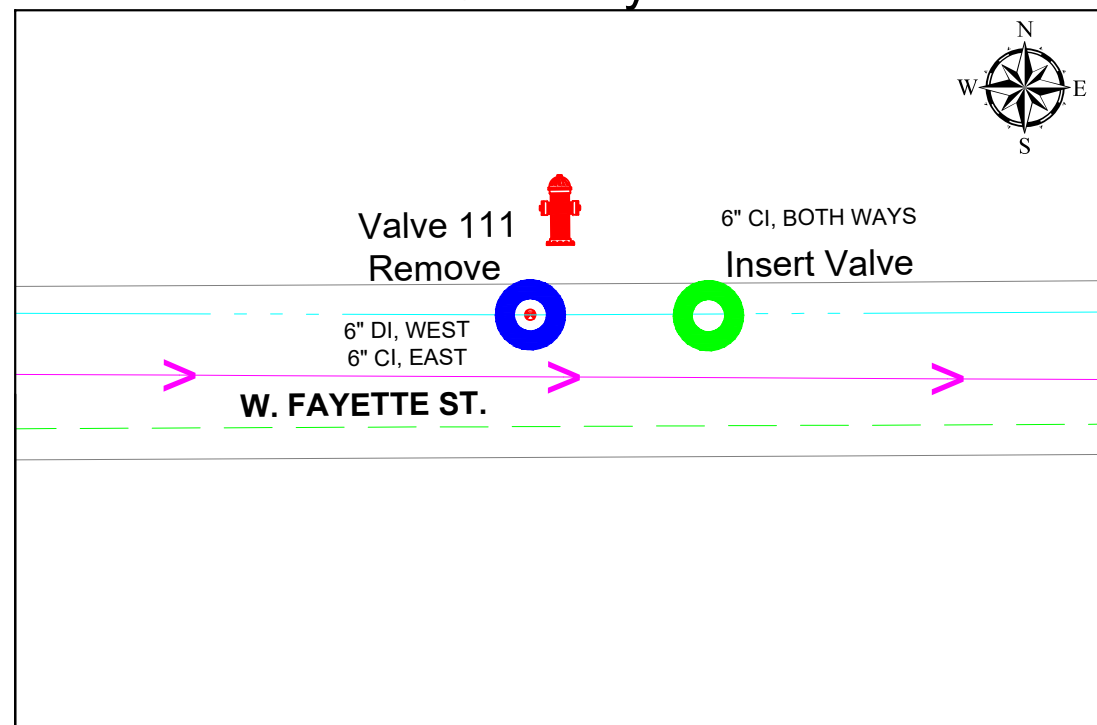
### Griswold / Ludlam



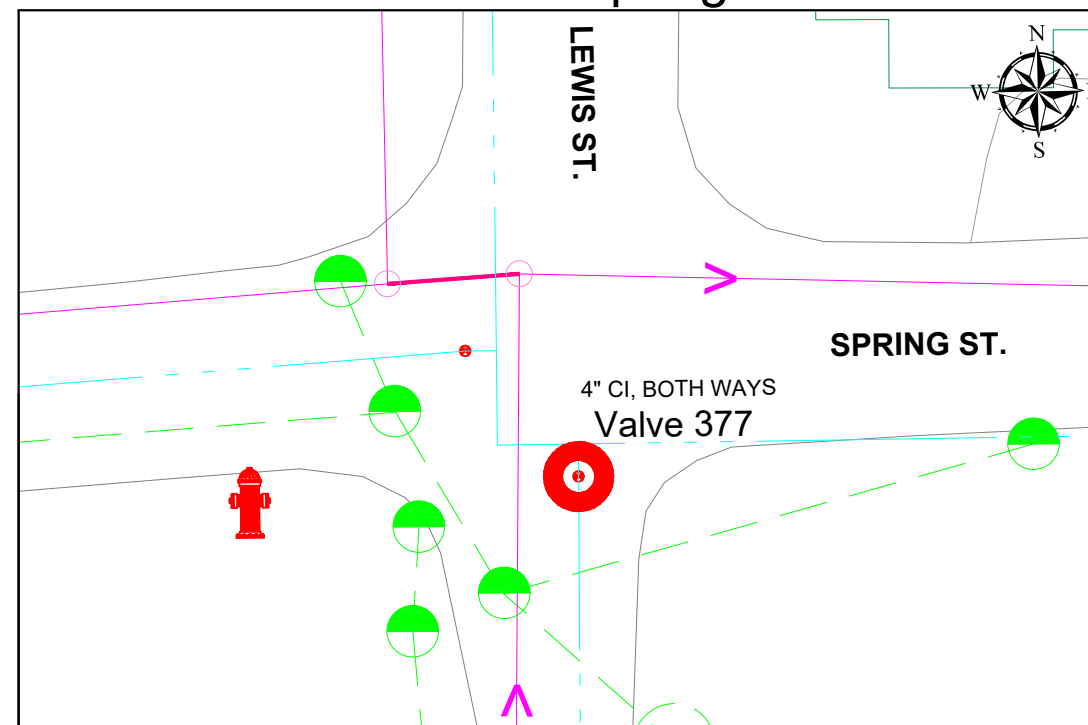
### 412 W CARLETON RD.



### 225 W Fayette



### Lewis / Spring

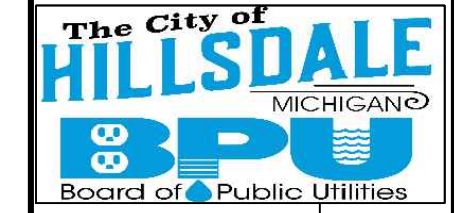


KEY			
SANITARY	→→→	VALVE REPLACEMENT LOCATION	●
WATER	- - -	VALVE INSERT LOCATION	●
STORM	- - -	VALVE ABANDON LOCATION	●

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

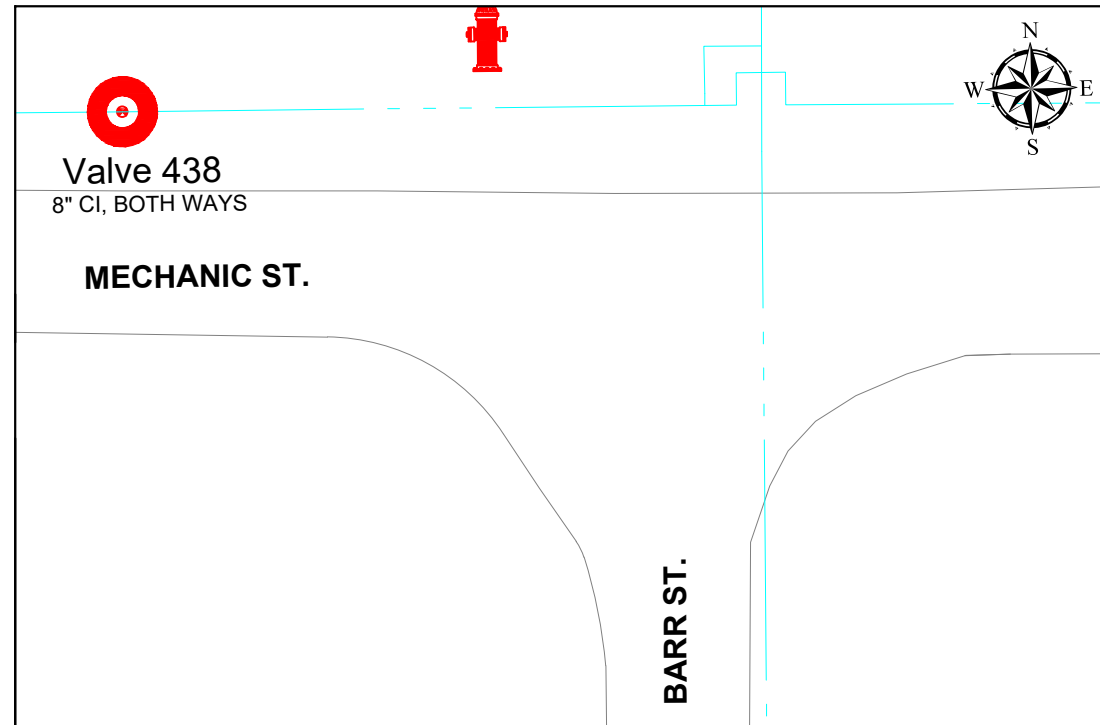
CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 WATER VALVE REPLACEMENTS  
 VALVES 18, 111, 290, 377

DRAWING SCALE:  
NOT TO SCALE

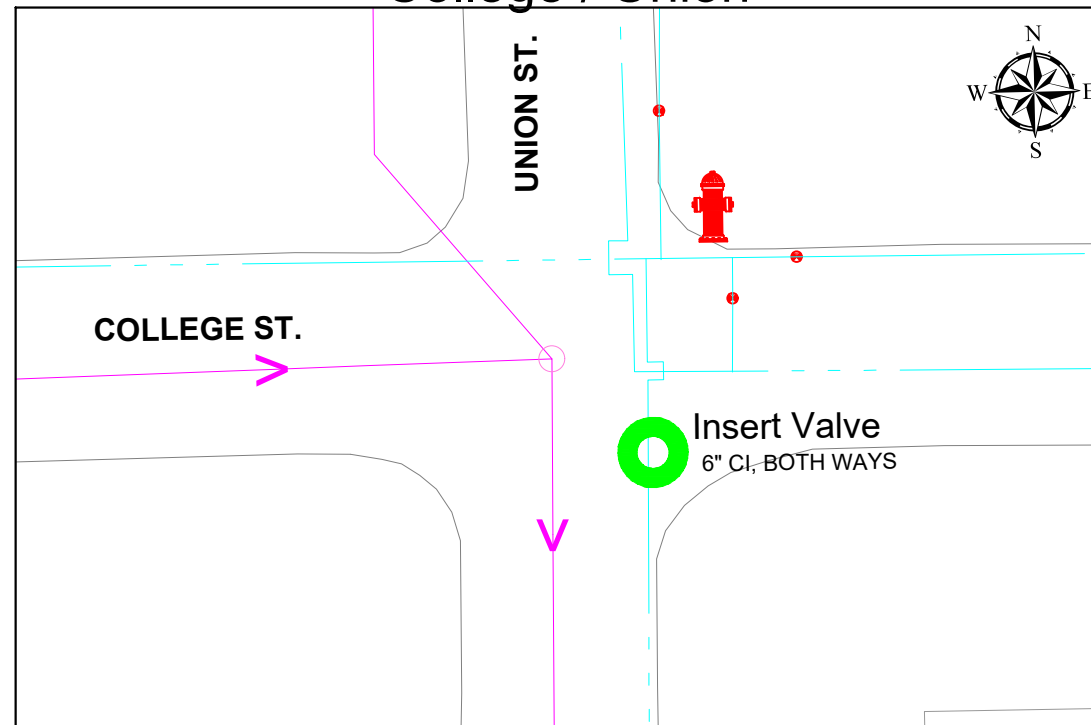
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W11**

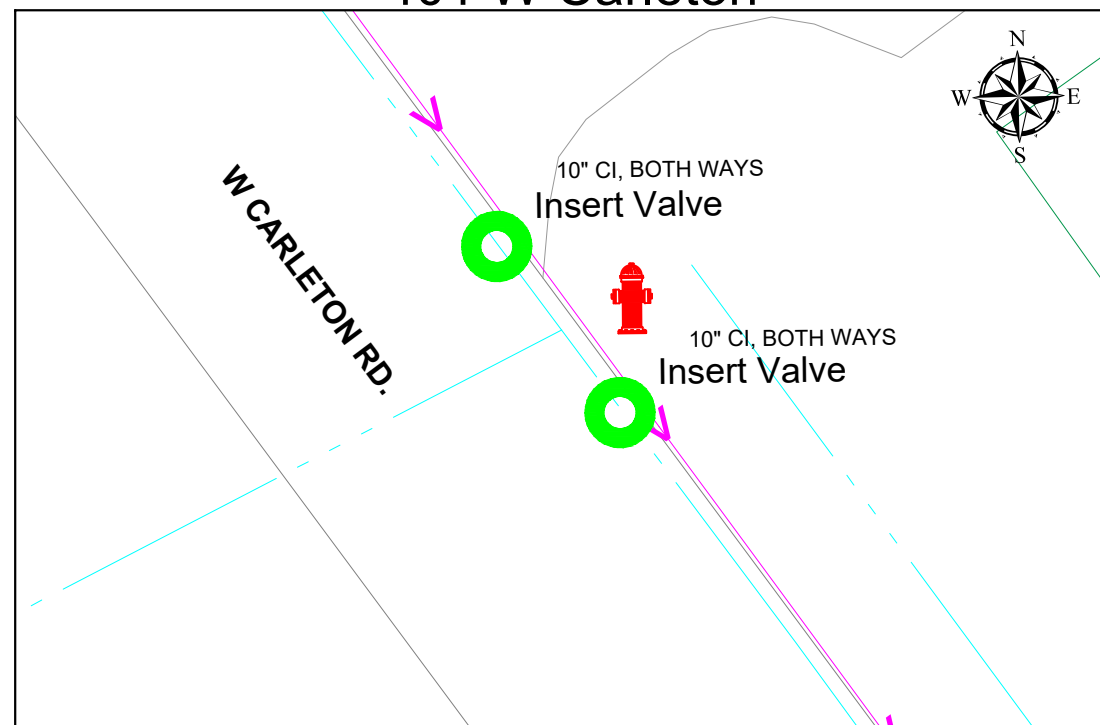
Barr / Mechanic



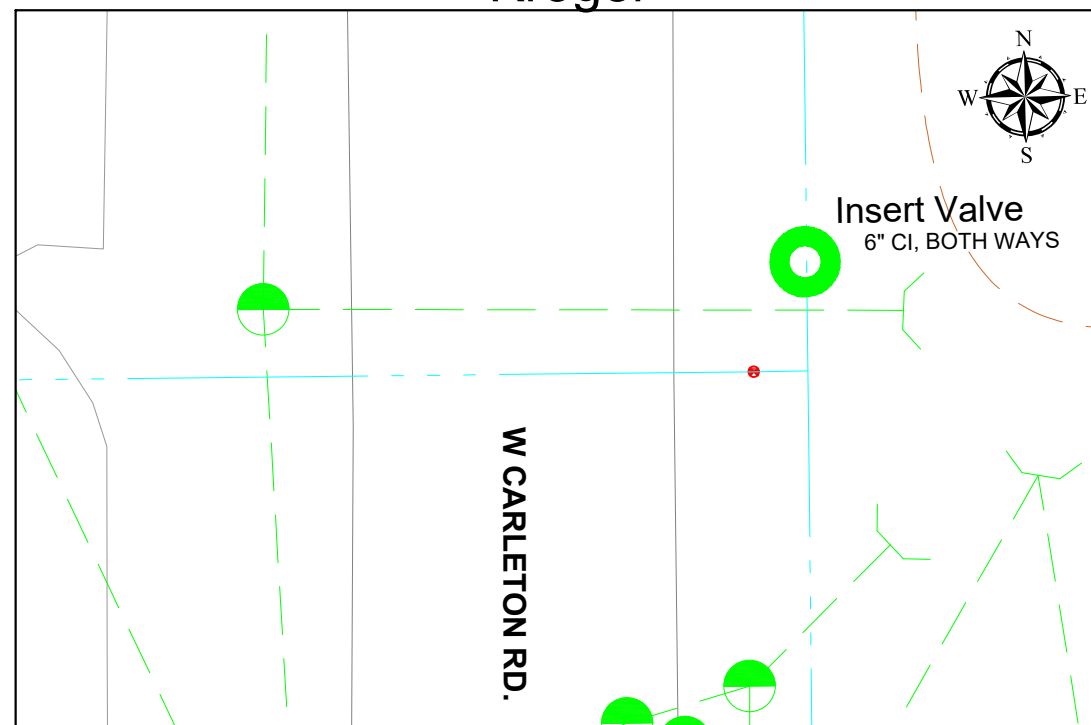
College / Union



401 W Carleton



Kroger



KEY			
SANITARY		VALVE REPLACEMENT LOCATION	
WATER		VALVE INSERT LOCATION	
STORM		VALVE ABANDON LOCATION	

REFER TO **W15** FOR TYPICAL CONSTRUCTION DETAILS AND **W16** FOR TRAFFIC CONTROL TYPICALS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
WATER VALVE REPLACEMENTS

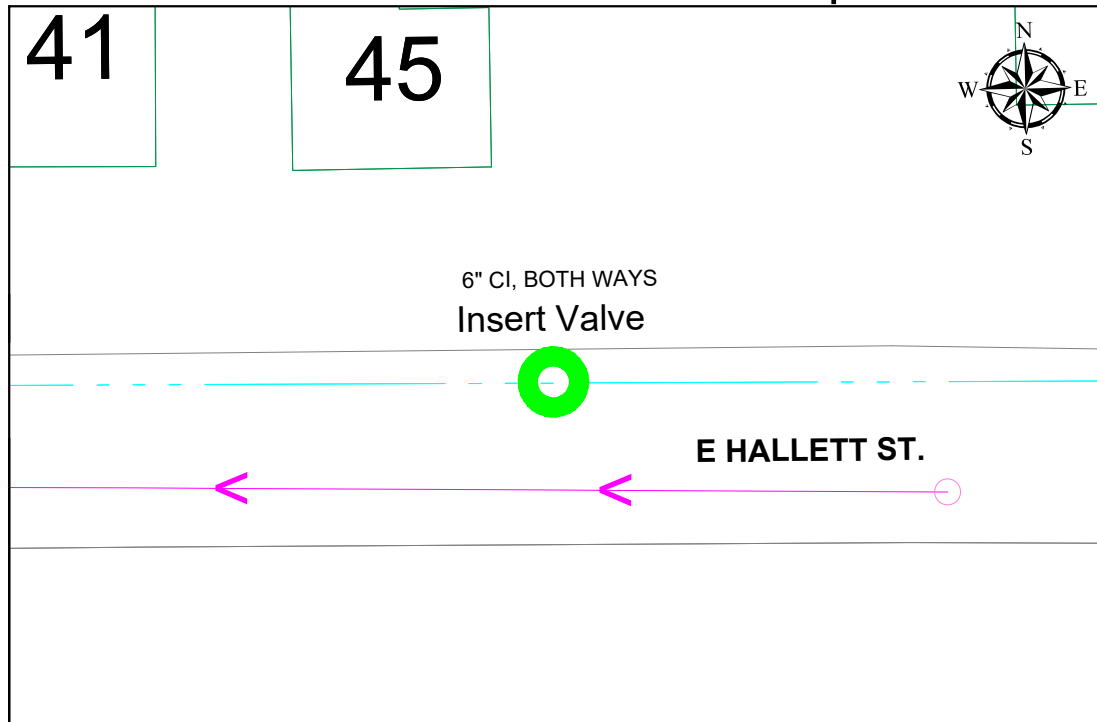
VALVE 438 & INSERT VALVES

DRAWING SCALE:  
NOT TO SCALE

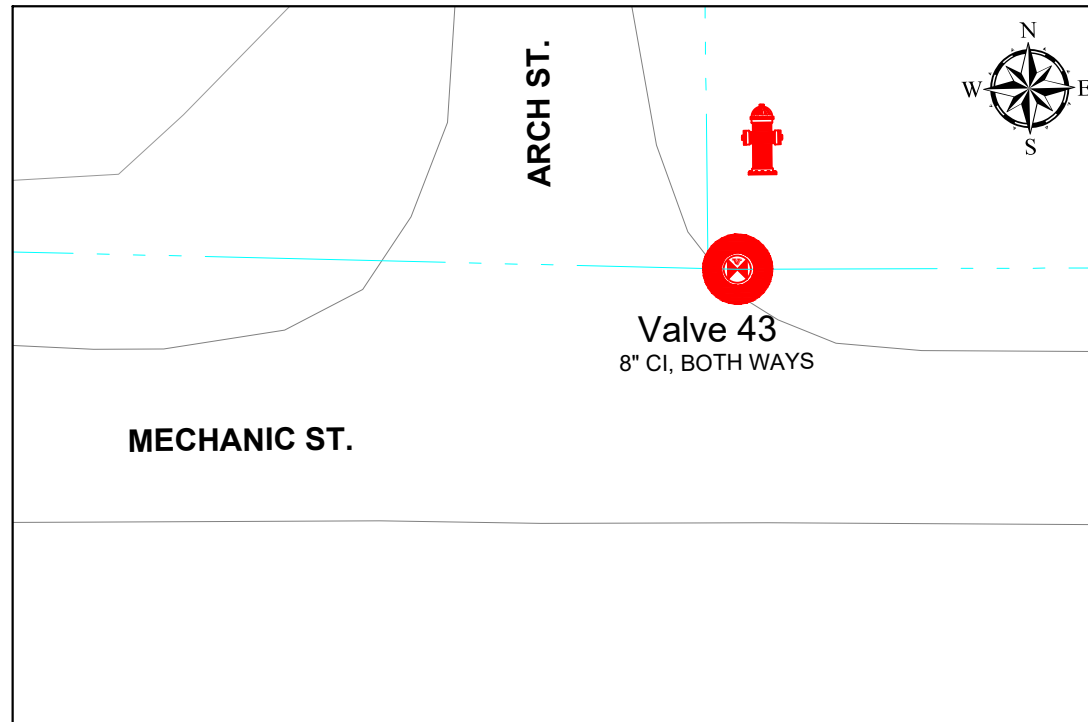
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W12**

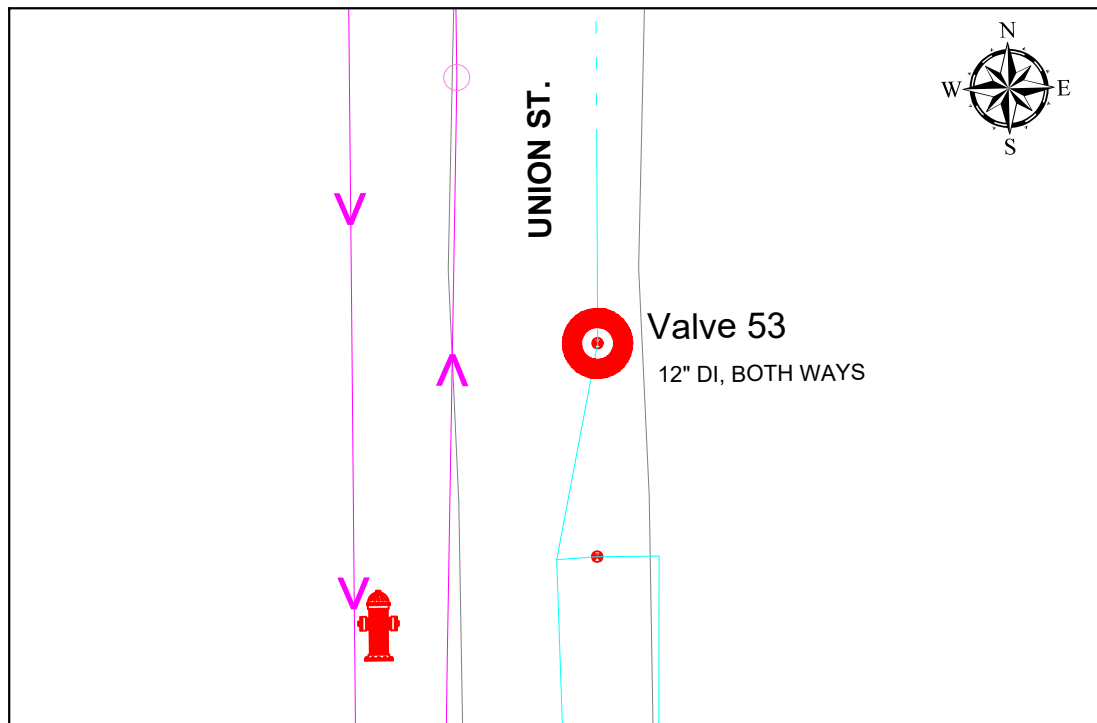
45 E Hallett / North of Hospital



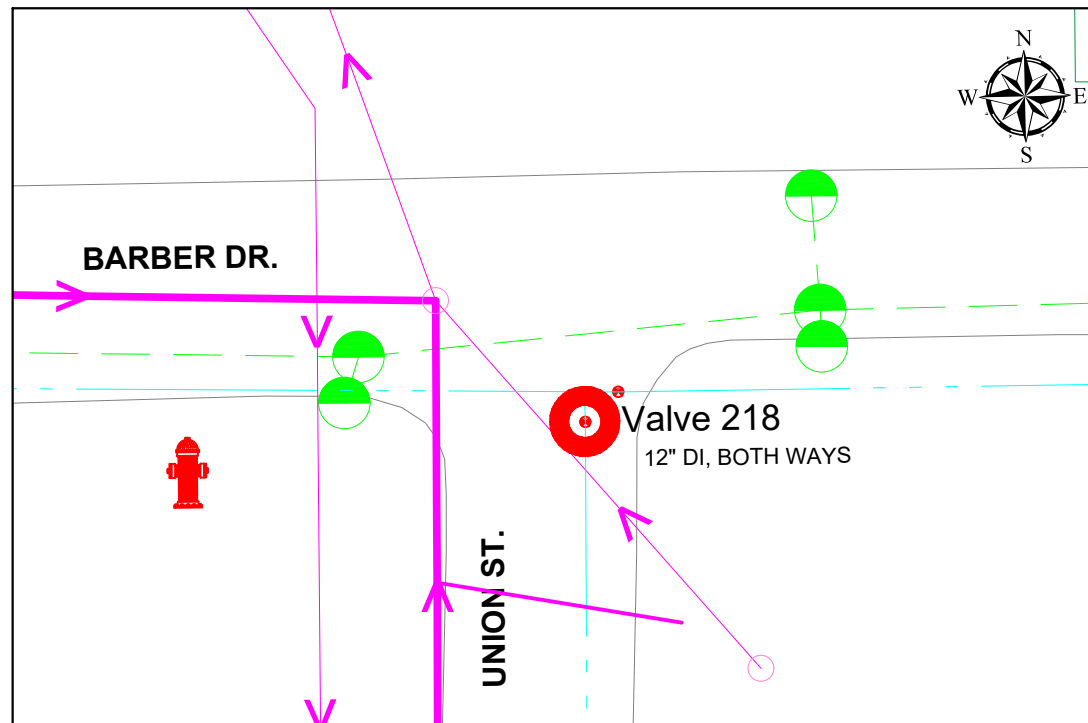
Mechanic / Arch



Between 81 & 250 Union St.



Barber / Union



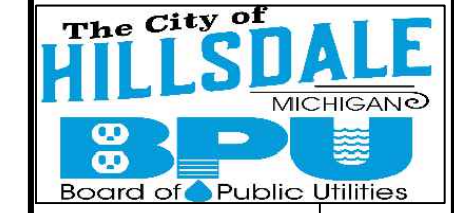
KEY	
SANITARY	→ → →
WATER	- - - - -
STORM	- - - - -
	○ (red)
	○ (green)
	○ (blue)

VALVE REPLACEMENT LOCATION  
 VALVE INSERT LOCATION  
 VALVE ABANDON LOCATION

REFER TO **W15** FOR TYPICAL  
 CONSTRUCTION DETAILS AND **W16**  
 FOR TRAFFIC CONTROL TYPICALS



45 MONROE ST.  
 HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 WATER VALVE REPLACEMENTS  
 VALVES 43, 53, 218 & INSERT VALVE

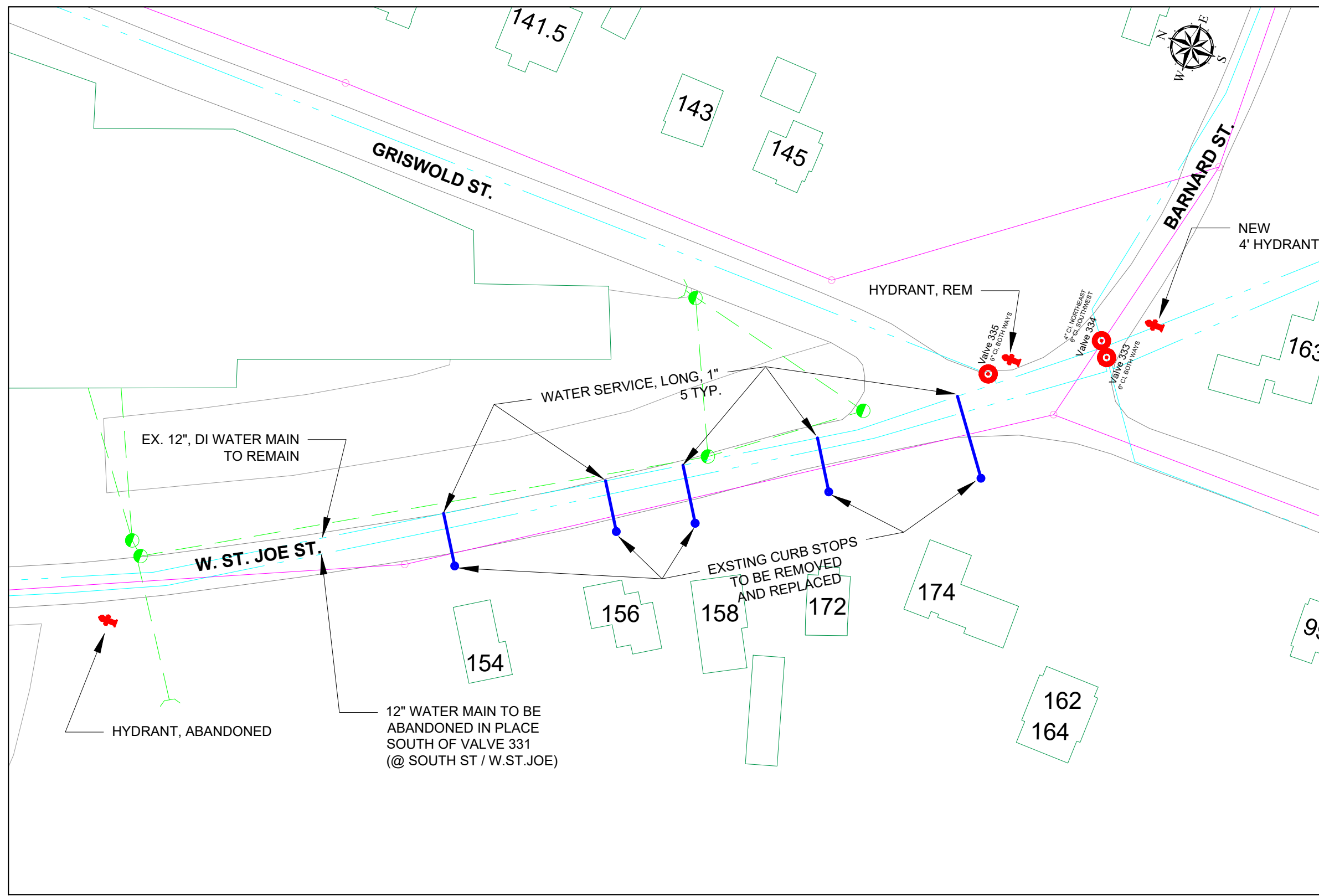
DRAWING SCALE:  
 NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **W13**

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
WATER MAIN IMPROVEMENTS  
W. ST. JOE STREET  
BTWN SOUTH ST. & BARNARD ST.



KEY	
SANITARY	→ → → → →
WATER	- - - - -
STORM	- - - - -
VALVE REPLACEMENT LOCATION	●
VALVE INSERT LOCATION	●
VALVE ABANDON LOCATION	●

REFER TO **W15** FOR TYPICAL  
CONSTRUCTION DETAILS AND **W16**  
FOR TRAFFIC CONTROL TYPICALS

DRAWING SCALE: NOT TO SCALE		
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23
DRAWING NO.		<b>W14</b>



45 MONROE ST.  
HILLSDALE, MI 49242

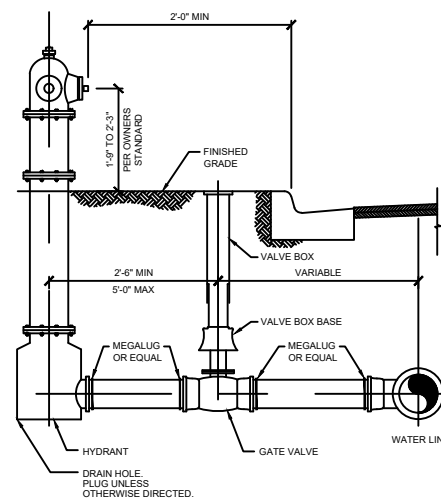
REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 SEWER MAIN IMPROVEMENTS  
 WATER DETAILS TYPICAL

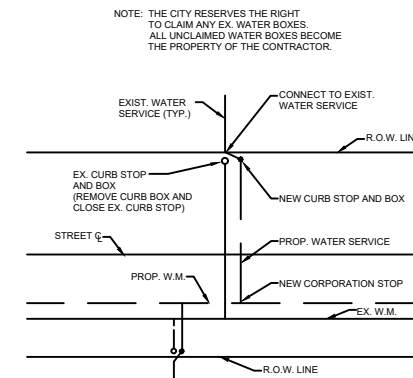
DRAWING SCALE:  
NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

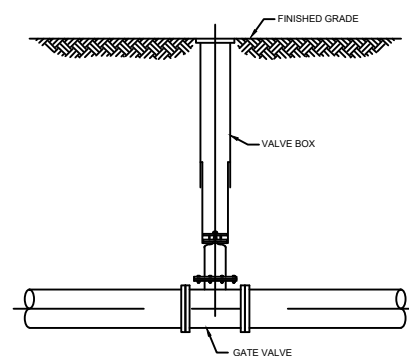
DRAWING NO. **W15**



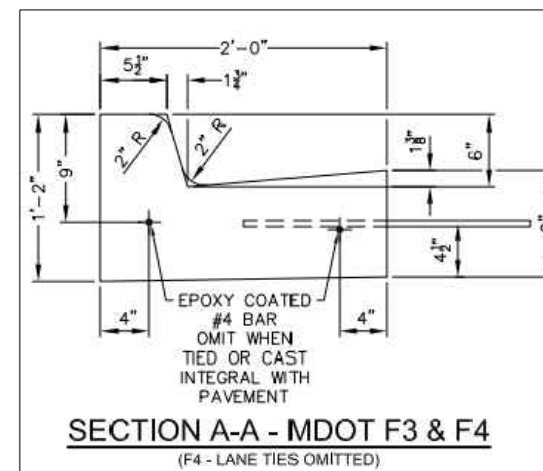
**HYDRANT ASSEMBLY**  
NOT TO SCALE



**WATER SERVICE CONNECTION DETAIL**  
NOT TO SCALE

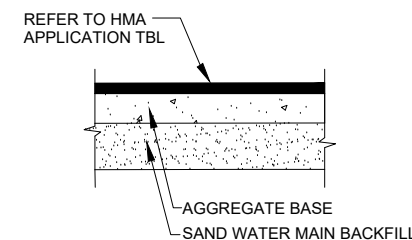


**GATE VALVE DETAIL**  
NOT TO SCALE

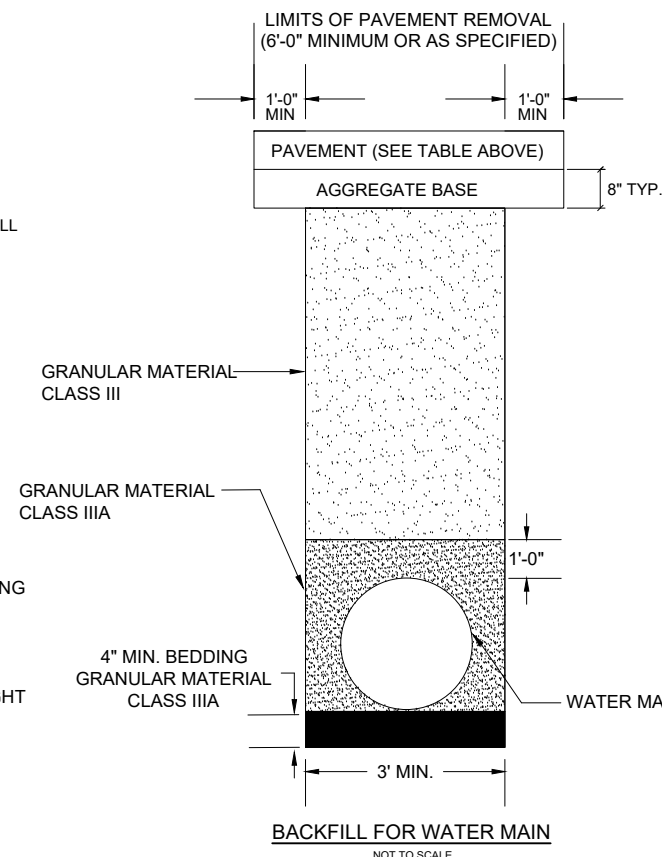


**SECTION A-A - MDOT F3 & F4**  
(F4 - LANE TIES OMITTED)

**TYPICAL F-4 CURB DETAIL**  
NOT TO SCALE



**TYPICAL HMA CROSS SECTION**  
SCALE: NONE



**BACKFILL FOR WATER MAIN**  
NOT TO SCALE

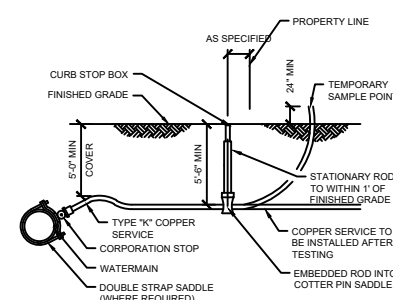
**WATER MAIN BACKFILL NOTES:**

- 1) COMPACT INITIAL BACKFILL MATERIALS IN LIFTS NOT TO EXCEED 6 INCHES BY HAND TAMPING AROUND AND DIRECTLY ABOVE THE PIPE TO MINIMIZE VOIDS.
- 2) DO NOT USE MECHANICAL COMPACTION EQUIPMENT DURING INITIAL BACKFILL OPERATIONS UNTIL MATERIAL HAS BEEN BROUGHT TO 12 INCHES ABOVE THE PIPE BARREL.
- 3) COMPACT SAND BACKFILL AND STANDARD TRENCHES IN LIFTS TO EXCEEDING 12 INCHES.

