

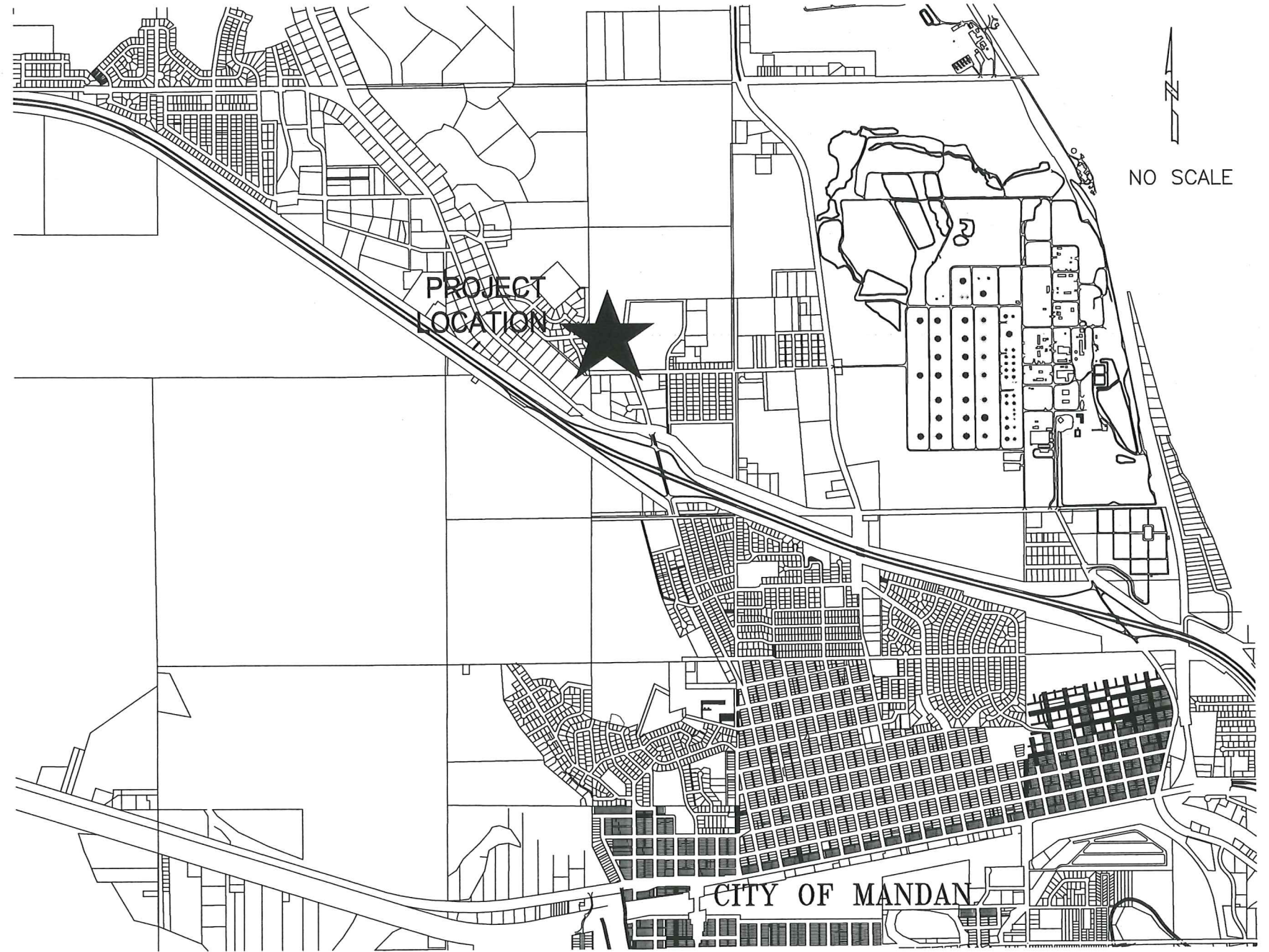
MISSOURI VALLEY ADDITION SANITARY & STORM SEWER IMPROVEMENTS

CITY PROJECT NO. 2013-07

MANDAN, NORTH DAKOTA

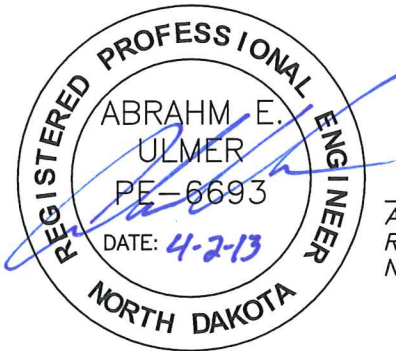
INDEX OF DRAWINGS

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8	DETAILS



DESIGN ENGINEER'S CERTIFICATE

I, ABRAHM E. ULMER, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA, HEREBY CERTIFY THAT THE PLANS FOR SANITARY & STORM SEWER IMPROVEMENTS, PROJECT NO. 2013-07, 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

CAUTION
UTILITY LOCATIONS ARE APPROXIMATE.
CONTRACTOR IS RESPONSIBLE FOR
VERIFYING LOCATION PRIOR TO
EXCAVATION



TOMAN ENGINEERING

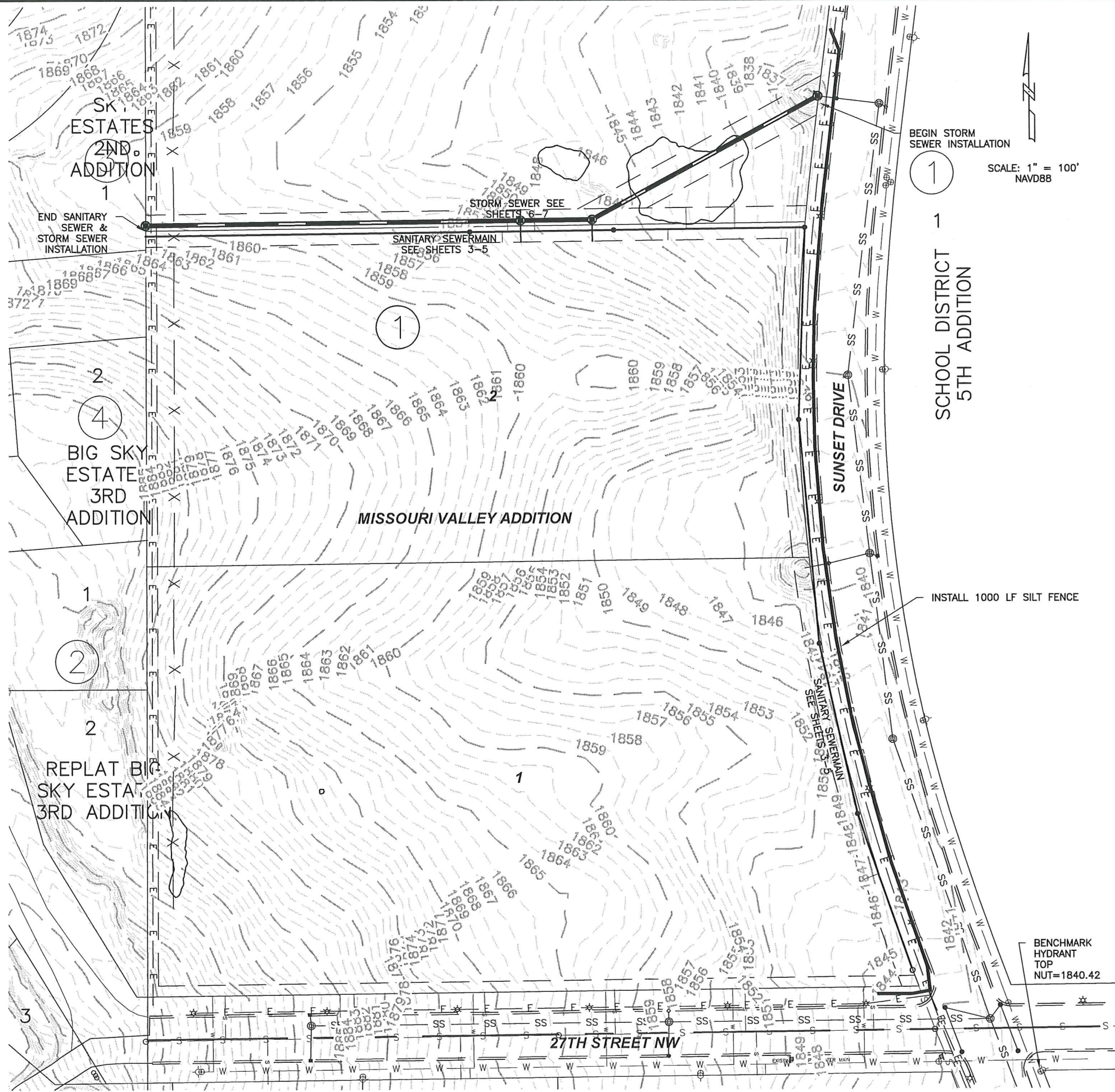
501 1st Street NW, Mandan, ND 58554
Phone: 701-663-6483 * Fax: 701-663-0923

