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HIGHWAY STANDARDS

000001-08	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
280001-07	TEMPORARY EROSION CONTROL SYSTEMS
424001-11	PERPENDICULAR CURB RAMPS FOR SIDEWALKS
424011-04	CORNER PARALLEL CURB RAMPS FOR SIDEWALKS
424016-05	MID-BLOCK CURB RAMPS FOR SIDEWALKS
424031-02	MEDIAN PEDESTRIAN CROSSINGS
442201-03	CLASS C AND D PATCHES
601001-05	PIPE UNDERDRAINS
602001-02	CATCH BASIN TYPE A
602011-02	CATCH BASIN TYPE C
602301-04	INLET - TYPE A
602401-07	PRECAST MANHOLE TYPE A 4' (1.22m) DIAMETER
602402-03	PRECAST MANHOLE TYPE A 5' (1.52m) DIAMETER
602406-11	PRECAST MANHOLE TYPE A 6' (1.83 m) DIAMETER
602411-09	PRECAST MANHOLE TYPE A 7' (2.13 m) DIAMETER
602601-06	PRECAST REINFORCED CONCRETE FLAT SLAB TOP
602701-02	MANHOLE STEPS
604001-05	FRAME AND LIDS TYPE 1
604036-03	GRATE TYPE 8
604051-04	FRAME AND GRATE TYPE 11
604091-04	FRAME AND GRATE TYPE 24
606001-07	CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER
606301-04	PC CONCRETE ISLANDS AND MEDIANS
701006-05	OFF-RD OPERATIONS, 2L, 2W, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE
701011-04	OFF-RD MOVING OPERATIONS, 2L, 2W, DAY ONLY
701101-05	OFF-RD OPERATIONS, MULTILANE, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE
701301-04	LANE CLOSURE, 2L, 2W, SHORT TIME OPERATIONS
701311-03	LANE CLOSURE 2L, 2W MOVING OPERATIONS - DAY ONLY
701427-05	LANE CLOSURE, MULTILANE, INTERMITTENT OR MOVING OPER., FOR SPEEDS ≤ 40 MPH
701501-06	URBAN LANE CLOSURE, 2L, 2W, UNDIVIDED
701502-09	URBAN LANE CLOSURE, 2L, 2W, WITH BIDIRECTIONAL LEFT TURN LANE
701602-10	URBAN LANE CLOSURE, MULTILANE, 2W WITH BIDIRECTIONAL LEFT TURN LANE
701701-10	URBAN LANE CLOSURE, MULTILANE INTERSECTION
701801-06	SIDEWALK, CORNER OR CROSSWALK CLOSURE
701901-08	TRAFFIC CONTROL DEVICES
720001-01	SIGN PANEL MOUNTING DETAILS
720006-04	SIGN PANEL ERECTION DETAILS
720016-04	MAST ARM MOUNTED STREET NAME SIGNS
728001-01	TELESCOPING STEEL SIGN SUPPORT
780001-05	TYPICAL PAVEMENT MARKINGS
781001-04	TYPICAL APPLICATIONS RAISED REFLECTIVE PAVEMENT MARKERS
814001-03	HANDHOLES
814006-03	DOUBLE HANDHOLES
821101-02	LUMINAIRE WIRING IN POLE
830026-01	TEMPORARY ROADWAY LIGHTING
836001-04	LIGHT POLE FOUNDATION
857001-01	STANDARD PHASE DESIGNATION DIAGRAMS AND PHASE SEQUENCES
862001-01	UNINTERRUPTABLE POWER SUPPLY (UPS)
873001-02	TRAFFIC SIGNAL GROUNDING & BONDING
877001-08	STEEL MAST ARM ASSEMBLY AND POLE 16' THROUGH 55'
877006-06	STEEL MAST ARM ASSEMBLY AND POLE WITH DUAL MAST ARMS
878001-11	CONCRETE FOUNDATION DETAILS
880006-01	TRAFFIC SIGNAL MOUNTING DETAILS
886001-01	DETECTOR LOOP INSTALLATIONS
886006-01	TYPICAL LAYOUTS FOR DETECTION LOOPS

COMMITMENTS

THERE ARE NO COMMITMENTS FOR THIS PROJECT

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INDEX OF SHEETS, HIGHWAY STANDARDS, AND COMMITMENTS

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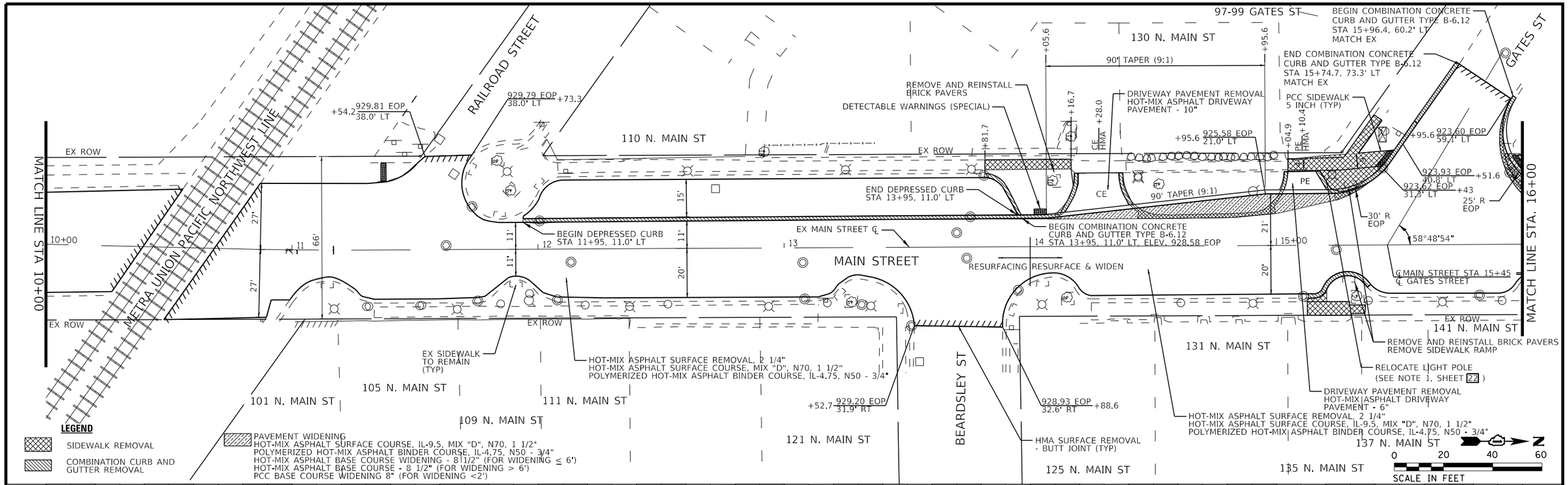
		CONTRACT NO. 61H27		
		ILLINOIS FED. AID PROJECT		



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BAXTER & WOODMAN Consulting Engineers

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE
MAIN STREET

SCALE: 1" = 20' | SHEET 2 OF 5 SHEETS | STA. 10+00 TO STA. 16+00

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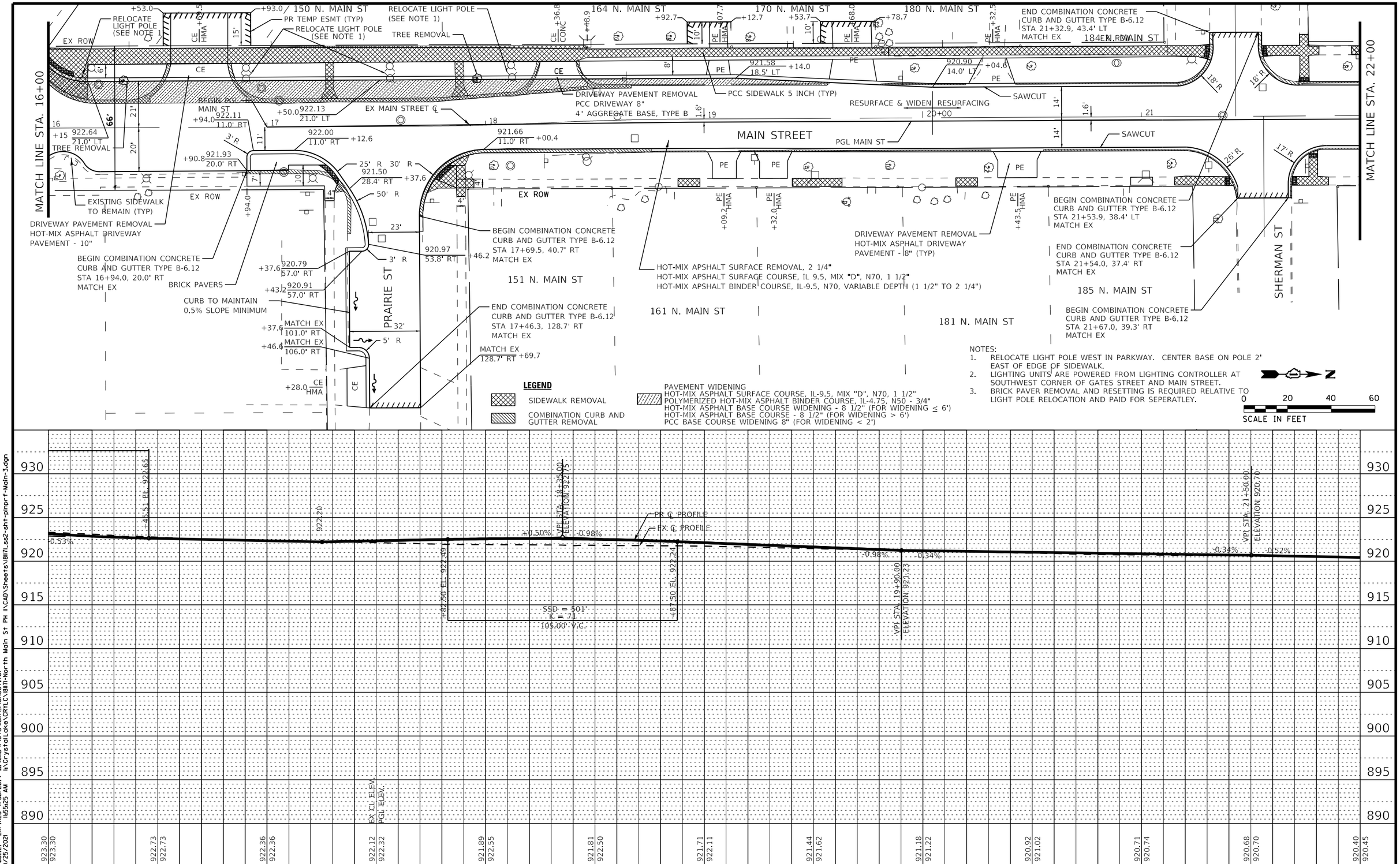

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE
MAIN STREET

SCALE: 1" = 20' | SHEET 3 OF 5 SHEETS | STA. 16+00 TO STA. 22+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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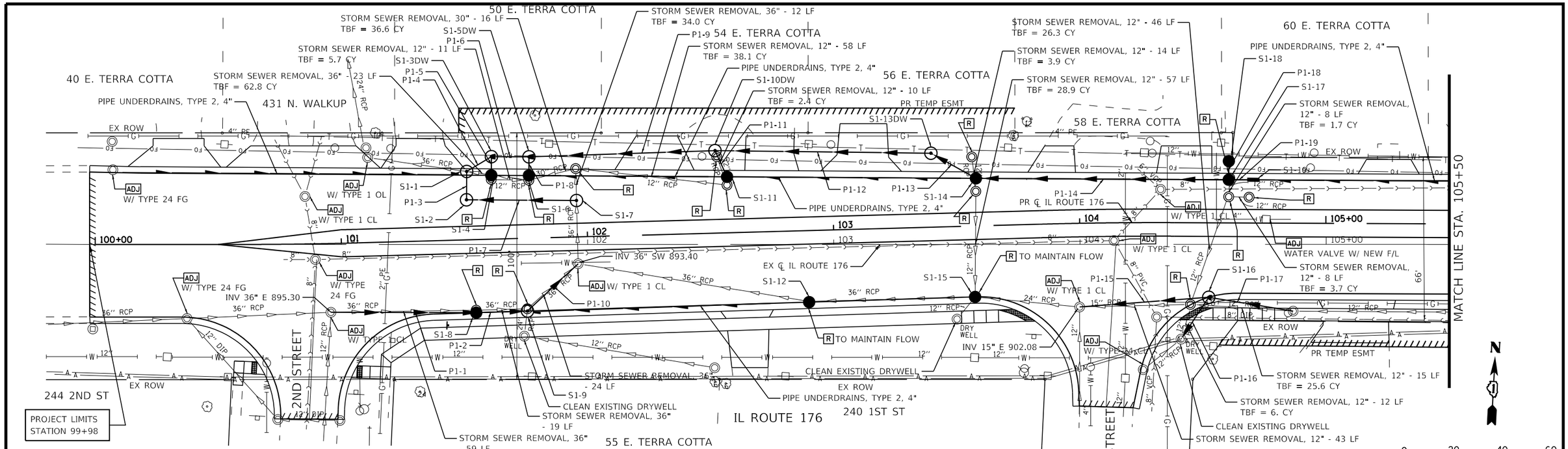
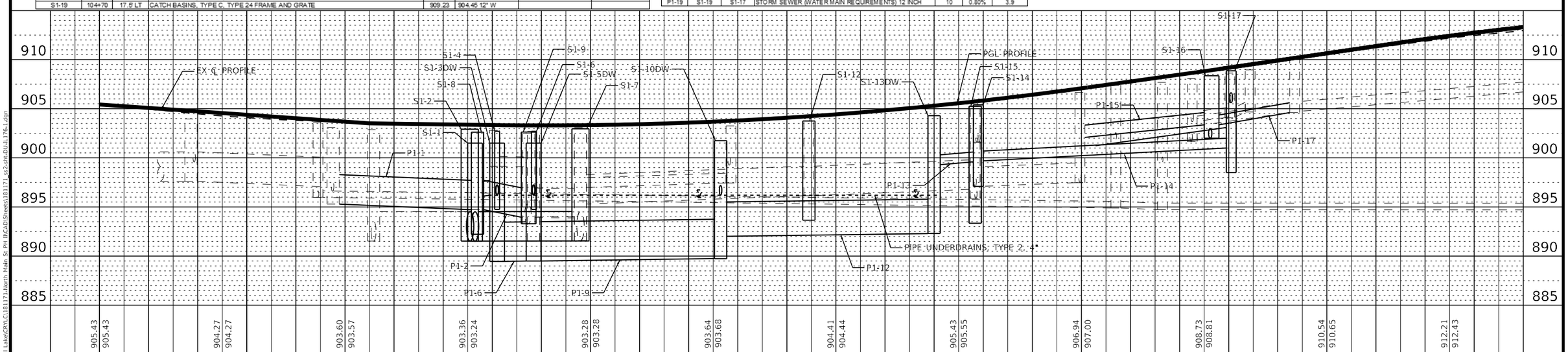


