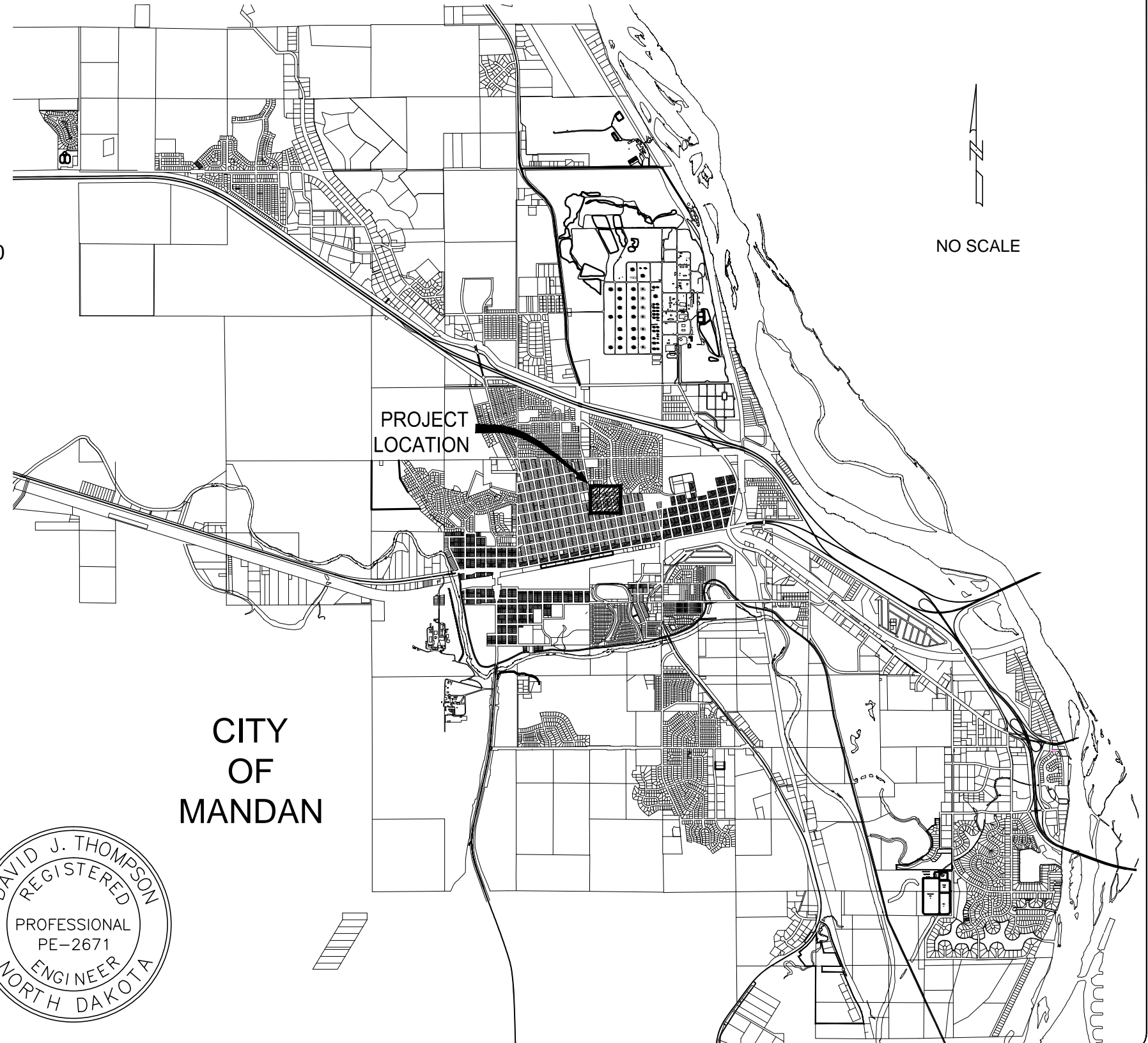


CITY OF MANDAN - 1ST AVENUE NE & 5TH STREET NE WATER & SEWER IMPROVEMENTS DISTRICT NO. XX CITY PROJECT NO. XXXX-XX

MARCH, 2012

INDEX OF DRAWINGS

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1	TITLE SHEET
2	PROJECT LAYOUT
3	FIRST AVENUE NE PLAN & PROFILE - STA 0+00 TO STA 3+00
4	FIFTH STREET PLAN & PROFILE - STA 0+00 TO STA 3+60
5	FIFTH STREET PLAN & PROFILE - STA 3+60 TO STA 7+20
6	FIFTH STREET PLAN & PROFILE - STA 7+20 TO END
7	THIRD AVENUE PLAN & PROFILE - STA 0+48 TO STA 4+48
8	DETAIL SHEET



APPROVED: _____ DATE: _____
CITY ENGINEER, MANDAN, ND

PREPARED BY:
TOMAN ENGINEERING CO.

DAVID J. THOMPSON, R.P.E. 2671 DATE: _____



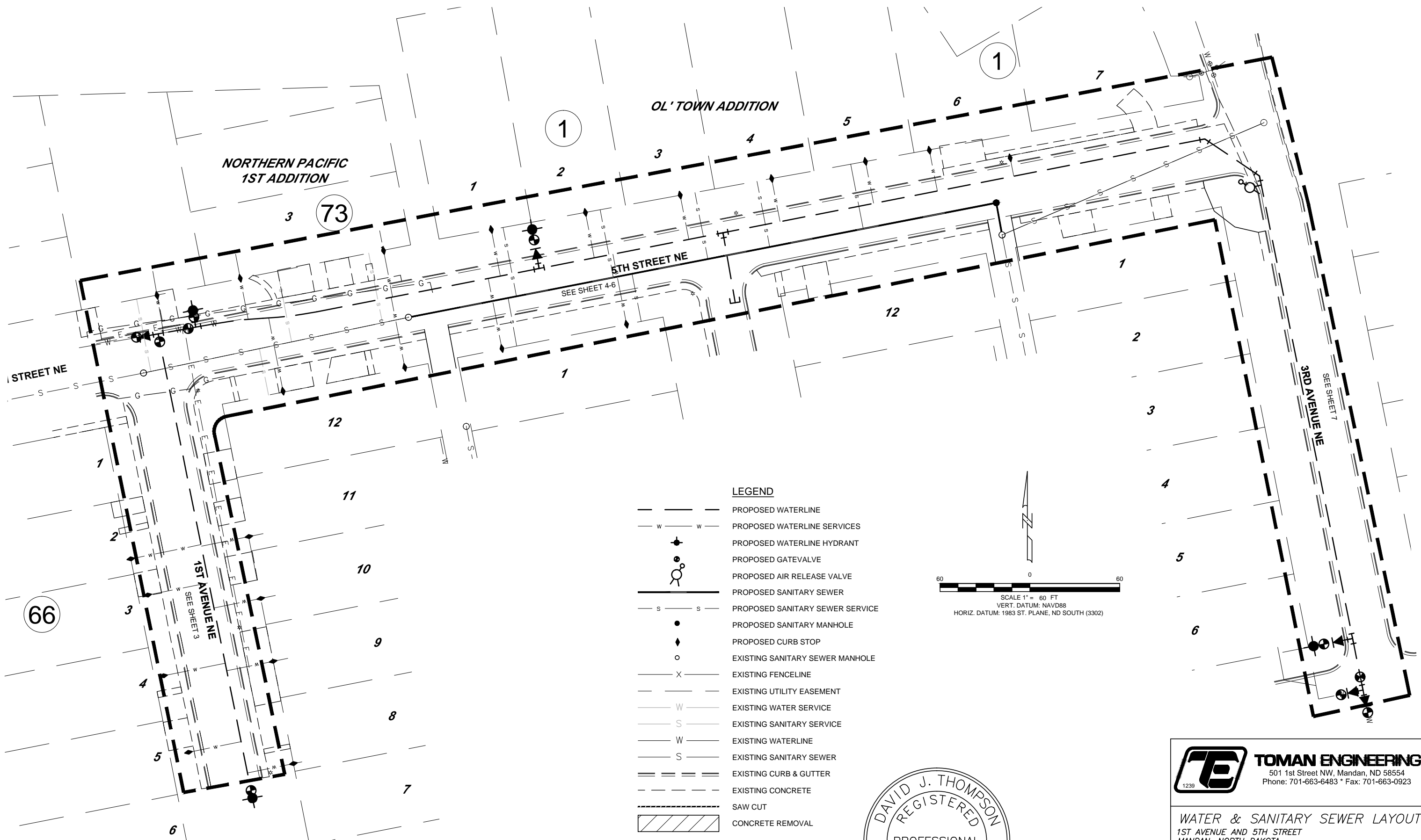
TOMAN ENGINEERING
501 1st Street NW, Mandan, ND 58554
Phone: 701-663-6483 * Fax: 701-663-0923



