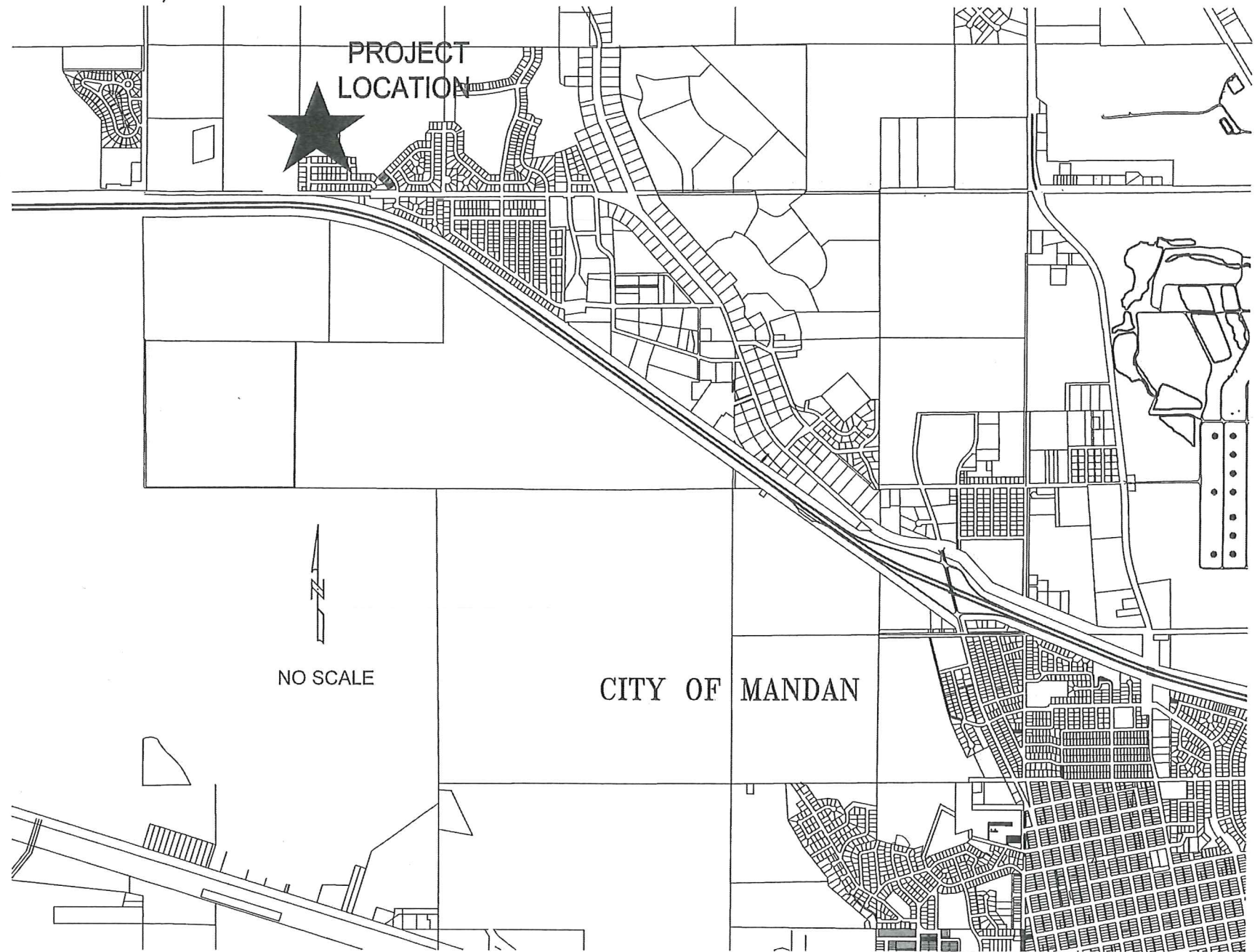


WEST HILLS ESTATES 3rd ADDITION
 WATER & SEWER IMPROVEMENT
 CITY PROJECT NO. 2014-05
 MANDAN, NORTH DAKOTA

ASBUILT

INDEX OF DRAWINGS

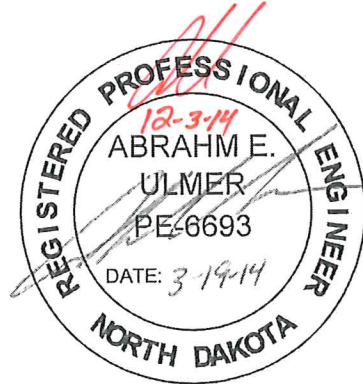
SHT NO	TITLE
1	TITLE SHEET
2	PROJECT LAYOUT
3	CORVETTE STREET NW PLAN & PROFILE
4	CROWN POINT ROAD NW PLAN & PROFILE
5	WATER & SEWER DETAILS



NO SCALE

DESIGN ENGINEER'S CERTIFICATE

I, ABRAHM E. ULMER, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF NORTH DAKOTA, HEREBY CERTIFY THAT THE PLANS FOR WEST HILLS ESTATES 3RD ADDITION WATER & SEWER IMPROVEMENTS, CITY PROJECT NO. 2014-05, 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