STRUCTURE NO.	STA.	OFFSET FT	STRUCTURE TYPE	RIM/EOP	INVERTS		
S1-1	101+53	27.7 LT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID	901.50	891.52 EX 36" W	896.10 18" NE	891.52 36" S
S1-2	101+51	16.2 LT	MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	902.92	891.53 36" N	891.53 36" E	
S1-3 DW	101+62	33.5 LT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID, SPECIAL	901.50	896.20 18" SW	889.45 48" E	896.20 12" S
S1-4	101+62	25.9 LT	CATCH BASINS, TYPE C, TYPE 24 FRAME AND GRATE	902.70	896.25 12" N		
S1-5 DW	101+77	33.0 LT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID, SPECIAL	901.50	889.50 48" W	889.50 48" E	896.20 12" S
S1-6	101+77	24.6 LT	CATCH BASINS, TYPE C, TYPE 24 FRAME AND GRATE	902.70	896.25 12" N		
S1-7	101+96	14.8 LT	MANHOLES, TYPE A, 7'-DIAMETER, TYPE 1 FRAME, CLOSED LID	902.96	891.54 36" W	891.54 EX 36" S	
S1-8	101+54	29.6 RT	CATCH BASINS, TYPE A, 5'-DIAMETER, TYPE 24 FRAME AND GRATE	902.62	894.72 36" E	894.72 36" W	
S1-9	101+75	29.5 RT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 24 FRAME AND GRATE	902.63	893.94 36" NE	893.29 EX 24" S	893.94 36" W
S1-10 DW	102+53	33.5 LT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID, SPECIAL	901.75	889.75 48" W	892.00 42" E	896.20 12" SE
S1-11	102+57	22.7 LT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 24 FRAME AND GRATE	903.70	896.25 12" NW		
S1-12	102+89	29.0 RT	CATCH BASINS, TYPE A, 5'-DIAMETER, TYPE 24 FRAME AND GRATE	903.80	896.16 EX 36" NW	896.16 EX 36" E	
S1-13 DW	103+40	30.0 LT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID, SPECIAL	904.30	892.30 42" W	899.30 18" SE	
S1-14	103+58	19.3 LT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 24 FRAME AND GRATE	905.40	899.60 18" NW	899.70 12" E	
S1-15	103+57	28.8 RT	CATCH BASINS, TYPE A, 5'-DIAMETER, TYPE 24 FRAME AND GRATE	905.25	896.75 EX 36" W	895.85 EX 12" SW	897.05 EX 24" E
S1-16	104+53	30.2 RT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 24 FRAME AND GRATE	908.36	903.37 15" W	902.00 12" SW	903.37 12" E
S1-17	104+61	17.5 LT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 24 FRAME AND GRATE	908.86	901.00 12" W	904.37 12" E	905.60 12" N
S1-18	104+61	25.1 LT	CATCH BASINS, TYPE C, TYPE 8 GRATE	909.00	905.70 12" SW		
S1-19	104+70	17.5 LT	CATCH BASINS, TYPE C, TYPE 24 FRAME AND GRATE	909.23	904.45 12" W		

PIPE NO.	FROM	TO	PIPE TYPE	LENGTH FT	SLOPE %	TRENCH BACKFILL CU YD
P1-1	ex MH1-2	S1-8	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 36"	59	0.98%	81.0
P1-2	S1-8	S1-9	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 36"	21	3.71%	31.2
P1-3	S1-2	S1-1	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 36"	11	0.09%	22.8
P1-4	S1-3 DW	S1-1	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 18"	12	0.83%	1.6
P1-5	S1-4	S1-3 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	8	0.62%	4.4
P1-6	S1-5 DW	S1-3 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 48"	15	0.33%	0.0
P1-7	S1-7	S1-2	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 36"	45	0.02%	101.3
P1-8	S1-6	S1-5 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	8	0.62%	4.4
P1-9	S1-10 DW	S1-5 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 48"	76	0.33%	74.3
P1-10	S1-9	ex MH1-3	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 36"	28	0.14%	45.7
P1-11	S1-11	S1-10 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	12	0.42%	1.9
P1-12	S1-13 DW	S1-10 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 42"	88	0.34%	107.2
P1-13	S1-14	S1-13 DW	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 18"	21	1.43%	2.7
P1-14	S1-17	S1-14	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	103	1.28%	65.3
P1-15	S1-16	ex MH1-4	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 15"	53	2.42%	23.6
P1-16	S1-16	ex DW1-3	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	20	0.50%	9.7
P1-17	ex MH1-5	S1-16	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	35	3.80%	16.6
P1-18	S1-18	S1-17	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	8	1.25%	2.1
P1-19	S1-19	S1-17	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	10	0.80%	3.9



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BAXTER & WOODMAN Consulting Engineers

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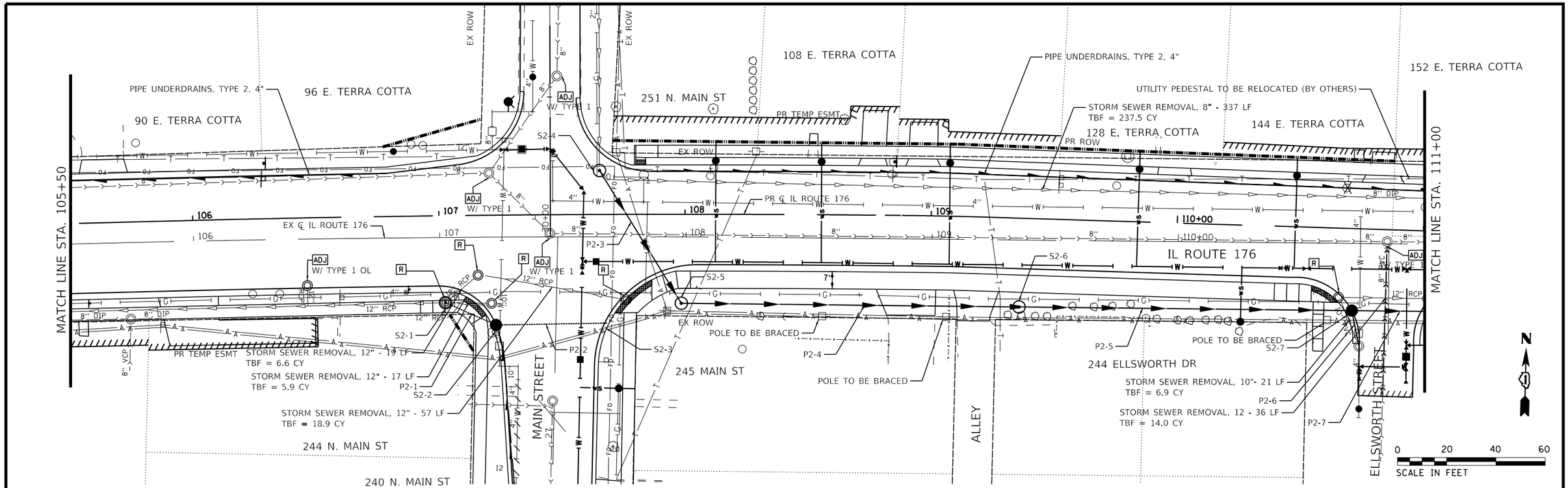
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES
IL ROUTE 176

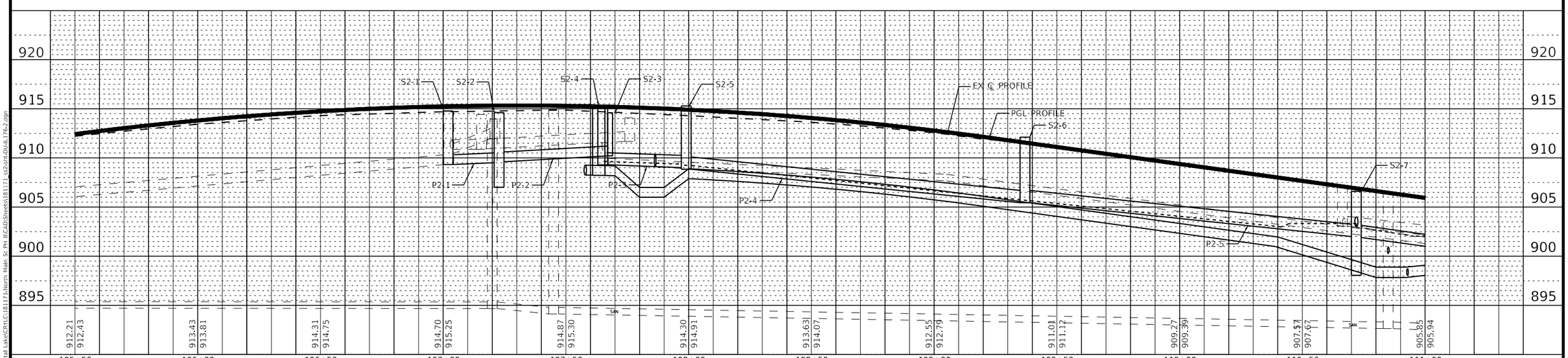
SCALE: 1" = 20' | SHEET 1 OF 3 SHEETS | STA. 100+00 TO STA. 105+50

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	41
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	



STRUCTURE NO.	STA.	OFFSET FT	STRUCTURE TYPE	RIM/EOP	INVERTS		
S2-1	107+02	35.3' RT	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	914.78	909.32 EX 12" W	909.32 12" SE	
S2-2	107+23	44.6' RT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 11 FRAME AND GRATE	914.62	909.52 12" NW	909.62 12" E	
S2-3	107+68	44.2' RT	INLETS, TYPE A, TYPE 11 FRAME AND GRATE	914.60	910.20 12" W		
S2-4	107+65	17.8' LT	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	915.30	909.30 15" SE	910.80 EX 8" N	
S2-5	107+99	36.2' RT	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	915.30	908.90 15" E	909.00 15" NW	
S2-6	109+37	36.0' RT	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	912.12	905.44 15" E	905.44 15" W	
S2-7	110+72	33.3' RT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 11 FRAME AND GRATE	906.60	901.90 18" E	902.00 15" W	903.00 12" S

PIPE NO.	FROM	TO	PIPE TYPE	LENGTH FT	SLOPE %	TRENCH BACKFILL CU YD
P2-1	S2-2	S2-1	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	22	0.91%	10.5
P2-2	S2-3	S2-2	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	45	1.29%	18.7
P2-3	S2-4	S2-5	STORM SEWER (WATER MAIN REQUIREMENTS) 15 INCH	63	0.48%	38.1
P2-4	S2-5	S2-6	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 15"	137	2.53%	29.1
P2-5	S2-6	S2-7	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 15"	135	2.55%	6.6
P2-6	ex IN2-1	S2-7	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	15	3.33%	3.8
P2-7	S2-7	S3-3	STORM SEWER (WATER MAIN REQUIREMENTS) 18 INCH	36	2.75%	16.9



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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

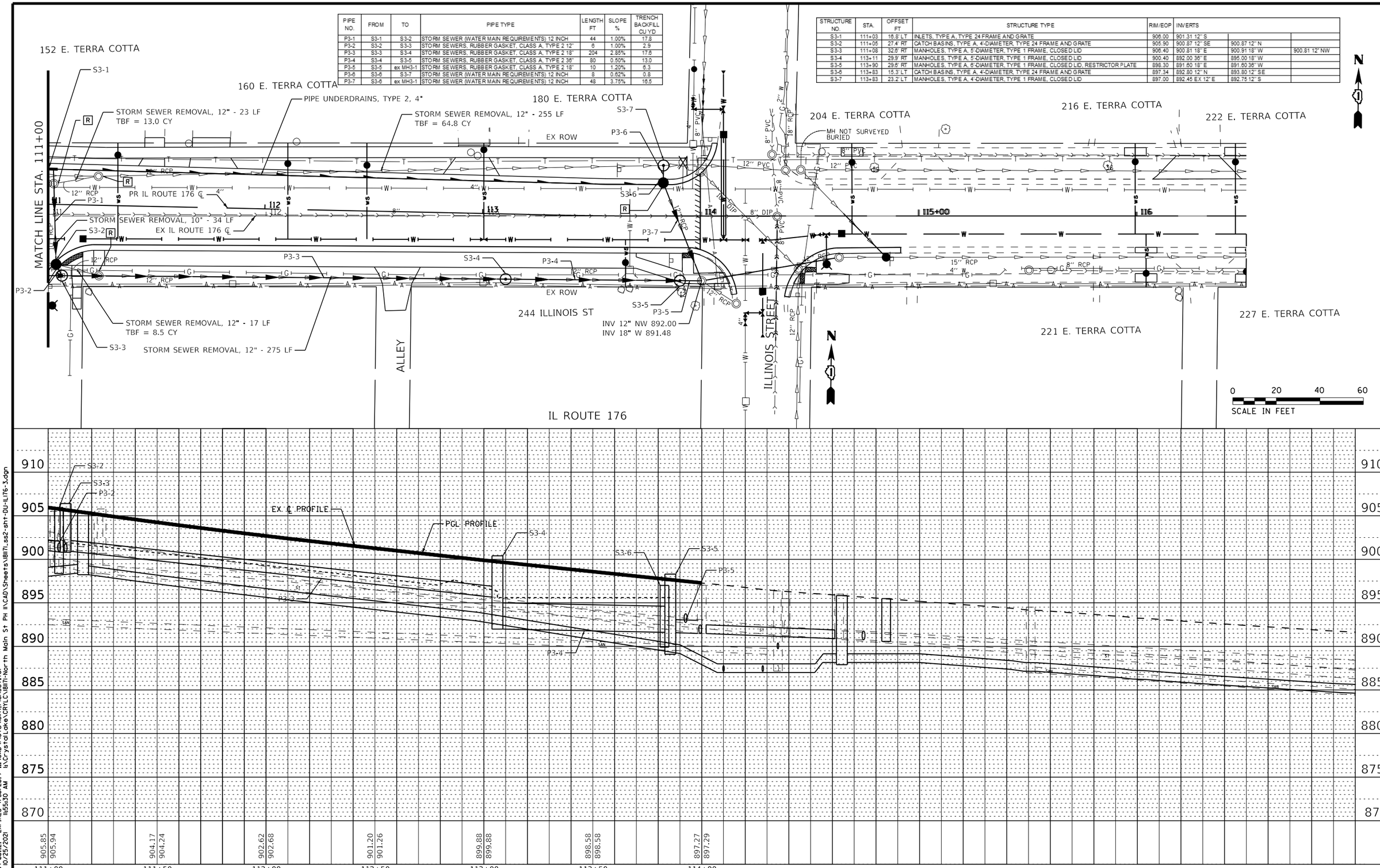
DRAINAGE AND UTILITIES
IL ROUTE 176

SCALE: 1" = 20' | SHEET 2 OF 3 SHEETS | STA. 105+50 TO STA. 111+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	42
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	