PROJECT:
CITY OF MANDAN
WATER & SEWER IMP. DISTRICT NO. 2011-10
TITLE SHEET

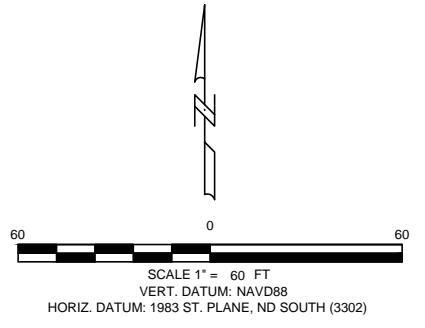
NO.	REVISIONS	
	BY	DATE

TITLE: CITY OF MANDAN
SHEET NUMBER
1
OF 8 SHEETS



LEGEND

	PROPOSED WATERLINE
	PROPOSED WATERLINE SERVICES
	PROPOSED WATERLINE HYDRANT
	PROPOSED GATEVALVE
	PROPOSED AIR RELEASE VALVE
	PROPOSED SANITARY SEWER
	PROPOSED SANITARY SEWER SERVICE
	PROPOSED SANITARY MANHOLE
	PROPOSED CURB STOP
	EXISTING SANITARY SEWER MANHOLE
	EXISTING FENCELINE
	EXISTING UTILITY EASEMENT
	EXISTING WATER SERVICE
	EXISTING SANITARY SERVICE
	EXISTING WATERLINE
	EXISTING SANITARY SEWER
	EXISTING CURB & GUTTER
	EXISTING CONCRETE
	SAW CUT
	CONCRETE REMOVAL



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

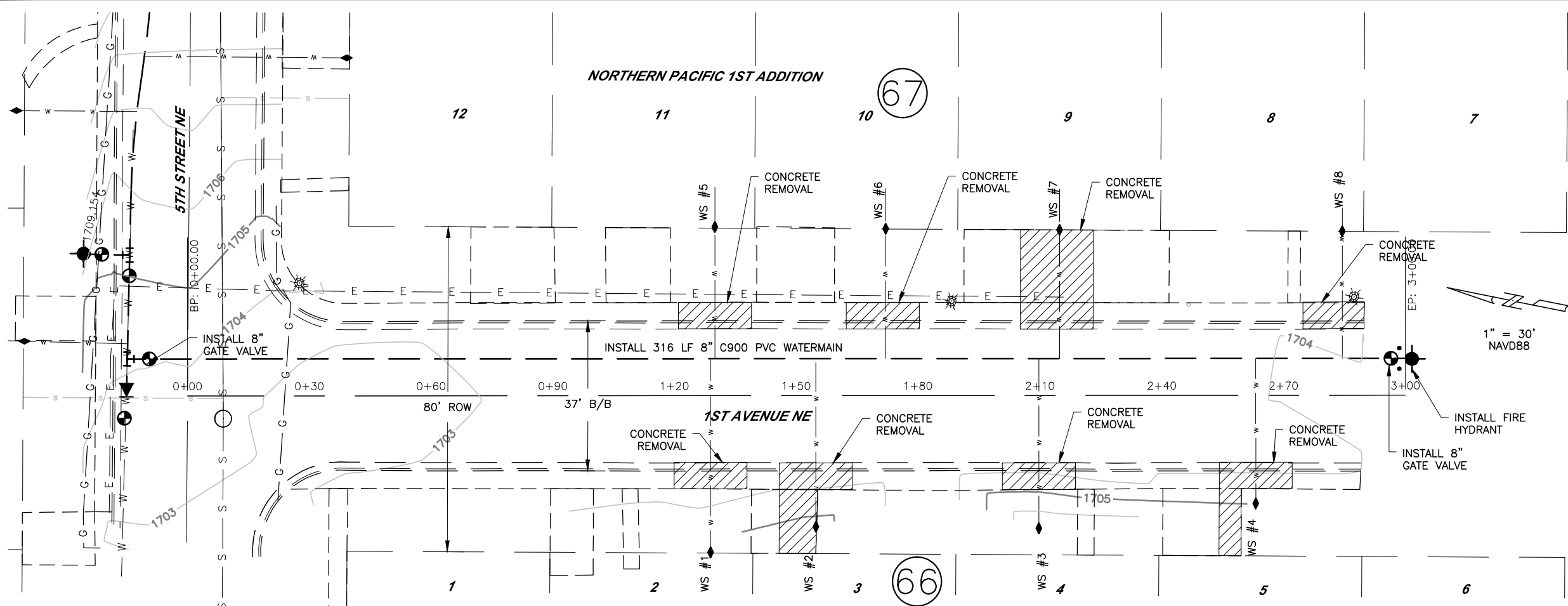
TOMAN ENGINEERING
 501 1st Street NW, Mandan, ND 58554
 Phone: 701-663-6483 * Fax: 701-663-0923