WEST HILLS ESTATES 3RD ADDITION
 MANDAN, NORTH DAKOTA

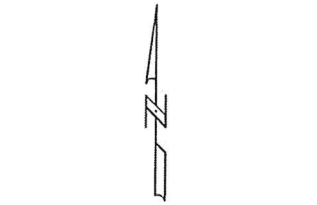
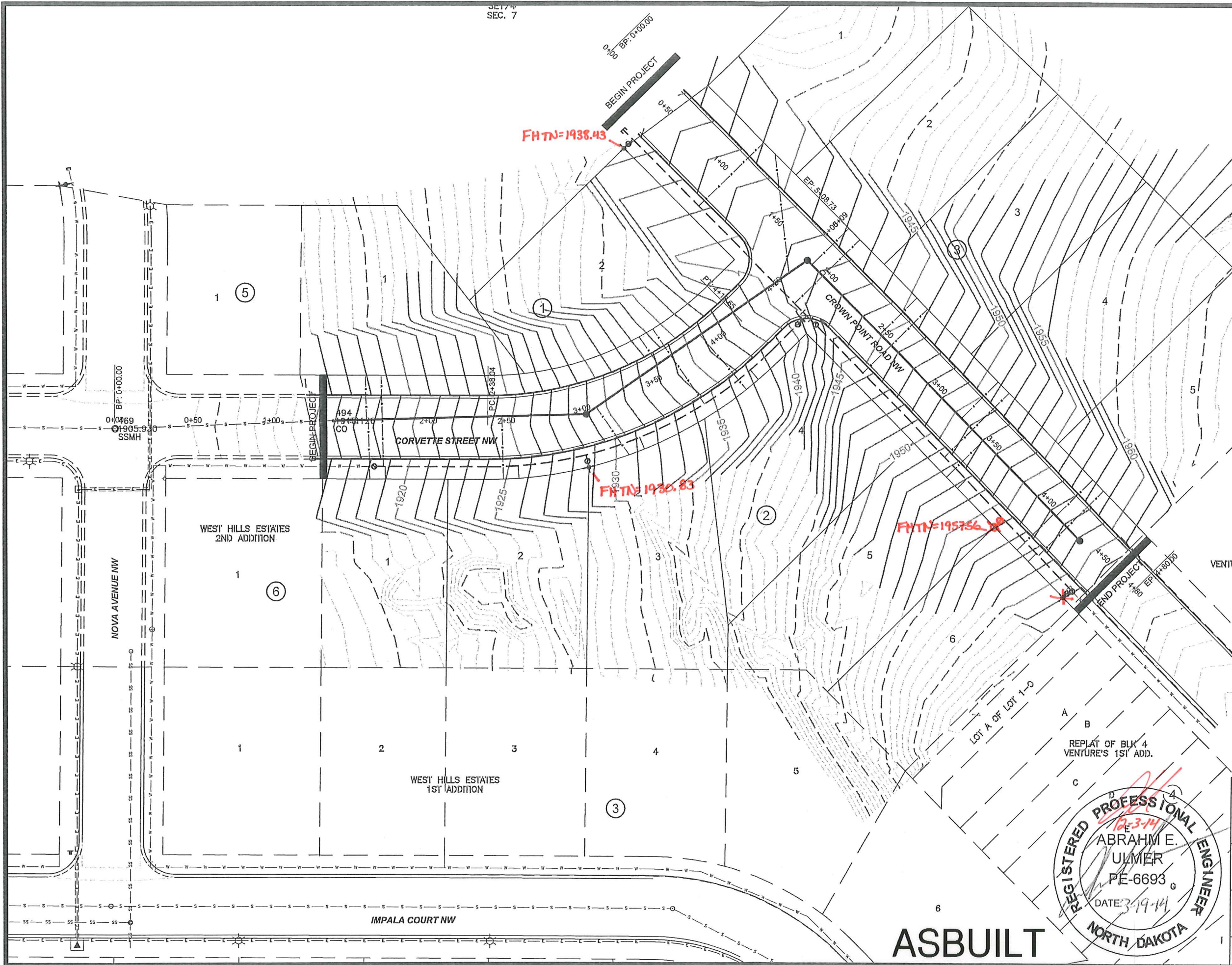
WATER & SEWER IMPROVEMENT
 CITY PROJECT NO. 2014-05

SHEET 1 OF 5

MARCH, 2014

TITLE SHEET

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



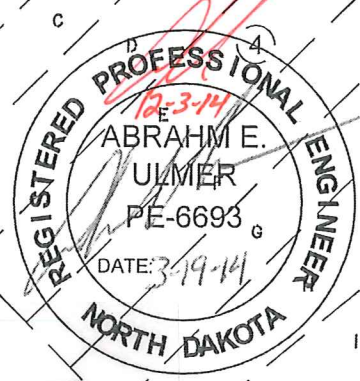
VERT. DATUM: NAV 88
HORIZ DATUM: 1983 STATE PLANE, ND SOUTH (3302)

