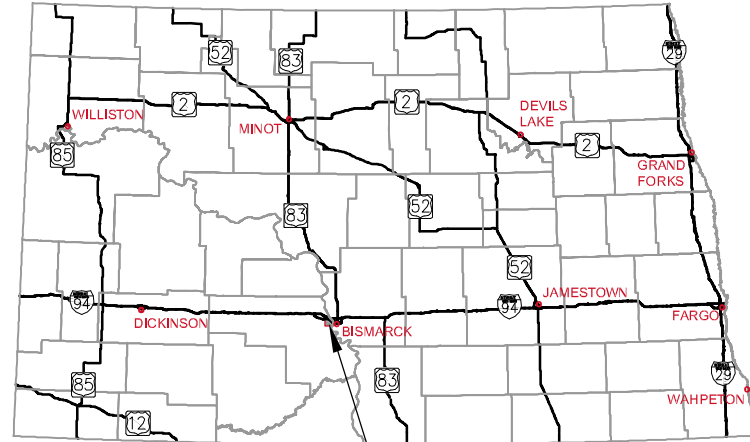


LAKWOOD 9TH ADDITION

WATER IMPROVEMENT PROJECT NO. 2015-17

SEWER IMPROVEMENT PROJECT NO. 2015-17

FEBRUARY 29, 2016
 RECORD DRAWINGS OCTOBER 2016



STATE OF NORTH DAKOTA PROJECT LOCATION



MANDAN, ND



VICINITY MAP

NO SCALE

INDEX OF SHEETS

- 1 COVER SHEET
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- 3 GENERAL NOTES
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- 10-11 34TH AVENUE SE PLAN & PROFILE
- 12-13 AMITY CIRCLE SE PLAN & PROFILE
- 14 DETAILS

UTILITY COMPANIES

GAS:
 MONTANA-DAKOTA UTILITIES CO.
 308 1ST STREET NW
 MANDAN, ND 58554
 PH: 701-663-8713

CITY OF MANDAN
 PUBLIC WORKS DEPARTMENT
 411 6TH AVENUE SW
 MANDAN, ND 58554
 PH: 701-667-3240
 JEFF WRIGHT

ELECTRIC:
 MOR-GRAN-SOU ELECTRIC COOP. INC.
 2816 37TH ST. NW
 MANDAN, ND 58554
 PH: 701-663-0297

CABLE:
 MIDCONTINENT COMMUNICATIONS
 719 MEMORIAL HIGHWAY
 BISMARCK, ND 58501
 PH: 1-800-888-1300

PHONE:
 CENTURYLINK
 1101 16TH STREET NE
 MANDAN, ND 58554
 PH: 701-222-6820

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 DESIGN, BUT ONLY AS TO THE
 RECORD DRAWING CHANGES.

ONE CALL
 BEFORE DIGGING
 1-800-795-0555

BASIS OF SURVEY

ALL CONTOURS, ELEVATIONS, AND COORDINATES FOR THE PROJECT ARE BASED ON NAD83 STATE PLANE COORDINATE SYSTEM, NORTH DAKOTA SOUTH ZONE, INTERNATIONAL FEET, AND NAVD 88.

3203 32ND AVE S, SUITE 201
 FARGO, ND 58103
 PH: 701.232.5353
 FAX: 855.288.8055
 www.kljeng.com



REVISED SET 2-29-16

KLJ PROJECT NO. 14615136



| | | | | |
|----------|---------------|-----------------|-------------------|---------------------|
| REVISION | CITY COMMENTS | CITY COMMENTS 2 | UTILITY REVISIONS | UTILITY REVISIONS 2 |
| NO. | 1 | 2 | 3 | 4 |
| DATE | 10/23/15 | 2/29/16 | 4/22/16 | 4/27/16 |