WATER & SANITARY SEWER LAYOUT
 1ST AVENUE AND 5TH STREET
 MANDAN, NORTH DAKOTA

WATER & SANITARY SEWER IMPROVEMENT
 PROJECT NO. 2011-10
 SHEET 2 OF 8
 BISMARCK, ND

MARCH, 2012

NORTHERN PACIFIC 1ST ADDITION



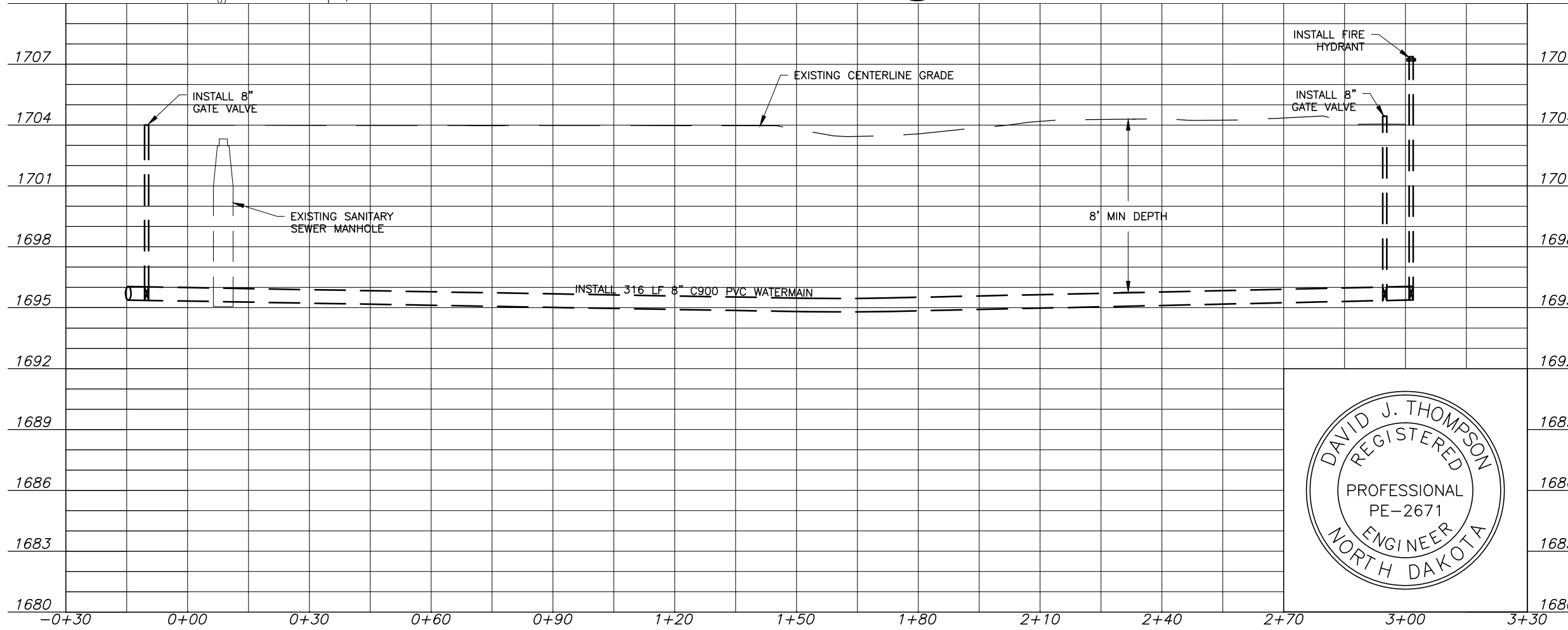
WATER SERVICE QUANTITY TABLE			
SERVICE NO	LENGTH	DIA & TYPE	CURB STOP
1	48 LF	1" POLY	1
2	48 LF	1" POLY	1
3	48 LF	1" POLY	1
4	48 LF	1" POLY	1
5	42 LF	1" POLY	1
6	42 LF	1" POLY	1
7	42 LF	1" POLY	1
8	37 LF	1" POLY	1

AVOID CUTTING UNDERGROUND UTILITY LINES IN YOUR AREA

TWO WORKING DAYS BEFORE YOU DIG-DRILL-BLAST IN NORTH DAKOTA - CALL TOLL FREE

1-800-795-0555

UTILITIES UNDERGROUND LOCATION CENTER



- NOTES:**
- CONTRACTOR TO CONNECT NEW SERVICE LINE TO EXISTING SERVICE LINE AT THE CURB STOPS WESTSIDE 1ST AVENUE
 - CONTRACTOR TO INSTALL NEW SERVICE LINE WITH CURB STOP TO ROW LINE & BORE INTO EXISTING HOMES ON EAST SIDE OF 1ST AVENUE. CONNECTION OF NEW LINE IN HOME & DISCONNECT OF OLD IN HOME SHALL BE CONSIDERED INCIDENTAL TO SERVICE BORING.
 - CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATES IN CITY ROW & PRIVATE PROPERTY.
 - CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH HOME OWNERS FOR HOOK-UP & CONNECTION TIMES.
 - CONCRETE REMOVAL SHALL BE AS NECESSARY & DIRECTED BY ENGINEER.
 - CITY OF MANDAN CONSTRUCTION SPECIFICATIONS & SET FORTH SPECIAL PROVISIONS SHALL BE UTILIZED ON THIS PROJECT.



TOMAN ENGINEERING

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

1ST AVENUE NE
 FROM 5TH STREET NE SOUTH 300'

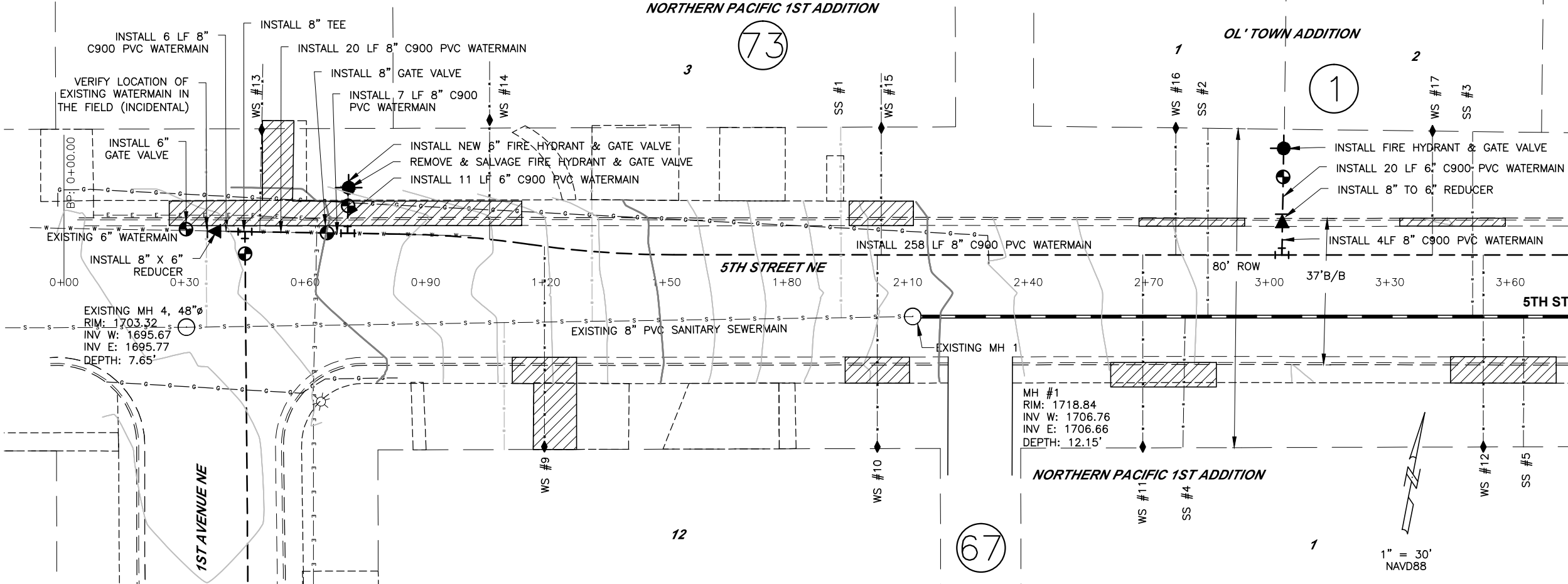
WATER & SANITARY SEWER IMPROVEMENTS
 DISTRICT NO. 2011-10
 SHEET 3 OF 8
 MANDAN, ND MARCH, 2012