LEGEND

- EXISTING MANHOLE
- EXISTING TELEPHONE PEDESTAL
- * EXISTING STREET LIGHT
- ⊕ EXISTING UTILITY POLE
- ⊖ EXISTING ANCHOR POLE
- EXISTING ELECTRICAL BOX
- ⊙ EXISTING TREE
- ⊕ EXISTING FIRE HYDRANT
- ⊗ EXISTING GATE VALVE
- ⊕ EXISTING SIGN
- s — EXISTING SANITARY SEWERMAIN
- w — EXISTING WATERMAIN
- o — EXISTING OVERHEAD POWER LINE
- ≡≡≡ EXISTING CURB & GUTTER
- s — EXISTING STORM SEWER
- g — EXISTING GAS LINE
- t — EXISTING TELEPHONE CABLE
- - - EXISTING CONTOUR MAJOR
- - - EXISTING CONTOUR MINOR
- ⊕ PROPOSED FIRE HYDRANT
- ⊗ PROPOSED GATE VALVE
- ⊕ PROPOSED CURB STOP
- PROPOSED SANITARY SEWER MANHOLE
- ≡≡≡ PROPOSED CURB & GUTTER
- - - PROPOSED WATERMAIN
- w — PROPOSED WATER SERVICE
- s — PROPOSED SANITARY SEWERMAIN
- g — PROPOSED SANITARY SERVICE

* Elevations shown were taken using GPS survey equipment

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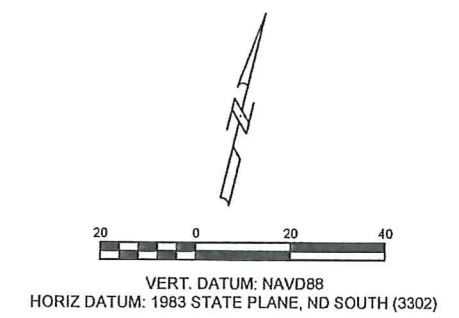
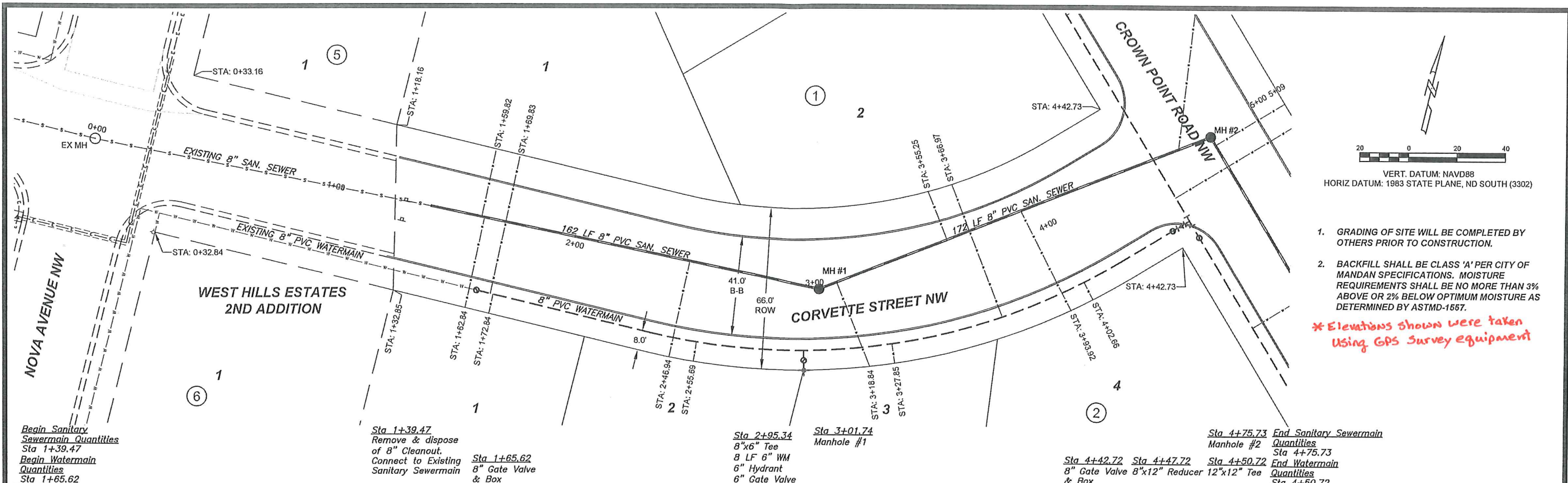
TOMAN ENGINEERING
501 1st Street NW, Mandan, ND 58554
Phone: 701-663-6483 * Fax: 701-663-0923

WEST HILLS ESTATES 3RD ADDITION
MANDAN, ND
WATER & SEWER IMPROVEMENTS
CITY PROJECT NO. 2014-05

SHEET 2 OF 5 MARCH, 2014

PROJECT LAYOUT

ASBUILT



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.
- * Elevations shown were taken using GPS survey equipment*

Begin Sanitary Sewermain Quantities Sta 1+39.47
 Begin Watermain Quantities Sta 1+65.62

Sta 1+39.47 Remove & dispose of 8" Cleanout. Connect to Existing Sanitary Sewermain

