

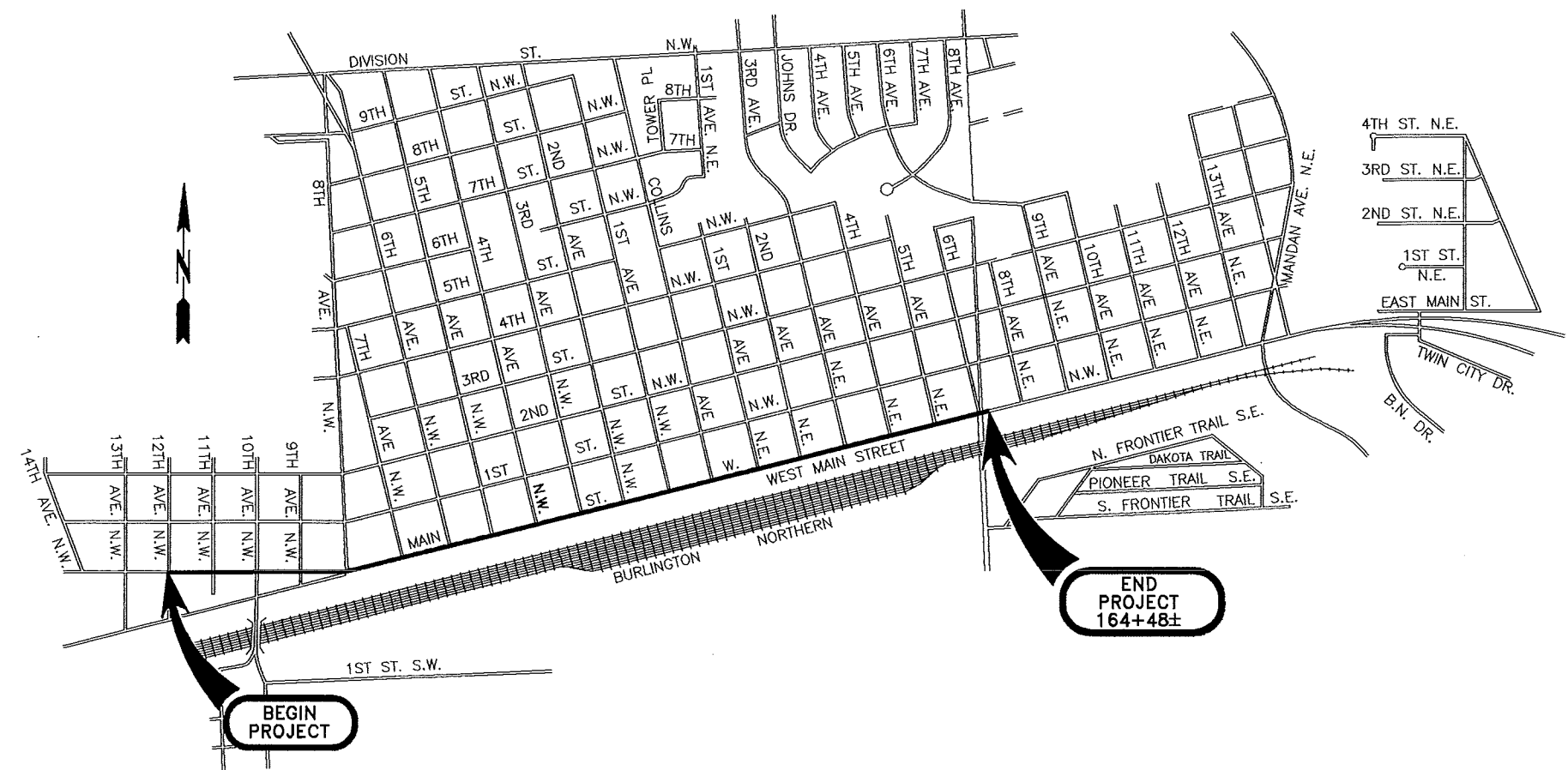
CITY OF MANDAN, NORTH DAKOTA

MAIN STREET WATER AND SANITARY SEWER IMPROVEMENTS

DISTRICT #39 WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation September 1992, Standard Drawings currently in effect, and other Contract Provisions submitted herein.



Record Drawing

DATE: 2-14-97

ULTEIG ENGINEERS, INC.

BISMARCK • FARGO • MINNEAPOLIS

UEI # 95834

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Record Drawing

GENERAL NOTES

SHEET
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P01
QUESTIONS: ALL TECHNICAL QUESTIONS PRIOR TO BIDDING OR AFTER BID AWARD IN REGARDS TO DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II ARE TO BE DIRECTED TO ULTEIG ENGINEERS, INC., 1701 SOUTH 12TH STREET, BOX 2041, BISMARCK, ND. TELEPHONE 701-258-6507. FAX 701-224-1163.

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P02
PROJECT OVERVIEW AND SPECIAL COORDINATION REQUIREMENTS: DISTRICT #39, WATER AND SEWER IMPROVEMENTS PROJECT 96-2, PHASE II SHALL BE BID AND CONSTRUCTED IN CONJUNCTION WITH NDDOT PROJECT NHU-1-094(035)915. NDDOT'S PROJECT WILL BE CONSTRUCTED IN PHASES WITH THE NORTH HALF OF MAIN STREET BEING RECONSTRUCTED FIRST. CONSTRUCTION OF WATER AND SEWER IMPROVEMENTS WILL REQUIRE SPECIAL COORDINATION AND PLANNING DUE TO THE PHASED RECONSTRUCTION OF MAIN STREET AND THE NEED TO MAINTAIN WATER SERVICE TO USERS ON BOTH SIDES OF THE STREET. SPECIAL REQUIREMENTS ARE AS FOLLOWS:

1. EXISTING 4" & 6" WATERMANS WITHIN CONSTRUCTION SEGMENTS TO REMAIN IN SERVICE UNTIL SERVICES AND FIRE HYDRANTS CAN BE SWITCHED OVER TO NEW 12" WATERMAIN, CONTRACTOR MAY SUBMIT FOR APPROVAL A DETAILED PLAN TO PROVIDE TOTAL BYPASSING OF WATER TO USERS ON THE NORTH AND SOUTH SIDE OF MAIN STREET INSTEAD OF KEEPING OLD MAINS IN SERVICE. BYPASSING PLAN MUST BE CAREFULLY THOUGHT OUT AND PROVIDE FIRE PROTECTION COMPARABLE TO EXISTING. ANY BYPASSING COSTS SHALL BE INCIDENTAL. NEW 12" WATERMAIN WILL NEED TO BE INSTALLED IN SEGMENTS.
2. CONTRACTOR MAY BE REQUIRED TO INSTALL TEMPORARY PLUGS IN EXISTING WATERMANS TO ALLOW SYSTEMATIC WATERMAIN CONSTRUCTION TO OCCUR. LOCATIONS REQUIRE ENGINEER'S APPROVAL. COSTS INCIDENTAL.
3. ADEQUATE NOTICE TO BE GIVEN TO ALL USERS PRIOR TO DISRUPTING WATER SERVICE. WATER SERVICE CANNOT BE DISRUPTED MORE THAN 8 HOURS. CONTRACTOR WILL DISTRIBUTE NOTICES TO AFFECTED USERS 24 HOURS IN ADVANCE OF ANY WATER SHUT DOWNS. NOTICES MUST BE GIVEN NOT ONLY TO USERS WITHIN THE CONSTRUCTION AREA BUT TO ANY USER AFFECTED BY DISRUPTIONS. CONTRACTOR MUST COORDINATE CLOSELY WITH OWNER TO DETERMINE WHO THE AFFECTED USERS ARE.
4. SERVICE LINE WORK WILL INCLUDE INSTALLING NEW COPPER SERVICE LINES FROM NEW 12" MAIN TO EXISTING CURB STOP, REPLACING EXISTING CURB STOPS, AND CONNECTING TO EXISTING SERVICE LINE.
5. ONCE THE NEW WATERMAIN IS INSTALLED, TESTED, ETC., SERVICES NEED TO BE CONNECTED TO NEW MAIN. IF ALL SERVICES WITHIN A VALVED SEGMENT CANNOT BE CONNECTED WITHIN 8 HOURS, THE CONTRACTOR MUST PROVIDE TEMPORARY SERVICE OR SHUT OFF, CRIMP, CAP OR PLUG THE EXISTING SERVICE LINES WHERE THE NEW ONES CONNECT. THE COST OF PROVIDING TEMPORARY WATER SERVICE SHALL BE INCIDENTAL TO THE PRICE BID FOR OTHER ITEMS. SCHEDULING OF WORK REQUIRING CLOSURE OF ANY WATERMANS SHALL BE COORDINATED WITH THE CITY. ANY OPERATIONS OF WATERMAIN VALVES WILL BE DONE BY THE CITY OF MANDAN. METHOD OF PROVIDING TEMPORARY WATER SERVICE REQUIRES THE ENGINEER'S APPROVAL. CITY OF MANDAN WILL FURNISH WATER FOR TEMPORARY SERVICES AT NO CHARGE. CONTRACTOR WILL BE REQUIRED TO FURNISH ALL PIPING, CONNECTIONS TO USERS FACILITIES, CONNECTIONS TO EXISTING HYDRANTS AND OTHER INCIDENTALS.

6. CONTRACTOR MUST PREPARE AND SUBMIT A WRITTEN PLAN FOR COMPLETING THE WORK TO THE ENGINEER FOR APPROVAL. PLAN WILL BE PREPARED AFTER CONTRACTOR HAS MET WITH OWNER AND ENGINEER TO DISCUSS PROJECT.
7. CONTRACTOR WILL BE REQUIRED TO ASSURE THAT ALL EXISTING USERS ARE RECONNECTED TO THE NEW 12" WATERMAIN.
8. BETWEEN ±158+75 AND ±162+00 CONTRACTOR WILL BE REQUIRED TO PROVIDE TEMPORARY BYPASS OF EXISTING WATER BECAUSE OF THE NEW PIPE AND EXISTING PIPE BEING IN APPROXIMATELY THE SAME LOCATION. ALL COSTS FOR THIS SHALL BE INCIDENTAL TO OTHER ITEMS.

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P01

ADDITIONAL WORK REQUIRED WITH SSMH #6 BEING INSTALLED AT 117+17 - 33' RT INCLUDES THE FOLLOWING: REMOVAL AND DISPOSAL OF EXISTING MANHOLE, BYPASSING SEWAGE DURING INSTALLATION OF NEW MANHOLE, CONSTRUCTING INTERIOR DROPS AT ALL INCOMING PIPES TO WITHIN 1' OF THE INVERT, RECONNECTING ALL PIPES, GROUTING INVERT AND OTHER INCIDENTALS. ALL COSTS FOR THIS ADDITIONAL WORK TO BE INCLUDED IN THE UNIT PRICE BID FOR SANITARY MANHOLE.

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P01

SANITARY MANHOLES: THE PRICE BID FOR SANITARY MANHOLE SHALL BE FULL COMPENSATION FOR ALL WORK AND MATERIALS ASSOCIATED WITH THE INSTALLATION OF A SANITARY SEWER MANHOLE INCLUDING, BUT NOT LIMITED TO: EXCAVATION, SETTING THE MANHOLE BASE, RISER SECTIONS, CASTING AND COVER. CONSTRUCTION OF THE FLOWLINES AND SETTING THE CASTING AND COVER TO FINAL GRADE ARE ALSO INCIDENTAL.

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P02

ABANDON EXISTING SANITARY MANHOLES AND EXISTING VALVE BOXES: WHERE CALLED FOR ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN THE FIELD, THE ABANDONMENT OF EXISTING SANITARY MANHOLES SHALL INCLUDE REMOVING AND DISPOSING OF ALL CASTINGS, ADJUSTMENT RINGS AND TOP MANHOLE SECTION, PLUGGING ALL PIPE OPENINGS WITH CONCRETE AND FILLING REMAINDER OF MANHOLE WITH COMPACTED GRANULAR MATERIAL (CLASS 5). THE AMOUNT TO BE PAID SHALL BE AT THE UNIT PRICE BID PER EACH ABANDON EXISTING MANHOLE. ALL EXISTING VALVE BOXES THAT ARE NO LONGER NEEDED ONCE EXISTING MAINS ARE ABANDONED SHALL BE ABANDONED AS FOLLOWS: REMOVE TOP SECTION OF VALVE BOX AND FILL REMAINING VALVE BOX WITH PEA ROCK THAT IS SLICED, TAMPED AND CONSOLIDATED TO THE ENGINEER'S SATISFACTION. THE AMOUNT TO BE PAID SHALL BE AT THE UNIT PRICE BID PER EACH ABANDON EXISTING VALVE BOX.

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WATERMAIN, VALVES, FITTINGS AND HYDRANTS: GATE VALVES SHALL BE REQUIRED WITH A GATE HAVING A RESILIENT (VULCANIZED SYNTHETIC RUBBER COATING) SEAT ATTACHED TO THE WEDGE, MANUFACTURED AND DESIGNED IN ACCORDANCE WITH THE LATEST REVISIONS OF AWWA STANDARD C-509. RESILIENT-SEATED GATE VALVE BODY AND BONNET SHALL BE COATED, INSIDE AND OUT, WITH A FUSION BONDED EPOXY IN ACCORDANCE WITH AWWA C-550. THE RESILIENT RUBBER SEAT SHALL BE MOLDED AND BONDED TO THE WEDGE. THE WATERWAY SHALL HAVE A FULL UNOBSTRUCTED FLOW WITHOUT RECESSES IN THE BOTTOM.

THE MINIMUM BARREL LENGTH OF HYDRANTS SHALL BE 18 INCHES FROM LOWEST NOZZLE TO FUTURE GROUND LINE WITH 8 FEET OF COVER OVER THE TOP OF THE HYDRANT LEAD.

ALL BOLTS CONNECTING THE BARREL TO THE FOOT ELBOW SHALL BE STAINLESS STEEL.

BOLTS FOR MECHANICAL JOINT FITTINGS SHALL BE ALTERNATED WITH ONE-HALF STAINLESS STEEL AND ONE-HALF LOW ALLOY STEEL. LOW ALLOY STEEL BOLTS SHALL CONTAIN A MAXIMUM CONTENT OF CARBON AT 0.2 PERCENT, MANGANESE AT 1.25 PERCENT AND SULFUR AT 0.05 PERCENT AND A MINIMUM CONTENT OF NICKEL AT 0.25 PERCENT, COPPER AT 0.20 PERCENT, AND A COMBINED CONTENT OF NICKEL, COPPER, AND CHROMIUM AT 1.25 PERCENT.

WEIGHTS SHOWN FOR FITTINGS ARE FOR DUCTILE IRON MECHANICAL JOINT FITTINGS. DUCTILE IRON SHALL BE MANUFACTURED IN ACCORDANCE WITH ANSI C153/A21.53 WITH A WORKING PRESSURE OF 350 PSI. THE WEIGHT TO BE PAID FOR SHALL NOT INCLUDE THE POUNDAGE FOR FITTING ACCESSORIES, i.e., BOLTS, FLANGES, ETC. THE COST FOR THESE ITEMS SHALL BE INCIDENTAL TO OTHER ITEMS.

WATERMAIN PIPE SHALL BE POLYVINYL CHLORIDE PIPE AND SHALL MEET THE REQUIREMENTS OF AWWA C-900 OR THE LATEST REVISION THEREOF AND SHALL BE FURNISHED IN CAST IRON PIPE EQUIVALENT OUTSIDE DIAMETERS WITH ELASTOMERIC JOINTS. THE PRESSURE CLASS OF THE PVC PIPE SHALL BE CLASS 150 WITH A SDR OF 18.

ANY ADAPTORS NECESSARY TO ADAPT FROM AN EXISTING WATERMAIN PIPE TO THE SPECIFIED WATERMAIN PIPE OR TO THE WATERMAIN PIPE SELECTED SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR WATERMAIN PIPE.

ALL FITTINGS, VALVES, AND HYDRANT SHOES SHALL BE INSTALLED WITH A POLYETHYLENE ENCASMENT CONFORMING TO AWWA C-150, ANSI A21.5 WITH AN 8 MIL NOMINAL FILM THICKNESS. NOT A SEPARATE PAY ITEM. COST TO BE INCLUDED IN PRICE BID FOR WATERMAIN PIPE.

ALL PIPE JOINTS WITHIN THREE FULL PIPE LENGTHS OF ANY FITTING, VALVE, COUPLING, PLUG OR OTHER SUCH ELEMENT SHALL BE MECHANICALLY RESTRAINED BY USE OF RESTRAINT DEVICES. ALL FITTING JOINTS, COUPLINGS, VALVES, AND PLUGS SHALL ALSO BE RESTRAINED. ALL PIPE JOINTS AND HYDRANTS ON HYDRANT LEADS SHALL ALSO BE RESTRAINED. RESTRAINT DEVICES SHALL BE AS MANUFACTURED BY EBAA IRON, UNI-FLANGE, CERTA-LOK, OR OTHER ENGINEER APPROVED DEVICES. ALL COSTS FOR RESTRAINING DEVICES SHALL BE INCIDENTAL TO OTHER BID ITEMS.

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P02

PRESSURE TESTING OF NEW WATERMAIN: INSPECTION AND TESTS MUST BE MADE BY THE MANUFACTURER ON ALL PIPE AND COMPONENT PARTS BEFORE SHIPMENT. SUCH TESTS SHALL BE MADE BY A TESTING LABORATORY SATISFACTORY TO THE ENGINEER AND SUCH TESTS SHALL BE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS. TESTS AND DOCUMENTARY EVIDENCE THAT THE MATERIALS HAVE PASSED SUCH INSPECTIONS MUST BE FURNISHED TO THE ENGINEER BEFORE THE DELIVERY OF THE MATERIALS ON THE JOB. ANY MATERIALS WHICH DO NOT PROVE SATISFACTORY AFTER BEING PLACED IN THE WORK MUST BE REMOVED FROM THE PREMISES AND REPLACED WITH SATISFACTORY MATERIAL. THE COST OF FOUNDRY INSPECTION SHALL BE PAID BY THE CONTRACTOR. AFTER THE PIPE HAS BEEN INSTALLED AND THE TRENCH PARTIALLY BACKFILLED, OR COMPLETELY BACKFILLED AT CONTRACTOR'S OPTION, ALL NEW PIPE OR ANY VALVED SECTION THEREOF SHALL BE SUBJECT TO HYDROSTATIC PRESSURE TEST UNDER THE SUPERVISION OF THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIALS AND DOING ALL TAPPING. THE TEST SECTION SHALL BE FILLED WITH WATER AND SUBJECTED TO EXAMINATION. AFTER THE EXAMINATION THE PRESSURE SHALL BE GRADUALLY INCREASED. IF DEFECTS ARE FOUND, THE CONTRACTOR SHALL IMMEDIATELY MAKE THE NECESSARY REPAIRS AT HIS OWN EXPENSE. THE FINAL PRESSURE TEST SHALL BE 150 POUNDS PER SQUARE INCH AND SHALL BE HELD AT LEAST TWO HOURS. IN ADDITION THE CONTRACTOR MUST COMPLY WITH ALL OF THE HYDROSTATIC TESTINGS OF AWWA C600-87. THE CONTRACTOR SHALL FURNISH ALL TOOLS, EQUIPMENT AND MATERIAL NECESSARY TO MAKE THE PRESSURE TEST.

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P03

CHLORINATION OF NEW MAINS: AFTER THE NEW MAINS AND VALVED EXTENSIONS HAVE BEEN TESTED THEY SHALL BE FLUSHED UNTIL ALL FOREIGN MATERIAL HAS BEEN REMOVED. CHLORINATION APPLICATIONS SHALL BE MADE UNDER THE SUPERVISION OF THE ENGINEER. WATER SHALL BE FED INTO THE NEW LINE WITH CHLORINE APPLIED IN AMOUNTS TO MAINTAIN A CHLORINE SOLUTION WITH A CHLORINE RESIDUAL OF 50 MILLIGRAMS PER LITER FOR 24 HOURS OR CHLORINE RESIDUAL OF 200 MILLIGRAMS PER LITER FOR 3 HOURS. ALL VALVES AND HYDRANTS IN THE SECTION TREATED SHALL BE OPERATED DURING THIS TIME IN ORDER TO DISINFECT THE APPURTENANCE. THE CHLORINE SHALL BE FLUSHED FROM THE MAIN THROUGH HYDRANTS UNTIL ALL EXCESS CHLORINE HAS BEEN REMOVED. NO CHLORINATION WATER WILL BE PERMITTED IN THE WATERMAIN TRENCH. THE CONTRACTOR SHALL FURNISH ALL TOOLS, EQUIPMENT AND MATERIAL TO CHLORINATE.

AFTER THE CHLORINATED WATER HAS BEEN FLUSHED FROM THE WATERMAIN, THE WATERMAIN SHALL BE TESTED FOR BACTERIOLOGICAL QUALITY IN ACCORDANCE WITH AWWA C651 LATEST REVISION THEREOF. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 24 HOURS PRIOR TO THE TIME THAT COLLECTION OF THE SAMPLES IS TO OCCUR. AT LEAST THREE SAMPLES SHALL BE COLLECTED FROM EACH SEGMENT OF THE PIPELINE BEING TESTED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSPORTING ALL SAMPLES TO THE NORTH DAKOTA STATE DEPARTMENT OF HEALTH AND CONSOLIDATED LABORATORIES AND PAYING THE APPROPRIATE FEE. A CORPORATION COCK COMPLETE WITH A COPPER TUBE GOOSENECK ASSEMBLY SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF THE INITIAL DISINFECTION FAILS TO PRODUCE SATISFACTORY BACTERIOLOGICAL RESULTS, THE WATERMAIN MUST BE REFLUSHED AND RESAMPLED. IF CHECK SAMPLES SHOW THE PRESENCE OF COLIFORM ORGANISMS, THE MAIN SHALL THEN BE RECHLORINATED AND PROCEDURES REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED. THE GOOSENECK ASSEMBLY SHALL BE REMOVED AND REUSED AT EACH SAMPLING LOCATION.

Record Drawing

GENERAL NOTES

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P04

WATER SERVICE CONNECTIONS: CURB STOPS SHALL BE MUELLER NO. H-15164, WITHOUT DRAIN, OR APPROVED EQUAL. CURB BOXES SHALL BE MUELLER NO. H-10300 (1 1/4" DIAMETER UPPER SECTION) FOR ONE (1) INCH CURB STOPS AND MUELLER NO. H-10340 (2" DIAMETER UPPER SECTION) FOR ONE AND ONE-QUARTER (1 1/4) INCH THROUGH TWO (2) INCH CURB STOPS, OR AN APPROVED EQUAL. THE LENGTH OF THE CURB BOXES SHALL VARY OR BE MODIFIED AT NO ADDITIONAL COST TO ACCOMODATE EXISTING CONDITIONS. THERE WILL BE NO SEPERATE PAYMENT FOR ADJUSTING CURB BOXES TO FINAL GRADE, ALL COSTS FOR ADJUSTING CURB BOXES TO FINAL GRADE ARE INCIDENTAL.

COPPER WATER PIPE SHALL CONFORM TO A.S.T.M. B88, TYPE K.

CORPORATION STOPS SHALL BE MUELLER NO. H-15000 FOR COPPER WATER PIPE OR APPROVED EQUAL.

ALL CORPORATION TAPS MADE INTO ALL SIZES AND CLASSES OF PVC FOR TESTING OR PERMANENT CONNECTIONS SHALL BE REINFORCED WITH A TAPPING SADDLE. TAPPING SADDLES USED ON PVC WATERMAIN SHALL PROVIDE FULL SUPPORT AROUND THE CIRCUMFERENCE OF THE PIPE AND PROVIDE A BEARING AREA OF SUFFICIENT WIDTH ALONG THE AXIS OF THE PIPE, 2 INCHES MINIMUM, ENSURING THAT THE PIPE WILL NOT BE DISTORTED WHEN A SADDLE IS TIGHTENED. TAPPING SADDLES SHALL BE ONE OF THE FOLLOWING: A DOUBLE STRAP BRONZE (NOT TO BE USED WITH PVC), A STAINLESS STEEL OR AN EPOXY COATED MALLEABLE IRON. ACCEPTABLE MANUFACTURER'S FOR THESE SADDLES ARE MUELLER, ROCKWELL, SUPERIOR, FORD, ROMAC AND CASCADE OR AN APPROVED EQUAL. THE MAXIMUM SIZE TAP INTO A SIX (6) INCH IN DIAMETER WATERMAIN IS 1 1/2 INCHES, HOWEVER A STAINLESS STEEL SLEEVE MAY BE USED FOR A 2 INCH TAP INTO A 6 INCH MAIN.

CONTRACTOR WILL BE REQUIRED TO TAP WATERMANS FOR ALL WATER SERVICE CONNECTIONS. TAPS WILL NOT BE MADE BY THE CITY OF MANDAN.

ALL WATER SERVICE LINE STUBOUTS SHALL BE THOROUGHLY FLUSHED PRIOR TO TESTING OF MAINS OR STUBOUTS. CURB STOPS SHALL BE INSTALLED ON A 1/2 SQUARE FOOT BY 4 INCH THICK CONCRETE OR BRICK PAD.

ON WATERMAIN REPLACEMENT CONSTRUCTION ALL TAPS TO THE NEW WATERMANS SHALL BE 1-1/2 INCH UNLESS OTHERWISE SPECIFIED ON THE PLANS. CONNECTION TO THE EXISTING WATER SERVICE LINES MAY REQUIRE A REDUCER AND SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS. ALL CONNECTIONS AND FITTINGS REQUIRED TO CONNECT THE NEW COPPER WATER SERVICE LINES TO THE EXISTING WATER SERVICE LINES SHALL BE CONSIDERED INCIDENTAL. EXISTING SERVICE LINES SHALL BE REPLACED UP TO AND INCLUDING THE CURB STOP. ALL CONNECTIONS AND FITTINGS REQUIRED TO CONNECT THE NEW CURB STOP TO THE EXISTING WATER SERVICE LINE SHALL BE CONSIDERED INCIDENTAL.

724
P05

SANITARY SERVICE CONNECTIONS: AFTER SEWERMANS HAVE BEEN INSTALLED OR SECTIONS OF SEWERMANS HAVE BEEN REPLACED, SANITARY SEWER SERVICE CONNECTIONS SHALL BE INSTALLED OR RECONNECTED AT THE LOCATIONS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. PVC WYES SHALL BE 6" SADDLE TYPE W/SS BANDS.

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P05
CONT.

ON SANITARY SEWER SERVICES TO BE RECONNECTED, THE EXISTING PIPE SHALL BE CUT SMOOTHLY AND VERTICALLY BY APPROVED CUTTING EQUIPMENT. ALL ROOTS, OBSTRUCTIONS, AND DEBRIS, AT CONNECTION PIPE SHALL BE REMOVED PRIOR TO MAKING CONNECTION. ALL DISRUPTED SERVICES ON A REPLACED SECTION OF SEWERMAIN SHALL BE RECONNECTED PRIOR TO REPLACING ANOTHER SECTION OF SEWERMAIN.

NEW 6" SERVICE PIPE SHALL BE CONNECTED TO EXISTING SERVICE LINES BY USE OF FERNCO ADAPTERS OR APPROVED EQUAL. ADAPTERS SHALL BE OF THE SIZE REQUIRED.

THE AMOUNT TO BE PAID SHALL BE AT THE CONTRACT UNIT PRICE BID PER EACH (EA) SANITARY SEWER SERVICE CONNECTION COMPLETE IN PLACE AND ACCEPTABLE TO THE ENGINEER. THIS SHALL INCLUDE ALL EXCAVATION, SAND BEDDING AND ENCASEMENT, BACKFILLING, COMPACTION, SADDLE WYE OF THE SIZE REQUIRED, SDR 35 PVC SEWER SERVICE PIPE OF THE LENGTH SHOWN OR AS REQUIRED FOR RECONNECTIONS, NECESSARY PVC BENDS AND FERNCO ADAPTERS.

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P06

ANY COSTS FOR THE DISPOSAL OF EXCESS EXCAVATION FROM THE TRENCHES OF WATERMANS, SEWERMANS OR OTHER UNDERGROUND PIPING ASSOCIATED WITH THESE PLANS SHALL BE INCLUDED IN THE PRICE BID FOR THE RESPECTIVE ITEM.

724
P07

GATE VALVES: PAYMENT FOR GATE VALVES SHALL BE FULL COMPENSATION FOR INSTALLING GATE VALVES AND INCIDENTALS INCLUDING BUT NOT LIMITED TO THE VALVE BOX. ADJUSTMENT OF THE VALVE BOX TO FINAL GRADE SHALL ALSO BE INCLUDED IN THE PRICE BID FOR "GATE VALVE".

724
P07

THE UNIT PRICE BID FOR TAPPING SLEEVES SHALL INCLUDE ALL COSTS FOR FURNISHING AND INSTALLING THE FLXMJ VALVE AND BOX.

744
P01

POLYSTYRENE INSULATION: A QUANTITY OF POLYSTYRENE INSULATION HAS BEEN PROVIDED TO ALLOW INSULATION OF WATERMAIN OR WATER SERVICE CROSSINGS WITHIN THREE (3) FEET OF ANY STORM SEWER LINE OR STRUCTURE. THE INSULATION SHALL BE IN TWO (2) INCH THICK SHEETS. ONE LAYER SHALL BE USED FOR A THREE FOOT SEPERATION BETWEEN LINES. ADDITIONAL LAYERS SHALL BE PLACED FOR SEPERATIONS LESS THAN THREE FEET, AS DIRECTED BY THE ENGINEER. INSULATION SHALL CONFORM TO ASTM C578-85, TYPE VII AND SHALL BE VERY HIGH DENSITY RIGID EXTRUDED POLYSTYRENE WITH A COMPRESSIVE STRENGTH OF 60 PSI (NOTE - MATERIAL COMES IN 2' WIDTHS).

910
P01

WHERE CALLED FOR ON THE PLANS, THE EXISTING 24" RCP SEWER LINE SHALL BE FILLED WITH A GROUT MATERIAL. GROUT MATERIAL SHALL BE A MIXTURE OF WATER, CEMENT, SAND AND FLYASH THAT PROVIDES A COMPRESSIVE STRENGTH OF 300 PSI IN SEVEN DAYS. CONTRACTOR SHALL PUMP MATERIAL TO ASSURE THAT THE ENTIRE 24" RCP IS FILLED.

THE AMOUNT TO BE PAID SHALL BE AT THE CONTRACT UNIT PRICE BID PER LINEAL FOOT (LF) FOR GROUT 24" RCP. THIS SHALL INCLUDE ALL MATERIALS, LABOR AND OTHER INCIDENTALS REQUIRED TO COMPLETE THE WORK.