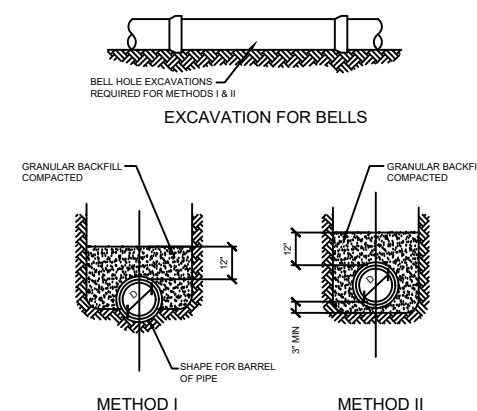
**PUBLIC UTILITIES:** THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO VERIFY THEIR ACCURACY OR THE RESPONSIBILITY IN CASE UTILITIES HAVE BEEN REMOVED OR CONSTRUCTED.

<b>GAS:</b>	MICHIGAN GAS UTILITY 70 SAUK RIVER DRIVE COLDWATER, MI 49036 P - 517-781-0511 ATTN: DONALD SEEKMAN donald.seekman@michiganasutilities.com	<b>ELECTRIC:</b>	CITY OF HILLSDALE BPU 45 MONROE STREET HILLSDALE, MI 49242 P - 517-437-6417 ATTN: JAKE HAMMEL jhammel@hilldalebpu.com
<b>CABLE TELEVISION:</b>	COMCAST 25626 TELEGRAPH RD. SOUTHFIELD, MI 48034 P - 734-359-1669 ATTN: JEFF DOBIES	<b>TELEPHONE:</b>	AT&T 1041 HURST ROAD JACKSON, MI 49201 P - 517-750-0660 ATTN: KAREN TRUDGEN karen.m.trudgen@att.com
<b>WATER/SEWER:</b>	CITY OF HILLSDALE BPU 45 MONROE STREET HILLSDALE, MI 49242 P - 517-437-6412 ATTN: JEFF GIER jgier@hilldalebpu.com	<b>PUBLIC WORKS:</b>	CITY OF HILLSDALE 149 WATER WORKS AVE HILLSDALE, MI 49242 517-437-6491 ATTN: JASON BLAKE jblake@cityofhilldale.org

THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND DEPTH OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONFLICTS IN GRADE SHALL BE REPORTS TO THE CITY ENGINEER AND ADJUSTMENTS MADE AT NO ADDITIONAL COST TO THE OWNER.



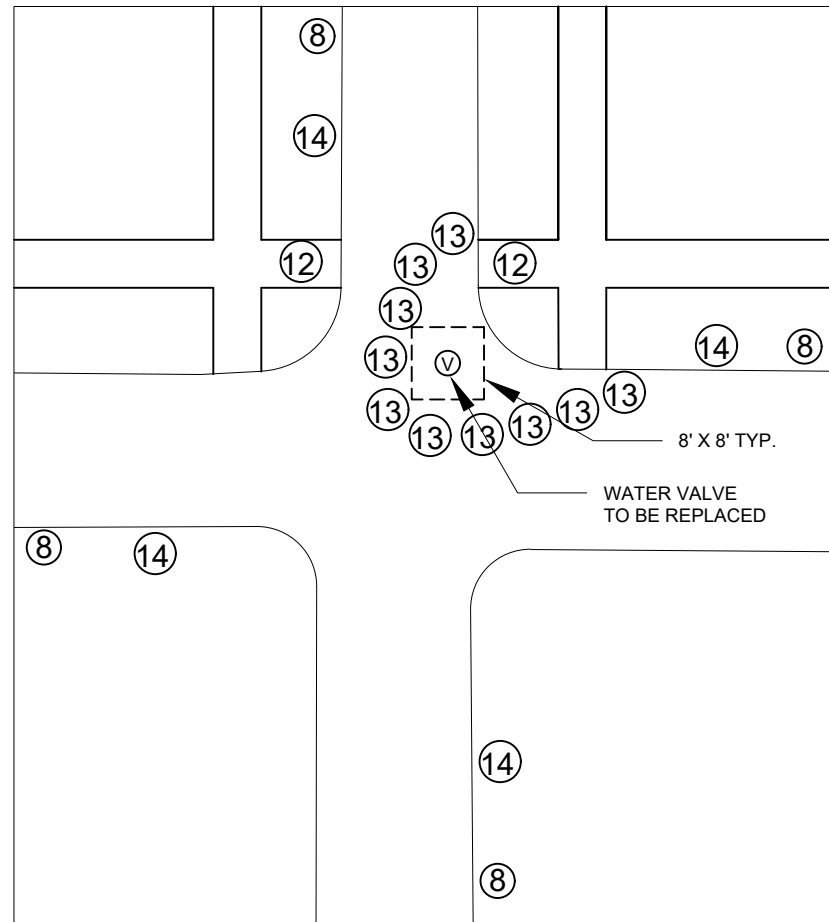
**COPPER SERVICE LEAD CONNECTION/SAMPLE POINT**  
NOT TO SCALE



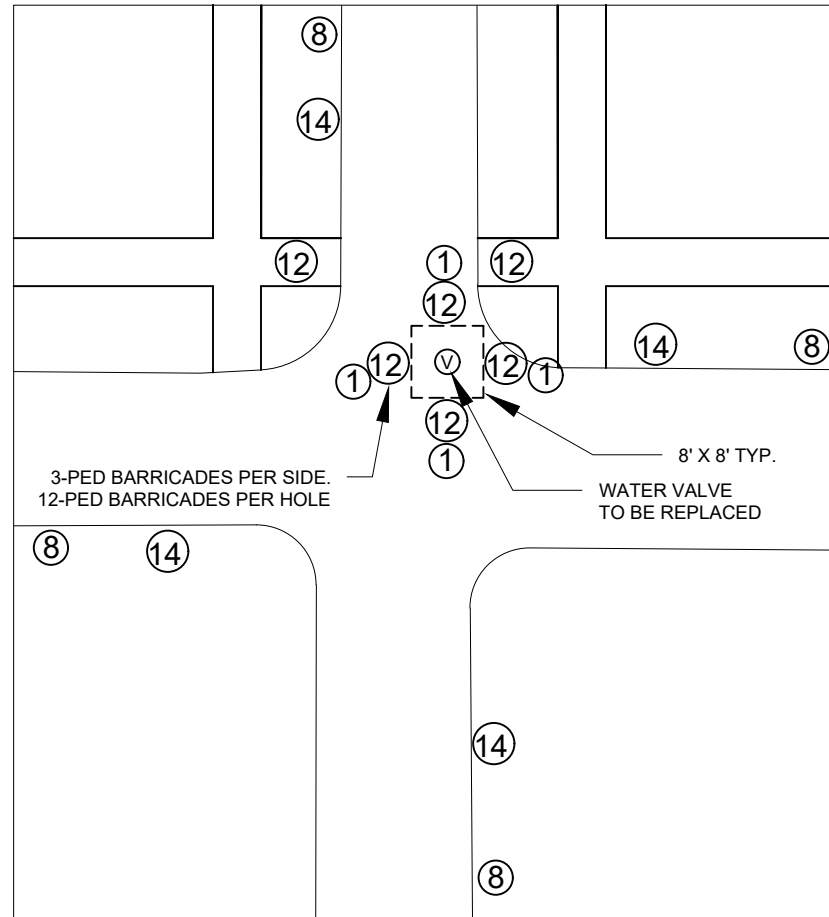
**METHODS OF BEDDING PRESSURE PIPE**  
NOT TO SCALE

- NOTES:
1. METHOD I: IN AREAS OF UNCONSOLIDATED SOILS (SAND, GRAVEL, ETC.)
  2. METHOD II: IN AREAS OF CONSOLIDATED SOILS (CLAY, HARDPAN, ROCK, ETC.)

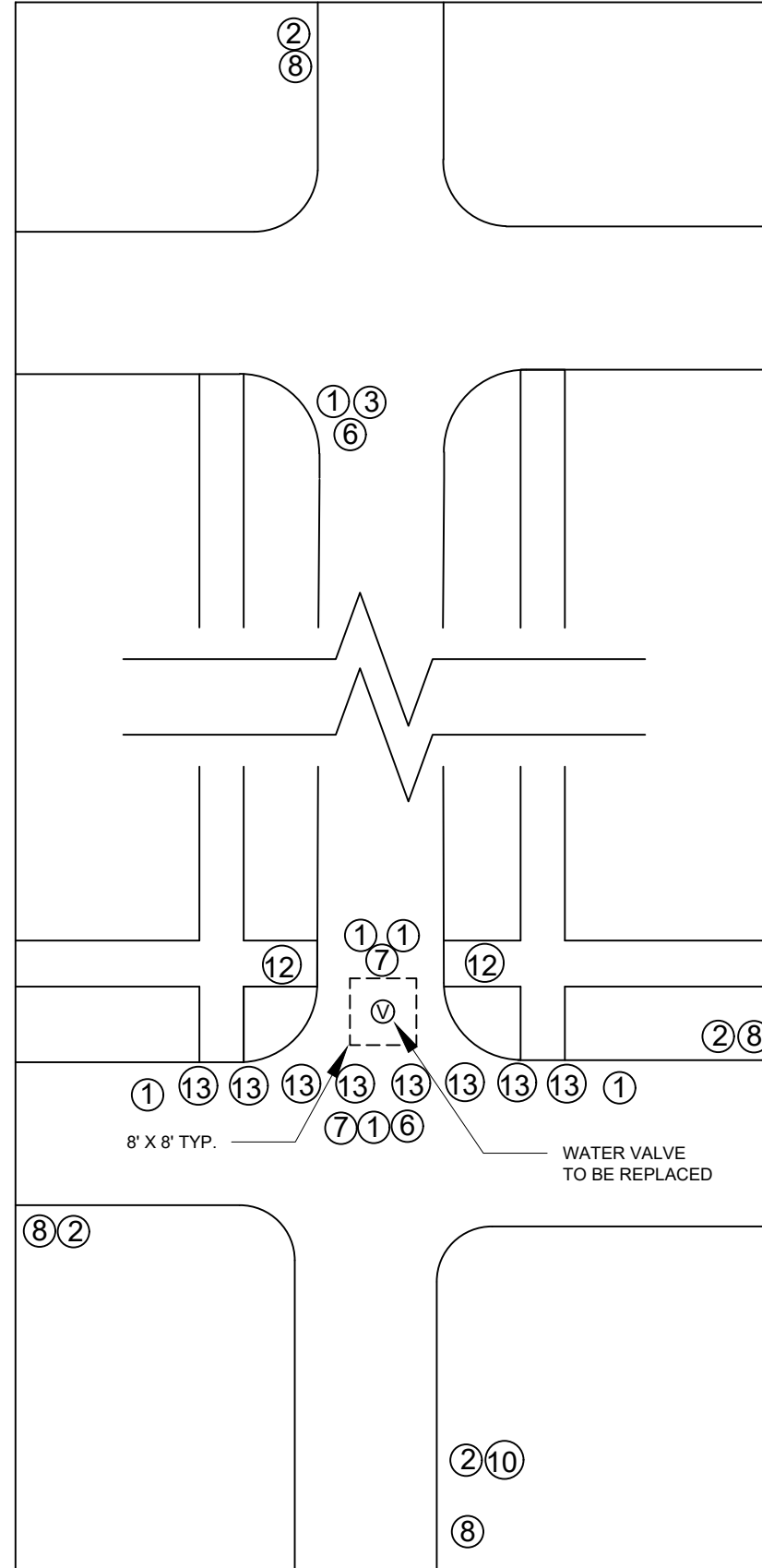
### DAILY CLOSURE



### OVERNIGHT CLOSURE



### WATER DETOUR



### TRAFFIC CONTROL KEY

KEY	CODE	SIGN	*QTY
①		TYPE III BARRICADE HIGH INTENSITY, LIGHTED	-
②	W20-3	ROAD CLOSED AHEAD	-
③	R11-4	ROAD CLOSED TO THRU TRAFFIC	-
④	M4-9R	DETOUR ARROW RIGHT	-
⑤	M4-9L	DETOUR ARROW LEFT	-
⑥	M4-10D	DETOUR ARROW DOUBLE	-
⑦	R11-2	ROAD CLOSED	-
⑧	W20-1	ROAD WORK AHEAD	-
⑨	M4-9S	DETOUR STRAIGHT	-
⑩	W20-2	DETOUR AHEAD	-
⑪	M4-8A	DETOUR ENDS	-
⑫		PED BARRICADE	-
⑬		BARRELS OR GRABBER CONES	-
⑭	W20-4	ONE LANE ROAD AHEAD, MAJOR STREETS	-

\* QUANTITIES ARE MINIMUM REQUIRED. CONTRACTOR MAY INCREASE AS NEEDED FOR THEIR CONSTRUCTION PLANS. LIGHTED BARRELS AND/OR GRABBER CONES WILL BE NEEDED FOR FLAG CONTROL ZONES AND OVER NIGHT ONE LANE SECTIONS.

### PROJECT NOTES

- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE MDOT 2012 STANDARD SPECIFICATION FOR CONSTRUCTION.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

45 MONROE ST.  
HILLSDALE, MI 49242

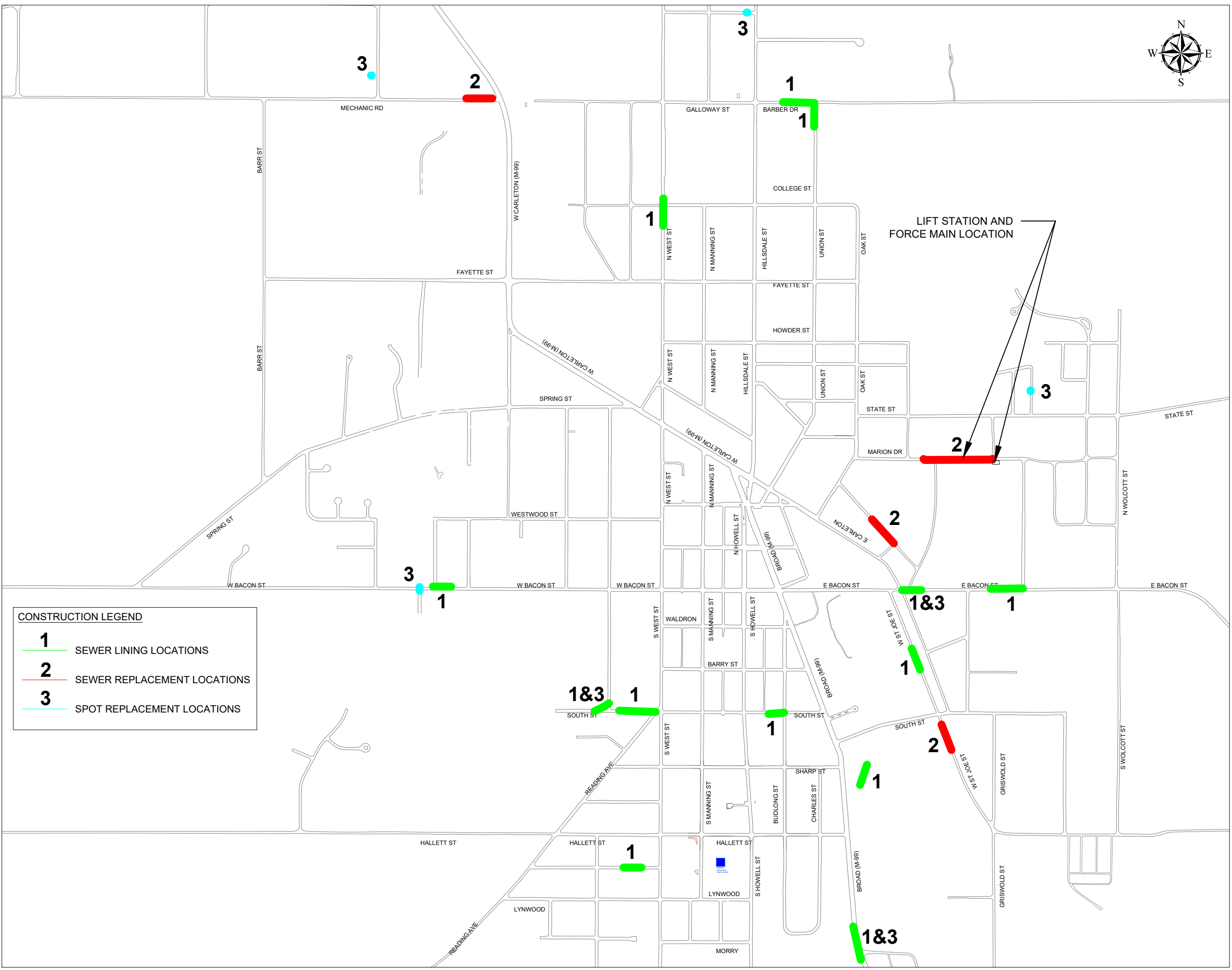
REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 WATER VALVE REPLACEMENTS  
 WATER VALVE REPLACEMENT  
 TRAFFIC CONTROL TYPICALS

DRAWING SCALE:  
NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JB	01/06/23

DRAWING NO. **W16**



**CONSTRUCTION LEGEND**

1	SEWER LINING LOCATIONS
2	SEWER REPLACEMENT LOCATIONS
3	SPOT REPLACEMENT LOCATIONS

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

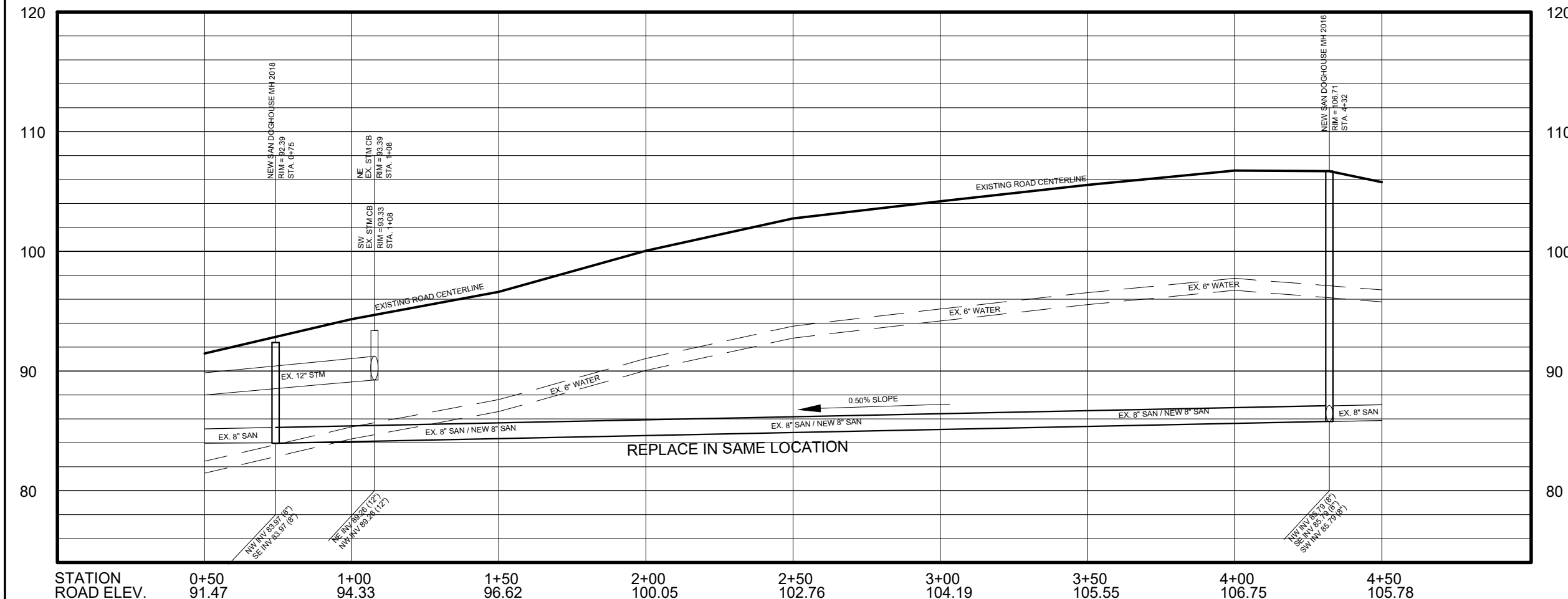
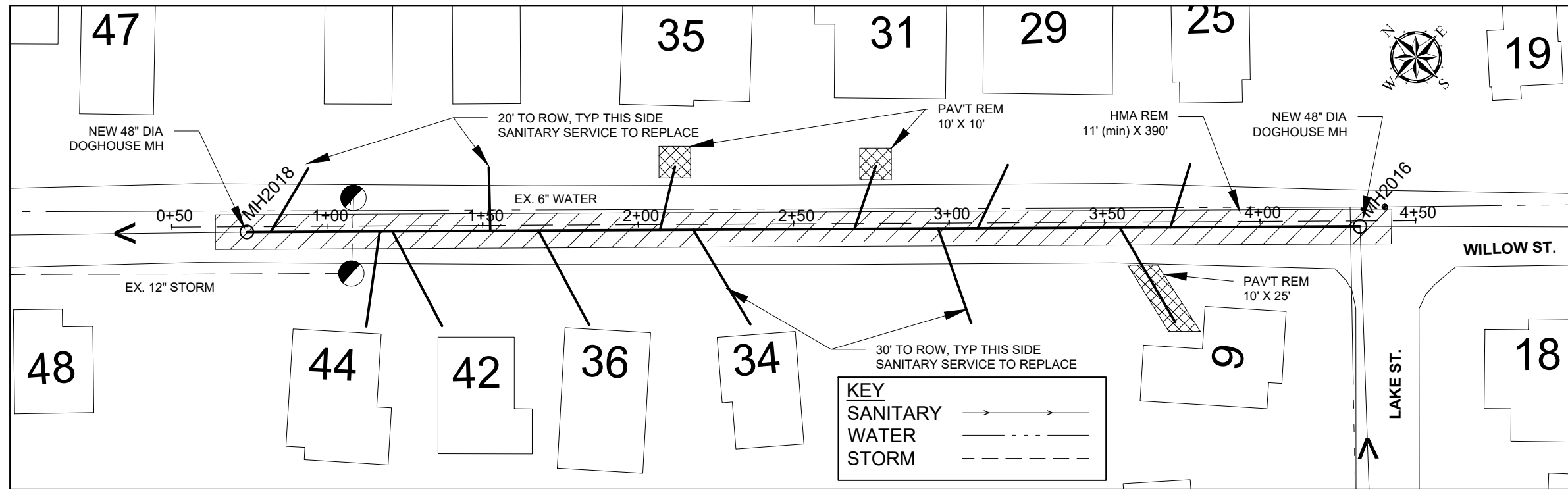
**CITY OF HILLSDALE  
HILLSDALE, MI**

**CITY WIDE  
WATER MAIN IMPROVEMENTS**

**SANITARY SEWER WORK LOCATIONS**

SCALE		
	NTS	
	NAME	DATE
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO.  
**SAN L**



REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 12** FOR TRAFFIC CONTROL DETAILS.

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
SEWER MAIN IMPROVEMENTS  
WILLOW ST. - PLAN AND PROFILE  
MH2016 TO MH2018



DRAWING SCALE:  
VERT: 1" = 10' HORIZ: 1" = 40'

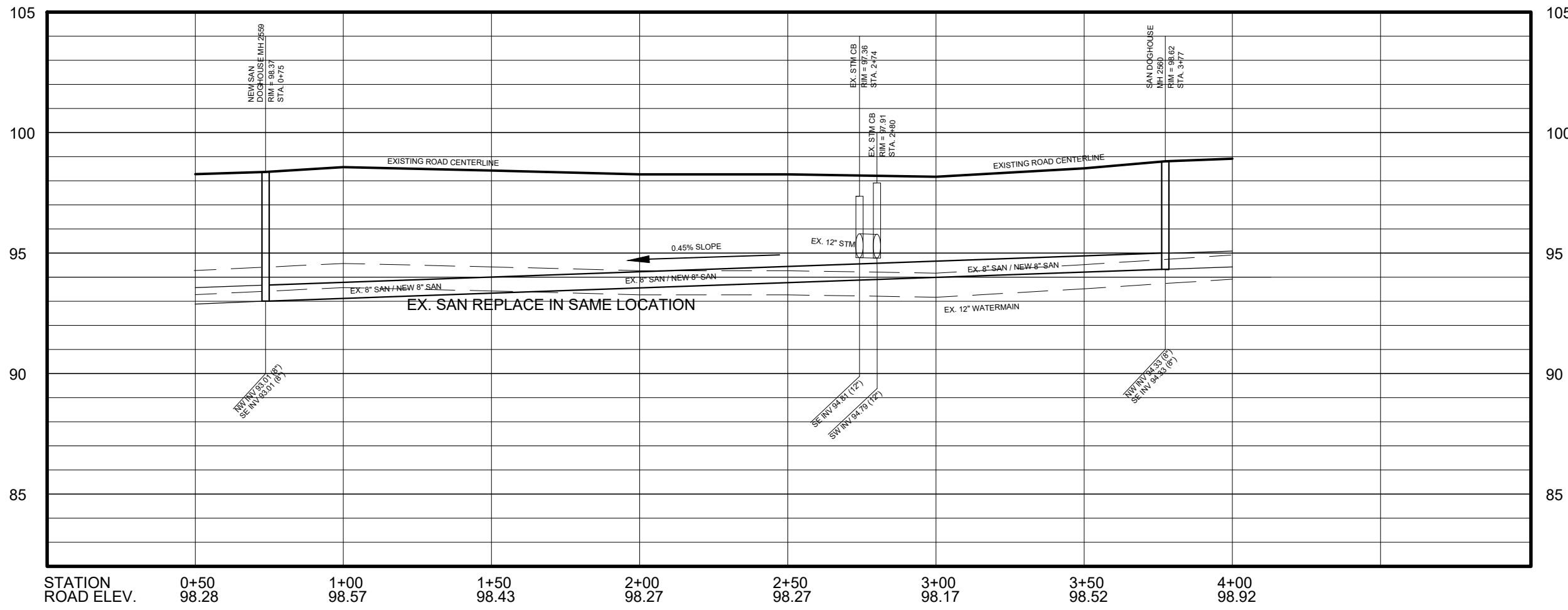
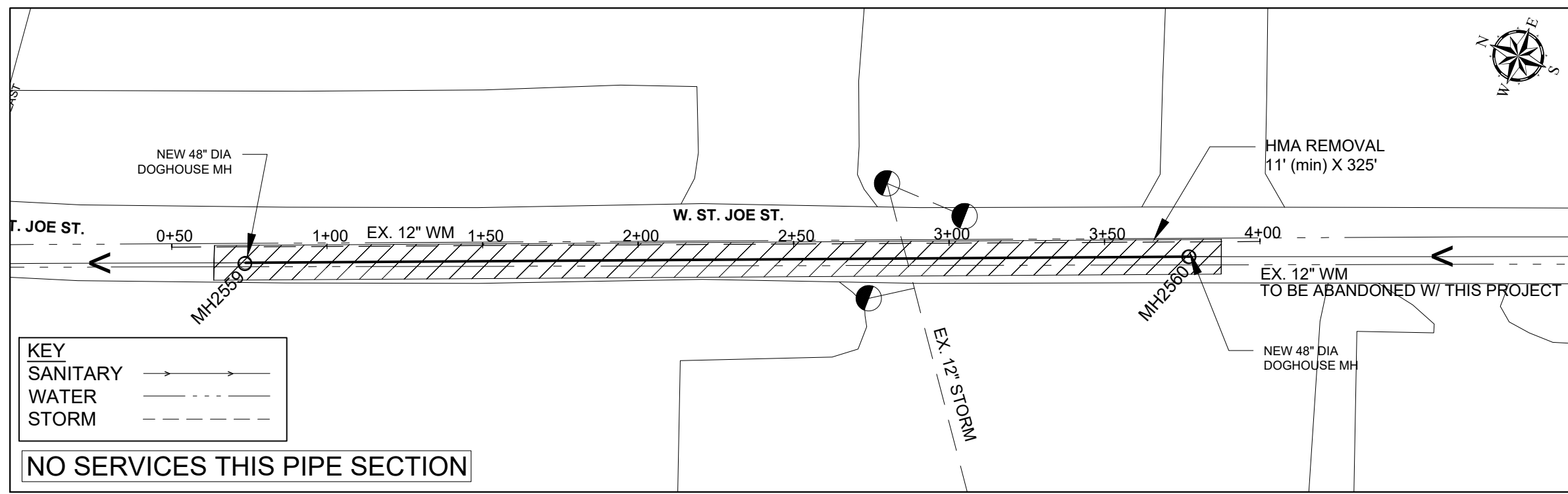
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **SAN 1**



45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23



REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 12** FOR TRAFFIC CONTROL DETAILS.

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
SEWER MAIN IMPROVEMENTS

W. ST. JOE ST. - PLAN AND PROFILE  
MH2559 TO MH2560

DRAWING SCALE:  
VERT: 1" = 5'    HORIZ: 1" = 40'

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING NO. **SAN 2**



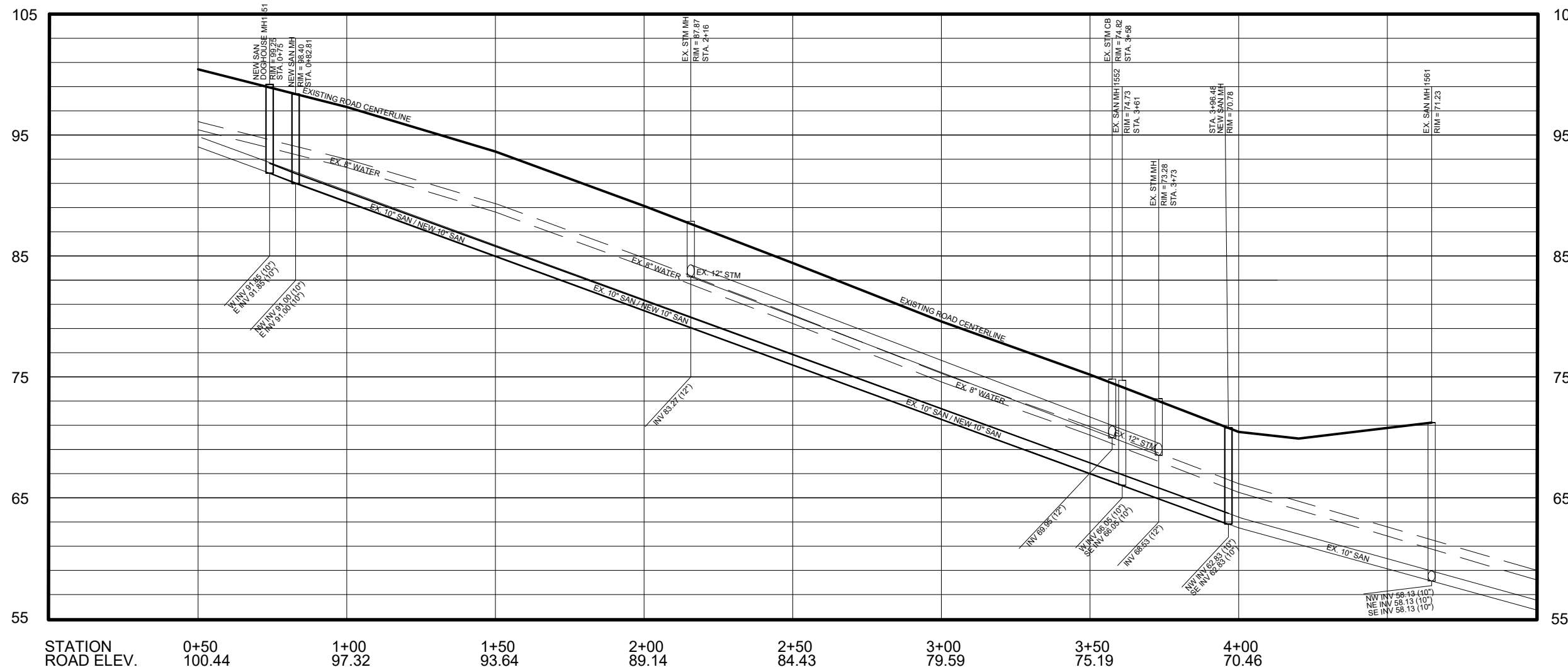
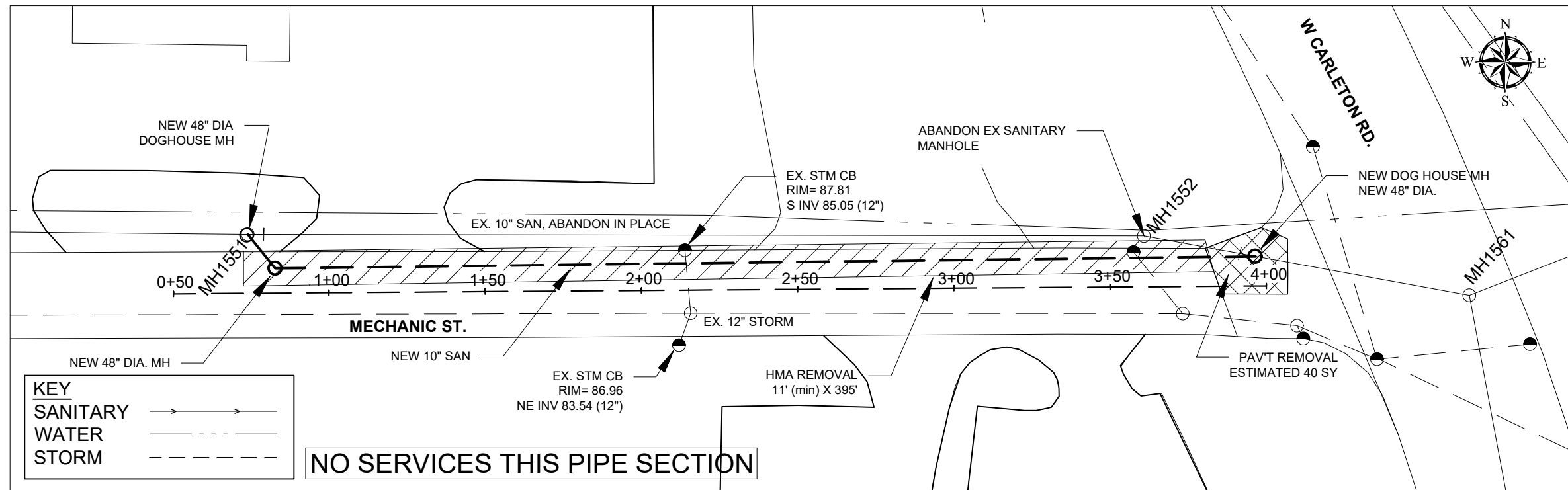
45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
SEWER MAIN IMPROVEMENTS

MECHANIC ST. - PLAN AND PROFILE  
MH1551 TO MH1561



STATION	0+50	1+00	1+50	2+00	2+50	3+00	3+50	4+00
ROAD ELEV.	100.44	97.32	93.64	89.14	84.43	79.59	75.19	70.46

REFER TO **SAN 11** FOR CONSTRUCTION  
DETAILS AND **SAN 13** FOR TRAFFIC  
CONTROL DETAILS.