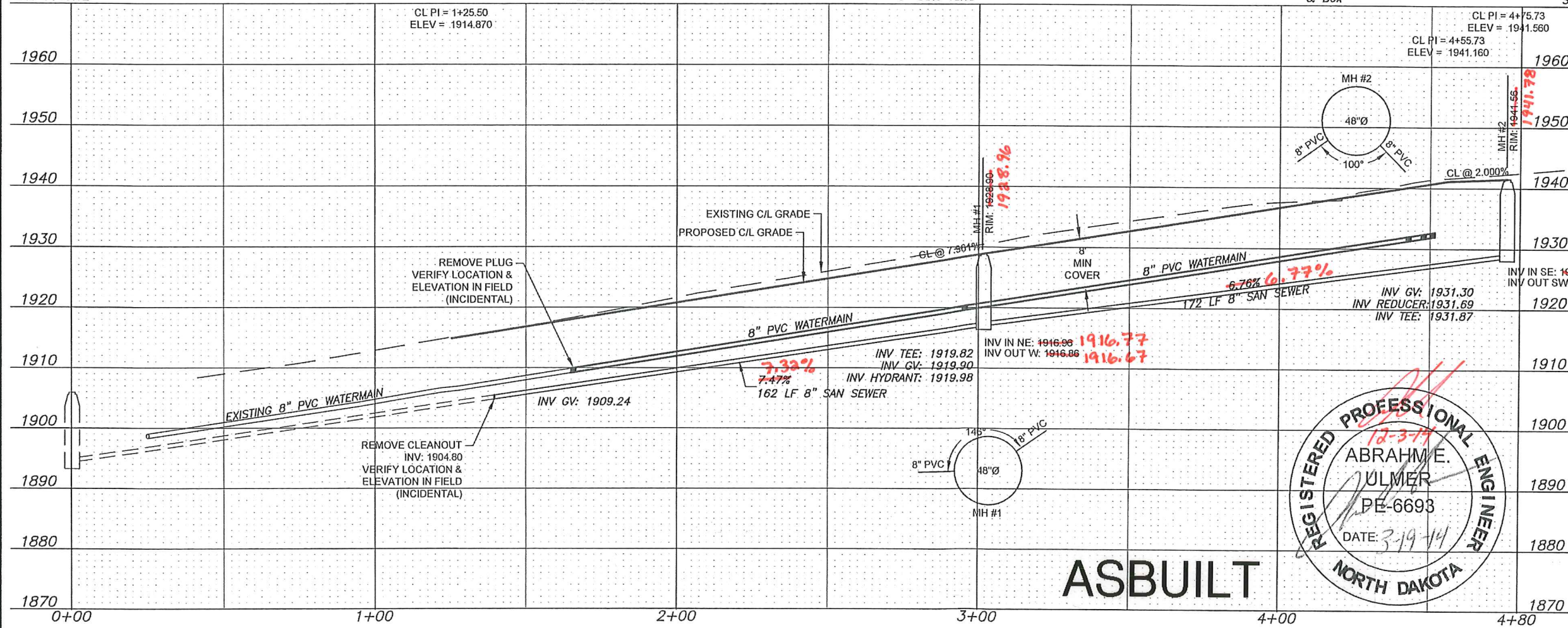
Sta 1+65.62 8" Gate Valve & Box

Sta 2+95.34 8"x6" Tee
 8 LF 6" WM
 6" Hydrant
 6" Gate Valve

Sta 3+01.74 Manhole #1

Sta 4+75.73 End Sanitary Sewermain Manhole #2

Sta 4+42.72 8" Gate Valve 8"x12" Reducer & Box
 Sta 4+47.72 12"x12" Tee
 Sta 4+50.72 End Watermain Quantities

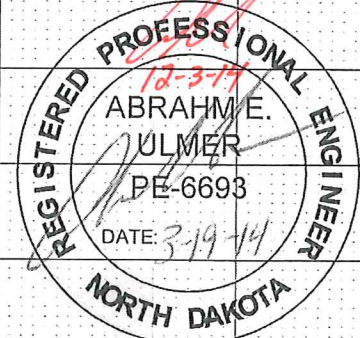


APPROXIMATE QUANTITIES

Spec No.	Sanitary Sewermain Items	Quantity
801-4.2	8" Sanitary Sewermain	334 LF
801-4.50	8"x4" Wye Branch	6 Ea
801-4.60	Bedding Material	85 Ton
1205-4.1	Manhole	1 Ea
1209-4.1	4" Sanitary Sewer Pipe	210 LF
1209-4.6	4" - 45° Bend	6 Ea

Spec No.	Watermain Items	Quantity
801-4.60	Bedding Material	110 Ton
901-4.10	6" Watermain	8 LF
901-4.11	8" Watermain	305 LF
901-4.51	6" Gate Valve & Box	1 Ea
901-4.52	8" Gate Valve & Box	2 Ea
901-4.70	6" Hydrant	1 Ea
1209-4.12	1" Water Service Pipe	149 LF
1209-4.41	1" Water Service Connection	6 Ea
1209-4.51	1" Curb Stop & 1-1/4" Box	6 Ea