DRAFTED
A.J.W.
REVIEWED
A.D.W.
PROJECT NUMBER
14615136
ISSUE DATE
2/27/16

LAKWOOD 9TH ADDITION
 VE LAND COMPANY LLC.
 MANDAN, NORTH DAKOTA
LEGEND & ESTIMATED QUANTITIES

LEGEND

| EXISTING | ITEM | PROPOSED |
|----------|-----------------------------|----------|
| | WATER MAIN | |
| | FIRE HYDRANT | |
| | GATE VALVE | |
| | CURB STOP | |
| | BEND | |
| | TEE | |
| | CROSS | |
| | REDUCER | |
| | WATER MANHOLE | |
| | SPRINKLER HEAD | |
| | WATER METER | |
| | SANITARY SEWER MAIN | |
| | SANITARY MANHOLE | |
| | CLEANOUT | |
| | STORM SEWER MAIN | |
| | STORM SEWER MANHOLE | |
| | CURB INLET | |
| | CATCH BASIN | |
| | UNDER GROUND ELECTRIC | |
| | OVERHEAD ELECTRIC | |
| | POWER POLE | |
| | GUY WIRE | |
| | LIGHT POLE | |
| | ELECTRICAL JUNCTION BOX | |
| | ELECTRICAL METER | |
| | ELECTRICAL OUTLET/PLUG-IN | |
| | UNDERGROUND TELEPHONE | |
| | TELEPHONE MANHOLE | |
| | TELEPHONE PEDESTAL | |
| | UNDERGROUND CABLE TV | |
| | CABLE TV PEDESTAL | |
| | GAS METER | |
| | GAS LINE | |
| | FUEL LINE | |
| | CONCRETE CURB & GUTTER | |
| | EDGE OF ASPHALT SURFACE | |
| | EDGE OF GRAVEL SURFACE | |
| | BITUMINOUS/CONCRETE SURFACE | |
| | BUILDING | |
| | SILT FENCE | |
| | CHAIN LINK FENCE | |
| | WOOD FENCE | |
| | BARB WIRE FENCE | |
| | TREES CONIFEROUS/ DECIDUOUS | |
| | BUSH | |
| | CULVERT | |
| | DRAINAGE DIRECTION | |
| | SIGN | |
| | MAIL BOX | |
| | PROPERTY PIN | |
| | CONTROL POINT | |

ESTIMATED QUANTITIES

| WATER & SANITARY SEWER ESTIMATED QUANTITIES | | | |
|---|----------------------------------|------|----------|
| Item No. | Description | Unit | Quantity |
| 1 | MOBILIZATION | LS | 1 |
| 2 | SUBCUT GRAVEL | TON | 169 |
| 3 | 8" SDR-35 PVC SANITARY SEWER | LF | 3951 |
| 4 | TELEWISE SEWER MAIN | LF | 3951 |
| 5 | 8" PVC C-900 WATER MAIN | LF | 4522 |
| 6 | 6" PVC C-900 WATERMAIN | LF | 126 |
| 7 | 6" HYDRANT | EA | 8 |
| 8 | 8" GATE VALVE AND BOX | EA | 18 |
| 9 | 6" GATE VALVE AND BOX | EA | 8 |
| 10 | 8" TAPPING SLEEVE WITH 8" VALVE | EA | 1 |
| 11 | 10" TAPPING SLEEVE WITH 8" VALVE | EA | 1 |
| 12 | 48" SANITARY SEWER MANHOLE | EA | 14 |
| 13 | 4" SDR-35 PVC SEWER SERVICE | LF | 2562 |
| 14 | 8" X 4" SEWER SERVICE CONNECTION | EA | 68 |
| 15 | 1" WATER SERVICE PIPE | LF | 2338 |
| 16 | 1" CURB STOP AND BOX | EA | 68 |
| 17 | 8" X 1" WATER SERVICE CONNECTION | EA | 68 |

2
2
2
2
2
2
2

8-23-15 REVISION SUMMARY

1. RAISE SANITARY SEWER BY 0.80' ON 21ST STREET AND AMITY CIRCLE
2. REMOVE ALL STORM SEWER ITEMS. STORM SEWER TO BE INSTALLED BY OTHERS
3. MOVE ALL WATERMAIN TO A MINIMUM OF 8' FROM BACK OF CURB
4. RELOCATE STORM SEWER ALIGNMENT THROUGH AMITY CIRCLE LOTS. MOVE WATER AND SEWER SERVICES AWAY FROM STORM SEWER. REVISE WATERMAIN DEPTH UNDER STORM SEWER.
5. ADD BID ITEMS FOR TAPPING SLEEVES TO CONNECT TO EXISTING WATERMAINS.