TITLE SHEET
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 1 OF 8
MANDAN, ND

MARCH, 2013

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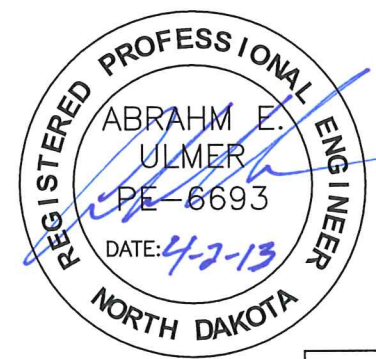
BEGIN STORM SEWER INSTALLATION

SCALE: 1" = 100'
NAVD88

SCHOOL DISTRICT
5TH ADDITION

LEGEND

- PROPOSED SANITARY SEWER
- s—s— PROPOSED SANITARY SEWER SERVICE
- PROPOSED SANITARY CLEANOUT
- PROPOSED SANITARY MANHOLE
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER MANHOLE
- X— EXISTING FENCELINE
- X— EXISTING UTILITY EASEMENT
- W—W— EXISTING WATERMAIN
- ⊕ EXISTING FIRE HYDRANT
- ◇ EXISTING CURB STOP
- ⊕ EXISTING GATE VALVE
- ⊙ EXISTING SANITARY MANHOLE
- ⊙ EXISTING STORM SEWER MANHOLE
- ⊙ EXISTING CATCH BASIN/CURB INLET
- S—S— EXISTING SANITARY SEWERMAIN
- SS— EXISTING STORM SEWER
- ⊙ EXISTING STREET LIGHT
- ⊕ EXISTING POWER POLE
- ← EXISTING GUY WIRE
- OH—OH— EXISTING OVERHEAD ELECTRIC
- FO—FO— EXISTING FIBER OPTIC
- CTV— EXISTING CABLE TV
- E—E— EXISTING UNDERGROUND ELECTRIC
- G—G— EXISTING GAS LINE
- ||— EXISTING CURB & GUTTER
- EXISTING TREES/BUSHES



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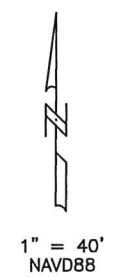
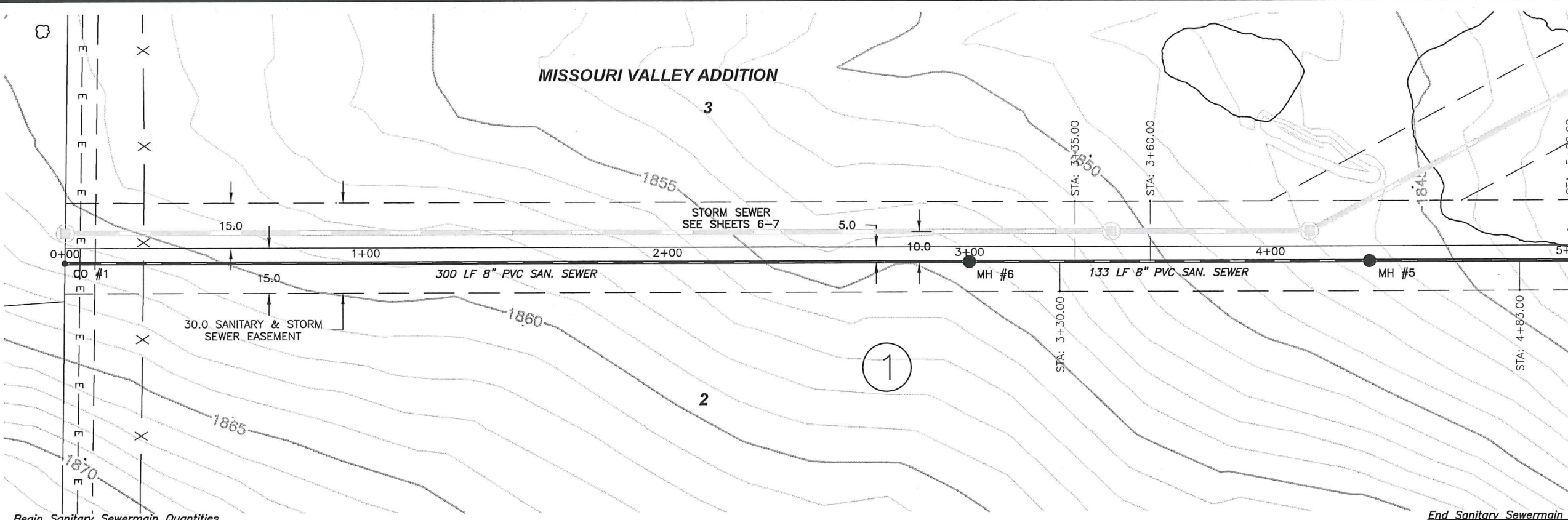
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PROJECT LAYOUT
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 2 OF 8
MANDAN, ND

