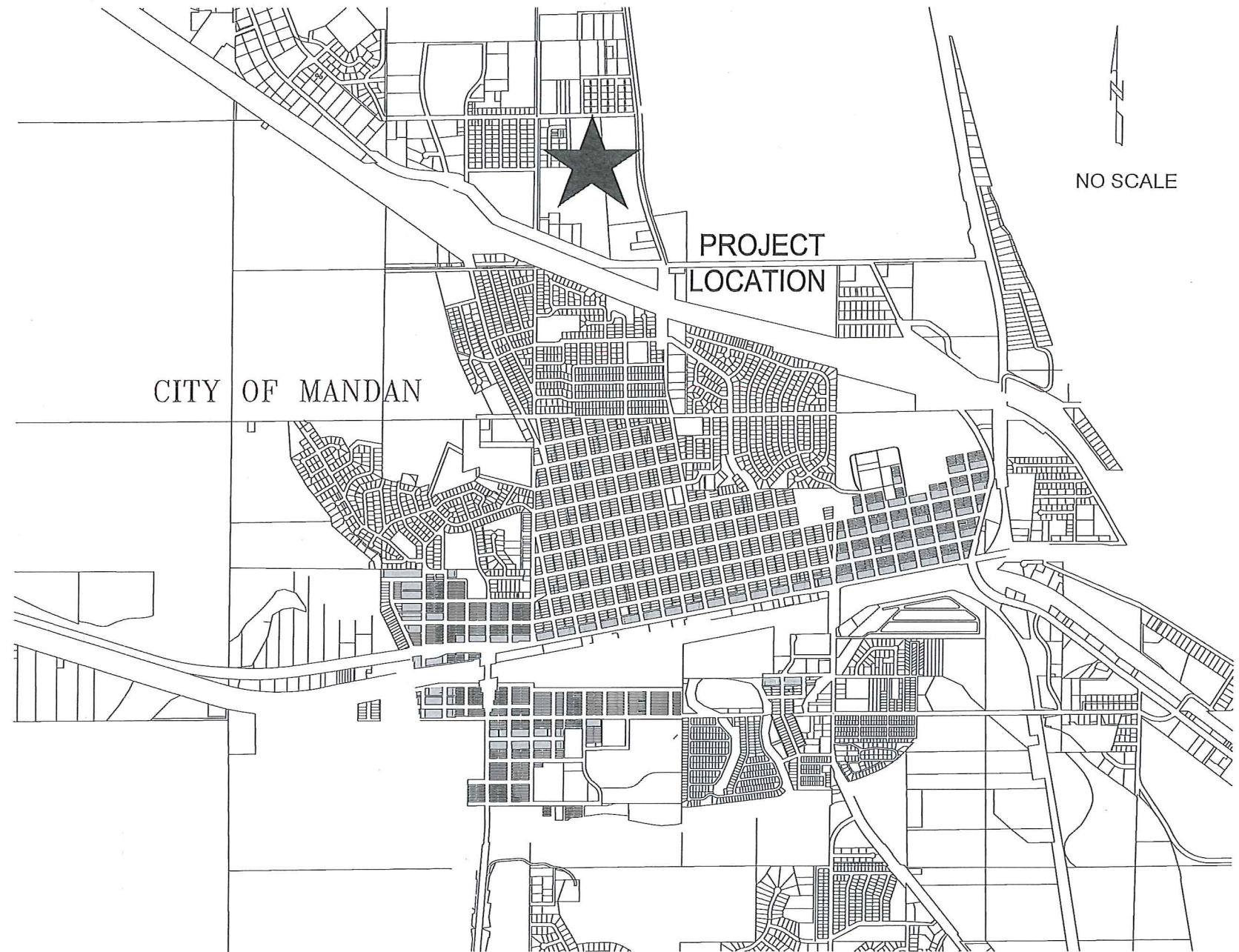


24TH STREET NW  
 WATER & SANITARY SEWER IMPROVEMENTS  
 CITY PROJECT NO. 2015-08 **ASBUILT**  
 MANDAN, NORTH DAKOTA

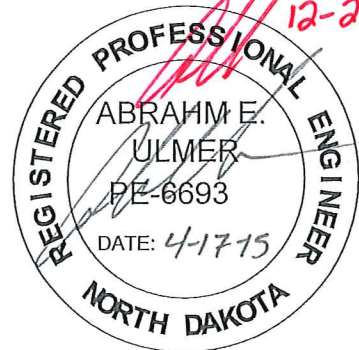
INDEX OF DRAWINGS

SHT NO	TITLE
1	TITLE SHEET
2	PROJECT LAYOUT
3-4	24th STREET PLAN & PROFILE
5	STREET DETAILS



DESIGN ENGINEER'S CERTIFICATE

I, ABRAHM E. ULMER, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA, HEREBY CERTIFY THAT THE WATER & SANITARY SEWER IMPROVEMENT PLANS FOR 24TH STREET NW, BETWEEN 6TH AVE NW & 8TH AVE NW, MANDAN, NORTH DAKOTA WERE PREPARED UNDER MY SUPERVISION AND ARE COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