2-29-16 REVISION SUMMARY

1. MOVE WATER AND SANITARY SEWER SERVICE LOCATIONS
2. ADD ADDITIONAL GATE VALVES.
3. ADD SANITARY SEWER AND WATERMAIN STUB-OUTS ALONG 21TH STREET SE.
4. REMOVE HORIZONTAL BENDS IN WATERMAIN ALONG 21ST STREET SE.
5. CHANGE BID ITEM [1" TYPE K COPPER WATER SERVICE] TO [1" WATER SERVICE PIPE].

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GENERAL

- ALL CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS; THE CITY OF MANDAN STANDARD SPECIFICATIONS AND DETAILS; AND THE CONSTRUCTION DOCUMENTS TITLED LAKEWOOD 9TH WATER, SANITARY SEWER, AND STORM SEWER IMPROVEMENTS MANDAN, NORTH DAKOTA.
- THESE NOTES APPLY TO THE ENTIRE PROJECT EXCEPT AS INDICATED OTHERWISE. CONTRACTOR SHOULD NOTE THAT ADDITIONAL CONSTRUCTION NOTES ARE INCLUDED ON INDIVIDUAL DRAWINGS.
- THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
- REQUESTS BY THE CONTRACTOR OR OWNER SHALL BE APPROVED IN WRITING BY THE ENGINEER AND CITY PRIOR TO IMPLEMENTATION.
- ANY ERRORS OR OMISSIONS DISCOVERED BY THE CONTRACTOR IN THE PLAN SET SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER WHEN DISCOVERED. THE CONTRACTOR SHALL ALLOW TIME FOR CLARIFICATION.
- ITEMS NOT INCLUDED IN THE PLANS AS A PAY ITEM BUT INCLUDED ELSEWHERE IN THE PLANS SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND SHALL BE CONSIDERED INCIDENTAL ITEMS.
- THIS PLAN SET HAS A LIST OF GENERAL ABBREVIATIONS AND SYMBOLS AND MATERIALS LEGENDS LISTED ON IT. SOME SYMBOLS, MATERIALS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- THE CONTRACTOR SHALL PROVIDE A ONE (1) WEEK NOTICE TO THE ENGINEER, OWNER AND THE CITY OF MANDAN PRIOR TO BEGINNING ANY CONSTRUCTION.
- ALL DITCH GRADES, CONTOURS AND CROSS SECTIONS REPRESENT THE FINISHED GRADE (TOP OF THE TOPSOIL). IN AREAS WHERE TOPSOIL IS TO BE PLACED, THE GRADING SHALL BE COMPLETED BY CUTTING OR FILLING EARTHWORK TO A POINT 10 INCHES BELOW THE FINAL GRADE; WITH TOPSOIL BRINGING THE GRADING TEMPLATE TO FINISHED GRADE ELEVATIONS. THE EARTHWORK SHALL BE CONSTRUCTED TO THE LINES AND GRADES AS SHOWN ON THE PLANS.

PROTECTION OF EXISTING UTILITIES AND MONUMENTS

- THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. UNDERGROUND LOCATES MAY BE MADE USING THE "ONE CALL" NUMBER 1-800-795-0555 OR 811.
- THE CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS. MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY THE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

REMOVALS

- EXCESS EXCAVATED MATERIAL INCLUDING PIPE, STUMPS, ROOTS, SOIL MATERIALS AND ANY OTHER ITEMS THE OWNER DOES NOT WISH TO SALVAGE SHALL BECOME THE CONTRACTOR'S PROPERTY AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY, INCIDENTAL TO THE CONTRACT. ASPHALT AND CONCRETE SHALL BE DISPOSED OF OFFSITE AT A LICENSED LANDFILL, INCIDENTAL TO THE CONTRACT.