MARCH, 2013

MISSOURI VALLEY ADDITION

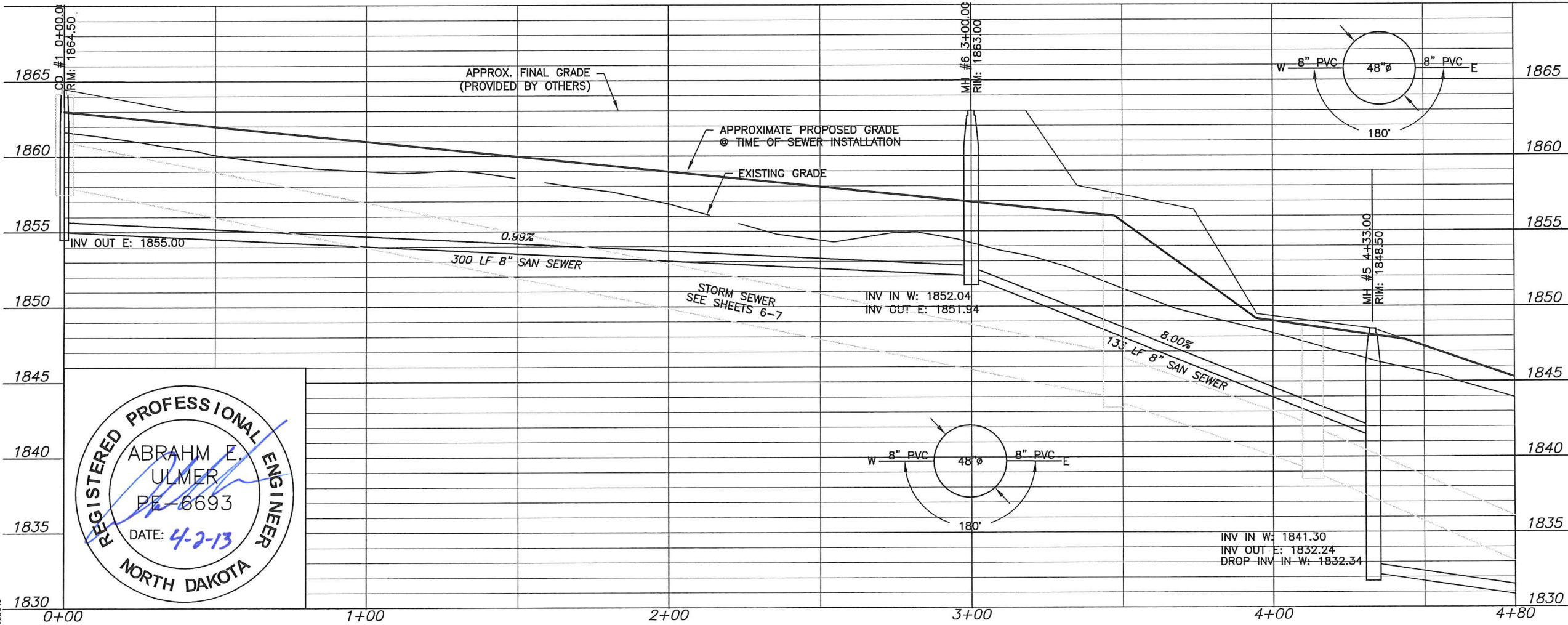


Begin Sanitary Sewermain Quantities
Sta 0+00.00
Sta 0+00.00
8" Cleanout #1

Sta 3+00.00
Manhole #6

End Sanitary Sewermain Quantities
Sta 4+80.00
Sta 4+33.00
Manhole #5
(DROP MANHOLE)

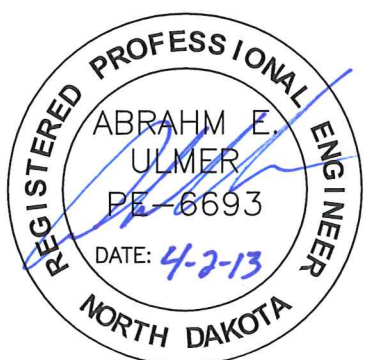
CAUTION
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1. Backfill shall be Class "A" as per City of Mandan Specifications.
2. SDR-26 shall be used when sanitary sewer depth is 20 feet or more (incidental).
3. Dirt work shall be completed by others prior to sewer installation.
4. Existing fence line shall be removed by others prior to construction.

APPROXIMATE QUANTITIES

801-4.2	Sanitary Sewermain	480 LF
801-4.6	Bedding Material	95 TON
801-4.51	8" x 6" Wye Branch	3 EA
801-4.67	8" Cleanout	1 EA
1205-4.1	Concrete Manhole	1 EA
1205-4.3	Concrete Drop Manhole	1 EA
1209-4.2	6" Sanitary Service Pipe	50 LF
1209-4.7	6" 45' Bend	3 EA

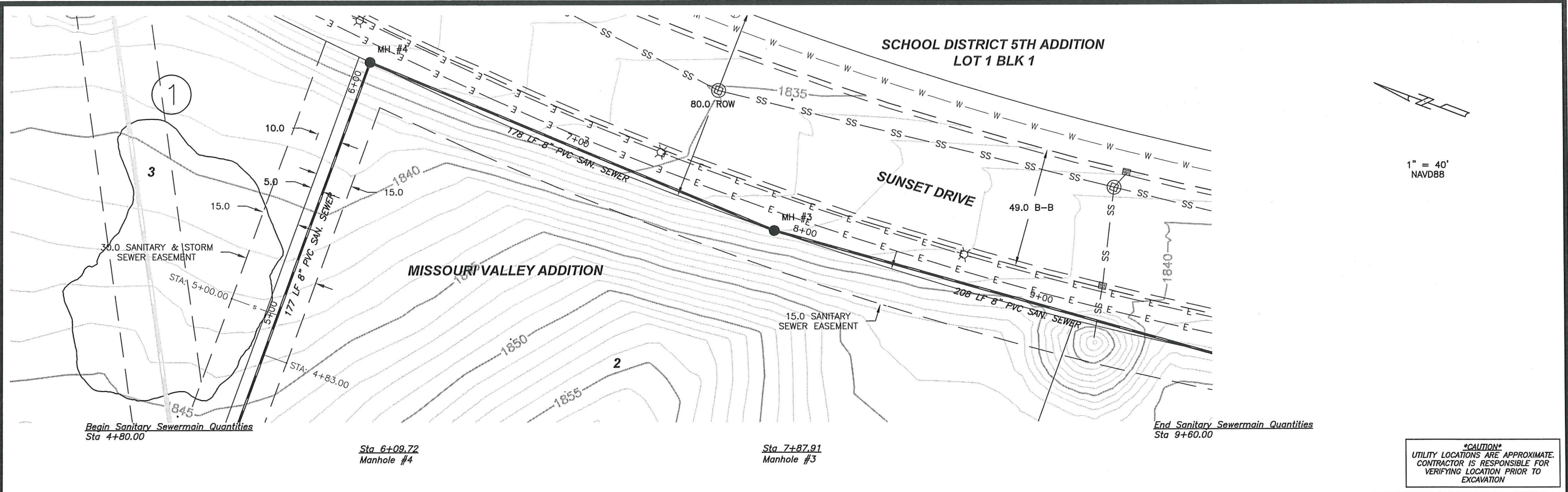


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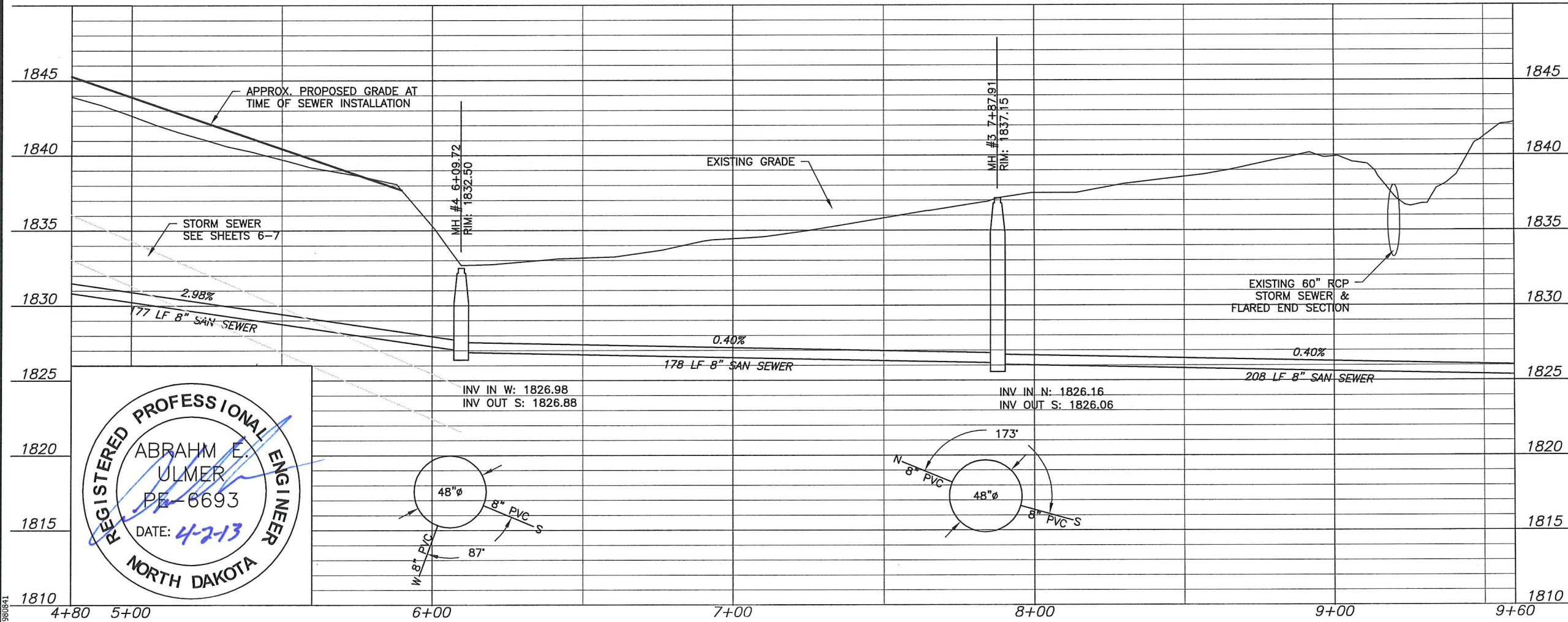
SANITARY SEWER 0+00 - 4+80
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 3 OF 8
MANDAN, ND