ABRAHM E. ULMER, P.E.  
 REGISTERED PROFESSIONAL ENGINEER  
 NORTH DAKOTA REGISTRATION NO. 6693

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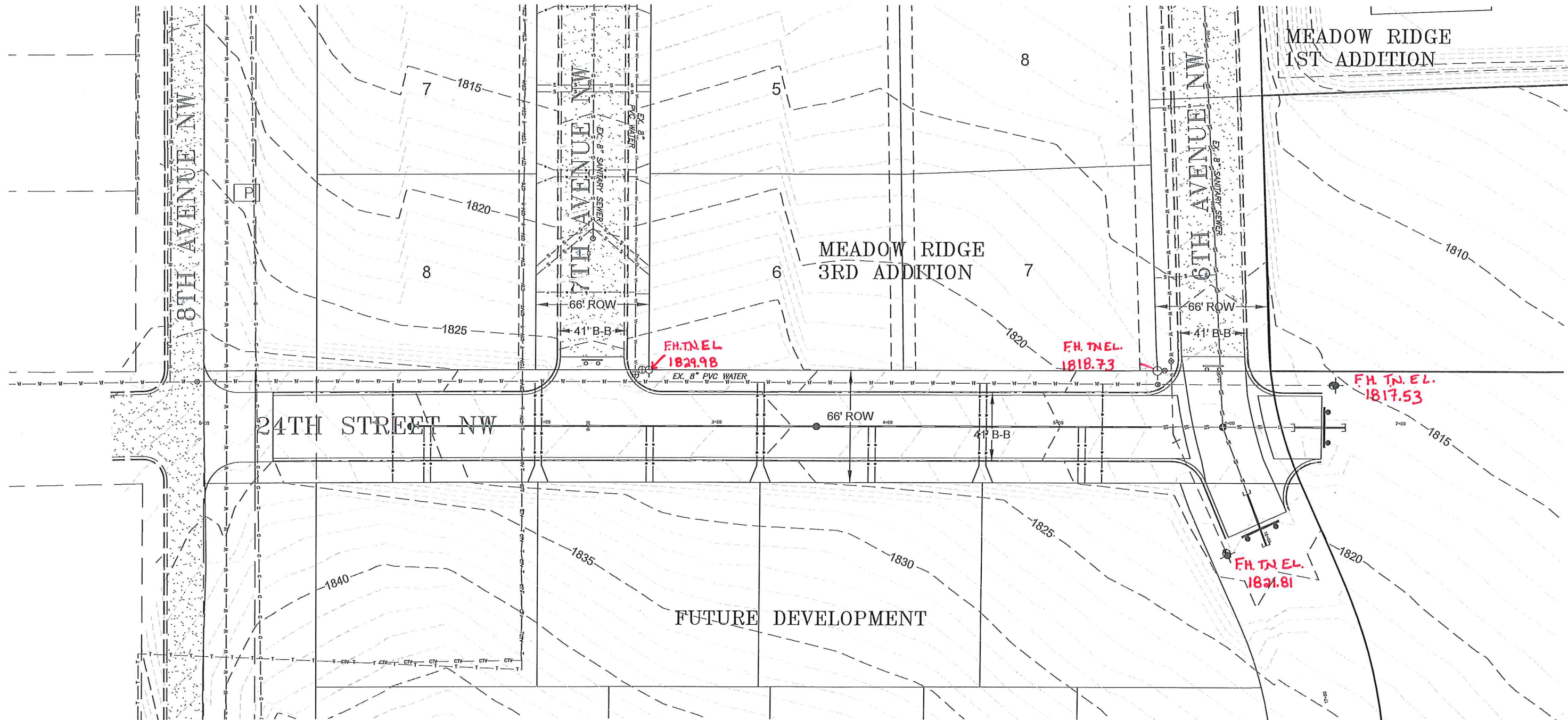
24TH STREET NW  
 BETWEEN 6TH AVE NW & 8TH AVE NW  
 MANDAN, NORTH DAKOTA

**\*CAUTION\***  
 UTILITY LOCATIONS ARE  
 APPROXIMATE. CONTRACTOR IS  
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 EXCAVATION

WATER & SANITARY SEWER IMPROVEMENTS  
 CITY PROJECT NO. 2015-08  
 TITLE SHEET  
 SHEET 1 OF 5

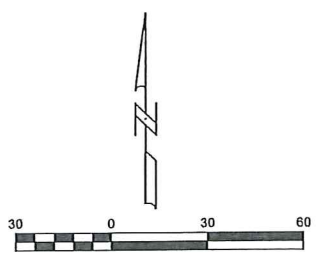
APRIL, 2015

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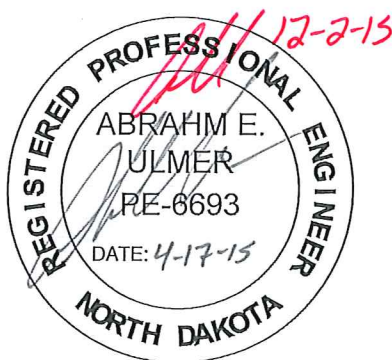