NORTHERN PACIFIC 1ST ADDITION

OL' TOWN ADDITION

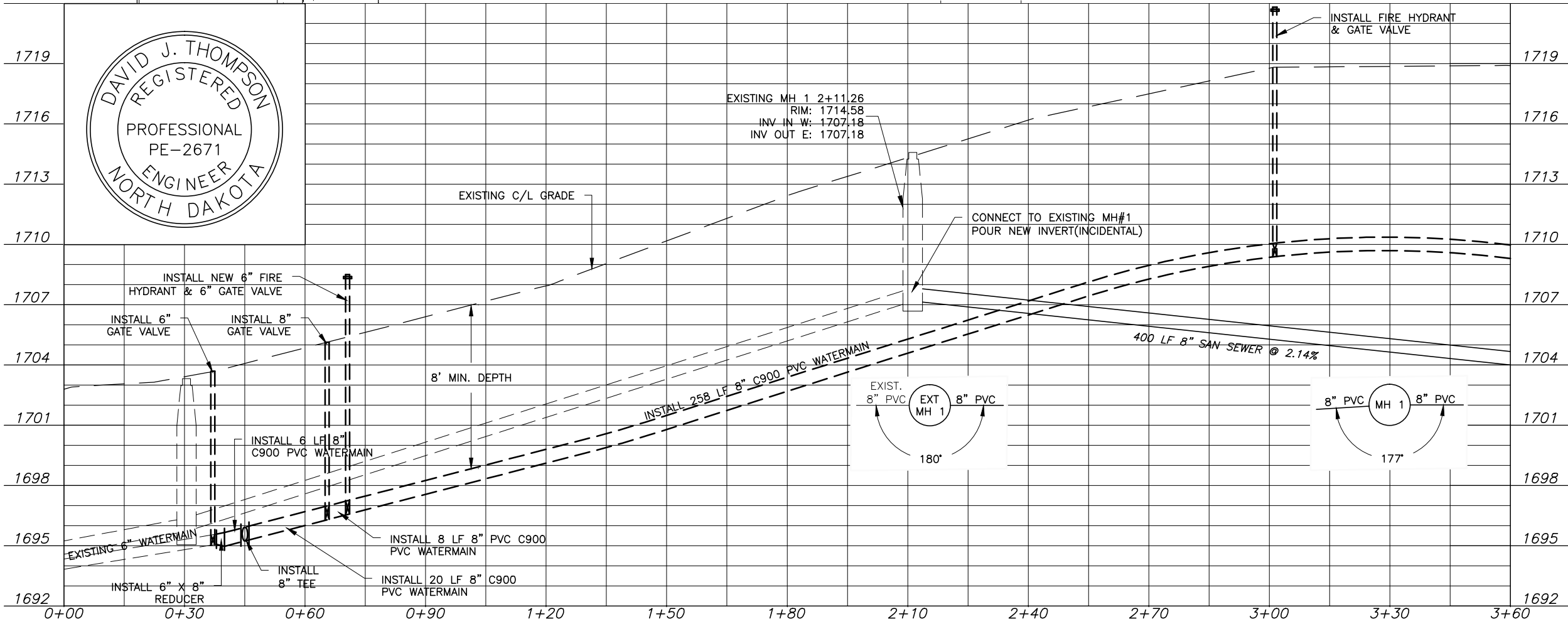
73

1



WATER SERVICE QUANTITY TABLE			
SERVICE NO	LENGTH	DIA & TYPE	CURB STOP
9	50 LF	1" POLY	1
10	48 LF	1" POLY	1
11	48 LF	1" POLY	1
12	48 LF	1" POLY	1
13	42 LF	1" POLY	1
14	44 LF	1" POLY	1
15	45 LF	1" POLY	1
16	32 LF	1" POLY	1
17	31 LF	1" POLY	1

SANITARY SEWER SERVICE QUANTITY TABLE			
SERVICE NO	LENGTH	DIA & TYPE	WYE
1	47 LF	4" PVC	1
2	47 LF	4" PVC	1
3	46 LF	4" PVC	1
4	32 LF	4" PVC	1



- NOTES:
- SERVICE LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATION IN FIELD (INCIDENTAL)
 - CONTRACTOR TO NOTIFY RESIDENTS 24 HOURS IN ADVANCE OF SHUTTING OFF WATER SERVICE, OR BLOCKING ACCESS TO HOMES.
 - CONTRACTOR TO INSTALL NEW SERVICE LINE AND CURB STOP AT ROW LINE, AND BORE INTO EXISTING HOMES ON SERVICE # 9, 10, 14, & 15. CONNECTION OF NEW LINE IN HOME AND DISCONNECT OF OLD SHALL BE CONSIDERED INCIDENTAL TO SERVICE LINE BORING.

AVOID CUTTING UNDERGROUND UTILITY LINES IN YOUR AREA

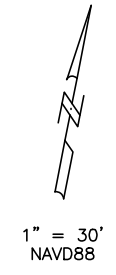
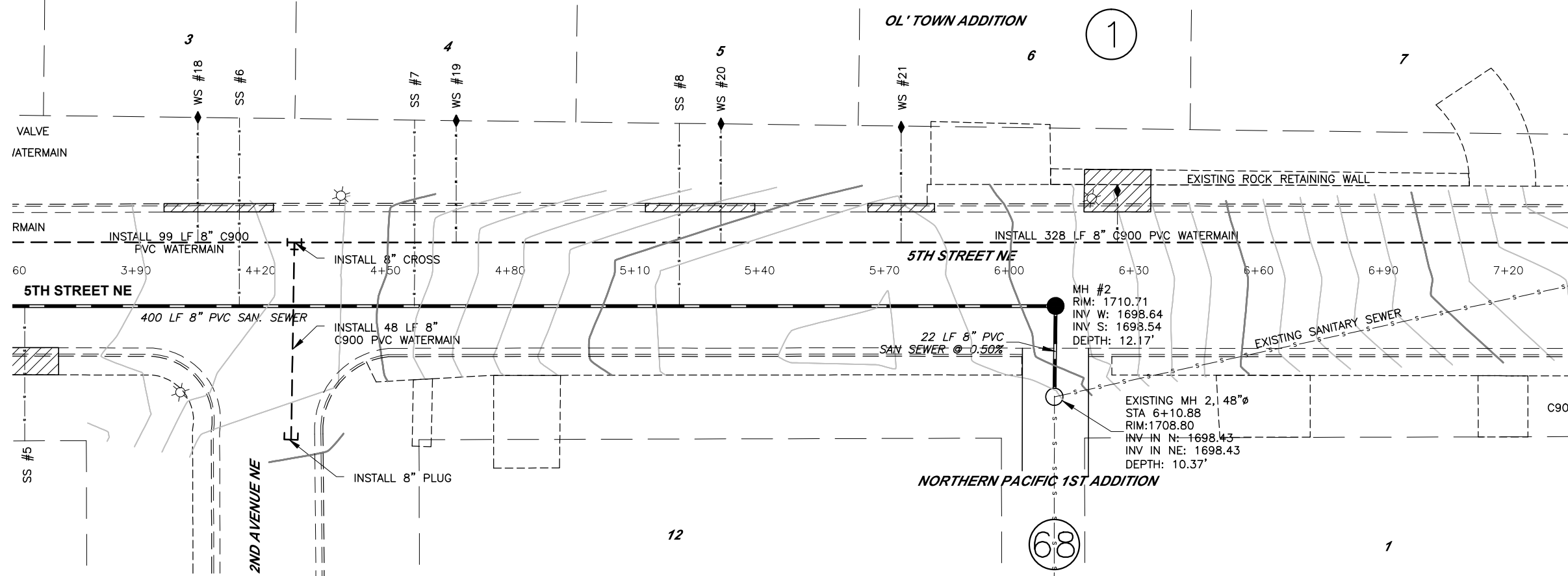
TWO WORKING DAYS BEFORE YOU DIG-DRILL-BLAST IN NORTH DAKOTA - CALL TOLL FREE **1-800-795-0555** UTILITIES UNDERGROUND LOCATION CENTER