Record Drawing

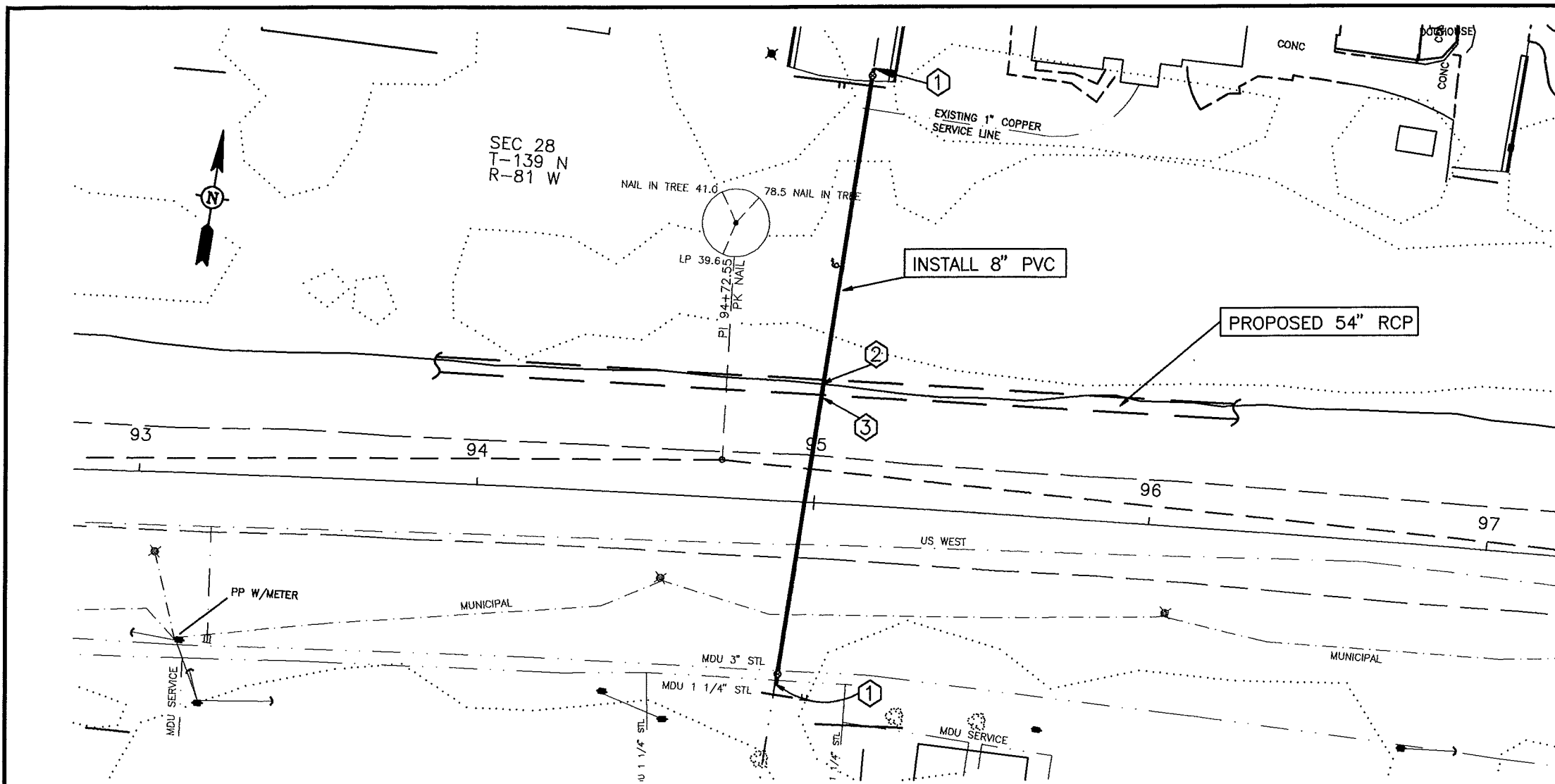
QUANTITIES

SHEET
NO.

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SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU FUNDS	CITY FUNDS	TOTAL
202	0112	REMOVAL OF CONCRETE, SIDEWALK	SY		122 124.61	122 124.61
202	0114	REMOVAL OF CONCRETE, PAVEMENT	SY		1050 1447.56	1050 1447.56
202	0130	REMOVAL OF CURB & GUTTER	LF		144 219.20	144 219.20
202	0137	REMOVAL OF PAVEMENT, ASPHALT	SY		380 52.89	380 52.89
408	9650	HBP CL 27 SUBGRADE SUBBASE PRIME TACK	TON		150 125.04	150 125.04
408	0320	120-150 ASPH. CEMENT	TON		10	10
550	0710	10 INCH CONCRETE PAVEMENT REPAIR	SY		1050 1130.45	1050 1130.45
714	7168	PIPE, PVC 24" SEWER	LF		991 1012	991 1012
714	7040	SANITARY SEWER SERVICE CONNECTION	EA		2	2
722	3291	ABANDON SANITARY SEWER MANHOLE	EA		3 1	3 1
722	0300	MANHOLE, SANITARY	EA		6	6
724	0210	FITTINGS, DUCTILE IRON	LBS		9218 9234	9218 9234
724	0300	GATE VALVE & BOX, 6 INCH	EA		25 24	25 24
724	0310	GATE VALVE & BOX, 8 INCH	EA		11 10	11 10
724	0315	GATE VALVE & BOX, 10 INCH	EA		1	1
724	0320	GATE VALVE & BOX, 12 INCH	EA		13	13
724	0400	HYDRANT, INSTALL 6 INCH	EA		17	17
724	0430	REMOVE HYDRANT	EA		13 16	13 16
724	0579	20" X 12" TAPPING SLEEVE & 1 - 12" VALVE BOX	EA		2	2
724	0605	WATER SERVICE PIPE, 1-1/2 INCH COPPER	LF		1919 2246	1919 2246
724	0607	WATER SERVICE PIPE, 2 INCH COPPER	LF		358 306	358 306
724	0810	WATERMAIN, 6 INCH PVC	LF		977 934	977 934
724	0830	WATERMAIN, 8 INCH PVC	LF		627 667	627 667
724	0840	WATERMAIN, 10 INCH PVC	LF		50 43	50 43
724	0850	WATERMAIN, 12 INCH PVC	LF		5223 5378	5223 5378
724	0907	CURB STOP AND BOX, 1-1/2 INCH	EA		86 94	86 94
724	0910	CURB STOP AND BOX, 2 INCH	EA		8 7	8 7
724	0958	WATER SERVICE CONNECTION, 1-1/2 INCH	EA		86 101	86 101
724	0960	WATER SERVICE CONNECTION, 2 INCH	EA		8 7	8 7
724	6013	ABANDON EXISTING VALVE BOX	EA		25 14	25 14
724	0426	HYDRANT EXTENSION	LF		17 29.55	17 29.55
724	8100	16" X 12" TAPPING CROSS & 2 - 12" VALVES	EA		1	1
744	0100	POLYSTYRENE INSULATION	BDFT		256 800	256 800
748	0140	CURB & GUTTER TYPE I	LF		144 219	144 219
750	0100	SIDEWALK CONCRETE	SY		122 124.61	122 124.61
910	0910	GROUT 24" RCP SEWER	LF		916 968	916 968

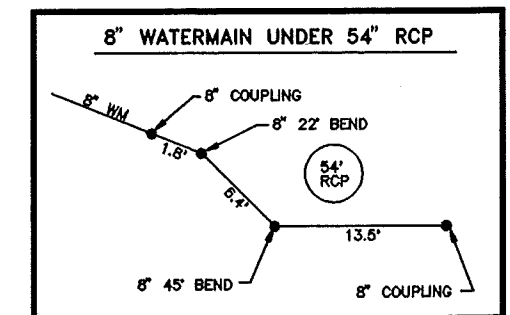
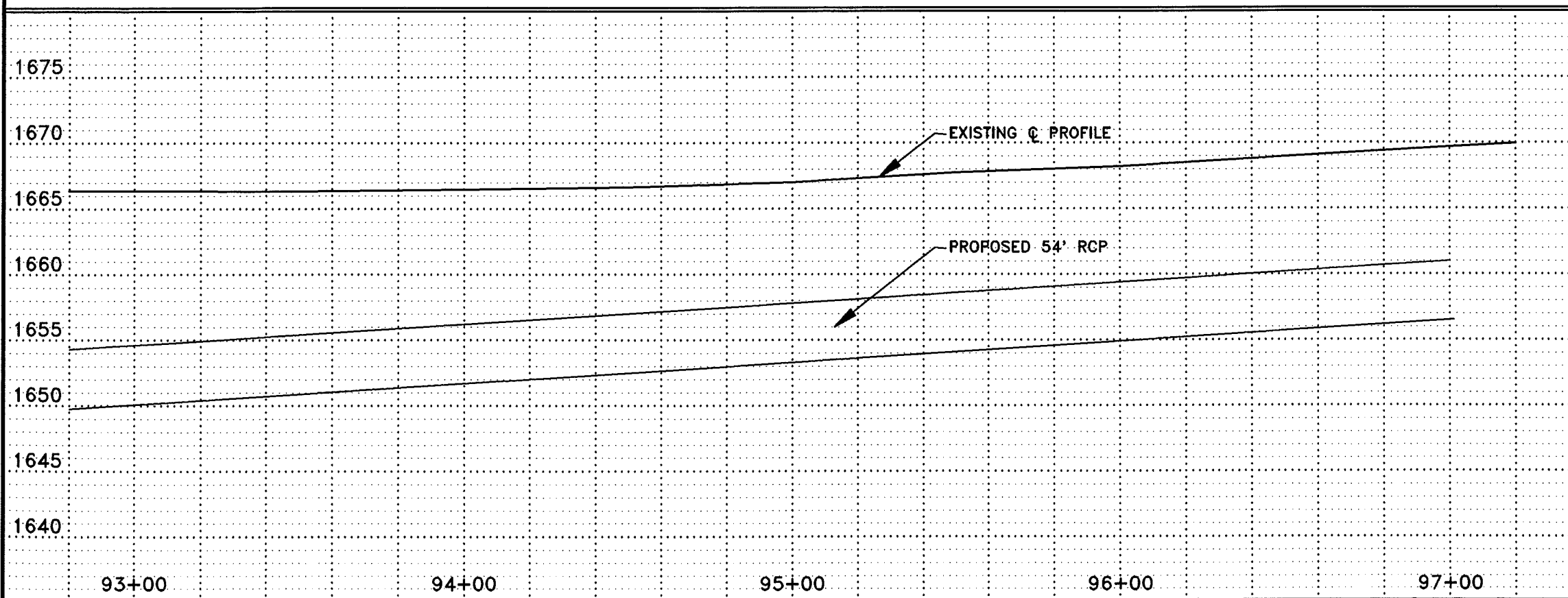
Record Drawing



WATERMAIN, 6" PVC		
95+00 - 50' LT TO 95+00 - 25' LT	25 LF	
WATERMAIN, 8" PVC		
94+92 ^{54'} 56' RT TO 95+08 ^{129'} 124' LT	183+80 LF	
GATE VALVE AND BOX, 8"		
94+92 ^{51'} 54' RT	1 EA	
95+06 ^{127'} 122' LT	1 EA	
FITTINGS, DUCTILE IRON		
95+00 - 25' LT	2 - 8" 1/8 BEND	90 LBS
95+00 - 25' LT	2 - 6" 1/8 BEND	62 LBS
95+00 - 50' LT	2 - 8" 1/8 BEND	90 LBS
95+00 - 50' LT	2 - 6" 1/8 BEND	62 LBS
94+92 - 56' RT	2 - 8" 1/8 BENDS	90 LBS
95+06 - 124' LT	2 - 8" 1/8 BENDS	90 LBS
94+92 ^{54'} 56' RT	6" X 8" REDUCER	40.32 LBS
95+06 ^{129'} 124' LT	6" X 8" REDUCER	40.32 LBS
95+06 - 46' LT	8" COUPLING	38 LBS
95+06 - 27' LT	8" COUPLING	38 LBS
95+06 - 46' LT	8" 1/16 BEND	59 LBS
SERVICE CONNECTIONS 1 1/2"		
95+06 - 112' LT		1 EA

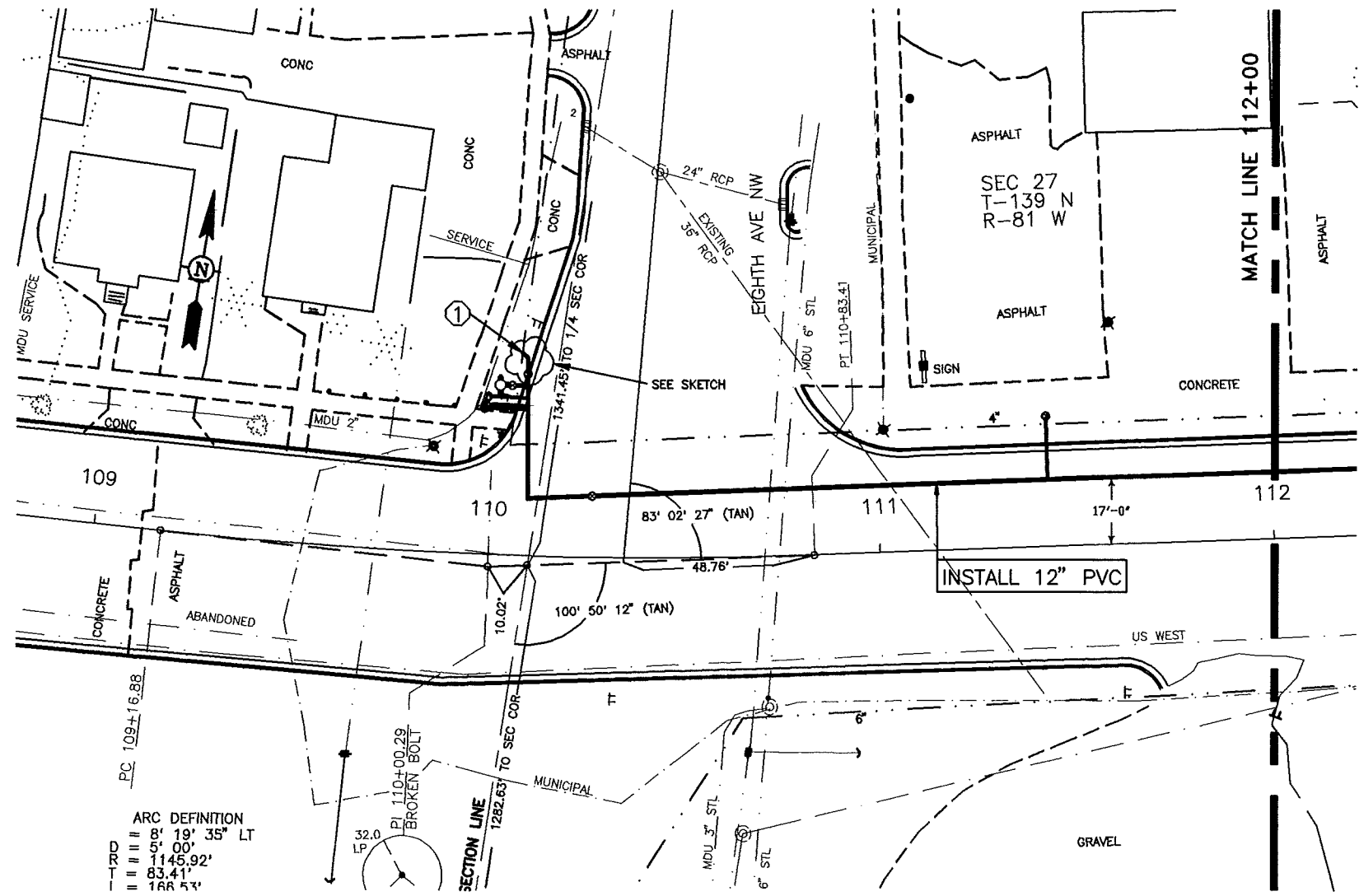
CONSTRUCTION NOTES

- ① CONNECTED
CONNECT NEW 8" TO EXISTING 6"
- ② INSTALLED
INSTALL NEW 8" ADJACENT TO EXISTING 6"
- ③ LOWERED
LOWER EXISTING 6" W.M. AND PROPOSED 8" W.M. UNDER PROPOSED 54" RCP. PLACE INSULATION BETWEEN W.M. AND RCP, INCIDENTAL.

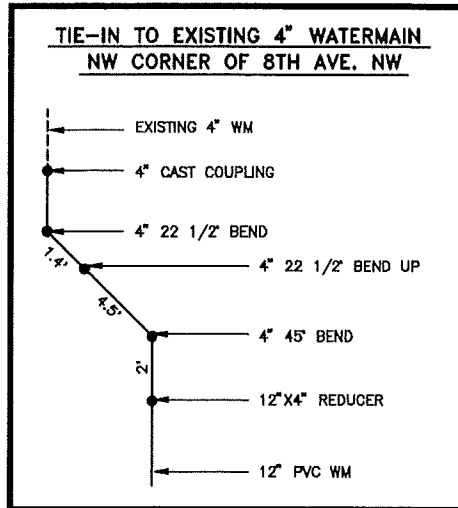
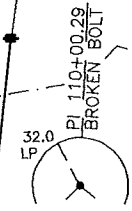


Record Drawing

REV.	DATE	DESCRIPTION	BY
▲	2/14/97	RECORD DRAWING	DMS
CITY OF MANDAN			
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT #6-2, PHASE II			
STA 95+00±			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS MINNEAPOLIS & FARO & MINNEAPOLIS			
DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 7 of 29	
APPROVED BY: BPM			



ARC DEFINITION
 ||| 8' 19' 35" LT
 ||| 5' 00"
 ||| 1145.92'
 ||| 83.41'
 ||| 166.53'



6" HYDRANT			
+04 110+03 - 43' LT	1 EA		
GATE VALVE AND BOX, 6"			
110+06 - 43' LT	1 EA		
110+13 - 28' LT	1 EA		
GATE VALVE AND BOX, 12"			
+26 110+10 - 17' 20" LT	1 EA		
110+10 - 46' 50" LT	1 EA		
WATERMAIN, 6" PVC			
+04 110+03 - 46' 43" LT TO 110+09±10 43' LT	3-6 LF		
110+10 - 28' LT TO 110+16 - 28' LT	6 LF		
WATERMAIN, 12" PVC			
110+10 - 17' LT TO 110+00 - 55' LT	28 LF		
110+10 - 17' LT TO 112+00 - 17' LT	190 LF		
FITTINGS, DUCTILE IRON			
+10 110+09 - 43' LT	12" X 6" TEE	115-123 LBS	
110+10 - 15' LT	12" 1/4 BEND	141-147 LBS	
+10 110+08 - 50' 55" LT	12" TO 4" REDUCER	67-52 LBS	
110+10 - 28' LT	12" X 6" TEE	123 LBS	
110+16 - 28' LT	6" TO 4" REDUCER	22 LBS	
110+16 - 28' LT	4" PLUG	22 LBS	
110+10± - 55± LT	1 - 4" 1/16 BEND	21 LBS	
110+10± - 55± LT	1 - 4" 1/16 BEND	21 LBS	
110+10± - 55± LT	1 - 4" 1/8 BEND	22 LBS	
110+10± - 55± LT	1 - 4" CAST COUPLING		

WATER SERVICE CONNECTION 1 1/2"			
110+10 - 37' LT	1 EA		
110+10 - 38' LT	1 EA		
110+10 - 40' LT	1 EA		
111+43 - 17' LT	1 EA		

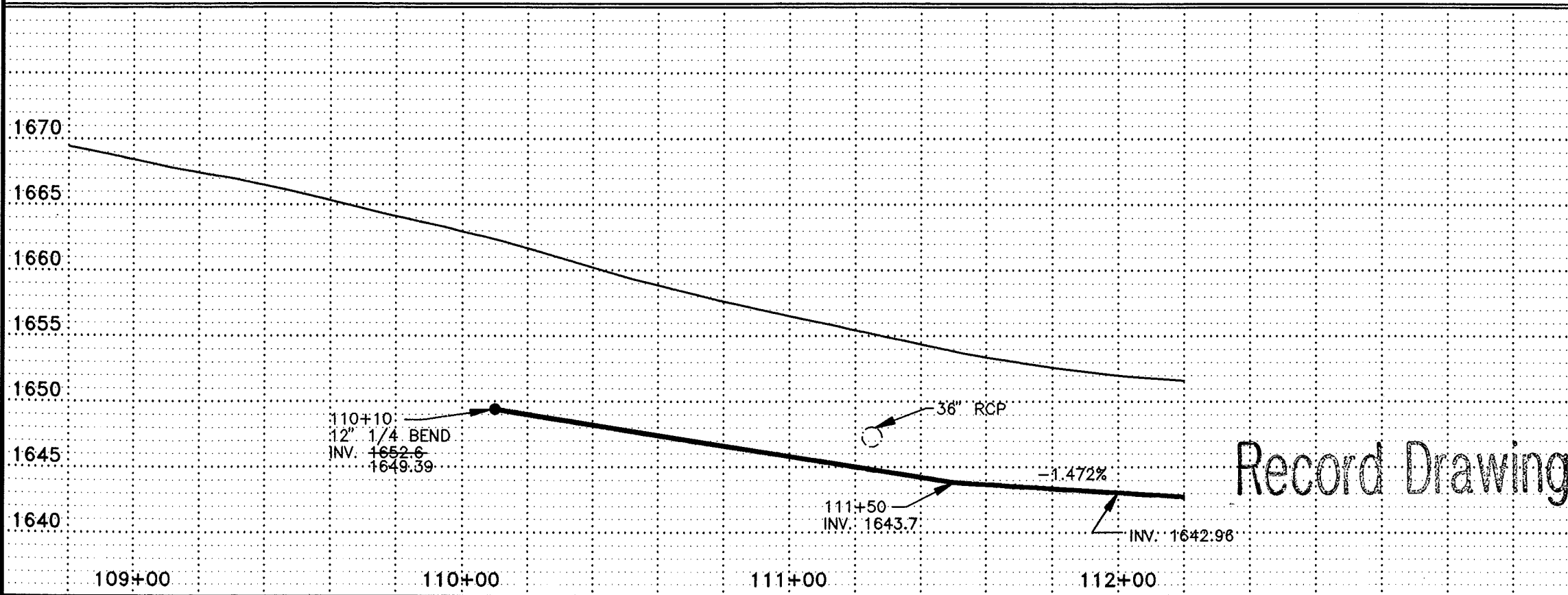
WATER SERVICE 1 1/2" COPPER			
110+10 - 37' LT	8 LF		
110+10 - 38' LT	8 LF		
110+10 - 40' LT	8 LF		
111+43 - 17' LT TO 111+43 - 35' LT	18 LF		

CURB STOP AND BOX 1 1/2"			
110+02 - 37' LT	1 EA		
110+02 - 38' LT	1 EA		
110+02 - 40' LT	1 EA		
111+48 - 35' LT	1 EA		

POLYSTYRENE INSULATION			
111+05	2 X 2" X 2' X 8' =	64	BDFT

NOTE:
 CURB STOP AND BOX 43' LT FOR FUTURE USE FOR HOUSE NO. 902 WEST MAIN ST.

- CONSTRUCTION NOTES**
- ① CONNECTED - CONNECT NEW 12" TO EXISTING 4"
 - ② CONNECT NEW 6" TO EXISTING 4"
 - ③ CLOSE VALVE AND INSTALL PLUG EAST OF VALVE ONCE 4" LINE CAN BE ABANDONED.



Record Drawing

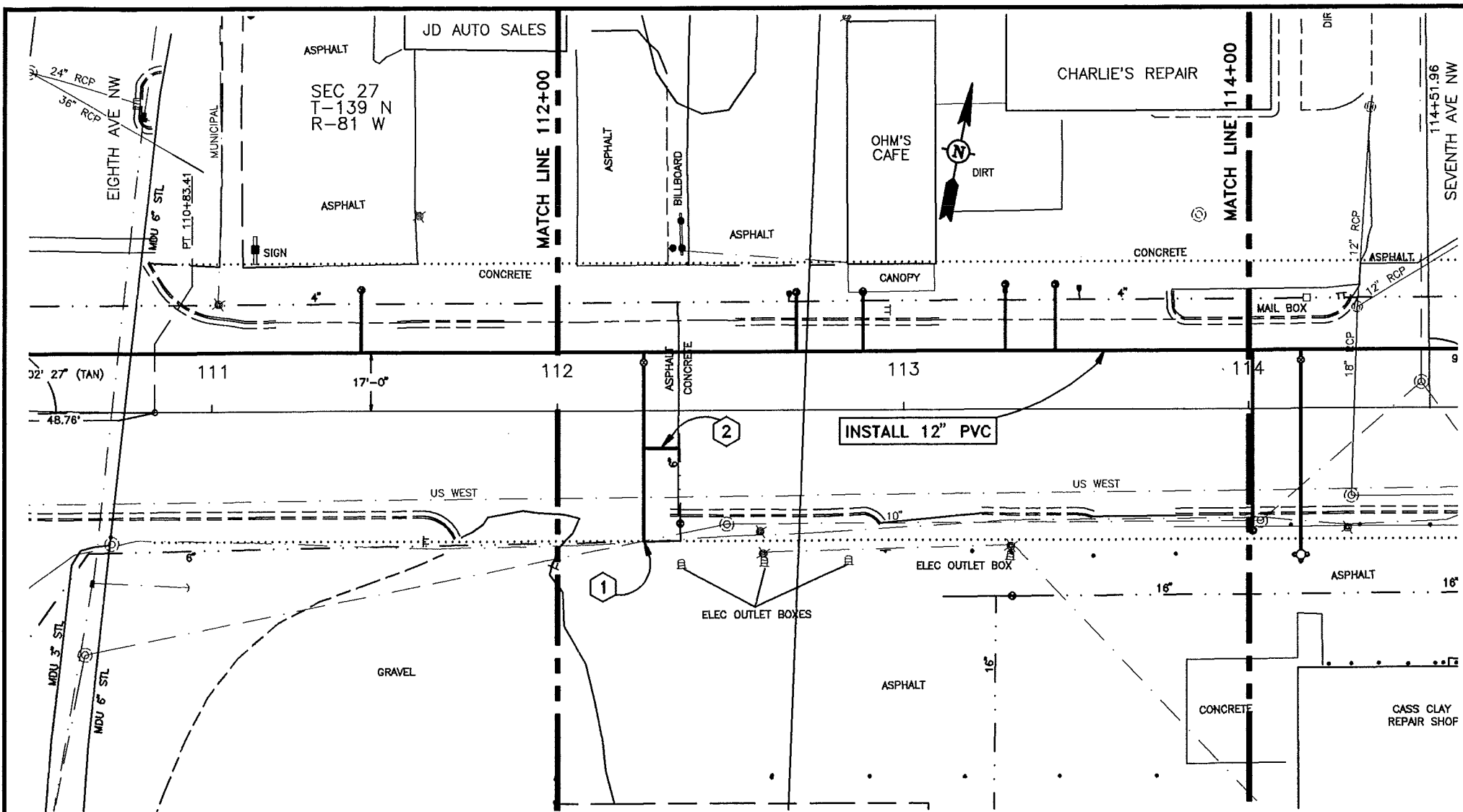
REV.	DATE	DESCRIPTION	BY
△	2/14/87	RECORD DRAWING	DMS
△	1-08-86	ADDED PLUG	KEN

CITY OF MANDAN
 DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II

STA 110+10 TO STA 112+00

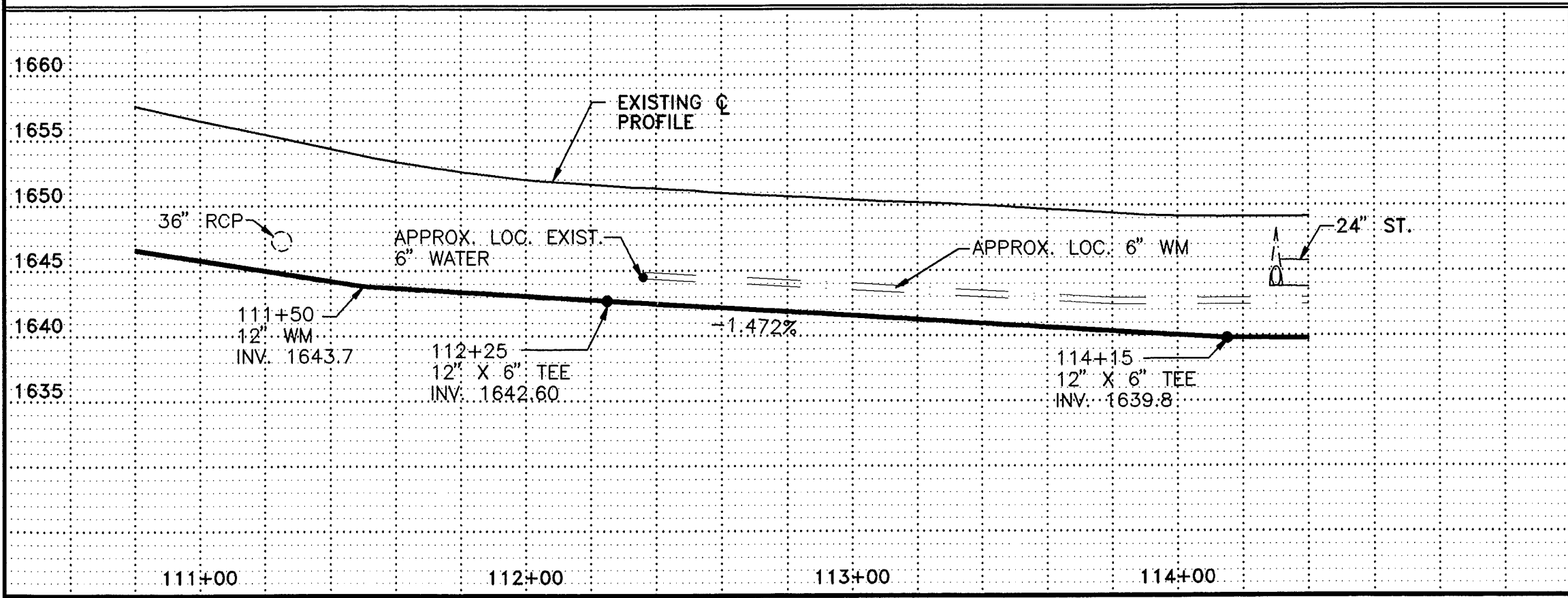
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
 1000 W. WASHINGTON ST. MINNEAPOLIS, MN 55402