PIPE NO.	FROM	TO	PIPE TYPE	LENGTH FT	SLOPE %	TRENCH BACKFILL CU YD
P3-1	S3-1	S3-2	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	44	1.00%	17.8
P3-2	S3-2	S3-3	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	6	1.00%	2.9
P3-3	S3-3	S3-4	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 18"	204	2.85%	17.8
P3-4	S3-4	S3-5	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 36"	80	0.50%	13.0
P3-5	S3-5	ex MH3-1	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 18"	10	1.20%	6.3
P3-6	S3-6	S3-7	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	8	0.62%	0.8
P3-7	S3-6	ex MH3-1	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	48	3.75%	16.5

STRUCTURE NO.	STA.	OFFSET FT	STRUCTURE TYPE	RIM/EOP	INVERTS		
S3-1	111+03	16.8' LT	INLETS, TYPE A, TYPE 24 FRAME AND GRATE	906.00	901.31 12" S		
S3-2	111+05	27.4' RT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 24 FRAME AND GRATE	905.90	900.87 12" SE	900.87 12" N	
S3-3	111+08	32.6' RT	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	906.40	900.81 18" E	900.91 18" W	900.81 12" NW
S3-4	113+11	29.9' RT	MANHOLES, TYPE A, 5'-DIAMETER, TYPE 1 FRAME, CLOSED LID	900.40	892.00 36" E	895.00 18" W	
S3-5	113+90	29.6' RT	MANHOLES, TYPE A, 6'-DIAMETER, TYPE 1 FRAME, CLOSED LID, RESTRICTOR PLATE	898.30	891.60 18" E	891.60 36" W	
S3-6	113+83	15.3' LT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 24 FRAME AND GRATE	897.34	892.80 12" N	893.80 12" SE	
S3-7	113+83	23.2' LT	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	897.00	892.45 EX 12" E	892.75 12" S	



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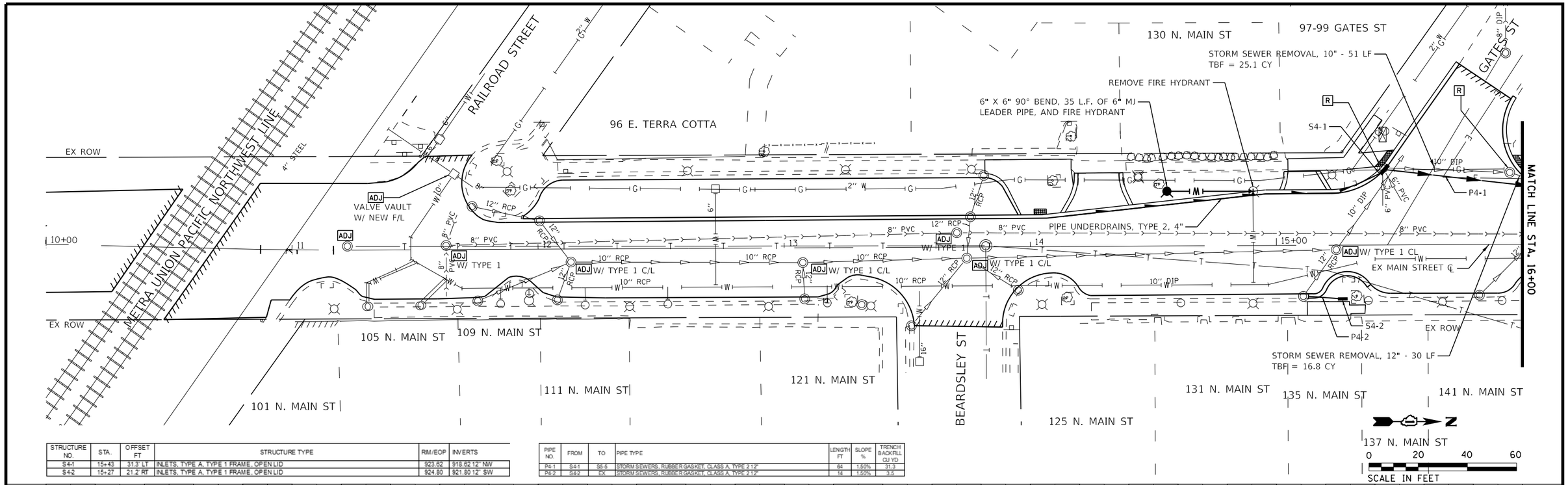
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES
IL ROUTE 176

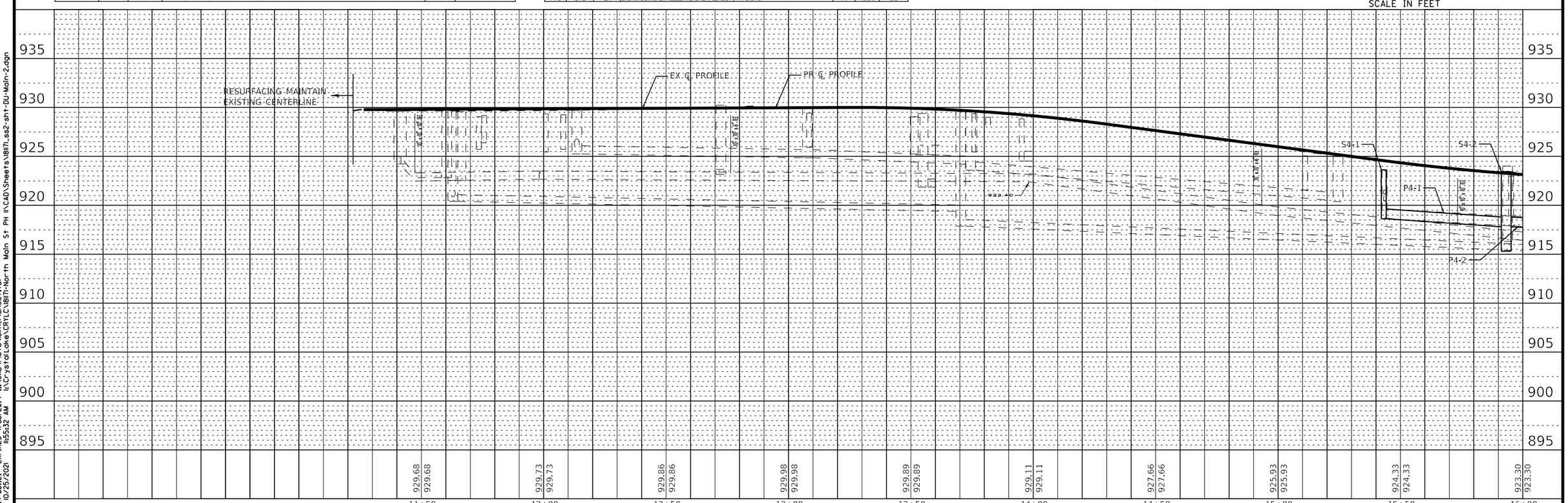
SCALE: 1" = 20' | SHEET 3 OF 3 SHEETS | STA. 111+00 TO STA. 116+50

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	43
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	



STRUCTURE NO.	STA.	OFFSET FT	STRUCTURE TYPE	RIM/EOP	INVERTS
S4-1	15+43	31.3' LT	INLETS, TYPE A, TYPE 1 FRAME, OPEN LID	923.62	918.62 12" NW
S4-2	15+27	21.2' RT	INLETS, TYPE A, TYPE 1 FRAME, OPEN LID	924.80	921.80 12" SW

PIPE NO.	FROM	TO	PIPE TYPE	LENGTH FT	SLOPE %	TRENCH BACKFILL CU YD
P4-1	S4-1	SS-5	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	64	1.50%	31.3
P4-2	S4-2	EX	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	14	1.50%	3.5



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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

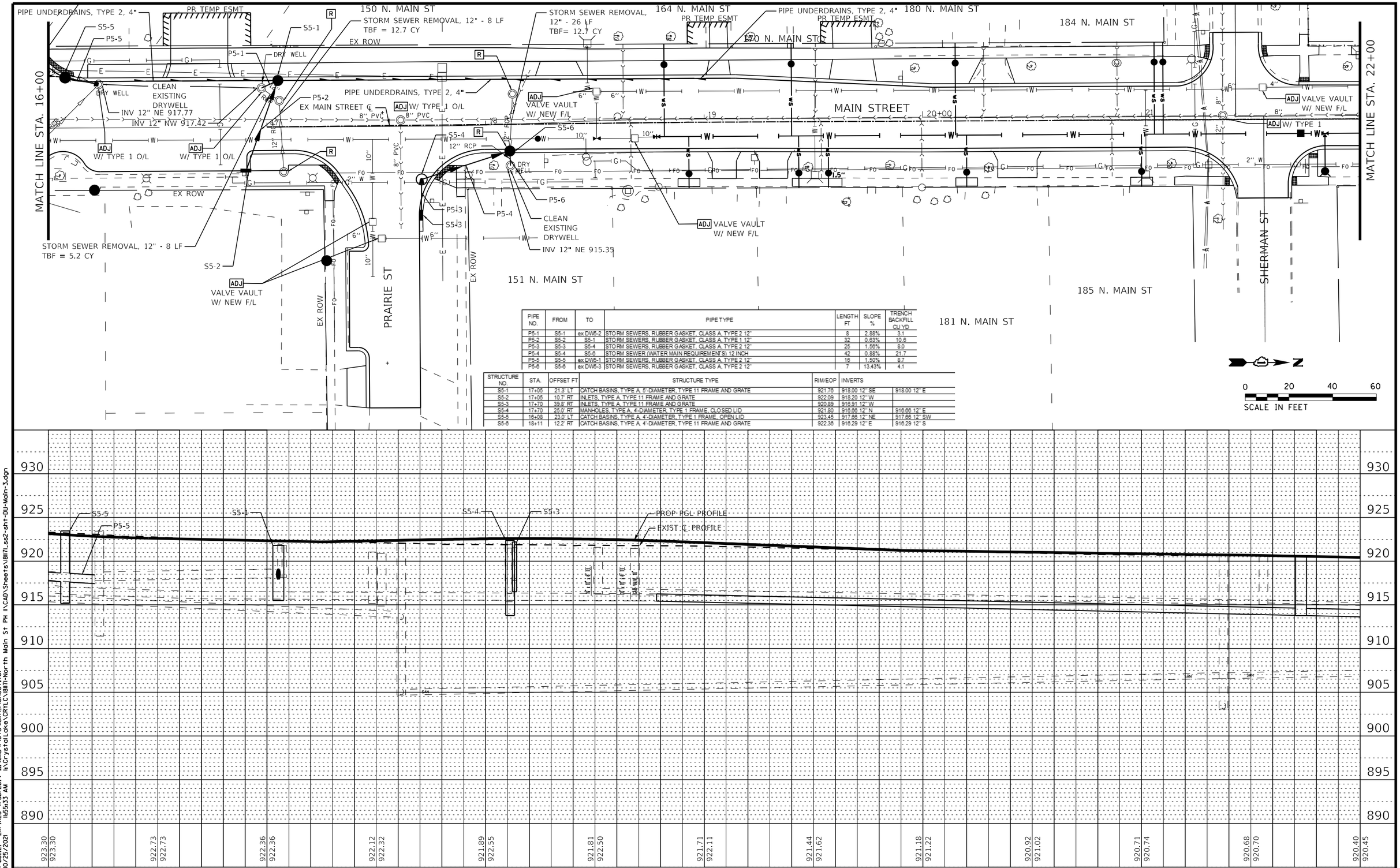
DRAINAGE AND UTILITIES
MAIN STREET

SCALE: 1" = 20' | SHEET 2 OF 5 SHEETS | STA. 10+00 TO STA. 16+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	44

CONTRACT NO. 61H27

ILLINOIS | FED. AID PROJECT



PIPE NO.	FROM	TO	PIPE TYPE	LENGTH FT	SLOPE %	TRENCH BACKFILL CU YD
P5-1	S5-1	ex DW5-2	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	8	2.88%	3.1
P5-2	S5-2	S5-1	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 1 12"	32	0.63%	10.6
P5-3	S5-3	S5-4	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	25	1.56%	8.0
P5-4	S5-4	S5-6	STORM SEWER (WATER MAIN REQUIREMENTS) 12 INCH	42	0.88%	21.7
P5-5	S5-5	ex DW5-1	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	16	1.50%	8.7
P5-6	S5-6	ex DW5-3	STORM SEWERS, RUBBER GASKET, CLASS A, TYPE 2 12"	7	13.43%	4.1

STRUCTURE NO.	STA.	OFFSET FT	STRUCTURE TYPE	RIM/EOP	INVERTS	
S5-1	17+05	21.3' LT	CATCH BASINS, TYPE A, 5'-DIAMETER, TYPE 11 FRAME AND GRATE	921.76	918.00 12" SE	918.00 12" E
S5-2	17+05	10.7' RT	INLETS, TYPE A, TYPE 11 FRAME AND GRATE	922.09	918.20 12" W	
S5-3	17+70	39.8' RT	INLETS, TYPE A, TYPE 11 FRAME AND GRATE	920.89	916.91 12" W	
S5-4	17+70	25.0' RT	MANHOLES, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID	921.80	916.66 12" N	916.66 12" E
S5-5	18+08	23.0' LT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 1 FRAME, OPEN LID	923.45	917.66 12" NE	917.66 12" SW
S5-6	18+11	12.2' RT	CATCH BASINS, TYPE A, 4'-DIAMETER, TYPE 11 FRAME AND GRATE	922.36	916.29 12" E	916.29 12" S