**LEGEND**

- |         |                              |           |                                 |
|---------|------------------------------|-----------|---------------------------------|
| ○       | EXISTING MANHOLE             | ≡≡≡≡      | EXISTING CURB & GUTTER          |
| ⊠       | EXISTING TELEPHONE PEDESTAL  | —ss—ss—   | EXISTING STORM SEWER            |
| ✱       | EXISTING STREET LIGHT        | —o—o—     | EXISTING GAS LINE               |
| ⊕       | EXISTING UTILITY POLE        | —t—t—     | EXISTING TELEPHONE CABLE        |
| ⌋       | EXISTING ANCHOR POLE         | —ctv—ctv— | EXISTING TELEPHONE CABLE        |
| ⊠       | EXISTING ELECTRICAL BOX      | ▨         | EXISTING ASPHALT                |
| ⊙       | EXISTING TREE                | ●         | PROPOSED SANITARY SEWER MANHOLE |
| ⊕       | EXISTING FIRE HYDRANT        | —         | PROPOSED SANITARY SEWER         |
| ⊗       | EXISTING GATE VALVE          | - - -     | PROPOSED CONTOURS               |
| ⊠       | EXISTING SIGN                | ≡≡≡≡      | PROPOSED CURB & GUTTER          |
| —s—s—   | EXISTING SANITARY SEWERMAIN  | —         | PROPOSED WATERMAIN              |
| —w—w—   | EXISTING WATERMAIN           | —w—w—     | PROPOSED WATER SERVICE          |
| —oh—oh— | EXISTING OVERHEAD POWER LINE | —s—s—     | PROPOSED SANITARY SEWER SERVICE |



VERT. DATUM: NAVD88  
HORIZ DATUM: 1983 STATE PLANE, ND SOUTH (3302)



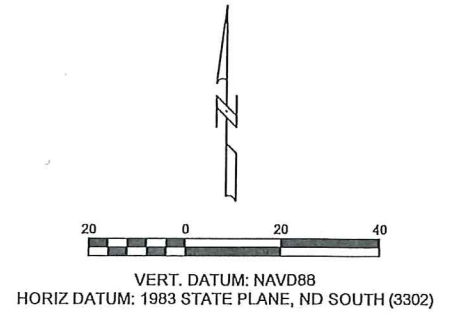
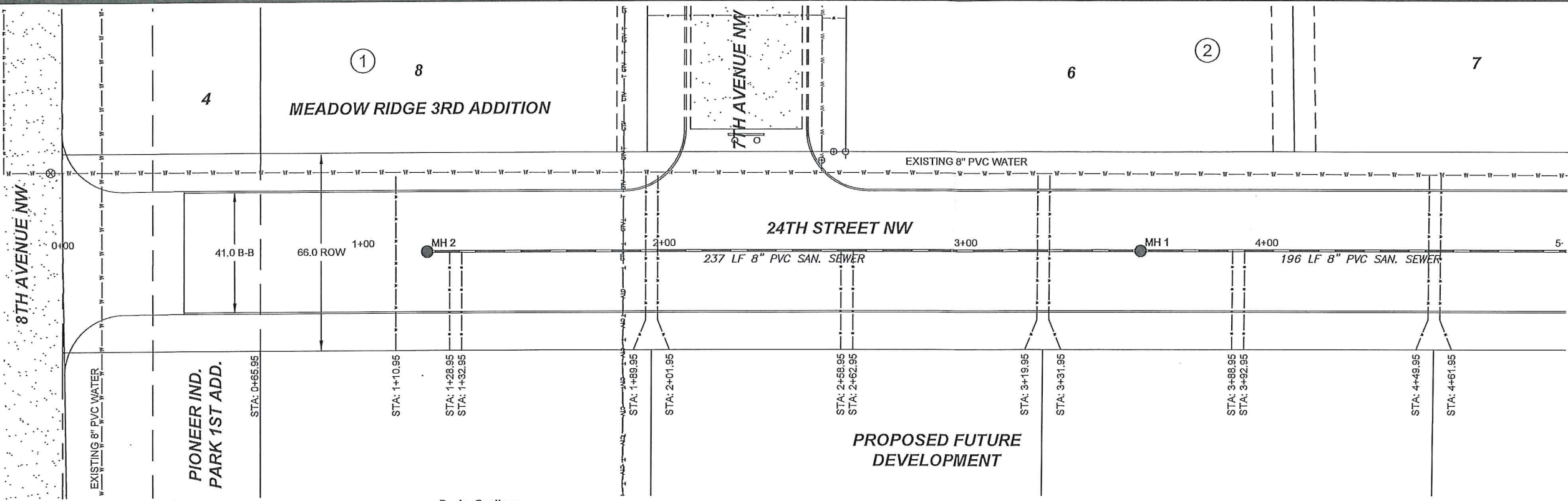
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**24TH STREET NW**  
BETWEEN 6TH AVE NW & 8TH AVE NW  
MANDAN, NORTH DAKOTA **As-built**