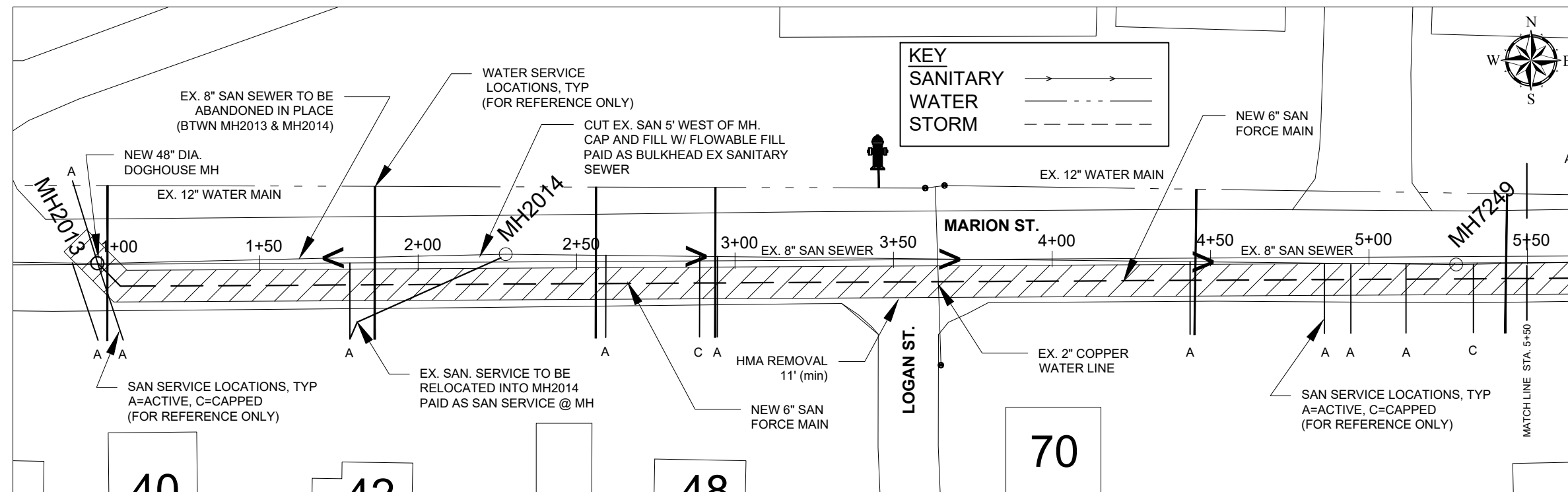
DRAWING SCALE:  
VERT: 1" = 10' HORIZ: 1" = 40'

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

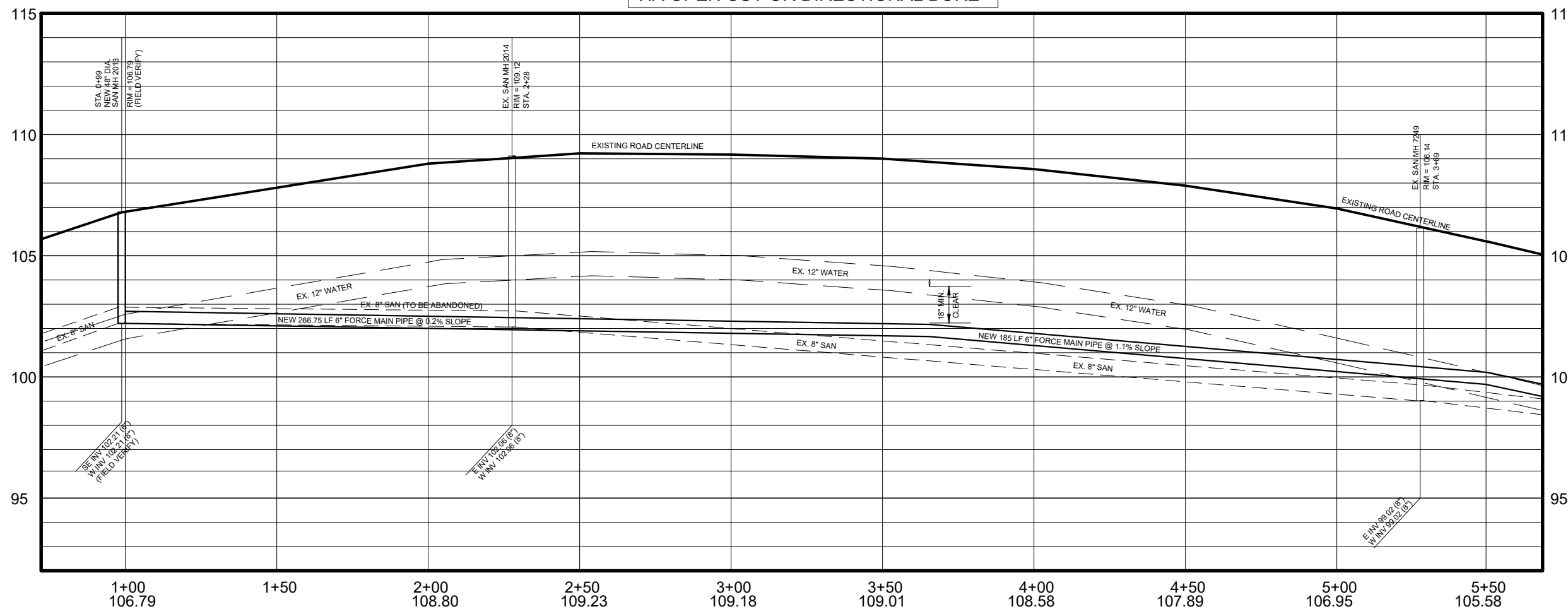
DRAWING NO. **SAN 3**

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
SEWER MAIN IMPROVEMENTS  
MARION ST. - PLAN AND PROFILE  
MH2013 TO STA. 5+50



FORCE MAIN CAN BE CONSTRUCTED  
VIA OPEN CUT OR DIRECTIONAL BORE



REFER TO **SAN 11** FOR CONSTRUCTION  
DETAILS AND **SAN 14** FOR TRAFFIC  
CONTROL DETAILS.

DRAWING SCALE:  
VERT: 1" = 5' HORIZ: 1" = 40'

DESIGNED	KLB	02/03/23
DRAWN	KLB	02/03/23
CHECKED	JG	02/06/23

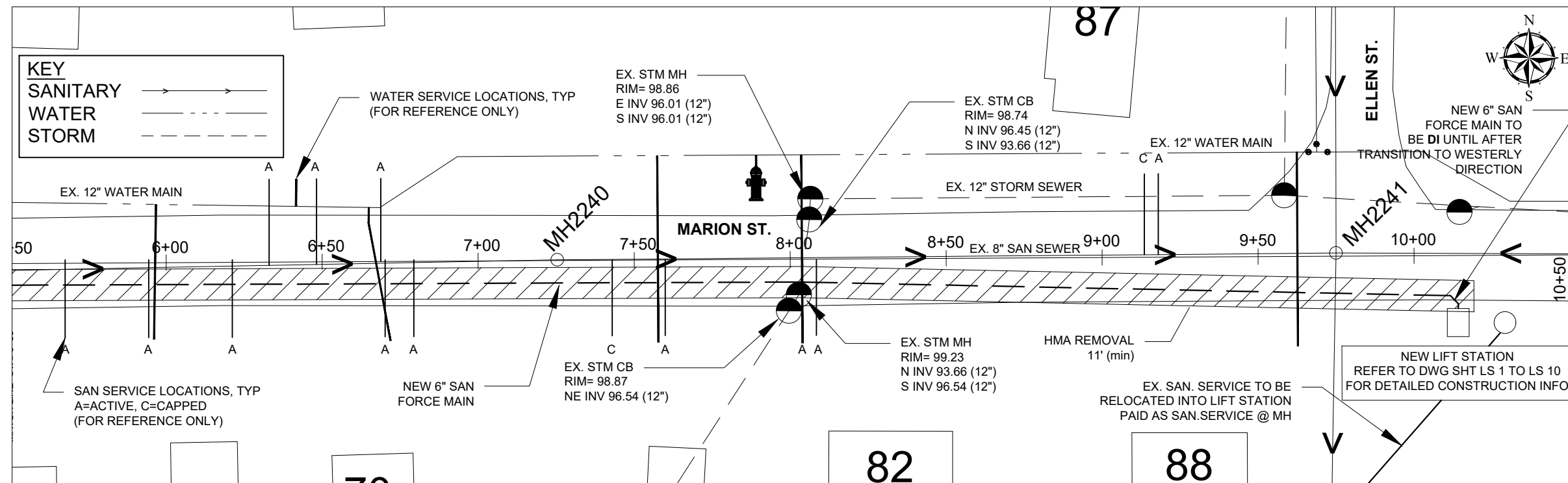
DRAWING NO. **SAN 4**

45 MONROE ST.  
HILLSDALE, MI 49242

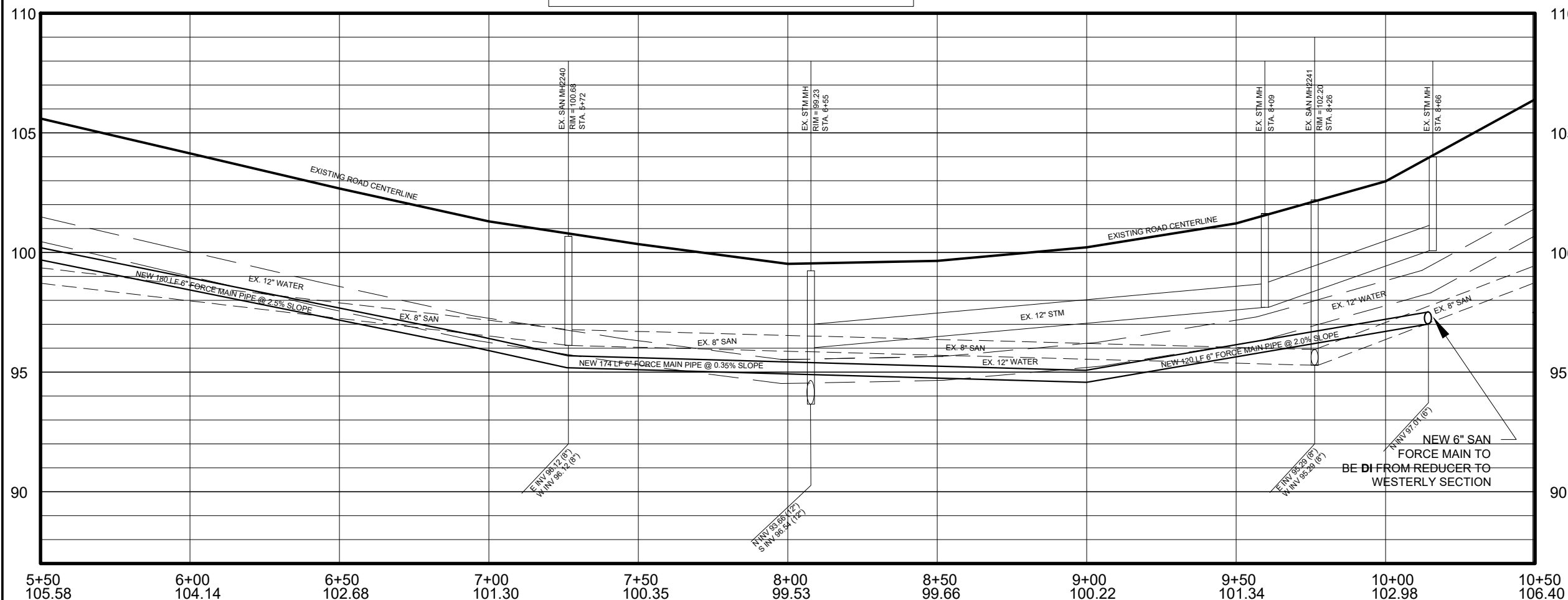
REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
SEWER MAIN IMPROVEMENTS

MARION ST. - PLAN AND PROFILE  
STA. 5+50 TO NEW LIFT STATION



FORCE MAIN CAN BE CONSTRUCTED  
VIA OPEN CUT OR DIRECTIONAL BORE



REFER TO **SAN 11** FOR CONSTRUCTION  
DETAILS AND **SAN 14** FOR TRAFFIC  
CONTROL DETAILS.

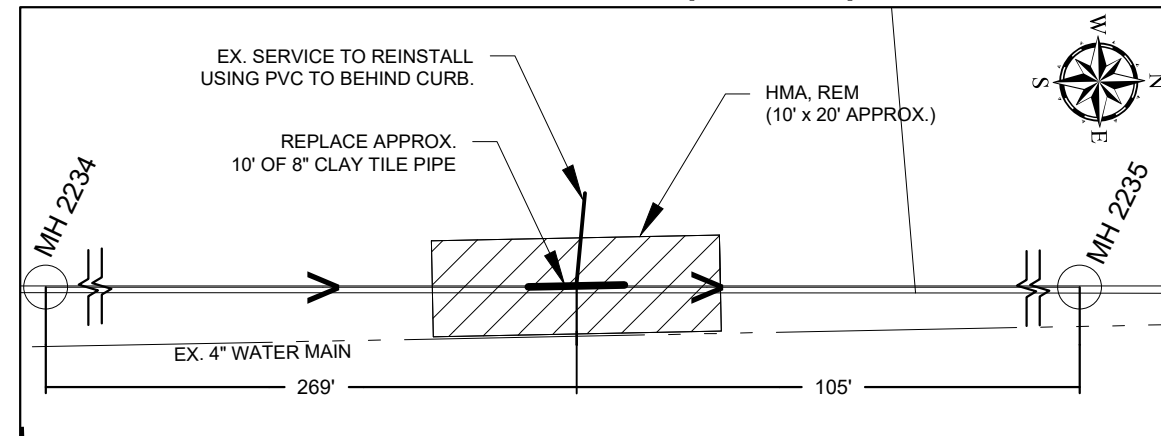
DRAWING SCALE:  
VERT: 1" = 5' HORIZ: 1" = 40'

DESIGNED	KLB	02/03/23
DRAWN	KLB	02/03/23
CHECKED	JG	02/06/23

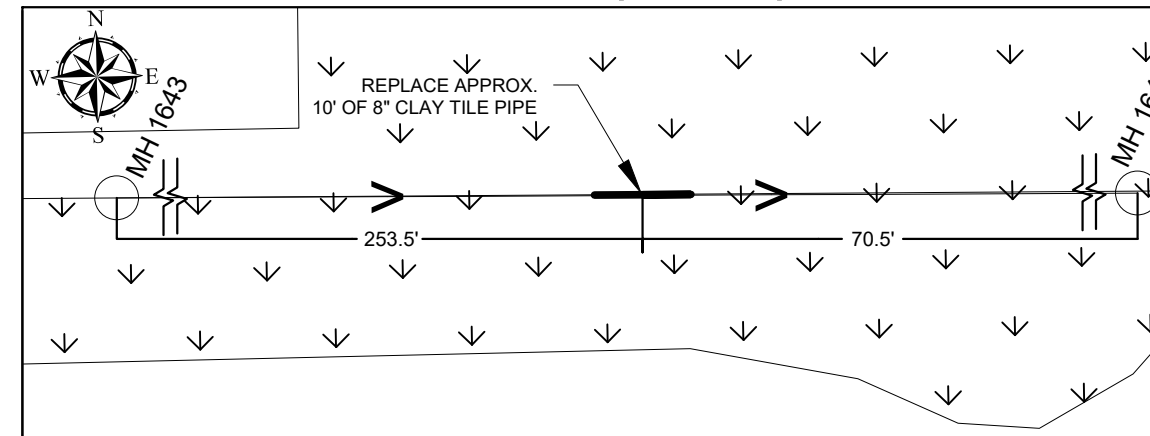
DRAWING NO. **SAN 5**

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

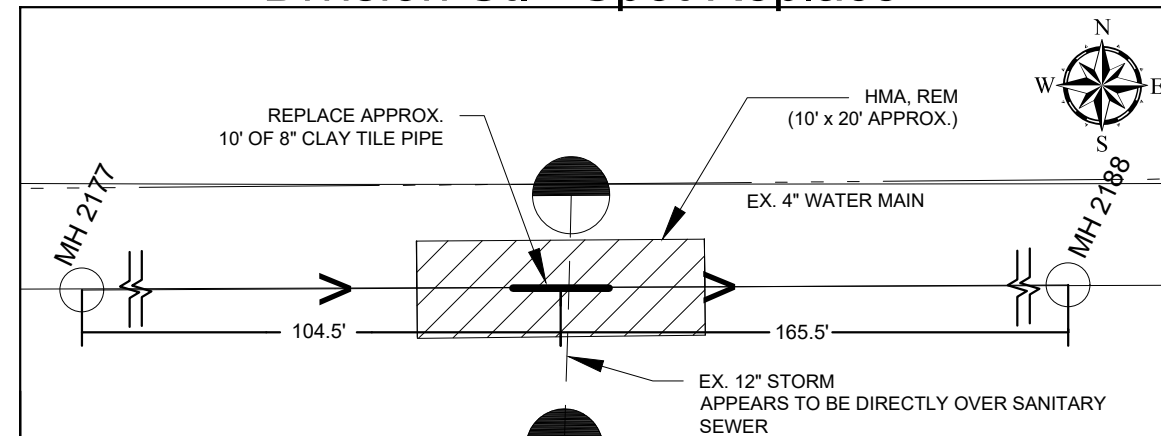
### Buena Vista Dr. - Spot Replace



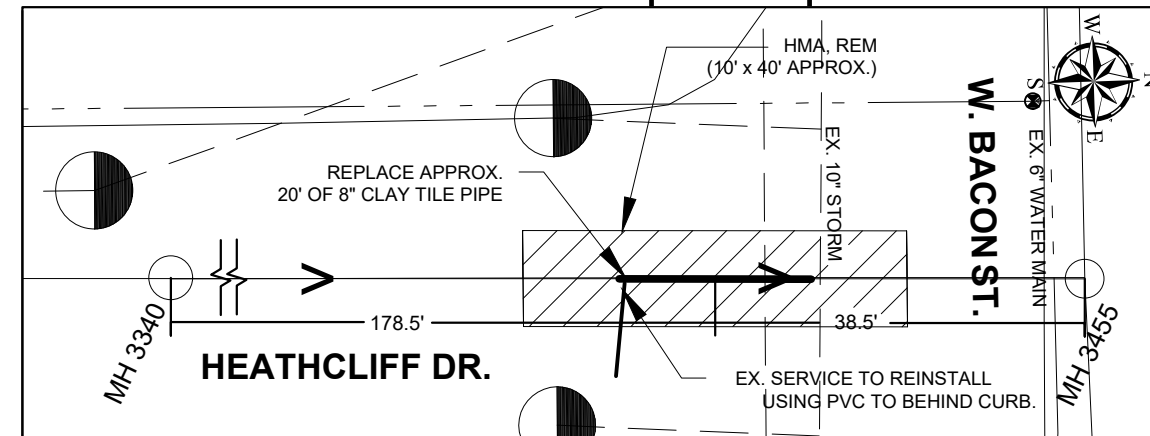
### Arch Ave. - Spot Replace



### Division St. - Spot Replace



### Heathcliff Dr. - Spot Replace



**NOTES THIS PAGE:**

- 1.) REPLACE SECTIONS FROM JOINT TO JOINT
- 2.) UTILIZE "FURNCO" OR SIMILAR AT REPLACEMENT JOINTS

KEY	
SANITARY	→ → → →
WATER	- - - - -
STORM	- - - - -
GRASS	∨

REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 15** FOR TRAFFIC CONTROL DETAILS.

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
SEWER MAIN IMPROVEMENTS  
SPOT REPLACEMENT LOCATIONS

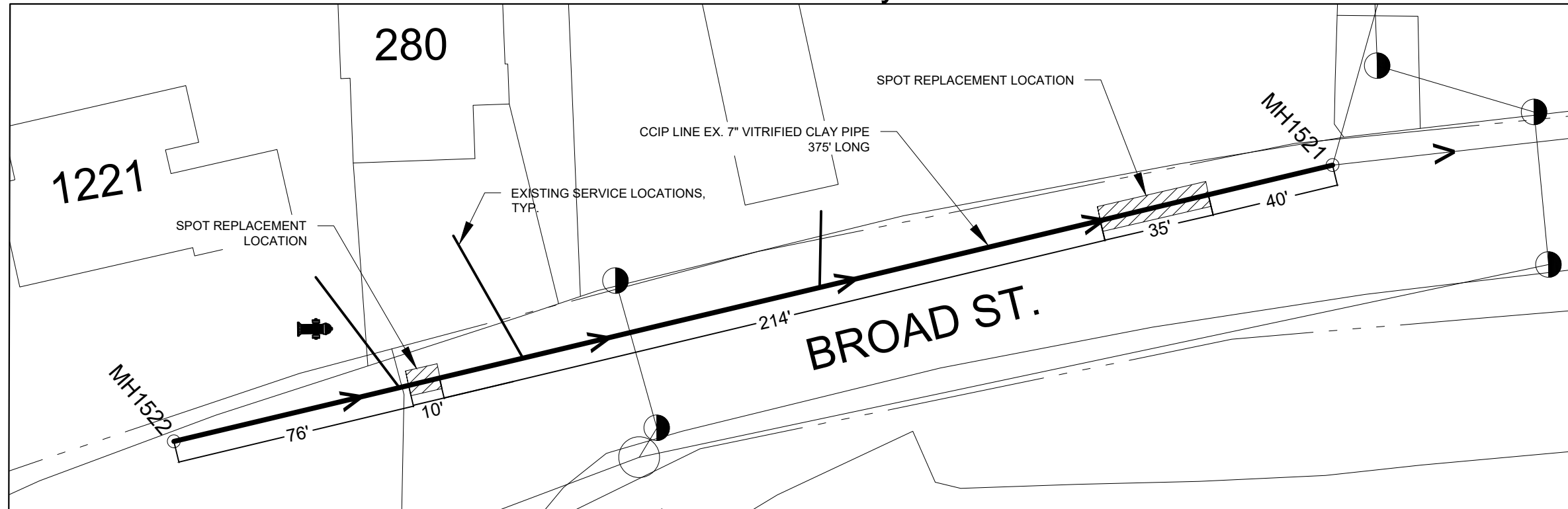
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NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

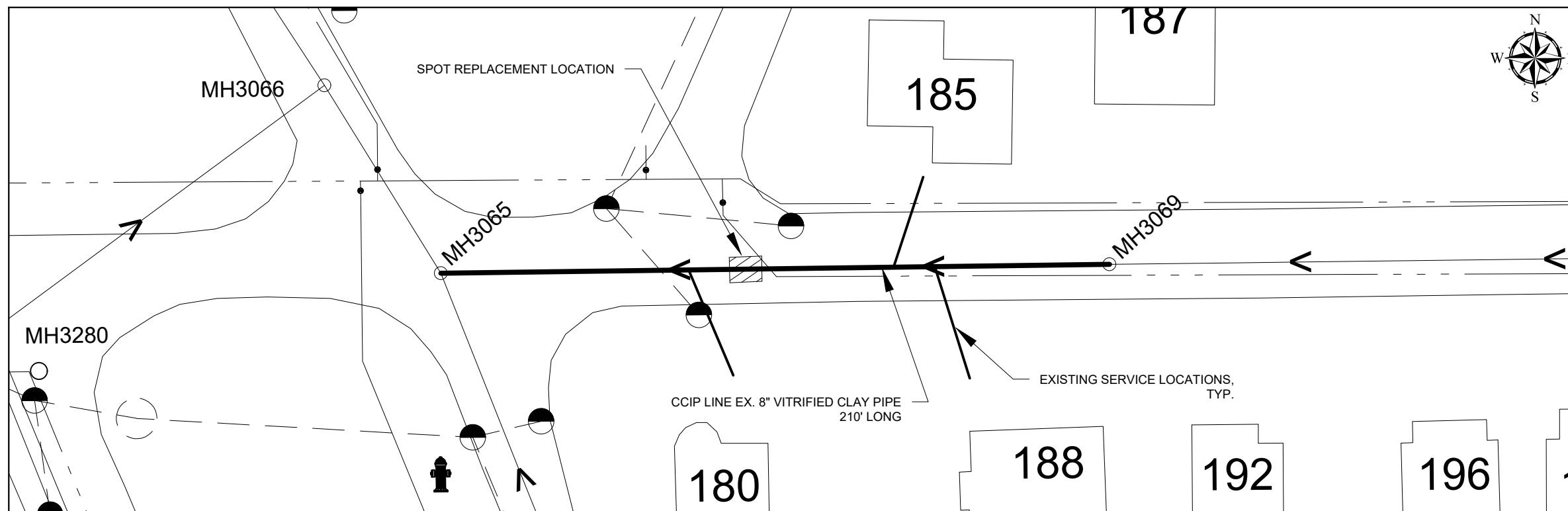
DRAWING  
**SAN 6**



### Hallett to South City Limits



### Carleton to Griswold



**NOTES THIS PAGE:**

- 1.) REPLACE SECTIONS FROM JOINT TO JOINT.
- 2.) UTILIZE "FURNCO" OR SIMILAR AT REPLACEMENT JOINTS.
- 3.) CONTRACTOR SHALL VERIFY PIPE SIZE AND LENGTH BEFORE PREPARING CIPP LINING MATERIALS.
- 4.) CONTRACTOR SHALL VERIFY ACTIVE SERVICE LINES TO BE RE-ESTABLISHED.

KEY	
SANITARY	—————>
WATER	- - - - -
STORM	- - - - -

REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 15** FOR TRAFFIC CONTROL DETAILS.

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 SEWER MAIN IMPROVEMENTS  
 SPOT REPLACEMENTS & CCIP LINING

DRAWING SCALE:  
NOT TO SCALE

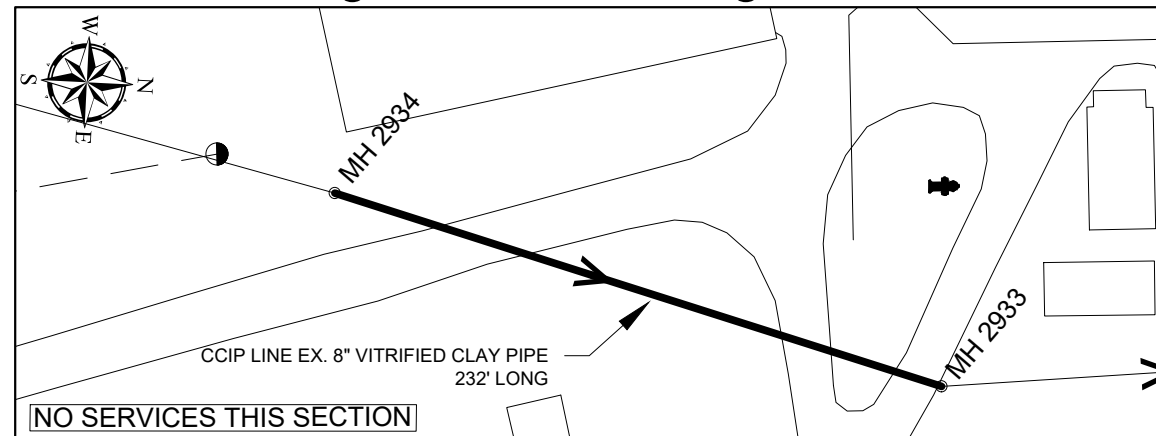
DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING **SAN 7**

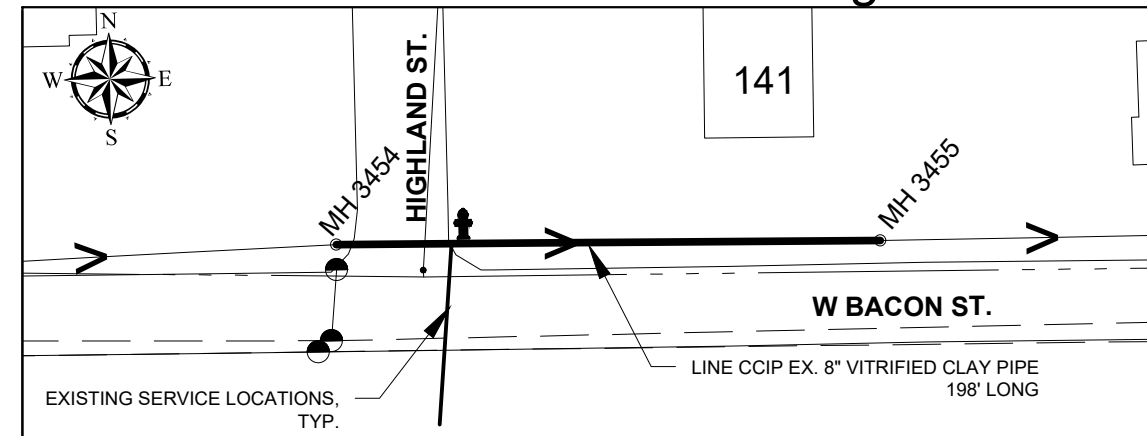


REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

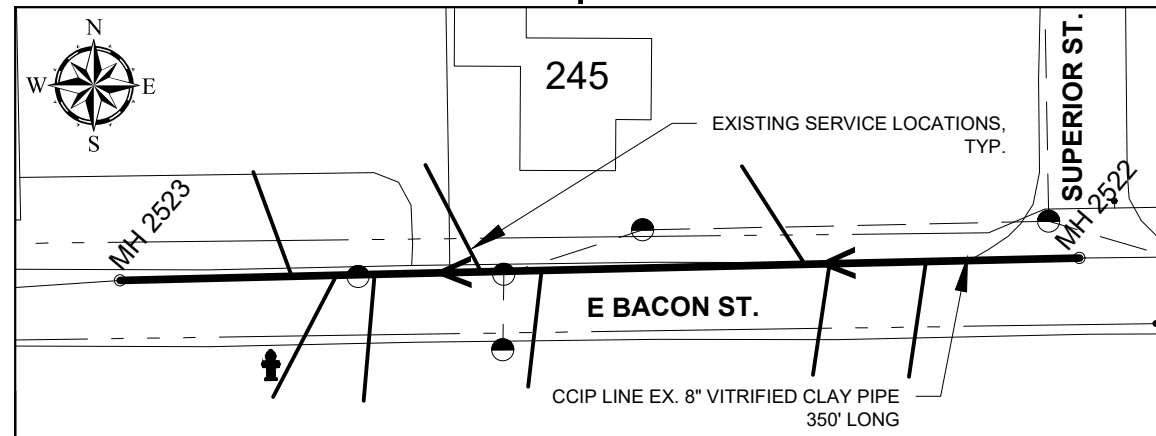
### Fairgrounds - In Fairgrounds



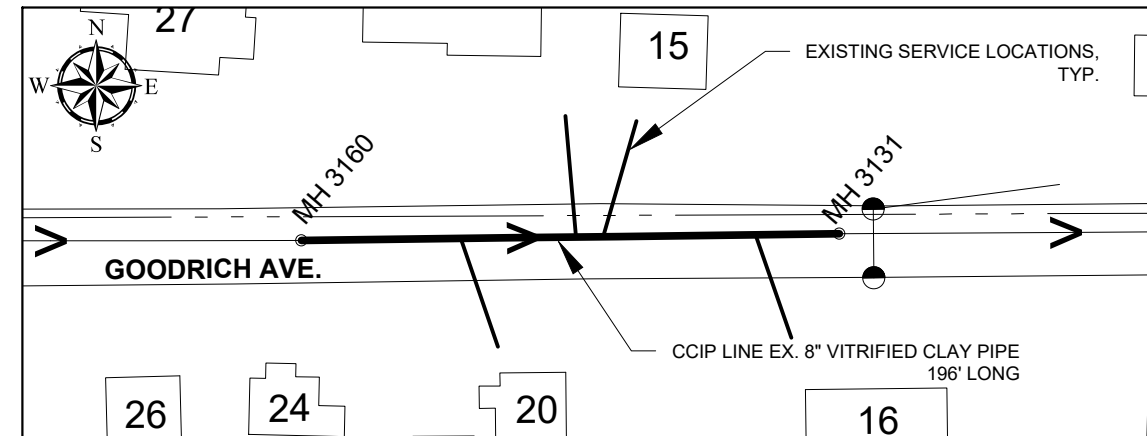
### W Bacon St. - Glendale to Highland



### E Bacon St. - Superior to Griswold



### Goodrich Ave. - West to Rea



#### NOTES THIS PAGE:

- 1.) CONTRACTOR SHALL VERIFY PIPE SIZE AND LENGTH BEFORE PREPARING CIPP LINING MATERIALS.
- 2.) CONTRACTOR SHALL VERIFY ACTIVE SERVICE LINES TO BE RE-ESTABLISHED.

KEY	
SANITARY	—————>
WATER	- - - - -
STORM	_____

REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 15** FOR TRAFFIC CONTROL DETAILS.

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
SEWER MAIN IMPROVEMENTS

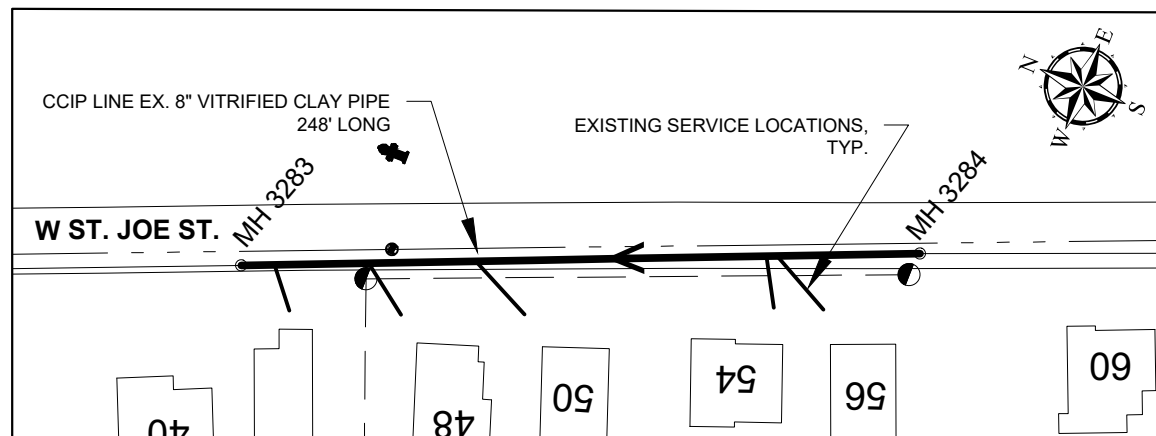
CCIP LINING LOCATIONS

DRAWING SCALE:  
NOT TO SCALE

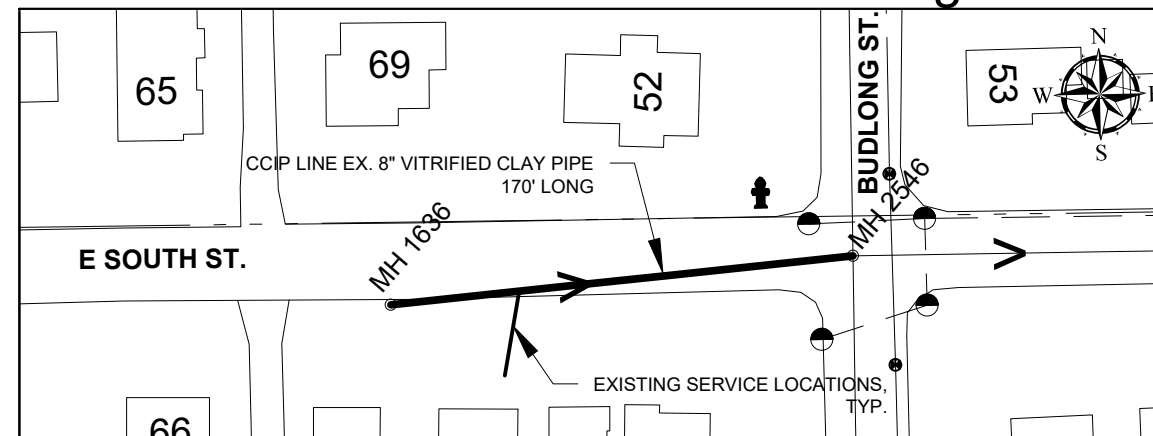
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DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING **SAN 8**

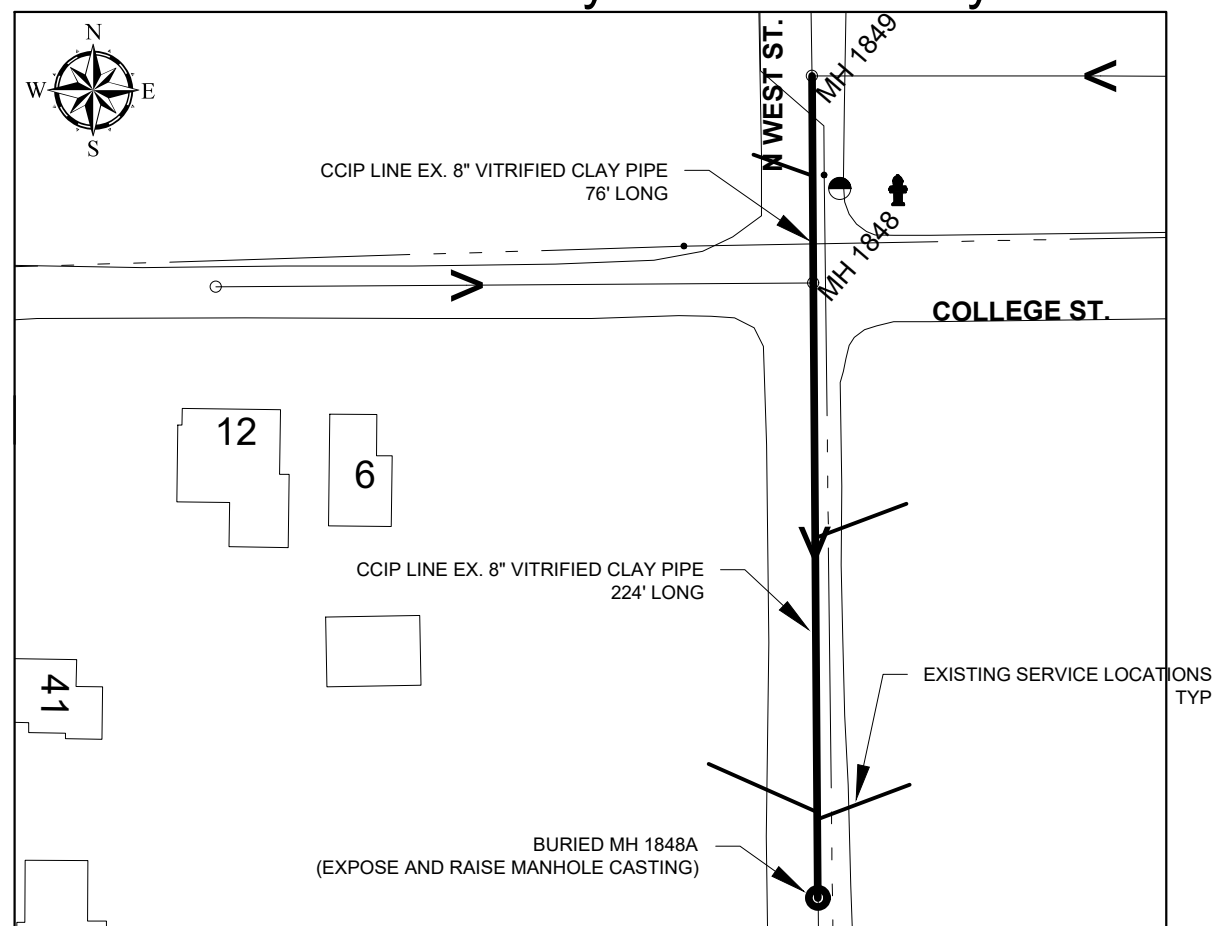
### W St. Joe St. - South to Bacon



### E South St. - Howell to Budlong

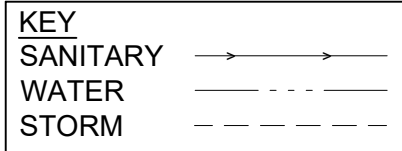


### N West St. - Fayette to Galloway



**NOTES THIS PAGE:**

- 1.) CONTRACTOR SHALL VERIFY PIPE SIZE AND LENGTH BEFORE PREPARING CIPP LINING MATERIALS.
- 2) CONTRACTOR SHALL VERIFY ACTIVE SERVICE LINES TO BE RE-ESTABLISHED.



REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 15** FOR TRAFFIC CONTROL DETAILS.

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

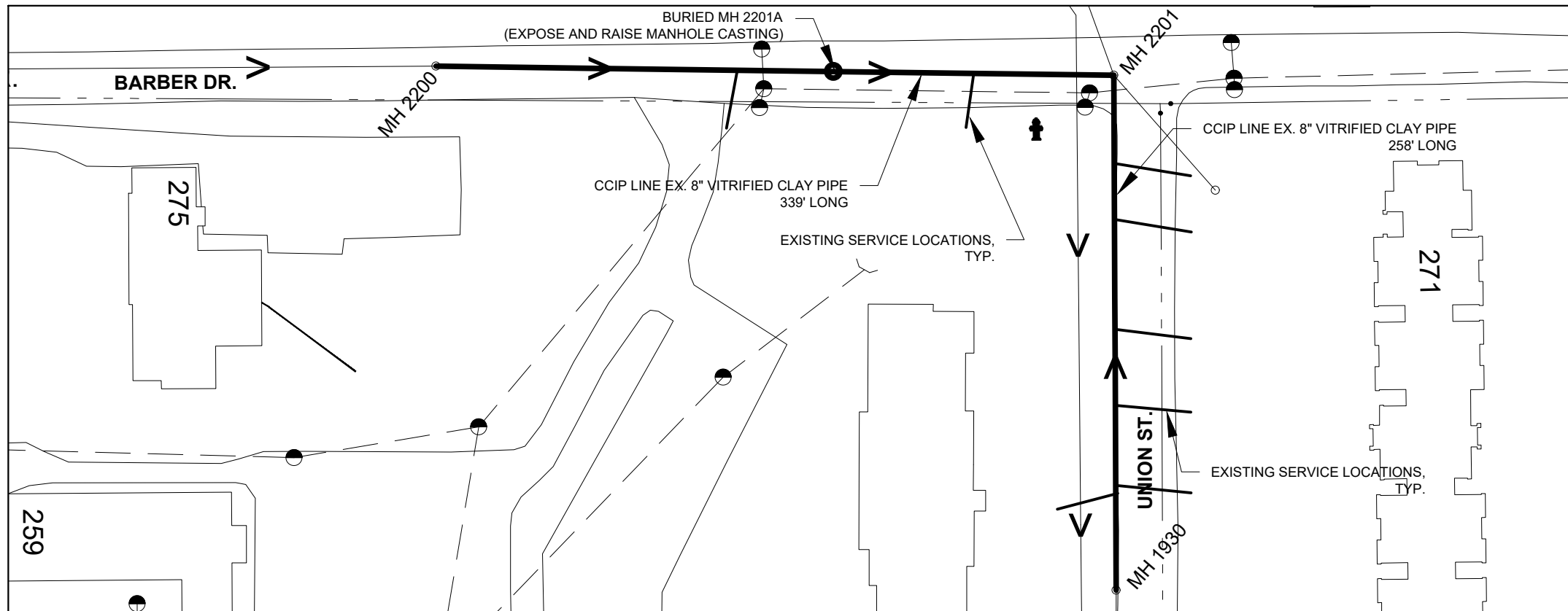
CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 SEWER MAIN IMPROVEMENTS  
 CCIP LINING LOCATIONS

DRAWING SCALE:  
NOT TO SCALE

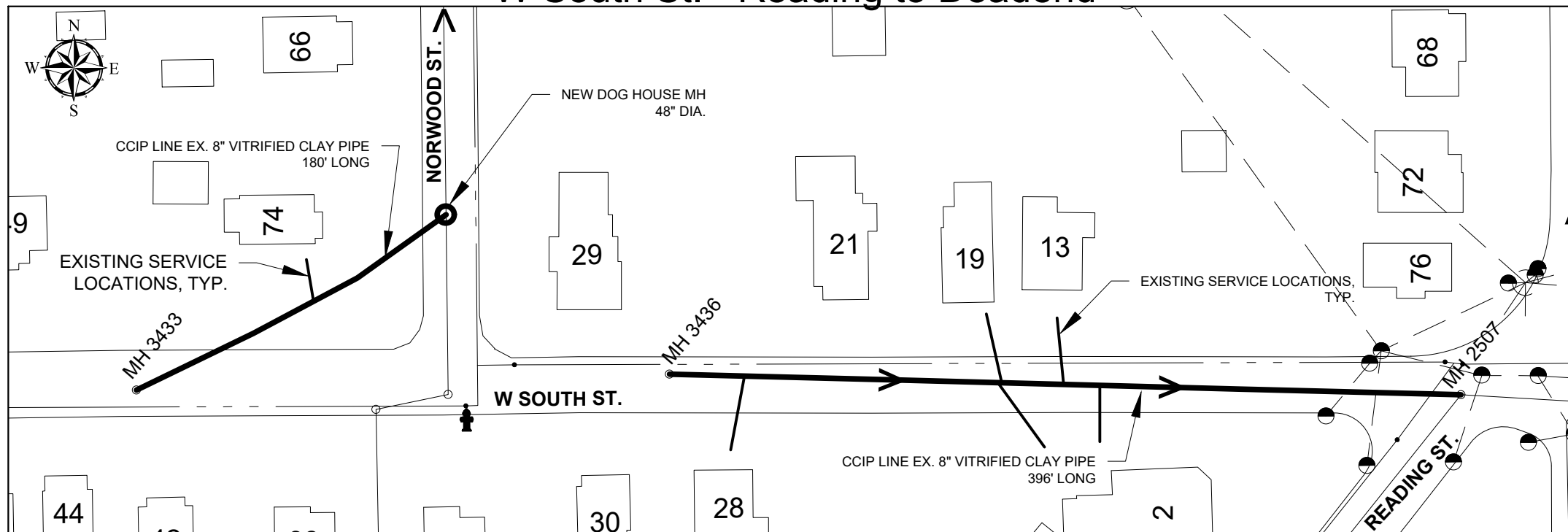
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DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING  
**SAN 9**

### Barber Dr. and Union St.



### W South St. - Reading to Deadend



**NOTES THIS PAGE:**

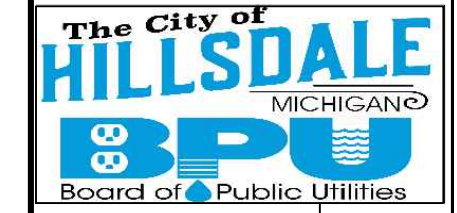
- 1.) CONTRACTOR SHALL VERIFY PIPE SIZE AND LENGTH BEFORE PREPARING CIPP LINING MATERIALS.
- 2.) CONTRACTOR SHALL VERIFY ACTIVE SERVICE LINES TO BE RE-ESTABLISHED.

KEY	
SANITARY	→ → → →
WATER	- - - - -
STORM	- - - - -

REFER TO **SAN 11** FOR CONSTRUCTION DETAILS AND **SAN 15** FOR TRAFFIC CONTROL DETAILS.



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 SEWER MAIN IMPROVEMENTS  
 LINING LOCATIONS

DRAWING SCALE:  
NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING **SAN 10**

45 MONROE ST.  
HILLSDALE, MI 49242

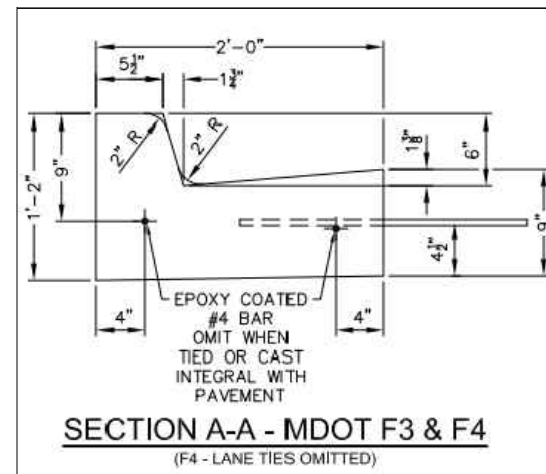
REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
 HILLSDALE, MI  
 CITY WIDE  
 SEWER MAIN IMPROVEMENTS  
 SANITARY DETAILS TYPICAL

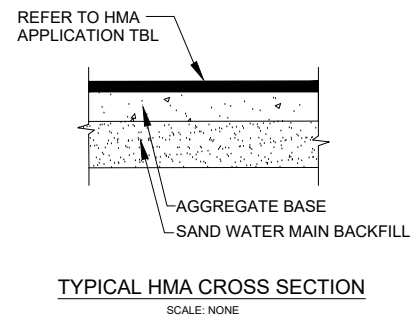
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DRAWN	RK	01/06/23
CHECKED	JG	01/13/23

DRAWING  
**SAN 11**



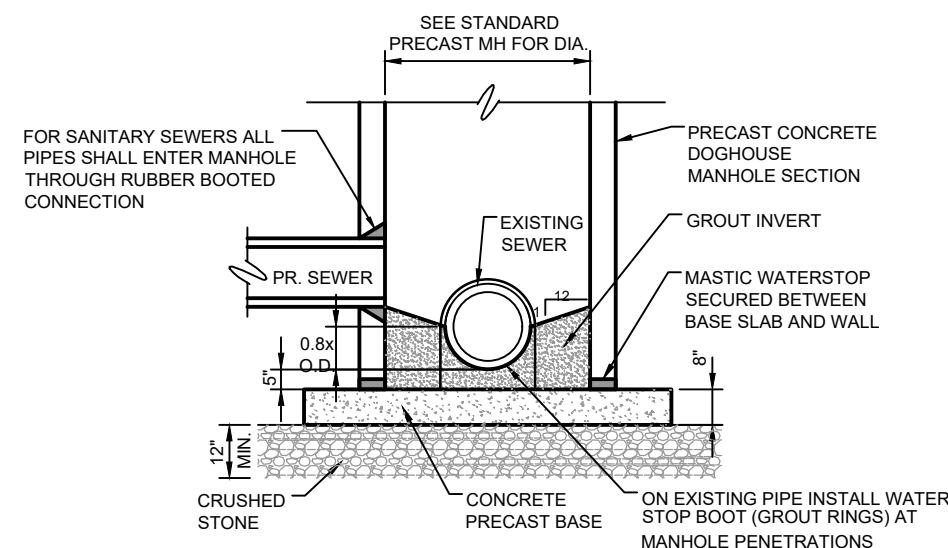
TYPICAL F-4 CURB DETAIL  
NOT TO SCALE



HMA APPLICATION TABLE					
STREET	HMA	BASE	LEVELING 1	LEVELING 2	TOP
CITY STREETS	LVSP	220 LBS/SYD	-	-	220 LBS/SYD
MDOT	LVSP	330 LBS/SYD	330 LBS/SYD	330 LBS/SYD	330 LBS/SYD

**HMA NOTES:**

- BOND COAT SHALL BE APPLIED BETWEEN SUCCESSIVE COURSES OF HMA (PAYMENT INCLUDED IN HMA MIX). APPLICATION RATE 0.05 - 0.15 GAL/SYD SS-IH, AS DIRECTED BY ENGINEER.
- BINDER GRADE SHALL BE PG 58-28.
- AGGREGATE WEAR INDEX (AWI) = 220 MIN., TOP COURSE ASPHALT



**DOGHOUSE PRECAST MANHOLE OVER EXISTING SEWER DETAIL**

NO SCALE

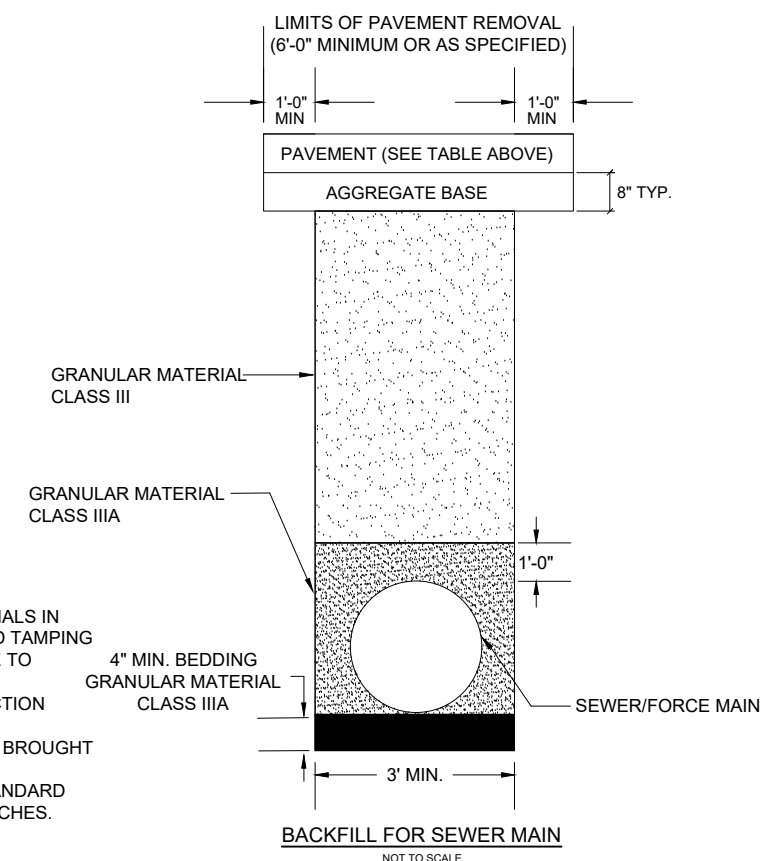
**PUBLIC UTILITIES:** THE EXISTING UTILITIES LISTED BELOW AND SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION AVAILABLE. THIS INFORMATION DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO VERIFY THEIR ACCURACY OR THE RESPONSIBILITY IN CASE UTILITIES HAVE BEEN REMOVED OR CONSTRUCTED.

<b>GAS:</b>	MICHIGAN GAS UTILITY 70 SAUK RIVER DRIVE COLDWATER, MI 49036 P - 517-781-0511 ATTN: DONALD SEEKMAN donald.seekman@michiganutilities.com	<b>ELECTRIC:</b>	CITY OF HILLSDALE BPU 45 MONROE STREET HILLSDALE, MI 49242 P - 517-437-6417 ATTN: JAKE HAMMEL jhammel@hillsdalebpu.com
<b>CABLE TELEVISION:</b>	COMCAST 25626 TELEGRAPH RD. SOUTHFIELD, MI 48034 P - 734-359-1669 ATTN: JEFF DOBIES	<b>TELEPHONE:</b>	AT&T 1041 HURST ROAD JACKSON, MI 49201 P - 517-750-0660 ATTN: KAREN TRUDGEN karen.m.trudgen@att.com
<b>WATER/SEWER:</b>	CITY OF HILLSDALE BPU 45 MONROE STREET HILLSDALE, MI 49242 P - 517-437-6412 ATTN: JEFF GIER jgier@hilldalebpu.com	<b>PUBLIC WORKS:</b>	CITY OF HILLSDALE 149 WATER WORKS AVE HILLSDALE, MI 49242 517-437-6491 ATTN: JASON BLAKE jblake@cityofhilldale.org

THE CONTRACTOR SHALL EXPOSE AND VERIFY LOCATION AND DEPTH OF EXISTING UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. CONFLICTS IN GRADE SHALL BE REPORTS TO THE CITY ENGINEER AND ADJUSTMENTS MADE AT NO ADDITIONAL COST TO THE OWNER.

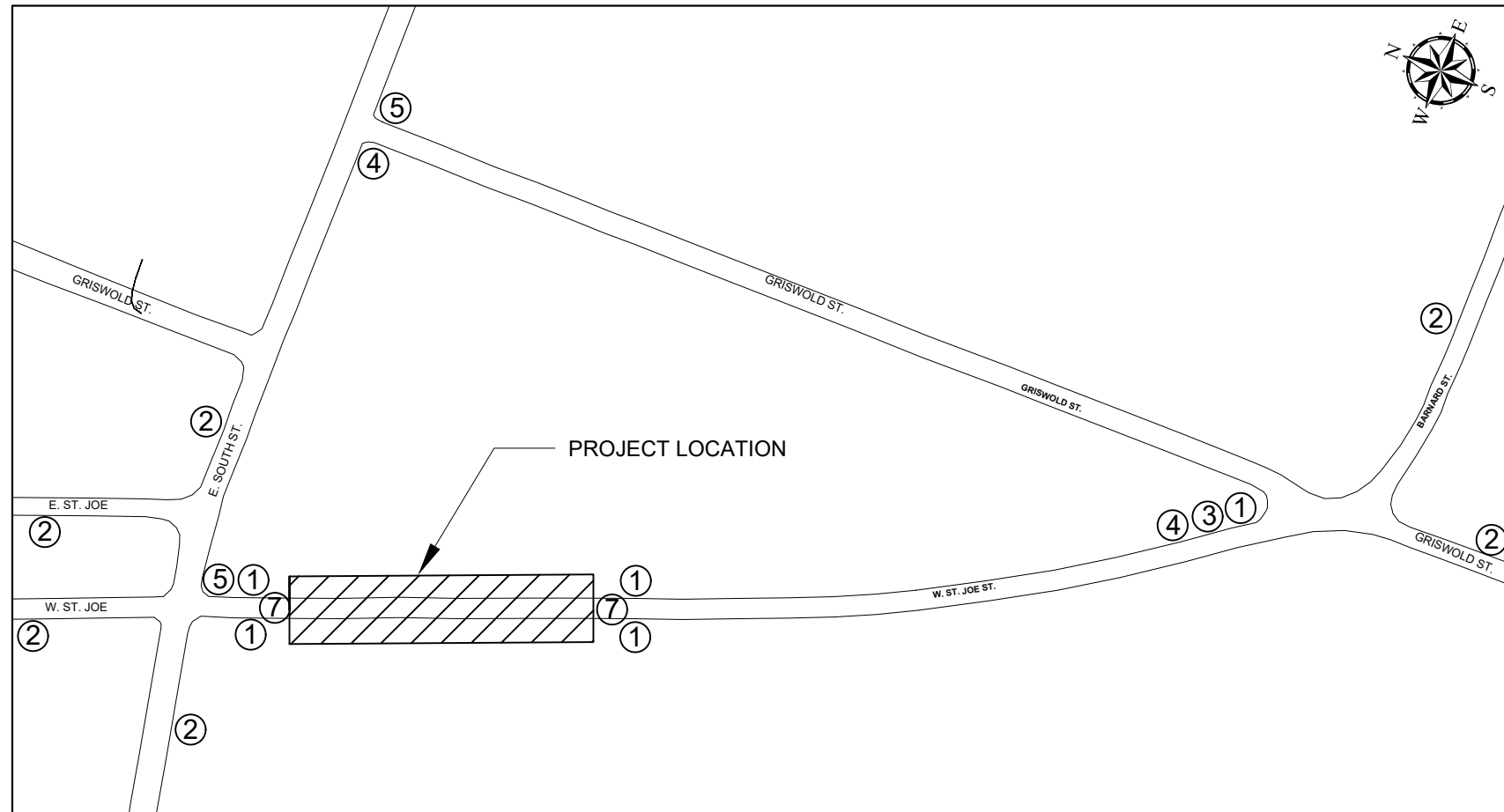
**SEWER MAIN BACKFILL NOTES:**

- COMPACT INITIAL BACKFILL MATERIALS IN LIFTS NOT TO EXCEED 6 INCHES BY HAND TAMPING AROUND AND DIRECTLY ABOVE THE PIPE TO MINIMIZE VOIDS.
- DO NOT USE MECHANICAL COMPACTION EQUIPMENT DURING INITIAL BACKFILL OPERATIONS UNTIL MATERIAL HAS BEEN BROUGHT TO 12 INCHES ABOVE THE PIPE BARREL.
- COMPACT SAND BACKFILL AND STANDARD TRENCHES IN LIFTS TO EXCEEDING 12 INCHES.

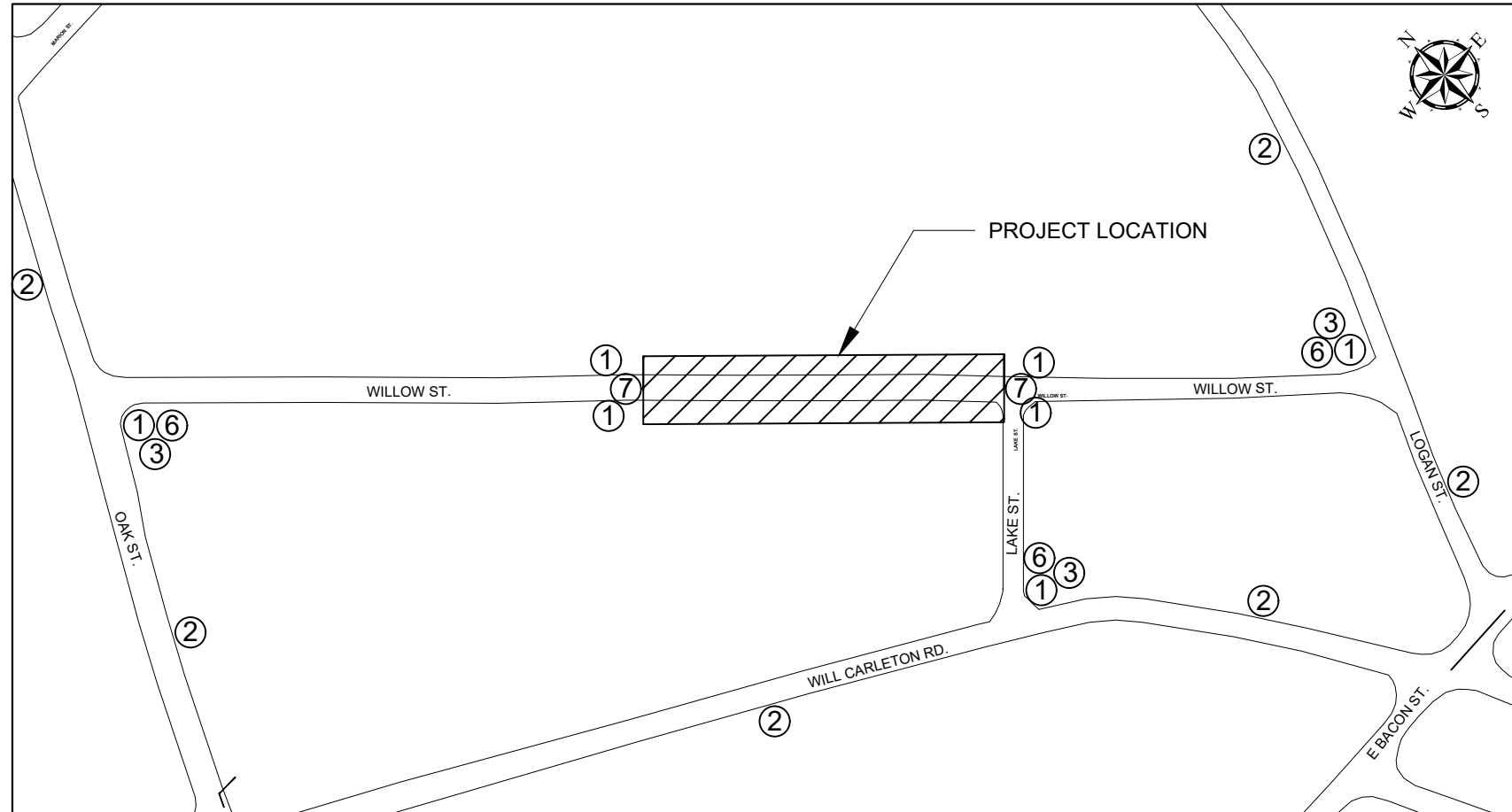




W. ST. JOE STREET



WILLOW STREET



TRAFFIC CONTROL KEY

KEY	CODE	SIGN	*QTY
①		TYPE III BARRICADE HIGH INTENSITY, LIGHTED	12
②	W20-3	ROAD CLOSED AHEAD	12
③	R11-4	ROAD CLOSED TO THRU TRAFFIC	4
④	M4-9R	DETOUR ARROW RIGHT	2
⑤	M4-9L	DETOUR ARROW LEFT	2
⑥	M4-10D	DETOUR ARROW DOUBLE	3
⑦	R11-2	ROAD CLOSED	4

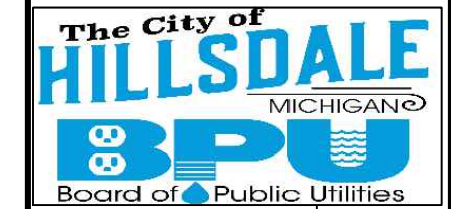
\* QUANTITIES ARE MINIMUM REQUIRED. CONTRACTOR MAY INCREASE AS NEEDED FOR THEIR CONSTRUCTION PLANS. LIGHTED BARRELS AND/OR GRABBER CONES WILL BE NEEDED FOR FLAG CONTROL ZONES AND OVER NIGHT ONE LANE SECTIONS.

PROJECT NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE MDOT 2012 STANDARD SPECIFICATION FOR CONSTRUCTION.
2. ALL TRAFFIC CONTROL SHALL CONFORM TO THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
SEWER MAIN IMPROVEMENTS  
TRAFFIC CONTROL  
WILLOW ST. & W. ST. JOE ST.

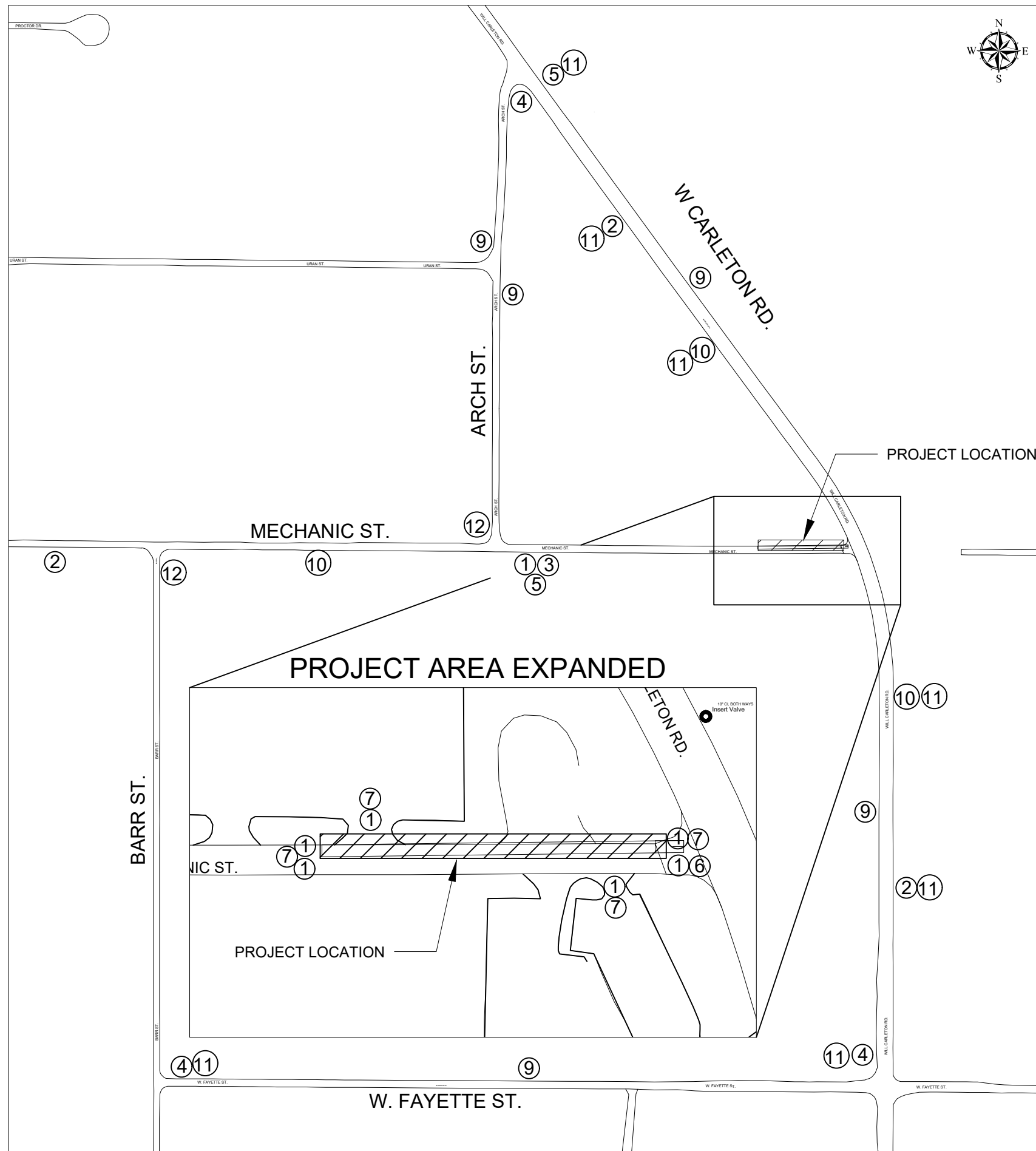
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NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JB	01/13/23

DRAWING **SAN 12**



MECHANIC STREET



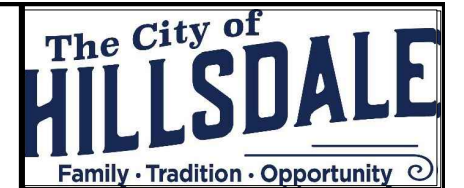
TRAFFIC CONTROL KEY

KEY	CODE	SIGN	*QTY
①		TYPE III BARRICADE HIGH INTENSITY, LIGHTED	7
②	W20-3	ROAD CLOSED AHEAD	3
③	R11-4	ROAD CLOSED TO THRU TRAFFIC	1
④	M4-9R	DETOUR ARROW RIGHT	3
⑤	M4-9L	DETOUR ARROW LEFT	2
⑥	M4-10D	DETOUR ARROW DOUBLE	1
⑦	R11-2	ROAD CLOSED	4
⑧	W20-1	ROAD WORK AHEAD	0
⑨	M4-9S	DETOUR STRAIGHT	4
⑩	W20-2	DETOUR AHEAD	2
⑪	D3-1	"MECHANIC ST." - PLAQUE	7
⑫	M4-8A	DETOUR ENDS	2

\* QUANTITIES ARE MINIMUM REQUIRED. CONTRACTOR MAY INCREASE AS NEEDED FOR THEIR CONSTRUCTION PLANS. LIGHTED BARRELS AND/OR GRABBER CONES WILL BE NEEDED FOR FLAG CONTROL ZONES AND OVER NIGHT ONE LANE SECTIONS.

PROJECT NOTES

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- ALL TRAFFIC CONTROL SHALL CONFORM TO THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.