MARCH, 2013



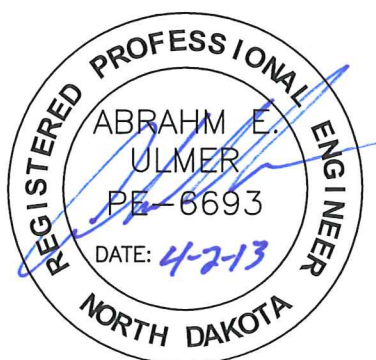
CAUTION
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EXCAVATION



- Backfill shall be Class "A" as per City of Mandan Specifications.
- SDR-26 shall be used when sanitary sewer depth is 20 feet or more (incidental).
- Dirt work shall be completed by others prior to sewer installation.
- At Sta. 9+20 the Contractor shall Remove & Replace existing RCP storm sewer, Flared End Section, and rip rap, as needed to facilitate Sanitary Sewer installation. (Incidental)
- Contractor shall Clear & Grub existing vegetation as needed. This shall be considered incidental to the installation of the sewer lines. Removal and Disposal of material from site is incidental.

APPROXIMATE QUANTITIES

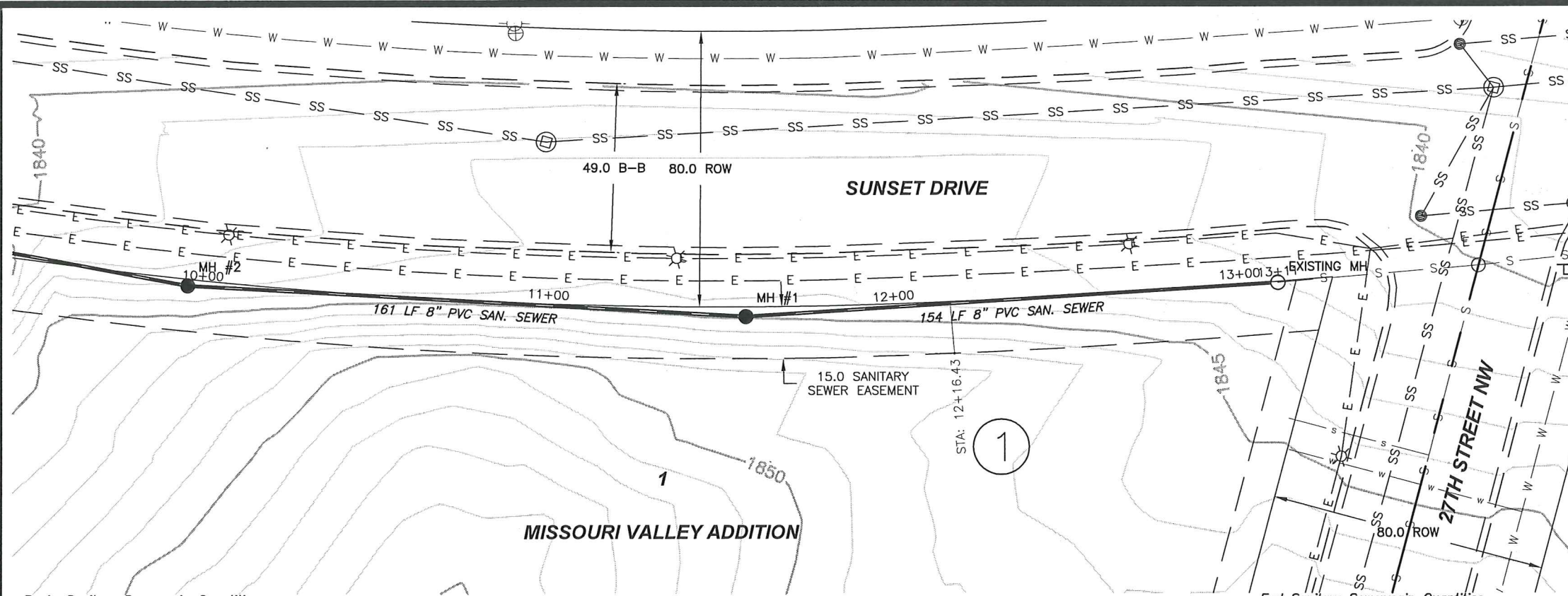
801-4.2	Sanitary Sewermain	480 LF
801-4.6	Bedding Material	90 TON
801-4.51	8" x 6" Wye Branch	2 EA
1205-4.1	Concrete Manhole	2 EA
1209-4.2	6" Sanitary Service Pipe	30 LF
1209-4.7	6" 45' Bend	2 EA



TE TOMAN ENGINEERING
1252
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SANITARY SEWER 4+80 - 9+60
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 4 OF 8
MANDAN, ND
MARCH, 2013



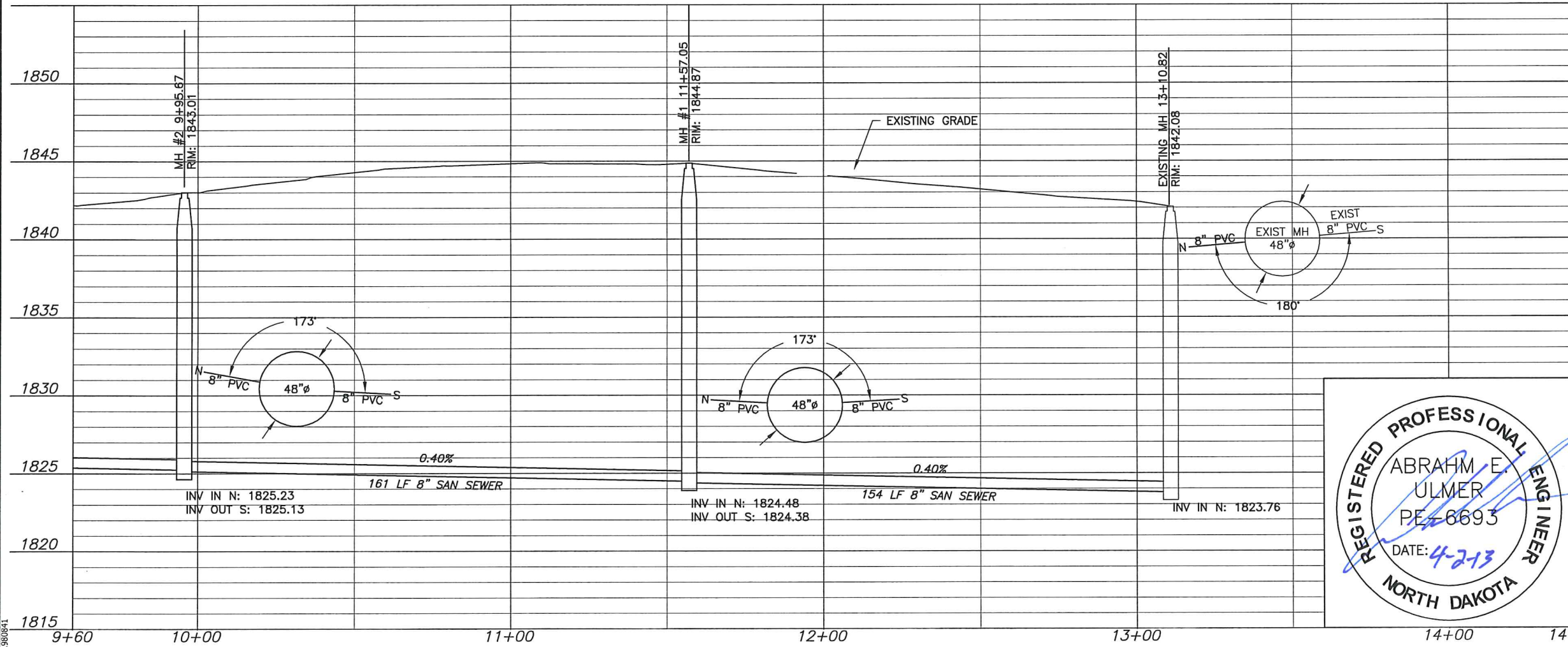
Begin Sanitary Sewermain Quantities
Sta 9+60.00