WATER & SANITARY SEWER IMPROVEMENTS  
CITY PROJECT NO. 2015-08  
PROJECT LAYOUT  
SHEET 2 OF 5

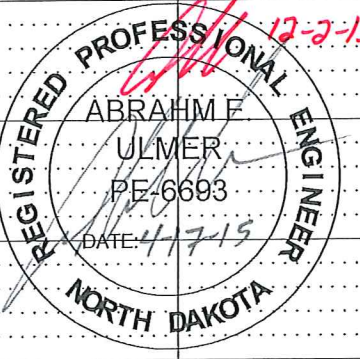
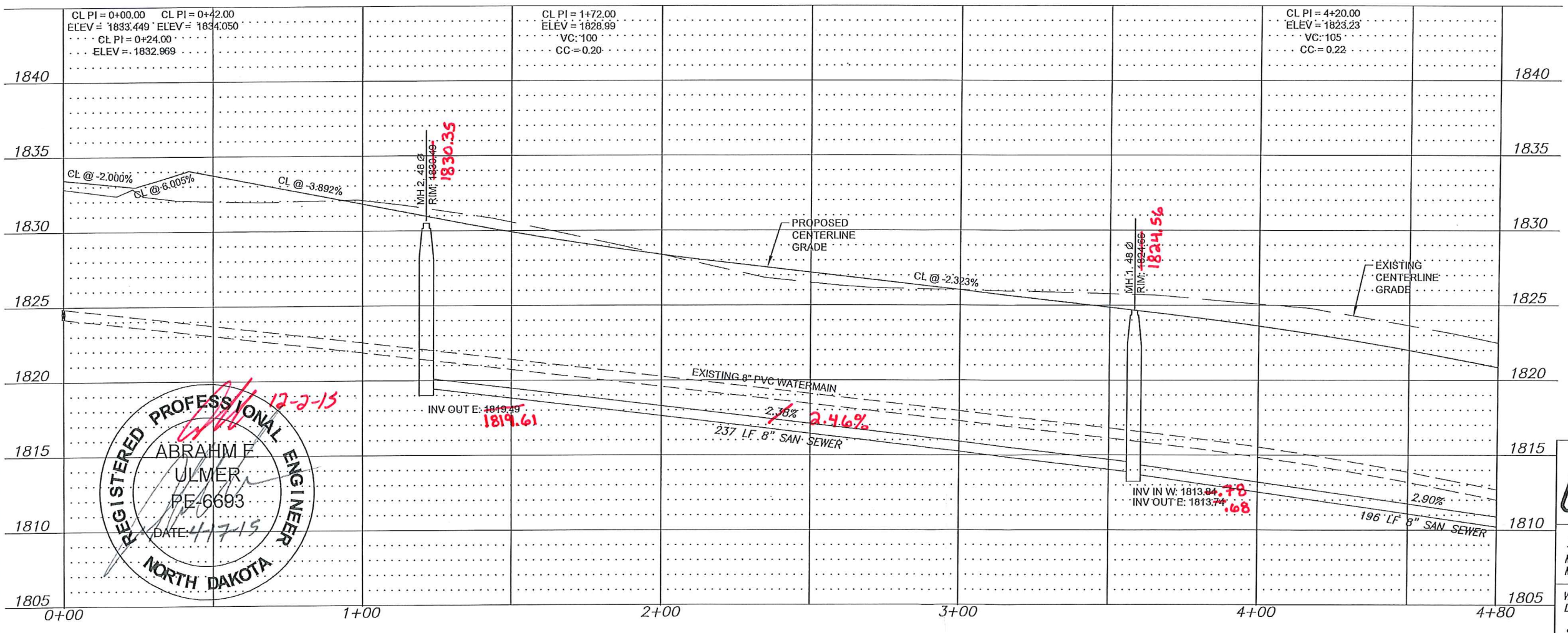
APRIL, 2015



1. GRADING OF SITE WILL BE COMPLETED BY OTHERS PRIOR TO CONSTRUCTION.
2. BACKFILL SHALL BE CLASS 'A' PER CITY OF MANDAN SPECIFICATIONS. MOISTURE REQUIREMENTS SHALL BE NO MORE THAN 3% ABOVE OR 2% BELOW OPTIMUM MOISTURE AS DETERMINED BY ASTM D-1557.