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

5TH STREET NE
 FROM 1ST AVENUE NE TO STA: 3+60

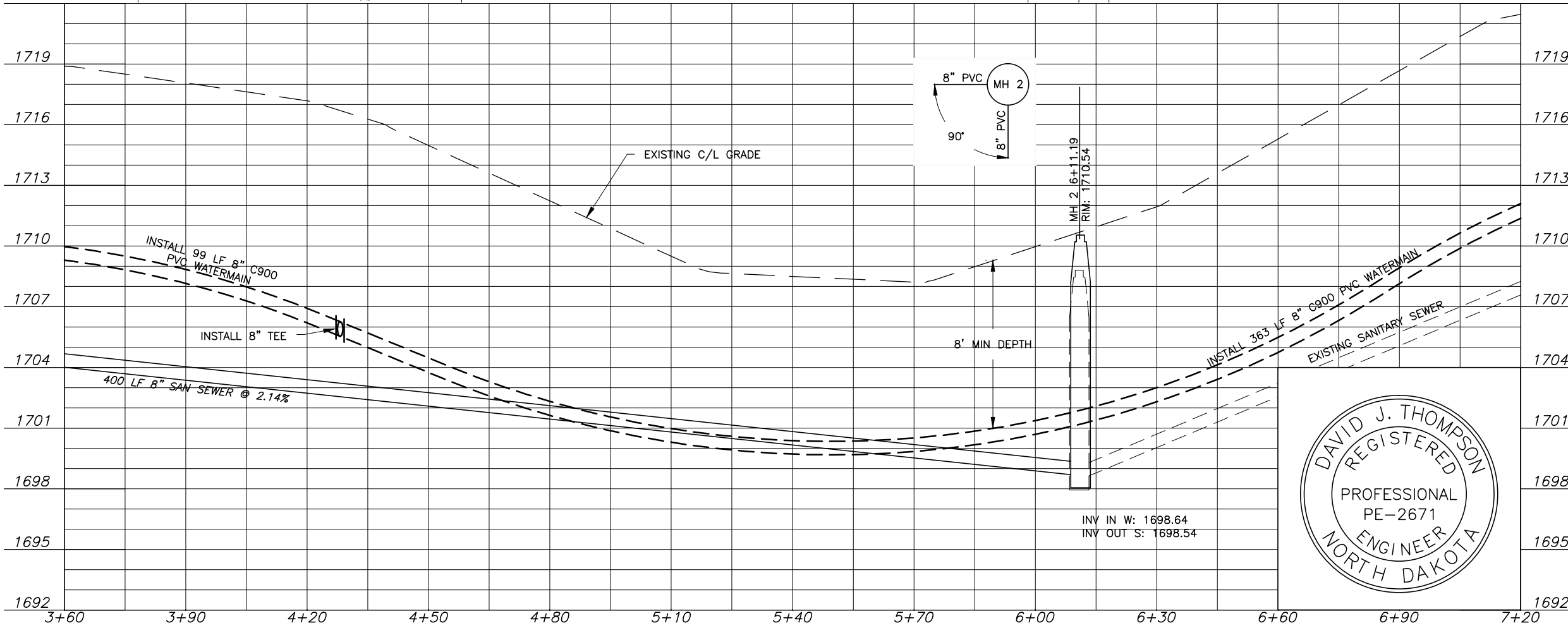
WATER & SEWER IMPROVEMENTS
 DISTRICT NO.
 SHEET 4 OF 8
 MANDAN, ND

MARCH, 2012



WATER SERVICE QUANTITY TABLE			
SERVICE NO	LENGTH	DIA & TYPE	CURB STOP
18	30 LF	1" POLY	1
19	29 LF	1" POLY	1
20	28 LF	1" POLY	1
21	28 LF	1" POLY	1

SANITARY SEWER SERVICE QUANTITY TABLE			
SERVICE NO	LENGTH	DIA & TYPE	WYE
5	32 LF	4" PVC	1
6	45 LF	4" PVC	1
7	45 LF	4" PVC	1
8	44 LF	4" PVC	1



- NOTES:**
- SERVICE LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATION IN FIELD (INCIDENTAL)
 - CONTRACTOR TO NOTIFY RESIDENTS 24 HOURS IN ADVANCE OF SHUTTING OFF WATER SERVICE, OR BLOCKING ACCESS TO HOMES.

AVOID CUTTING UNDERGROUND UTILITY LINES IN YOUR AREA

TWO WORKING DAYS BEFORE YOU DIG-DRILL-BLAST IN NORTH DAKOTA - CALL TOLL FREE **1-800-795-0555**

UTILITIES UNDERGROUND LOCATION CENTER

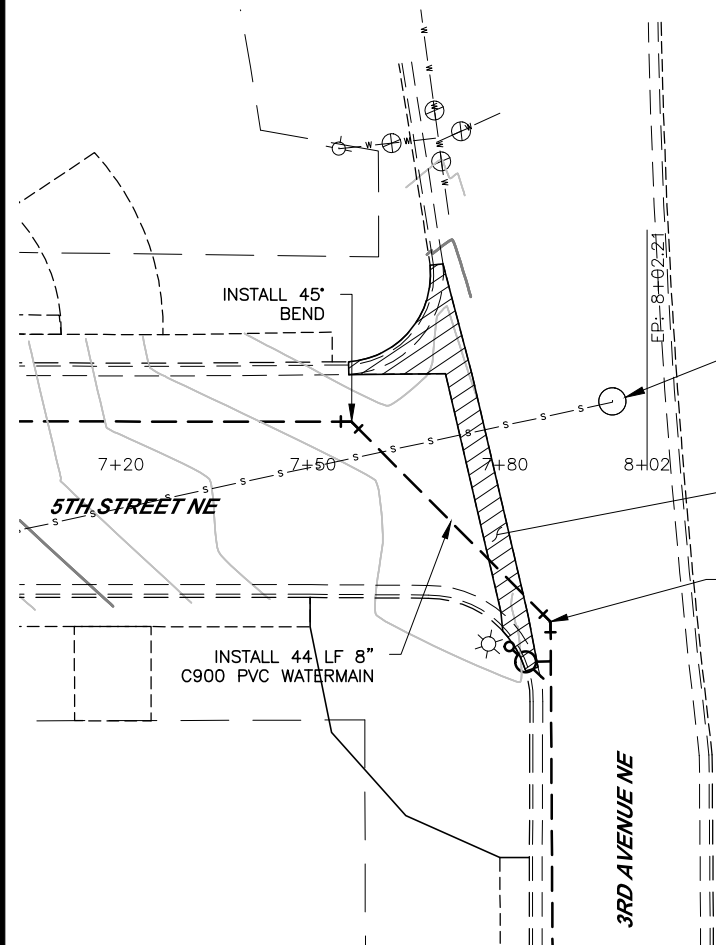


TOMAN ENGINEERING
 501 1st Street NW, Mandan, ND 58554
 Phone: 701-663-6483 * Fax: 701-663-0923