CAUTION
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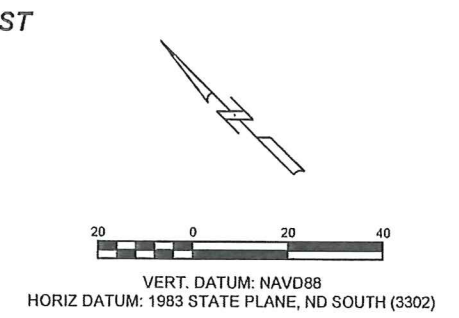
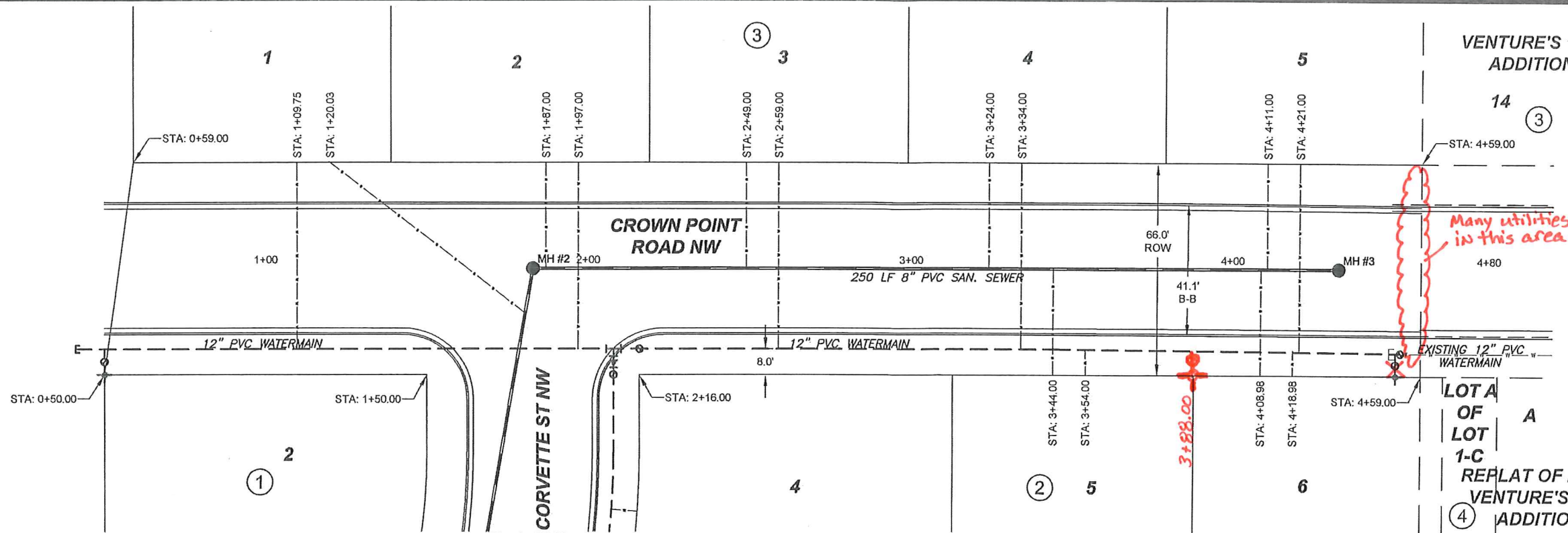
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CORVETTE STREET NW
 WEST HILLS ESTATES 3RD ADDITION
 MANDAN, ND

WATER & SEWER IMPROVEMENTS
 CITY PROJECT NO. 2014-05

SHEET 3 OF 5 MARCH, 2014

ASBUILT



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- *Elevations shown were taken with GPS Survey Equipment*