Begin Sanitary  
Sewermain Quantities  
Sta 1+21.45  
Sta 1+21.45  
Manhole #2

Sta 3+58.45  
Manhole #1



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EXCAVATION

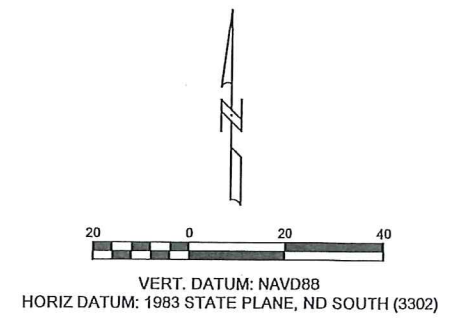
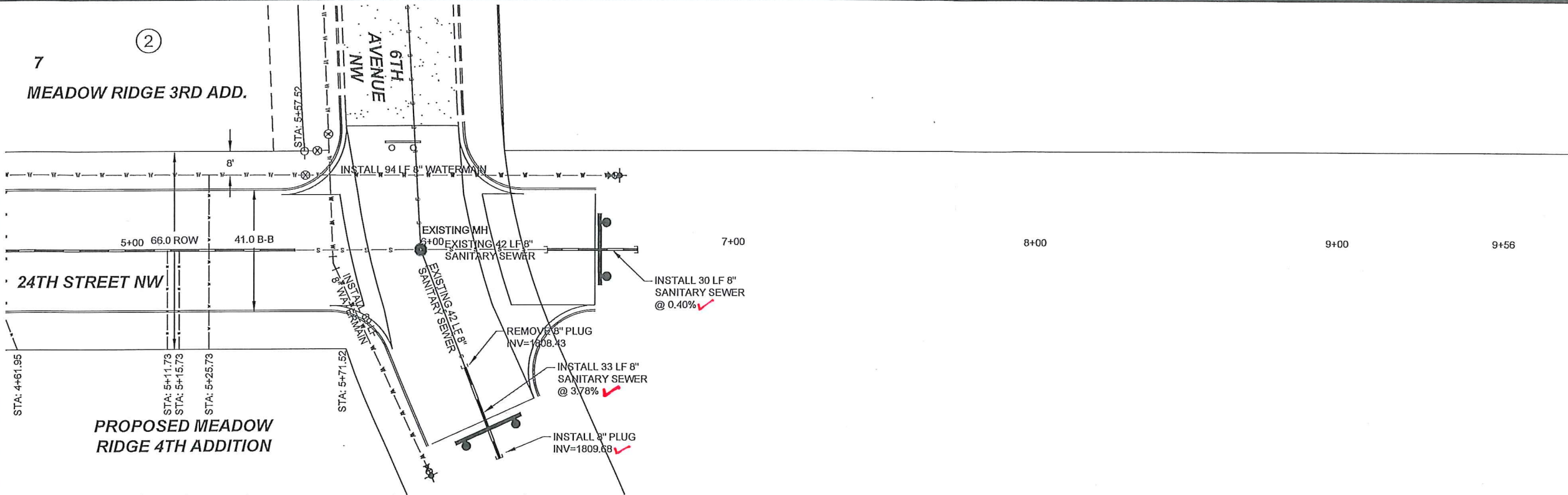
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24TH STREET NW  
MEADOW RIDGE 3RD ADDITION  
MANDAN, NORTH DAKOTA  
**As-built**

WATER & SEWER IMPROVEMENTS  
DISTRICT NO 2015-08  
SHEET 3 OF 5  
APRIL, 2015

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7  
MEADOW RIDGE 3RD ADD.



1. GRADING OF SITE WILL BE COMPLETED BY OTHERS PRIOR TO CONSTRUCTION.
2. BACKFILL SHALL BE CLASS 'A' PER CITY OF MANDAN SPECIFICATIONS. MOISTURE REQUIREMENTS SHALL BE NO MORE THAN 3% ABOVE OR 2% BELOW OPTIMUM MOISTURE AS DETERMINED BY ASTM D-1557.

**Begin Watermain Quantities**  
Sta 5+66.04

**Sta: 5+66.04**  
Remove Plugs & Connect to Existing Watermain

**Sta: 5+66.04-4'RT**  
8" 22.5' BEND

**Sta: 5+84.43-44'RT**  
8"x6" Reducer  
3 LF 6" Watermain  
6" Gate Valve & Box  
6" Hydrant

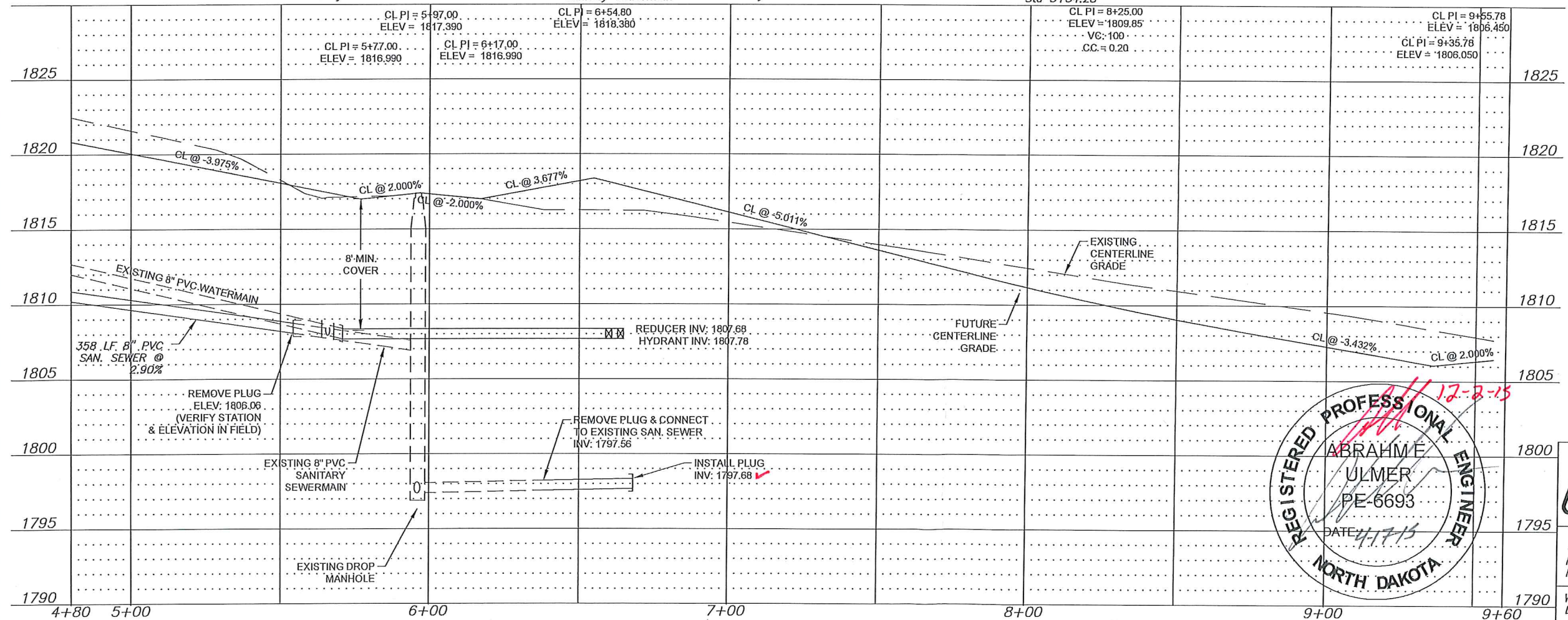
**Sta: 6+12 - 33' RT**  
Remove Plug & Connect to Existing Sanitary Sewermain