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

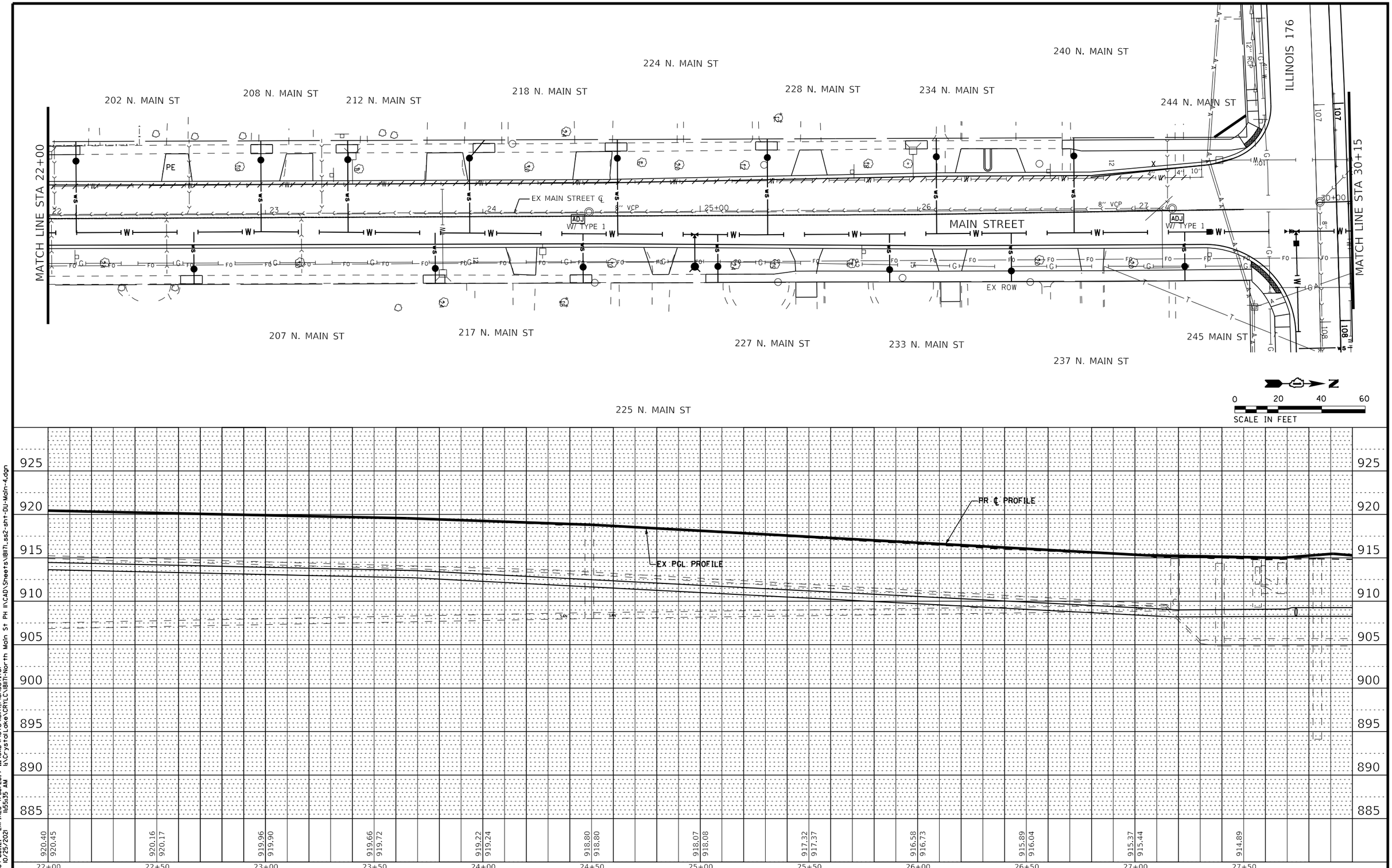
DRAINAGE AND UTILITIES
MAIN STREET

SCALE: 1" = 20' | SHEET 3 OF 5 SHEETS | STA. 16+00 TO STA. 22+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	45

CONTRACT NO. 61H27

ILLINOIS | FED. AID PROJECT



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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES
MAIN STREET

SCALE: 1" = 20' | SHEET 4 OF 5 SHEETS | STA. 22+00 TO STA. 30+15

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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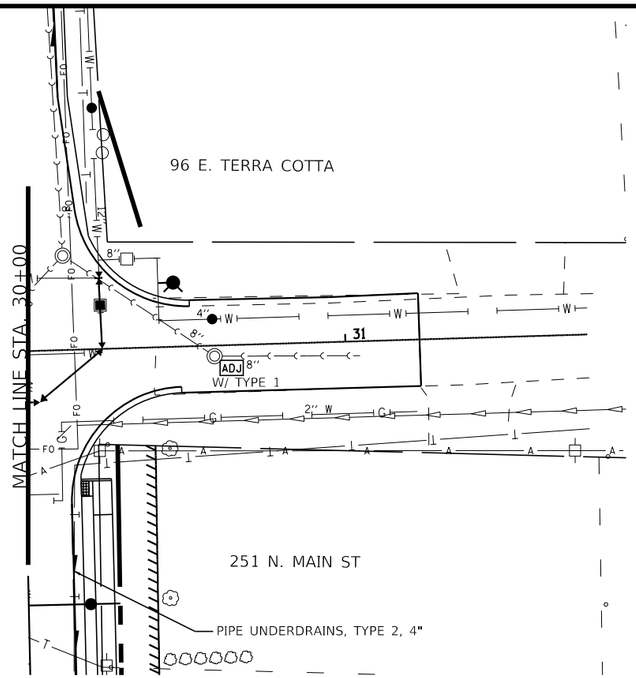
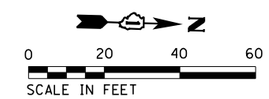
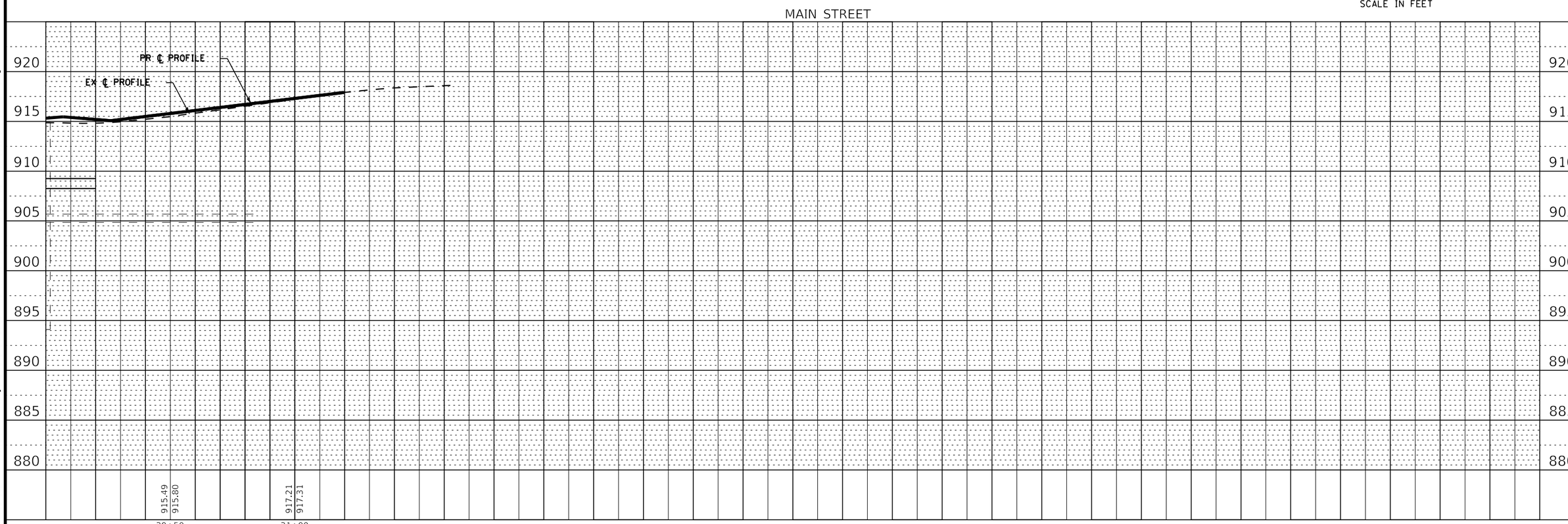
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	







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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAINAGE AND UTILITIES
MAIN STREET

SCALE: 1" = 20' | SHEET 5 OF 5 SHEETS | STA. 30+15 TO STA. 32+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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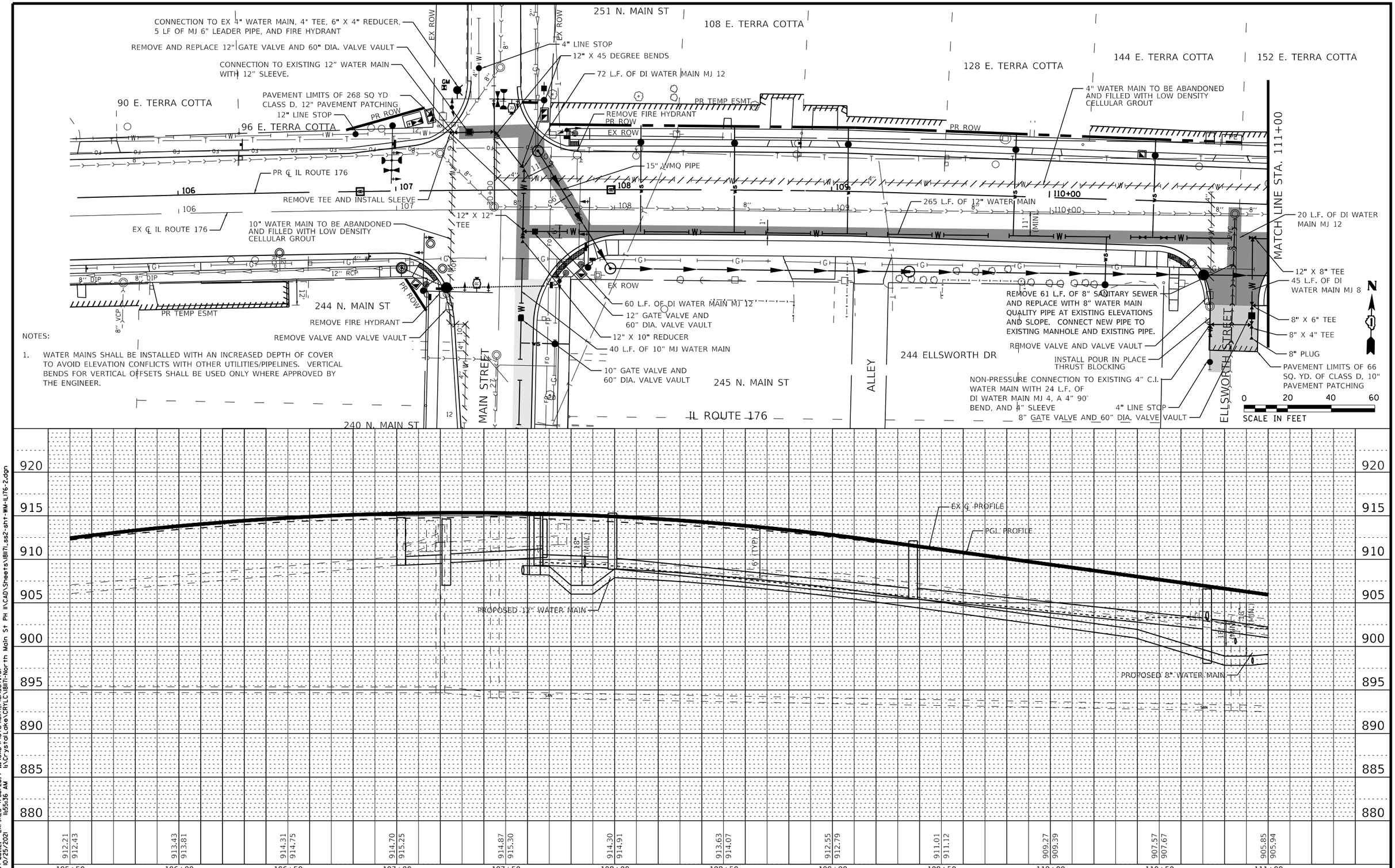

NOTES:

1. WATER MAINS SHALL BE INSTALLED WITH AN INCREASED DEPTH OF COVER TO AVOID ELEVATION CONFLICTS WITH OTHER UTILITIES/PIPELINES. VERTICAL BENDS FOR VERTICAL OFFSETS SHALL BE USED ONLY WHERE APPROVED BY THE ENGINEER.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