Begin Sanitary Sewermain Quantities
Sta 1+83.00

Begin Watermain Quantities
Sta 0+41.09

Sta 0+50.00
12"x6" Tee
8 LF 6" WM
6" Gate Valve & 6" Hydrant

Sta 1+83.00 Manhole #2

Sta 2+08.00 12"x12" Tee
Sta 2+16.00 12" Gate Valve

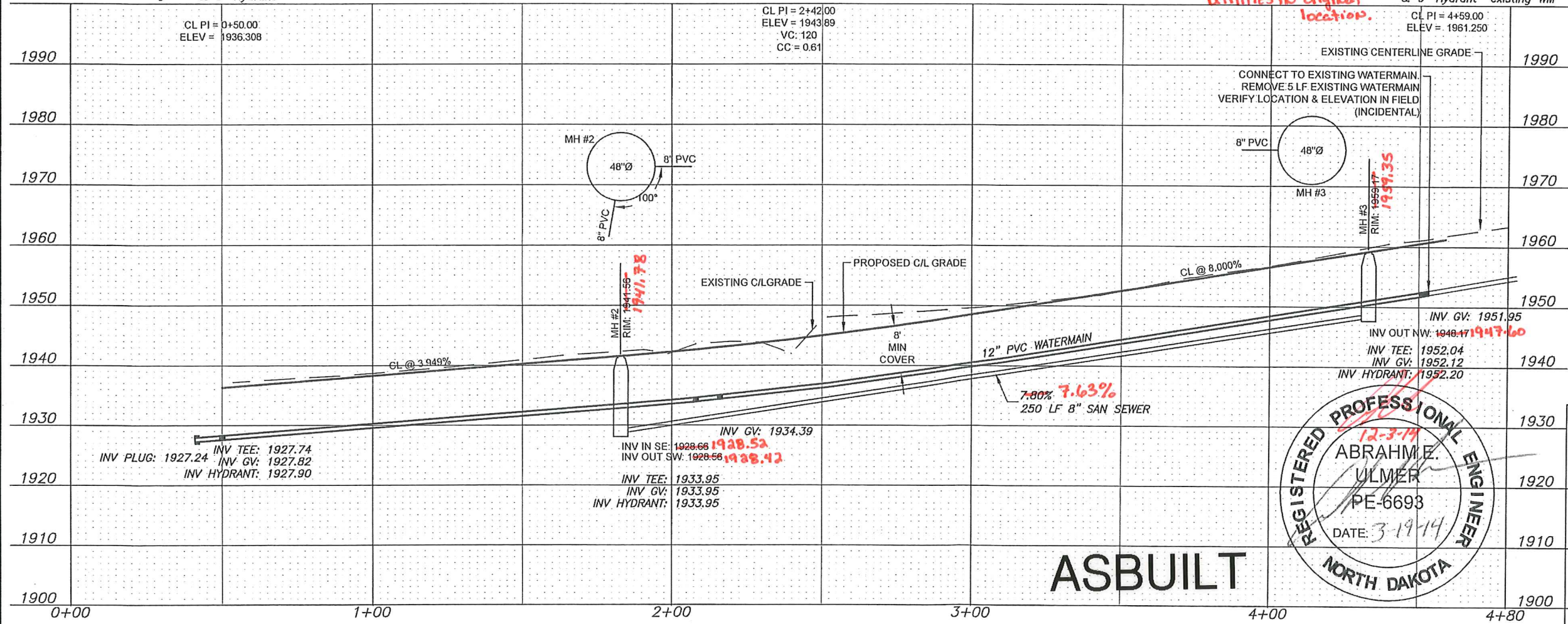
Sta 4+33.00 Manhole #3

Sta 4+51.00 12"x6" Tee
8 LF 6" WM
6" Gate Valve & 6" Hydrant

Sta 4+52.50 12" Gate Valve Connect to existing WM

End Sanitary Sewermain Quantities
Sta 4+33.00

End Watermain Quantities
Sta 4+52.50

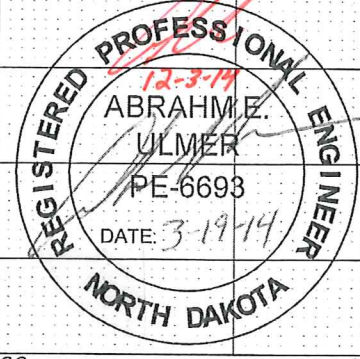


APPROXIMATE QUANTITIES

Spec No.	Sanitary Sewermain Items	Quantity
801-4.2	8" Sanitary Sewermain	250 LF
801-4.50	8"x4" Wye Branch	7 Ea
801-4.60	Bedding Material	85 Ton
1205-4.1	Manhole	2 Ea
1209-4.1	4" Sanitary Sewer Pipe	275 LF
1209-4.6	4" - 45° Bend	7 Ea

Spec No.	Watermain Items	Quantity
801-4.60	Bedding Material	185 Ton
901-4.10	6" Watermain	16 LF
901-4.13	12" Watermain	412 LF
901-4.51	6" Gate Valve & Box	2 Ea
901-4.54	12" Gate Valve & Box	2 Ea
901-4.70	6" Hydrant	2 Ea
1209-4.12	1" Water Service Pipe	309 LF
1209-4.41	1" Water Service Connection	7 Ea
1209-4.51	1" Curb Stop & 1-1/4" Box	7 Ea

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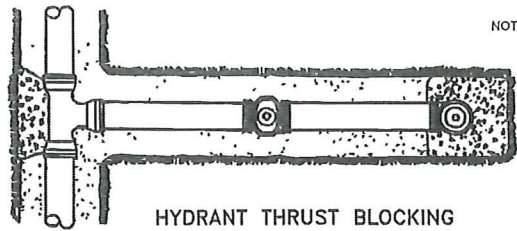
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CROWN POINT ROAD NW
WEST HILLS ESTATES 3RD ADDITION
MANDAN, ND

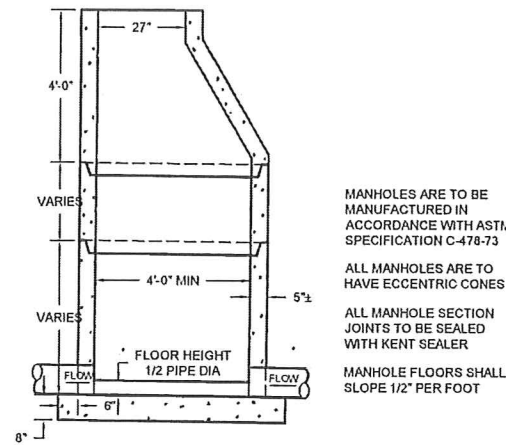
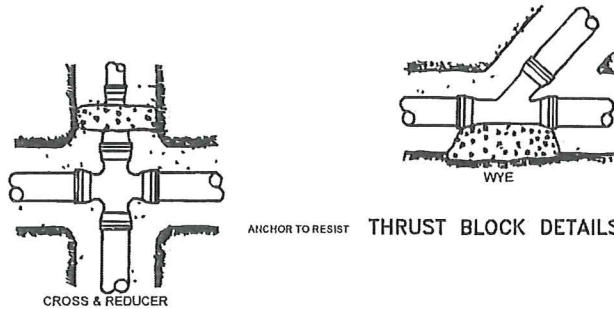
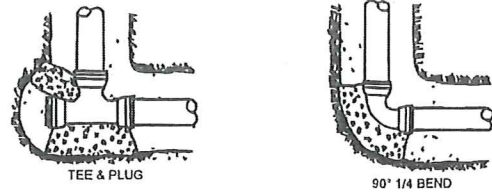
WATER & SEWER IMPROVEMENTS
CITY PROJECT NO. 2014-05