Sta 9+95.67
Manhole #2

Sta 11+57.05
Manhole #1

End Sanitary Sewermain Quantities
Sta 13+10.82
Existing Manhole

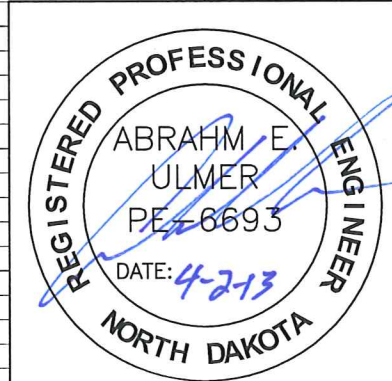
CAUTION
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1. Backfill shall be Class "A" as per City of Mandan Specifications.
2. SDR-26 shall be used when sanitary sewer depth is 20 feet or more (incidental).
3. Dirtwork shall be completed by others prior to sewer installation.
4. Break into existing manhole & pour new invert (incidental to 8" sanitary sewer installation).

APPROXIMATE QUANTITIES

801-4.2	Sanitary Sewermain	347 LF
801-4.6	Bedding Material	70 TON
801-4.51	8"x6" Wye Branch	1 EA
1205-4.1	Concrete Manhole	2 EA
1209-4.2	6" Sanitary Sewer Pipe	14 LF
1209-4.7	6" 45' Bend	1 EA

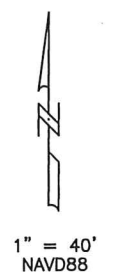
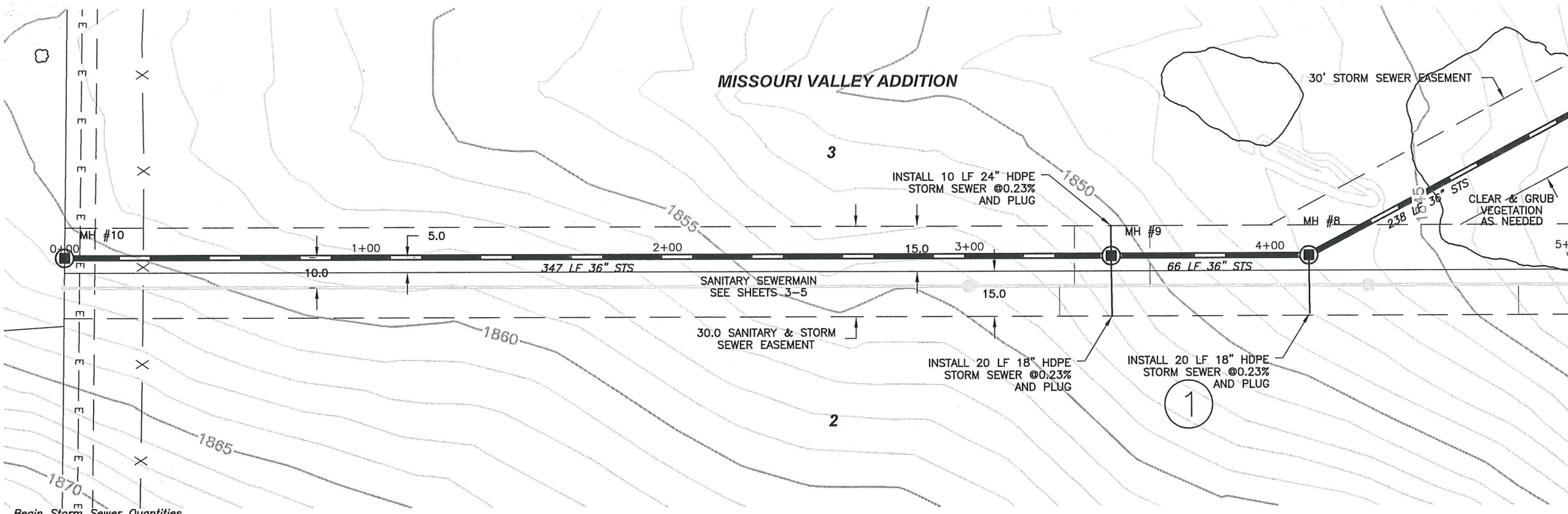


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SANITARY SEWER 9+60 - END
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 5 OF 8
MANDAN, ND