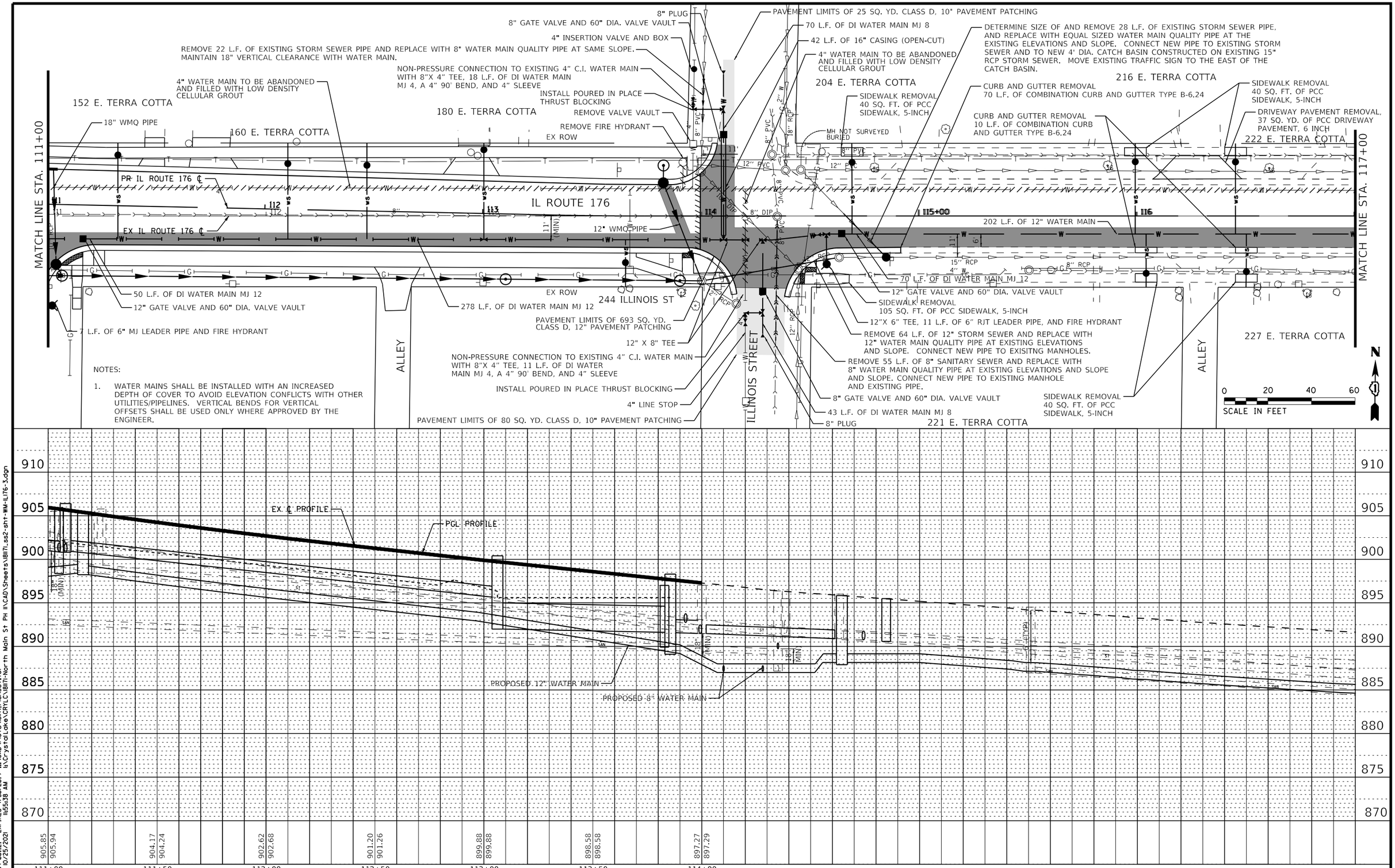
WATER MAIN PLAN AND PROFILE
IL ROUTE 176

SCALE: 1" = 20' | SHEET 2 OF 3 SHEETS | STA. 105+50 TO STA. 111+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	48

CONTRACT NO. 61H27

ILLINOIS | FED. AID PROJECT



NOTES:

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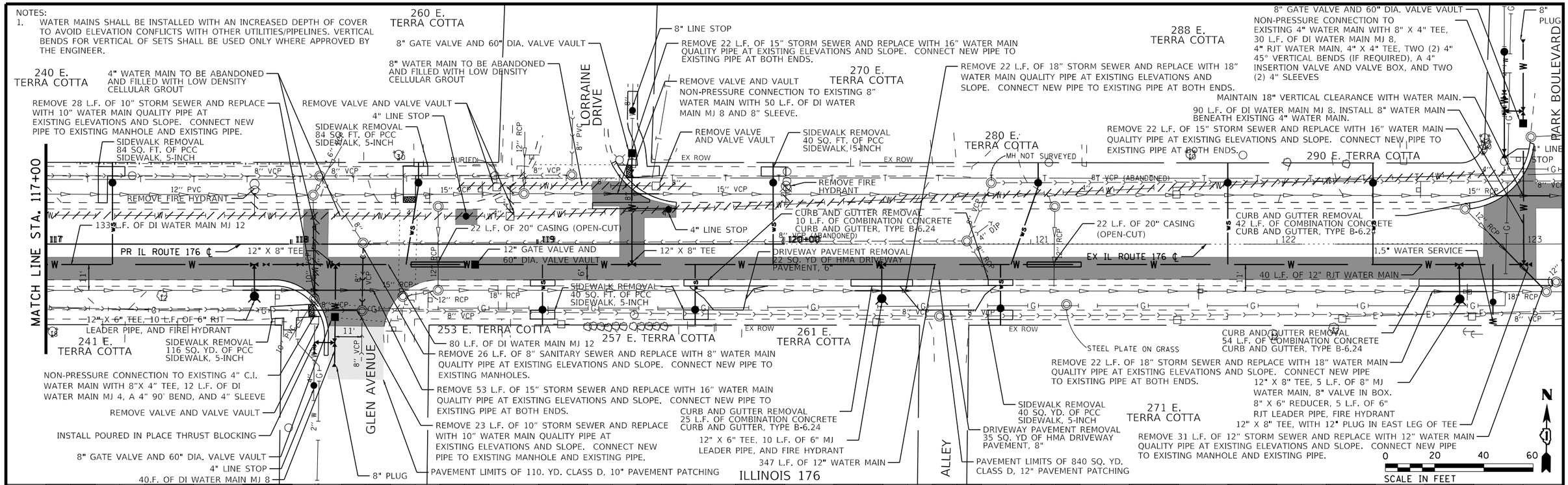
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

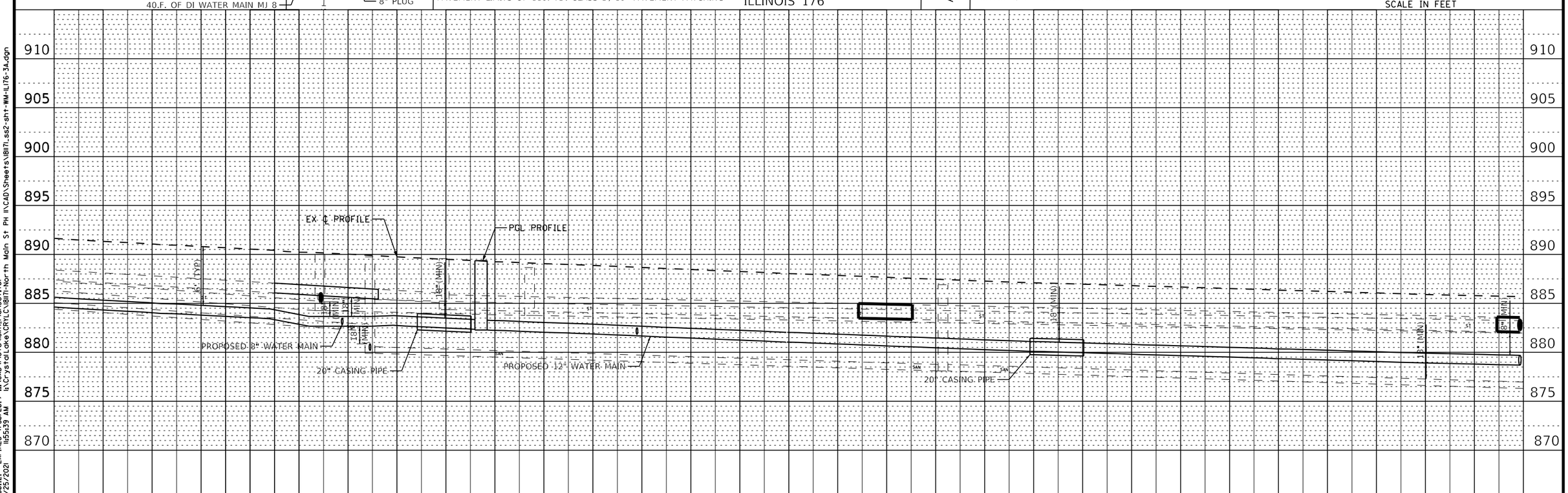
WATER MAIN PLAN AND PROFILE
IL ROUTE 176

SCALE: 1" = 20' | SHEET 3 OF 3 SHEETS | STA. 111+00 TO STA. 117+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	49
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	

NOTES:
1. WATER MAINS SHALL BE INSTALLED WITH AN INCREASED DEPTH OF COVER TO AVOID ELEVATION CONFLICTS WITH OTHER UTILITIES/PIPELINES. VERTICAL BENDS FOR VERTICAL OF SETS SHALL BE USED ONLY WHERE APPROVED BY THE ENGINEER.





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		DRAWN - KAR	REVISED -			335	15-00124-00-PV	McHENRY	121	50
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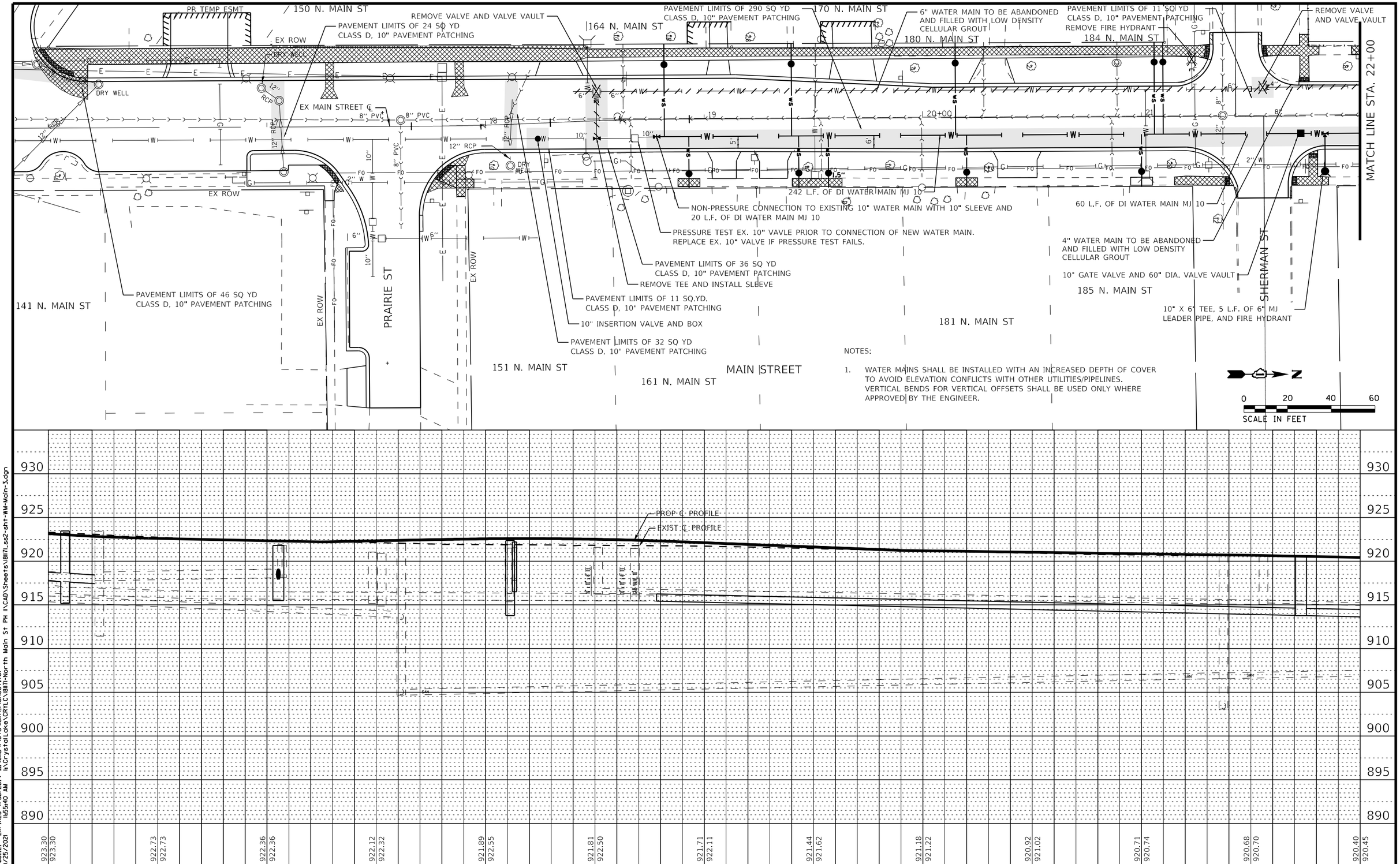

NOTES:

1. WATER MAINS SHALL BE INSTALLED WITH AN INCREASED DEPTH OF COVER TO AVOID ELEVATION CONFLICTS WITH OTHER UTILITIES/PIPELINES. VERTICAL BENDS FOR VERTICAL OFFSETS SHALL BE USED ONLY WHERE APPROVED BY THE ENGINEER.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