45 MONROE ST.  
HILLSDALE, MI 49242



REVISIONS	DATE
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ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

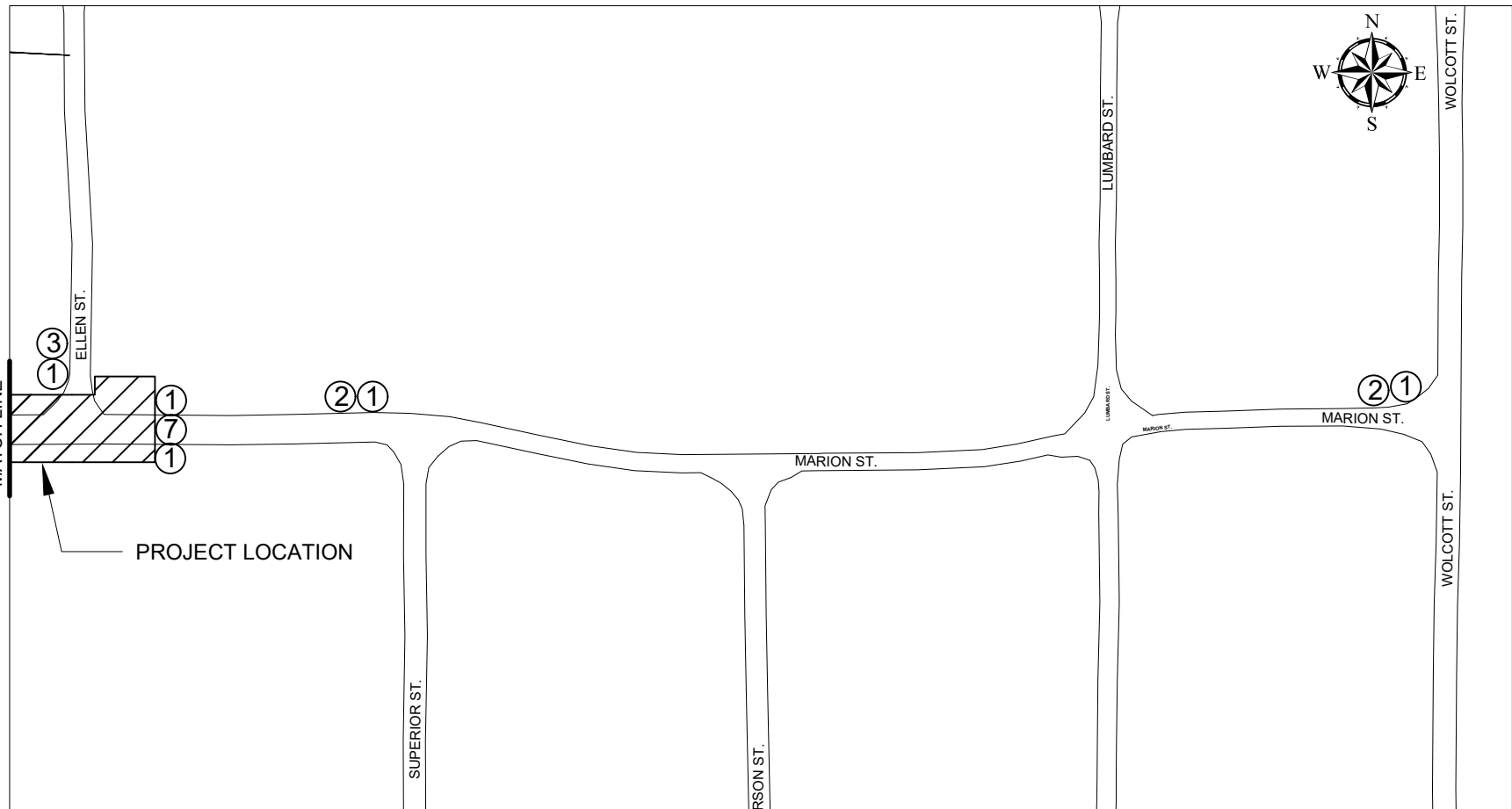
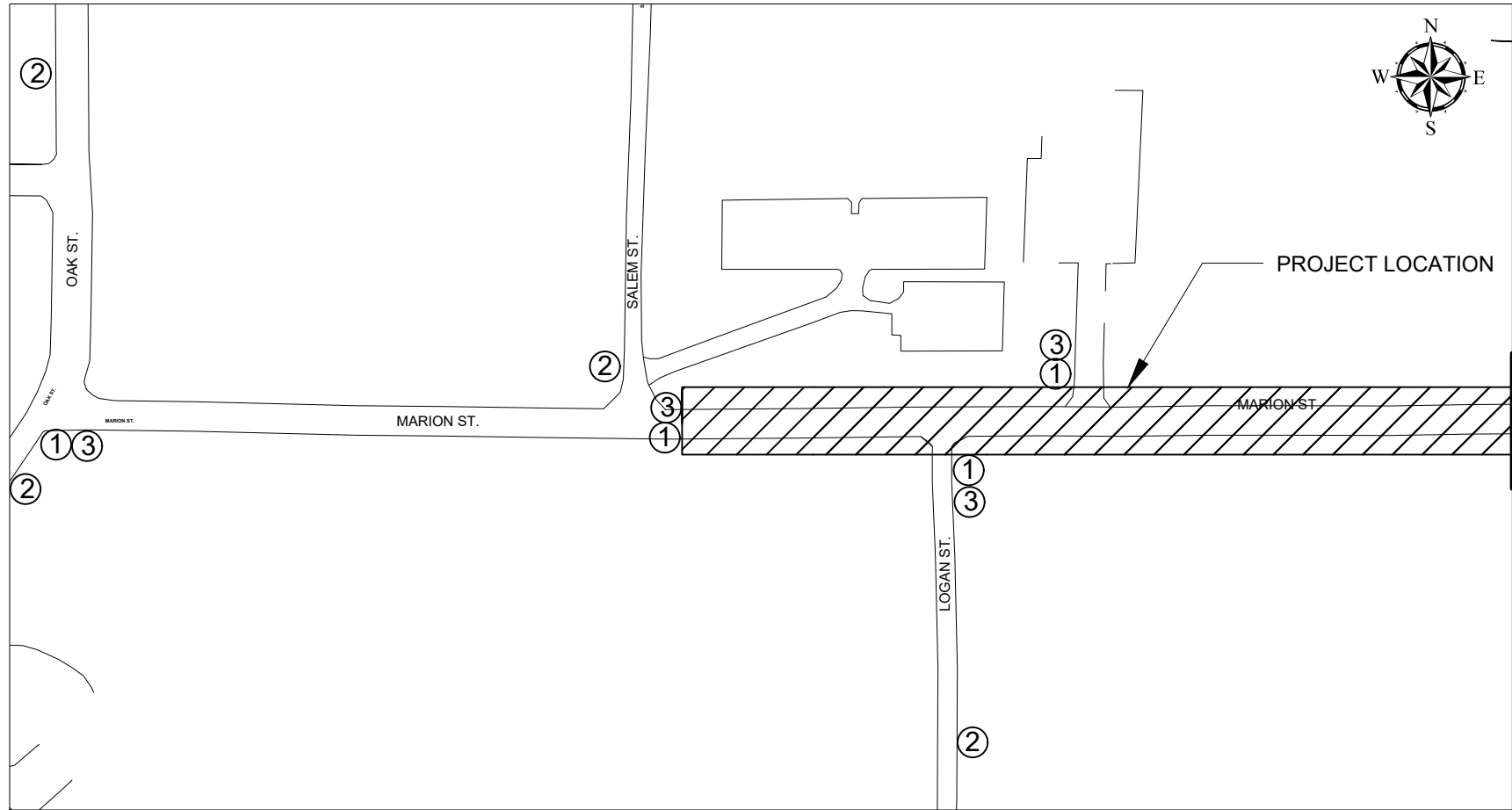
CITY WIDE  
SEWER MAIN IMPROVEMENTS

TRAFFIC CONTROL  
MECHANIC ST.

DRAWING SCALE:  
NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JB	01/13/23

DRAWING **SAN 13**



### TRAFFIC CONTROL KEY

KEY	CODE	SIGN	*QTY
①		TYPE III BARRICADE HIGH INTENSITY, LIGHTED	9
②	W20-3	ROAD CLOSED AHEAD	6
③	R11-4	ROAD CLOSED TO THRU TRAFFIC	5
④	M4-9R	DETOUR ARROW RIGHT	0
⑤	M4-9L	DETOUR ARROW LEFT	0
⑥	M4-10D	DETOUR ARROW DOUBLE	0
⑦	R11-2	ROAD CLOSED	1

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### PROJECT NOTES

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- ALL TRAFFIC CONTROL SHALL CONFORM TO THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
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CITY OF HILLSDALE  
HILLSDALE, MI  
CITY WIDE  
SEWER MAIN IMPROVEMENTS  
TRAFFIC CONTROL  
MARION ST.

DRAWING SCALE:  
NOT TO SCALE

DESIGNED	KLB	12/29/22
DRAWN	RK	01/06/23
CHECKED	JB	01/13/23

DRAWING **SAN 14**

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

CITY WIDE  
SEWER MAIN IMPROVEMENTS

TRAFFIC CONTROL  
SPOT REPLACEMENTS/LINING LOCATIONS

DRAWING SCALE:  
NOT TO SCALE

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DRAWN	RK	01/06/23
CHECKED	JB	01/13/23

DRAWING  
**SAN 15**

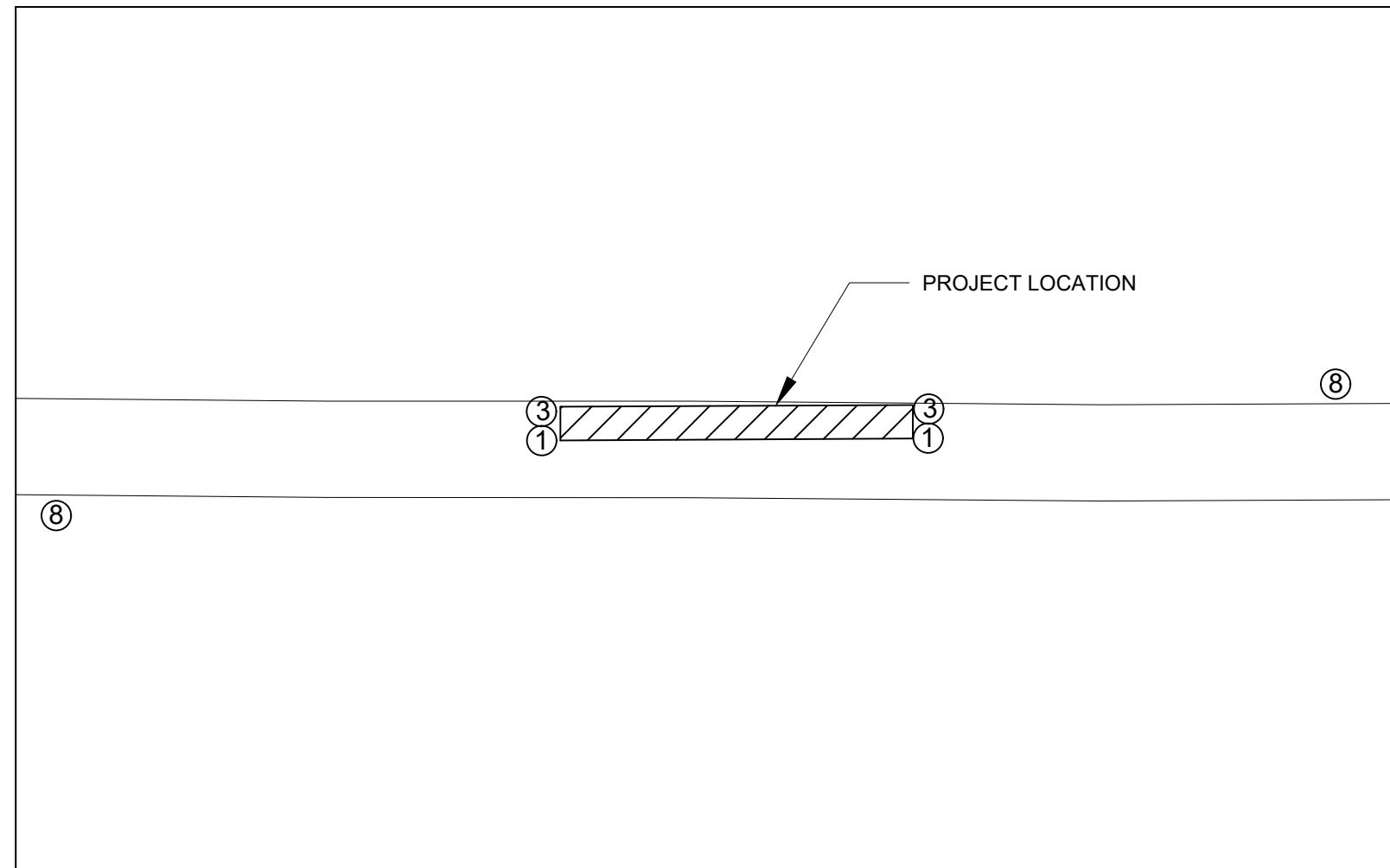
### TRAFFIC CONTROL KEY

KEY	CODE	SIGN	*QTY
①		TYPE III BARRICADE HIGH INTENSITY, LIGHTED	7
②	W20-3	ROAD CLOSED AHEAD	3
③	R11-4	ROAD CLOSED TO THRU TRAFFIC	1
④	M4-9R	DETOUR ARROW RIGHT	3
⑤	M4-9L	DETOUR ARROW LEFT	2
⑥	M4-10D	DETOUR ARROW DOUBLE	1
⑦	R11-2	ROAD CLOSED	4
⑧	W20-1	ROAD WORK AHEAD	0

\* QUANTITIES ARE MINIMUM REQUIRED. CONTRACTOR  
MAY INCREASE AS NEEDED FOR THEIR CONSTRUCTION  
PLANS. LIGHTED BARRELS AND/OR GRABBER CONES  
WILL BE NEEDED FOR FLAG CONTROL ZONES AND OVER  
NIGHT ONE LANE SECTIONS.

### PROJECT NOTES

- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE MDOT 2012 STANDARD SPECIFICATION FOR CONSTRUCTION.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.



TYPICAL TRAFFIC CONTROL  
@ SPOT REPLACEMENTS/LINING LOCATIONS

(REFER TO MDOT TRAFFIC CONTROL FOR M-99 WORK)

45 MONROE ST.  
HILLSDALE, MI 49242

REVISIONS	DATE
ISSUED FOR BIDS	2/10/23
ISSUED FOR RE-BID	3/17/23

CITY OF HILLSDALE  
HILLSDALE, MI

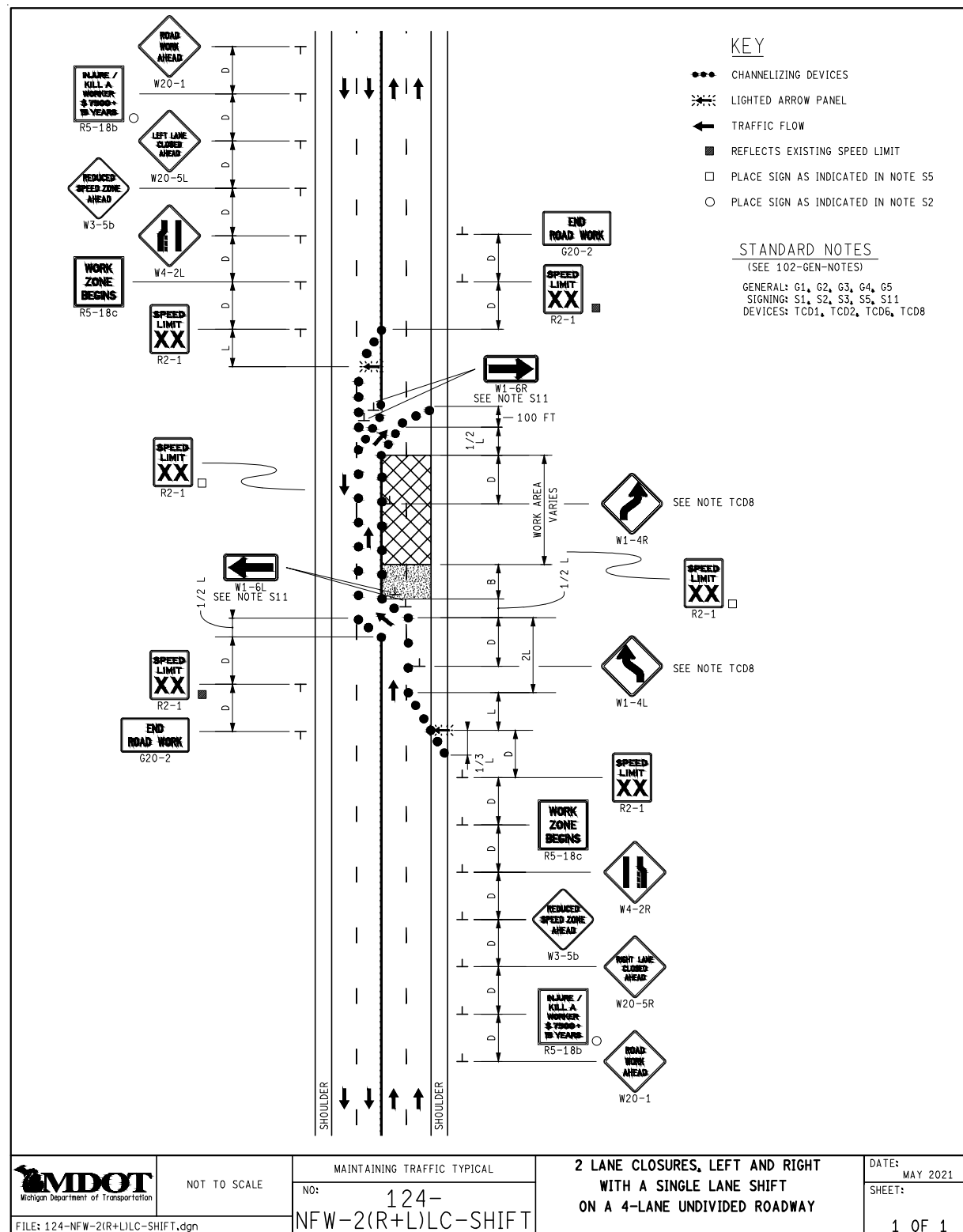
CITY WIDE  
SEWER MAIN IMPROVEMENTS

TRAFFIC CONTROL  
MDOT TYPICALS

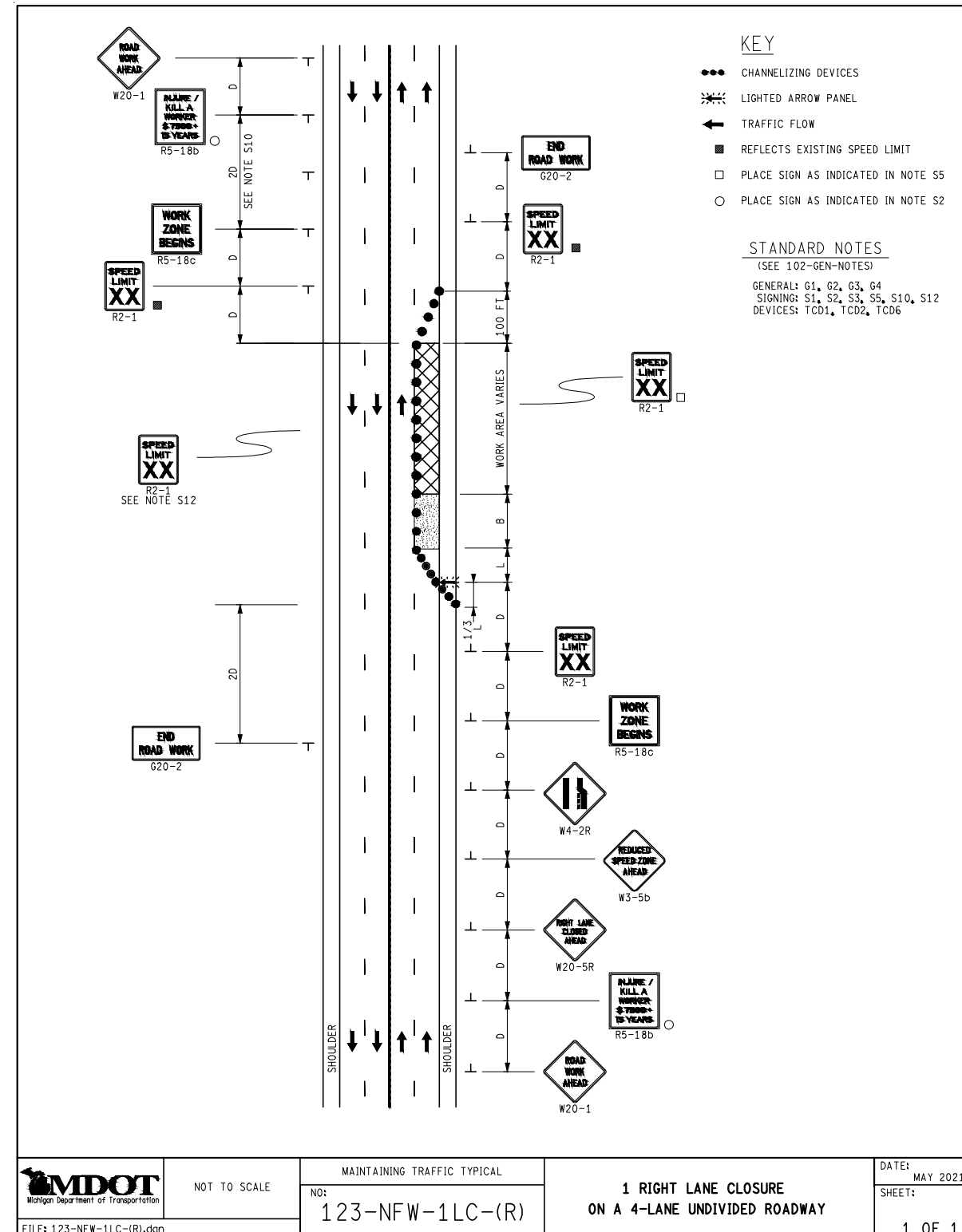
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DRAWN	RK	01/06/23
CHECKED	JB	01/13/23

DRAWING  
**SAN 16**



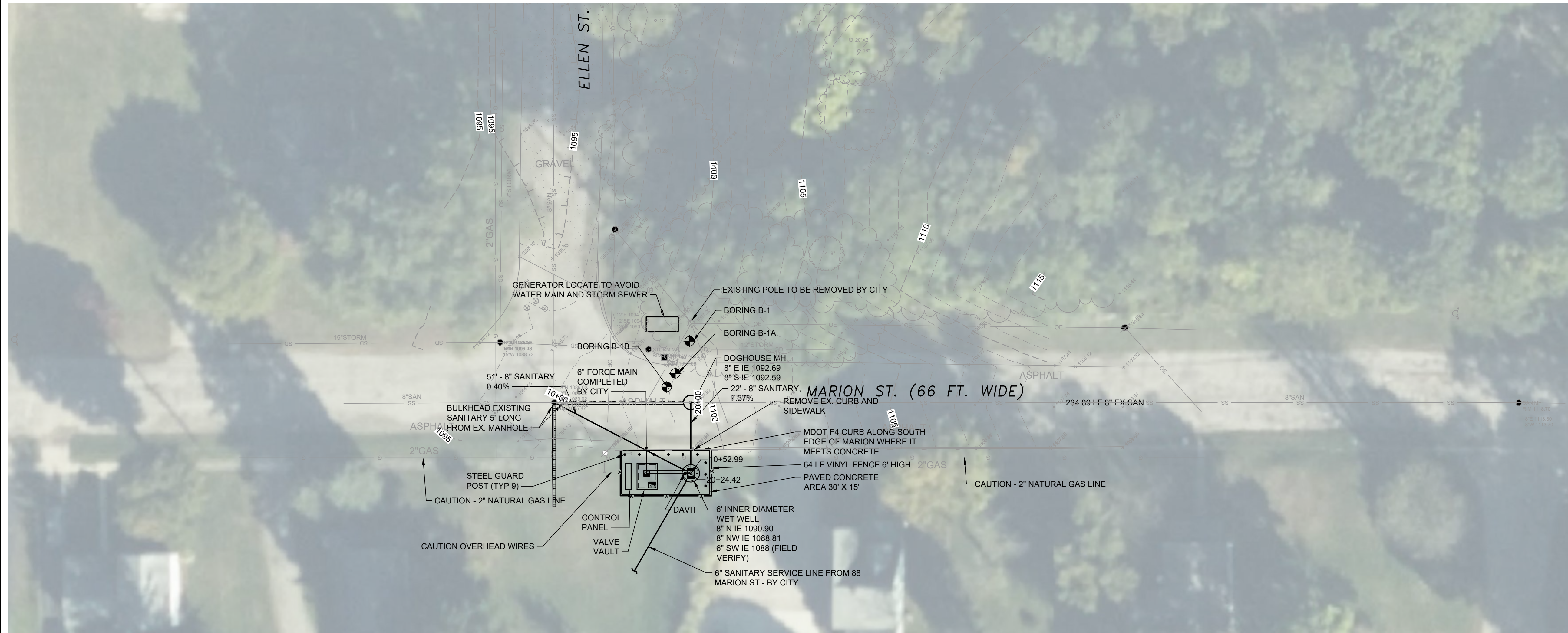
**MDOT LANE SHIFT TYPICAL**  
(UTILIZE FOR S. BROAD ST. - M-99 @ SANITARY REPAIR / CCIP LINING)



**MDOT LANE CLOSURE TYPICAL**  
(UTILIZE FOR W. CARLETON RD. - M-99 @ WATER VALVES)



2/7/2023 5:07:28 PM - C:\PROJECTS\ANN ARBOR\12761200-12761-23002\CAD\SHSHEETFILES\LS-1 PROPOSED SITE.DWG - BARBER, JOHN

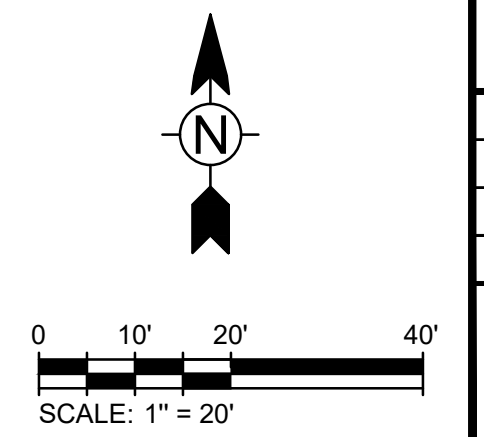


LOG OF BORING		Project No.: 221658 Boring No.: B-1 Sheet: 1 of 1								
Project: Marion Street and Ellen Street Pump Station Client: City of Hillsdale Location: Hillsdale, Michigan Drill Type: Geoprobe 7822 Crew Chief: MS Field Eng.: JV Rev. By: RS Coordinates: N=154607.9 E=13053873.3 (MI South ft) Elevation: 1097.7 ft Datum: NAVD 88 (GPS Observation) Notes:										
Date Begin: 01/03/2023 Date End: 01/03/2023		Groundwater, ft.								
Tooling	Type	Dia.	Groundwater, ft.							
Casing	HSA	4 1/4"	During							
Sampler	SPT	2"	End							
Core			Seepage							
Tube			Date							
SPT Hammer	Auto		Depth, ft.							
Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 3.5 ft. Depth Drilled: 5.0 ft.										
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)										
Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
1096.7	1	S-1	1.3	11-3-3 N=6	SP-SM	6" Clayey Topsoil	0.5			Fill: 0' to 5.0'
1095.7	2					Brown poorly graded SAND with silt; mostly coarse to fine sand, few silty fines, few coarse to fine gravel, moist. Fill with concrete pieces.				
1094.7	3									
1093.7	4									
1092.7	5	S-2	0.7	7-5-7 N=12			5.0			S-2: Poor Recovery, possible coarse gravel / COBBLE / debris
End of Boring										

LOG OF BORING		Project No.: 221658 Boring No.: B-1A Sheet: 1 of 1								
Project: Marion Street and Ellen Street Pump Station Client: City of Hillsdale Location: Hillsdale, Michigan Drill Type: Geoprobe 7822 Crew Chief: MS Field Eng.: JV Rev. By: RS Coordinates: N=154604.3 E=13053874.7 (MI South ft) Elevation: 1097.5 ft Datum: NAVD 88 (GPS Observation) Notes:										
Date Begin: 01/03/2023 Date End: 01/03/2023		Groundwater, ft.								
Tooling	Type	Dia.	Groundwater, ft.							
Casing	HSA	4 1/4"	During							
Sampler	SPT	2"	End							
Core			Seepage							
Tube			Date							
SPT Hammer	Auto		Depth, ft.							
Plugging Record: Backfilled borehole with compacted cuttings. Cave in at 3.0 ft. Depth Drilled: 5.5 ft.										
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)										
Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
1098.5	1					4" HMA	0.3			
1095.5	2					Blind Drilled to 5.5'				
1094.5	3									
1093.5	4									
1092.5	5									
End of Boring										

LOG OF BORING		Project No.: 221658 Boring No.: B-1B Sheet: 1 of 1								
Project: Marion Street and Ellen Street Pump Station Client: City of Hillsdale Location: Hillsdale, Michigan Drill Type: Geoprobe 7822 Crew Chief: MS Field Eng.: JV Rev. By: RS Coordinates: N=154598.9 E=13053873.7 (MI South ft) Elevation: 1097.9 ft Datum: NAVD 88 (GPS Observation) Notes:										
Date Begin: 01/03/2023 Date End: 01/03/2023		Groundwater, ft.								
Tooling	Type	Dia.	Groundwater, ft.							
Casing	HSA	4 1/4"	During							
Sampler	SPT	2"	End							
Core			Seepage							
Tube			Date							
SPT Hammer	Auto		Depth, ft.							
Plugging Record: Backfilled borehole with compacted cuttings, patched pavement with cold patch. Cave in at 23.3 ft. Depth Drilled: 25.5 ft.										
Component Percentages: Trace < 5%, Few 5-10%, Little 15-25%, Some 30-45%, Mostly 50-100% QP = Calibrated Penetrometer (tons/sq. ft.)										
Elev. FT.	Depth FT.	Sample Number	Recov. FT.	Penetration (Blows Per 6") ASTM D 1586	*USCS Group Symbol	*DESCRIPTION	QP tsf	MST %	DD pcf	REMARKS
1096.9	1					Blind Drilled to 6.0'				Fill: 0' to 11.1'
1095.9	2									Driller noted hard drilling from 0' to 11.1'
1094.9	3									
1093.9	4									
1092.9	5									
1091.9	6						6.0			
1090.9	7	S-1	0.7	4-7-6 N=13	SC	Brown clayey SAND with gravel, mostly coarse to fine sand, little clayey fines, little coarse to fine gravel, moist. Fill with concrete pieces.				S-1, S-2: Poor recovery, possible coarse gravel / COBBLE / debris
1089.9	8									
1088.9	9	S-2	0.5	5-5-8 N=13						
1087.9	10									
1086.9	11						11.1			
1085.9	12	S-3	1.5	10-10-10 N=20	SP-SM	Brown poorly graded SAND with silt; mostly coarse to fine sand, few silty fines, moist				
1084.9	13									
1083.9	14	S-4	0.0	5-5-5 N=10			14.5			S-4, S-5, S-6: Poor recovery, possible coarse gravel / COBBLE
1082.9	15									
1081.9	16	S-5	0.4	5-7-8 N=15	SC	Gray clayey SAND; mostly medium to fine sand, some clayey fines, moist				
1080.9	17									
1079.9	18									
1078.9	19	S-6	0.0	6-6-7 N=11			17.5			
1077.9	20							2.0	16.4	
1076.9	21	S-7	1.5	4-5-7 N=12	CL	Gray sandy lean CLAY; mostly clayey fines, little fine sand, few coarse to fine gravel, moist				
1075.9	22									
1074.9	23									
1073.9	24	S-8	1.5	2-3-5 N=8			2.5		10.0	S-9: Sampler refusal, possible coarse gravel / COBBLE
1072.9	25	S-9	0.0	50/3"			25.5			Auger refusal at 25.5' due to possible coarse gravel / COBBLE
End of Boring										

- NOTES
- SAWCUT EXISTING BITUMINOUS PAVEMENT FOR PLACEMENT OF NEW GAS LINE TO GENERATOR AND NEW SEWER PIPE.
  - HMA TO BE MDOT LVSP, BASE COURSE 220 LBS/SYD, TOP COURSE 220 LBS/SYD.
  - BOND COAT SHALL BE APPLIED BETWEEN SUCCESSIVE COURSES OF HMA PAVEMENT. APPLICATION RATE OF 0.05-0.15 GAL/SYD SS-1H, AS DIRECTED BY ENGINEER.
  - BINDER SHALL BE PG 58-28.
  - AGGREGATE WEAR INDEX (awi) = 220 MIN. TOP COURSE ASPHALT.
  - HMA TO BE PLACED ON 8" AGGREGATE BASE, MDOT SPEC 21 AA LIMESTONE.
  - CURB AND GUTTER SHALL BE 24" MDOT F4 MODIFIED.
  - FENCE SHALL BE MASTER HALCO LEGEND, TAN COLOR OPEN SPINDLE TOP, SOLID VINYL PRIVACY FENCE WITH GOTHIC POST CAPS. THE WEBSITE IS WWW.MASTERHALCO.COM/VINYL



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MARK	DATE	DESCRIPTION	BY
1	2/10/23	ISSUED FOR BIDS	
2	3/17/23	ISSUED FOR RE-BID	

CITY OF HILLSDALE  
MARION STREET  
SANITARY IMPROVEMENTS  
PROPOSED PUMP STATION  
SITE PLAN

PROJ: 200-12761-23002  
 DESN: NGL  
 DRWN: RM  
 CHKD:

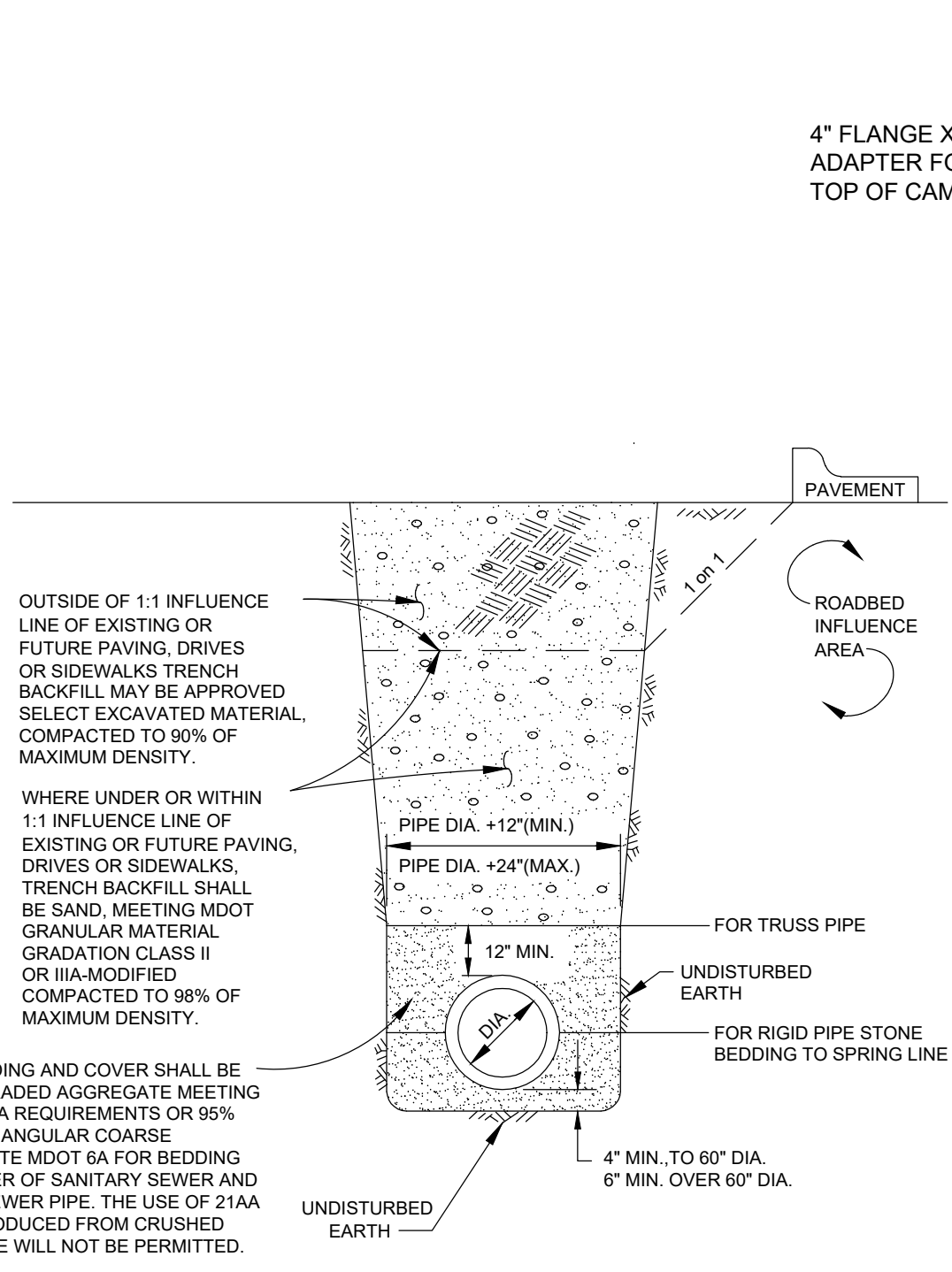
LS-1

Copyright: Tetra Tech

Bar Measures 1 inch, otherwise drawing not to scale



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**STANDARD PIPE BEDDING**

MANHOLE SCHEDULE						
PIPE SIZE ("d")	D**	T	MAX INV DEPTH*	SLAB REINF (EA WAY)	A <sub>s</sub>	A <sub>sw</sub> (SQ IN)
8"-24"	48"	6"	24'	#4AT12"	0.20	
27"-36"	60"	8"	24'	#5AT12"	0.31	
42"-48"	72"	8"	24'	#5AT9"	0.48	
54"	84"	8"	24'	#5AT6"	0.74	

\* FOR GREATER DEPTH, INCREASE REINFORCEMENT PROPORTIONALLY.  
\*\* UNLESS NOTED OTHERWISE ON DRAWINGS.