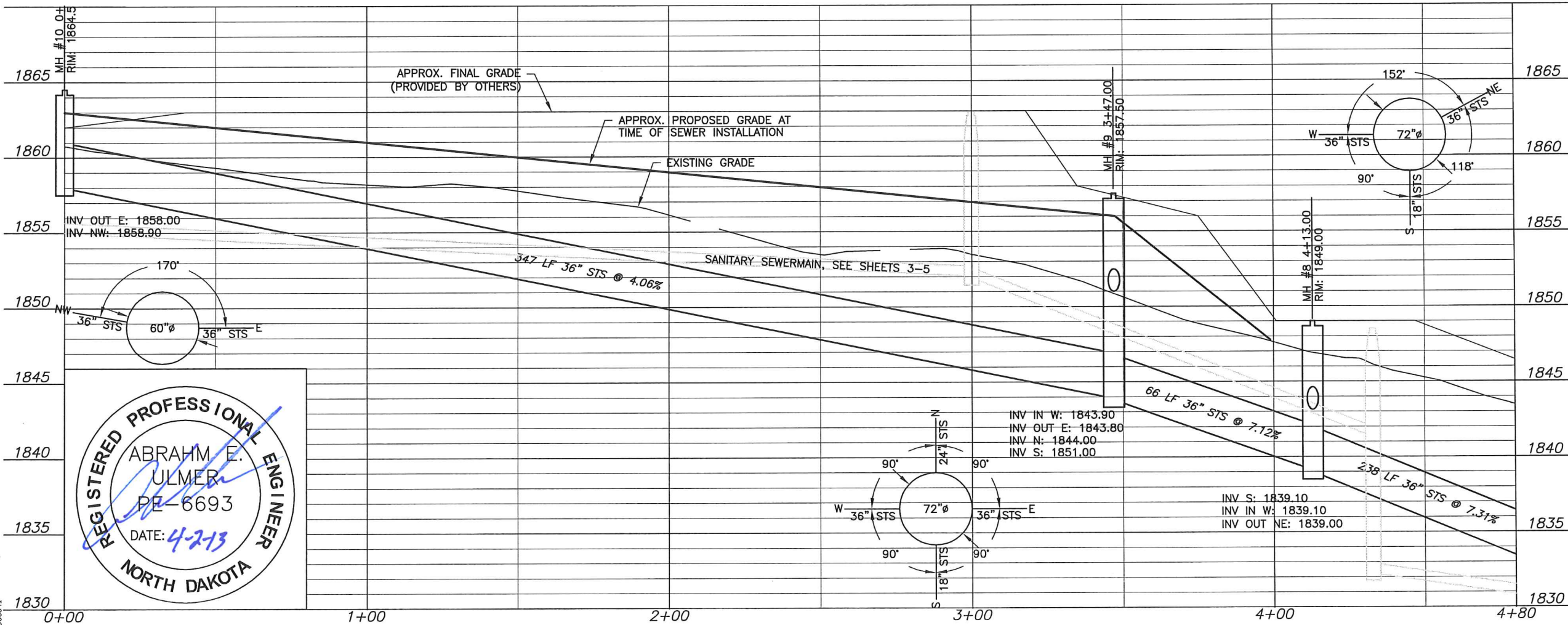
MARCH, 2013



Begin Storm Sewer Quantities
Sta 0+00.00
Sta 0+00.00
Manhole #10

Sta 3+47.00
Manhole #9
Sta 4+13.00
Manhole #8

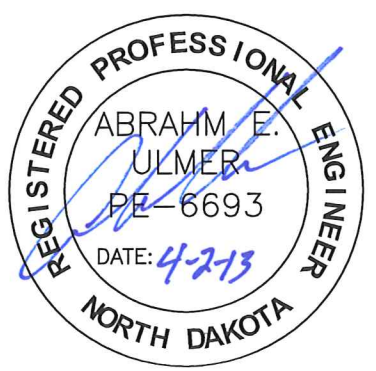
CAUTION
UTILITY LOCATIONS ARE APPROXIMATE.
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- Backfill shall be Class "A" as per City of Mandan Specifications.
- SDR-26 shall be used when sanitary sewer depth is 20 feet or more (incidental).
- Dirt work shall be completed by others prior to storm sewer installation.
- Contractor shall Clear & Grub existing vegetation as needed. This shall be considered incidental to the installation of the sewer lines. Removal and Disposal of material from site is incidental.
- Manhole #10 shall be installed with a knock out for a future 36" STS pipe. Contractor shall board up this knock out & make it water tight. (Incidental)
- Storm sewer pipe materials shall be HDPE as per city of Mandan specifications.

APPROXIMATE QUANTITIES

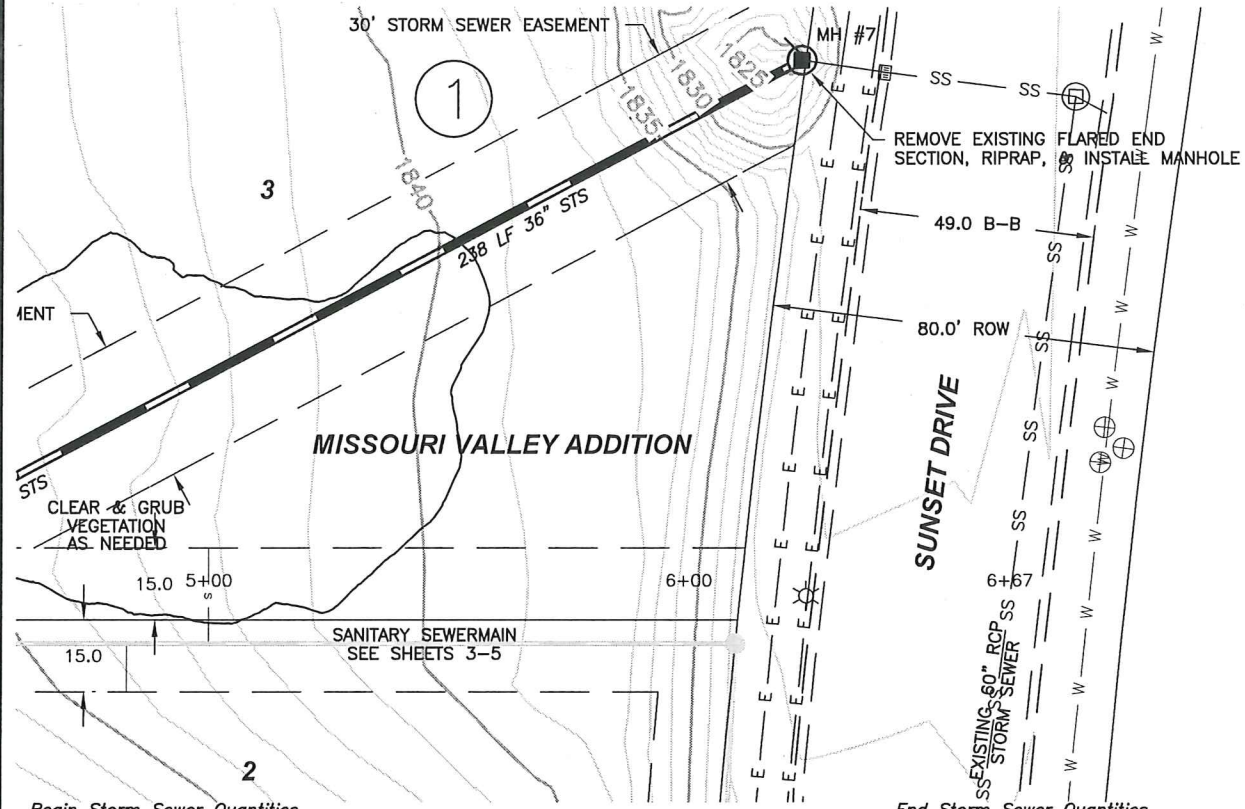
801-4.6	Bedding Material	760 TON
802-4.3	18" Storm Sewer Pipe	40 LF
802-4.5	24" Storm Sewer Pipe	10 LF
802-4.9	36" Storm Sewer Pipe	489 LF
1205-4.1C	60" Concrete Manhole	1 EA
1205-4.1D	72" Concrete Manhole	2 EA



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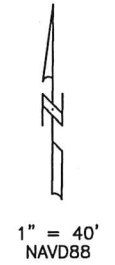
STORM SEWER 0+00 - 4+80
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 6 OF 8
MANDAN, ND
MARCH, 2013



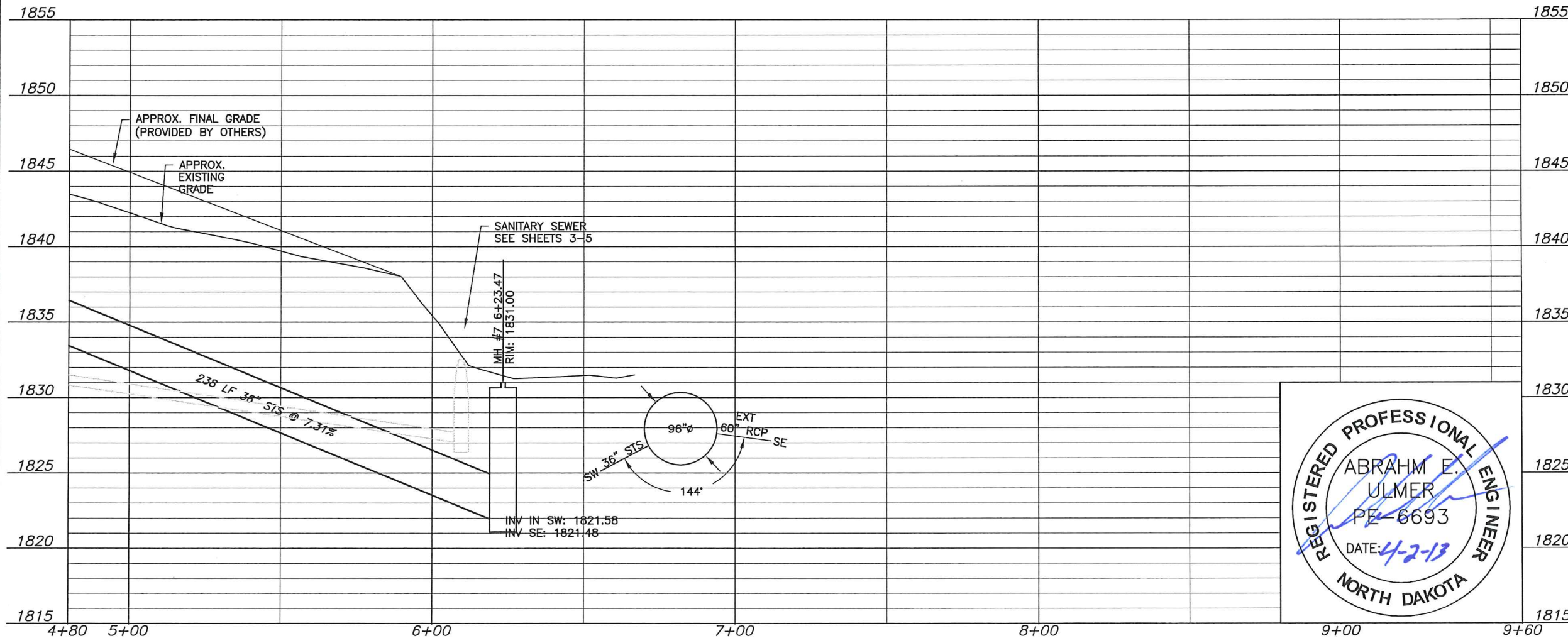
Begin Storm Sewer Quantities
Sta 4+80.00