SHEET 4 OF 5 MARCH, 2014

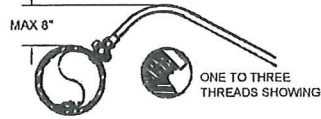
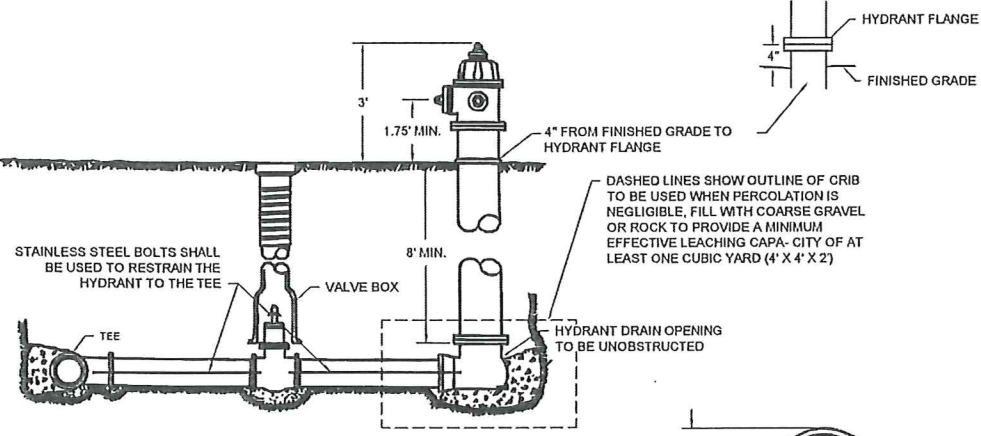
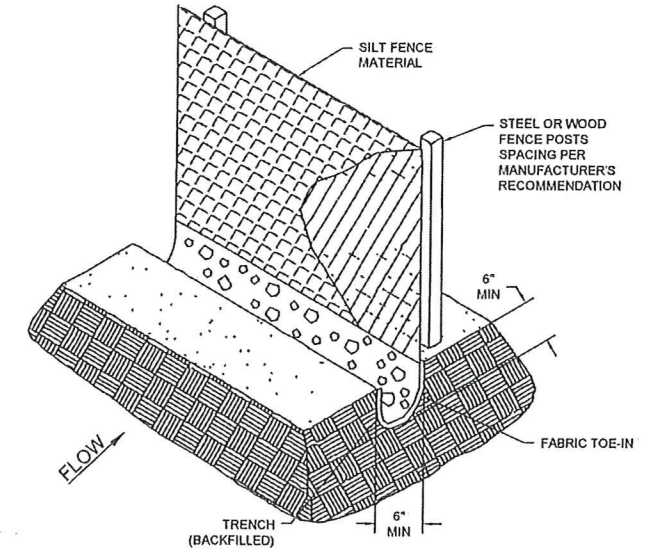
ASBUILT