**Sta: 6+39**  
Remove Plug & Connect to Existing Sanitary Sewermain

**Sta 6+62.38-25'LT**  
8"x6" Reducer  
3 LF 6" Watermain  
6" Gate Valve & Box  
6" Hydrant

**End Watermain Quantities**  
Sta 6+40.18

**End Sanitary Sewermain Quantities**  
Sta 5+54.28



**TOTAL PROJECT**

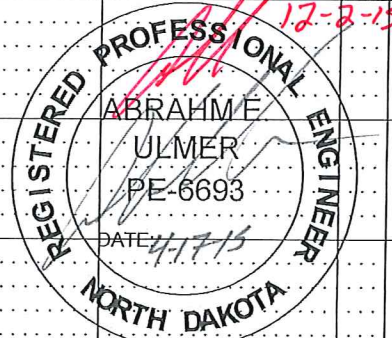
**APPROXIMATE QUANTITIES**

Spec No.	Sanitary Sewermain Items	Quantity
801-4.2	8" Sanitary Sewermain	421 LF
801-4.50	8"x4" Wye Branch	5 Ea
801-4.60	Bedding Material	95 Ton
1205-4.1	Manhole	1 Ea
1209-4.1	4" Sanitary Sewer Pipe	146 LF
1209-4.6	4" - 45° Bend	4 Ea

Spec No.	Watermain Items	Quantity
801-4.60	Bedding Material	90 Ton
901-4.10	6" Watermain	6 LF
901-4.20	8" Watermain	163 LF
901-4.51	6" Gate Valve & Box	2 Ea
901-4.70	6" Hydrant	2 Ea
1209-4.12	1" Water Service Pipe	232 LF
1209-4.41	1" Water Service Connection	4 Ea
1209-4.51	1" Curb Stop & 1 1/4" Box	4 Ea

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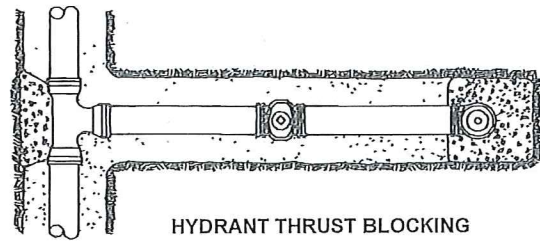


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24TH STREET NW  
MEADOW RIDGE 3RD ADDITION  
MANDAN, NORTH DAKOTA  
*As-built*

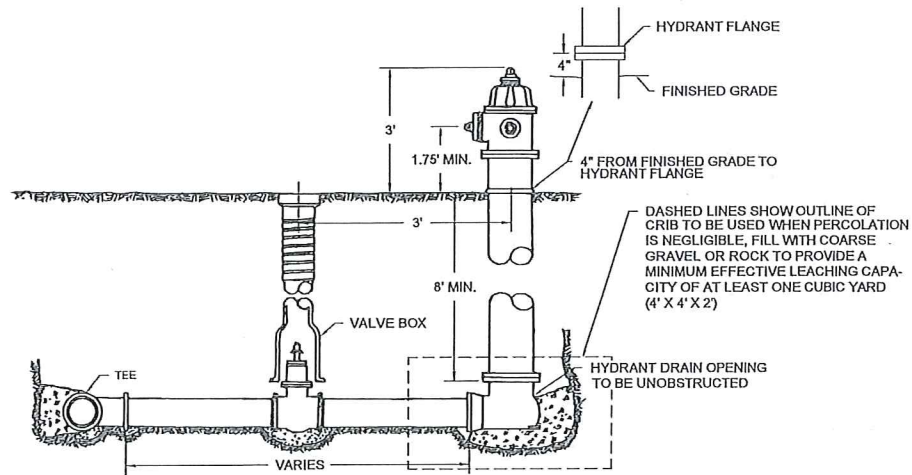
WATER & SEWER IMPROVEMENTS  
DISTRICT NO 2015-08

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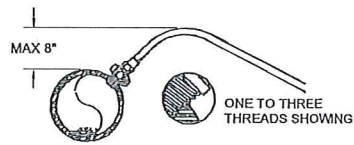