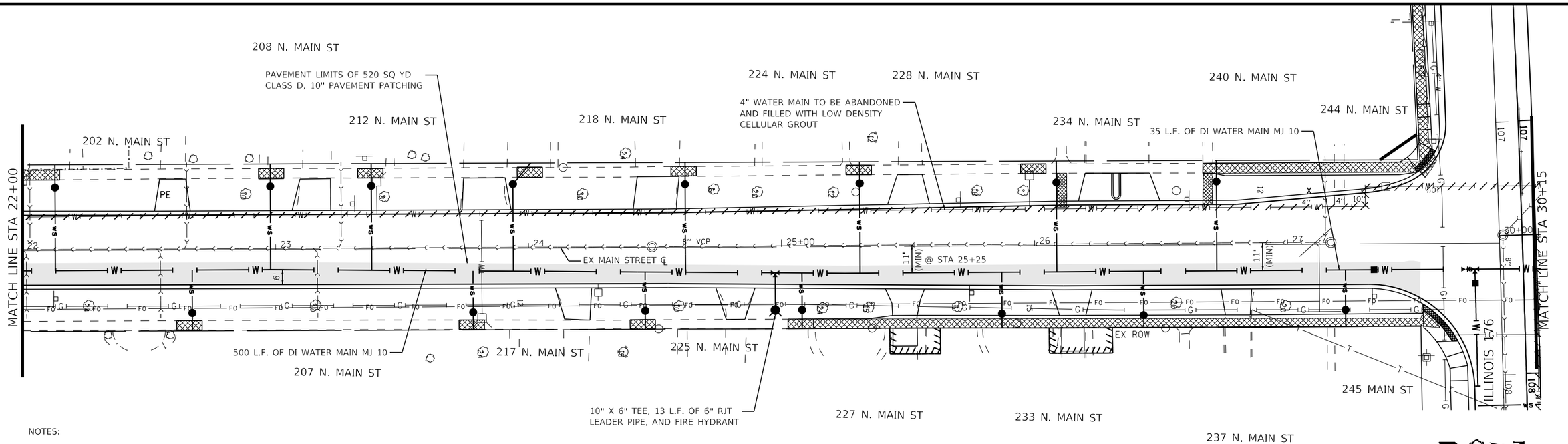
WATER MAIN PLAN AND PROFILE
MAIN STREET

SCALE: 1" = 20' | SHEET 3 OF 5 SHEETS | STA. 16+00 TO STA. 22+00

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	51

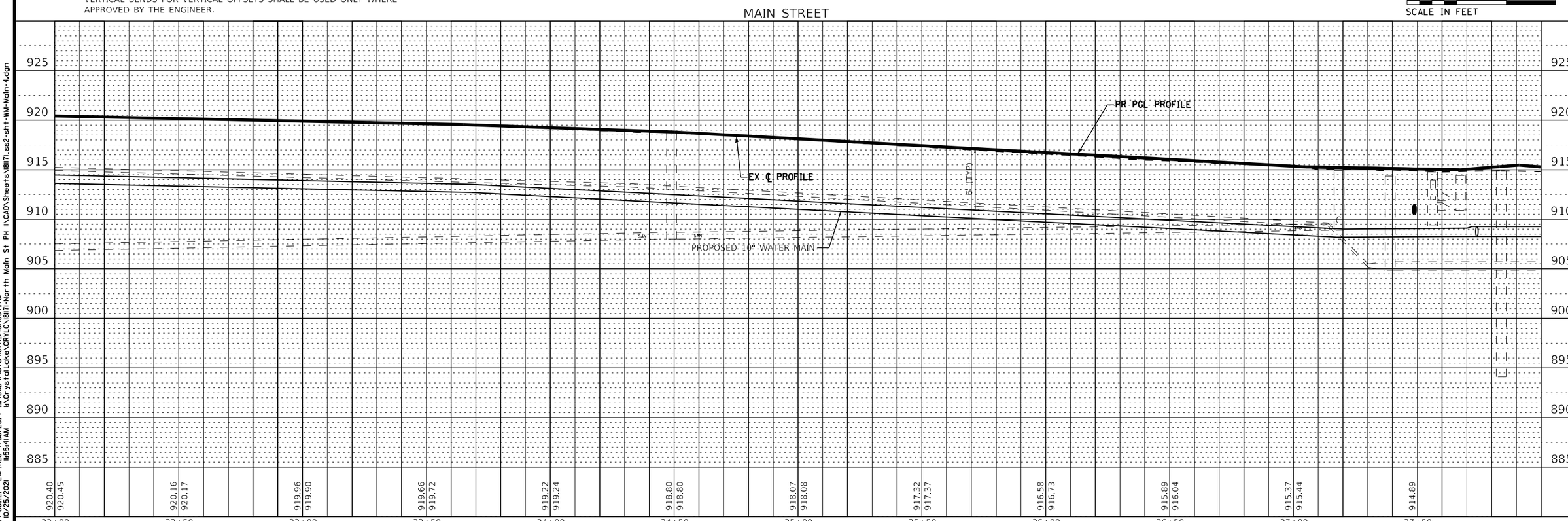
CONTRACT NO. 61H27

ILLINOIS | FED. AID PROJECT



NOTES:

1. WATER MAINS SHALL BE INSTALLED WITH AN INCREASED DEPTH OF COVER TO AVOID ELEVATION CONFLICTS WITH OTHER UTILITIES/PIPELINES. VERTICAL BENDS FOR VERTICAL OFFSETS SHALL BE USED ONLY WHERE APPROVED BY THE ENGINEER.



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mornig

BAXTER & WOODMAN Consulting Engineers

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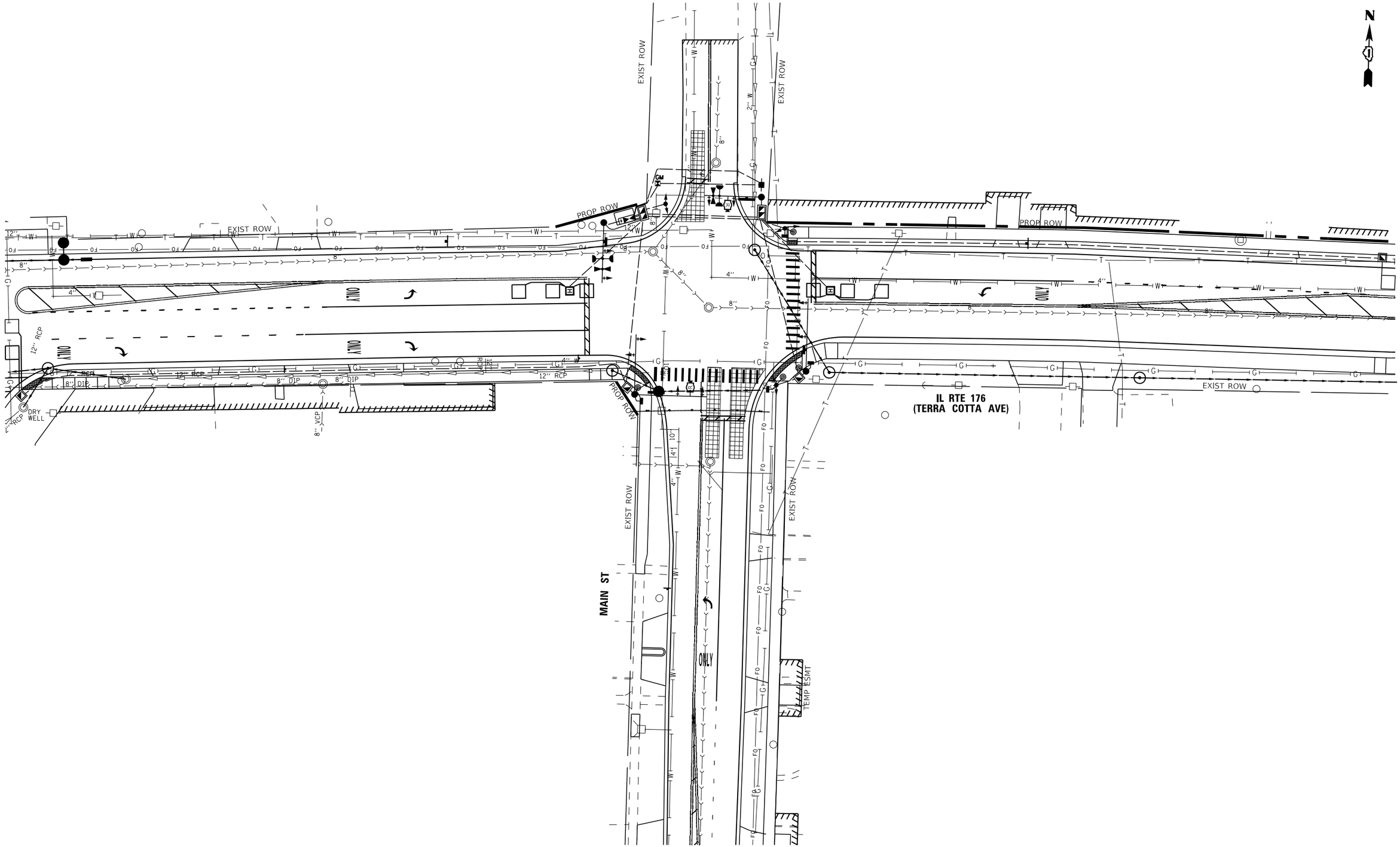
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WATER MAIN PLAN AND PROFILE
MAIN STREET

SCALE: 1" = 20' | SHEET 4 OF 5 SHEETS | STA. 22+00 TO STA. 30+15

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	52
		CONTRACT NO. 61H27		
		ILLINOIS FED. AID PROJECT		



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BAXTER & WOODMAN Consulting Engineers

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PLOT SCALE = 40.0000 ' / in.	CHECKED - AKS	REVISED -
PLOT DATE = 10/25/2021	DATE - 10-12-2021	FILE - 181171_ss2-sht-TS-1_176_Utility.dgn

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

UTILITY INFORMATION SHEET
IL RTE 176 (TERRA COTTA AVE) AND MAIN ST

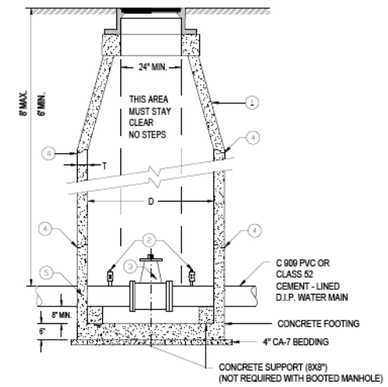
SCALE: 1" = 20' | SHEET 1 OF 1 SHEETS | STA. TO STA.

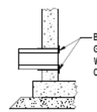
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	70

CONTRACT NO. 61H27

ILLINOIS | FED. AID PROJECT

UW-01





DIAMETER OF WATER MAIN	VAULT SIZE DIAMETER	VAULT SIZE WALL THICKNESS
4" AND 6"	4 FT.	4"
UP TO 12"	5 FT.	5"
16" AND OVER	6 FT.	6"

LEGEND:

1. CONCENTRIC CONES REQUIRED
2. 1" (MIN) MUELLER, A.Y. McDONALD, OR FORD NO LEAD CORPORATION STOP EACH SIDE OF VALVE MUST BE A COMPRESSION FITTING.
3. MUELLER 2361 OR AMERICAN FLOW CONTROL 2500-1 RESILIENT SEAT GATE VALVE
4. WATER TIGHT JOINTS USING EZ-STIK PREMIUM BUTYL SEALANT ASTM C990 FOR FRAMES ADJUSTING RINGS AND BARREL SECTIONS.
5. GASKET-TYPE WATERSTOP COLLAR FOR ALL WATER MAIN CONNECTIONS

NOTES:

1. ALL MANHOLES MUST BE DAMP PROOF PER IDOT SPECIFICATIONS 1060.
2. DRAIN FOR VALVE VAULT SHALL BE CONSTRUCTED ONLY WHEN SHOWN ON THE PLANS.
3. CAST IRON MANHOLE FRAME & COVER SIMILAR TO NEENAH R-1712 WITH STANDARD DUTY, NON-ROCKING TYPE LDS WITH "CITY OF CRYSTAL LAKE WATER" CAST INTO LID. (NEENAH R-2535, MAY BE USED IN GRASSY AREAS)
4. HDPE PLASTIC MANHOLE ADJUSTING RINGS CONFORMING TO THE REQUIREMENTS OF HS26 OF THE AASHTO STANDARD SPECIFICATIONS AND ASTM D1248-84. ALL ADJUSTING RINGS SHALL BE STABALIZED AGAINST ULTRA VIOLET LIGHT. ADJUSTING RING HEIGHT NOT TO EXCEED 8" WITH A MAXIMUM OF THREE (3) ADJUSTMENT RINGS. THE ANNULAR SPACE BETWEEN RINGS AND CONE BASIN, THE RINGS AND THE RINGS COVER FRAME SHALL BE SEALED UTILIZING AND APPROVED BUTYL SEALANT. ALL ADJUSTMENT FOR MATCHING ROAD GRADE SHALL BE MADE UTILIZING A MOLDED AND INDEXED SLOPE RING.
5. ALL UNDERGROUND NUTS, BOLTS & WASHERS MUST BE STAINLESS STEEL.
6. VALVE VAULT REQUIRED FOR WATER SERVICES GREATER THAN OR EQUAL TO 4". SEE VAULT SIZE TABLE.
7. STEPS WITHIN VAULT TO BE REMOVED PRIOR TO CITY ACCEPTANCE.

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015 2. 09/8/2021 - KL 1" CORP AND STEPS REMOVED 3. 4.	STANDARD VALVE VAULT	UW-01 Date: 05/29/2015 Drawn JH Checked VR	City of Crystal Lake Illinois

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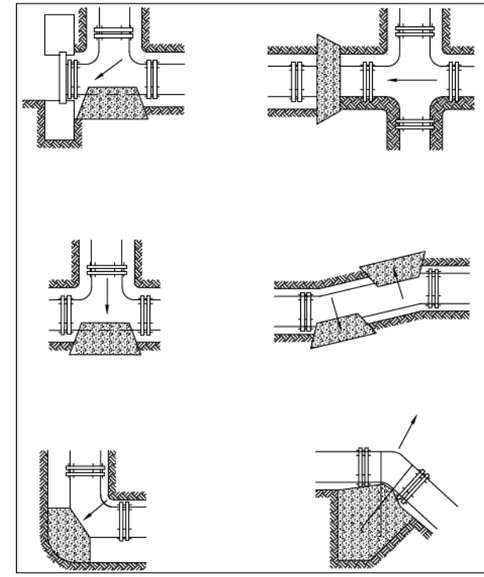
UW-03



BEARING AREA (SQ. FT.)					
PIPE SIZE	TEE/PLUG	90°	45°	21 1/2°	11 1/4°
6	4	2	1	1	1
8	6	4	3	1	1
10	7	5	3	1	1
12	8	6	4	2	2
14	12	9	6	3	3
16	15	12	7	3	3
18	18	15	9	4	4
24	40	30	15	5	5

NOTES:

ALL BLOCKING SHALL BE POURED CLASS SI CONCRETE AGAINST UNDISTURBED EARTH.

ALL BENDS OR ELBOWS GREATER THAN OR EQUAL TO 11 1/4° SHALL HAVE THRUST BLOCKING. FORM AS TO NOT COVER BOLTS.

IN LIEU OF THRUST BLOCKING, "MEGA LUG" (EBAA) JOINT RESTRAINTS CAN BE USED AS APPROVED BY THE ENGINEER.