MANHOLE ACCESS  
INCOMING SEWER  
OUTGOING SEWER

NEOPRENE FLAT WASHER  
5/8" DIA. RUBBER "O" RINGS  
THREADED INSERTS (CAST-IN)

WATER TIGHT COVER ANCHORAGE

TO BE SURMOUNTED BY 1/2" THK. MORTAR BED AND STANDARD MH FRAME AND COVER.  
3" TO 8" CONC. BRICK OR GRADE RINGS

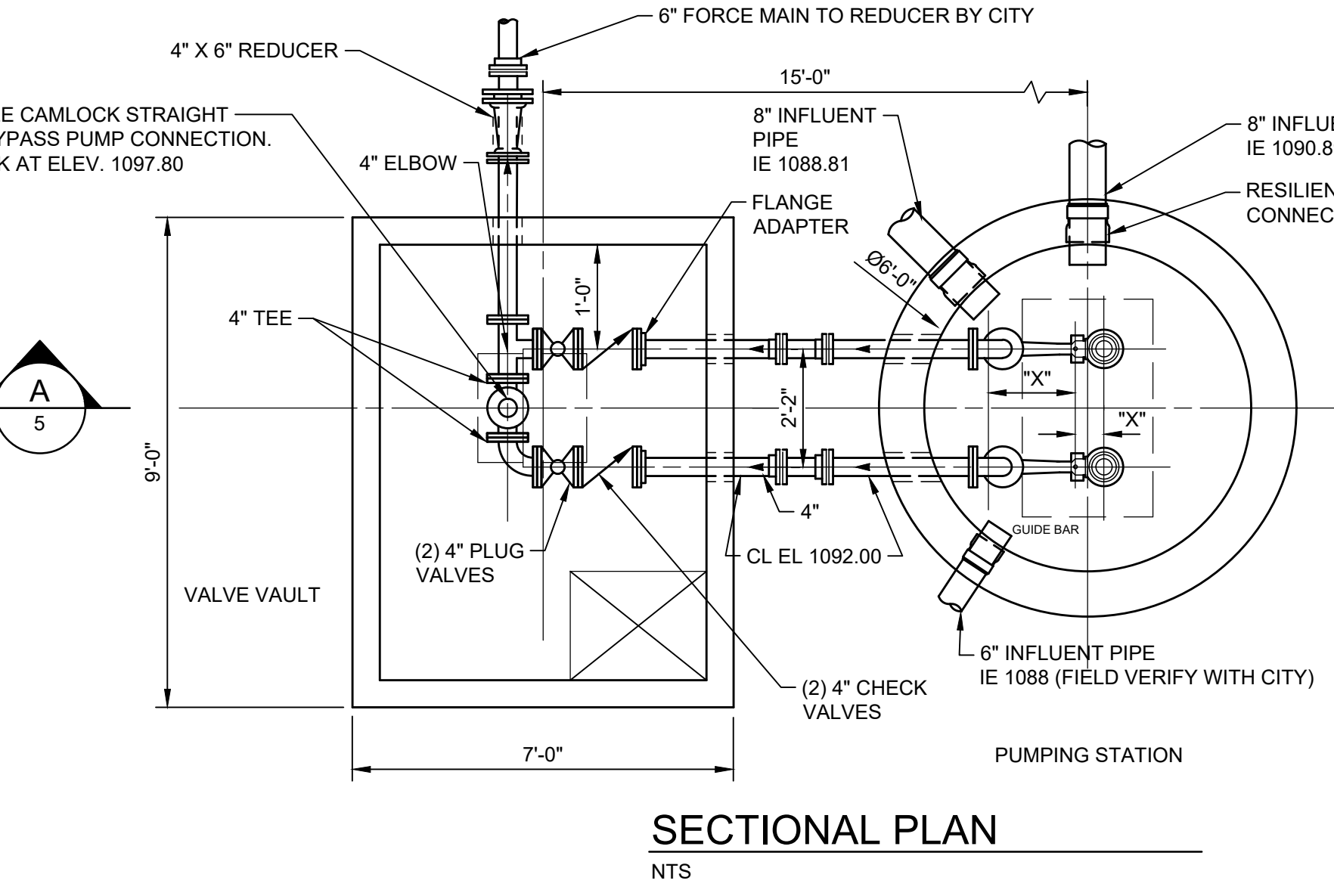
FOR PRECAST CONC. BLOCK

1/2" CEMENT MORTAR COAT  
ALTERNATE BLOCK WALL SECTION  
45" MORTAR BEVEL (TYP.)  
MH STEPS AT 16" CTRS.  
NOT OVER 16"  
INTEGRAL SLAB  
PRECASC CONC. MH SECTION (ASTM C478)

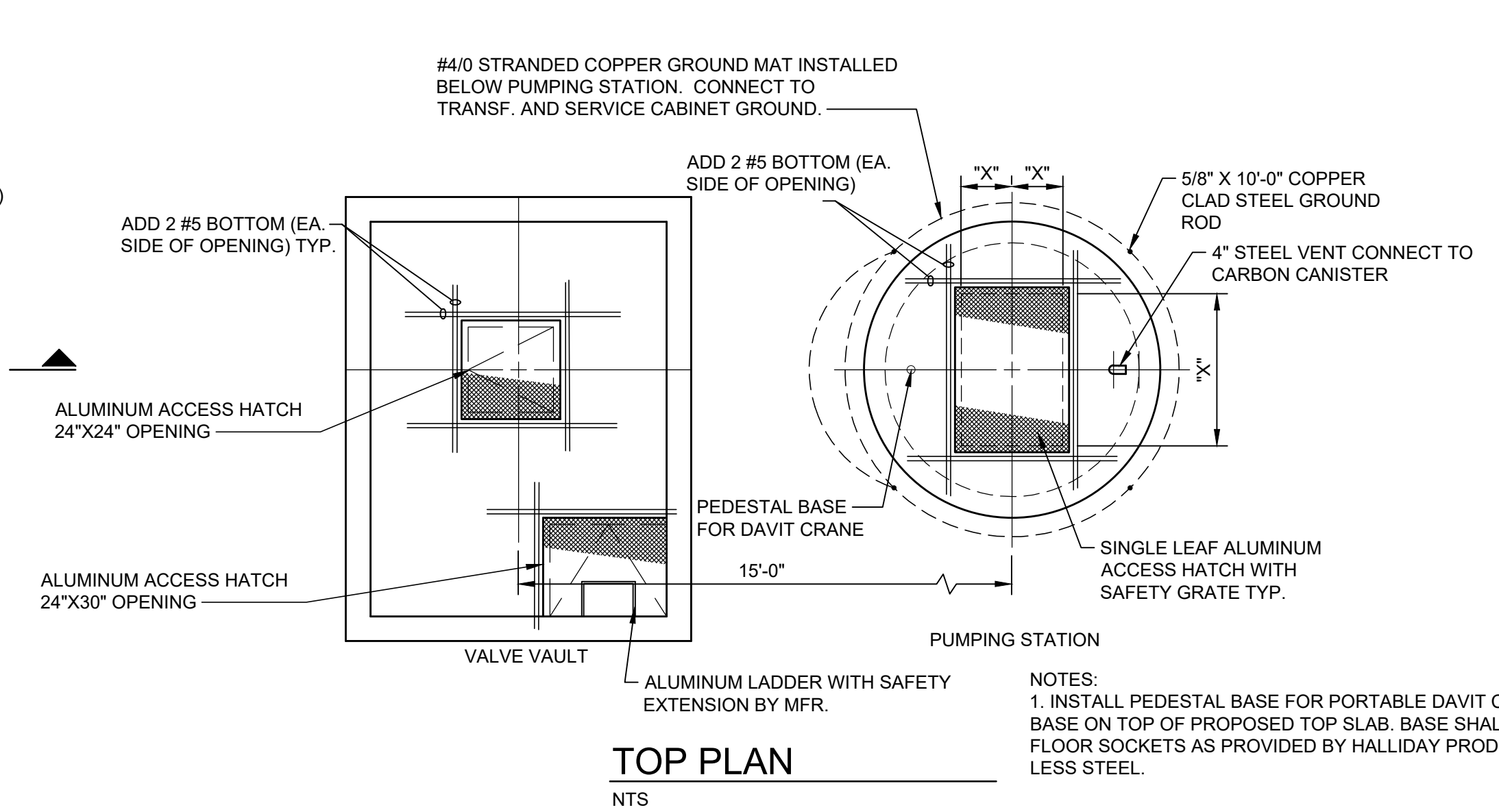
ALTERNATE CONFIGURATION FOR LARGE MANHOLES

NOTES:  
1. MANHOLE CONES SHALL BE THE ECCENTRIC TYPE.  
2. PROVIDE 6" OF COMPACTED GRANULAR MATL UNDER ALL PRECAST CONCRETE BASE SLABS.  
3. STANDARD MH FRAMES AND COVER AS SPECIFIED. USE VENTED COVERS FOR STORM SEWERS.  
4. WATER TIGHT MH FRAME AND COVER AS SPECIFIED.

**STANDARD MANHOLE**  
NO SCALE

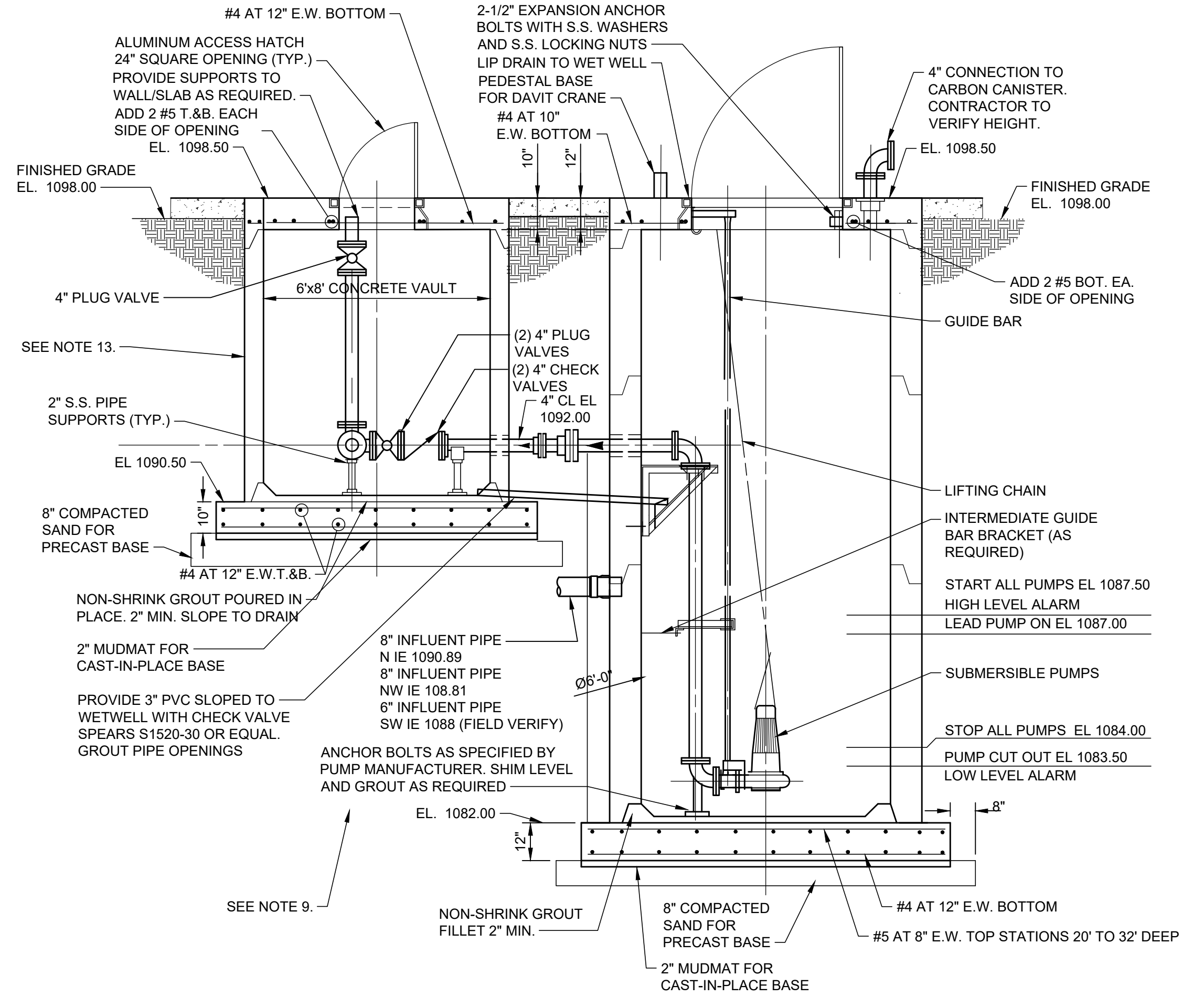


**SECTIONAL PLAN**  
NTS



**TOP PLAN**  
NTS

NOTES:  
1. INSTALL PEDESTAL BASE FOR PORTABLE DAVIT CRANE. INSTALL BASE ON TOP OF PROPOSED TOP SLAB. BASE SHALL BE SERIES D HOIST FLOOR SOCKETS AS PROVIDED BY HALLIDAY PRODUCTS IN T-304 STAINLESS STEEL.



**SECTION A-A**  
NTS

**SEQUENCE OF CONSTRUCTION**

- BYPASS PUMPING**
- NO BYPASS PUMPING IS ANTICIPATED. NEW PUMP STATION TO BE INSTALLED AND TESTED PRIOR TO CONNECTING TO EXISTING SANITARY MANHOLE.
  - PUMPING AND HAULING WILL BE ACCEPTABLE.
- PUMP STATION CONSTRUCTION**
- PRIOR TO EXCAVATION FOR NEW PUMP STATION, REMOVE AND SALVAGE ALL SURFACE ITEMS AS INDICATED ON THE DRAWINGS.
  - SET UP ALL TEMPORARY SOIL EROSION CONTROL MEASURES.
  - EXCAVATE AND INSTALL NEW PUMP STATION WET WELL AND VALVE VAULT.
  - INSTALL REMAINING EQUIPMENT AND ELECTRICAL SERVICE IN THE NEW PUMP STATION WET WELL AND VALVE VAULT
  - CITY TO INSTALL FORCE MAIN AND MAKE CONNECTION TO EXISTING MANHOLE DISCHARGE LOCATION
  - INSTALL GRAVITY SEWER, MAKING PROPOSED CONNECTIONS TO THE PROPOSED WET WELL AS SHOWN ON THE DRAWINGS.
  - INSTALL DOGHOUSE MANHOLE AS SHOWN ON THE DRAWINGS AND CONNECT GRAVITY MAIN TO PROPOSED DOGHOUSE MANHOLE.
  - CORE EXISTING MANHOLE FOR NEW PIPING CONNECTION TO THE PROPOSED WET WELL.
  - FIELD LOCATE 88 MARION STREET SERVICE LINE CONNECTION TO EXISTING GRAVITY SEWER. INSTALL GRAVITY SERVICE LINE FROM EXISTING, FIELD-LOCATED SERVICE LINE CONNECTION TO THE PROPOSED WET WELL. CONNECT TO THE PROPOSED WET WELL AS SHOWN ON THE DRAWINGS THEN CONNECT TO EXISTING SERVICE LINE.
  - COMPLETE ALL ACCEPTANCE TESTING AND START UP PROCEDURES.
  - BULKHEAD EXISTING GRAVITY SEWER MAINS TO BE ABANDONED AS SHOWN ON THE DRAWINGS. PUMP AND HAULING MAY BE REQUIRED FOR THIS WORK.
  - COMPLETE SITE CLEANUP AND RESTORATIONS
  - REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES.

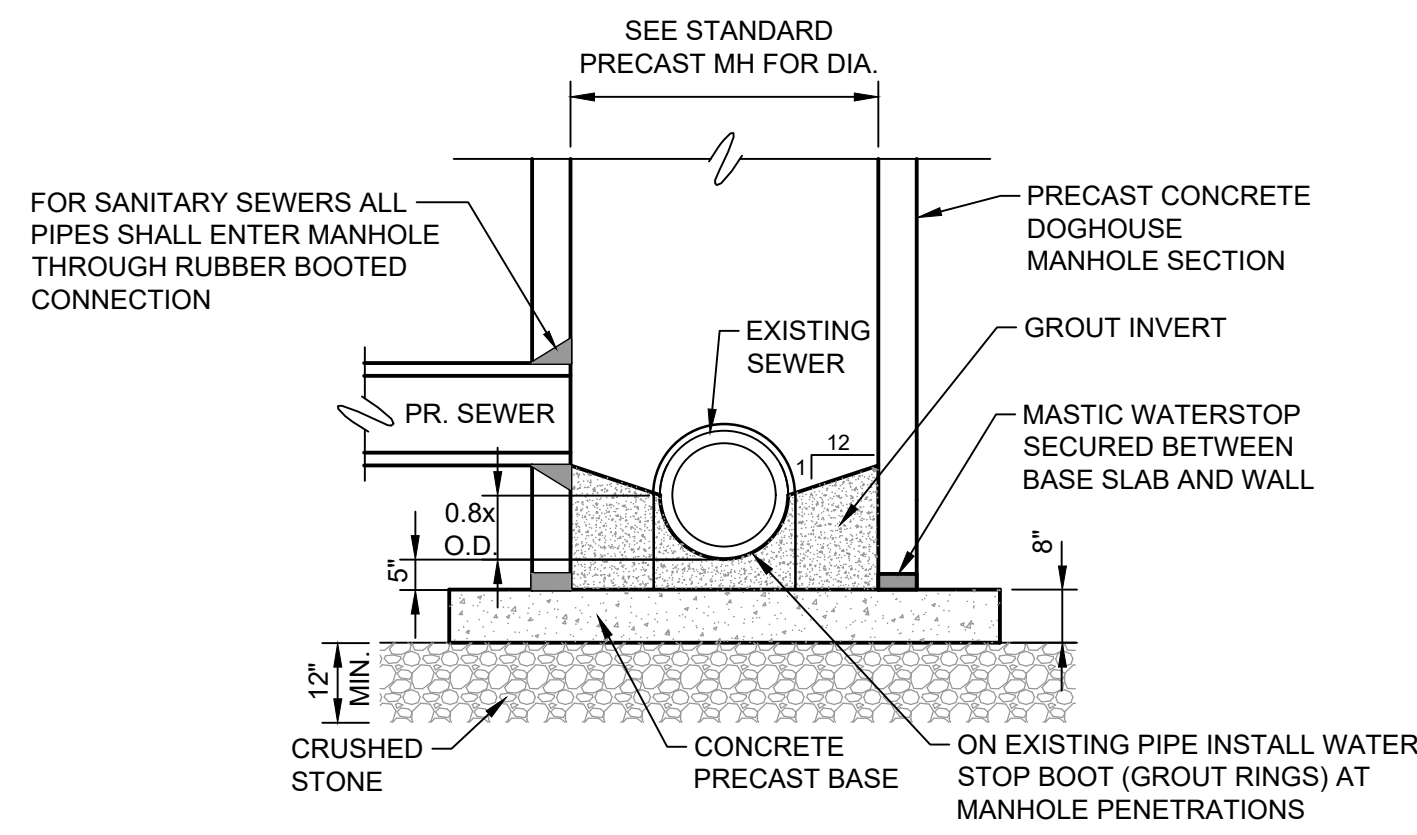
**NOTES:**

- ALL PIPING IN WET WELL AND VALVE VAULT SHALL BE DUCTILE IRON.
  - GROUND BURIED FLANGES WILL NOT BE ALLOWED.
  - ALL FLANGED ADAPTORS SHALL BE HARNESSSED.
  - ALL PIPING SUPPORTS AND MOUNTING HARDWARE SHALL BE STAINLESS STEEL IN THE WET WELL AREA AND VALVE VAULT AREA.
  - MAINTAIN A MINIMUM 18" VERTICAL CLEARANCE AT ALL PIPE CROSSINGS.
  - A MINIMUM OF 5-1/2 FEET COVER TO BE MAINTAINED OVER THE FORCE MAIN.
  - ALL HATCHES TO BE LOCKABLE BY PADLOCK AND FLUSH WITH TOP SLAB ELEVATIONS.
  - DIMENSIONS MARKED "X" ARE UNKNOWN AND ARE TO BE DETERMINED BY THE EQUIPMENT FURNISHED.
  - VALVE VAULT BY ADVANCE CONCRETE PRODUCTS COMPANY OR EQUAL. CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4500 PSI. REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60 REBAR. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI STANDARDS. STANDARD STRUCTURAL DESIGN BASED ON AASHTO H20 WHEEL LOADING.
  - EXCAVATION/BACKFILL LIMITS OF THE WET WELL THAT IMPACT THE PLACEMENT AND SUPPORT FOR THE VALVE VAULT SHALL BE BACKFILLED WITH CLASS II SAND COMPACTED TO 98% MAXIMUM DENSITY.
- SEQUENCE OF CONSTRUCTION**  
PORTION OF THE STRUCTURES FILLED WITH SAND COMPACTED TO 95% MAX DENSITY OR FLOWABLE FILL.
- PUMP AND HAULING MAY BE REQUIRED FOR THIS WORK.
  - COMPLETE SITE CLEANUP AND RESTORATIONS
  - REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES.

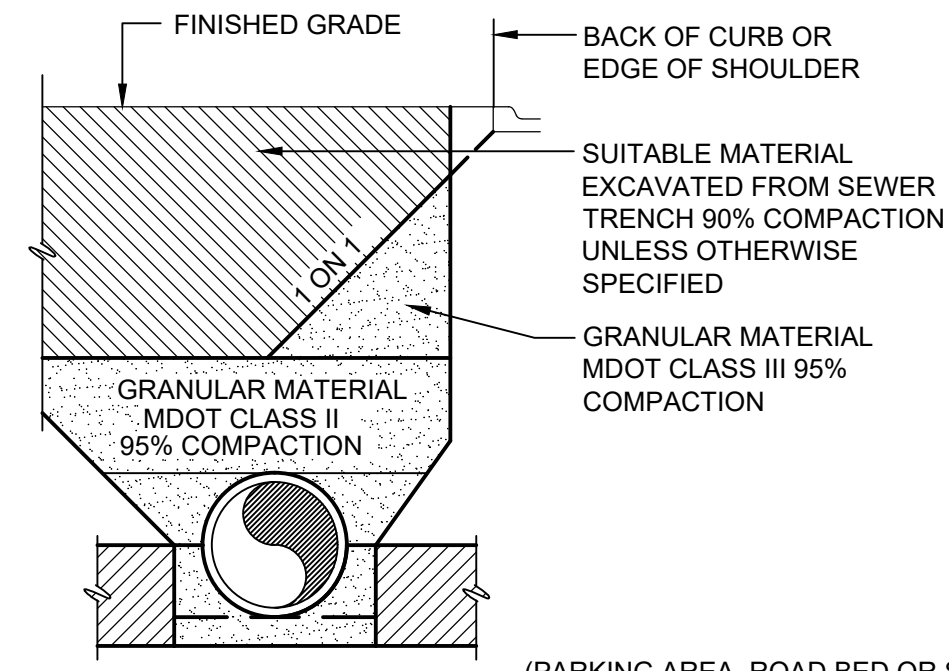
MARK	DATE	DESCRIPTION	BY
1	2/10/23	ISSUED FOR BIDS	
2	3/17/23	ISSUED FOR RE-BID	

CITY OF HILLSDALE  
MARION STREET  
SANITARY IMPROVEMENTS  
**PUMP STATION PLANS AND SECTIONS**

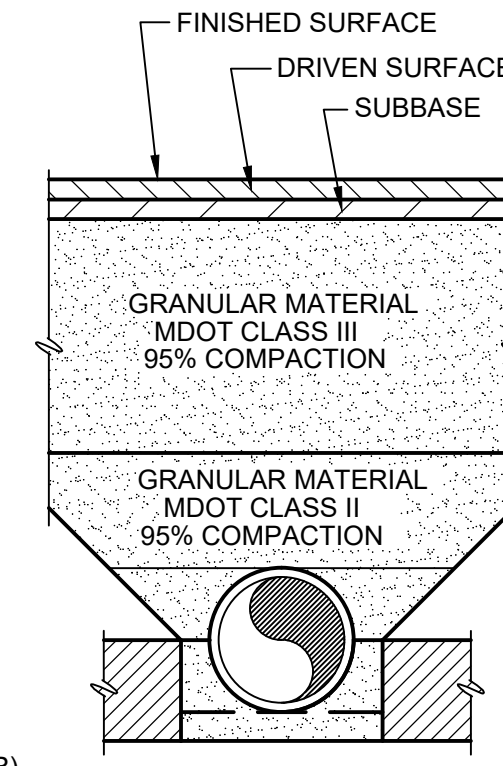
PROJ: 200-12761-23002  
DESN: J.BARBER  
DRWN: B.THOMASY  
CHKD: J.BARBER



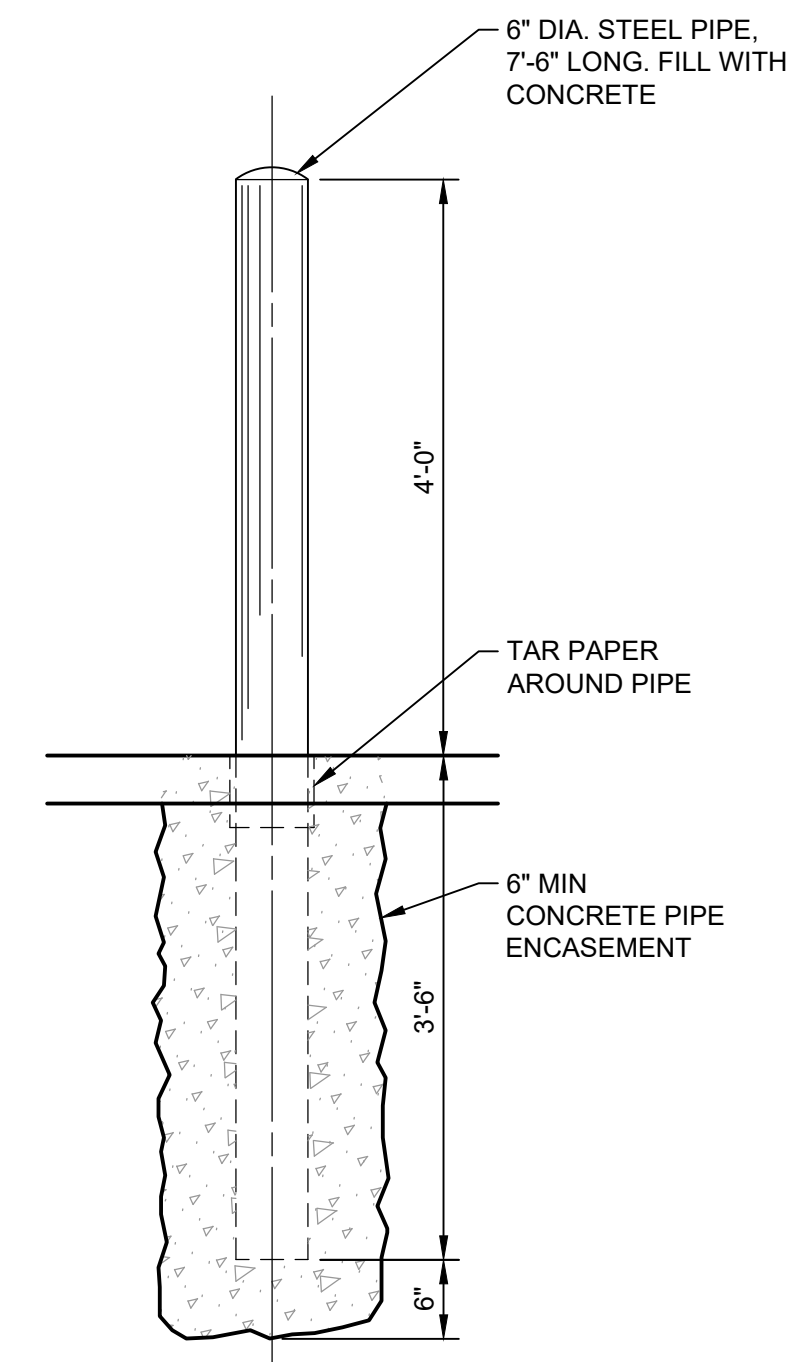
**PRECAST MANHOLE OVER EXISTING SEWER DETAIL**  
NO SCALE



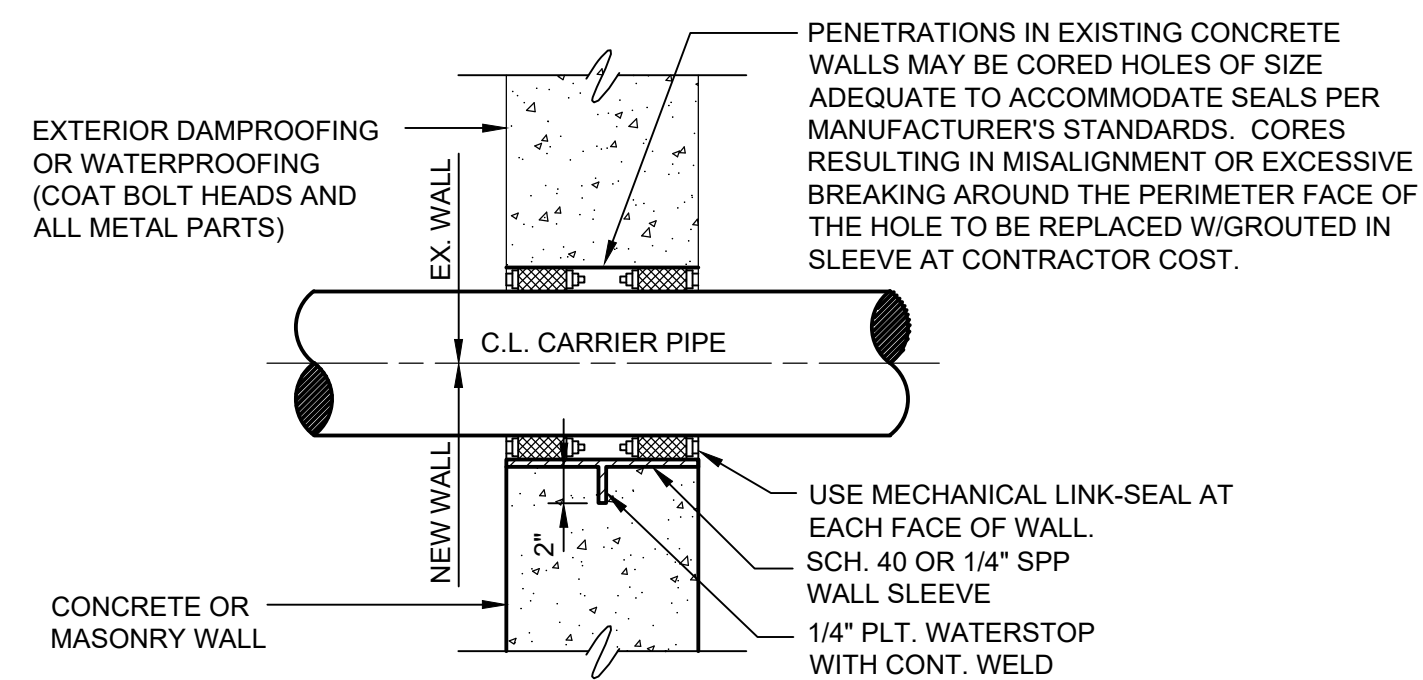
PIPE UNDER OR WITHIN INFLUENCE OF DRIVEN SURFACE



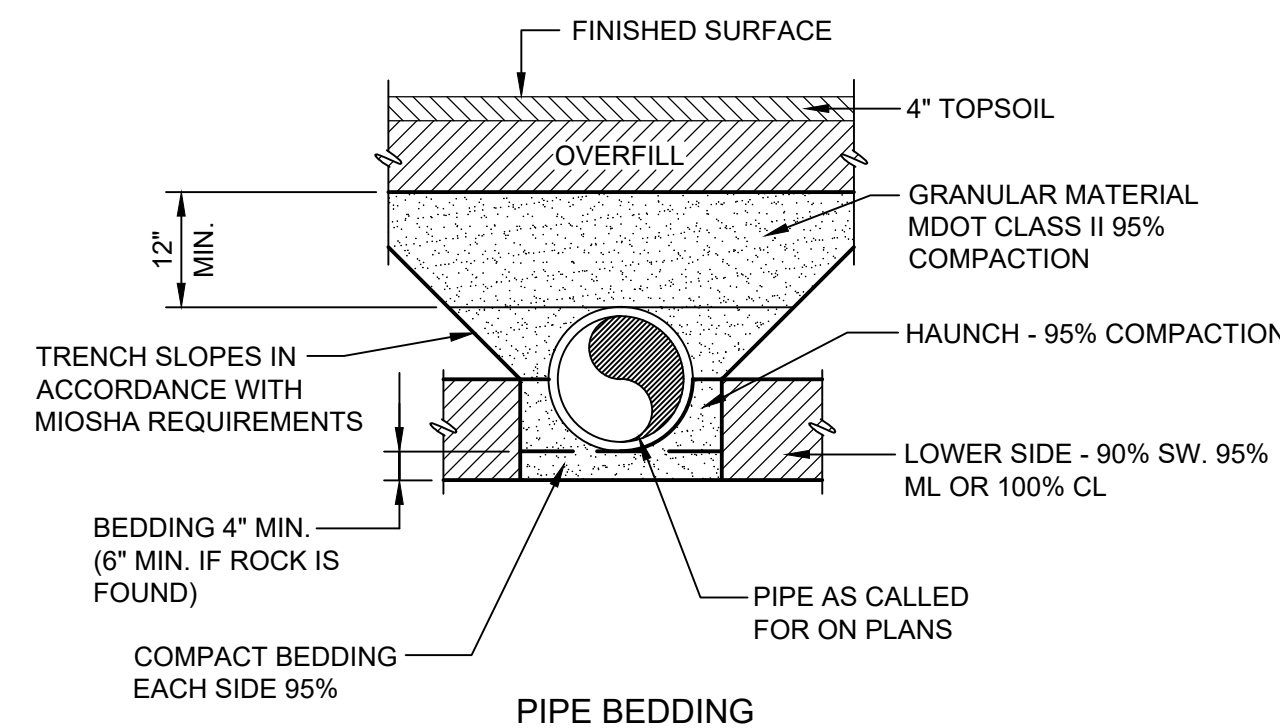
PIPE NOT UNDER DRIVEN SURFACE



**STEEL GUARD POST DETAIL**  
SCALE: 3/4"=1'-0"



(UNLESS NOTED OTHERWISE ON THE DRAWINGS)  
**TYPICAL PIPE SLEEVE IN EARTH, LIQUID RETAINING OR GAS TIGHT WALLS**  
SCALE: NONE

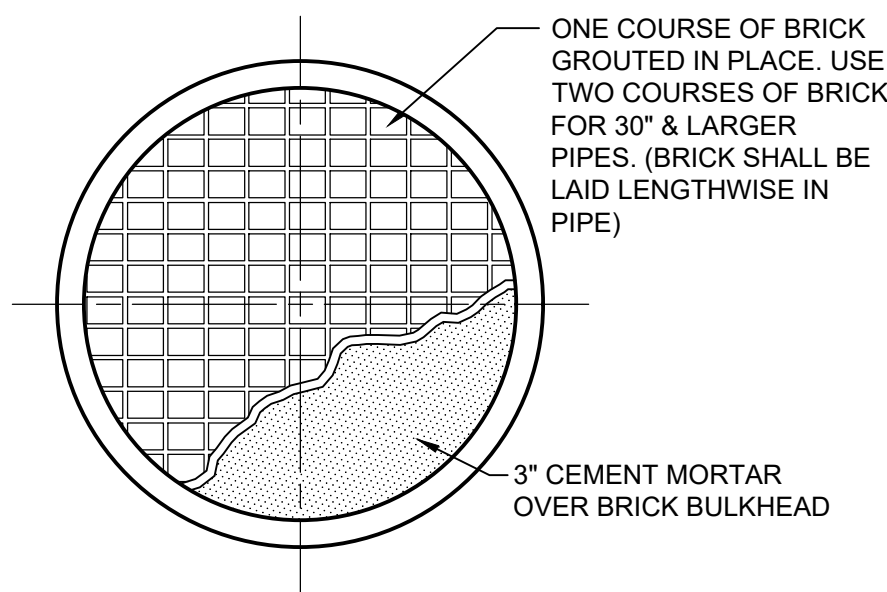


PIPE BEDDING

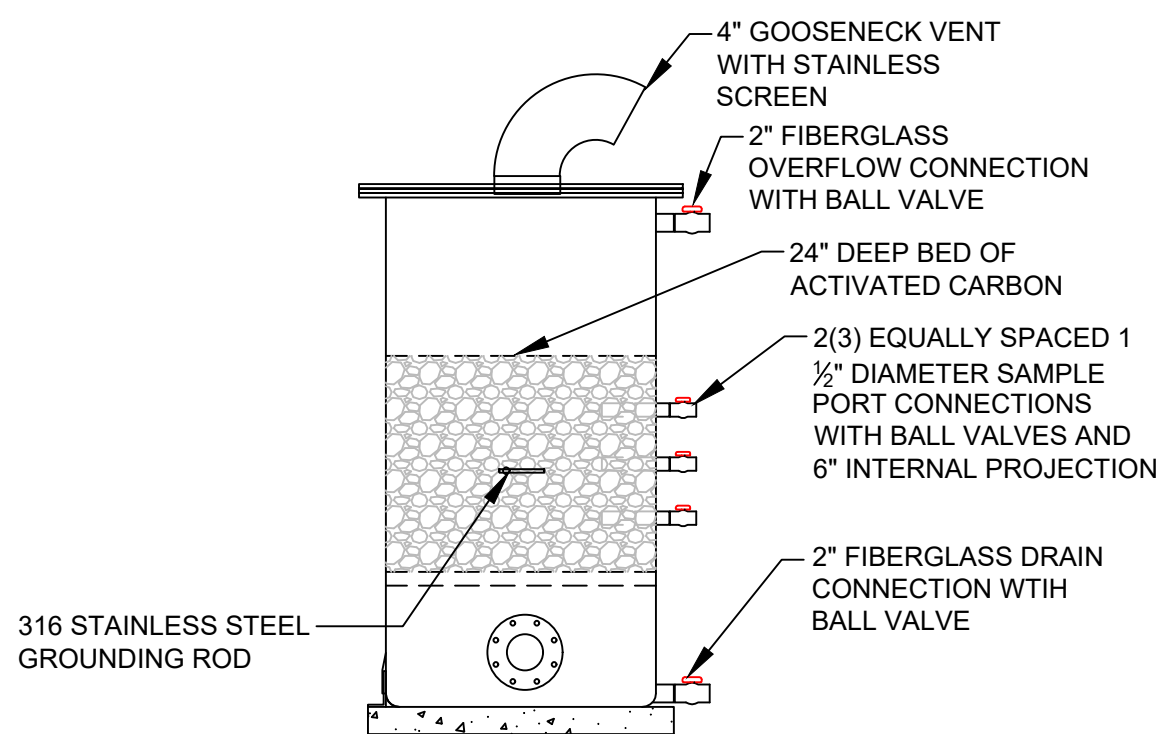
**NOTES:**

1. COMPACTION PRESENTED AS MINIMUM STANDARD PROCTOR VALUES.
2. MATERIALS AROUND THERMO PLASTIC PIPE WITH DIAMETER < 6 INCHES SHALL PASS 0.5 INCH SIEVE, MATERIALS AROUND OTHER PIPES SHALL PASS 1.5 INCH SIEVE.
3. MATERIALS AROUND HDPE PIPE TO BE MDOT 6A OR 21AA.
4. DRIVEN SURFACE IS DRIVEWAY, PARKING AREA, ROAD BED OR SHOULDER.