SCALE: 1" = 40'
 PROJECT NO. 95834
 DRAWN BY: MJH
 CHECKED BY: BPM
 APPROVED BY: BPM
 DATE: MAY 17, 1995
 SHEET 8 of 29



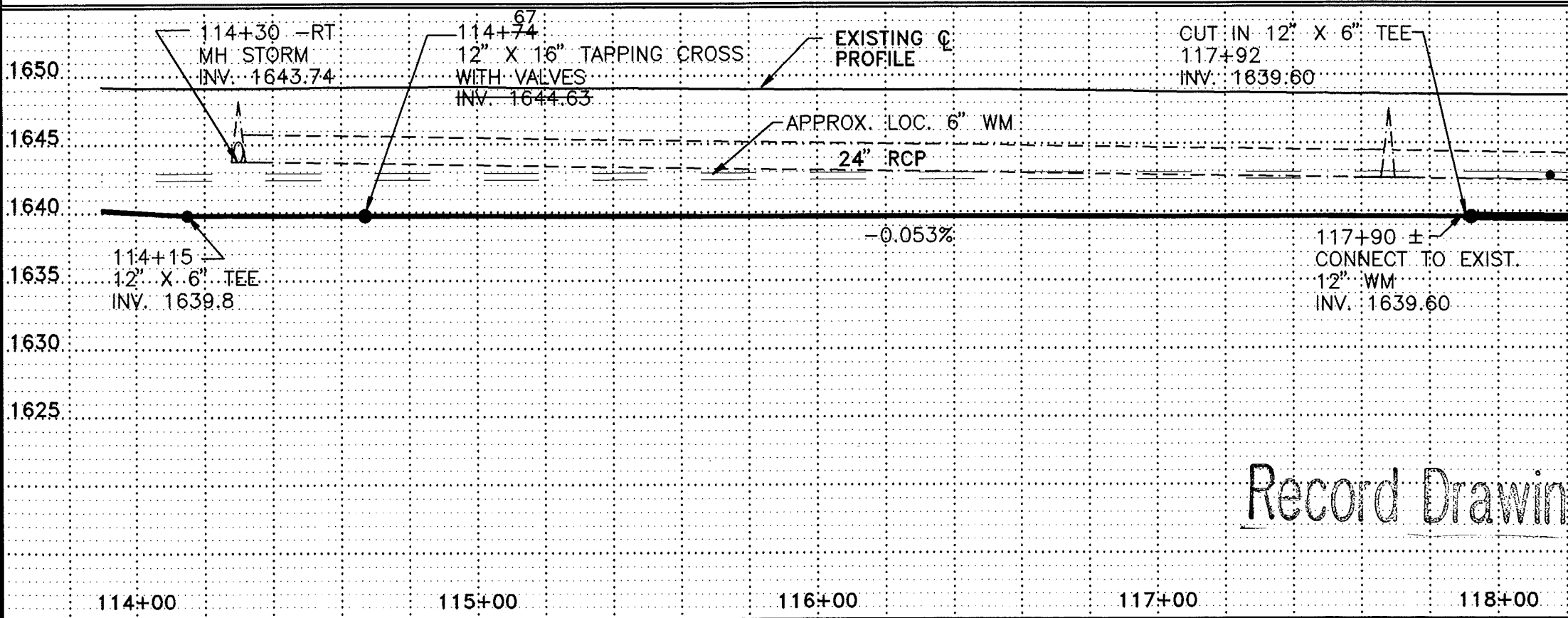
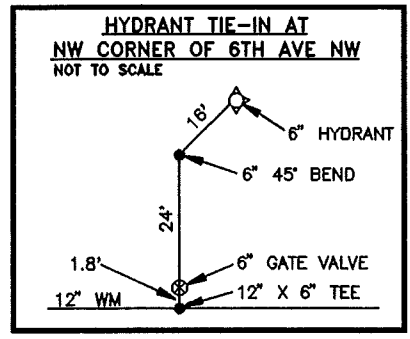
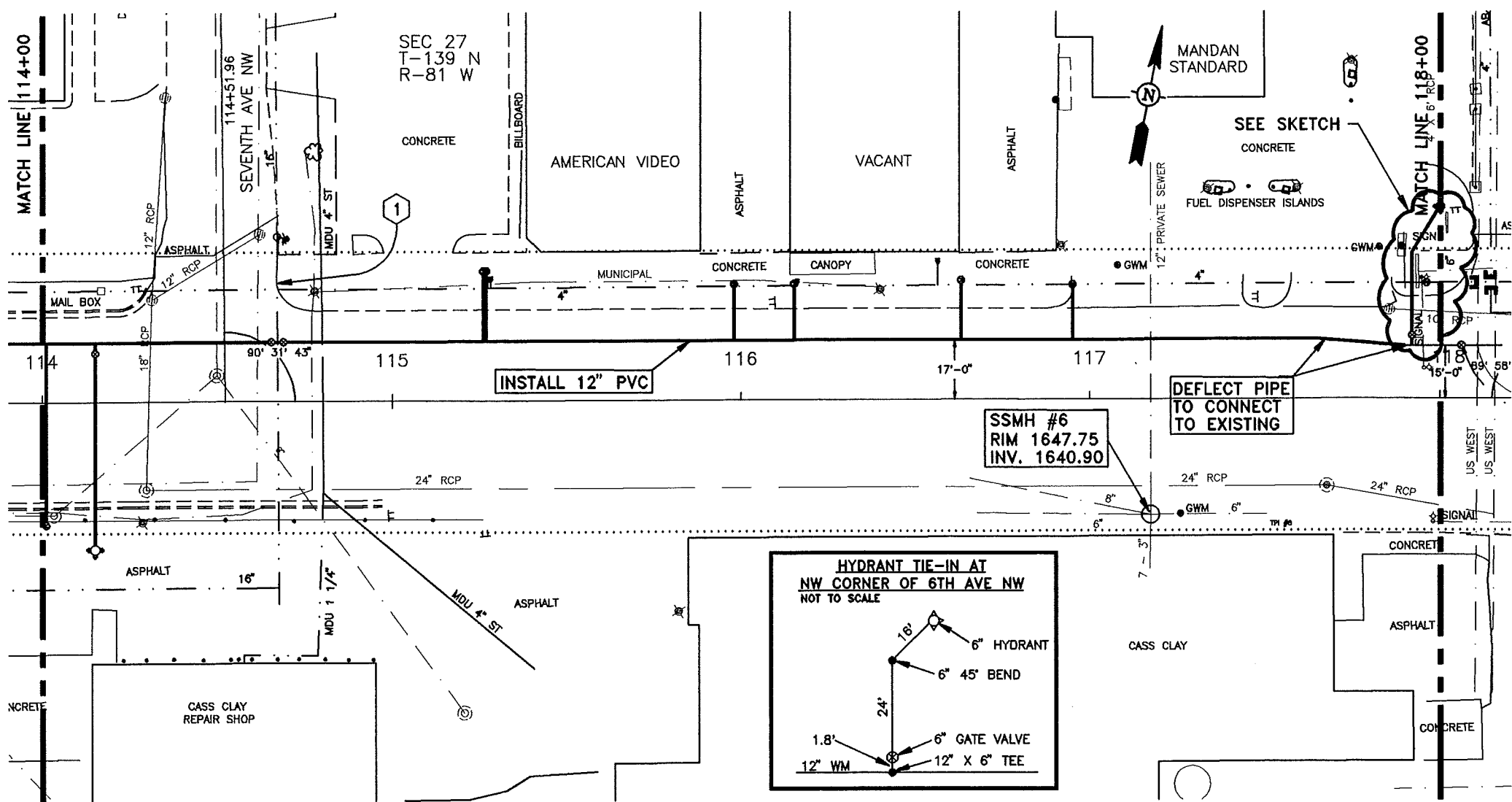
GATE VALVE AND BOX, 6"	
112+25 - 14' LT	1 EA
WATERMAIN, 6" PVC	
112+25 - 17' LT TO 112+25	34'40" RT 51'57" LF
WATERMAIN, 12" PVC	
112+00 - 17' LT TO 114+00 - 17' LT	200 LF
FITTINGS, DUCTILE IRON	
112+25 - 17' LT	12" X 6" TEE 115'423 LBS
112+25	34'40" RT 1-2 EA 6 1/4 BENDS 48'80 LBS
112+25 - 32' RT	6 1/16 BENDS 37 LBS
WATER SERVICE LINE 1-1/2" COPPER	
+69 112+67 - 17' LT TO 112+67	34'33" LT 17'46 LF
113+29 - 17' LT TO 113+29	38'34" LT 18'47 LF
+44 113+54 - 17' LT TO 113+54	38'34" LT 19'47 LF
112+88 - 17' LT TO 112+88 - 34' LT	17 LF
WATER SERVICE CONNECTION 1-1/2"	
+69 112+67 - 17' LT	1 EA
113+29 - 17' LT	1 EA
+44 113+54 - 17' LT	1 EA
112+88 - 17' LT	1 EA
CURB STOP AND BOX 1-1/2"	
+69 112+67	34'33" LT 1 EA
113+29	38'34" LT 1 EA
+44 113+54 - 34' LT	1 EA
112+88 - 34' LT	1 EA

- CONSTRUCTION NOTES**
- 1 CONNECTED - CONNECT NEW 6" TO EXISTING 6". INSTALL FITTINGS AS NECESSARY TO MAKE CONNECTION.
 - 2 PROVIDED - PROVIDE TEMPORARY 6" TIE DURING PHASE I RECONSTRUCTION OF MAIN STREET.



Record Drawing

REV.	DATE	DESCRIPTION	BY
2/14/87		RECORD DRAWING	DMS
CITY OF MANDAN			
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II			
STA 112+00 TO STA 114+00			
ULTEIG ENGINEERS, INC.			
DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 9 of 29	
APPROVED BY: BPM			

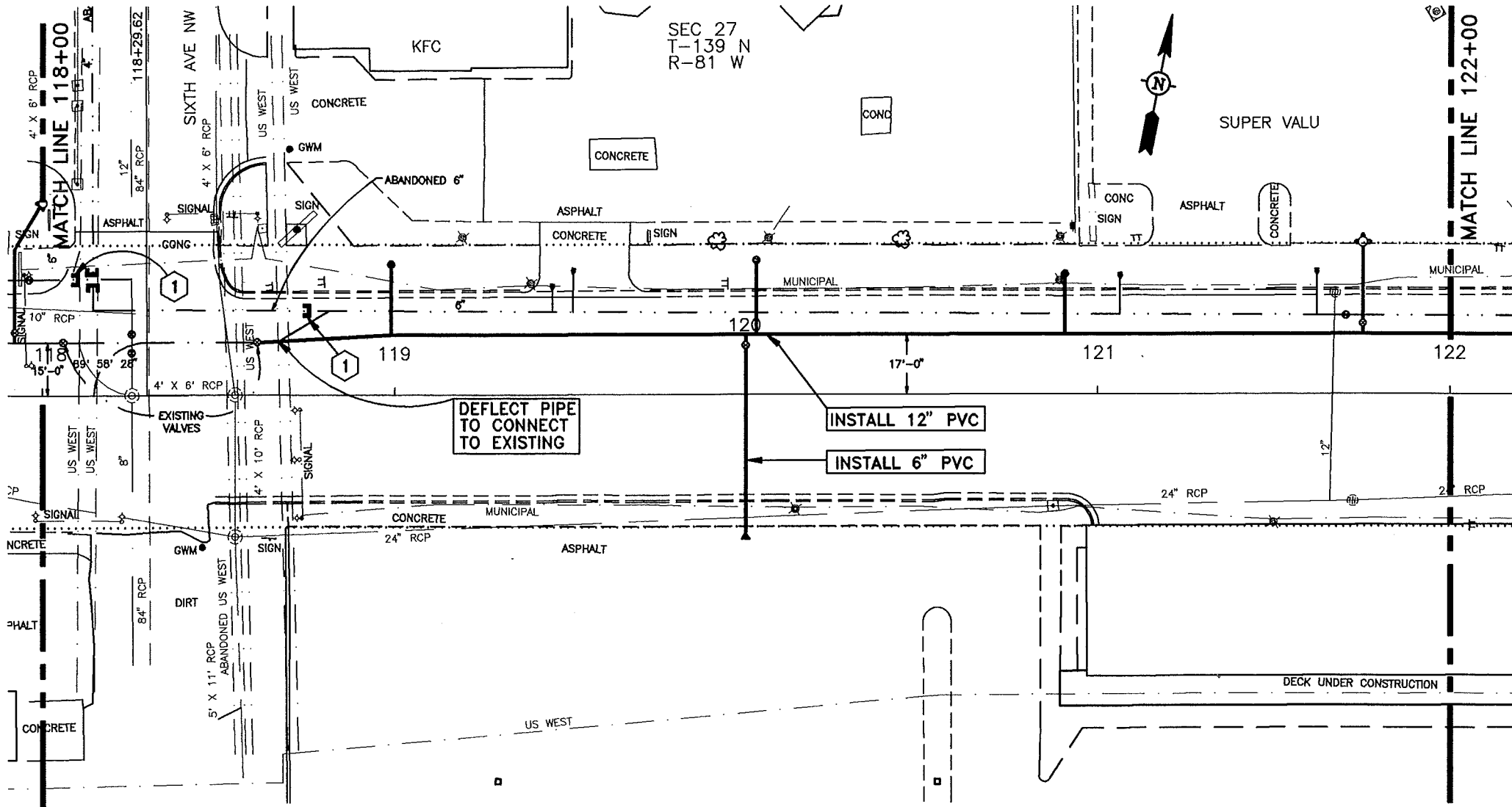


6" HYDRANT			
114+15	42'-39.5" RT	1 EA	
GATE VALVE AND BOX, 6"			
114+15	- 14' LT	1 EA	
117+92	- 18' LT	1 EA	
16" X 12" TAPPING CROSS & 2-12" VALVES			
+67	114+74 - 17' LT	1 EA	
WATERMAIN, 6" PVC			
114+15	- 17' LT TO 114+15	42'-39.5" RT	59'-56.5" LF
117+92	- 15' LT TO 118+00	- 54.8' LT	42 LF
WATERMAIN, 12" PVC			
114+00	- 17' LT TO 118+00	- 17' LT	398'-400" LF
FITTINGS, DUCTILE IRON			
114+15	- 17' LT	12" X 6" TEE	115'-123" LBS
114+50	- 17' LT	12" 1/8 BEND	92 LBS
114+55	- 17' LT	12" 1/8 BEND	92 LBS
114+92.5	- 17' LT	12" 1/8 BEND	92 LBS
114+97.5	- 17' LT	12" 1/8 BEND	92 LBS
117+92	- 15' LT	12" X 6" TEE	115 LBS
117+92	- 41' LT	6" 1/8 BEND	38 LBS
WATER SERVICE LINE 1-1/2" COPPER			
+26	115+27 - 17' LT TO 115+27	37'-35" LT	20'-18" LF
+27	115+28 - 17' LT TO 115+28	37'-35" LT	20'-18" LF
+15	116+16 - 17' LT TO 116+16	33'-34" LT	16'-7" LF
+63	116+56 - 17' LT TO 116+56	34'-40" LT	17'-23" LF
116+95	117+96 - 17' LT TO 117+96	- 33' LT	16 LF
114+01	- 17' LT TO 114+01	- 35' RT	52 LF
115+98	- 17' LT TO 115+98	- 33' LT	16 LF
WATER SERVICE CONNECTION 1-1/2"			
+26	115+27 - 17' LT	1 EA	
+27	115+28 - 17' LT	1 EA	
+15	116+16 - 17' LT	1 EA	
+63	116+56 - 17' LT	1 EA	
116+95	117+96 - 17' LT	1 EA	
114+01	- 17' LT	1 EA	
115+98	- 17' LT	1 EA	
CURB STOP AND BOX 1-1/2"			
+26	115+27 - 35' LT	1 EA	
+27	115+28 - 35' LT	1 EA	
+15	116+16 - 34' LT	1 EA	
+63	116+56 - 40' LT	1 EA	
116+95	117+96 - 33' LT	1 EA	
114+01	- 35' LT	1 EA	
115+98	- 35' LT	1 EA	
SANITARY MANHOLE			
117+17	- 33' RT	1 EA	
REMOVE HYDRANT & GATE BOX			
114+76	- 46' LT	1 EA	

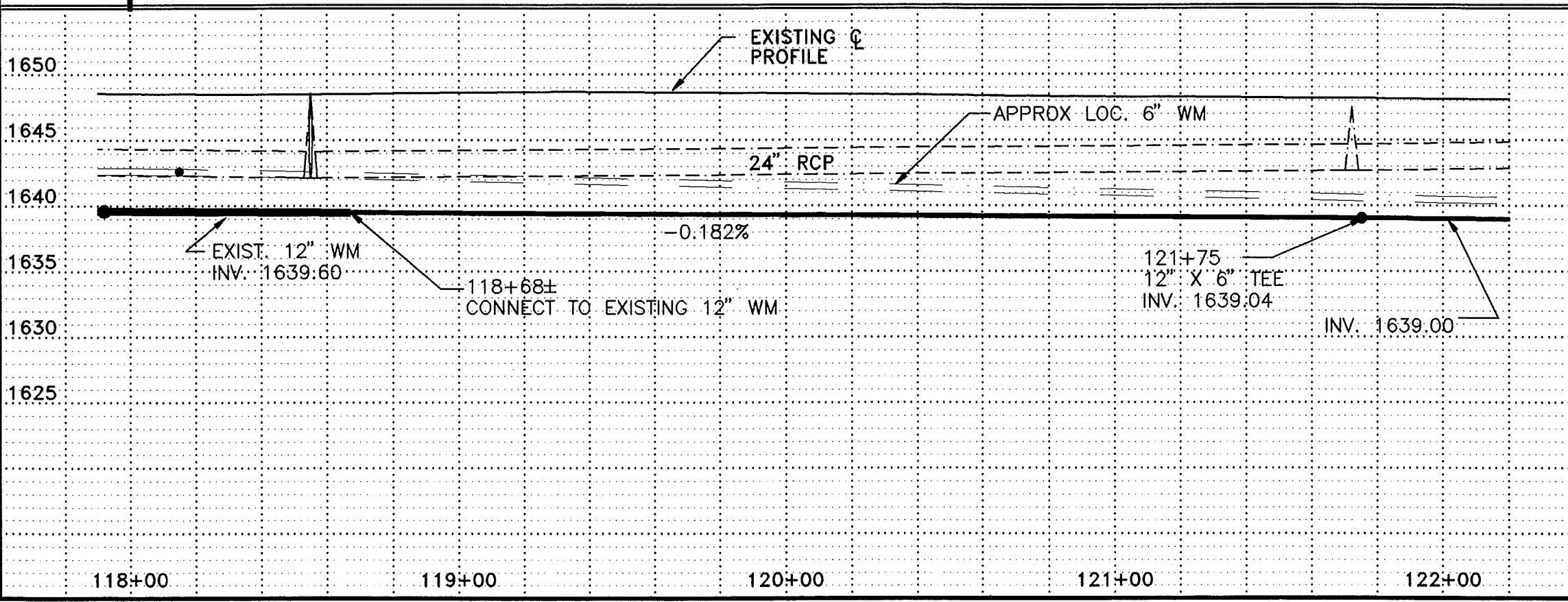
CONSTRUCTION NOTES			
1	IF EXISTING 4" IS CONNECTED TO 16". THEN DISCONNECT 4" BOTH SIDES OF 16" AND PLUG OR CAP ALL OPENINGS IN ALL PIPES. COSTS INCIDENTAL.		

REV.	DATE	DESCRIPTION	BY
2/14/97		RECORD DRAWING	DMS
CITY OF MANDAN			
DISTRICT #38, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II			
STA 114+00 TO STA 118+00			
ULTEIG ENGINEERS, INC.			
DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 10 OF 29	

Record Drawing



6" HYDRANT			
118+00	54' 52" LT	1 EA	
121+75	43' 20" LT	1 EA	
GATE VALVE AND BOX, 6"			
118+00	18' LT	1 EA	
120+00	14' LT	1 EA	
121+75	20' LT	1 EA	
WATERMAIN, 6" PVC			
118+00	15' LT TO 118+00	52' LT	37 LF
120+00	17' LT TO 120+00	39' 40" RT	56 57 LF
121+75	17' LT TO 121+75	43' 40" LT	26 23 LF
WATERMAIN, 12" PVC			
+62	118+70 - 17' LT TO 122+00 - 17' LT	338	330-LF
FITTINGS, DUCTILE IRON			
118+00	115' LT	12" X 6" TEE	123 LBS
120+00	17' LT	12" X 6" TEE	115 123 LBS
120+00	39' 40" RT	6" PLUG	118 46 LBS
121+75	17' LT	12" X 6" TEE	115 123 LBS
WATER SERVICE LINE 1-1/2" COPPER			
118+99	17' LT TO 118+99	37' LT	20 LF
119+45	17' LT TO 119+45	33' LT	16 LF
119+51	17' LT TO 119+51	35' LT	18 LF
120+91	17' LT TO 120+91	34' LT	17 LF
120+03	17' LT TO 120+03	38' LT	21 LF
WATER SERVICE CONNECTION 1-1/2"			
118+99	17' LT	1 EA	
119+45	17' LT	1 EA	
119+51	17' LT	1 EA	
120+91	17' LT	1 EA	
120+03	17' LT	1 EA	
CURB STOP AND BOX 1-1/2"			
118+99	37' LT	1 EA	
119+45	33' LT	1 EA	
119+51	35' LT	1 EA	
120+91	34' LT	1 EA	
120+03	38' LT	1 EA	



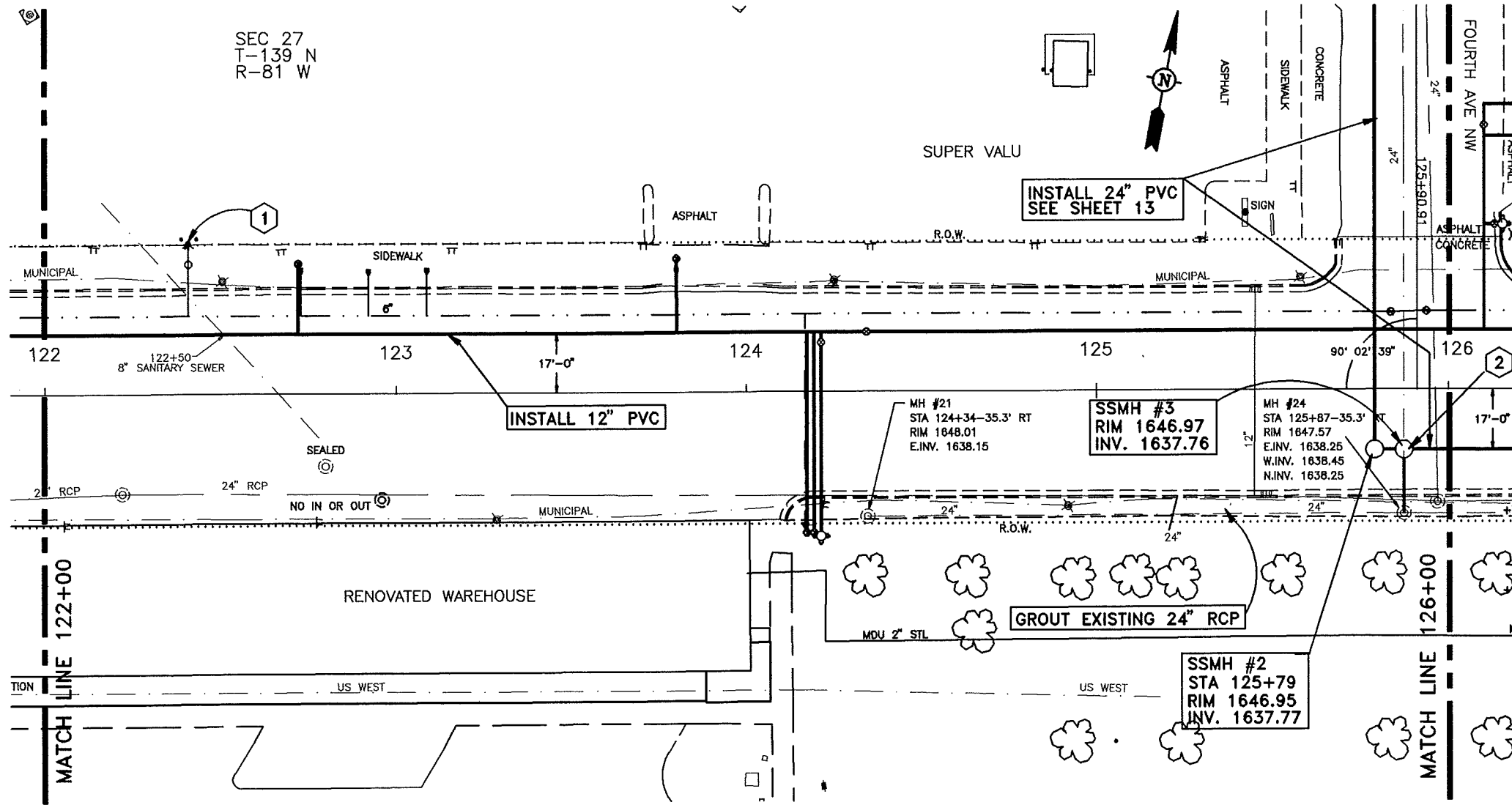
CONSTRUCTION NOTES

① PLUGGED
 - PLUG EXISTING 6" ONCE NEW
 12" CONNECTED TO EXISTING 12".

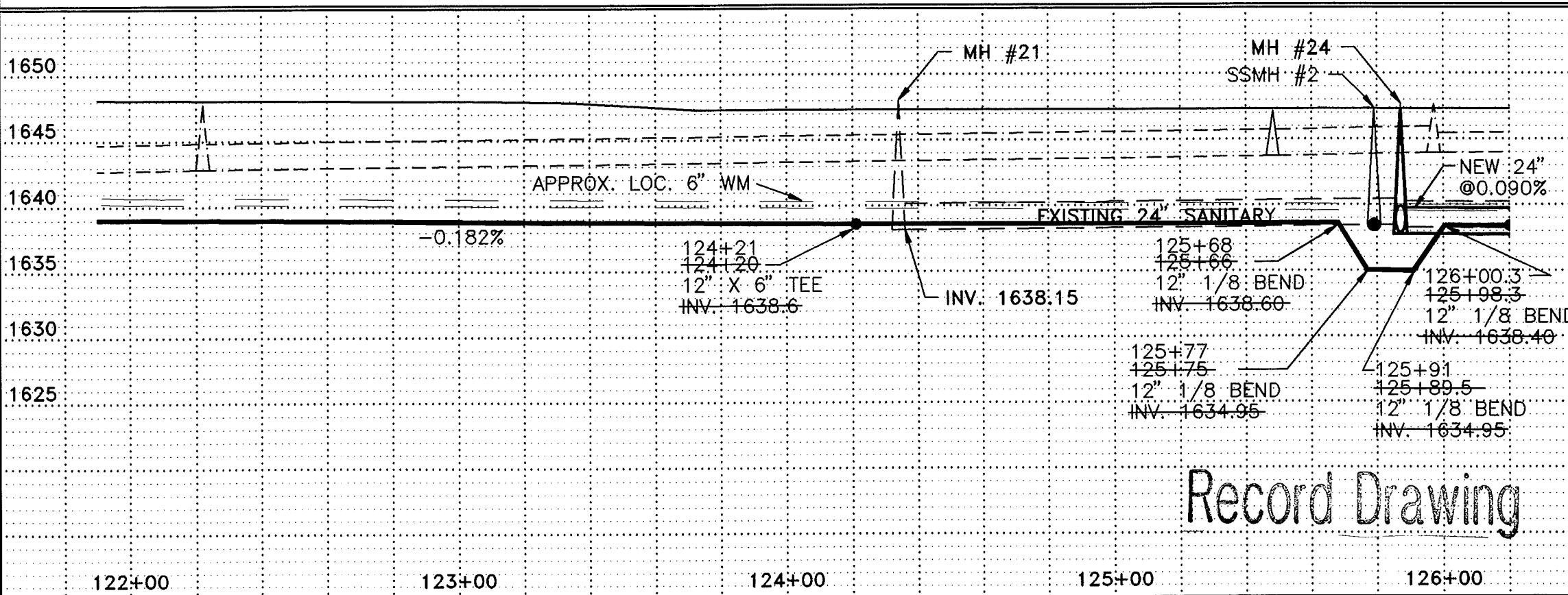
Record Drawing

DATE	2/14/97	DESCRIPTION	RECORD DRAWING	BY	DMS
CITY OF MANDAN					
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II					
STA 118+00 TO STA 122+00					
ULTEIG ENGINEERS, INC.					
DRAWN BY:	MJH	SCALE:	1" = 40'	PROJECT NO.:	95834
CHECKED BY:	BPM	DATE:	MAY 17, 1995	SHEET:	11 of 29
APPROVED BY:	BPM				

SEC 27
T-139 N
R-81 W



6" HYDRANT	
+21 124+20 - 41'39.5" RT	1 EA
GATE VALVE AND BOX, 6"	
+21 124+20 - 14' LT	1 EA
GATE VALVE AND BOX, 12"	
+34 124+23 - 17' LT	1 EA
WATERMAIN, 6" PVC	
+21 124+20 - 17' LT TO 124+20 - 41'39.5" RT	58.56.5 LF
WATERMAIN, 12" PVC	
122+00 - 17' LT TO 126+00 - 17' LT	400 LF
FITTINGS, DUCTILE IRON	
+21 124+20 - 17' LT 12" X 6" TEE	115-423-LBS
+68 125+66 - 17' LT 12" 1/8 BEND	111-92-LBS
+77 125+76 - 17' LT 12" 1/8 BEND	111-92-LBS
+81 125+89.5 - 17' LT 12" 1/8 BEND	111-92-LBS
126+00.3 - 125+98.3 - 17' LT 12" 1/8 BEND	111-92-LBS
WATER SERVICE LINE 2" COPPER AND 1 1/2"	
(2") +72 122+73 - 17' LT TO 122+73 - 37'35" LT	20-48-LF
(2") 123+80 - 17' LT TO 123+80 - 38'35" LT	21-48-LF
(1 1/2") 124+17 - 17' LT TO 124+17 - 40'38" RT	57-55-LF
(1 1/2") 124+19 - 17' LT TO 124+19 - 40' RT	57 LF
WATER SERVICE CONNECTION 2" WATER SERVICE CONNECTION 1 1/2"	
+72 122+73 - 17' LT	1 EA
123+80 - 17' LT	1 EA
124+17 - 17' LT	1 EA
124+17 - 17' LT	1 EA
124+19 - 17' LT	1 EA
CURB STOP AND BOX 2"	
+72 122+73 - 37'35" LT	1 EA
123+80 - 38'35" LT	1 EA
124+17 - 38' RT	1 EA
CURB STOP AND BOX 1 1/2"	
124+17 - 40' RT	1 EA
124+19 - 40' RT	1 EA
REMOVE HYDRANT	
122+40 - 42' LT	1 EA
SANITARY MANHOLE	
125+79 - 17' RT	1 EA
125+87 - 17' RT	1 EA
ABANDON MANHOLE	
124+34 - 35.3' RT	1 EA
125+87 - 35.3' RT	1 EA
SEWERMAIN, 24" PVC	
125+79 - 17' RT TO 126+00 - 17' RT	21 LF
125+79 - 17' RT TO 125+79 - 7' RT	10 LF
125+87 - 17' RT TO 125+87 - 35' RT	18 LF
GROUT 24" RCP	
124+34 - 35' RT TO 126+00 - 35.3' RT	166 LF



CONSTRUCTION NOTES

① REMOVED EXISTING HYDRANT ONCE 6" IS ABANDONED. TYPICAL ALL REMOVAL LOCATIONS.