HYDRANT THRUST BLOCKING

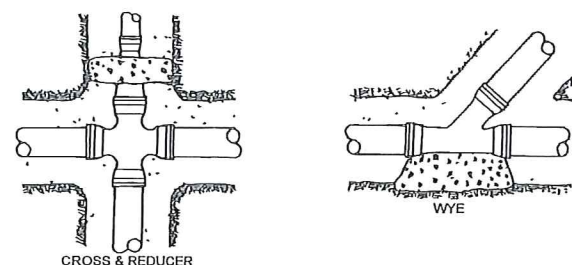
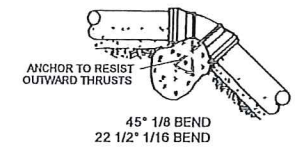
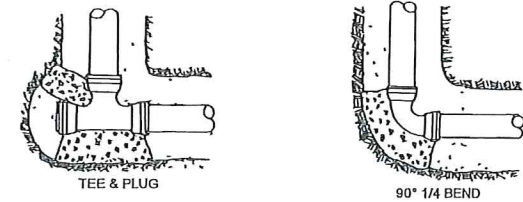
NOTE: (1) PIPE DEFLECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS  
 (2) BEDDING REQUIREMENTS SHALL BE AS INDICATED HEREON UNLESS MODIFIED IN THE SPECIFICATIONS  
 (3) CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI, AND MAX. SLUMP OF 3 INCHES AT TIME OF PLACEMENT.  
 (4) ALL DUCTILE IRON FITTINGS SHALL BE WRAPPED WITH 8-MIL PLASTIC



LAYOUT OF FIRE HYDRANT & VALVE



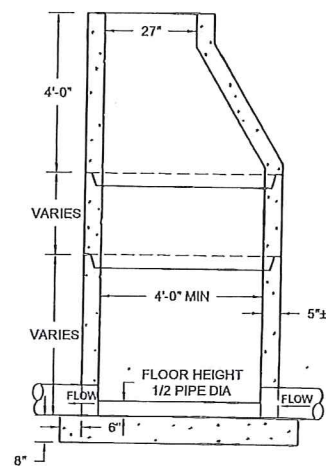
SERVICE LINE CORPORATION COCK DIRECT TAP POSITION



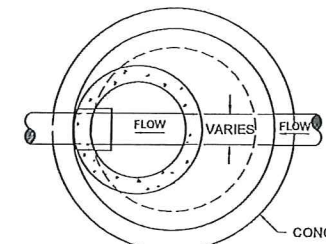
MAXIMUM SIZE OF OUTLET RECOMMENDED WITH SERVICE CLAMPS (INCHES)

NOMINAL PIPE SIZE	(CLASSES 100-150-200) DOUBLE STRAP
4"	1"
6"	1 1/2"
8"	2"
10"	2"
12"	2"
14"	2"
16"	2"

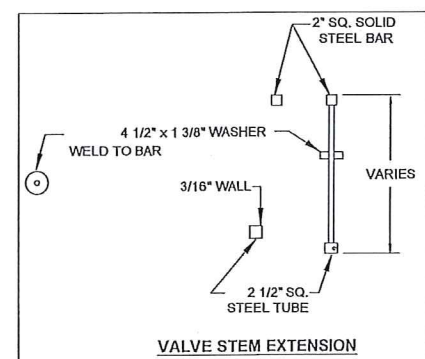
SADDLES FOR PVC WATERMAIN



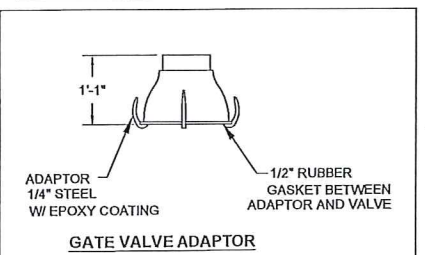
MANHOLES ARE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM SPECIFICATION C-478-73  
 ALL MANHOLES ARE TO HAVE ECCENTRIC CONES  
 ALL MANHOLE SECTION JOINTS TO BE SEALED WITH KENT SEALER  
 MANHOLE FLOORS SHALL SLOPE 1/2" PER FOOT