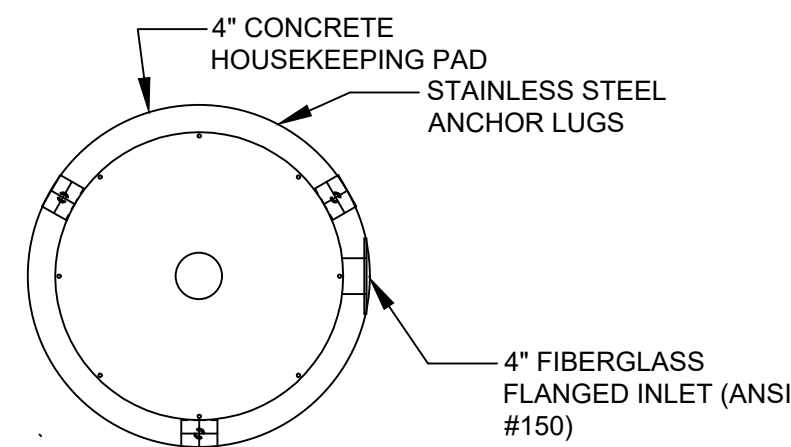
**TRENCH DETAIL**  
NO SCALE



**BULKHEAD DETAIL**  
NO SCALE

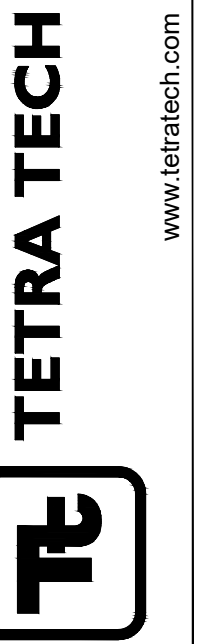


**CARBON CANISTER DETAIL**  
NO SCALE



DESIGN BASIS:  
- 3 SECONDS OF CONTACT TIME  
- MAXIMUM 60 F/M BED VELOCITY  
- ECS PSV-24 ACTIVATED CARBON SYSTEM OR EQUAL

2/7/2023 4:46:06 PM - C:\PROJECTS\ANN ARBOR\RIER127161\200-12761-23002\CAD\SHETS\FILES\LS-3 CIVIL DETAILS.DWG - BARBER, JOHN



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MARK	DATE	DESCRIPTION	BY
1	2/10/23	ISSUED FOR BIDS	
2	3/17/23	ISSUED FOR RE-BID	

CITY OF HILLSDALE  
MARION STREET  
SANITARY IMPROVEMENTS  
CIVIL DETAILS

PROJ: 200-12761-23002  
DESIGN: J.BARBER  
DRAWN: HA  
CHECKED: J.BARBER

**LS-3**



### BACKGROUND PLAN AND ONE LINE SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONTROL SWITCH (SEL. OR P.B.) SEE CIRCUITS FOR SPECIFIC TYPE		TAG NO. (BALLOON) FOR DEVICE INDICATED
	SEE CIRCUITS FOR SPECIFIC TYPE FLOAT SWITCH - FLOW SWITCH		FOR POWER (SEE NOTE 2 ON STANDARD NOTE SHEET) 3/4" C(2#18SH) CONDUIT AND WIRE RUN FROM DEVICE INDICATED TO LOCATION INDICATED
	TEMPERATURE - HUMIDISTAT SWITCH (SUBSCRIPT=NO. OF STAGES)		CAPACITOR, 3 PHASE, SIZE AS INDICATED
	LIMIT (PROXIMITY TYPE) PRESSURE - VACUUM SWITCH		DISCONNECT SWITCH (F) = FUSED, (C) = CIRCUIT BREAKER
	ELECTRICAL OR MECHANICAL ALTERNATOR (SEE WIRING)		MAGNETIC STARTER (BACKGROUND DRAWINGS ONLY)
	OVERLOAD SWITCH OR DEVICE		COMBINATION MAGNETIC STARTER FUSED UNLESS NOTED (CIRCUIT BREAKER)
	TERMINAL BOX		COMBINATION LIGHTING CONTACTOR WITH HAND-OFF-AUTO SWITCH
	SOLENOID VALVE		MANUAL STARTER (R) = REVERSING
	PHOTOCELL LINE VOLTAGE		CONTROL PANEL
	AS NOTED (LIGHTING PANEL, CONTROL PANEL, DISTRIBUTION PANEL, ETC.) WALL MOUNTED		CURRENT TRANSFORMER, AND RATIO (WITH NUMBER REQUIRED SHOWN)
	JUNCTION BOX		LIGHTING ARRESTOR
	TRANSFORMER		LOW VOLTAGE HOME RUNS 120/208V, 120/240V (SEE NOTE 2 ON STANDARD NOTE SHEET)
	CONDUIT WITH CONDUIT SEAL FITTING		WATERTIGHT
	CONDUIT EXPOSED		WATERTIGHT AND CORROSION PROOF
	CONDUIT CONCEALED		EXPLOSION PROOF - CLASS I, DIVISION 1, GROUP D
	DIRECT BURIED CONDUIT		EXPLOSION PROOF - CLASS II, DIVISION 1
	DIRECT BURIED CABLE		KEYLOCK
	OVERHEAD LINE		SMOKE DETECTOR
	UNDERGROUND DUCT BANK		EXIT LIGHT
	EXISTING UNDERGROUND DUCT BANK		FLUORESCENT LUMINAIRE
	CONCRETE ENCASED DUCT BANK WITH CABLE LOCATIONS, AND SPARE DUCTS AS INDICATED ON DRAWINGS		INCANDESCENT LUMINAIRE
	CABLE REEL		HIGH INTENSITY DISCHARGE LIGHT
	MULTI-STACK ALARM LIGHTS		EMERGENCY BATTERY PACK
	SELECTOR SWITCH / PUSHBUTTON, FUNCTIONS AS SHOWN IN WIRING DIAGRAMS		DESK INTERCOM SET
	LOW VOLTAGE DISCONNECT SWITCH		CAMERA
	LOW VOLTAGE FUSE (BELOW 600V)		DOME CAMERA (PAN, TILT, ZOOM)
	HIGH VOLTAGE FUSE (ABOVE 600V)		DRAW OUT CIRCUIT BREAKER (ABOVE 600 VOLT)
	ALL STARTERS SHALL BE FULL VOLTAGE, NON-REVERSING UNLESS OTHERWISE INDICATED. (FVR) FULL VOLTAGE REVERSING (RV) REDUCED VOLTAGE (2S, 2W) TWO SPEED, TWO WINDING		CIRCUIT BREAKER WITH STAB CONNECTION
	1 RV		GROUND ROD
	2 FVR		GROUND ROD WITH TEST WELL
	3 2S, 2W		
	600V, 3 POLE MOLDED CASE CIRCUIT BREAKER, FRAME & RATING AS SHOWN		
	SINGLE PHASE, FRACTIONAL HP MOTOR TO LOCATION INDICATED (SEE NOTE 2 ON STANDARD NOTE SHEET)		
	86 DEVICE SYMBOL WITH TYPE DEVICE		
	A 1 THREE PHASE LOAD WITH IDENTIFICATION		

### WIRING DEVICE SCHEDULE

SYMBOL	DESCRIPTION	NEMA TYPE
	125V, 2P, DUPLEX, 3W	5-20 R
	SIMPLEX RECEPTACLE	
	QUAD RECEPTACLE	
	20A, 120/277V SWITCH	SPST

### CONTROL CIRCUIT & PILOT DEVICE LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	PRESS. ACTUATED SWITCH		FLOAT ACTUATED SWITCH
	FLOW ACTUATED SWITCH		TEMP. ACTUATED SWITCH
	LIMIT SWITCH - NORMALLY OPEN		LIMIT SWITCH - NORMALLY CLOSED
	LIMIT SWITCH - NORMALLY CLOSED - HELD OPEN		LIMIT SWITCH - NORMALLY OPEN - HELD CLOSED
	LATCHING CABLE SWITCH		TIME DELAY FUSE
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY CLOSED		PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
	MOMENTARY PUSHBUTTON OPERATOR-NORMALLY OPEN		FIELD LOCATED STOP BUTTON
	CONTROL RELAY CONTACT - NORMALLY OPEN		CONTROL RELAY CONTACT - NORMALLY CLOSED
	TIMING RELAY INSTANTANEOUS CONTACT		TIMING RELAY INSTANTANEOUS CONTACT
	CONTROL RELAY COIL		SELECTOR SWITCH OPERATOR WITH FUNCTION SHOWN
	TWO COIL LATCHING RELAY		
	TIMED CLOSED CONTACT ON ENERGIZATION		TIMED OPEN CONTACT ON ENERGIZATION
	TIMED OPEN CONTACT ON DE-ENERGIZATION		PUSH-TO-TEST INDICATING LIGHT
	ZERO SPEED OR ANTI-PLUGGING SWITCH		MAINTAINED STOP - MOMENTARY START PUSHBUTTON (JOG)
	MAINTAINED STOP-START PUSHBUTTON OPERATOR		SOLENOID OR CLUTCH
	MAINTAINED PUSH - PULL OPERATOR		ELAPSED TIME INDICATOR
	LOCAL TERMINALS WITH EXTERNAL WIRING		120VAC TRANSFORMER
	TIMING RELAY COIL		PUSHBUTTON OPERATOR WITH MUSHROOM HEAD
	TIMING RELAY COIL (OFF DELAY)		SOLENOID OR CLUTCH
	INDICATING LIGHT		THERMAL OVERLOAD
	PUSH-TO-TEST INDICATING LIGHT		FIELD LOCATED
	SECONDARY TRANSFORMER		TERMINAL POINT
	MOLDED CASE CIRCUIT BREAKER		TERMINAL
	MOMENTARY PUSHBUTTON OPERATOR - NORMALLY CLOSED		LOW VOLTAGE FUSE
	MOMENTARY PUSHBUTTON OPERATOR - NORMALLY OPEN		FUSIBLE TERMINAL BLOCK
	GENERAL DISCONNECT SWITCH		CONTROL POWER TRANSFORMER
			RECEPTACLE

NOTE: THE PLC I/O ADDRESS SHALL BE USED AS THE WIRING TAG SCHEME FOR ALL PANEL AND FIELD CONTROL WIRING. COORDINATE WITH ELECTRICAL CONTRACTOR.

### I.S.A. STANDARD LETTER FUNCTIONS

SYMBOL	FIRST LETTER	SUCCEEDING LETTERS
A	ANALYSIS, ANALOG	ALARM
B	BURNER, FLAME	BATCH
C	CONDUCTIVITY, COMMAND	CONTROL (FEEDBACK TYPE)
D	DENSITY, SPECIFIC GRAVITY	
E	VOLTAGE	PRIMARY ELEMENT
F	FLOW RATE	RATIO
G	GAGING	GLASS
H	HAND, MANUAL	HIGH
I	CURRENT	INDICATE
J	POWER	SCAN
K	TIME, TIME SCHEDULE	CONTROL (NO FEEDBACK)
L	LEVEL, LIGHT	LOW
M	MOISTURE, HUMIDITY	MIDDLE, MODULATE
N		
O	OVERLOAD	ORIFICE
P	PRESSURE, VACUUM	POINT
Q	QUANTITY	TOTALIZE, INTEGRATE
R	RADIOACTIVITY	RECORD, PRINT, RECEIVE
S	SPEED, FREQUENCY, SOLENOID	SWITCH
T	TEMPERATURE, TURBIDITY	TRANSMIT, TRANSFORM
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION, VISCOSITY	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE	
X		
Y		RELAY, COMPUTE
Z	POSITION	DRIVE, ACTUATE

### PROTECTIVE RELAY LEGEND

DEVICE NO.	DESCRIPTION
2	SYNC. TIMER 0-5 MIN.
25	SYNCHRONIZING
27	SHORT TIME UNDERVOLTAGE
32	REVERSE POWER RELAY
38	TEMPERATURE
40	LOSS OF EXCITATION
43	SELECTOR SWITCH
47	PHASE SEQUENCE & UNDERVOLTAGE
49	THERMAL
50/51	INSTANTANEOUS AND VERY INVERSE
51	VERY INVERSE
51G	INVERSE GROUND FAULT
51N	NEUTRAL OVERCURRENT
51V	OVERCURRENT RELAY WITH VOLTAGE RESTRAINT
52/CS	CONTROL SWITCH
59	INSTANTANEOUS OVERVOLTAGE
60	VOLTAGE BALANCE
62	TIME DELAY
64	SHORT TIME LOW PICK UP OVERVOLTAGE
67	DIRECTIONAL OVERCURRENT
69	LOCKOUT CONTROL SWITCH
78	OUT OF STEP
81	OVER/UNDER FREQUENCY RELAY
83	MULTI-CONTACT AUXILIARY
86/HR	MULTI-CONTACT AUX. HAND RESET
87	DIFFERENTIAL OVERCURRENT

### SYMBOL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	POTENTIAL TRANSFORMER		WATTMETER
	CURRENT TRANSFORMER		ALARM POINT
	AMMETER		CONTROL POWER TRANSFORMER
	VOLTMETER		NUMBER OF DEVICES REQUIRED
	POWER FACTOR METER		ELAPSED TIME METER



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BY

DATE DESCRIPTION

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CITY OF HILLSDALE  
MARION STREET  
SANITARY IMPROVEMENTS

ELECTRICAL LEGEND  
AND ABBREVIATIONS

PROJ: 200-12761-23002

DESN: WAP

DRWN: EDP

CHKD:

LS-4

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**NOTES:**

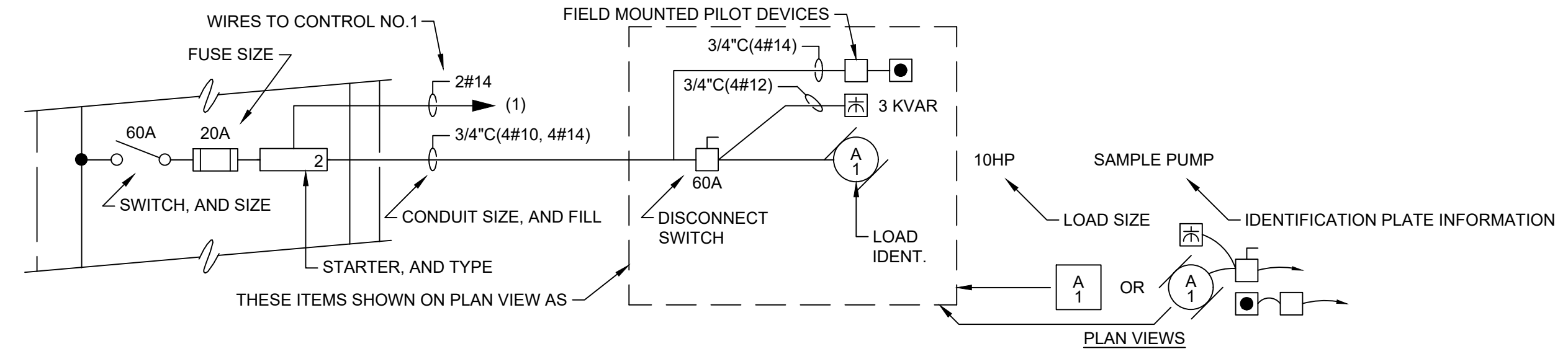
- FIELD VERIFY CONDUIT ROUTING AT THE PLANT WITH OWNER. CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF THE CONDUITS SHOWN. PATCH WITH NON-SHRINK GROUT.
- TURN OVER TO OWNER AT PROJECT COMPLETION OPERATION AND MAINTENANCE MANUALS (QUANTITY AS SPECIFIED) TO OWNER.
- IN ADDITION TO PATCH CABLES SUPPLIED FOR THE PROJECT, FURNISH 30-10FT LONG MULTIMODE DUPLEX FIBER OPTIC PATCH CABLES (SC-SC) CONNECTORS, AND 30-10FT. LONG CABLES WITH ST-ST CONNECTORS, AND 30-10FT CAT-6 PATCH CABLES FOR OWNERS USE. TURN OVER CABLES TO OWNER.
- MULTIMODE FIBER OPTIC PATCH CABLES, AND ETHERNET PATCH CABLES SUPPLIED IN THE PROJECT SHALL BE COLORED PURPLE.
- FIBER OPTIC PATCH PANELS SHALL BE THE PRODUCT OF CORNING CABLE SYSTEMS. (RACK OR SURFACE MOUNTED AS SHOWN", ST STYLE CONNECTORS, WITH QUANTITY OF BULKHEADS AS SHOWN.

**GENERAL CONSTRUCTION NOTES:**

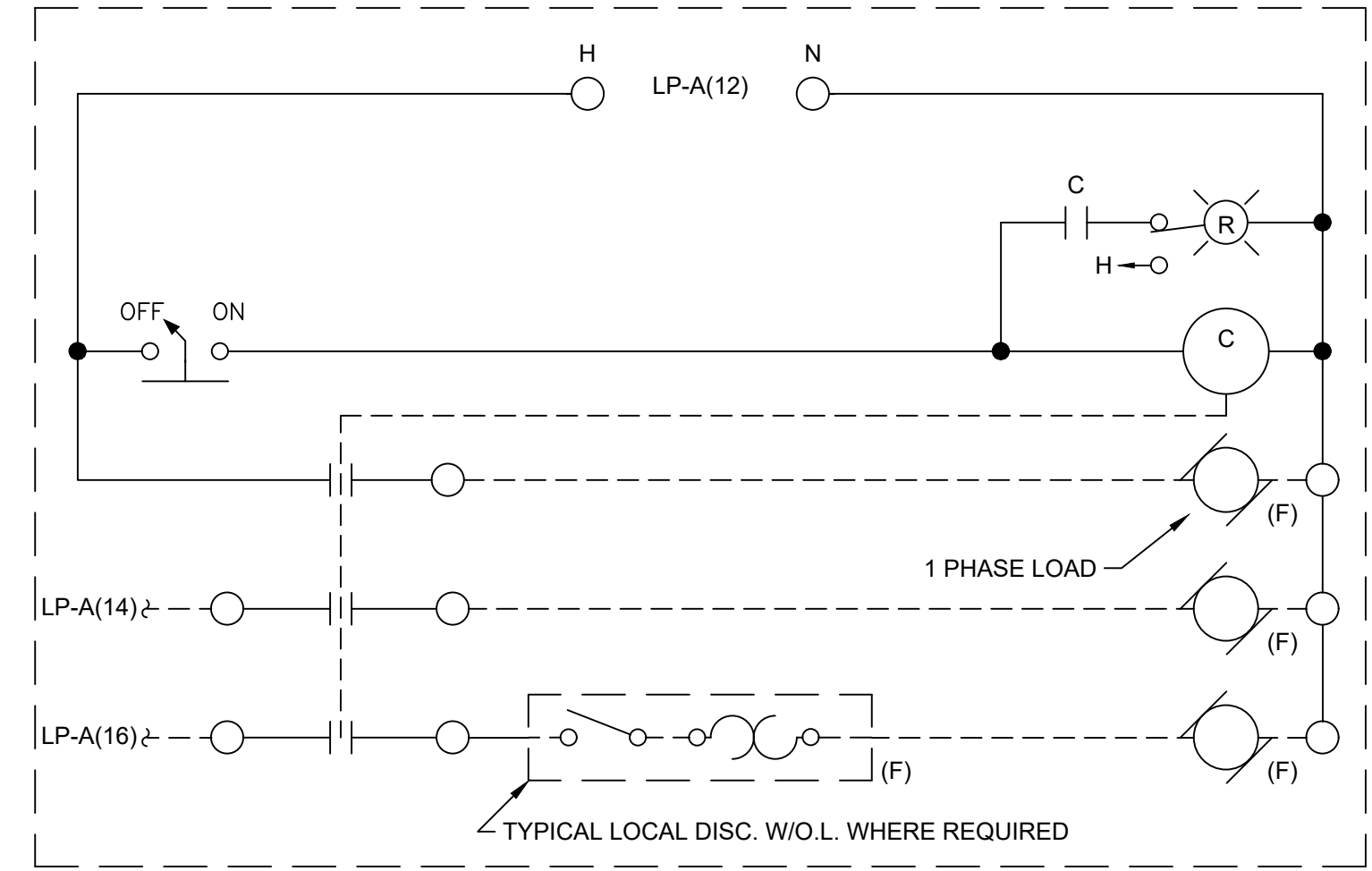
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
- ITEMS SHOWN OR NOTED TO BE DEMOLISHED ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED FROM SITE BY CONTRACTOR UNLESS NOTED TO BE TURNED OVER TO OWNER.
- FOR ITEMS INDICATED AS "FIELD LOCATE", THE CONTRACTOR SHALL FIELD VERIFY FOR INTERFERENCE AND FOR LOCATIONS OF MOUNTING FLANGES, CONNECTION POINTS, ETC.
- CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE INTENDED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS FOR CONDUITS, AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
- REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULL BOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
- CONDUITS/RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL CHANNEL STRUT. MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE.
- PANELS SHALL BE MOUNTED OFF WALLS WITH STRUT, CONDUITS SHALL BE MOUNTED ON STRUT INCLUDING SINGLE RUNS.
- CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANELS, AND EQUIPMENT.
- REPAIR SIDEWALKS AND ROADWAYS DUE TO SITE WORK ADDITIONS, THE EXTENT OF THE REPAIR REQUIRED SHALL BE FIELD VERIFIED PRIOR TO BIDS IN CONJUNCTION WITH THE WORK SHOWN IN THE CONTRACT DOCUMENTS. PRIOR TO TRENCHING, FIELD LOCATE EXISTING GAS LINES, TELEPHONE LINES, SPRINKLER LINES, ETC. COORDINATE WITH OWNER
- PULL CORDS SHALL BE INSTALLED IN CONDUITS CONTAINING NETWORK CABLES, AND FIBER OPTIC CABLES.
- CORE HOLES AS REQUIRED TO SUIT INSTALLATION OF CONDUIT AND WIRING/CABLING AS SHOWN. FIELD VERIFY EXACT EXTENT OF WORK REQUIRED.
- FURNISH PULL BOXES FOR FIBER OPTIC CABLE. COORDINATE EXACT BENDING RADIUS WITH MANUFACTURER.
- NEW CONDUITS INSTALLED THIS CONTRACT WITH FIBER OPTIC CABLES ARE TO BE LABELED WITH PHENOLIC TAGS (AT BEGINNING TO END) TO INDICATE THE NUMBER OF STRANDS, ORIENTATION AND DESTINATION. TAGS TO BE COLOR CODED ORANGE FOR MULTIMODE.
- WHERE NEW CONDUITS SHOWN TO BE INSTALLED PASS UNDER ROADWAYS, CONDUITS SHALL BE CONCRETE ENCASED.
- PRIOR TO EXCAVATION, FIELD LOCATE EXISTING UTILITIES. COORDINATE WITH OWNER.
- AREAS WHERE CAMERAS ARE SHOWN TO BE INSTALLED SHALL BE CLASSIFIED AS NEMA 4, UNLESS CALLED OUT OTHERWISE.
- THE ASSOCIATED INSTRUMENTATION DRAWINGS SHOW EXISTING WIRES AND TERMINAL NUMBERS REQUIRED TO PROPERLY INTERFACE WITH NEW EQUIPMENT. THIS INFORMATION WAS COLLECTED FROM AS-BUILT DRAWINGS AND EXTENSIVE FIELD VERIFICATION. THE INFORMATION SHALL BE USED AS A GUIDE IN RE-TERMINATION. IT SHALL REMAIN THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE THE WIRING AND TO REVISE TO SUIT AS REQUIRED. CHANGES IN THE CONTRACT OR COST WILL NOT BE GRANTED FOR THIS COORDINATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE PROPOSED WORK SHOWN.
- CONDUIT ROUTINGS SHOWN ON BACKGROUND PLANS ARE PROPOSED ROUTINGS ONLY. EXACT CONDUIT ROUTINGS AND LENGTH SHALL BE FIELD LOCATED AND VERIFIED BY THE CONTRACTOR. COORDINATE CONDUIT ROUTING IN FINISHED AREAS WITH OWNER. CONDUIT TO BE CONCEALED IN THESE AREAS.
- RACEWAYS, PULL BOXES AND JUNCTION BOXES TO BE INSTALLED WITH 316 STAINLESS STEEL FASTENERS SUPPORTS, AND THREADED ROD, ETC. (CHANNEL STRUT TO ALSO BE STAINLESS STEEL). MINIMUM STRUT LENGTH TO BE 12 INCHES, WHERE POSSIBLE. TYPICAL FOR NEMA 12, 4, AND 7 AREAS.
- WIRING FOR STARTERS SHALL BE IN ACCORDANCE WITH NEMA CLASS II B STANDARDS. SUBMIT ENGINEERED SHOP DRAWINGS FOR ALL STARTERS SHOWN TO BE WIRED.
- WIRE NUMBERS (1, 3, 5, ETC.) SHALL BE PREFIXED WITH STARTER TAG NUMBERS. THE WIRE NUMBER AFTER THE PREFIX SHALL BE THE MANUFACTURER'S WIRE NUMBERING SYSTEM. WIRE MARKERS SHALL BE USED AT EACH WIRE TERMINATION POINT.
- IN AREAS WHERE EQUIPMENT AND CONDUIT IS REMOVED, REPAIR WALL AND FLOOR SURFACES AS REQUIRED TO MATCH SURROUNDING AREA. WHERE DEVICES ARE REMOVED FROM CONCEALED BOXES, FURNISH AND INSTALL A BLANK COVER ON THE BOX.
- FIBER OPTIC CABLE SHALL BE AS CALLED OUT ON SYSTEM CONFIGURATION DRAWINGS, MULTIMODE, ALL DIELECTRIC, SUITABLE FOR INSTALLATION UNDERGROUND IN WET CONDUIT.

**GENERAL NOTES:**

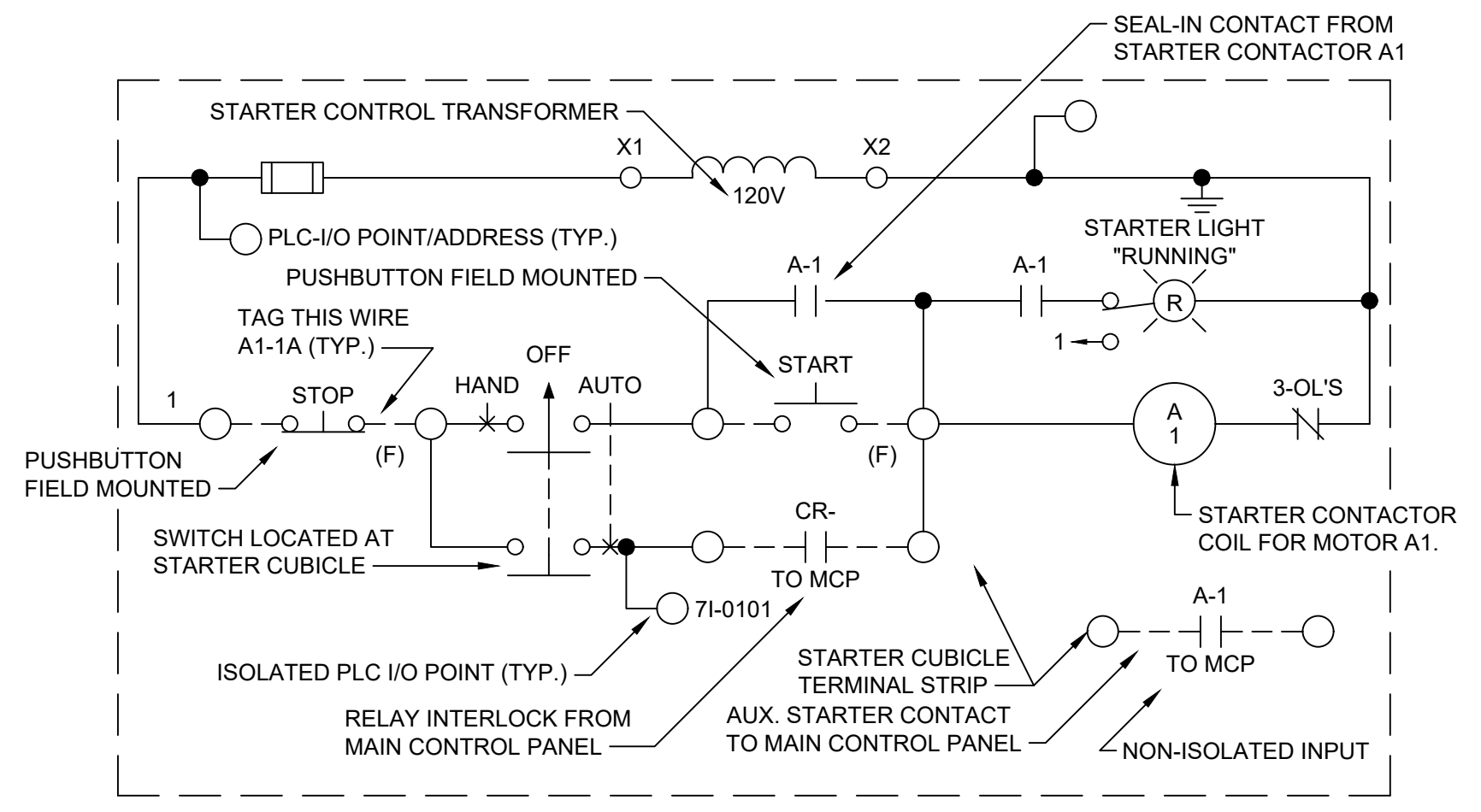
- PRIOR TO SUBMITTING A BID FOR THE WORK DETAILED UNDER THIS CONTRACT, BIDDER SHALL VISIT THE PUMP STATION SITE. THE BIDDER SHALL FULLY ACQUAINT ONESELF WITH EXISTING FIELD CONDITIONS AT THE SITE. NO BULLETINS WILL BE WRITTEN FOR WORK DUE TO LACK OF VERIFICATION OF EXISTING SITE CONDITIONS AND WIRING.
- NO WIRES SHALL BE TERMINATED TO TERMINAL STRIPS, OR OTHER EQUIPMENT WITHOUT FIRST VERIFYING SIGNAL TYPE. DAMAGES RESULTING FROM LACK OF VERIFICATION SHALL BE BORNE BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE SIGNAL TYPE AND VOLTAGE WITH I/O CARDS SHOWN.
- WITHIN CONTROL PANELS, NAMEPLATES SHALL BE PROVIDED TO INDICATE DIFFERENT VOLTAGE LEVELS WITHIN PANELS. ALSO, A NAME TAG (YELLOW BACKGROUND, RED LETTERING) SHALL BE LOCATED ON THE FRONT OF EVERY PANEL INDICATING THAT WHEN MAIN PANEL IS DISCONNECTED 120V IS STILL PRESENT FROM FIELD DEVICES (YELLOW WIRING/ISOLATED INPUT CARDS.)
- PHENOLIC TAGS ON FACE OF CONTROL PANELS TO HAVE WHITE BACKGROUND AND BLACK LETTERING (EXCEPT WARNING TAGS; YELLOW BACKGROUND RED LETTERING).
- PROVIDE SAFETY COVERS ON ALL 480V MOLDED CASE MAIN CIRCUIT BREAKERS TO INSULATE THE INCOMING CABLES AND SIDE CONDUCTORS FROM CONTACT. (TYP. FOR CONTROL PANELS.) PROVIDE BREAKER LOCKS FOR PUMP CIRCUIT BREAKERS (MCP) AND MAIN PANEL BREAKERS.
- REFER TO WIRING DIAGRAMS FOR ADDITIONAL INFORMATION ON ISOLATED I/O. A COMMON NEUTRAL MAY BE USED FOR SEVERAL ISOLATED INPUTS FROM THE SAME STARTER. PROVIDE NEUTRAL JUMPERS WIRES WITHIN THE PANEL AS REQUIRED.
- ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN LIGHT LINE WEIGHTS ON THE DRAWINGS ARE EXISTING ITEMS TO REMAIN. ELECTRICAL MATERIALS AND EQUIPMENT ITEMS SHOWN IN HEAVY LINE WEIGHTS ARE NEW THIS CONTRACT.
- ITEMS SHOWN CROSSHATCHED (OR NOTED TO BE DEMOLISHED) ON THE DRAWINGS ARE EXISTING ITEMS TO BE REMOVED, FROM SITE BY CONTRACTOR.
- INSTALL A SINGLE CONDUCTOR INSULATED (RHW, THWN, OR XHHW) COPPER GROUND WIRE IN EACH CONDUIT, SIZE AS SHOWN ON DRAWINGS, OR AS A MINIMUM PER THE NATIONAL ELECTRICAL CODE. THIS GROUND WIRE SHALL BE CONNECTED AT EACH END TO THE EQUIPMENT GROUND. THIS ALSO INCLUDES INSTRUMENTATION DEVICES SUCH AS LEVEL, PRESSURE, FLOW TRANSMITTERS, LIMIT SWITCHES, CONDUITS, NETWORK AND I/O CABLES.
- THE FOLLOWING EXAMPLE COMPONENT IDENTIFICATION SHALL BE USED AS APPROPRIATE:  
(F) FIELD MOUNTED, NOT AT STARTER OR OTHER CONTROL PANELS  
(S) STARTER PANEL MOUNTED  
(MCP) AT MAIN CONTROL PANEL  
(1) AT CONTROL PANEL NO.1  
(2) AT CONTROL PANEL NO.2  
(TCP) AT TEMPERATURE CONTROL PANEL
- REFER TO DETAIL SHEETS. CONTRACTOR SHALL FURNISH AND INSTALL HARDWARE AND APPURTENANCES (I.E. PIPE TAPS, WETWELL BUBBLER TUBES, VALVES, COPPER TUBING, BALL VALVES, PNEUMATIC PIPING, SPOOL PIECES, ETC.) FOR FIELD DEVICES SHOWN (FLOWMETERS, PRESSURE TRANSMITTERS, LEVEL TRANSMITTERS, ETC.). WORK SHALL BE COORDINATED WITH OTHER TRADES (MECHANICAL INSTRUMENTATION, ETC.) CONTRACTOR SHALL BE RESPONSIBLE FOR SYSTEM COORDINATION AND INSTALLATION.
- ETHERNET AND FIBER OPTIC TERMINATIONS SHALL BE PERFORMED BY A QUALIFIED REPRESENTATIVE OF CABLE MANUFACTURER, THE CABLES SHALL BE TESTED, NO SPLICING SHALL BE PERMITTED OF FIBER OPTIC CABLES, BETWEEN PANELS. FIBERS SHALL BE TERMINATED AT PATCH PANELS, INCLUDING SPARES.
- REFER TO THE CABLE MANUFACTURER'S RECOMMENDATIONS FOR MINIMUM BEND RADIUS FOR FIBER OPTIC CABLES. INSTALL NEW PULL BOXES (PB) AS REQUIRED FOR CONDUITS. SIZE PULLBOXES AS REQUIRED PER FIBER OPTIC CABLE MANUFACTURERS RECOMMENDATIONS.
- CONDUIT ENTERING CONTROL PANELS AND ELECTRICAL EQUIPMENT ENCLOSURES SHALL BE FILLED WITH DUCT SEAL, INCLUDING OPENINGS IN BOTTOM OF PANEL.
- CABLES (INCLUDING FIBER, ETHERNET, CONTROL WIRE, ETC.) WHERE PASSING THROUGH A PULLBOX SHALL BE LABELED AND COMPLETELY IDENTIFIED WITH IDENTIFICATION NUMBERS AND ORIENTATION/DESTINATION. THIS ALSO INCLUDES ALL CABLE BUNDLES ENTERING CONTROL PANELS, PULLBOXES, ETC.
- CONTROL WIRES SHALL BE TAGGED WITH THE PLC I/O ADDRESS IN THE FIELD AND AT THE PANEL.
- THE FIELD DEVICES SHOWN ON THE P&ID'S, ELECTRICAL BACKGROUNDS, AND DETAILS SHEETS MAKEUP THE FIELD DEVICE EQUIPMENT REQUIREMENTS. NOT ALL FIELD DEVICES REQUIRED ARE SHOWN ON THE P&ID'S.
- UPS SELECTED SHALL BE COMPATIBLE WITH ISOLATION TRANSFORMERS. (TYP.)
- REFER TO I/O DRAWING LAYOUT FOR ADDITIONAL SIGNALS NOT SHOWN ON P&ID FLOW DIAGRAMS.
- CONTRACTOR SHALL OBTAIN THE SERVICES OF THE PVC COATED CONDUIT REPRESENTATIVE. (OCAL, OR ROBROY) TO INSPECT THE CONDUIT INSTALLATION AFTER THE FIRST FEW CONDUIT LENGTHS ARE INSTALLED OUTDOORS TO VERIFY THAT THE RACEWAY IS INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS. CONTRACTOR TO INSTALL JOINT, AND SEALING COMPOUND AS REQUIRED PER MANUFACTURER FOR SEALING CONDUIT THREADS, AND TO ENSURE RACEWAY IS INSTALLED PER MANUFACTURER'S REQUIREMENTS. CONDUITS TO BE SEALED EACH END. (WARM AREA TO COLD AREA). SEALANT PER NEC AND SEAL FITTING MANUFACTURER. ALSO SEAL ALL CONDUITS INTO BUILDINGS FROM ABOVE AND BELOW GRADE.
- CONTRACTOR SHALL GROUND ALL EXTERIOR HANDRAILS, PROCESS PIPING, LIGHT POLES, CONDUIT RACKS, STRUT SUPPORTS, ETC. WITH GREEN INSULATED NO.6 AWG WIRE, RHW - USE. (TYP.)
- REFER TO PROCESS DRAWINGS FOR EXACT LOCATIONS OF FLOW METERS VALVE ACTUATORS, AND PROCESS EQUIPMENT.
- FURNISH, AND INSTALL PHENOLIC NAMETAGS ON THE EXTERIOR OF ALL NEW CONDUITS (THIS PROJECT) CONTAINING E-FO, F.O., E-NET, POWER, SIGNAL, CONTROL WIRES/CABLES. NAMETAGS TO BE INSTALLED ON EACH CONDUIT AT EACH END, BETWEEN ENCLOSURES ORANGE BACKGROUND, WHITE LETTERING, FOR MULTIMODE FIBER, YELLOW BACKGROUND, WHITE LETTERING, SINGLEMODE FIBER, EXAMPLE: "24 - E-FO TFPF TO FPP-1". FOR POWER: "480V POWER FROM MCC-S TO MCC-B1". FOR CONTROL: "CONTROL WIRES - TO BPP". FOR SIGNAL: "SIGNAL WIRES - TO BPP".
- TAG ALL FIBER OPTIC PATCH CABLES WITH DESCRIPTIVE NAMETAGS.
- WATERTIGHT HUBS ARE REQUIRED FOR ALL ENCLOSURES. DISCONNECT SWITCHES, ETC. IN NEMA 4, AND NEMA 12 AREAS. (TYP.)