② SET MH OVER EXISTING 24" RCP PIPE. DO NOT REMOVE 24" RCP WITHIN MANHOLE UNTIL NEW 24" PVC IS READY TO BE PUT IN SERVICE. REMOVE AND PLUG EXISTING 24" RCP WITH CONCRETE ONCE NEW 24" PVC IS IN SERVICE.

REV.	DATE	DESCRIPTION	BY
△	2/14/97	RECORD DRAWING	DMS

CITY OF MANDAN
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT #6-2, PHASE #

STA 122+00 TO STA 126+00

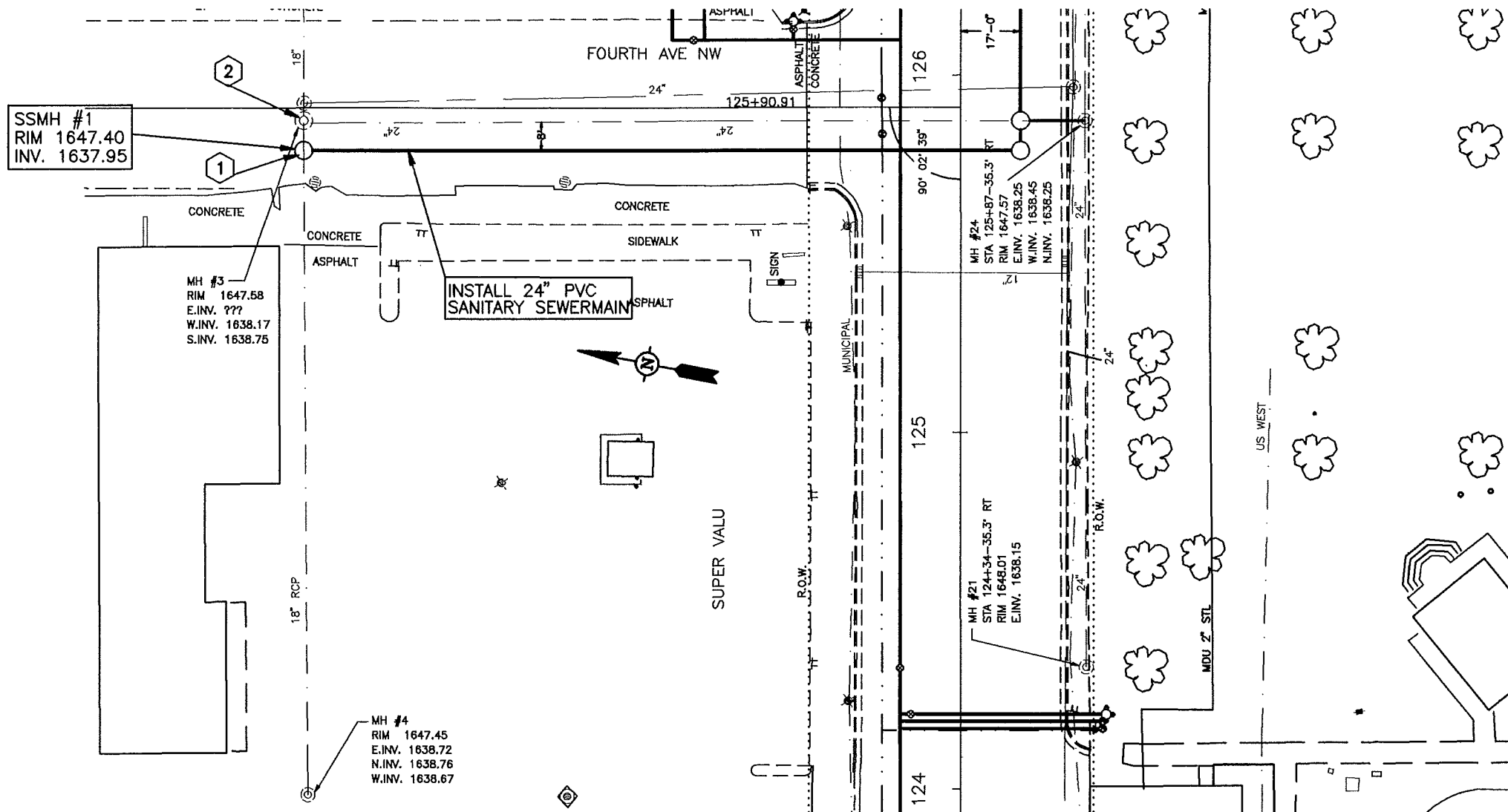
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
MINNEAPOLIS • FARO • MINNEAPOLIS

DRAWN BY: MJH
CHECKED BY: BPM
APPROVED BY: BPM

SCALE: 1" = 40'
DATE: MAY 17, 1995
PROJECT NO. 95834
SHEET 12 OF 29

Record Drawing



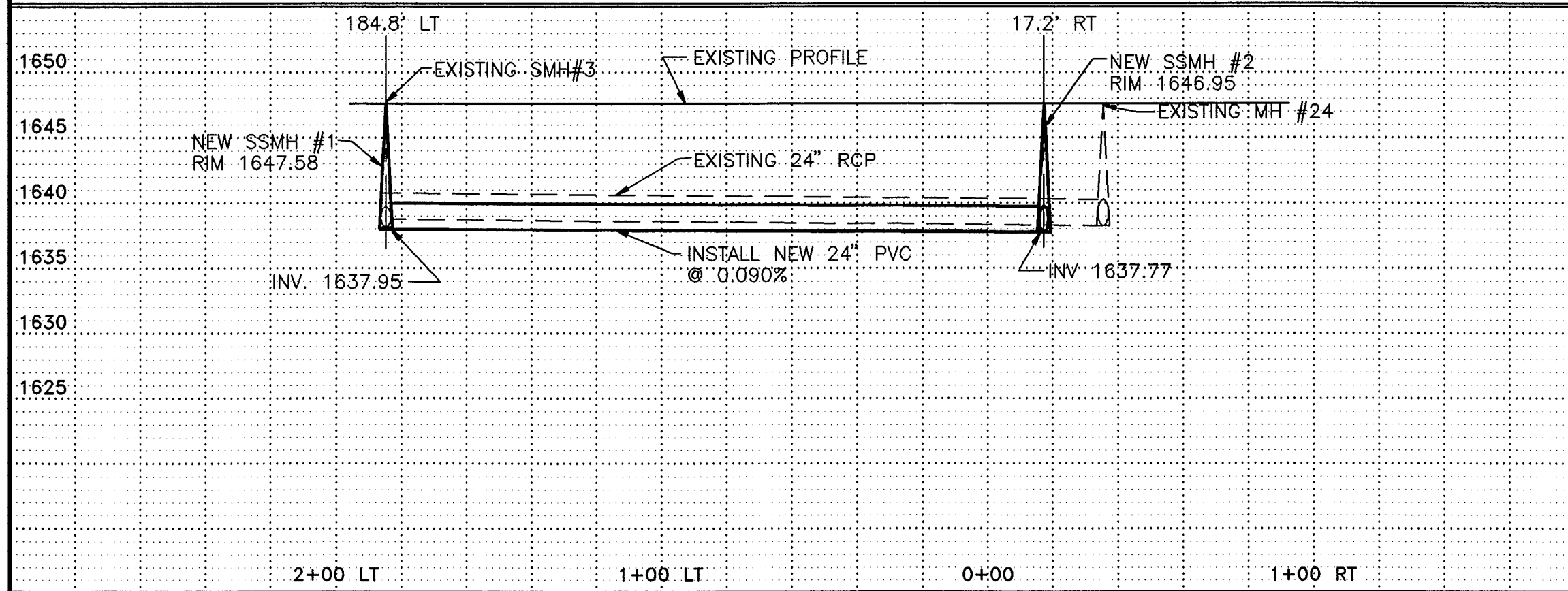


SANITARY MANHOLE	125+79 - 188' LT	1 EA
SEWERMAIN, 24" PVC	125+79 - 185' LT TO 125+79 - 17' RT	202 LF
REMOVE ASPHALT PAVEMENT	125+79 - 195' LT TO 125+79 - 25' LT	380 SY

CONSTRUCTION NOTES

- ① SET NEW MH OVER EXISTING 18" RCP. DO NOT BREAK EXISTING LINE UNTIL NEW 24" PVC READY TO BE PUT INTO SERVICE. GROUT INVERT PRIOR TO REMOVING 18" PIPE.
- ② PLUGGED ~~PLUG~~ EXISTING 24" RCP TO THE SOUTH ONCE NEW 24" PVC LINE IN SERVICE. COSTS INCIDENTAL.
- ③ VERTICALLY CUT FULL DEPTH ALL ASPHALT PAVEMENT PRIOR TO REMOVAL. REPLACE REMOVED PAVEMENT WITH 6" OF NEW ASPHALT PAVEMENT PLACED IN 2 - 3" LIFTS.

NEW PAVEMENT TO BE PLACED ON 6" OF CL5 MATERIAL OVER COMPACTED SUBGRADE. ALL COSTS FOR CL5 AND SUBGRADE PREPARATION INCIDENTAL TO OTHER ITEMS.



Record Drawing

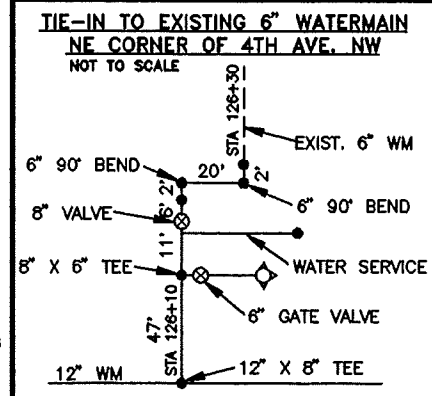
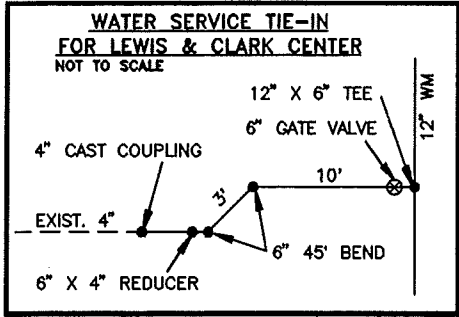
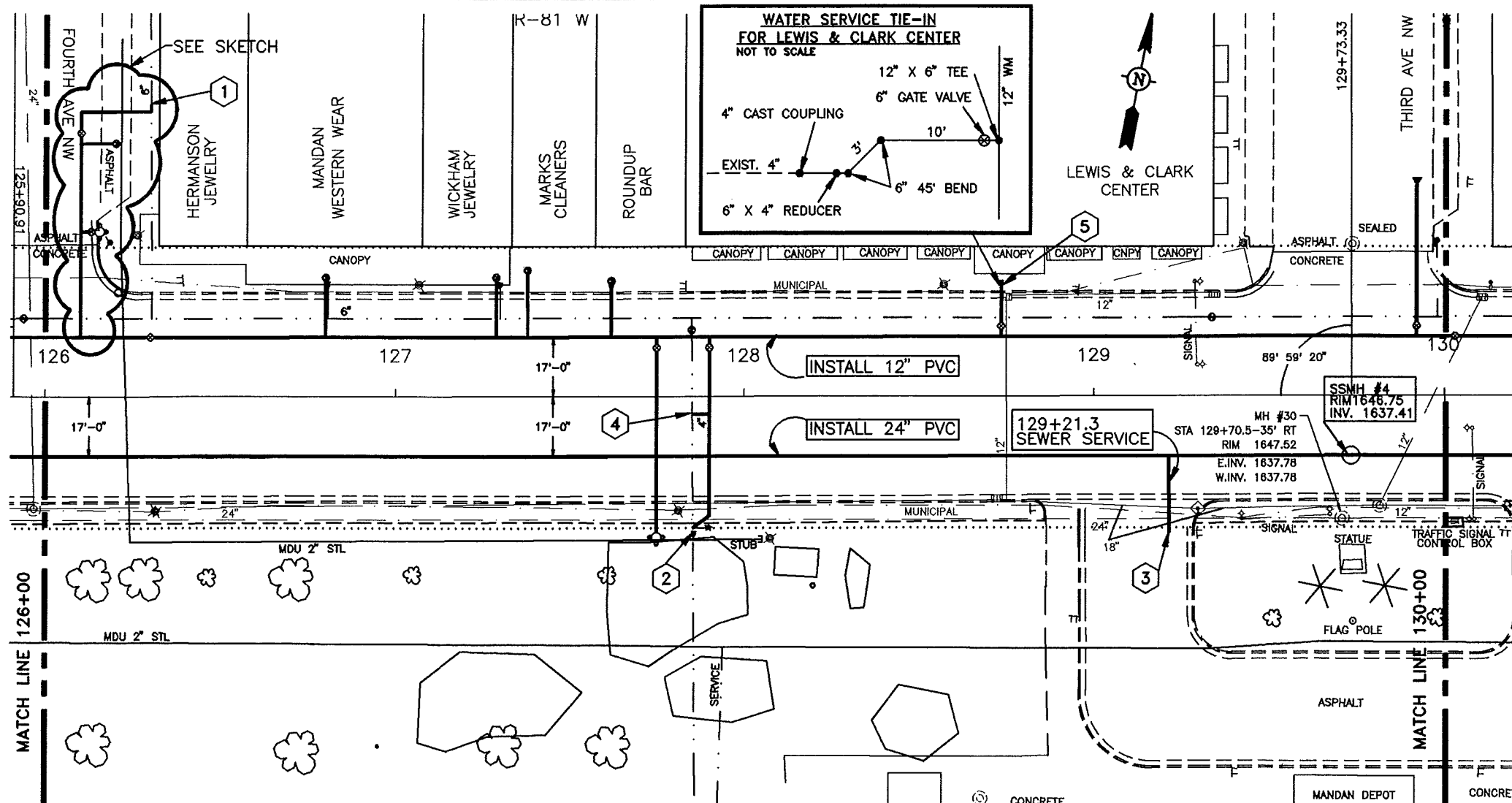
REV.	DATE	DESCRIPTION	BY
▲	2/14/97	RECORD DRAWING	DMS

CITY OF MANDAN
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II

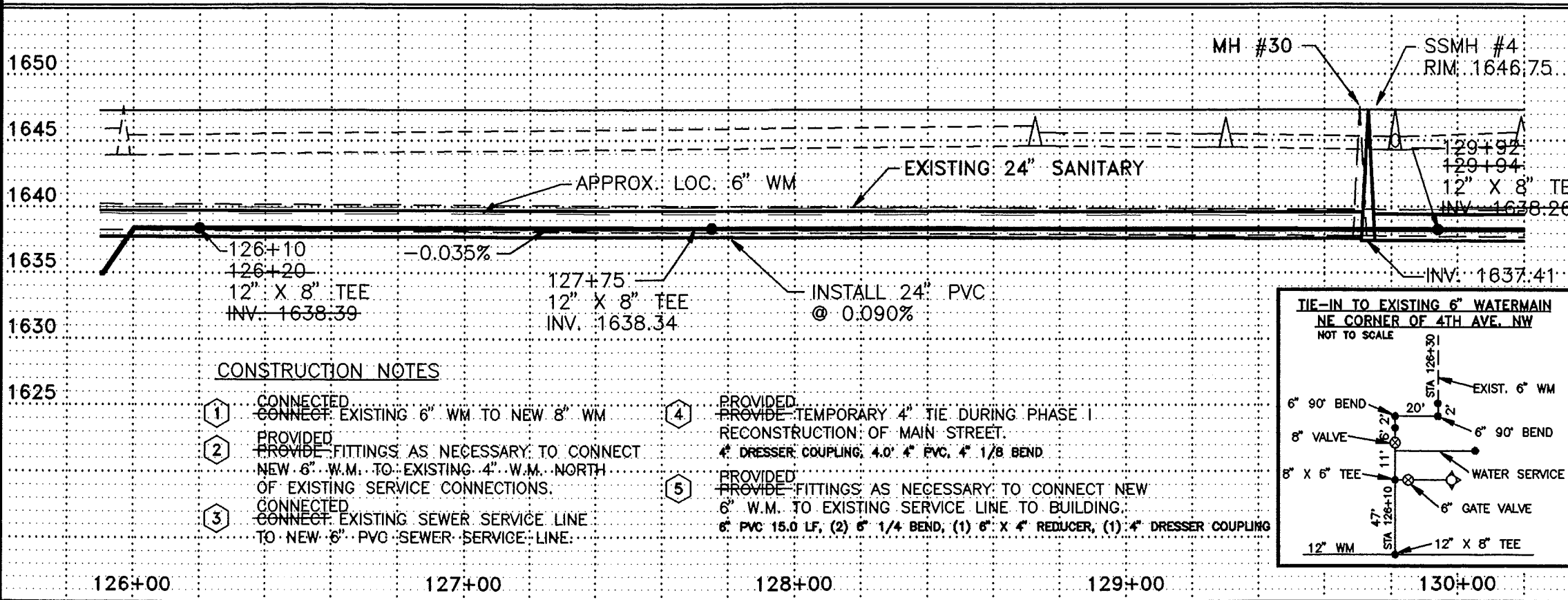
STA 125+79 - 185' LT TO STA 125+79 - 17' RT

ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
DESIGNER'S OFFICE MINNEAPOLIS

DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 13 of 29
APPROVED BY: BPM		



6" HYDRANT	
126+14 - 47' LT 1 EA	127+75 - 40' RT 1 EA
GATE VALVE AND BOX, 6"	
+13 126+47 - 47' LT 1 EA	127+90 - 14' LT 1 EA
127+75 - 14' LT 1 EA	128+73 - 20' LT 1 EA
GATE VALVE & BOX, 8"	
+10 126+20 - 75' LT 1 EA	126+47+30 17' LT 1 EA
129+94+92 20' LT 1 EA	129+94 - 17' LT 1 EA
GATE VALVE & BOX, 12"	
WATERMAIN, 6" PVC	
+10 126+14 - 47' LT TO 126+20+14 47' LT	4 - 6' LF
127+75 - 17' LT TO 127+75 - 40' RT	57 LF
127+90 - 17' LT TO 127+90 - 41' RT	58 LF
128+73 - 17' LT TO 128+73 - 32' RT	15 LF
128+10 - 17' LT TO 128+30 83' LT	20 LF
WATERMAIN, 8" PVC	
+10 126+20 - 17' LT TO 126+20 - 31' RT	64 LF
+92 129+94 - 17' LT TO 129+94 - 60' RT	43 LF
WATERMAIN, 12" PVC	
126+00 - 17' LT TO 130+00 - 17' LT	400 LF
FITTINGS, DUCTILE IRON	
+10 126+20 - 17' LT	12" X 8" TEE 123+37 LBS
+10 126+20 - 47' LT	8" X 6" TEE 80+73 LBS
+10 126+20 - 70' LT	8" X 6" REDUCER 40+32 LBS
127+75 - 17' LT	12" X 6" TEE 115+23 LBS
+27+85 5' RT	4" X 4" TEE LBS
127+90 - 5' RT	6" X 4" TEE 51 LBS
127+90 - 17' LT	12" X 6" TEE 123 LBS
127+90 - 41' RT	2 - 6" 1/8 BENDS 38 LBS
128+73 - 17' LT	12" X 6" TEE 115+23 LBS
+92 129+94 - 70' LT	8" PLUG 26+49 LBS
+92 129+94 - 17' LT	12" X 8" TEE 123+37 LBS
126+10-84' LT	6" 1/4 BEND 48 LBS
126+20-83' LT	6" 1/4 BEND 48 LBS
WATER SERVICE LINE 1-1/2" COPPER	
+80 126+84 - 17' LT TO 126+84 - 34' RT	17+46 LF
+29 127+34 - 17' LT TO 127+34 - 34' RT	17+46 LF
127+62 - 17' LT TO 127+62 - 33' RT	16 LF
126+10-72' LT TO 126+20 - 72' LT	14 LF
126+38-17' LT TO 127+38 - 36' RT	19 LF
WATER SERVICE CONNECTION 1-1/2"	
+80 126+84 - 17' LT	1 EA
+29 127+34 - 17' LT	1 EA
127+62 - 17' LT	1 EA
126+10-72' LT	1 EA
126+38-17' LT	1 EA (8" 1 1/2 SADDLE)
CURB STOP AND BOX 1-1/2"	
+80 126+84 - 34' RT	1 EA
+29 127+34 - 34' RT	1 EA
127+62 - 33' RT	1 EA
126+10-72' LT	1 EA
126+38-36' LT	1 EA
SEWERMAIN, 24" PVC	
126+00 TO 130+00	400LF
GROUT 24" RCP	
126+00 - 35' RT TO 130+00 - 35' RT	400LF
SANITARY MANHOLE ABANDON MANHOLE	
129+75 - 17' RT	1 EA
129+70.5 - 35' RT	1 EA
SANITARY SEWER SERVICE CONNECTION	
129+21 - 17' RT TO 37' RT	1 EA
REMOVE HYDRANT	
127+90 - 17' RT	1 EA
126+14 - 47' LT	1 EA
129+97 - 43' LT	1 EA



CONSTRUCTION NOTES

- 1 CONNECTED EXISTING 6" WM TO NEW 8" WM
- 2 PROVIDED FITTINGS AS NECESSARY TO CONNECT NEW 6" W.M. TO EXISTING 4" W.M. NORTH OF EXISTING SERVICE CONNECTIONS.
- 3 CONNECTED EXISTING SEWER SERVICE LINE TO NEW 6" PVC SEWER SERVICE LINE.
- 4 PROVIDED TEMPORARY 4" TIE DURING PHASE I RECONSTRUCTION OF MAIN STREET. 4" DRESSER COUPLING, 4.0' 4" PVC, 4" 1/8 BEND.
- 5 PROVIDED FITTINGS AS NECESSARY TO CONNECT NEW 6" W.M. TO EXISTING SERVICE LINE TO BUILDING. 6" PVC 15.0 LF, (2) 6" 1/4 BEND, (1) 6" X 4" REDUCER, (1) 4" DRESSER COUPLING

Record Drawing

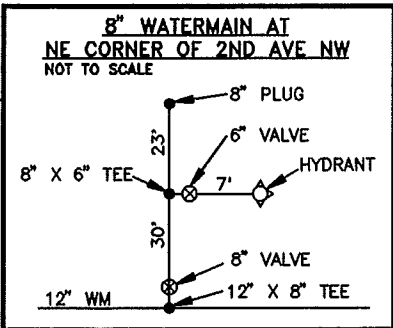
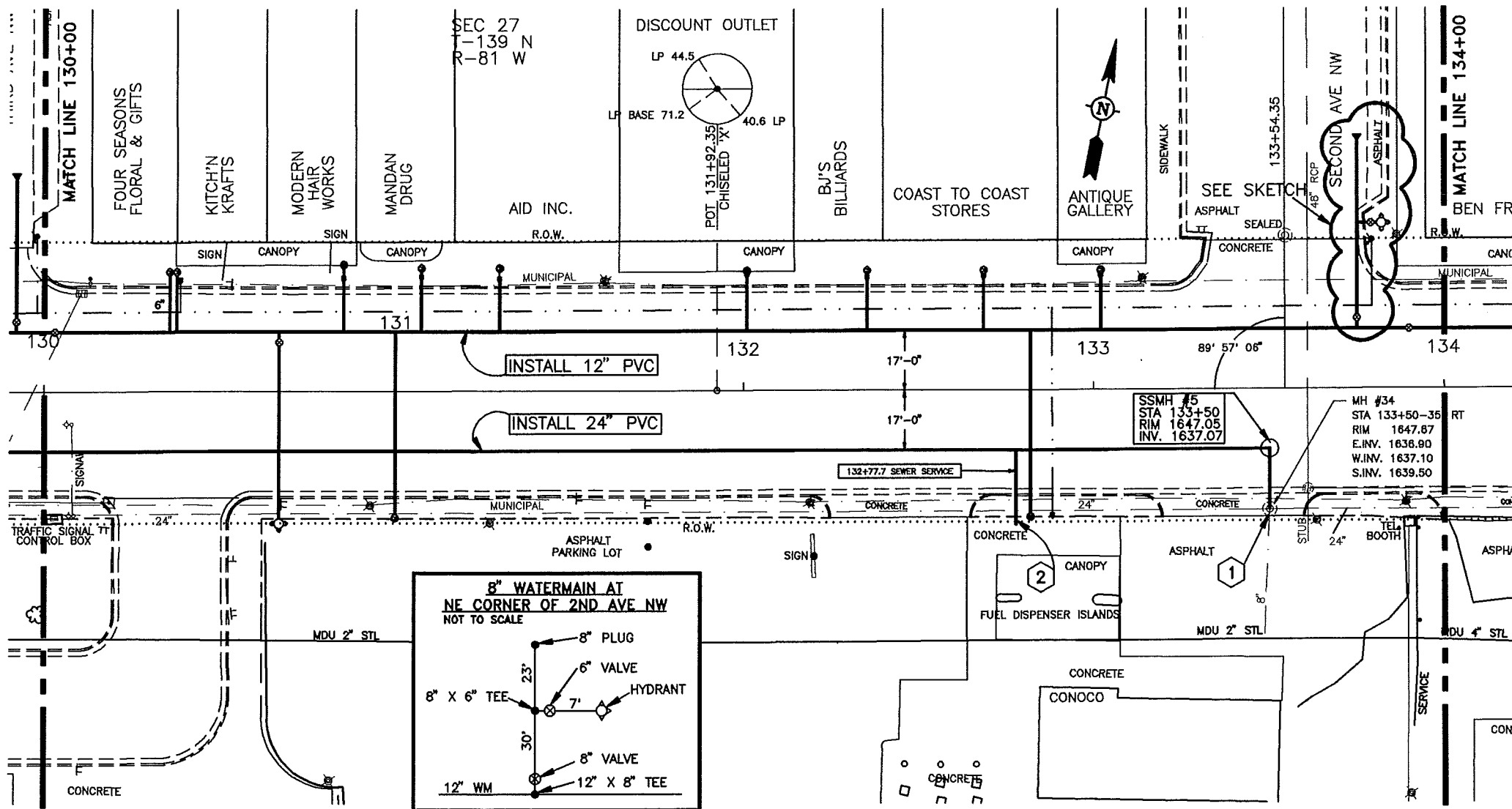
REV.	DATE	DESCRIPTION	DMS	BY
2/14/97		RECORD DRAWING		

CITY OF MANDAN
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II

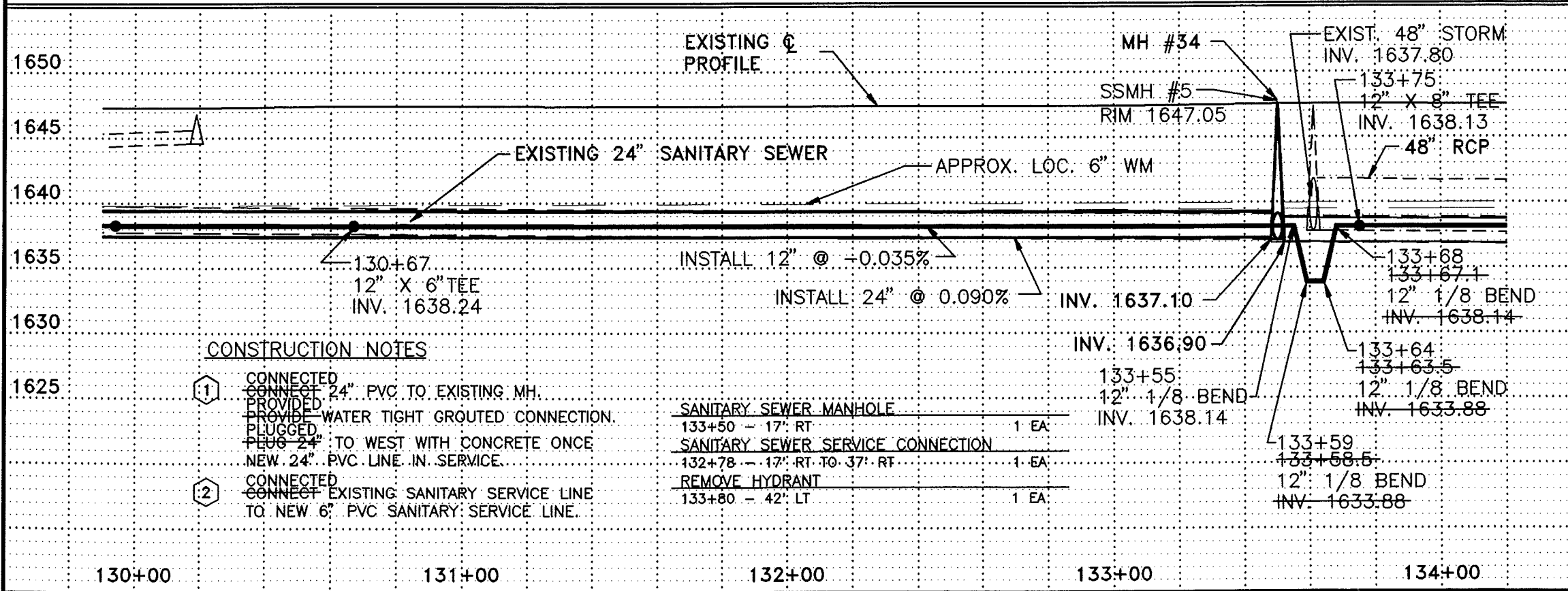
STA 126+00 TO STA 130+00

ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
2000 W. 13TH ST. SUITE 200, MANDAN, ND 58548

DRAWN BY: MJH SCALE: 1" = 40' PROJECT NO: 95834
CHECKED BY: BPM DATE: MAY 17, 1995 SHEET 14 OF 29
APPROVED BY: BPM



6" HYDRANT		REMOVED HYDRANT	
130+67 - 39.5' RT	1 EA	130+67 - 39.5' RT	1 EA
133+82 - 47' LT	1 EA		
GATE VALVE & BOX, 6"		GATE VALVE & BOX, 8"	
130+67 - 14' LT	1 EA	133+75 - 20' LT	1 EA
133+79 - 47' LT	1 EA		
GATE VALVE AND BOX, 12"			
+90 133+72 - 17' LT	1 EA		
130+03 - 17' LT	1 EA		
WATERMAIN, 6" PVC			
130+67 - 17' LT TO 130+67 - 39.5' RT	56.5 LF		
133+75 - 47' LT TO 133+82 - 47' LT	7 LF		
WATERMAIN, 8" PVC			
133+75 - 17' LT TO 133+75 - 70' LT	53 LF		
WATERMAIN, 12" PVC			
130+00 - 17' LT TO 134+00 - 17' LT	400 LF		
FITTINGS, DUCTILE IRON			
130+67 - 17' LT	12" X 6" TEE	115-123	LBS
130+67 - 12' RT	6" 1/8 BEND	38-34	LBS
130+67 - 15.5' RT	6" 1/8 BEND	38-34	LBS
133+55 - 17' LT	12" 1/8 BEND	111-92	LBS
+59 133+58.5 - 17' LT	12" 1/8 BEND	111-92	LBS
+64 133+63.5 - 17' LT	12" 1/8 BEND	111-92	LBS
+68 133+67.1 - 17' LT	12" 1/8 BEND	111-92	LBS
133+75 - 17' LT	12" X 8" TEE	123-137	LBS
133+75 - 47' LT	8" X 6" TEE	80-73	LBS
133+75 - 70' LT	8" PLUG	26	LBS
WATER SERVICE LINE 1-1/2" COPPER			
+36 130+39 - 17' LT TO 130+39 34' 33" LT	17	46	LF
130+85 - 17' LT TO 130+85 36' 33" LT	19	46	LF
131+08 - 17' LT TO 131+08 35' 33" LT	18	46	LF
131+30 - 17' LT TO 131+30 35' 33" LT	18	46	LF
132+01 - 17' LT TO 132+01 34' 33" LT	17	46	LF
132+35 - 17' LT TO 132+35 34' 33" LT	17	46	LF
132+69 - 17' LT TO 132+69 34' 33" LT	17	46	LF
133+02 - 17' LT TO 133+02 34' 33" LT	17	46	LF
130+38 - 17' LT TO 130+38 - 34' LT	17		LF
WATER SERVICE LINE 2" COPPER			
131+00 - 17' LT TO 131+00 36' 40" RT	53	57	LF
+82 132+88 - 17' LT TO 132+88 - 36' RT	53		LF
WATER SERVICE CONNECTION 1-1/2"			
130+39 36" LT	1 EA	132+01 - 17' LT	1 EA
130+85 - 17' LT	1 EA	132+35 - 17' LT	1 EA
131+08 - 17' LT	1 EA	132+69 - 17' LT	1 EA
131+30 - 17' LT	1 EA	133+02 - 17' LT	1 EA
130+38 - 17' LT	1 EA		
WATER SERVICE CONNECTION, 2"			
131+00 - 17' LT	1 EA		
+82 132+88 - 17' LT	1 EA		
CURB STOP AND BOX 1-1/2"			
130+39 36" LT	1 EA	132+01 - 33' 34" LT	1 EA
130+85 - 33' 38" LT	1 EA	132+35 - 33' 34" LT	1 EA
131+08 - 33' 35" LT	1 EA	132+69 - 33' 34" LT	1 EA
131+30 - 33' 35" LT	1 EA	133+02 - 33' 34" LT	1 EA
130+38 - 34' LT	1 EA		
CURB STOP AND BOX 2"			
131+00 - 46' RT	1 EA		
+82 132+88 - 36' RT	1 EA		
SANITARY SEWER, 24" PVC			
130+00 - 35' RT TO 133+50 - 35' RT	368		LF
130+00 - 35' RT TO 133+50 - 35' RT	350		LF



- CONSTRUCTION NOTES**
- CONNECTED TO EXISTING 24" PVC TO EXISTING MH. PROVIDE WATER TIGHT GROUTED CONNECTION. PLUGGED TO WEST WITH CONCRETE ONCE NEW 24" PVC LINE IN SERVICE.
 - CONNECTED TO EXISTING SANITARY SERVICE LINE TO NEW 6" PVC SANITARY SERVICE LINE.