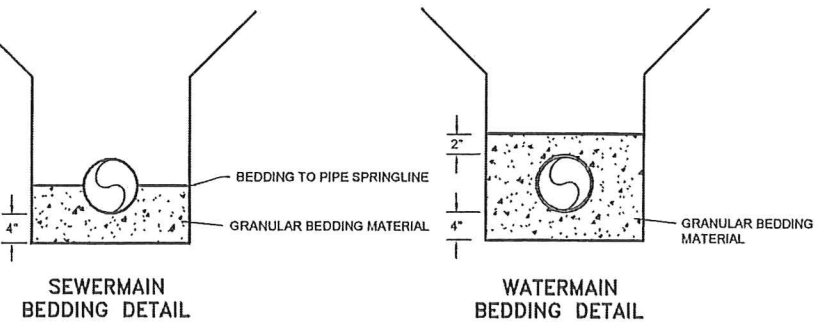
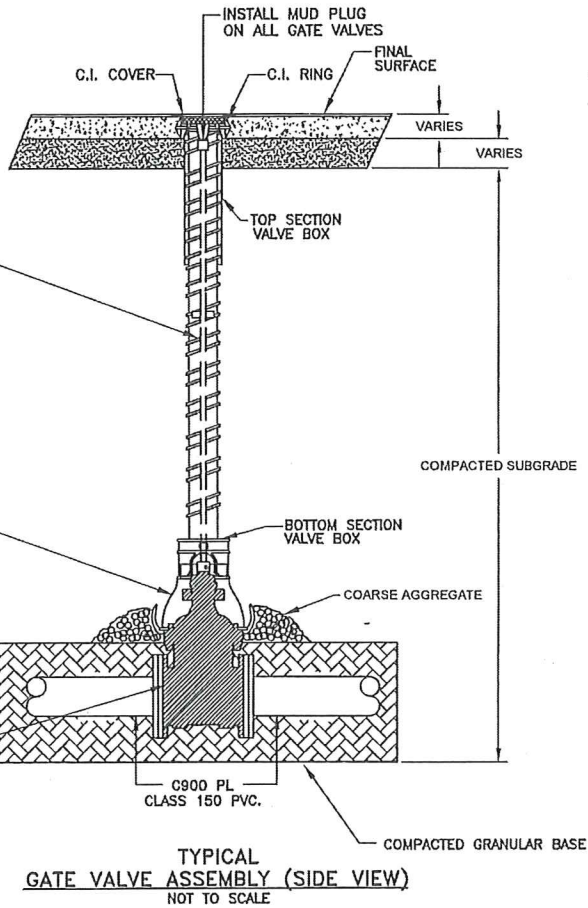
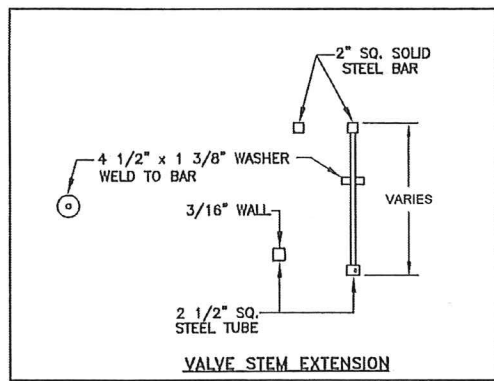
- NOTES:**
- (1) PIPE DEFLECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION
 - (2) BEDDING REQUIREMENTS SHALL BE AS INDICATED HEREON UNLESS MODIFIED IN THE SPECIFICATION
 - (3) CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 P.S.I. AND MAX. SLUMP OF 3 INCHES AT TIME OF PLACEMENT



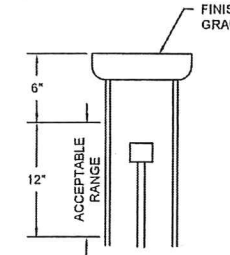
- NOTES:**
1. SILT FENCE FABRIC SHALL BE ONE OF THE FOLLOWING
 - A. BURLAP: AASHTO M182
 - B. POLYPROPYLENE FABRIC: ASTM D4397
 - C. NYLON NETTING REINFORCED FABRIC
 - D. PREMANUFACTURED SILT FENCE MEETING EQUAL PROPERTIES OF ABOVE.
 2. SILT FENCE FABRIC SHALL HAVE A MINIMUM BURSTING STRENGTH 150 PSI
 3. SILT FENCE FABRIC SHALL HAVE EDGES TREATED TO PREVENT UNRAVELING.
 4. 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.
 5. INSTALL THE POSTS ON SLIGHT ANGLE TOWARDS THE ANTICIPATED RUNOFF SURFACE.



SERVICE LINE CORPORATION COCK DIRECT TAP POSITION



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

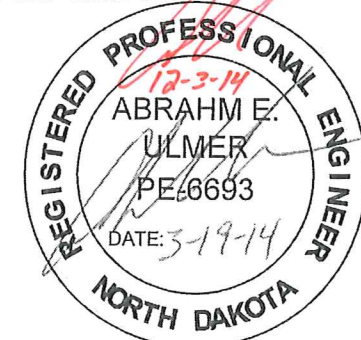
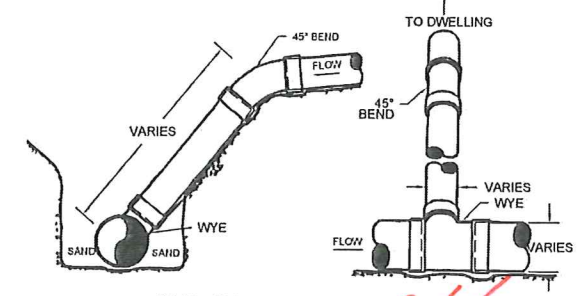
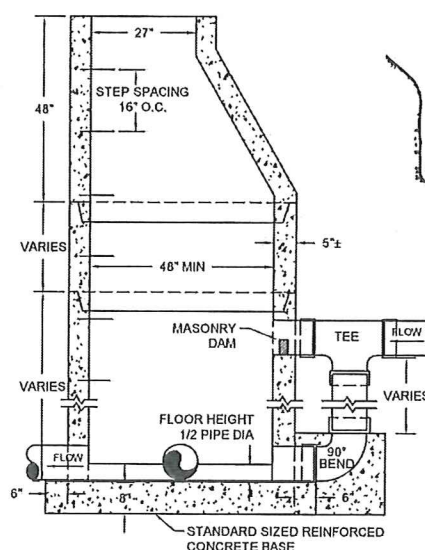


NOTE: VALVE STEM MUST BE IN RANGE OF 6" - 18" BELOW FINISHED GRADE.

SADDLES FOR PVC WATERMAIN

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"

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DETAIL SHEET
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MANDAN, NORTH DAKOTA

WATER & SEWER IMPROVEMENT
CITY PROJECT NO. 2014-05

SHEET 5 OF 5 MARCH, 2014

WATER & SEWER DETAILS

ASBUILT