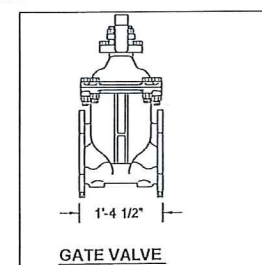
TYPICAL MANHOLE NON-INTEGRAL



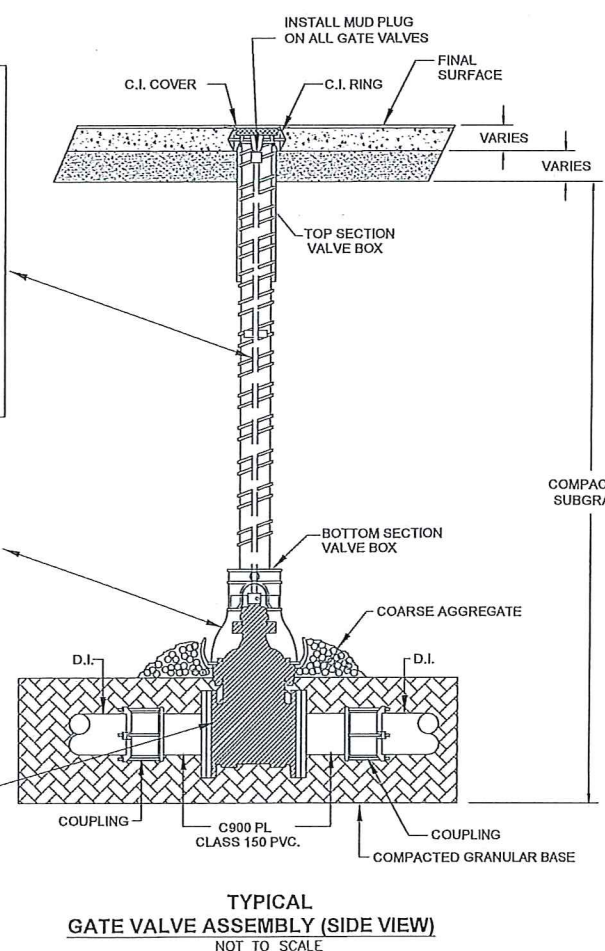
VALVE STEM EXTENSION



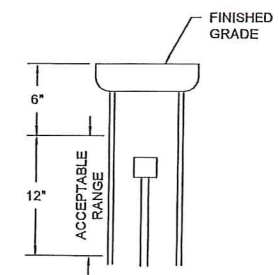
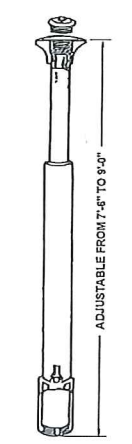
GATE VALVE ADAPTOR



GATE VALVE

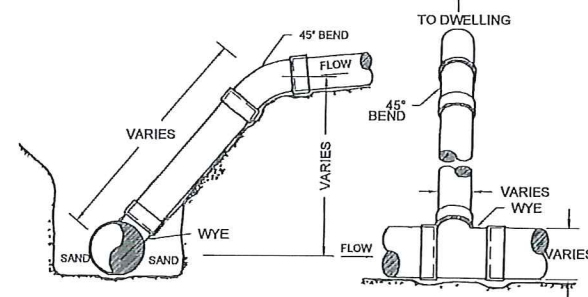


TYPICAL GATE VALVE ASSEMBLY (SIDE VIEW) NOT TO SCALE

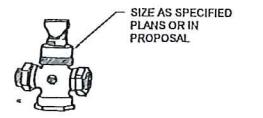


NOTE: VALVE STEM MUST BE IN RANGE OF 6" - 18" BELOW FINISHED GRADE.

VALVE STEM DETAIL

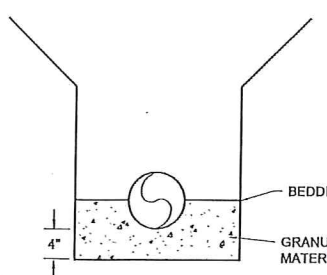


WYE AND RISER DETAILS

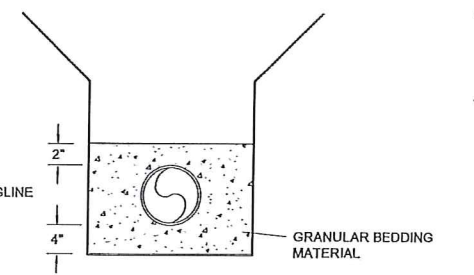


NOTE: 1. CURB STOP SHALL BE PLACED ON 4" X 8" X 2" CONCRETE BLOCK  
 2. AFTER CURB STOP IS PLACED ON CONCRETE BLOCK BACKFILL AROUND CURB STOP WITH WASHED GRAVEL APPROX. 1 SQ FT PER BOX

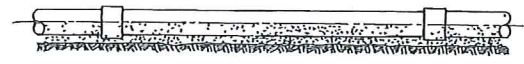
CURB STOP & DRAIN WITH BASE CURB BOX



SEWERMAIN BEDDING DETAIL

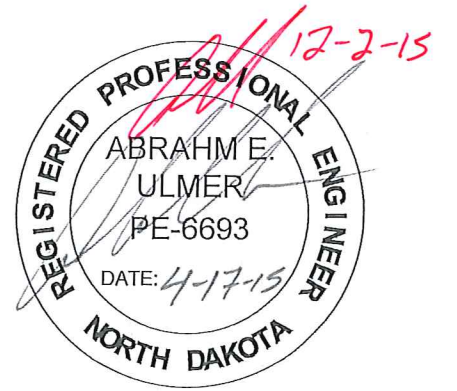


WATERMAIN BEDDING DETAIL



SAND CUSHION BEDDING-SUPPORT ENTIRE LENGTH OF PIPE SPECIAL COMPACTION REQUIRED TO PIPE SPRING LINE

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 MANDAN, NORTH DAKOTA

As-built

WATER & SANITARY SEWER IMPROVEMENTS  
 CITY PROJECT NO. 2015-08  
 DETAIL SHEET  
 SHEET 5 OF 5

APRIL, 2015