SANITARY SEWER MANHOLE	
133+50 - 17' RT	1 EA
SANITARY SEWER SERVICE CONNECTION	
132+78 - 17' RT TO 37' RT	1 EA
REMOVE HYDRANT	
133+80 - 42' LT	1 EA

Record Drawing

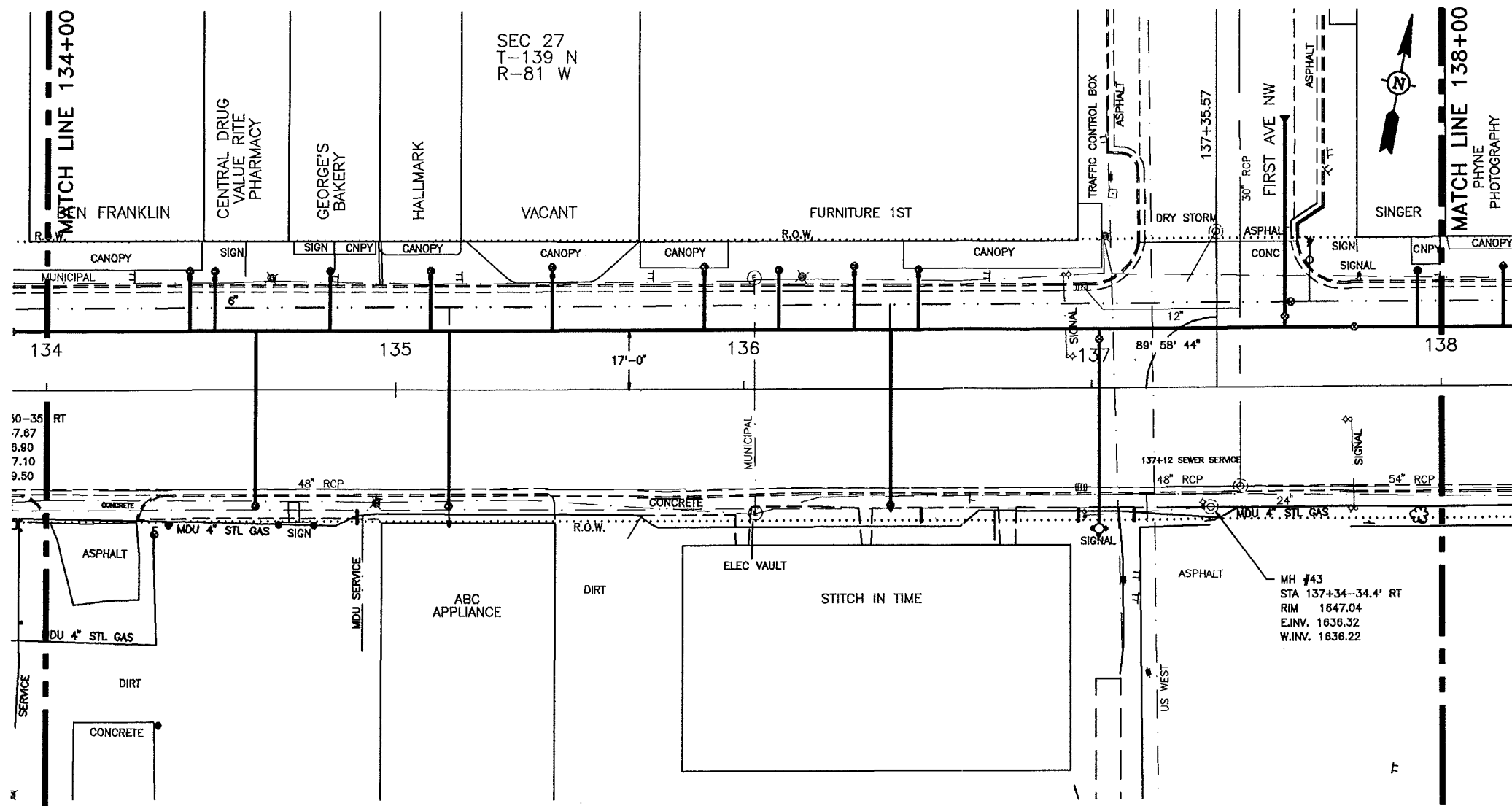
REV.	DATE	DESCRIPTION	BY
2/14/97		RECORD DRAWING	DMS

CITY OF MANDAN
DISTRICT #99, WATER AND SEWER IMPROVEMENT PROJECT 88-2, PHASE II

STA 130+00 TO STA 134+00

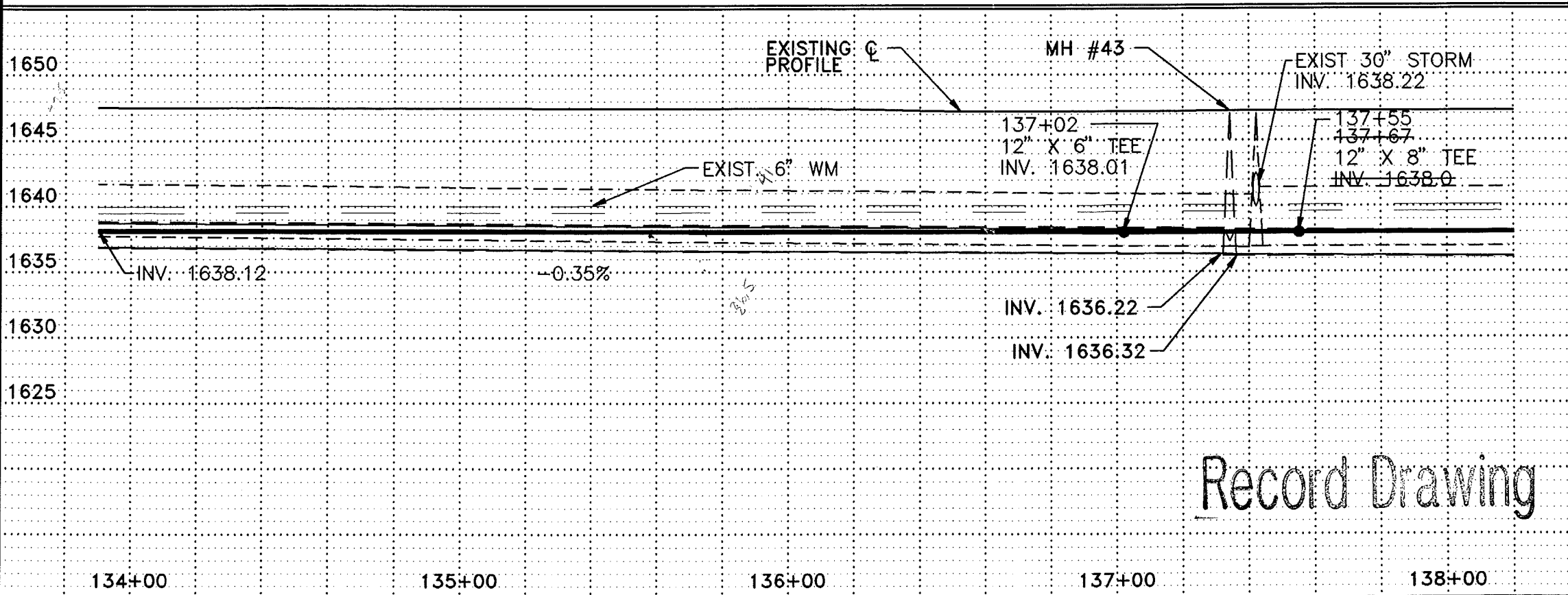
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
RESEARCH PARK & MINNEAPOLIS

DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 15 OF 29



6" HYDRANT

137+02 - 40' 39.5' RT	1 EA	3'-0" EXTENSION
GATE VALVE AND BOX, 6"		
137+02 - 14' LT	1 EA	
GATE VALVE AND BOX, 8"		
+55 137+67 - 20' LT	1 EA	
GATE VALVE AND BOX, 12"		
+75 137+64 - 17' LT	1 EA	
WATERMAIN, 6" PVC		
137+02 - 17' LT TO 137+02 40' 39.5' RT 57' 56.5' LF		
WATERMAIN, 8" PVC		
+55 137+67 - 17' LT TO 137+67 - 75' LT	58 LF	
WATERMAIN, 12" PVC		
134+00 - 17' LT TO 138+00 - 17' LT	400 LF	
FITTINGS, DUCTILE IRON		
137+02 12' 21.5' RT	6" 1/8 BEND	38 3/4 LBS
137+02 15' 25.7' RT	6" 1/8 BEND	38 3/4 LBS
137+02 - 17' LT	12" X 6" TEE	115+23 LBS
+37+37.7 - 17' LT	12" 1/8 BEND	92 LBS
+37+40.5 - 17' LT	12" 1/8 BEND	92 LBS
+37+45.5 - 17' LT	12" 1/8 BEND	92 LBS
+37+48.3 - 17' LT	12" 1/8 BEND	92 LBS
+55 137+67 - 17' LT	12" X 8" TEE	123+37 LBS
+55 137+67 - 75' LT	8" PLUG	26 LBS
WATER SERVICE LINE 1-1/2" COPPER		
134+41 - 17' LT TO 134+41 34' 33" LT	17 1/6 LF	
134+48 - 17' LT TO 134+48 34' 33" LT	17 1/6 LF	
134+60 - 17' LT TO 134+60 33' 36" RT	50 5/8 LF	
134+81 - 17' LT TO 134+81 34' 33" LT	17 1/6 LF	
135+10 - 17' LT TO 135+10 34' 33" LT	17 1/6 LF	
135+15 - 17' LT TO 135+15 33' 39" RT	50 5/8 LF	
135+45 - 17' LT TO 135+45 35' 33" LT	18 1/6 LF	
135+89 - 17' LT TO 135+89 35' 33" LT	18 1/6 LF	
136+32 - 17' LT TO 136+32 35' 33" RT	18 1/6 LF	
136+42 - 17' LT TO 136+42 33' 35" RT	50 5/8 LF	
136+50 - 17' LT TO 136+50 34' 33" LT	17 1/6 LF	
137+93 - 17' LT TO 137+93 34' 33" LT	17 1/6 LF	
138+10 - 17' LT TO 138+10 - 34' LT	17 LF	
WATER SERVICE CONNECTION 1-1/2"		
134+41 - 17' LT	1 EA	
134+48 - 17' LT	1 EA	
134+60 - 17' LT	1 EA	
134+81 - 17' LT	1 EA	
135+10 - 17' LT	1 EA	
135+15 - 17' LT	1 EA	
135+45 - 17' LT	1 EA	
135+89 - 17' LT	1 EA	
136+32 - 17' LT	1 EA	
136+42 - 17' LT	1 EA	
136+50 - 17' LT	1 EA	
137+93 - 17' LT	1 EA	
138+10 - 17' LT	1 EA	



134+41 - 17' LT	1 EA
134+48 - 17' LT	1 EA
134+60 - 17' LT	1 EA
134+81 - 17' LT	1 EA
135+10 - 17' LT	1 EA
135+15 - 17' LT	1 EA
135+45 - 17' LT	1 EA
135+89 - 17' LT	1 EA
136+32 - 17' LT	1 EA
136+42 - 17' LT	1 EA
136+50 - 17' LT	1 EA
137+93 - 17' LT	1 EA
138+10 - 17' LT	1 EA
CURB STOP AND BOX 1-1/2"	
134+41 34' 33" LT	1 EA
134+48 34' 33" RT	1 EA
134+60 33' 36" RT	1 EA
134+81 34' 33" LT	1 EA
135+10 34' 33" LT	1 EA
135+15 33' 39" LT RT	1 EA
135+45 35' 33" LT	1 EA
135+89 35' 33" LT	1 EA
136+32 35' 33" LT	1 EA
136+42 33' 35" RT	1 EA
136+50 34' 33" LT	1 EA
137+93 34' 33" LT	1 EA
138+10 - 34' LT	1 EA
REMOVE HYDRANT	
137+63 - 41' LT	1 EA

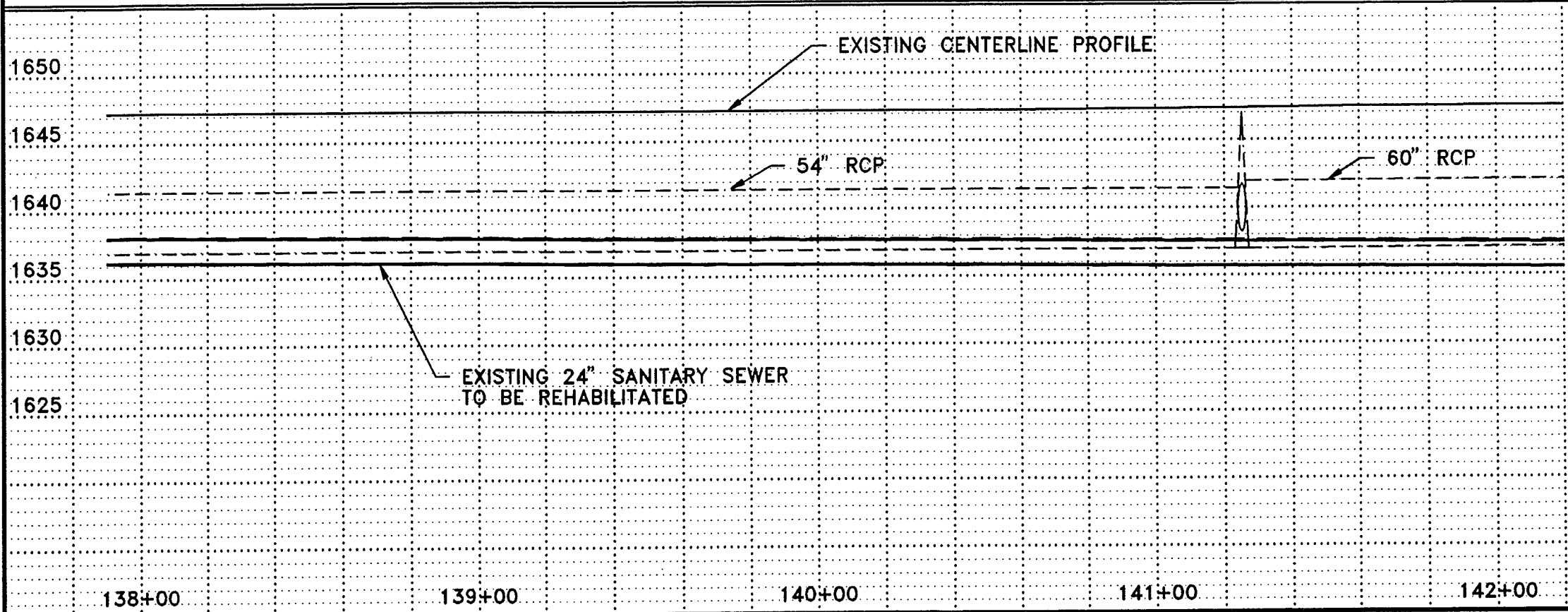
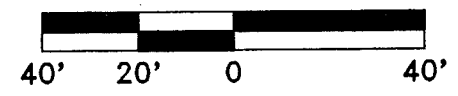
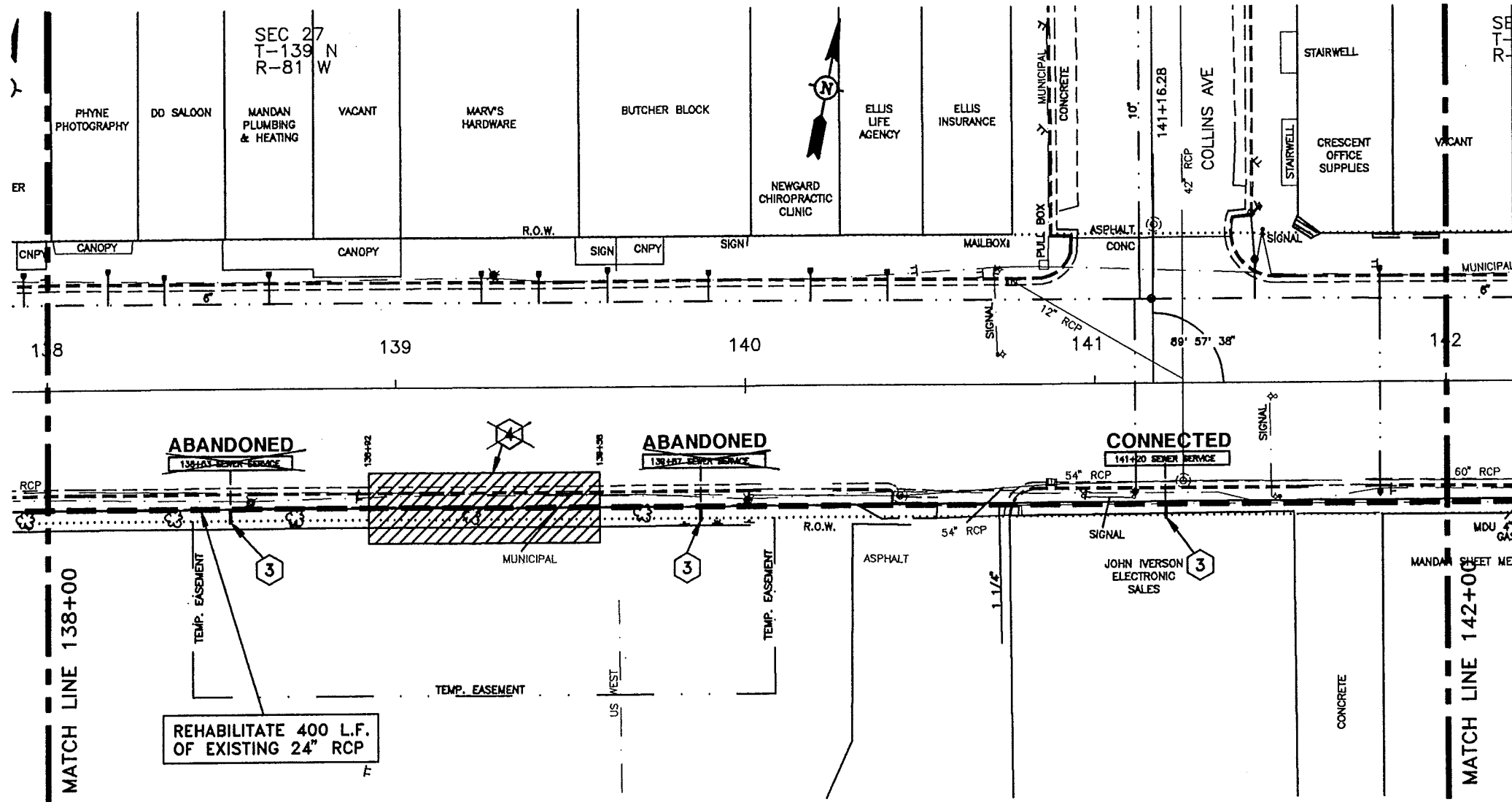
2/14/97	RECORD DRAWING	DMS	
REV.	DATE	DESCRIPTION	BY
CITY OF MANDAN			
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II			
STA 134+00 TO STA 138+00			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS			
RESOURCES • FARGO • MINNEAPOLIS			
DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 16 of 29	
APPROVED BY: BPM			

Record Drawing

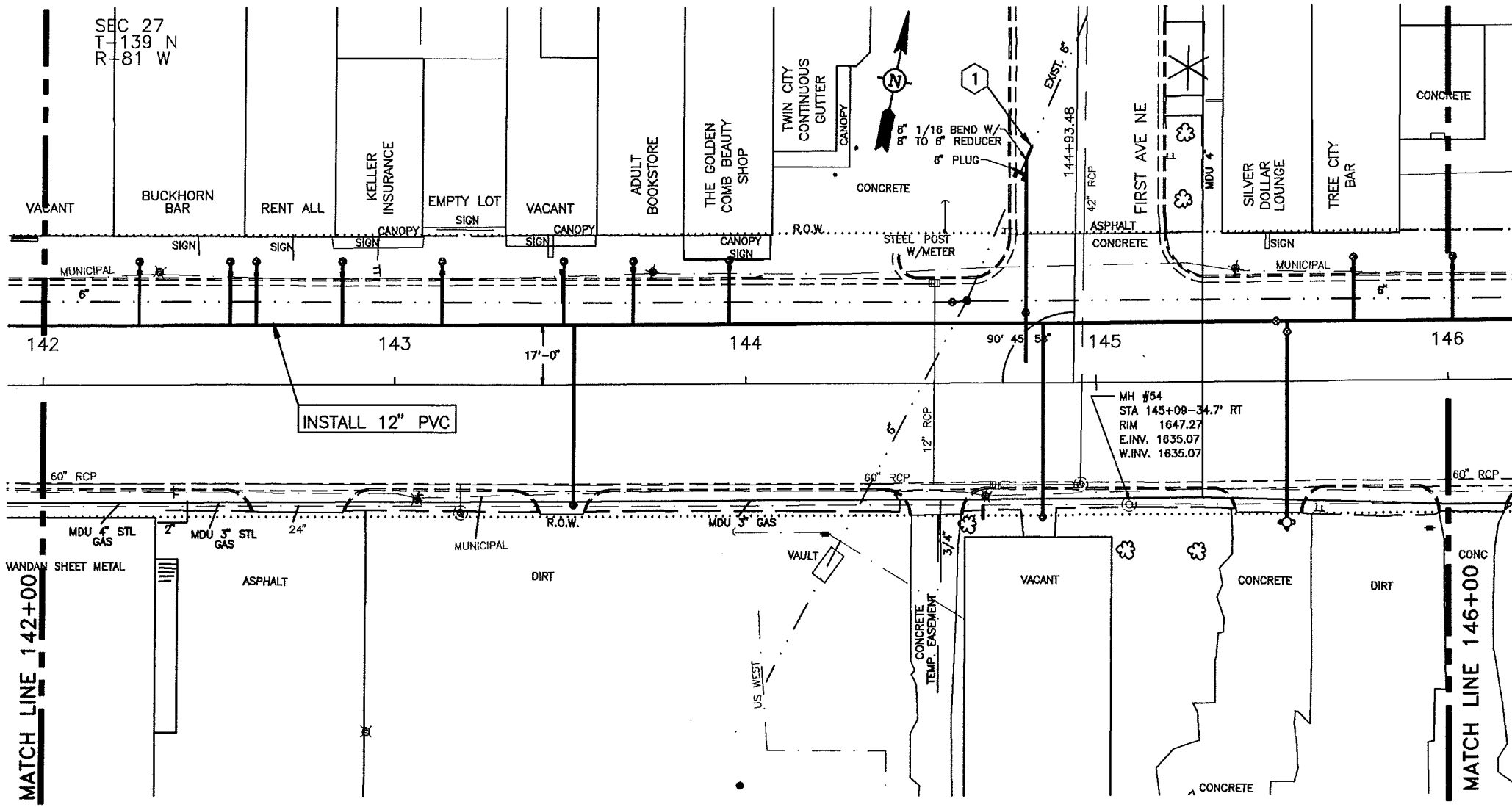
134+00 135+00 136+00 137+00 138+00

CONSTRUCTION NOTES

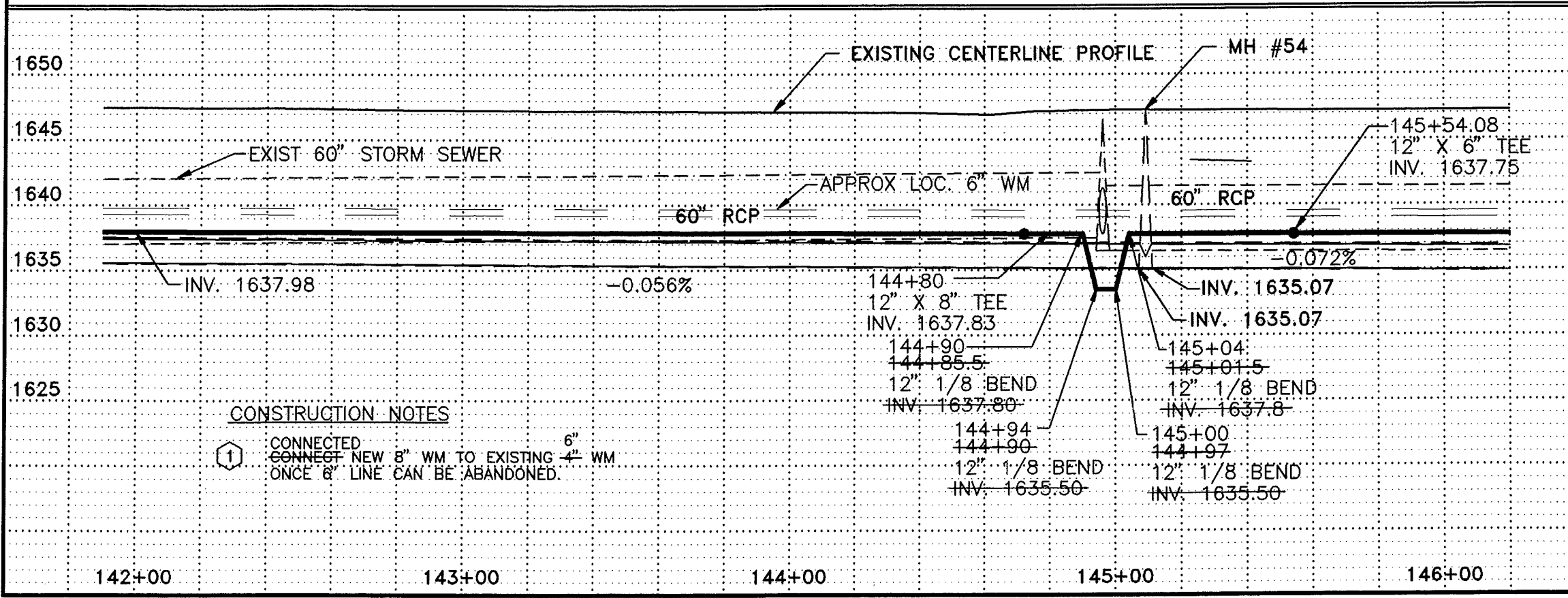
- ① CONTRACTOR TO VERIFY LOCATION OF ALL PUBLIC AND PRIVATE UTILITIES.
- ② REHABILITATE MANHOLE IN ACCORDANCE WITH SPECIFICATIONS.
- ③ MAKE SANITARY SEWER CONNECTION AS PER DETAIL.
- ④ INSERTION PIT AS PER DETAIL.