5TH STREET NE
 STA: 3+60 - 7+20

WATER & SANITARY SEWER IMPROVEMENT
 DISTRICT NO.
 SHEET 5 OF 8
 MANDAN, ND

SEPTEMBER, 2011

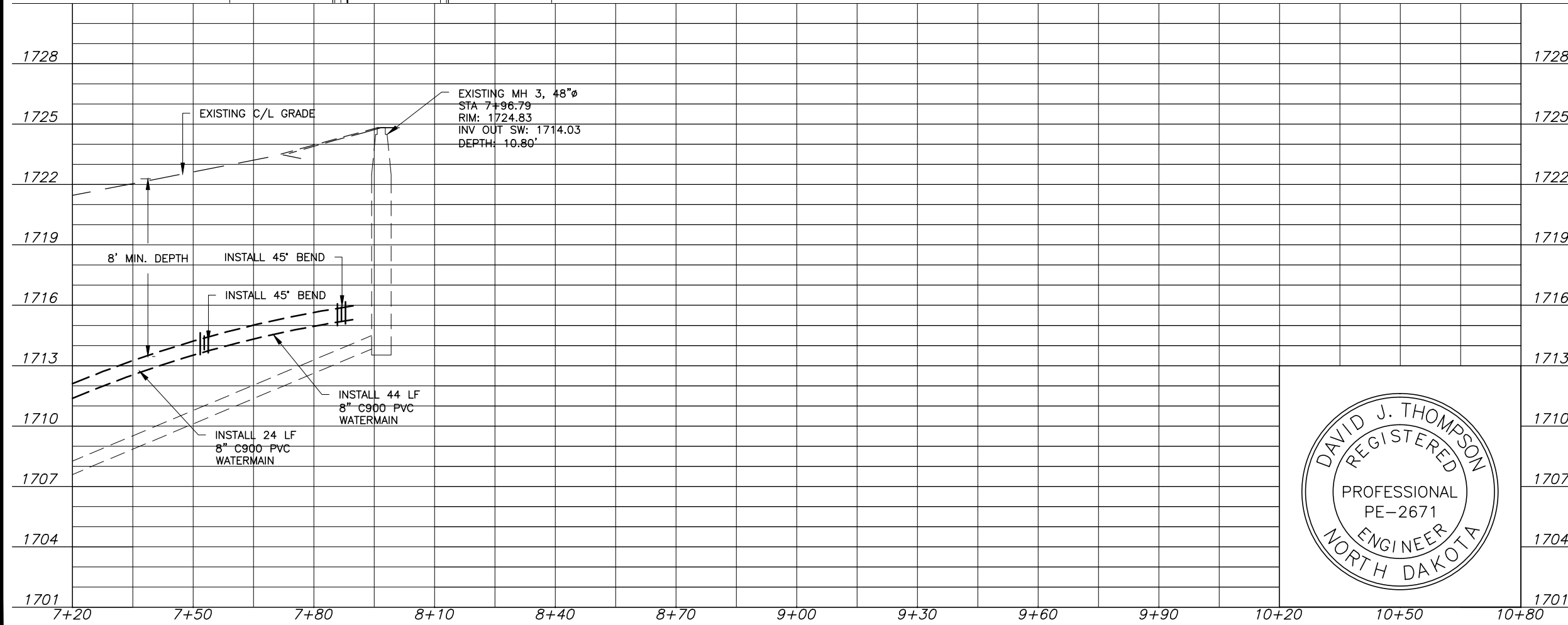


EXISTING MH 3, 48"Ø
 STA 7+96.79
 RIM: 1724.83
 INV OUT SW: 1714.03
 DEPTH: 10.80'



NORTHERN PACIFIC 1ST ADDITION

12



EXISTING MH 3, 48"Ø
 STA 7+96.79
 RIM: 1724.83
 INV OUT SW: 1714.03
 DEPTH: 10.80'

- NOTES:**
- SERVICE LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATION IN FIELD (INCIDENTAL)
 - CONTRACTOR TO NOTIFY RESIDENTS 24 HOURS IN ADVANCE OF SHUTTING OFF WATER SERVICE, OR BLOCKING ACCESS TO HOMES.

AVOID CUTTING UNDERGROUND UTILITY LINES IN YOUR AREA

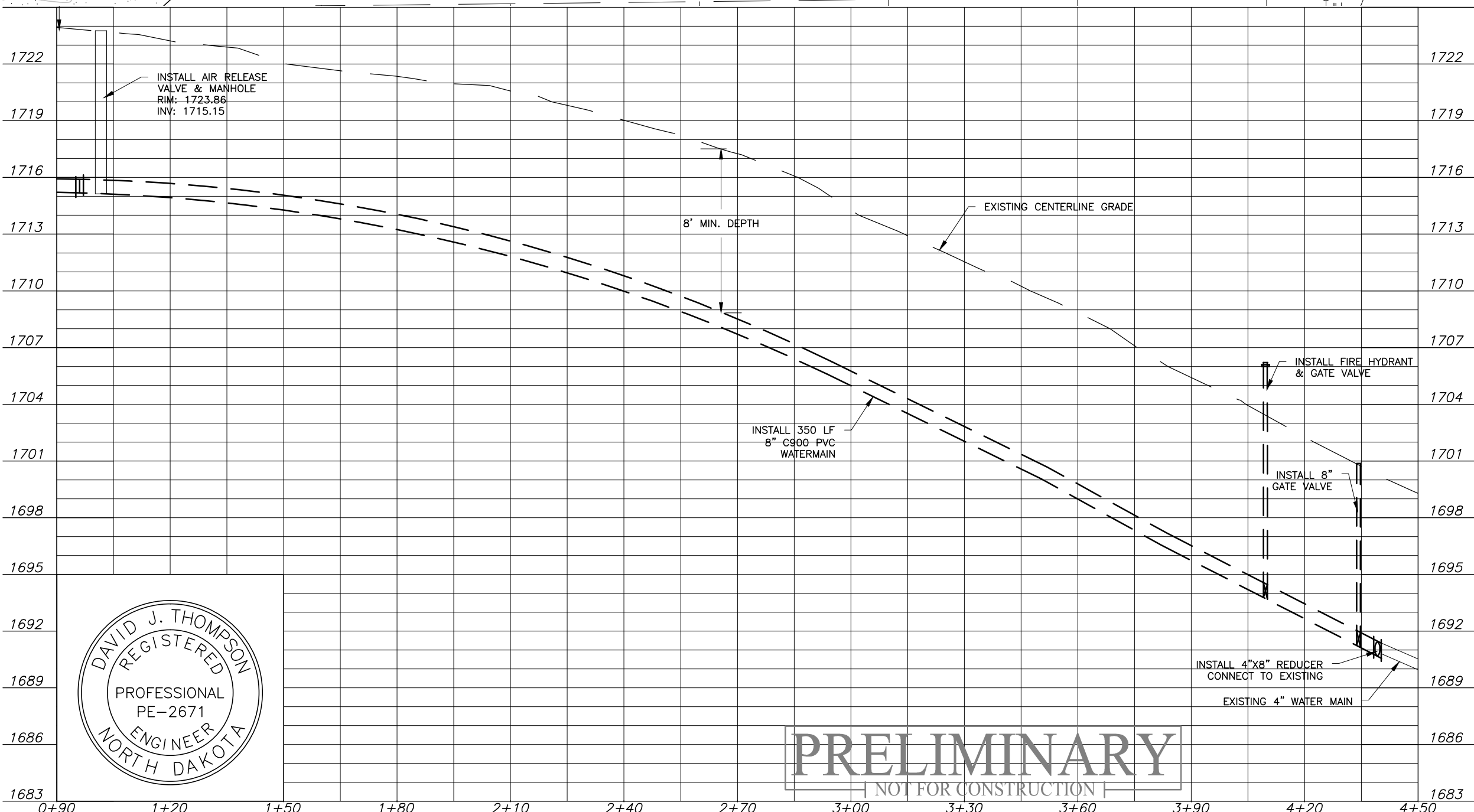
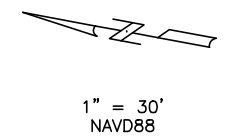
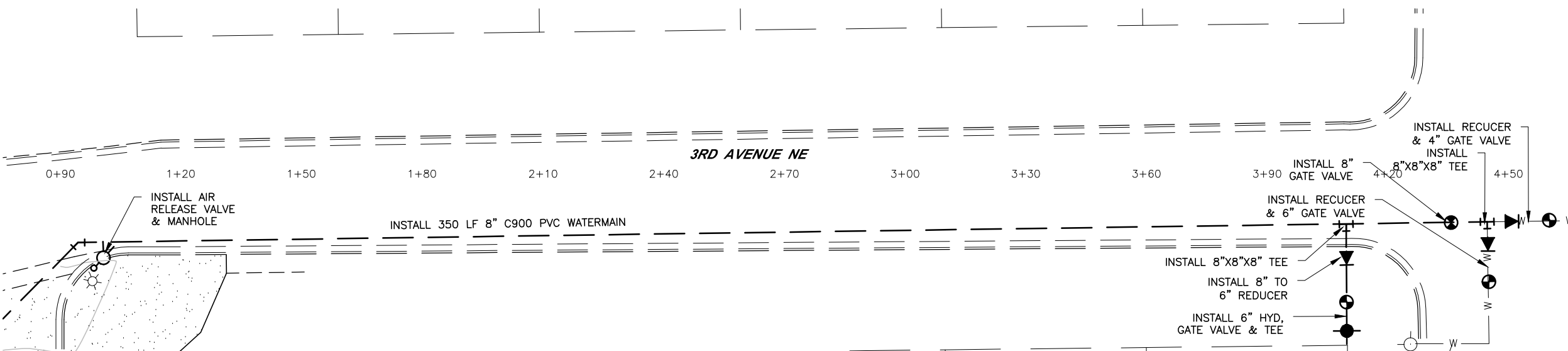
TWO WORKING DAYS BEFORE YOU DIG-DRILL-BLAST IN NORTH DAKOTA - CALL TOLL FREE **1-800-795-0555** UTILITIES UNDERGROUND LOCATION CENTER