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015 2. 3. 4.	THRUST BLOCK INSTALLATION	UW-03 Date: 05/29/2015 Drawn JH Checked VR	City of Crystal Lake Illinois

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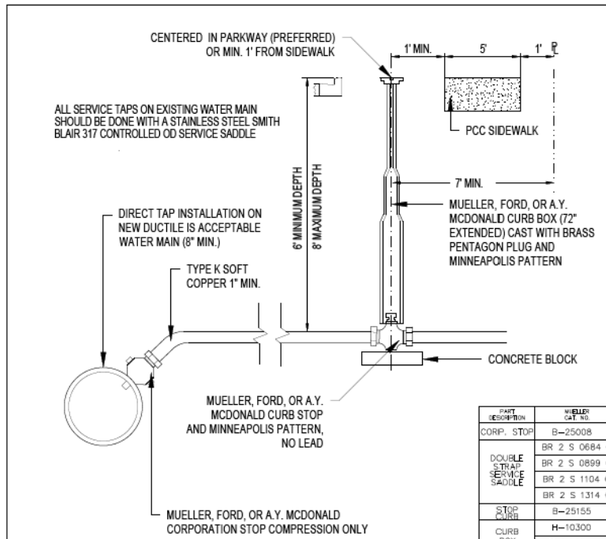
UW-04



NOTES:

1. NO CORPORATION STOPS OR CURB BOXES MAY BE LOCATED UNDER PAVED AREAS INCLUDING DRIVES AND SIDEWALKS.
2. ALL WATER MAIN HARDWARE SHALL BE MUELLER, A.Y. McDONALD, OR FORD. NO LEAD, COMPRESSION ONLY.
3. SERVICE TO BE CONTINUOUS WITHOUT JOINTS FROM CORPORATION STOP TO CURB STOP.
4. MULTIPLE TAPS INTO MAIN SHALL BE NO CLOSER THAN 2' APART.
5. TRENCH FROM MAIN TO BACK OF SIDEWALK TO BE COMPACTED TRENCH BACKFILL.
6. NO FLARE FITTINGS WILL BE ACCEPTED. COMPRESSION ONLY.
7. ALL CURB BOX ADJUSTMENTS TO BE MADE WITH GALVANIZED PIPE AND COUPLINGS (SCREWED ON).
8. B-BOXES (TWO OR MORE) FOR ALL MULTI-UNIT BUILDINGS MUST BE CLEARLY AND PERMANENTLY LABELED BY WELDING THE UNIT NUMBER/LETTER ONTO THE B-BOX TOP.
9. B-BOXES TO BE USED FOR SERVICES LESS THAN OR EQUAL TO 2".

PART DESCRIPTION	MUELLER CAT. NO.	FORD CAT. NO.	A.Y. McDONALD CAT. NO.	SERVICE SIZE
CORP. STOP	B-25008	FB1000-Q	4701BQ	
DOUBLE STRAP SERVICE SADDLE	BR 2 S 0684 CC	202BS-750-CC	3855 6	
	BR 2 S 0899 CC	202BS-962-CC	3855 8	
	BR 2 S 1104 CC	202BS-1212-CC	3855 10	
	BR 2 S 1314 CC	202BS-1438-CC	3855 12	
STOP CURB	B-25155	B44-M-Q	6104Q	
CURB BOX	H-10300	EM2-60-56	5614	1"
	H-10300-99002	EM2-60-57	5615	1.5" & 2"

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015 2. 01/25/2021 KL Eliminate 1.25" Services 3. 4.	WATER SERVICE INSTALLATION FOR DUCTILE AND CAST IRON WATER MAIN	UW-04 Date: 03/17/2014 Drawn DD Checked VR	City of Crystal Lake Illinois

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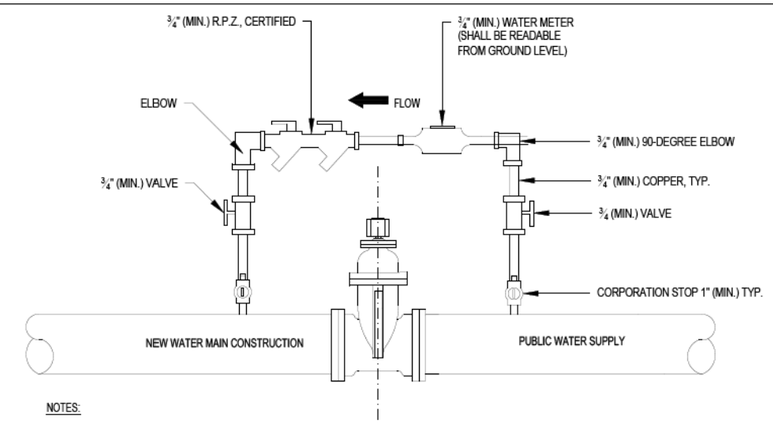
UW-05



NOTES:

1. VALVE JUMPER METER SHALL BE INSTALLED INSIDE VALVE VAULT AND MUST BE VISIBLE FROM THE GROUND SURFACE. INSTALLATION OUTSIDE OF THE VALVE VAULT MUST BE APPROVED BY THE ENGINEER.
2. VALVE JUMPER METER SHALL BE PROTECTED FROM COLD WEATHER WITH BLANKETS WHEN NECESSARY.
3. JUMPER SHALL BE INSTALLED IMMEDIATELY AFTER SECOND DAY CHLORINATION SAMPLE (SEE UW-09A).
4. ALL FITTINGS, WHIPS, AND HARDWARE NECESSARY TO CONNECT 1" CORPORATION STOPS TO CERTIFIED VALVE JUMPERS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015 2. 7/23/2021 KL JUMPER INSIDE VALVE VAULT. 1" CORP 3. 4.	WATER VALVE JUMPER	UW-05 Date: 06/01/2015 Drawn JH Checked VR	City of Crystal Lake Illinois

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BAXTER & WOODMAN Consulting Engineers

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WATER MAIN DETAILS

SCALE: NONE | SHEET 1 OF 3 SHEETS | STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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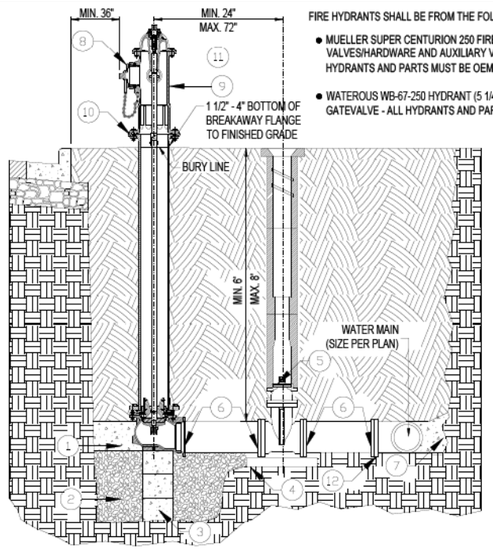
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	

UW-06



FIRE HYDRANTS SHALL BE FROM THE FOLLOWING LIST, AS APPROVED BY THE CITY:

- MUELLER SUPER CENTURION 250 FIRE HYDRANT, A423 (5 1/4" BARREL) WITH MUELLER VALVES/HARDWARE AND AUXILIARY VALVE 6" GATE VALVE NO. 2361RESILIENT WEDGE - ALL HYDRANTS AND PARTS MUST BE OEM AND COMPLY WITH NO LEAD REQUIREMENTS.
- WATEROUS WB-67-250 HYDRANT (5 1/4" PACER) WITH SERIES 2500-1 RESILIENT WEDGE GATEVALVE - ALL HYDRANTS AND PARTS MUST COMPLY WITH NO LEAD REQUIREMENTS

LEGEND:

1. PROVIDE CLASS SI CONCRETE BASE AND BLOCKING AGAINST UNDISTURBED EARTH
2. DRAIN SUMP TO BE 3/4 CUBIC YARD OF 3/4" WASHED STONE
3. CONCRETE SUPPORT
4. CONCRETE BLOCK OR BRICK SUPPORT
5. RUBBER VALVE BOX STABILIZER
6. USE MEGALUG RESTRAINTS WITH GRADE 304 STAINLESS STEEL NUTS AND BOLTS AT ALL MECHANICAL JOINTS.
7. CONCRETE BLOCKING
8. 4 1/2" PORT TO FACE PAVEMENT OR AS DIRECTED BY CITY ENGINEER
9. ALL NEWLY INSTALLED HYDRANTS MUST HAVE 2.4 MILS AMERICO AT PRIMER AND FINISH COAT SHERWIN WILLIAMS POLANE B MIN 4.1 MILS=6.5 MILS TOTAL DRY FILM THICKNESS. COLOR (SAFETY RED)
10. MIN. 48" BETWEEN HYDRANT AND ANY VERTICAL OBSTRUCTIONS.
11. MIN. 72" BETWEEN HYDRANT AND ANY LANDSCAPING WITH A MATURE HEIGHT GREATER THAN 12".
12. ALL UNDERGROUND HARDWARE MUST BE STAINLESS STEEL INCLUDING NUTS, BOLTS, AND WASHERS.

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015	FIRE HYDRANT	UW-06	City of Crystal Lake Illinois
2. 01/25/2021 KL Mueller Super Centurion 250 FH Specification		Date: 06/01/2015	
3.		Drawn JH / Checked VR	
4.			

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UW-08

CITY OF CRYSTAL LAKE WATER MAIN CHLORINATION SPECIFICATIONS:

1. DISINFECTION OF WATER MAINS SHALL BE DONE IN ACCORDANCE WITH THE STATE OF ILLINOIS STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION, CURRENT EDITION
2. THE CITY ENGINEERING DIVISION AND WATER DIVISION SHALL BE NOTIFIED 48 HOURS IN ADVANCE FOR SCHEDULING OF ANY TESTING, CHLORINATING, FLUSHING, OR SAMPLING.
3. ONLY CITY WATER DIVISION PERSONNEL MAY OPERATE WATER VALVES ON LIVE MAINS.
4. A WATER VALVE JUMPER IS REQUIRED TO MAINTAIN PRESSURE ON THE CHLORINATED LINES DURING THE SAMPLING PROCEDURE. FOR PROPER INSTALLATION AND REQUIREMENTS SEE THE STANDARD WATER VALVE JUMPER DETAIL UW-05.
5. WATER MAINS SHALL BE FLUSHED WITH A MINIMUM VELOCITY OF 2.5 FPS.
6. THE INITIAL CHLORINE CONCENTRATION SHALL BE 50 mg/L WITH A MINIMUM 24 HOUR RESIDUAL OF 25 mg/L.
7. THE METHOD OF CHLORINE APPLICATION SHALL BE APPROVED BY THE CITY:
   a. LIQUID CHLORINE W/CHLORINATING DEVICE WITH BACKFLOW PREVENTER.
   b. CHLORINE BEARING COMPOUNDS IN WATER.
   c. TABLET DISINFECTION.
8. ALL NEW VALVES AND HYDRANTS SHALL BE OPERATED WHILE LINE IS BEING CHLORINATED.
9. THE CITY ENGINEERING DIVISION SHALL DETERMINE LOCATION AND QUANTITY OF CORPORATION STOPS FOR FLUSHING AND CHLORINATING. MAXIMUM SPACING BETWEEN SAMPLES SHALL BE 1,200 FEET. THE CHLORINE SOURCE AND ALL DEAD ENDS SHALL BE SAMPLED.
10. THE FINAL FLUSHING RESIDUAL IN THE NEW CHLORINATED LINES SHALL BE BETWEEN 0.2 AND 2.0 mg/L.
11. ALL WATER SAMPLES SHALL BE COLLECTED ON TWO (2) CONSECUTIVE DAYS AND PASS BACTERIOLOGICAL TEST RESULTS. IN THE EVENT THAT THE FIRST SET OF SAMPLES TAKEN TWO (2) CONSECUTIVE DAYS APART FAIL TO PASS, ANOTHER SET OF SAMPLES MAY BE TAKEN TWO (2) DAYS APART (PER STATE SPECS). IF THE SECOND SET FAILS TO PASS TESTING, THEN THE PROCEDURE MUST BE REPEATED WITH THE MAIN BEING RECHLORINATED, REFLUSHED, AND RESAMPLED.
12. IF THE WATER MAIN FALLS BELOW 20 PSI AFTER CHLORINATION, THE LINE SHALL BE RESAMPLED ON TWO (2) CONSECUTIVE DAYS AND PASS BACTERIOLOGICAL TEST RESULTS.
13. STATE CERTIFIED LAB MUST BE USED FOR SAMPLES.

CHLORINE REQUIREMENTS TO PRODUCE 50 mg/L CONCENTRATION IN 100 FEET OF PIPE-BY DIAMETER

PIPE SIZE IN INCHES	100% CHLORINE, LB.	1% CHLORINE SOLUTION, GALS.
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88

NUMBER OF 5-GRAIN HYPOCHLORITE TABLETS REQUIRED FOR A DOSAGE OF 50mg/L PER LENGTH OF PIPE SECTION

PIPE SIZE IN INCHES	LENGTH OF PIPE SECTION IN FEET: UP TO 13	18	20	30	40
2	1	1	1	1	1
4	1	1	2	2	2
6	2	2	3	3	4
8	2	3	5	5	6
10	3	5	7	7	9
12	5	6	10	10	14

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015	CHLORINATION SPECIFICATIONS	UW-08	City of Crystal Lake Illinois
2. 4/30/2021 KL 20 PSI RESAMPLE, SAMPLING FREQUENCY		Date: 09/20/2012	
3.		Drawn DD / Checked VR	
4.			

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UW-14

NOTES:

CASING PIPE SHALL BE GRADE B STEEL WITH MINIMUM WALL THICKNESS 0.375". WALL THICKNESS FOR CASING PIPE GREATER THAN 36" SHALL BE APPROVED BY THE CITY ENGINEER.

JOINTS SHALL BE CONTINUOUSLY WELDED.

CASING PIPE WALLS SHALL BE COATED INSIDE AND OUTSIDE WITH ONE COAT SHOP PRIMER PAINT. THE EXTERNAL SURFACE SHALL BE TREATED WITH ONE COAT OF COAL TAR EPOXY OR BITUMINOUS ASPHALT COATING.

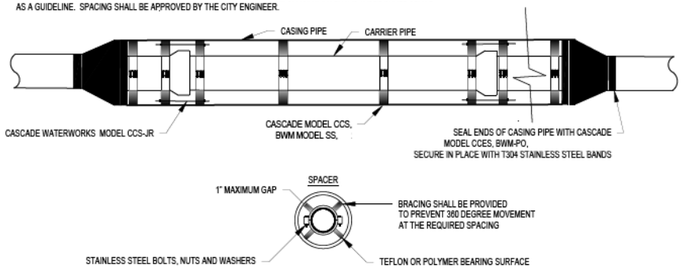
SPACERS SHALL BE INSTALLED WITHIN 2' OF THE END OF THE CASING PIPE.

DO NOT INSTALL SPACERS OVER PIPE BELLS OR TAPERS.

SPACERS SHALL BE INSTALLED IN A MANNER TO CENTER AND RESTRAIN THE CARRIER PIPE.

SPACER MANUFACTURER SHALL BE CONSULTED TO DETERMINE SPACER WIDTH AND MAXIMUM SPACER INTERVALS DEPENDING ON CARRIER/CASING PIPE MATERIAL AND SIZE. THE MAXIMUM SPACING INTERVAL TABLE SHALL SERVE AS A GUIDELINE. SPACING SHALL BE APPROVED BY THE CITY ENGINEER.