REV.	DATE	DESCRIPTION	BY
11/96		RECORD DRAWING	
CITY OF MANDAN DISTRICT #39, SEWER IMPROVEMENT PROJECT 98-2, PHASE I			
PLAN & PROFILE			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS MINNAPOLIS, ILLINOIS & MINNEAPOLIS, MINNESOTA			
DRAWN BY: MJH	SCALE: AS SHOWN	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 6 of	
APPROVED BY: BPM			



6" HYDRANT				
145+54.08	-40'39.5'	RT	1 EA	
GATE VALVE AND BOX, 6"				
145+54.08	-14'	LT	1 EA	
GATE VALVE AND BOX, 8"				
144+80	-20'	LT	1 EA	
GATE VALVE AND BOX, 12"				
145+51	-17'	LT	1 EA	
WATERMAIN, 6" PVC				
145+54.08	-17'	LT TO 145+54.08	-40'39.5' RT 57'56.5' LF	
WATERMAIN, 8" PVC				
144+80	-17'	LT TO 144+74	+81'57'70" LT 50'53' LF	
WATERMAIN, 12" PVC				
142+00	-17'	LT TO 146+00	-17' LT 400 LF	
FITTINGS, DUCTILE IRON				
144+80	-17'	LT	12" X 8" TEE 123+137 LBS	
144+80	-63'50"	LT	1-2-8" 1/8 BENDS 51-90 LBS	
144+80	-67'50"	LT	8" TO 6" REDUCER 32-29 LBS	
+90	144+85.5	-17'	LT 12" 1/8 BEND 111-92 LBS	
+94	144+90	-17'	LT 12" 1/8 BEND 111-92 LBS	
145+00	144+97	-17'	LT 12" 1/8 BEND 111-92 LBS	
+04	145+01.5	-17'	LT 12" 1/8 BEND 111-92 LBS	
145+54.08	-17'	LT	12" X 6" TEE 115+123 LBS	
145+54.08	-12'21"	RT	6" 1/8 BEND 38-39 LBS	
145+54.08	-17'25"	RT	6" 1/8 BEND 38-39 LBS	
145+54.08	-40'	RT	6" 1/4 BEND 48 LBS	
WATER SERVICE LINE 1-1/2" COPPER				
142+27	-17'	LT TO 142+27	35'33" LT 18+16 LF	
142+53	-17'	LT TO 142+63	35'33" LT 18+16 LF	
142+60	-17'	LT TO 142+60	35'33" LT 18+16 LF	
142+85	-17'	LT TO 142+85	35'33" LT 18+16 LF	
143+13	-17'	LT TO 143+13	35'33" LT 18+16 LF	
+48	143+47	-17'	LT TO 143+47	35'33" LT 18+16 LF
+51	143+50	-17'	LT TO 143+50	34'37" RT 51+54 LF
143+68	-17'	LT TO 143+68	35'33" LT 18+16 LF	
143+95	-17'	LT TO 143+95	35'33" LT 18+16 LF	
+85	144+90	-17'	LT TO 144+90	35'33" RT 55+54 LF
145+73	-17'	LT TO 145+73	35'33" LT 18+16 LF	
WATER SERVICE CONNECTION 1-1/2"				
142+27	-17'	LT	1 EA	
142+53	-17'	LT	1 EA	
142+60	-17'	LT	1 EA	
142+85	-17'	LT	1 EA	
143+13	-17'	LT	1 EA	
+48	143+47	-17'	LT 1 EA	
+51	143+50	-17'	LT 1 EA	
143+68	-17'	LT	1 EA	
143+95	-17'	LT	1 EA	
+85	144+90	-17'	LT 1 EA	
145+73	-17'	LT	1 EA	
CURB STOP AND BOX 1-1/2"				
142+27	35'33"	LT	1 EA	
142+53	35'33"	LT	1 EA	
142+60	35'33"	LT	1 EA	
142+85	35'33"	LT	1 EA	
143+13	35'33"	LT	1 EA	
+48	143+47	35'33"	LT 1 EA	
+51	143+50	34'37"	RT 1 EA	
143+68	35'33"	LT	1 EA	
143+95	35'33"	LT	1 EA	
+85	144+90	35'33"	RT 1 EA	
145+73	35'33"	LT	1 EA	



CONSTRUCTION NOTES

1. CONNECTED TO EXISTING 6" WM ONCE 8" LINE CAN BE ABANDONED.

Record Drawing

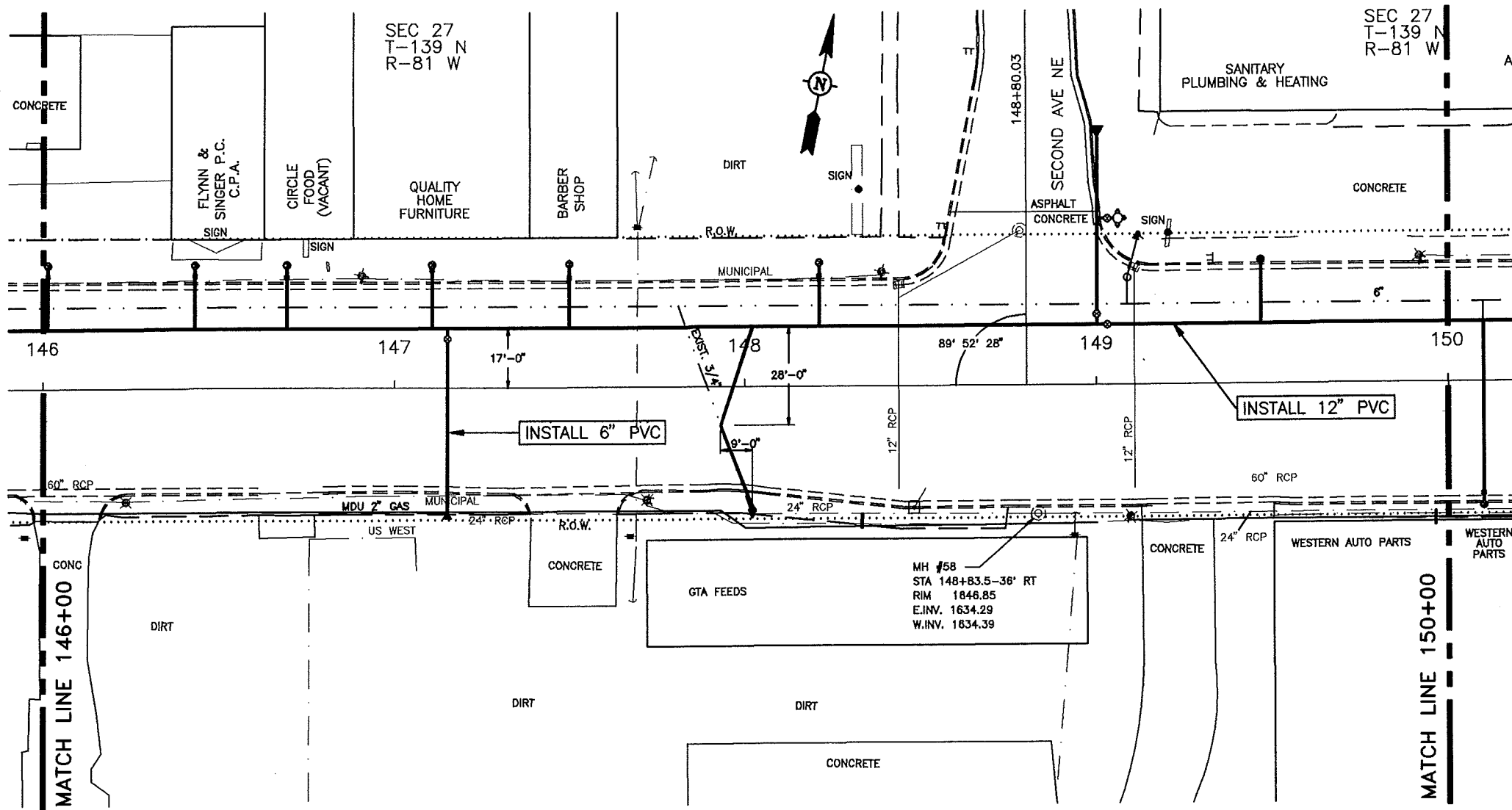
REV.	DATE	DESCRIPTION	BY
2/14/97		RECORD DRAWING	DMS

CITY OF MANDAN
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT #6-2, PHASE II

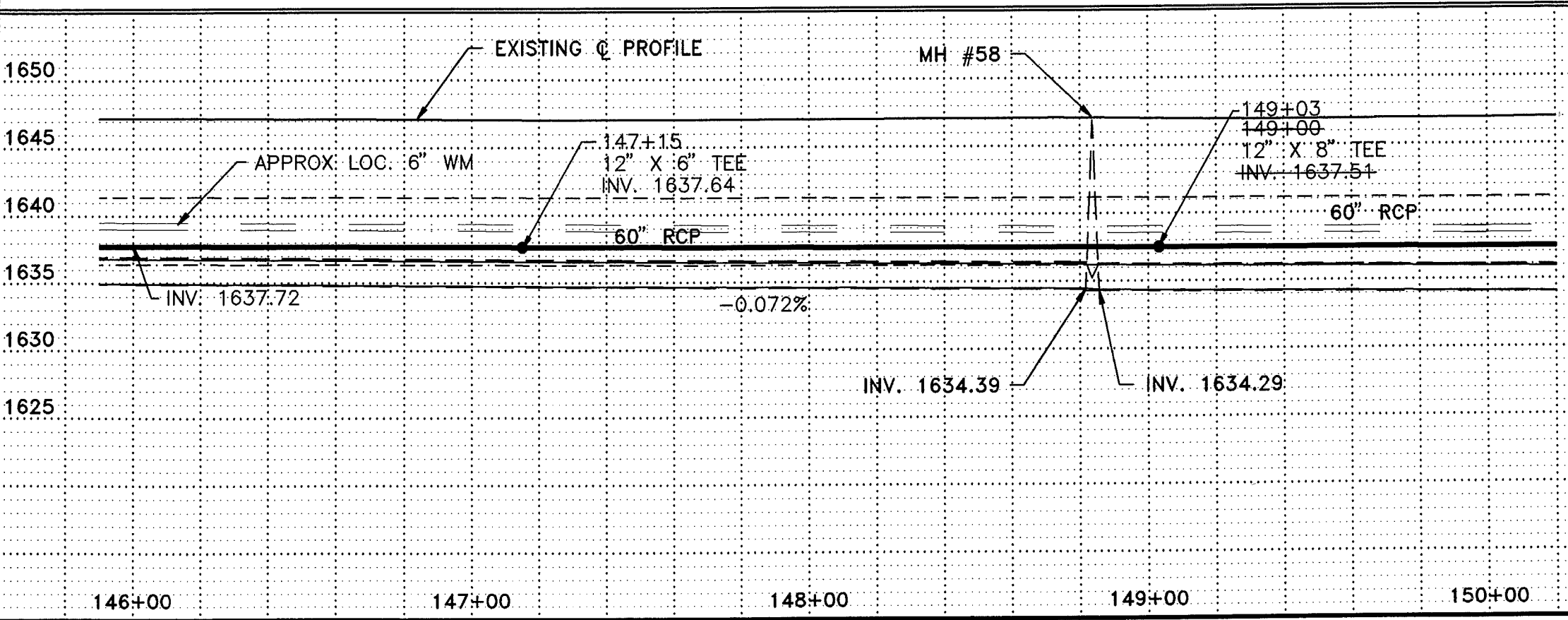
STA 142+00 TO STA 146+00

ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
MINNEAPOLIS • ST. PAUL • MINNEAPOLIS

DRAWN BY: M.J.H. SCALE: 1" = 40' PROJECT NO. 95834
CHECKED BY: BPM DATE: MAY 17, 1995 SHEET 18 of 29
APPROVED BY: BPM

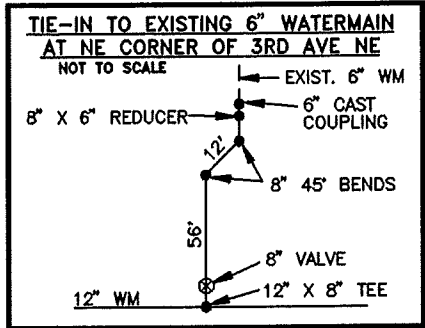
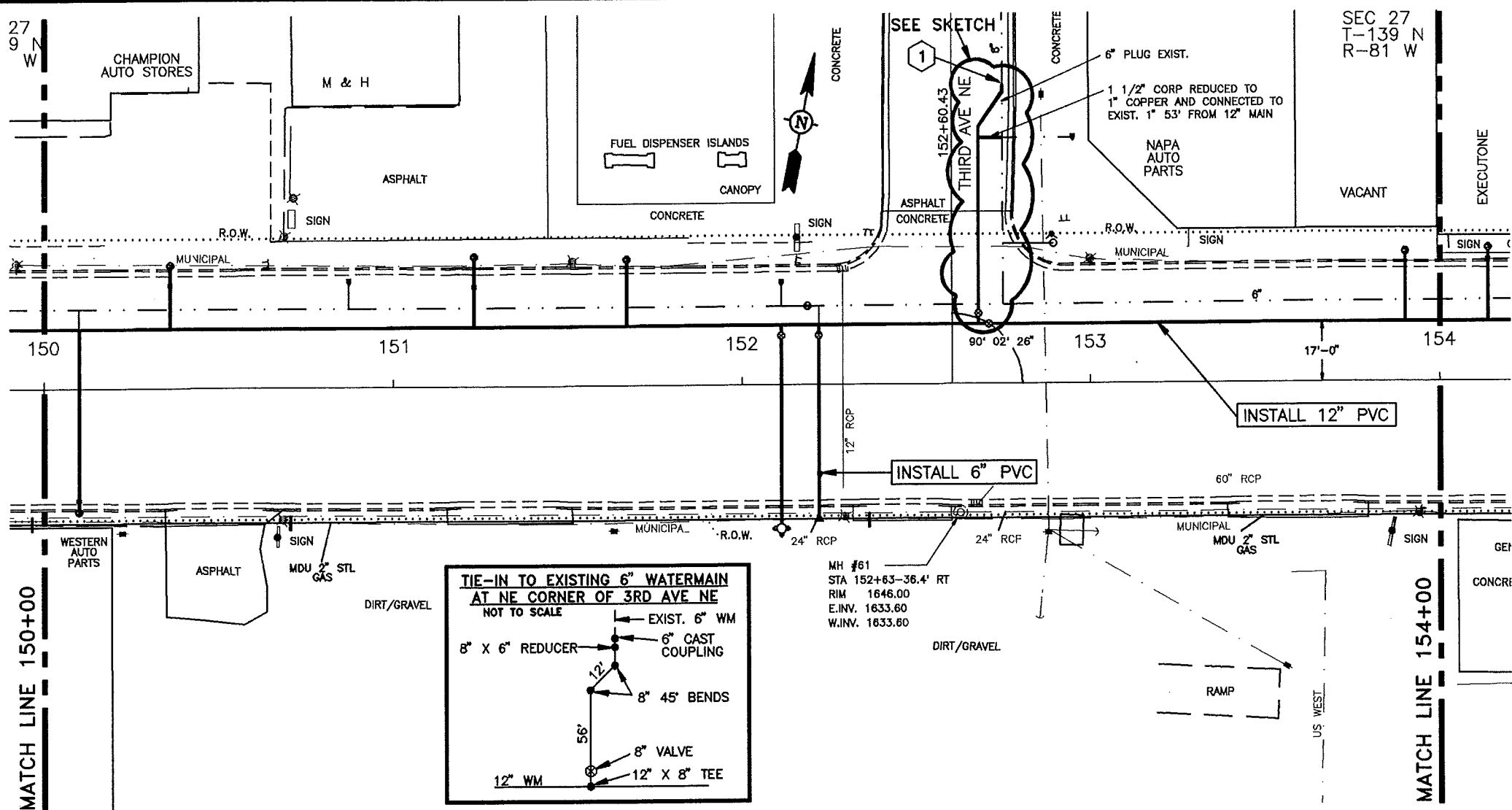


6" HYDRANT	
149+06 - 47' LT	1 EA
GATE VALVE AND BOX, 6"	
147+15 - 14' LT	1 EA
149+03 - 47' LT	1 EA
GATE VALVE AND BOX, 8"	
149+00 - 20' LT	1 EA
GATE VALVE AND BOX, 12"	
148+97 - 17' LT	1 EA
WATERMAIN, 6" PVC	
147+15 - 17' LT TO 147+15	35' 37" RT 52 54 LF
149+00 - 47' LT TO 149+06	6 LF
WATERMAIN, 8" PVC	
149+00 - 17' LT TO 149+00 - 70' LT	53 LF
WATERMAIN, 12" PVC	
146+00 - 17' LT TO 150+00 - 17' LT	400 LF
FITTINGS, DUCTILE IRON	
147+15 - 17' LT	12" X 6" TEE 115+23 LBS
147+15 - 9' 25" RT	2 - 6" 1/8 BENDS 38 62 LBS
147+15 - 35' 37" RT	6" PLUG 18 15 LBS
149+00 - 17' LT	12" X 8" TEE 123+37 LBS
149+00 - 47' LT	8" X 6" TEE 80 73 LBS
149+00 - 70' LT	8" PLUG 25 26 LBS
WATER SERVICE LINE 1-1/2" COPPER	
146+01 - 17' LT TO 146+01	35' 33" LT 18 16 LF
146+43 - 17' LT TO 146+43	35' 33" LT 18 16 LF
146+70 - 17' LT TO 146+70	35' 33" LT 18 16 LF
147+11 - 17' LT TO 147+11	35' 33" LT 18 16 LF
147+50 - 17' LT TO 147+50	35' 33" LT 18 16 LF
148+02 - 17' LT TO 148+02	35' 37" RT 52 54 LF
148+21 - 17' LT TO 148+21	35' 33" LT 18 16 LF
149+47 - 17' LT TO 149+47	35' 34" LT 18 17 LF
WATER SERVICE CONNECTION 1-1/2"	
146+01 - 17' LT	1 EA
146+43 - 17' LT	1 EA
146+70 - 17' LT	1 EA
147+11 - 17' LT	1 EA
147+50 - 17' LT	1 EA
148+02 - 17' LT	1 EA
148+21 - 17' LT	1 EA
149+47 - 17' LT	1 EA
CURB STOP AND BOX 1-1/2"	
146+01	35' 33" LT 1 EA
146+43	35' 33" LT 1 EA
146+70	35' 33" LT 1 EA
147+11	35' 33" LT 1 EA
147+50	35' 33" LT 1 EA
148+02	35' 37" RT 1 EA
148+21	35' 33" LT 1 EA
149+47	35' 34" LT 1 EA
REMOVE HYDRANT	
149+11 - 42' LT	1 EA

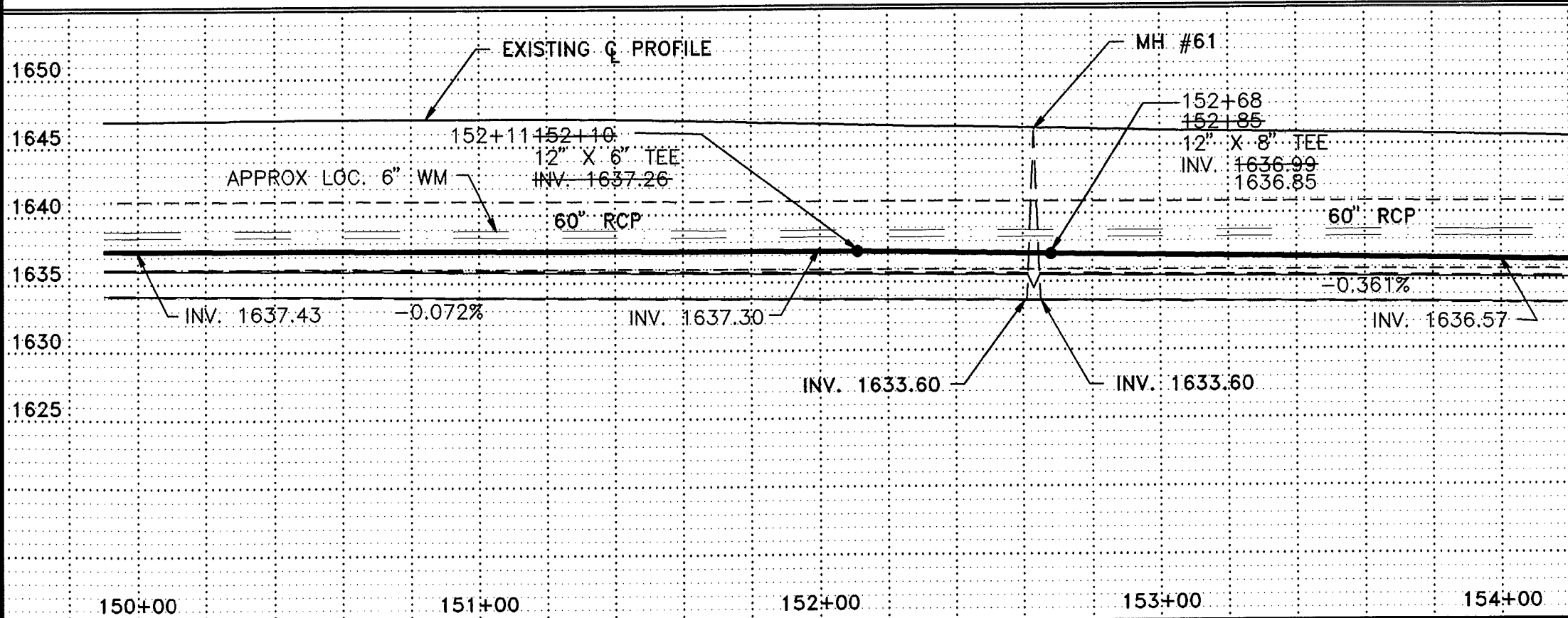


Record Drawing

REV.	DATE	DESCRIPTION	BY
2/14/97		RECORD DRAWING	DMS
CITY OF MANDAN			
DISTRICT #30, WATER AND SEWER IMPROVEMENT PROJECT #6-2, PHASE II			
STA 146+00 TO STA 150+00			
ULTEIG ENGINEERS, INC.			
CONSULTING ENGINEERS	RESEARCH • FARGO • MINNEAPOLIS		
DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 19 of 29	
APPROVED BY: BPM			

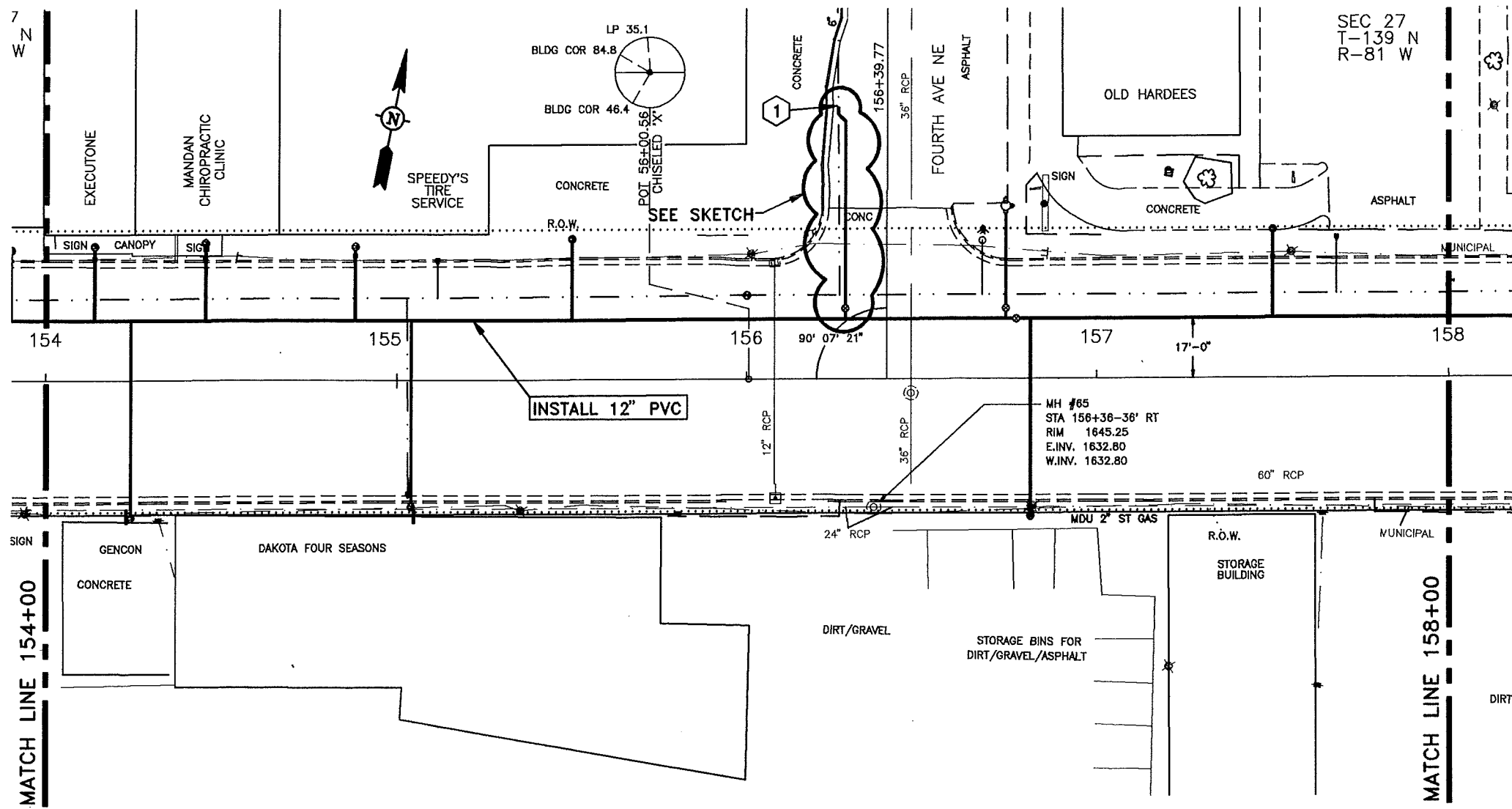


6" HYDRANT		
152+11 - 4' 39.5' RT	1 EA	
GATE VALVE AND BOX, 6"		
152+11 - 14' LT	1 EA	
152+22 - 14' LT	1 EA	
GATE VALVE AND BOX, 8"		
+68 152+85 - 20' LT	1 EA	
GATE VALVE AND BOX, 12"		
+71 152+07 - 17' LT	1 EA	
WATERMAIN, 6" PVC		
152+11 - 17' LT TO 152+11 4' 39.5' RT	58 56.5 LF	
152+22 - 17' LT TO 152+22 4' 37' RT	58 54 LF	
WATERMAIN, 8" PVC		
+68 152+85 - 17' LT TO 152+85 85' 70' LT	68 53 LF	
WATERMAIN, 12" PVC		
150+00 - 17' LT TO 154+00 - 17' LT	400 LF	
FITTINGS, DUCTILE IRON		
+11 152+40 - 17' LT	12" X 6" TEE	116+23 LBS
152+11 - 11' 23.5' RT	6" 1/8 BEND	38+4 LBS
152+11 - 17' 29' RT	6" 1/8 BEND	38+4 LBS
152+22 - 17' LT	12" X 6" TEE	116+23 LBS
152+22 - 4' 37' RT	6" PLUG	18+5 LBS
152+22 - 17' 25' LT	1/2 - 6" 1/8 BENDS	38+62 LBS
+68 152+85 - 17' LT	12" X 8" TEE	123+37 LBS
+76 152+85 - 85' 70' LT	8" TO 6" REDUCER	40+32 LBS
152+68 - 73' LT	8" 1/8 BEND	59 LBS
152+75 - 83' LT	8" 1/8 BEND	59 LBS
WATER SERVICE LINE 1-1/2" COPPER		
150+10 - 17' LT TO 150+10 35' 33' RT	52 50 LF	
150+36 - 17' LT TO 150+36 35' 36' LT	18+19 LF	
151+67 150+87 - 17' LT TO 150+87 36' 37' LT	19+20 LF	
151+23 - 17' LT TO 151+23 37' 38' LT	20+21 LF	
153+90 - 17' LT TO 153+90 - 37' LT	20 LF	
152+68 - 70' LT TO 152+75 - 70' LT	7 LF (NO PAY ITEM)	
WATER SERVICE CONNECTION 1-1/2"		
150+10 - 17' LT	1 EA	
150+36 - 17' LT	1 EA	
151+67 150+87 - 17' LT	1 EA	
151+23 - 17' LT	1 EA	
152+68 - 7' LT	1 EA	
CURB STOP AND BOX 1-1/2"		
150+10 - 33' RT	1 EA	
150+36 - 35' 36' LT	1 EA	
151+67 150+87 - 36' 37' LT	1 EA	
151+23 - 37' 38' LT	1 EA	
153+90 - 37' LT	1 EA	
REMOVE HYDRANT		
152+88 - 42' LT	1 EA	

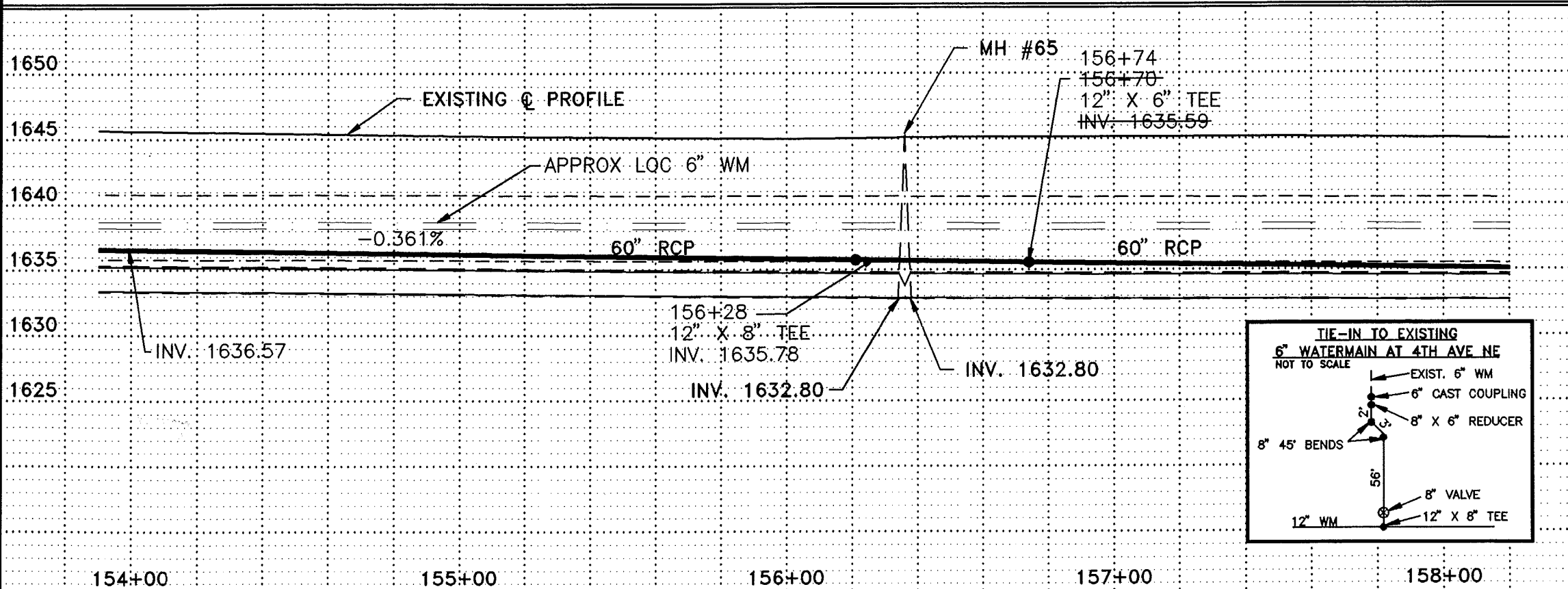


CONSTRUCTION NOTES		
CONNECTED TO EXISTING 6" WM		
Record Drawing		
REV.	DATE	DESCRIPTION
1	2/14/97	RECORD DRAWING
CITY OF MANDAN		
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II		
STA 150+00 TO STA 154+00		
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS		
BISMARCK • FARO • MINNEAPOLIS		
DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 20 of 29
APPROVED BY: BPM		