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 501 1st Street NW, Mandan, ND 58554
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5TH STREET NE
 FROM STA 7+20 TO 3RD STREET NE

WATER & SANITARY SEWER IMPROVEMENTS
 DISTRICT NO.
 SHEET 6 OF 8
 MANDAN, ND MARCH, 2012



- NOTES:**
- EXISTING WATER MAIN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATION IN FIELD (INCIDENTAL)
 - CONTRACTOR TO NOTIFY RESIDENTS 24 HOURS IN ADVANCE OF SHUTTING OFF WATER SERVICE, OR BLOCKING ACCESS TO HOMES.

AVOID CUTTING UNDERGROUND UTILITY LINES IN YOUR AREA

TWO WORKING DAYS BEFORE YOU DIG-DRILL-BLAST IN NORTH DAKOTA - CALL TOLL FREE

1-800-795-0555

UTILITIES UNDERGROUND LOCATION CENTER



TOMAN ENGINEERING

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 Phone: 701-663-6483 * Fax: 701-663-0923

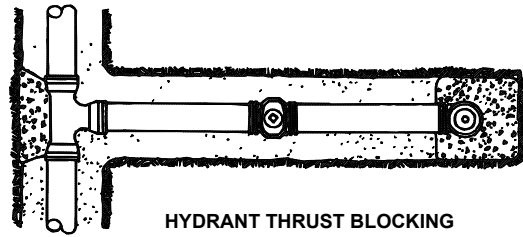
PRELIMINARY
 NOT FOR CONSTRUCTION

3RD AVENUE
 FROM 5TH STREET TO 4TH STREET
 MANDAN, NORTH DAKOTA

WATER & SANITARY SEWER IMPROVEMENT
 PROJECT NO. 2011-10
 SHEET 7 OF 8
 MANDAN, ND

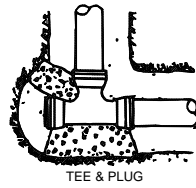
MARCH, 2012

NO SCALE

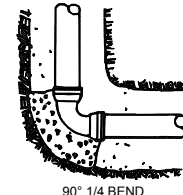


HYDRANT THRUST BLOCKING

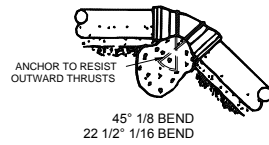
NOTE: (1) PIPE DEFLECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS (2) BEDDING REQUIREMENTS SHALL BE AS INDICATED HEREON UNLESS MODIFIED IN THE SPECIFICATIONS (3) CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI, AND MAX. SLUMP OF 3 INCHES AT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



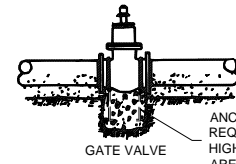
TEE & PLUG



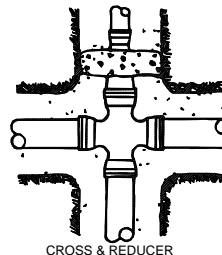
90° 1/4 BEND



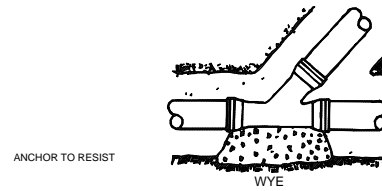
45° 1/8 BEND
22 1/2° 1/16 BEND



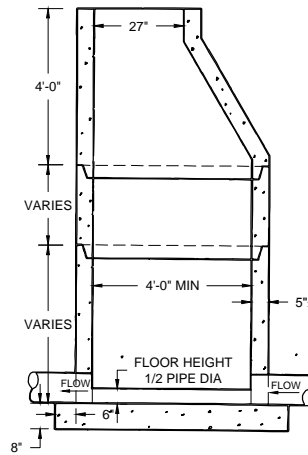
GATE VALVE
ANCHOR RODS REQUIRED FOR HIGH PRESSURE AREAS



CROSS & REDUCER



THRUST BLOCK DETAILS



TYPICAL MANHOLE NON-INTEGRAL

AVOID CUTTING UNDERGROUND UTILITY LINES IN YOUR AREA

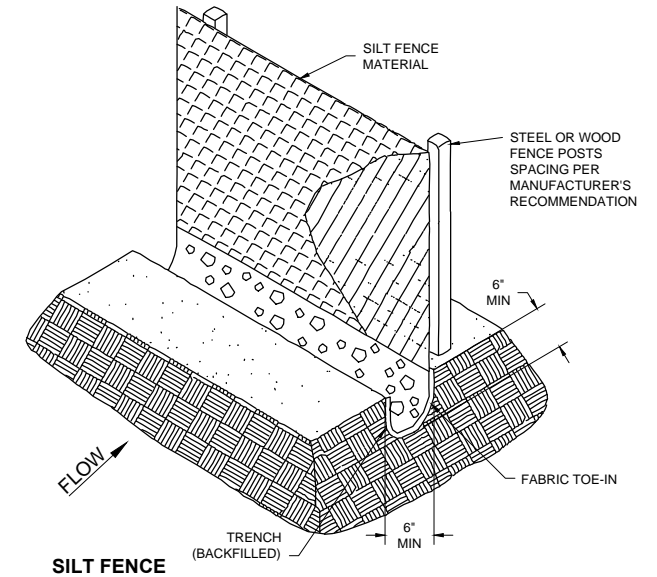
TWO WORKING DAYS BEFORE YOU DIG-DRILL-BLAST IN NORTH DAKOTA - CALL TOLL FREE 1-800-795-0555 UTILITIES UNDERGROUND LOCATION CENTER

MANHOLES ARE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM SPECIFICATION C-478-73