MAXIMUM SPACER INTERVAL	
CARRIER PIPE MATERIAL <60" OD	MAXIMUM INTERVAL
STEEL/DUCTILE IRON	8'-0"
PLASTIC	6'-0"
CONCRETE	4'-0"



NOT TO SCALE

Revised:	Drawing Name	Drawing Number	
1.	CASING PIPE	UW-14	City of Crystal Lake Illinois
2.		Date: 01-25-2021	
3.		Drawn KL / Checked PW	
4.			

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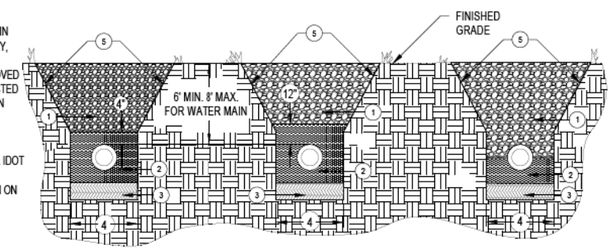
UG-03

LEGEND:

1. TRENCH BACKFILL TO SUBGRADE AND WITHIN 2 FEET OF PROPOSED PAVEMENT, DRIVEWAY, CURB AND GUTTER OR SIDEWALK. TRENCH BACKFILL MATERIALS SHALL BE IDOT APPROVED GRADATION CA-6, GRADE 7, 8, OR 9 COMPACTED TO 90% OF MODIFIED PROCTOR DENSITY. IN NON-STRUCTURAL AREAS BACKFILL WITH APPROVED EXCAVATED MATERIALS.
2. PIPE BEDDING SHALL BE WASHED MATERIAL IDOT GRADATION CA-7 OR CA-11 FROM 4 INCHES BELOW BOTTOM OF PIPE TO HEIGHT SHOWN ON EACH SECTION
3. UNSUITABLE MATERIAL TO BE REMOVED WHERE DIRECTED BY THE ENGINEER AND REPLACED WITH COMPACTED SUITABLE MATERIAL.
4. TRENCH WIDTH:
   PIPE O.D. + 12 INCHES MINIMUM
   PIPE I.D. + 18 INCHES MAXIMUM
5. CONTRACTORS SHALL COMPLY WITH ALL CURRENT OSHA STANDARDS.



SECTION A:
WATER MAIN DIP
FORCE MAIN DIP
SANITARY SEWER MAIN & SERVICES DIP

SECTION B:
SANITARY SEWER MAIN & SERVICES (PVC)
STORM SEWER (PVC)
WATER MAIN, C909 FORCE MAIN (PVC) (HDPE)

SECTION C:
STORM SEWER (RCP)

* NOTE: ALL DUCTILE IRON SHALL BE WRAPPED WITH APPROVED POLYETHYLENE PIPE WRAP

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015	TYPICAL TRENCH CROSS SECTION	UG-03	City of Crystal Lake Illinois
2. 02/04/2021 KL CA-7 WASHED STONE		Date: 05/29/2015	
3.		Drawn JH / Checked AW	
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BAXTER & WOODMAN Consulting Engineers

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WATER MAIN DETAILS

SCALE: NONE | SHEET 2 OF 3 SHEETS | STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	95
		CONTRACT NO. 61H27		
		ILLINOIS	FED. AID PROJECT	

UW-09A

WATERMAIN TESTING AND CHLORINATION PROCEDURE

STANDARD SPECIFICATIONS FOR WATER AND SEWER CONSTRUCTION IN ILLINOIS (LATEST EDITION) AND AWWA STANDARD C600-17 SHALL APPLY ALONG WITH THE FOLLOWING:

2 HOUR PRESSURE AND LEAKAGE TEST

1. PRETEST: THE CONTRACTOR SHALL PROVIDE A MAP OF THE FACILITIES (WATER MAINS, HYDRANTS, VALVES, ETC.) TO BE INCLUDED DURING THE TEST TO THE ENGINEER. SEE UW-09B WORKSHEET. ALL FIRE HYDRANT AUXILIARY VALVES SHALL BE OPENED SO TESTING IS PERFORMED AGAINST FIRE HYDRANTS. THE ENGINEER WILL COORDINATE WITH THE WATER DEPARTMENT TO SCHEDULE OPENING OF CITY VALVES AND FILLING OF NEW WATER MAIN A MINIMUM OF 48 HOURS IN ADVANCE OF THE TEST. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES ON EXISTING CITY WATER MAIN WITHOUT WRITTEN PERMISSION.
2. HYDROSTATIC PRESSURE TESTING: ALL TESTING EQUIPMENT AND LABOR NECESSARY TO SETUP AND RUN THE TEST SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL INCLUDE:
   A) PRESSURE GAUGE LOCATED AT HIGHEST POINT OF ELEVATION OF THE WATER MAIN
   B) PUMP
   C) TANK
   D) FITTINGS FOR TESTING EQUIPMENT TO BE CONNECTED TO WATER MAIN
   E) ACCURATE WATER VOLUME MEASURING DEVICE (CALIBRATED VOLUMETRIC METER OR 1 GALLON GRADUATED CYLINDER IN OUNCES)
3. AIR REMOVAL: AFTER FILLING THE WATERMAIN, AIR SHALL BE EXPELLED BY FLUSHING WATER OUT OF THE MAIN AT FIRE HYDRANTS OR CORPORATION STOPS LOCATED AT HIGH POINTS ALONG THE WATER MAIN.
4. PRESSURIZATION: AFTER ALL AIR HAS BEEN REMOVED, THE MAIN SHOULD BE PRESSURIZED TO MINIMUM 150 PSI BY PUMPING ADDITIONAL WATER INTO THE WATER MAIN.
5. TWO HOUR TEST: ONCE TESTING PRESSURE IS OBTAINED, THE PUMP SHOULD BE SHUT OFF AND TIMING STARTED. THE PRESSURE GAUGE SHOULD BE CHECKED INTERMITTENTLY AND THE PRESSURE READING RECORDED AFTER TWO HOURS. IF THE PRESSURE READING VARIES MORE THAN +/- 5 PSI FROM THE INITIAL PRESSURE, THE TEST FAILS. THE LEAK SHALL BE FOUND AND ADDRESSED PRIOR TO RETESTING.
6. MAKE UP VOLUME: IF THE PRESSURE IS MAINTAINED WITHIN +/- 5 PSI FOR THE TWO HOUR TEST, THE MAKE-UP VOLUME SHALL BE DETERMINED BY PUMPING WATER BACK INTO THE WATER MAIN TO REACH THE INITIAL TEST PRESSURE. THIS WILL NORMALLY BE DONE BY EXCEEDING THE TEST PRESSURE, AND USING THE BLEED OFF VALVE TO DROP THE PRESSURE TO THE INITIAL TEST PRESSURE. ONCE THE INITIAL TEST PRESSURE HAS BEEN REACHED, THE BLEED OFF VALVE SHALL BE OPENED AND WATER THAT LEAVES THE SYSTEM SHALL BE COLLECTED IN THE VOLUME MEASURING DEVICE. ONCE THE GAUGE REACHES THE FINAL TWO HOUR TEST PRESSURE, THE VOLUME OF WATER COLLECTED SHALL BE MEASURED.
7. ALLOWABLE MAKE-UP VOLUME: THE MEASURED VOLUME OF "MAKE UP" WATER SHALL BE COMPARED TO THE ALLOWABLE LEAKAGE. THE ALLOWABLE LEAKAGE SHALL BE CALCULATED BY THE ENGINEER USING THE FORMULA ABOVE. IF THE WATER COLLECTED IS LESS THAN THE ALLOWABLE MAKE UP VOLUME, THE TEST PASSES. IF THE WATER COLLECTED IS MORE THAN THE ALLOWABLE MAKE UP VOLUME, THE TEST FAILS. THE LEAK SHALL BE FOUND AND ADDRESSED PRIOR TO RETESTING.
8. FINAL VALVE CHECK: PRIOR TO BLEEDING OFF THE PRESSURE, ALL HYDRANTS ON THE TESTING MAP SHALL BE SLOWLY OPENED TO ENSURE THAT THEY HAD PRESSURE AGAINST THEM DURING TESTING. THE PRESSURE GAUGE SHOULD DROP AS THE HYDRANTS ARE OPENED ENSURING THAT ALL VALVES IN THE SYSTEM WERE PROPERLY OPENED/CLOSED DURING TESTING.
9. IF THE WATER MAIN HAS PASSED THE PRESSURE TEST, THE PRESSURE SHALL BE REDUCED TO THE CITY'S SYSTEM PRESSURE.

CHLORINATION

1. PRE-CHLORINATION: THE ENGINEER WILL COORDINATE WITH THE WATER DEPARTMENT TO SCHEDULE OPENING OF CITY VALVES FOR CHLORINATION A MINIMUM OF 48 HOURS IN ADVANCE OF THE CHLORINATION. THE FOLLOWING METHODS OF CHLORINE APPLICATION ARE APPROVED BY THE CITY
   A) LIQUID CHLORINE WITH CHLORINATION DEVICE AND BACKFLOW PREVENTER
   B) CHLORINE BEARING COMPOUNDS IN WATER
   C) TABLET DISINFECTION
2. SAMPLING LOCATIONS: THE ENGINEER SHALL DETERMINE THE LOCATION AND QUANTITY OF SAMPLING LOCATIONS. MAXIMUM SPACING BETWEEN SAMPLES SHALL BE 1,200 FEET. THE CHLORINE SOURCE AND ALL DEAD ENDS SHALL BE SAMPLED. SEE UW-09B WORKSHEET.
3. CHLORINATION: THE INITIAL CHLORINE CONCENTRATION SHALL BE 50 mg/L WITH A MINIMUM 24 HOUR RESIDUAL OF 25 mg/L. ALL NEW VALVES AND HYDRANTS SHALL BE OPERATED WHILE THE LINE IS BEING CHLORINATED. THE FINAL FLUSHING RESIDUAL IN THE NEW CHLORINATED LINES SHALL BE BETWEEN 0.2-2.0 mg/L.
4. TESTING: ALL WATER SAMPLES SHALL BE COLLECTED ON TWO CONSECUTIVE DAYS AND PASS BACTERIOLOGICAL TEST RESULTS FROM A CERTIFIED LABORATORY. TEST RESULTS SHALL BE EMAILED TO THE CITY OF CRYSTAL LAKE SO THE IEPA PERMIT APPLICATION CAN BE SUBMITTED. IN THE EVENT THAT THE FIRST SET OF SAMPLES TAKEN TWO CONSECUTIVE DAYS APART FAIL TO PASS, ANOTHER SET OF SAMPLES ME BE TAKEN TWO DAYS APART. IF THE SECONDS SET FAILS TO PASS TESTING, THE PROCEDURE MUST BE REPEATED WITH THE WATER MAIN BEING RECHLORINATED, REFLUSHED AND RESAMPLED.
5. MAINTAIN PRESSURE: IMMEDIATELY AFTER THE SECOND DAY SAMPLE HAS BEEN TAKEN, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSTALL A CERTIFIED WATER VALVE JUMPER (SEE UW-05) TO MAINTAIN PRESSURE ON THE NEW WATER MAIN UNTIL THE IEPA PERMIT IS RECEIVED. AFTER RECEIVING THE IEPA OPERATING PERMIT, THE CITY OF CRYSTAL LAKE SHALL OPEN THE VALVE BETWEEN THE NEW AND EXISTING WATERMAIN AND THE WATER VALVE JUMPER MAY BE REMOVED. WATER VALVE JUMPERS ARE AVAILABLE FOR RENT AT THE CITY OF CRYSTAL LAKE WATER DEPARTMENT. IF WATER IN EXCESS OF THE ALLOWABLE LEAKAGE ENTERS THE NEW WATER MAIN THROUGH THE WATER VALVE JUMPER ,THE CONTRACTOR SHALL LOCATE THE LEAK. IF THE NEW WATER MAIN MUST BE DEPRESSURIZED TO FIX A LEAK, THE SYSTEM SHALL BE RETESTED, RECHLORINATED, REFLUSHED, AND RESAMPLED.

Revised:	Drawing Name	Drawing Number	
1. 06/12/2015 2. 7/13/2021 - KL Leakage formula, procedure, delete 24 hour test 3. 4.	WATER MAIN PRESSURE TEST AND CHLORINATION PROCEDURE	UW-09A Date: 09/20/2012 Drawn DD Checked VR	City of Crystal Lake Illinois

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UW-09B

PROJECT NAME: _____
CONTRACTOR: _____
WITNESS: _____
LINE PRESSURIZED: DATE: _____TIME: _____ am / pm
LINE TESTED: DATE: _____TIME: am / pm

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

LEAKAGE FORMULA
L = Testing (leakage) allowance (makeup water), in gallons per hour = _____GPH
S = Length of pipe tested in feet = _____FEET
D = Nominal diameter of the pipe, in inches = _____INCHES
P = Average test pressure during the hydrostatic test, in pounds per square inch (gauge)_____PSI
*If multiple diameters of water main are being tested, separate leakage (L) calcaulation shall be added together.

NOTES AND CALCULATIONS

2-HOUR TEST

TOTAL ALLOWABLE LEAKAGE = L X 2 HOURS	_____GALLONS	A
INITIAL TEST PRESSURE (MINIMUM 150 PSI)	_____PSI	B
FINAL TEST PRESSURE	_____PSI	C
PASS (B-C<5 PSI) OR FAIL (B-C>5 PSI)		
MAKE UP VOLUME	_____GALLONS	D
PASS (A > D) OR FAIL (A < D)		E

LOCATION DIAGRAM AND SAMPLING MAP

INDICATE NORTH

Revised:	Drawing Name	Drawing Number	
1. 2. 3. 4.	WATER MAIN PRESSURE TEST AND CHLORINATION WORKSHEET	UW-09B Date: 07/23/2021 Drawn KL Checked PW	City of Crystal Lake Illinois

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STATE OF ILLINOIS - PROFESSIONAL DESIGN FIRM
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BAXTER & WOODMAN Consulting Engineers

USER NAME = mornig	DESIGNED - DJS	REVISED △2 ADDENDUM B 10/25/2021
	DRAWN - KAR	REVISED -
PLOT SCALE = 80.0000 ' / in.	CHECKED - AKS	REVISED -
PLOT DATE = 10/25/2021	DATE - 10-12-2021	FILE - 181171_ss2-sht-WM_Dets.dgn

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WATER MAIN DETAILS

SCALE: SHEET 3 OF 3 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
335	15-00124-00-PV	McHENRY	121	95A

CONTRACT NO. 61H27
ILLINOIS FED. AID PROJECT