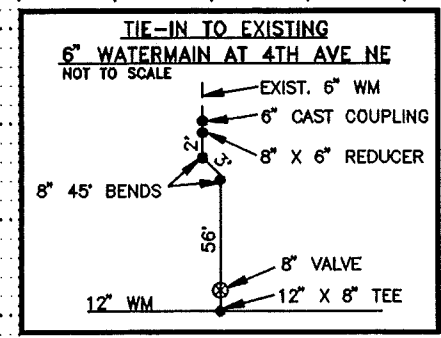




6" HYDRANT	
+74 156+70 - 49' LT	1 EA
GATE VALVE AND BOX, 6"	
+74 156+70 - 20' LT	1 EA
GATE VALVE AND BOX, 8"	
156+28 - 20' LT	1 EA
GATE VALVE AND BOX, 12"	
+77 156+67 - 17' LT	1 EA
WATERMAIN, 6" PVC	
+74 156+70 - 17' LT TO 156+70 - 49' LT	32 LF
WATERMAIN, 8" PVC	
156+28 - 17' LT TO 156+21 +26 80' 70' LT	63 53 LF
WATERMAIN, 12" PVC	
154+00 - 17' LT TO 158+00 - 17' LT	400 LF
FITTINGS, DUCTILE IRON	
+26 156+21 - 77' 70' LT	8" TO 6" REDUCER 40 20 LBS
+26 156+21 - 75' 70' LT	8" 1/8 BEND 59 45 LBS
156+28 - 17' LT	12" X 8" TEE 123 37 LBS
156+28 - 73' 63' LT	8" 1/8 BEND 59 45 LBS
+74 156+70 - 17' LT	12" X 6" TEE 115 423 LBS
WATER SERVICE LINE 1-1/2" COPPER	
154+14 - 17' LT TO 154+14 - 38' LT	21 LF
+24 154+20 - 17' LT TO 154+20 - 39' 36' RT	56 53 LF
154+45 - 17' LT TO 154+45 - 39' 38' LT	22 21 LF
154+88 - 17' LT TO 154+88 - 38' LT	21 LF
+04 155+03 - 17' LT TO 155+03 - 36' 34' RT	53 51 LF
+50 155+12 - 17' LT TO 155+12 - 40' 38' LT	23 24 LF
+81 156+75 - 17' LT TO 156+75 - 39' 36' RT	56 53 LF
157+50 - 17' LT TO 157+50 - 42' 38' LT	25 24 LF
157+68 - 17' LT TO 157+68 - 38' LT	21 LF
WATER SERVICE CONNECTION 1-1/2"	
154+14 - 17' LT	1 EA
+24 154+20 - 17' LT	1 EA
154+45 - 17' LT	1 EA
154+88 - 17' LT	1 EA
+04 155+03 - 17' LT	1 EA
+50 155+12 - 17' LT	1 EA
+81 156+75 - 17' LT	1 EA
157+50 - 17' LT	1 EA
158+68 - 17' LT	1 EA



CURB STOP AND BOX 1-1/2"	
154+14 - 38' LT	1 EA
+21 154+20 - 39' 36' RT	1 EA
154+45 - 38' LT	1 EA
154+88 - 38' LT	1 EA
+04 155+03 - 36' 34' RT	1 EA
+50 155+12 - 40' 38' LT	1 EA
+81 156+75 - 36' RT	1 EA
157+50 - 42' 38' LT	1 EA
157+68 - 38' LT	1 EA
REMOVE HYDRANT	
156+67 - 42' LT	1 EA



CONSTRUCTION NOTES

Record Drawing

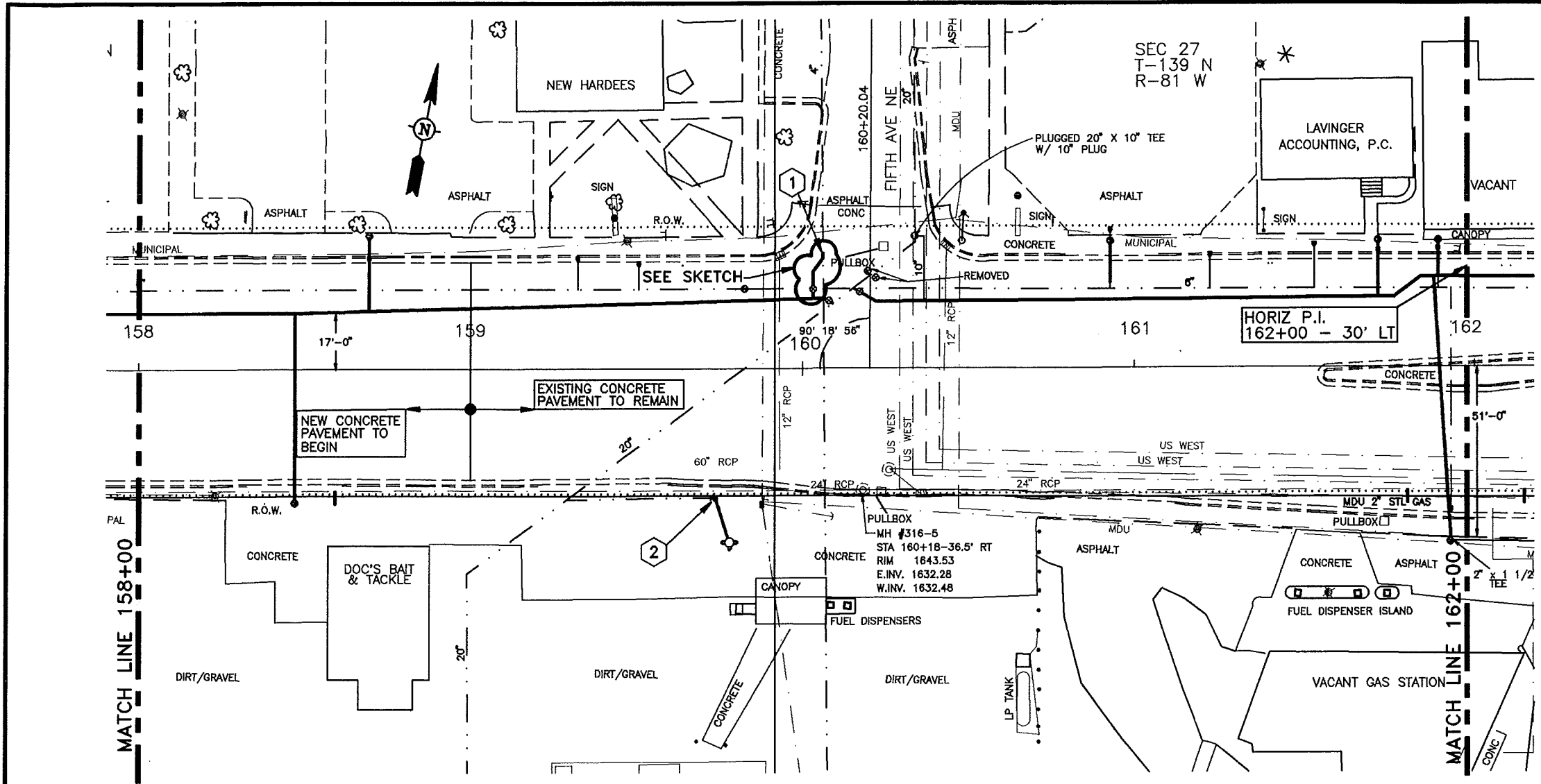
DATE	2/14/97	DESCRIPTION	RECORD DRAWING	DMS
REV.				

CITY OF MANDAN
DISTRICT #59, WATER AND SEWER IMPROVEMENT PROJECT 86-2, PHASE II

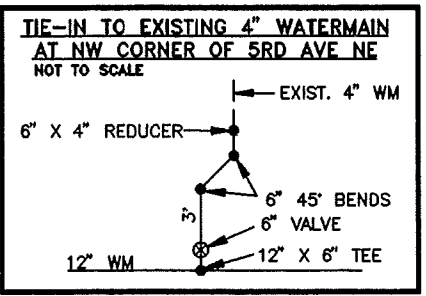
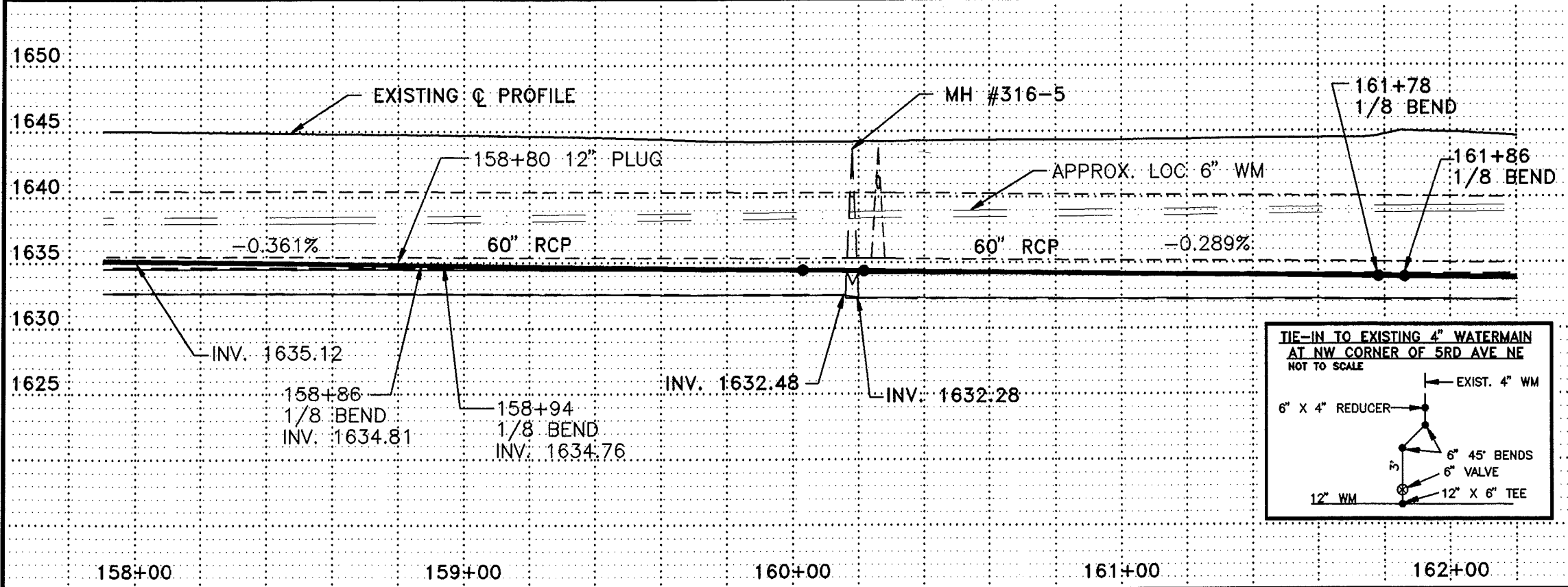
STA 154+00 TO STA 158+00

ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS
DESIGNER • FARGO • MINNEAPOLIS

DRAWN BY: MJH	SCALE: 1" = 40'	PROJECT NO. 95834
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 21 of 29



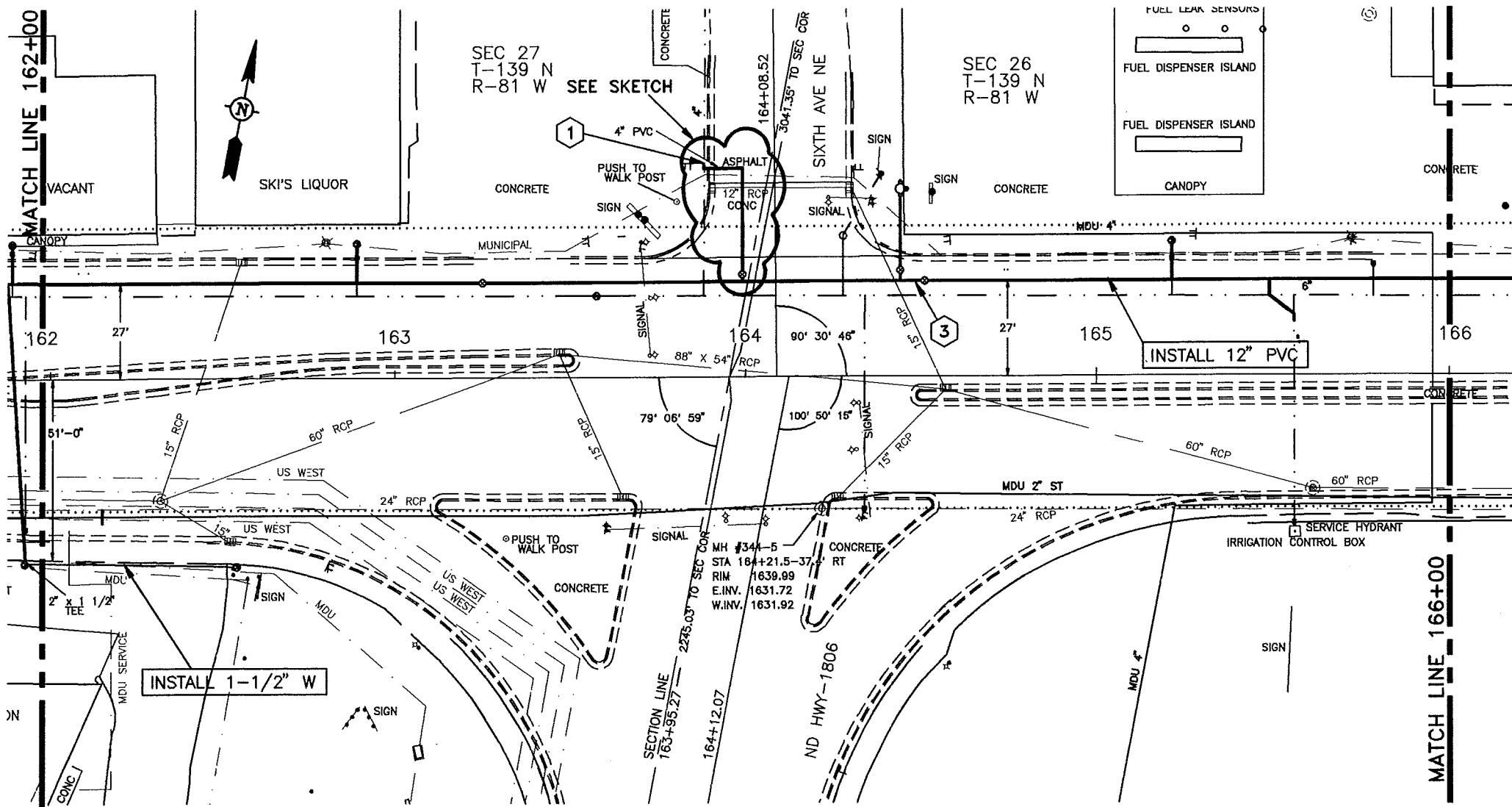
6" HYDRANT	
159+78 - 52' RT	1 EA
TAPPING SLEEVE AND 12" VALVE, 20" X 12"	
+09 160+14 - 19.52' LT	1 EA
+17 160+29 - 23.34' LT	1 EA
GATE VALVE AND BOX, 6"	
160+03 - 28.27' LT	1 EA
WATERMAIN, 6" PVC	
159+73 - 40' RT TO 159+78 - 52' RT	1614 LF
160+03 - 21.24' LT TO 160+03 - 33.36' LT	9-6 LF
WATERMAIN, 12" PVC	
158+00 - 17' LT TO 162+00 - 27' LT	400 LF
FITTINGS, DUCTILE IRON	
161+78-158+86 - 21.17' LT	12" 1/8 BEND 111+47 LBS
161+86-158+94 - 27.22.5' LT	12" 1/8 BEND 111+47 LBS
159+82 - 30' RT	6" 1/8 BEND 38-34 LBS
160+03 - 24.27' LT	12" X 6" TEE 115+23 LBS
160+03 - 29.33' LT	2 - 6" 1/8 BENDS 78-62 LBS
+02 160+08 - 21.27' LT	12" 1/8 BEND 111+47 LBS
+22 160+33 - 20.27' LT	12" 1/8 BEND 111+47 LBS
160+08 - 33' LT	6" TO 4" REDUCER 27 LBS
WATER SERVICE LINE 1-1/2" COPPER	
160+93 - 22.26' LT TO 160+93 - 42.38' LT	20 1/2 LF
+01+22 - 26' LT TO 161+22 - 38' LT	12 LF
+01+54 - 27' LT TO 161+54 - 38' LT	11 LF
161+73 - 23.27' LT TO 161+73 - 42.38' LT	19 1/4 LF
161+92 - 27' LT TO 161+92 - 39.38' LT	12 1/4 LF
161+95 - 50.51' RT TO 162+00 - 50.51' RT	5 LF
WATER SERVICE LINE 2" COPPER	
158+69 - 17' LT TO 158+69 - 40.38' LT	23 2/4 LF
+47 158+75 - 17' LT TO 158+75 - 47.40' RT	57 5/4 LF
+90 161+95 - 27' LT TO 161+95 - 50.52' RT	79 8/2 LF
WATER SERVICE CONNECTION	
158+69 - 18.17' LT	1 EA - 2" CONNECTION
+47 158+75 - 17' LT	1 EA - 2" CONNECTION
160+93 - 20.26' LT	1 EA
161+22 - 26' LT	1 EA
161+54 - 27' LT	1 EA
161+73 - 21.27' LT	1 EA
161+92 - 27' LT	1 EA
+90 161+95 - 27' LT	1 EA - 2" CONNECTION
CURB STOP AND BOX 1-1/2"	
160+93 - 40.38' LT	1 EA
+01+22 - 38' LT	1 EA
+01+54 - 38' LT	1 EA
161+73 - 42.38' LT	1 EA
161+92 - 39.38' LT	1 EA
CURB STOP AND BOX 2"	
158+69 - 40.38' LT	1 EA
+47 158+75 - 40.37' RT	1 EA
+90 161+95 - 50.52' RT	1 EA
REMOVE HYDRANT	
159+73 - 40' RT	1 EA
160+48 - 48' LT	1 EA



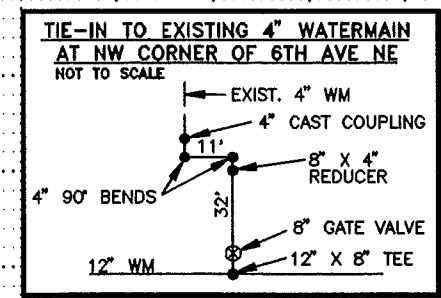
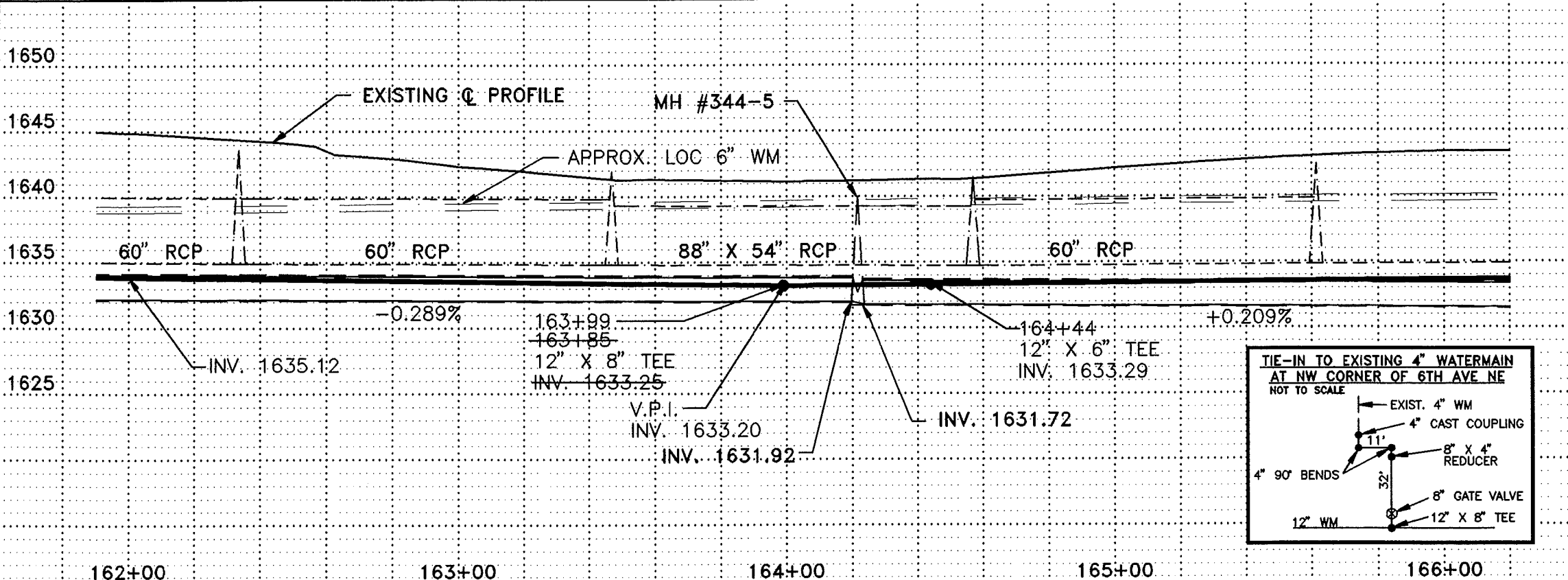
CONSTRUCTION NOTES

1 CONNECTED
CONNECT EXISTING 4" WATERMAIN TO
NEW 6" WATERMAIN.
EXTENDED
EXTENDING EXISTING LINE TO NEW
HYDRANT LOCATION.

DATE	DESCRIPTION	BY
2/14/97	RECORD DRAWING	DMS
CITY OF MANDAN		
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II		
STA 158+00 TO STA 162+00		
ULTEIG ENGINEERS, INC.		
CONSULTING ENGINEERS RESURGE & PARDO • MINNEAPOLIS	PROJECT NO. 95834	
DRAWN BY: M.J.H.	SCALE: 1" = 40'	CHECKED BY: BPM
DATE: MAY 17, 1995	SHEET 22 of 29	



6" HYDRANT	164+44 - 53' LT	1 EA
GATE VALVE AND BOX, 6"	164+44 - 30' LT	1 EA
GATE VALVE AND BOX, 8"	+99 163+85 - 29' LT	1 EA
GATE VALVE AND BOX, 12"	+64+48 - 27' LT	1 EA
	163+25 - 27' LT	1 EA (NO PAY ITEM)
WATERMAIN, 6" PVC	164+44 - 27' LT TO 164+44 - 53' LT	26 LF
WATERMAIN, 8" PVC	+99 163+85 - 27' LT TO 163+82 - 59' LT	32.48 LF
WATERMAIN, 12" PVC	162+00 - 27' LT TO 164+48 - 27' LT	251.248 LF
FITTINGS, DUCTILE IRON		
+88 163+82 - 59' LT	4" 8" 1/8 BEND	26.45 LBS
+99 163+82 - 59' LT	8" TO 4" REDUCER	36.20 LBS
+98 163+85 - 59' LT	4" 8" 1/8 BEND	26.45 LBS
+99 163+86 - 27' LT	12" X 8" TEE	123.137 LBS
164+44 - 27' LT	12" X 6" TEE	115.123 LBS
164+53 - 27' LT	12" PLUG	49 LBS
164+39 - 27' LT	12" COUPLING	56 LBS
WATER SERVICE LINE 1-1/2" COPPER		
161+95 162+00 - 50' RT	TO 163+17 - 50' RT	86.115 LF
162+89 - 27' LT	TO 162+89 - 38' LT	11 LF
WATER SERVICE CONNECTION		
162+89 - 27' LT		1 EA
CURB STOP AND BOX 1-1/2"		
162+89 - 38' LT		1 EA
163+17 - 95' RT		1 EA
162+55 - 50' RT		1 EA
REMOVE HYDRANT		
164+40 - 58' LT		1 EA
POLYSTYRENE INSULATION		
164+39 - 27' LT		128 BDF



CONSTRUCTION NOTES

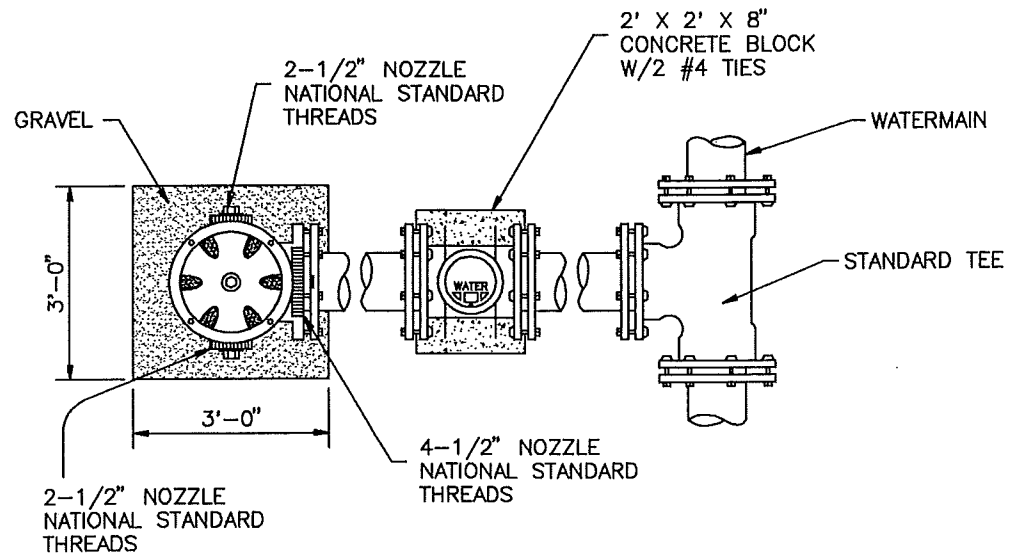
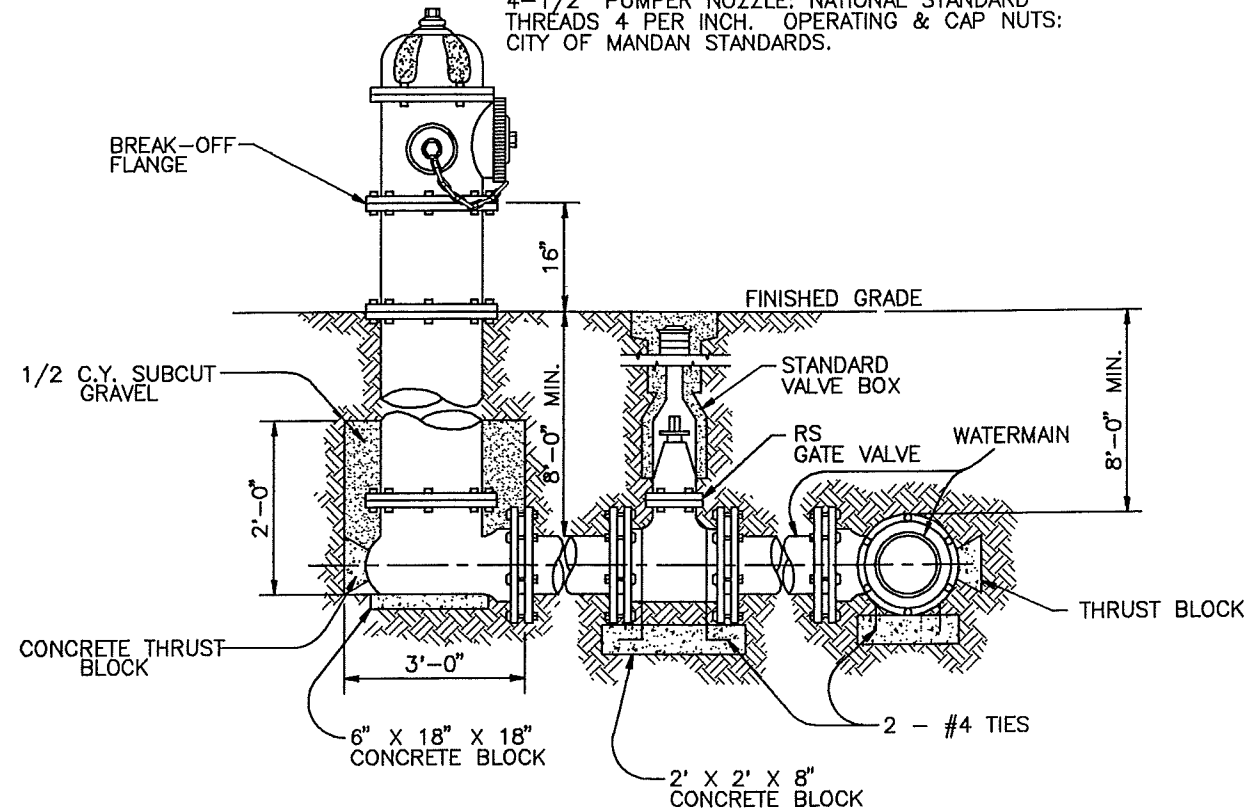
- CONNECTED
CONNECT EXISTING 4" W.M. TO NEW 8" W.M.
- CONNECTED
CONNECT NEW 1-1/2" COPPER TO EXISTING 1" COPPER
- QUANTITIES FOR THIS PROJECT END AT 164+48. INSTALL 12" VALVE AND BOX AND PLUG IF PHASE III CONTRACTOR HAS NOT COMPLETED WORK IN THIS AREA. IF PHASE III CONTRACTOR HAS COMPLETED WORK IN THIS AREA, REMOVE PLUG AND CONNECT TO WATERMAIN.