End Storm Sewer Quantities
Sta 6+23.47
Sta 6+23.47, 111.83 Lt
Manhole #7



SCHOOL DISTRICT
5TH ADDITION

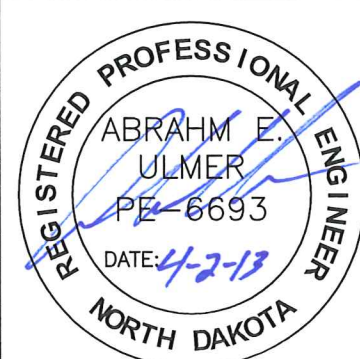
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EXCAVATION



1. Backfill shall be Class "A" as per City of Mandan Specifications.
2. Dirt work shall be completed by others prior to storm sewer installation.
3. Remove and Salvage existing Rip Rap, RCP Flared End Section & Install new Manhole.(Incidental)
4. Contractor shall Clear & Grub existing vegetation as needed. This shall be considered incidental to the installation of the sewer lines. Removal and Disposal of material from site is incidental.
5. Storm sewer pipe materials shall be HDPE as per city of Mandan specifications.

APPROXIMATE QUANTITIES

801-4.6	Bedding Material	240 TON
802-4.9	36" Storm Sewer Pipe	162 LF
1205-4.1H	96" Concrete Manhole	1 EA

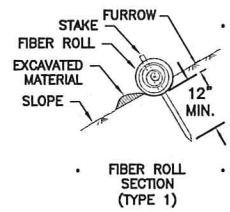
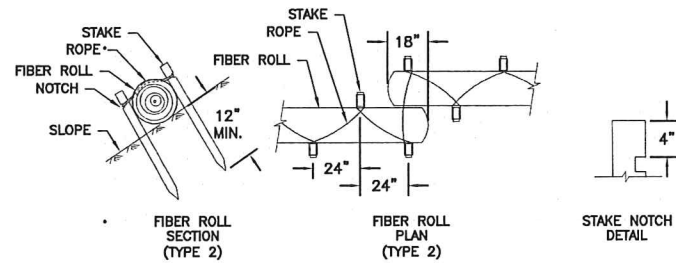
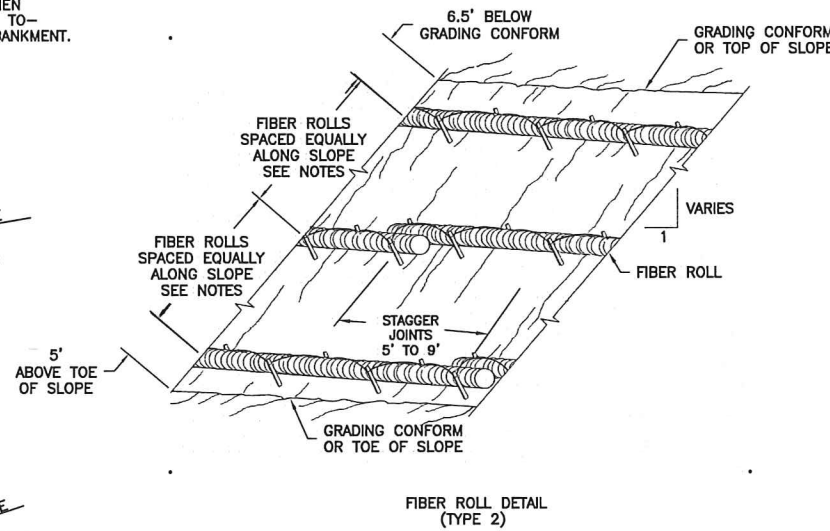
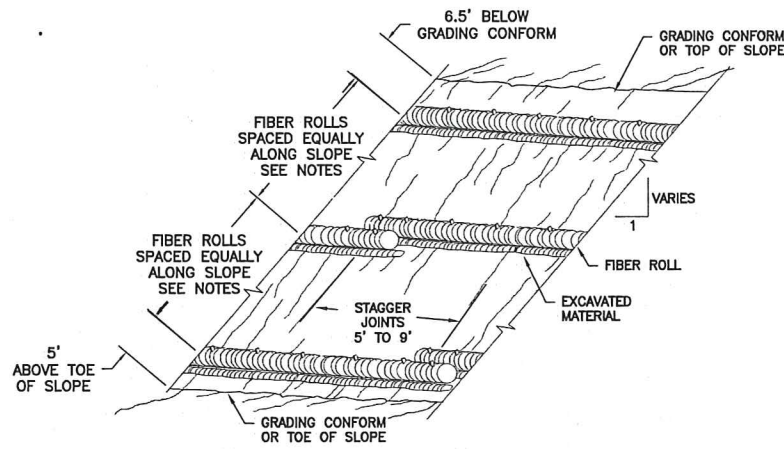
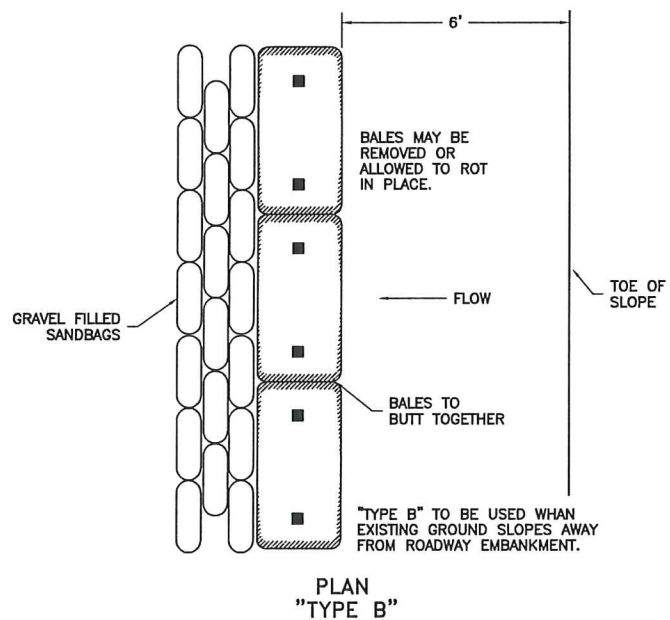
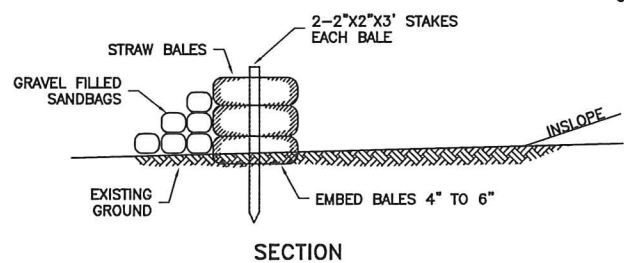
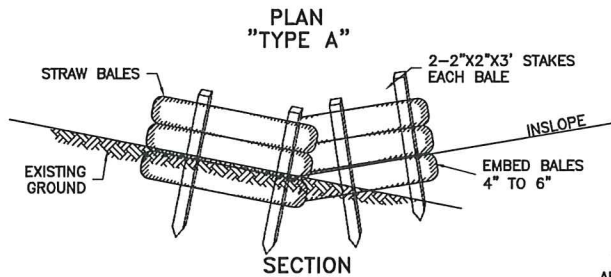
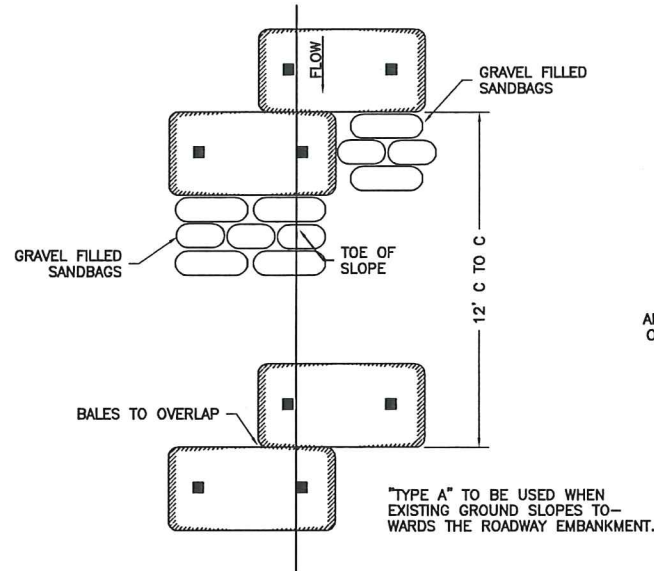