**MCC LEGEND EXAMPLE**

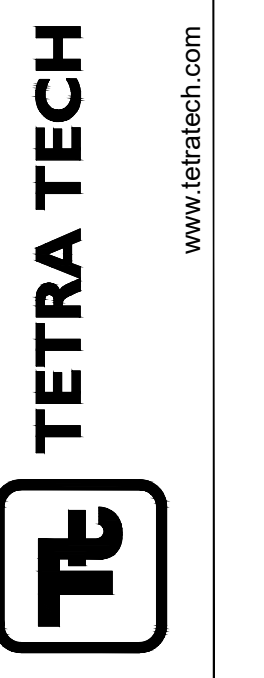


**TYPICAL 120V 3 POLE CONTACTOR (EXAMPLE CIRCUIT)**



**EXAMPLE PUMP (TAG A1) (EXAMPLE CIRCUIT)**

2/10/2023 12:56:21 PM - O:\PROJECTS\ANN ARBOR\IER12761200-12761-23002\CAD\SHEETFILES-5 ELECTRICAL NOTES AND DETAILS DWG - DOAMARALPINHEIRO. EDGARD



MARK	DATE	DESCRIPTION	BY
1	2/10/23	ISSUED FOR BIDS	
2	3/17/23	ISSUED FOR RE-BID	

CITY OF HILLSDALE  
MARION STREET  
SANITARY IMPROVEMENTS  
ELECTRICAL NOTES  
AND DETAILS

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DESN:	WAP
DRWN:	EDP
CHKD:	

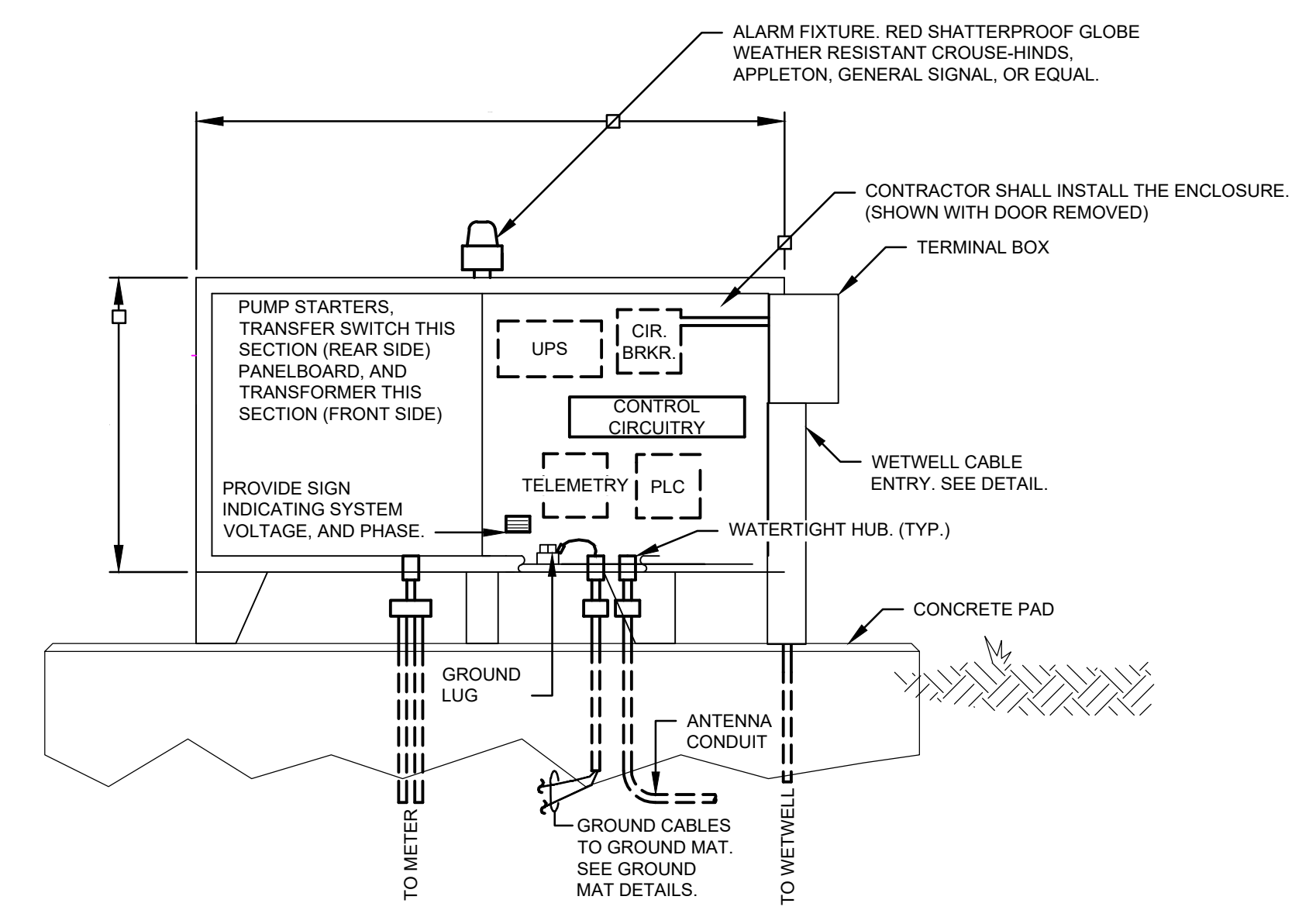
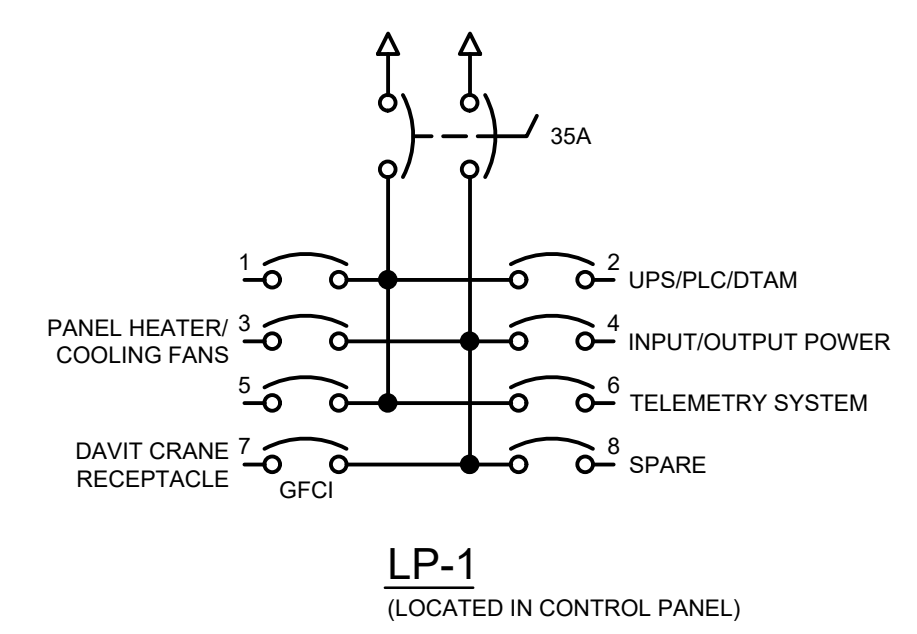
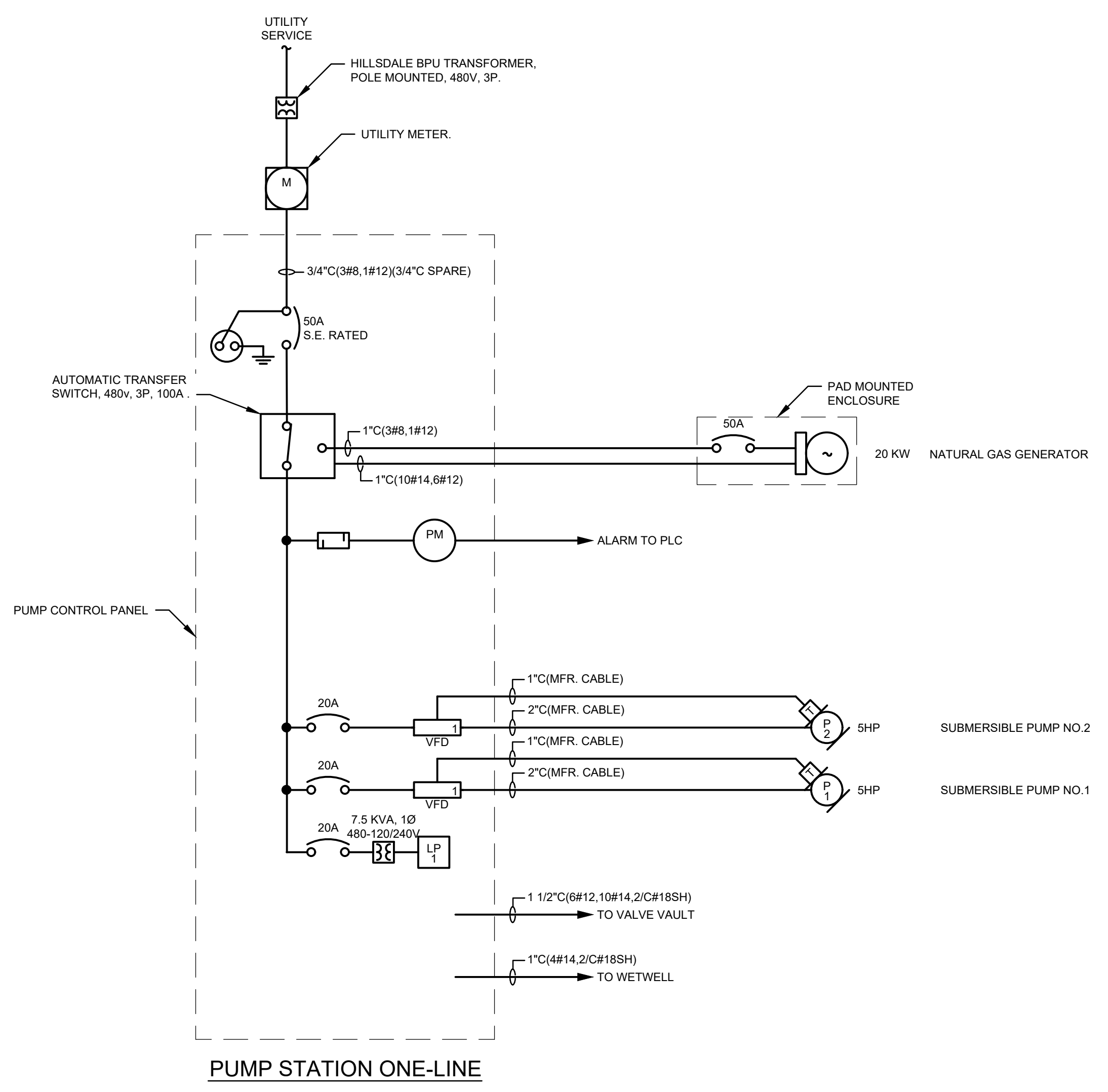
**LS-5**







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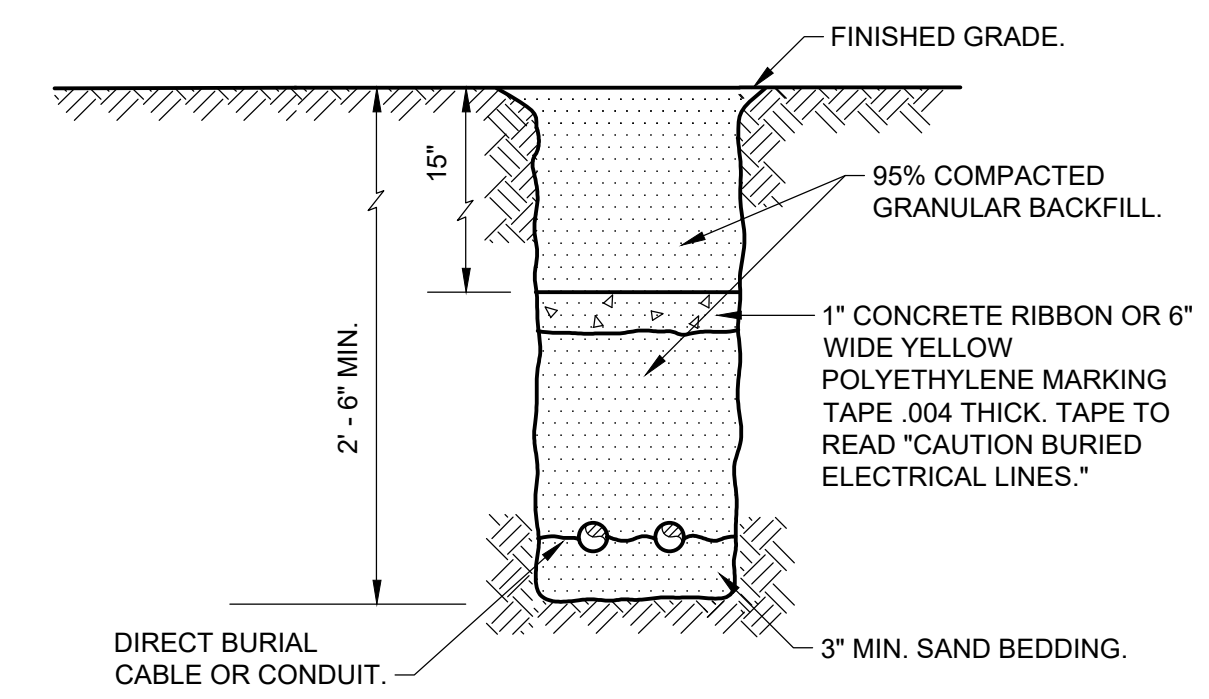


**PUMP CONTROL PANEL DETAIL**

NOT ALL CONDUIT PENETRATIONS SHOWN IN DETAIL ABOVE.  
 NEMA 4 RATED  
 NO SCALE

**PUMP CONTROL PANEL NOTES:**

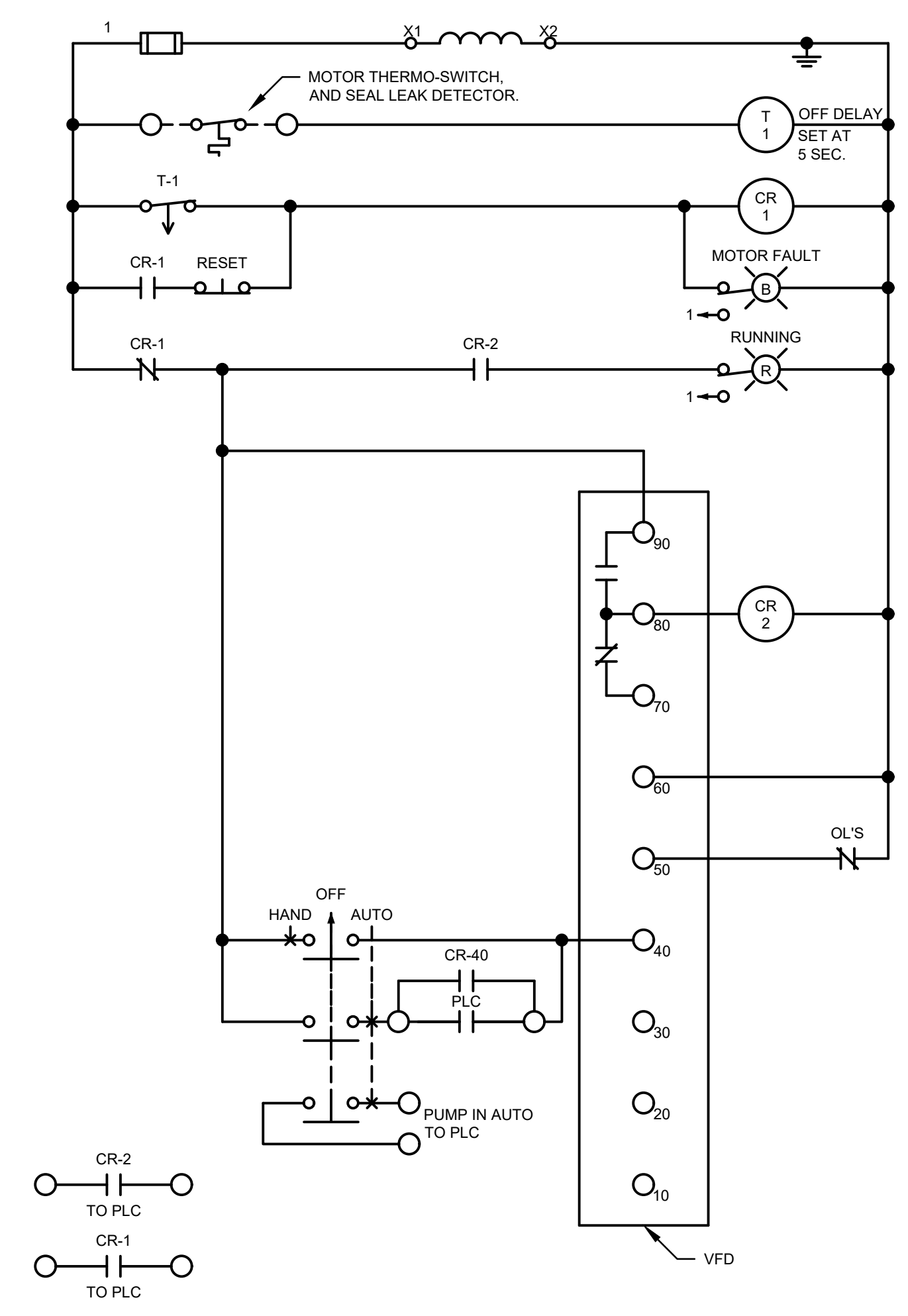
- POWER WIRING SHALL ENTER ENCLOSURE ON OPPOSITE END FROM CONTROL, AND INSTRUMENTATION WIRES.
- SIZE CONTROL PANEL AS REQUIRED.
- PAINT PANEL PER OWNER'S REQUIREMENTS.



**TRENCHING DETAIL**

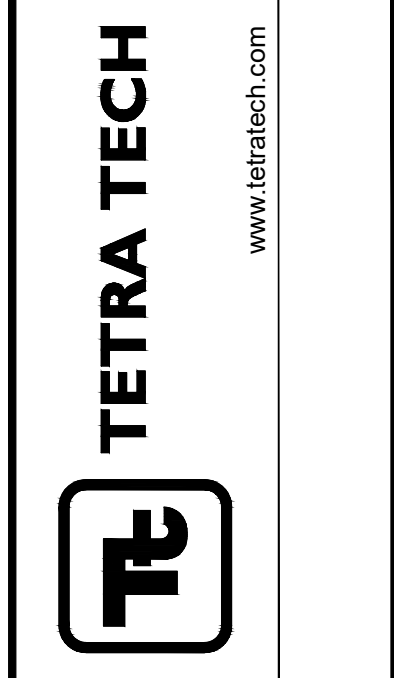
NO SCALE

- GENERAL NOTES:**
- INSTALL GROUND RODS BELOW PUMPING STATION PANEL. CONNECT GROUNDING CONDUCTOR TO PUMP CONTROL PANEL. SEE GROUND MAT DETAIL.
  - EXPOSED ABOVE GRADE CONDUIT SHALL BE PVC COATED RMC.
  - THE PUMP CONTROL PANEL SHALL BE LINED WITH RIGID INSULATION, AND HEATED BY STRIP HEATER WITH LINE-VOLTAGE THERMOSTATS.
  - PROVIDE FORCED AIR VENTILATION SYSTEM FOR PUMP CONTROL PANEL.
  - COORDINATE WITH CONSUMERS ENERGY POWER COMPANY ON INSTALLATION OF NEW ELECTRICAL SERVICE TO PUMP STATION. PROVIDE UNISTRUT EQUIPMENT RACK FOR LOCATING METER, AND SERVICE ENTRANCE RATED MAIN BREAKER.
  - THE ALLEN BRADLEY SMC'S SHALL HAVE THE SOFT START, AND SOFT STOP TIME SETTINGS SET AT THEIR MAXIMUM ALLOWABLE SETTINGS.
  - SPARE CONDUITS SHALL HAVE SCREWED ON CAPS WHEN IN THE WETWELL.



**SUBMERSIBLE PUMP NO.1 WIRING DIAGRAM**

(TYP. FOR PUMP NO.2)



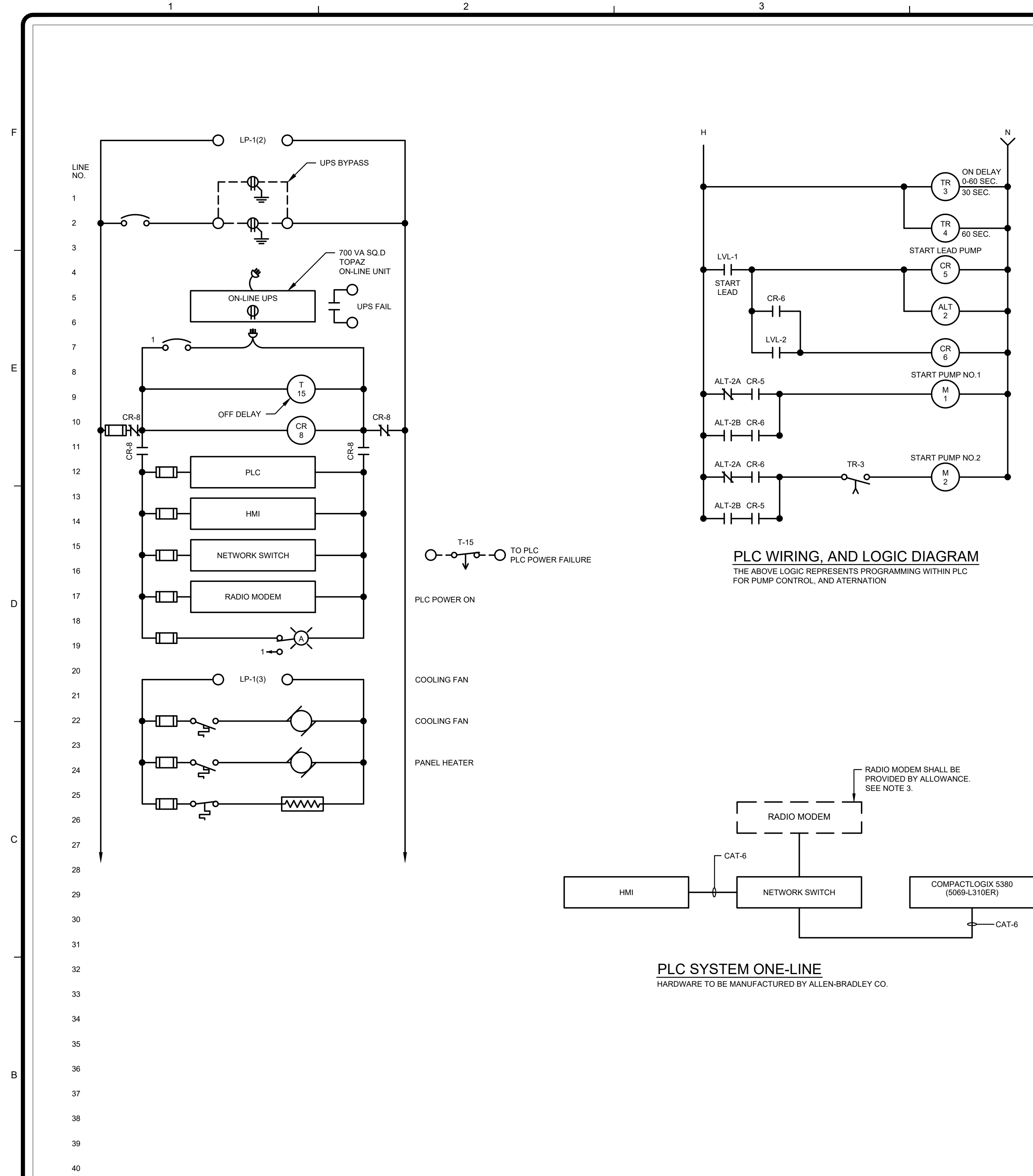
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CITY OF HILLSDALE  
 MARION STREET  
 SANITARY IMPROVEMENTS  
**ONE-LINE & SCHEMATICS**

PROJ: 200-12761-23002  
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 CHKD:

**LS-7**

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**GRAPHIC SYMBOL FOR INSTRUMENTATION ITEMS**

	DEVICE MOUNTED ON PANEL		CONTROL RELAY CONTACT - NORMALLY OPEN
	BOARD OR PANEL MOUNTED DEVICE - DEVICE MOUNTED INSIDE PANEL		CONTROL RELAY CONTACT - NORMALLY CLOSED
	FIELD OR LOCALLY MOUNTED DEVICE		TIMING RELAY COIL
	PROGRAMMED FUNCTION NOT NORMALLY ACCESSIBLE TO OPERATOR		MOLDED CASE CIRCUIT BREAKER
	PROGRAMMED FUNCTION ACCESSIBLE THROUGH OPERATOR'S INTERFACE DEVICE		LOW VOLTAGE FUSE
	COMPUTER SYSTEM INPUT OR OUTPUT POINT		RECEPTACLE
	MOTOR STARTER		PUMP
	COMPLEX LOGIC		TIMED CLOSED CONTACT ON ENERGIZATION
	IN-LINE FLOW ELEMENT (MAGNETIC TYPE)		

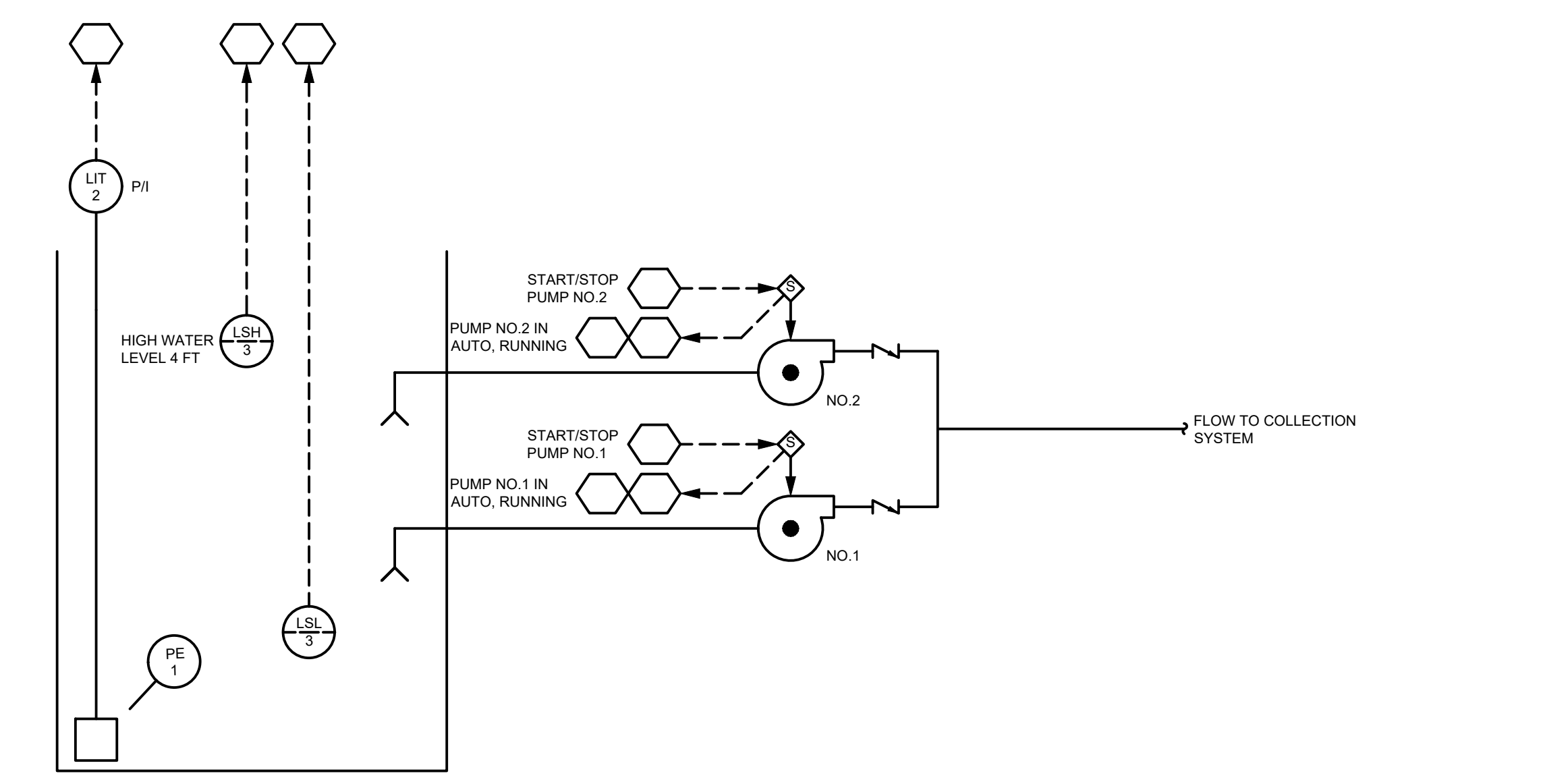
**INSTRUMENTATION LINE SYMBOLS**

SYMBOL	DESCRIPTION
	ELECTRICAL SIGNAL
	AIR LINE/PNEUMATIC SIGNAL
	HYDRAULIC SIGNAL
	ELECTROMAGNETIC OR SONIC SIGNAL
	SOFTWARE SIGNAL
	CONNECTION TO PROCESS, OR MECHANICAL LINK
	ETHERNET COMMUNICATION SIGNAL-UNSHIELDED TWISTED PAIR (UTP) - SPEED AS INDICATED
	ETHERNET FIBER OPTIC COMMUNICATIONS SIGNAL
	PLC REMOTE I/O FIBER OPTIC COMMUNICATION SIGNAL
	ETHERNET VIDEO FIBER OPTIC

**I.S.A. STANDARD LETTER FUNCTIONS**

SYMBOL	FIRST LETTER	SUCCEEDING LETTERS
A	ANALYSIS, ANALOG	ALARM
B	BURNER, FLAME	BATCH
C	CONDUCTIVITY, COMMAND	CONTROL (FEEDBACK TYPE)
D	DENSITY, SPECIFIC GRAVITY	HIGH
E	VOLTAGE	PRIMARY ELEMENT
F	FLOW RATE	RATIO
G	GAGING	GLASS
H	HAND, MANUAL	HIGH
I	CURRENT	INDICATE
J	POWER	SCAN
K	TIME, TIME SCHEDULE	CONTROL (NO FEEDBACK)
L	LEVEL, LIGHT	LOW
M	MOISTURE, HUMIDITY	MIDDLE, MODULATE
N		
O	OVERLOAD	ORIFICE
P	PRESSURE, VACUUM	POINT
Q	QUANTITY	TOTALIZE, INTEGRATE
R	RADIOACTIVITY	RECORD, PRINT, RECEIVE
S	SPEED, FREQUENCY, SOLENOID	SWITCH
T	TEMPERATURE, TURBIDITY	TRANSMIT, TRANSFORM
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION, VISCOSITY	VALVE, DAMPER, LOUVER
W	WEIGHT, FORCE	
X		
Y		RELAY, COMPUTE
Z	POSITION	DRIVE, ACTUATE



- NOTES:**
- AS A MINIMUM PROVIDE THE FOLLOWING SPARE PARTS:
    - 1 - CPU MODULE
    - 1 - DISCRETE INPUT, AND 1 - OUTPUT MODULE
    - 1 - ANALOG INPUT MODULE
    - 1 - PLC POWER SUPPLY
  - PLC PROGRAMMING IS BY ENGINEER.
  - RADIO SYSTEM PROVIDED BY UTILITIES INSTRUMENTATION SERVICES. WORK BY UIS SHALL BE COVERED UNDER A \$10000 ALLOWANCE. INCLUDE ALLOWANCE IN BID.

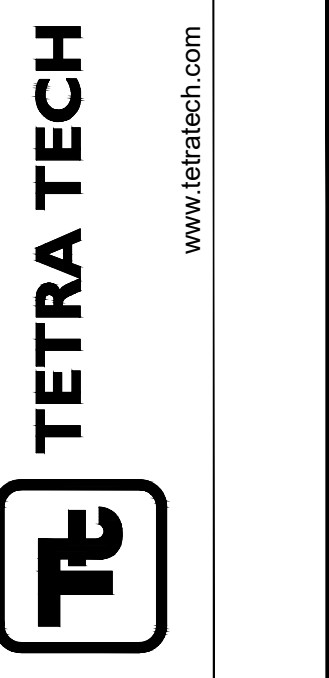
- PLC I/O POINT

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CITY OF HILLSDALE  
MARION STREET  
SANITARY IMPROVEMENTS  
**P&ID & PANEL POWER**

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CHKD:

**LS-8**



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