ALL MANHOLES ARE TO HAVE ECCENTRIC CONES

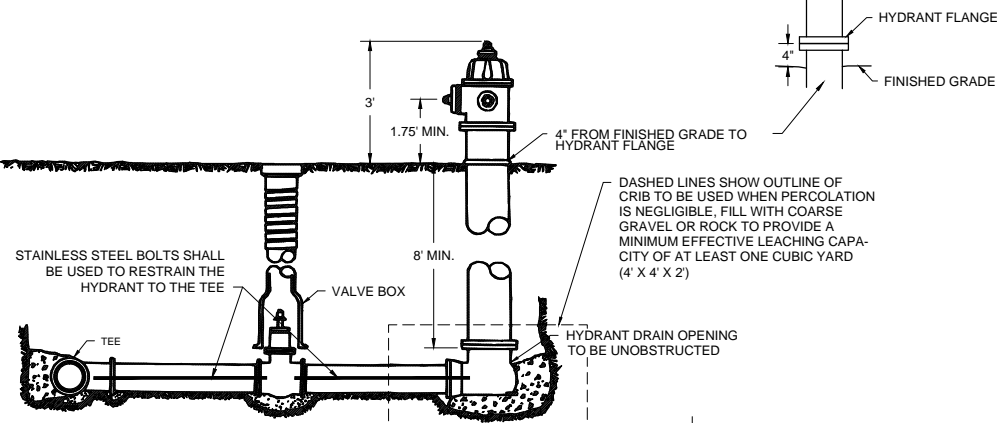
ALL MANHOLE SECTION JOINTS TO BE SEALED WITH KENT SEALER

MANHOLE FLOORS SHALL SLOPE 1/2" PER FOOT



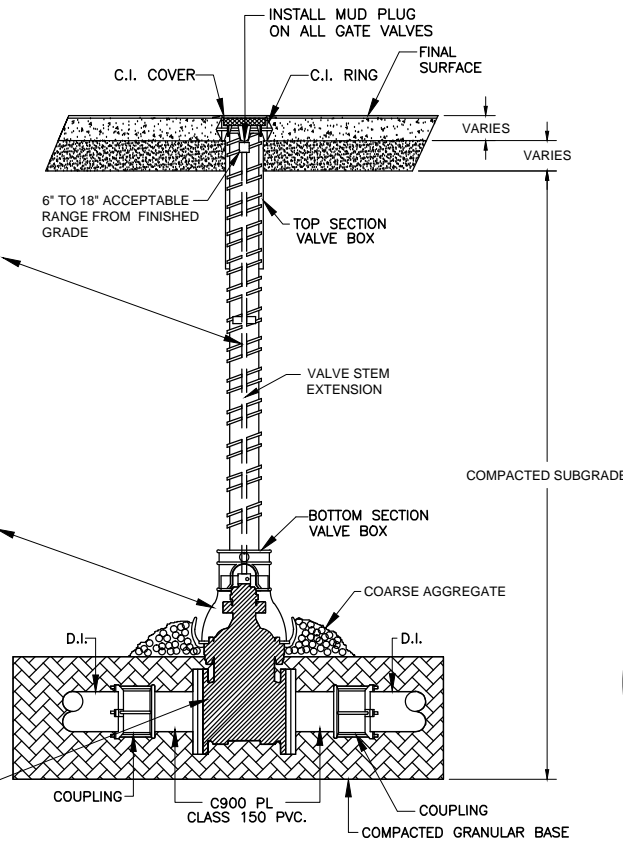
SILT FENCE

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.

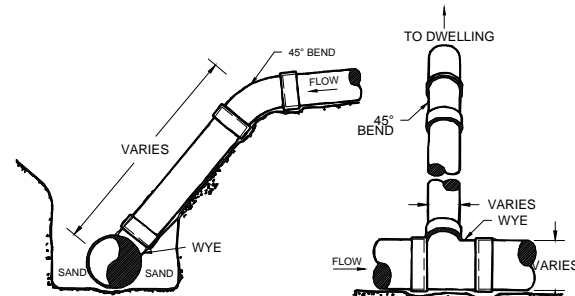


LAYOUT OF FIRE HYDRANT & VALVE

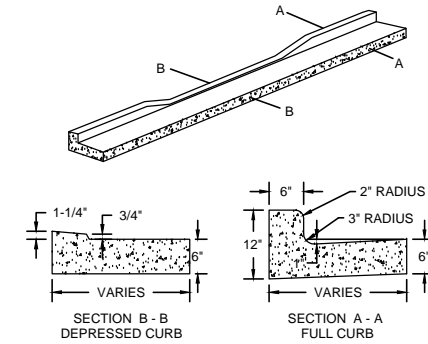
SERVICE LINE CORPORATION COCK DIRECT TAP POSITION



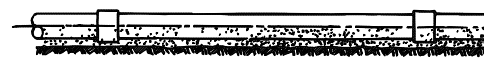
TYPICAL GATE VALVE ASSEMBLY (SIDE VIEW) NOT TO SCALE



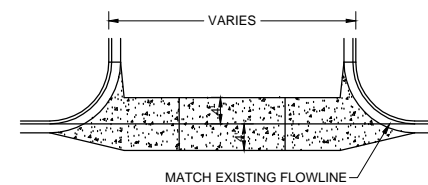
WYE AND RISER DETAILS



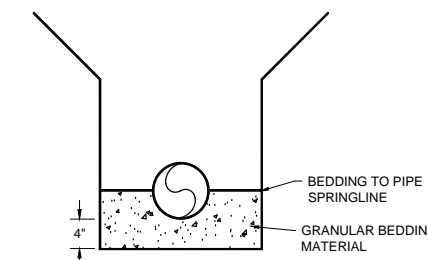
TYPICAL CURB & GUTTER



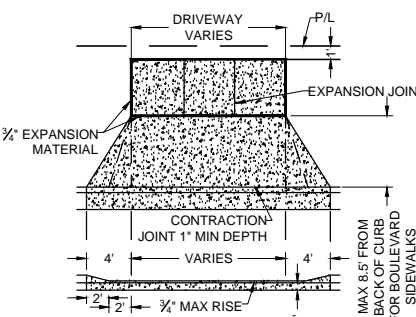
SAND CUSHION BEDDING-SUPPORT ENTIRE LENGTH OF PIPE SPECIAL COMPACTION REQUIRED TO PIPE SPRING LINE



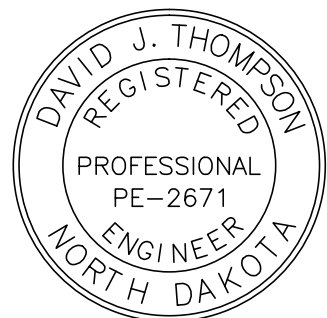
TYPICAL VALLEY GUTTER SECTION



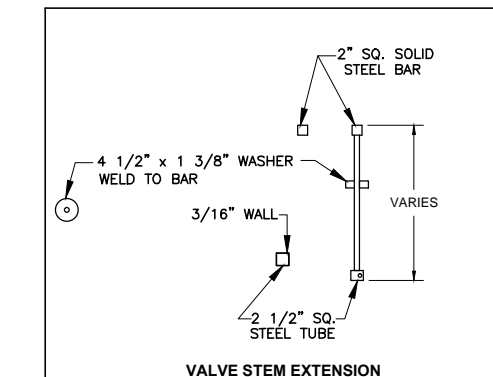
WATERMAIN & SEWERMAIN BEDDING & INSULATION DETAIL



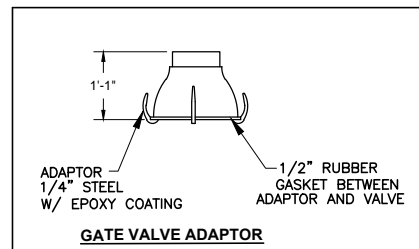
NOTE: 4" WASHED SAND BASE NEEDED UNDER CONCRETE. SIDEWALK & DRIVEWAY DETAIL



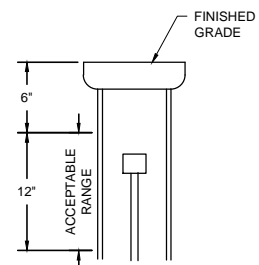
AIR RELEASE MANHOLE DETAIL SEE CITY OF MANDAN DETAIL #1312



VALVE STEM EXTENSION

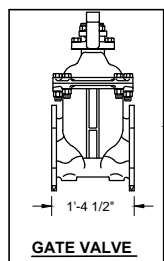


GATE VALVE ADAPTOR



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

VALVE STEM DETAIL



GATE VALVE

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

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. 1FT PER BOX

CURB STOP & DRAIN WITH BASE CURB BOX



WATER & SEWER DETAILS
CITY OF MANDAN
5TH AVENUE IMPROVEMENTS

WATER & SEWER IMPROVEMENT PROJECT NO.
SHEET 8 OF 8
BISMARCK, ND

MARCH, 2012

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