STORM SEWER 4+80 - 6+66.81
MISSOURI VALLEY ADDITION

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 7 OF 8
MANDAN, ND MARCH, 2013

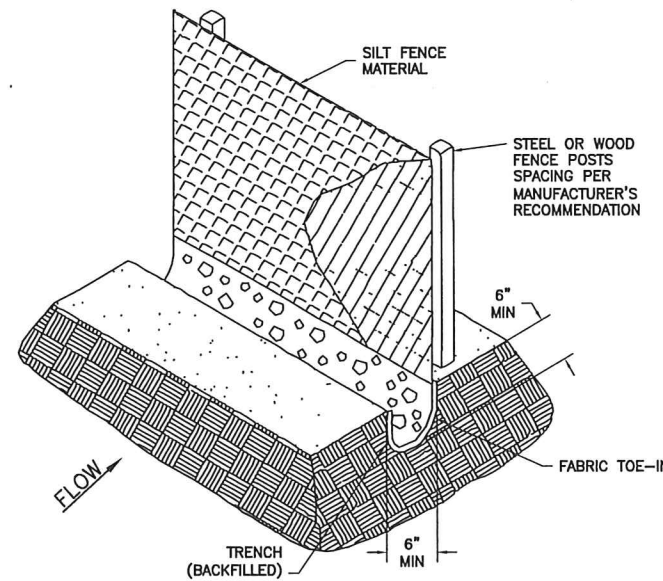
H:\Projects\1000\1252\06-07 1252 Storm Sewer.dwg, 4/2/2013 2:53:52 PM, SHARP AR-M355N PCL6, 1:1

BALED STRAW EROSION CHECKS

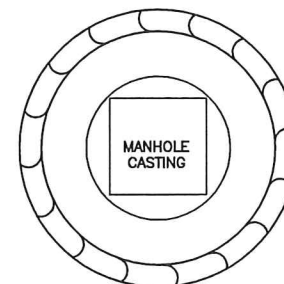


- NOTES:
- FIBER ROLL SPACING VARIES DEPENDING UPON SLOPE INCLINATION.
- | SLOPE | SPACING |
|-------|---------|
| 2:1 | 10 FEET |
| 3:1 | 15 FEET |
| 4:1 | 20 FEET |
- INSTALLATION SHOWN ARE FOR SLOPE INCLINATION OF 1:10 & STEEPER.

- NOTES:
- SILT FENCE FABRIC SHALL BE ONE OF THE FOLLOWING:
A. BURLAP: AASHTO M182
B. POLYPROPYLENE FABRIC: ASTM D4397
C. NYLON NETTING REINFORCED FABRIC
D. PREMANUFACTURED SILT FENCE MEETING EQUAL PROPERTIES OF ABOVE.
 - SILT FENCE FABRIC SHALL HAVE A MINIMUM BURSTING STRENGTH 150 PSI
 - SILT FENCE FABRIC SHALL HAVE EDGES TREATED TO PREVENT UNRAVELING.
 - MINIMUM HEIGHT OF THE SILT FENCE TO BE 2'-6" WITH A MINIMUM OF 6" CLEARANCE BETWEEN THE TOP OF THE SILT FENCE AND THE TOP OF THE POSTS.
 - INSTALL THE POSTS ON SLIGHT ANGLE TOWARDS THE ANTICIPATED RUNOFF SURFACE.
 - CONTRACTOR SHALL ASSUME RESPONSIBILITY TO APPLY, MAINTAIN, AND TRANSFER A NORTH DAKOTA STATE HEALTH DEPARTMENT PERMIT. THIS IS INCIDENTAL TO THE PROJECT.

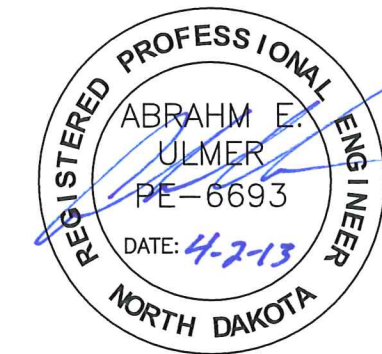
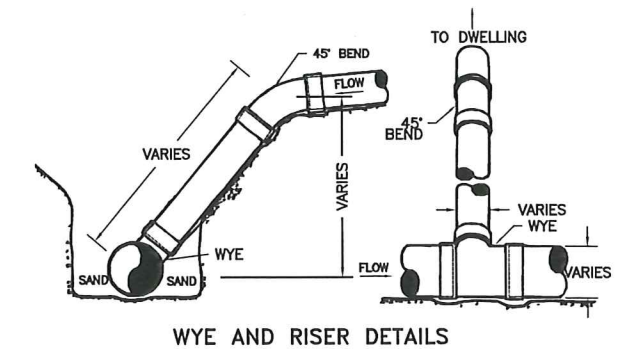
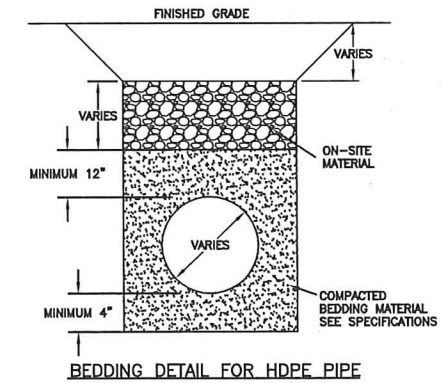


SILT FENCE



FIBER ROLL INSTALLATION

- NOTES:
- FIBER ROLLS SHALL BE STAKED EVERY 2 FEET USING 1" X 2" X 18" STAKES.
 - FIBER ROLLS SHALL BE INSTALLED AND MAINTAINED UNTIL PAVING OPERATIONS ARE COMPLETE.
 - MANHOLES SHALL HAVE SILT FENCE FABRIC INSTALLED BETWEEN THE CASTING AND THE CONCRETE SECTION.
 - EROSION CONTROL MEASURES SHALL BE LEFT IN PLACE UNTIL CONCRETE AND PAVING OPERATIONS ARE COMPLETE.



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DETAILS
MISSOURI VALLEY ESTATES

SANITARY & STORM SEWER IMPROVEMENTS
CITY PROJECT NO. 2013-07
SHEET 8 OF 8
MANDAN, ND MARCH, 2013