Record Drawing

DATE	2/14/97	DESCRIPTION	RECORD DRAWING	BY	DMS
CITY OF MANDAN					
DISTRICT #59, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II					
STA 162+00 TO STA 164+48					
ULTEIG ENGINEERS, INC.					
CONSULTING ENGINEERS	RESOURCES	PARSONS	MINNEAPOLIS		
DRAWN BY: M.J.H.	SCALE: 1" = 40'	PROJECT NO. 95834			
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 23 OF 29			
APPROVED BY: BPM					

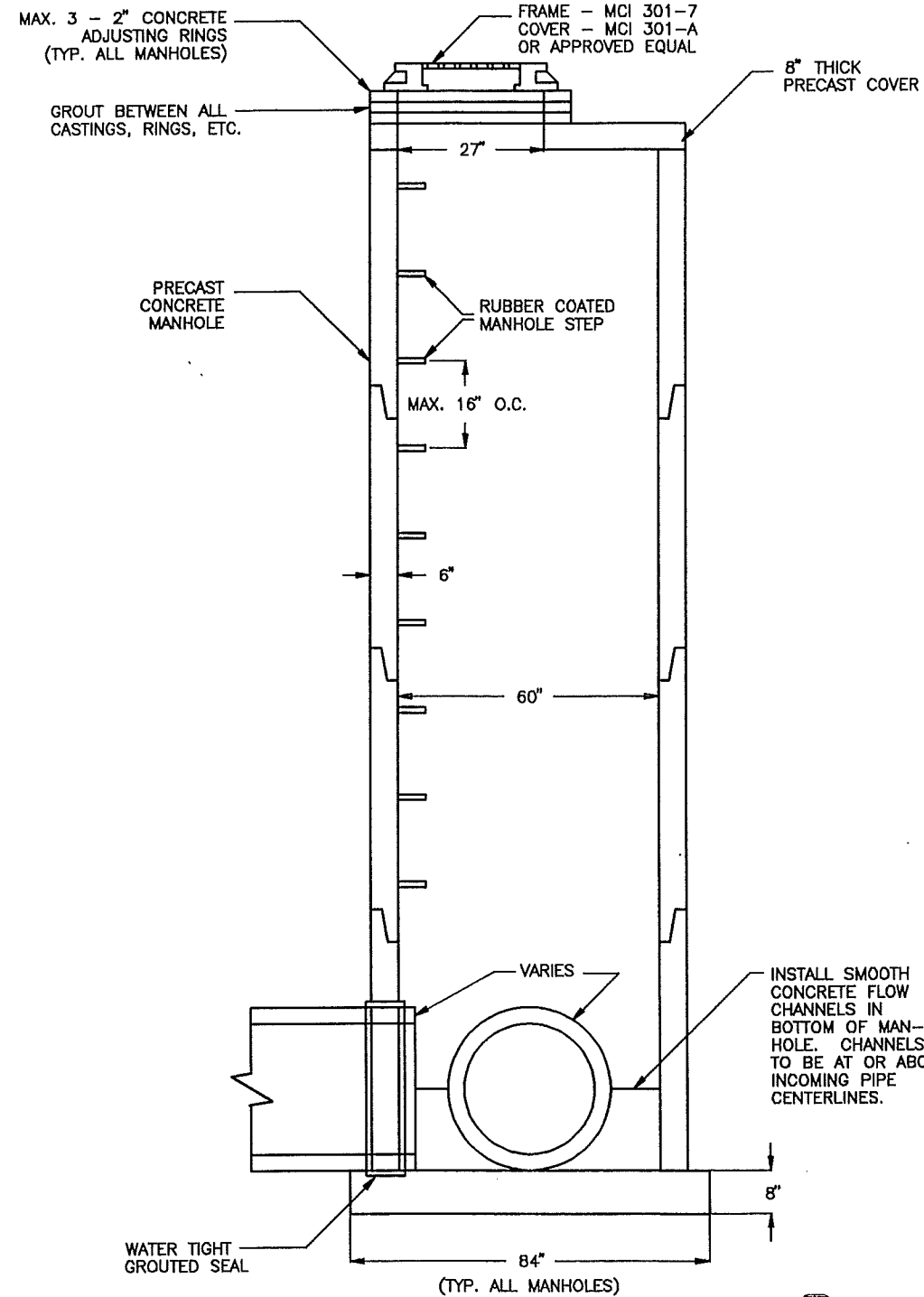
2-1/2" HOSE NOZZLES: NATIONAL STANDARD THREADS, 2-1/16" O.D. MALE THREADS, 7-1/2 THREADS PER INCH L.H. THREADS.

4-1/2" PUMPER NOZZLE: NATIONAL STANDARD THREADS 4 PER INCH. OPERATING & CAP NUTS: CITY OF MANDAN STANDARDS.



HYDRANT & VALVE DETAIL

NOT TO SCALE

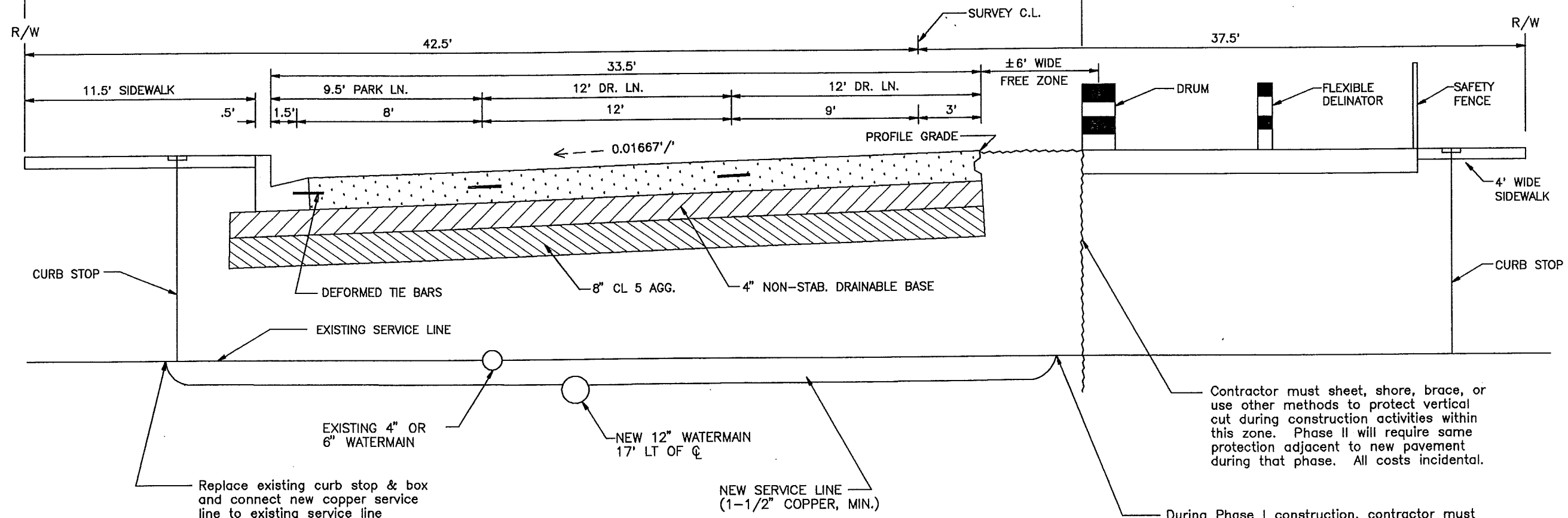


SANITARY MANHOLE DETAIL Record Drawing
NOT TO SCALE

REV.	DATE	DESCRIPTION	BY
CITY OF MANDAN			
DISTRICT #39, WATER & SEWER IMPROVEMENT PROJECT 96-2, PHASE II			
DETAILS			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS FARGO • BISMARCK • MINNEAPOLIS			
DRAWN BY: MJH	SCALE: NO SCALE	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: MAY 17, 1995	SHEET 24 of 29	
APPROVED BY: BPM			



PHASE I CONSTRUCTION ZONE FOR STREET RECONSTRUCTION



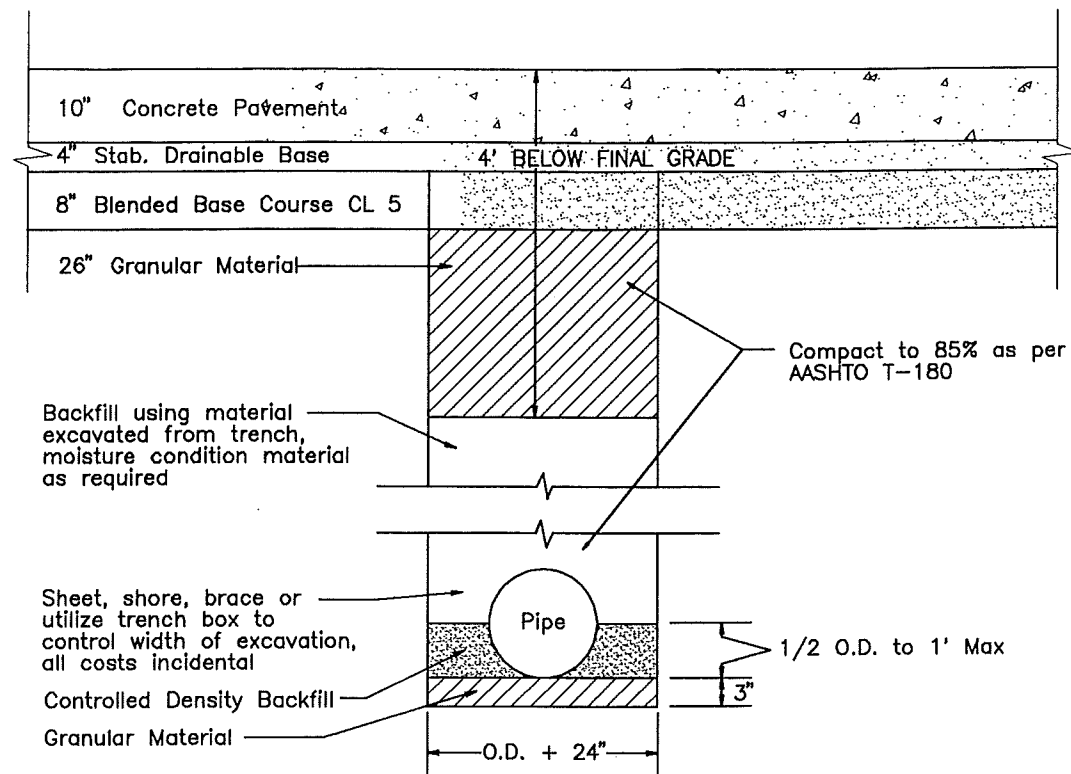
Contractor must sheet, shore, brace, or use other methods to protect vertical cut during construction activities within this zone. Phase II will require same protection adjacent to new pavement during that phase. All costs incidental.

During Phase I construction, contractor must extend all new service lines, hydrant leads and all other water or sewer related piping into this zone. New lines must be connected to existing lines within this area so that services are maintained to all users on the south side of main street. All costs for connections incidental.

Record Drawing

REV.	DATE	DESCRIPTION	BY
CITY OF MANDAN DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II			
PHASING DETAILS			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS FARGO • BISMARCK • MINNEAPOLIS			
DRAWN BY: DMS	SCALE: NO SCALE	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: SEPT. 27, 1995	SHEET 25 of 29	
APPROVED BY: BPM			



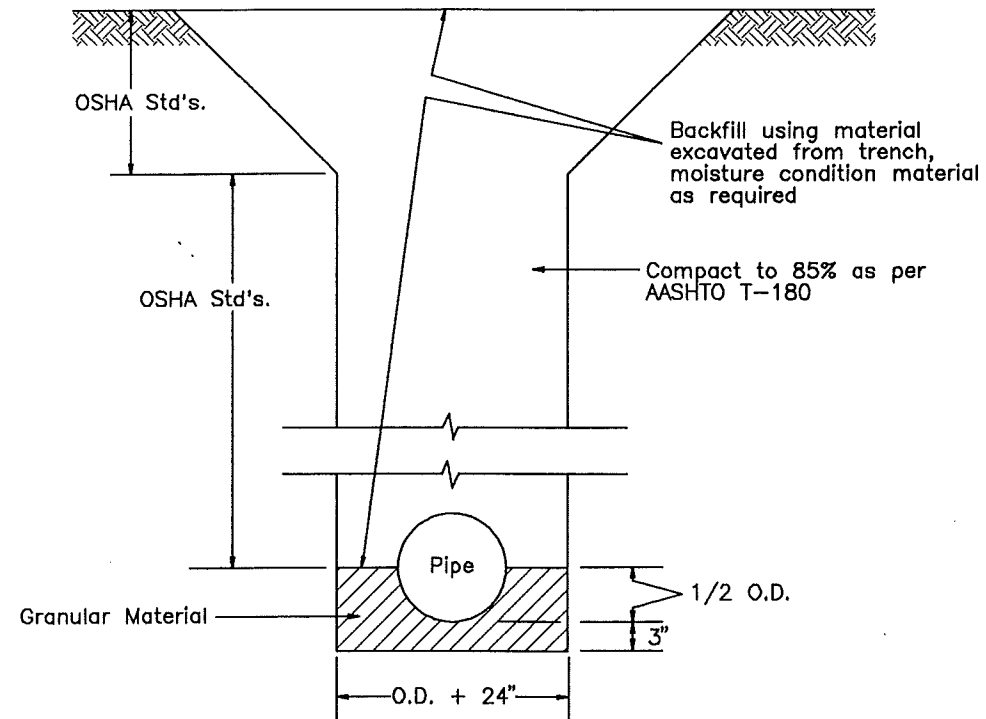


BEDDING AND BACKFILL FOR PIPE UNDER THE ROADWAY

CONTROLLED DENSITY BACKFILL:

Shall be a blend of cement, water, pozzolanic materials and fillers. The material shall be fluid on placement to flow around and fill voids around pipes in the backfill area. The material shall be able to support normal loads after six hours and shall have a compressive strength in the range of 75 psi. to 125 psi. at 28 days. the material shall be such that it lends itself to easy removal with a tractor backhoe. The contractor shall provide mix design and compression strength test results of the material to the engineer for approval five days prior to placement. Two typical mix designs are shown below. Both mix designs yield approximately one cubic yard of flowable mortar.

Mix No. 1		Mix No. 2	
Sand	3000 lbs.	Cement	100 lbs.
Water	450 lbs.	Fly Ash	300 lbs.
Fly Ash	250 lbs.	Fine Aggregate	2600 lbs.
Cement	30 lbs.	Water	70 gals.



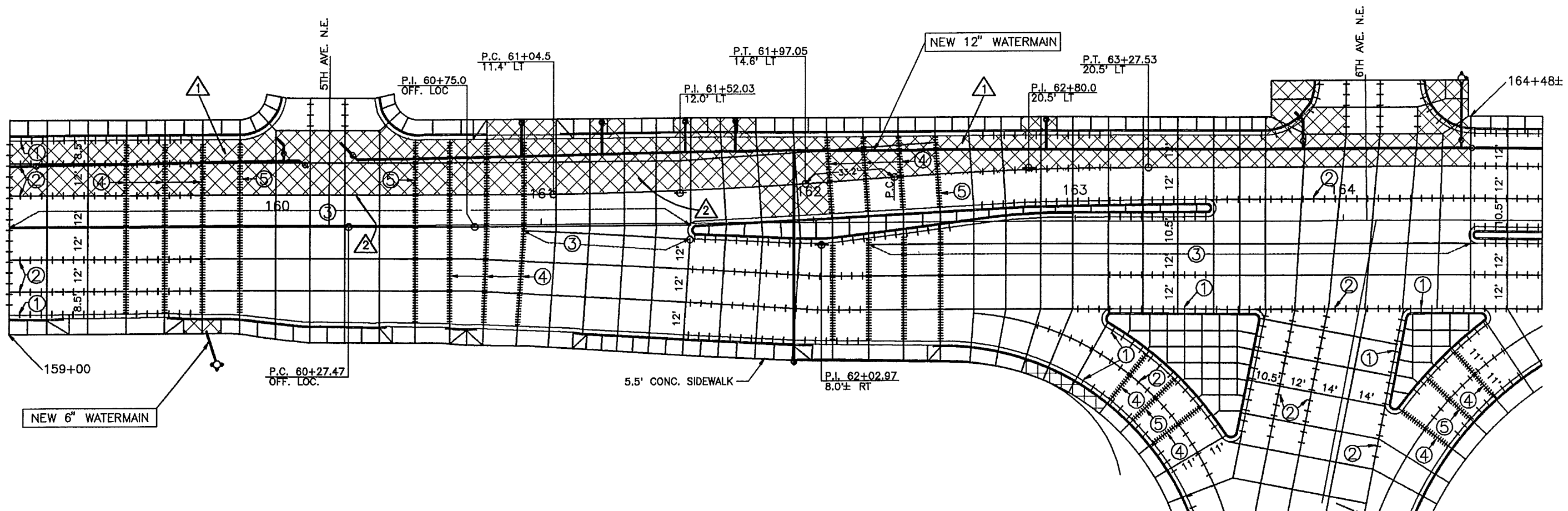
BEDDING AND BACKFILL FOR PIPE NOT UNDER ROADWAY

NOTES:

- 1) All granular material shall be class 5.
- 2) The cost for all backfill material, to include granular material, controlled density backfill, moisture conditioned existing soils, etc., shall be included in the price bid for the pipe.
- 3) Four (4) feet below final grade the moisture content of material excavated from trench and used for backfill can not be higher or lower than what will allow compaction to the specified density. The moisture content of the upper four (4) feet shall be from optimum to +5%.
- 4) These notes are applicable to both types of trenches.

Record Drawing

▲			
▲			
▲			
▲			
REV.	DATE	DESCRIPTION	BY
CITY OF MANDAN DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II			
TRENCH DETAILS			
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS FARGO & RICHMOND & MINNEAPOLIS			
DRAWN BY: DMS	SCALE: NO SCALE	PROJECT NO. 95834	
CHECKED BY: BPM	DATE: SEPT. 27, 1995	SHEET 26 of 29	
APPROVED BY: BPM			



CONSTRUCTION NOTES

- ① REMOVE AND REPLACE CROSS-HATCHED 10" THICK CONCRETE PAVEMENT IN ORDER TO INSTALL NEW 12" WATERMAIN. PROTECT ALL EXISTING CURB & GUTTER AND SIDEWALK ALONG NORTH SIDE OF STREET EXCEPT WHERE THEY NEED TO BE REMOVED TO INSTALL SERVICE LINES. SAW PAVEMENT FULL DEPTH ALONG JOINTS WHERE REMOVAL IS TO TAKE PLACE. COSTS FOR SAWING INCIDENTAL TO REMOVAL OF CONCRETE PAVEMENT. INSTALL REPLACEMENT 10" CONCRETE PAVEMENT ON 12" THICK CL5 SUBBASE. COSTS FOR CL5 SUBBASE INCIDENTAL TO 10" CONCRETE PAVEMENT REPAIR. ALL NEW PANELS TO MATCH EXISTING WIDTHS AND LENGTHS.
- ② DRILL AND EPOXY NO. 3 X 1'-6" TIE BARS INTO FACE OF EXISTING GUTTER AND ALONG NORTH EDGE OF EXISTING PAVEMENT PRIOR TO REPLACING CONCRETE PAVEMENT. RESTORE ALL OTHER LONGITUDINAL AND TRANSVERSE JOINTS TO MATCH EXISTING. ALL COSTS FOR JOINTS INCIDENTAL TO 10" CONCRETE PAVEMENT REPAIR.
- ③ WIDEN AND SEAL ALL JOINTS WITH SILICONE. COSTS INCIDENTAL TO 10" CONCRETE PAVEMENT REPAIR.
- ④ 5TH AVE. NE AND 6TH AVE. NE CANNOT BE CLOSED AT THE SAME TIME.
- ⑤ REMOVE AND REPLACE SIDEWALK AND CURB AND GUTTER AS NEEDED TO INSTALL SERVICE CONNECTIONS OR HYDRANTS.

EXISTING JOINT KEY

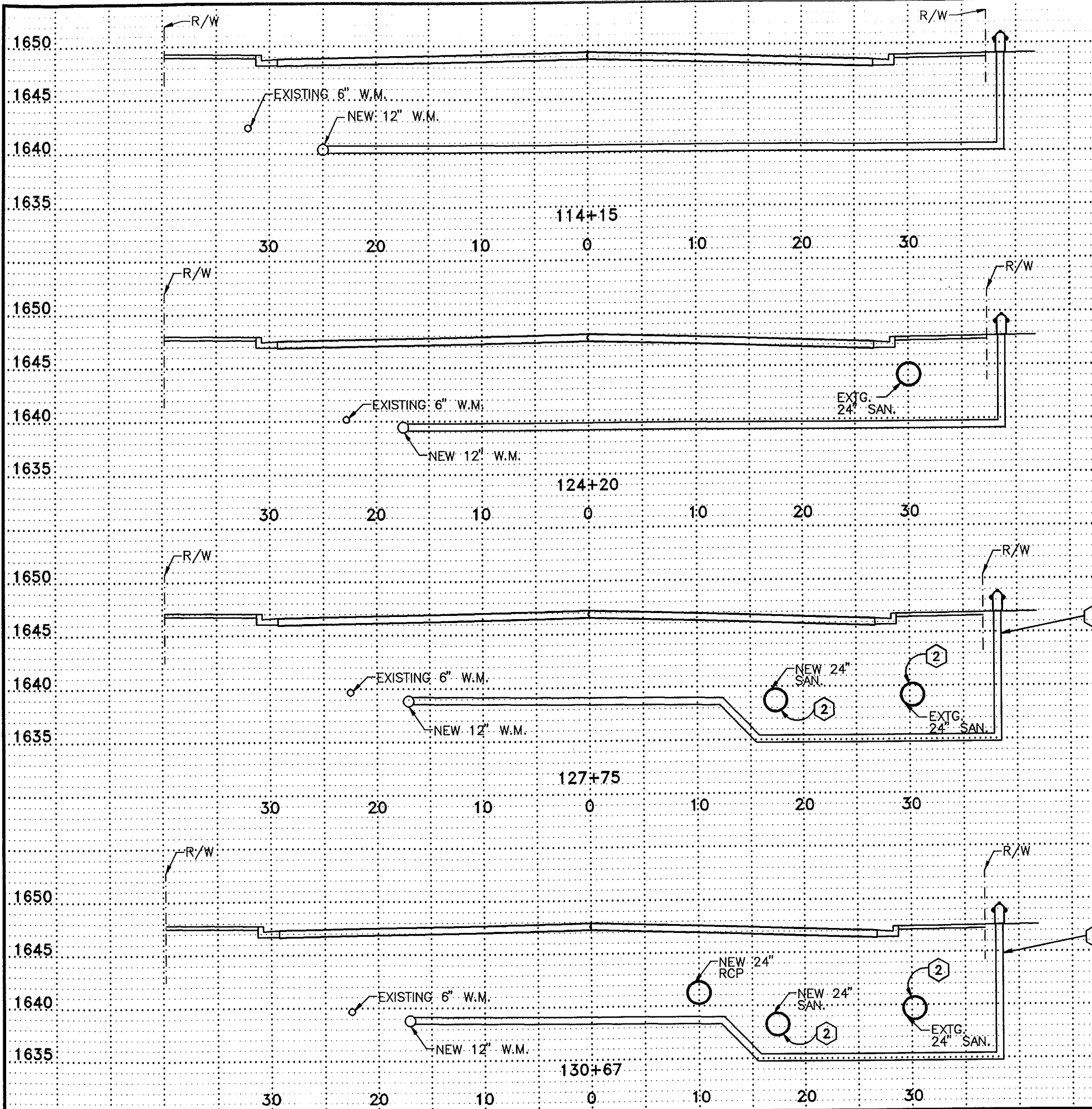
- ① NO. 3 X 1'-6" TIE BAR @ 4'-0" C-C (CONTINUOUS)
- ② NO. 4 X 2'-6" TIE BAR @ 4'-0" C-C (CONTINUOUS)
- ③ KEYED JOINT (SILICONE SEAL)
- ④ DOWELED CONTRACTION JOINT
- ⑤ DOWELED EXPANSION JOINT

QUANTITIES

REMOVE CONCRETE, SIDEWALK	122 SY
REMOVE CONCRETE, PAVEMENT	1050 SY
10" CONCRETE PAVEMENT	1050 SY
REMOVE CURB AND GUTTER	144 LF
SIDEWALK	122 SY
CURB AND GUTTER	144 LF

Record Drawing

REV.	DATE	DESCRIPTION	BY
CITY OF MANDAN			
DISTRICT #39 WATER AND SEWER IMPROVEMENT PROJECT 86-2, PHASE I			
PAVEMENT LAYOUT STA 159+00 TO 164+48±			
ULTEIG ENGINEERS, INC.		CONSULTING ENGINEERS	
DRAWN BY: DMS		SCALE: 1" = 40'	
CHECKED BY: BPM		PROJECT NO. 95834	
APPROVED BY: BPM		DATE: SEPT. 27, 1985	
		SHEET 27 OF 29	



- CONSTRUCTION NOTES**
- ① INSTALL HYDRANT EXTENSIONS AS REQUIRED TO BRING TOP OF HYDRANT TO PROPER GRADE
 - ② PROTECT EXISTING PIPES, COSTS INCIDENTAL

Record Drawing

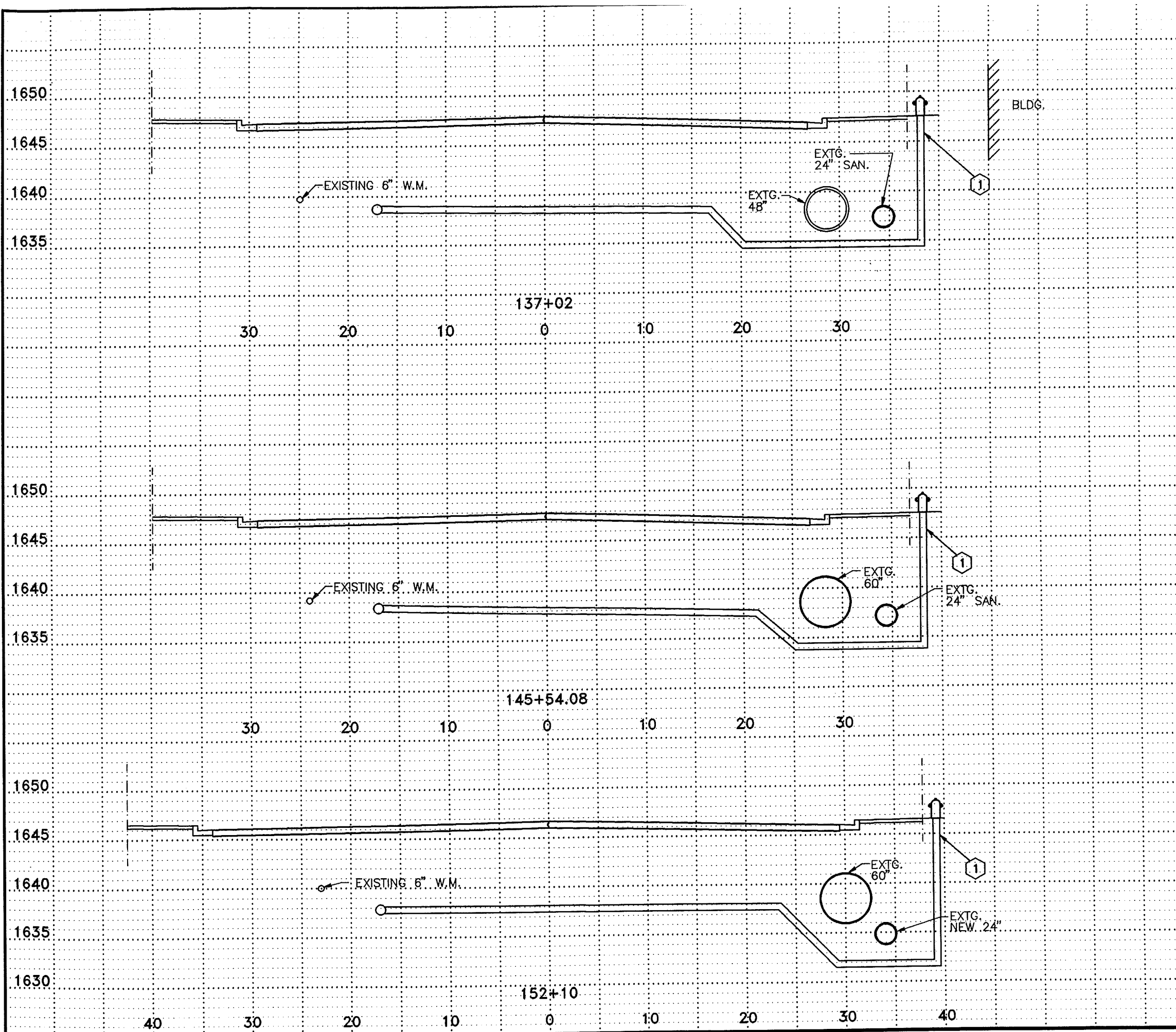
REV.	DATE	DESCRIPTION	BY

CITY OF MANDAN	
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 96-2, PHASE II	
CROSS-SECTIONS	
ULTEIG ENGINEERS, INC. <small>CONSULTING ENGINEERS MINNEAPOLIS, MANDAN & FARGO, MINNEAPOLIS</small>	
<small>DRAWN BY:</small> DMS <small>CHECKED BY:</small> BPM <small>APPROVED BY:</small> BPM	<small>SCALE:</small> AS SHOWN <small>DATE:</small> SEPT. 27, 1995 <small>PROJECT NO.:</small> 95834 <small>SHEET:</small> 28 of 29



CONSTRUCTION NOTES

- ① INSTALL HYDRANT EXTENSIONS AS REQUIRED TO BRING TOP OF HYDRANT TO PROPER GRADE
- ② PROTECT EXISTING PIPES, COSTS INCIDENTAL



Record Drawing

REV.	DATE	DESCRIPTION	BY

CITY OF MANDAN	
DISTRICT #39, WATER AND SEWER IMPROVEMENT PROJECT 98-2, PHASE II	
CROSS-SECTIONS	
ULTEIG ENGINEERS, INC. CONSULTING ENGINEERS 1000 W. 12TH ST. S. MINNEAPOLIS, MN 55404	
DRAWN BY: DMS CHECKED BY: BPM APPROVED BY: BPM	SCALE: AS SHOWN DATE: SEPT. 27, 1995 SHEET: 29 of 29
PROJECT NO. 95834	