WATER & SANITARY SEWER

- PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION, ELEVATION, MATERIAL AND SIZE OF THE EXISTING WATER AND SEWER MAIN AT THE POINTS OF CONNECTION. CONNECTIONS BETWEEN NEW AND EXISTING PIPES SHALL USE PROPER FITTINGS TO SUIT THE ACTUAL CONDITIONS ENCOUNTERED. FITTINGS NECESSARY TO MAKE ALL CONNECTIONS SHALL BE INCIDENTAL.
- THE CONTRACTOR IS TO PROVIDE AND MAINTAIN ADEQUATE DEWATERING EQUIPMENT TO REMOVE AND DISPOSE OF ANY SURFACE AND GROUNDWATER ENTERING THE TRENCH. ALL COSTS ASSOCIATED WITH WELLPOINT DEWATERING, AND OTHER PUMP SYSTEMS, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. PERMITS REQUIRED FOR DEWATERING SHALL BE OBTAINED BY THE CONTRACTOR.
- DEPTH OF COVER FOR ALL WATERLINES SHALL BE A MINIMUM OF 7 FEET 6 INCHES MEASURED FROM THE GROUND SURFACE TO THE TOP OF PIPE. MAINS SHALL BE LOWERED, AS REQUIRED, TO AVOID CONFLICTS WITH EXISTING UTILITIES AND TO MAINTAIN SPECIFIED SEPARATIONS.
- WATER MAIN DEFLECTIONS FROM A STRAIGHT LINE OR GRADE ARE TO BE MADE WITH FITTINGS, DEFLECTED JOINTS, SHORTER PIPE SECTIONS OR A COMBINATION OF THESE METHODS TO CONFORM TO THE ALIGNMENT AND PROFILE INDICATED ON THE DRAWINGS AND SPECIFICATIONS. DEFLECTED JOINTS SHALL NOT EXCEED THE PIPE MANUFACTURERS RECOMMENDATION.
- ALL SANITARY SEWER MANHOLES SHALL HAVE A MONOLITHIC BASE WITH PRECAST INVERTS.
- ALL PIPE BEDDING SHALL BE CONSIDERED INCIDENTAL TO THE PIPE INSTALLED.
- WHERE THE BOTTOM OF THE TRENCH UNCOVERED AT SUBGRADE IS UNSUITABLE AND IN THE OPINION OF THE ENGINEER CANNOT SUPPORT THE PIPE, FURTHER DEPTH AND/OR WIDTH SHALL BE EXCAVATED AND REFILLED TO THE PIPE FOUNDATION GRADE WITH SUBCUT GRAVEL THOROUGHLY COMPACTED. SUBCUT GRAVEL SHALL BE MEASURED BY THE TON AND PAID FOR AT THE UNIT PRICE FOR "SUBCUT GRAVEL" COMPLETE IN PLACE AND ACCEPTED BY THE ENGINEER.

TRAFFIC CONTROL AND SIGNAGE

- THE CONTRACTOR SHALL MAINTAIN INGRESS/EGRESS ACCESS TO INDIVIDUAL PROPERTY OWNERS AT ALL TIMES. THE CONTRACTOR SHALL COORDINATE DETOURS AND ANY TEMPORARY CLOSURES WITH EACH PROPERTY OWNER AND THE CITY OF MANDAN ENGINEERING DEPARTMENT. THE CONTRACTOR SHALL KEEP THE DURATION OF ALL CLOSURES AND DETOURS TO A MINIMUM.
- THE CONTRACTOR SHALL MAINTAIN TEMPORARY DETOUR ROADS UNTIL DETOUR IS NO LONGER NECESSARY. MAINTENANCE COSTS SHALL BE INCIDENTAL TO THE CONTRACT.
- THE CONTRACTOR SHALL FOLLOW THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION.
- THE CONTRACTOR SHALL FOLLOW NORTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS WHEN SETTING UP THE TRAFFIC CONTROL DEVICES.

STORM WATER POLLUTION PREVENTION

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A GENERAL PERMIT (NPDES) FROM THE NORTH DAKOTA DEPARTMENT OF HEALTH. AN APPLICATION PACKAGE WITH ALL RELATED AND SUBSEQUENT REQUIREMENTS MAY BE ACQUIRED BY CONTACTING THE NORTH DAKOTA DEPARTMENT OF HEALTH AT 701-328-5210.
- THE CONTRACTOR IS RESPONSIBLE FOR MINIMIZING TRACKING OF SOIL AND DEBRIS ONTO ADJACENT PROPERTIES AND ROADWAYS. TRACKING MUST BE REMOVED BY THE END OF EACH DAY.
- THE CONTRACTOR SHALL BE REQUIRED TO CLEAN STREETS AND SIDEWALKS AND REPAIR TO THE CONDITION THEY WERE IN PRIOR TO THE START OF CONSTRUCTION BEFORE OPENING UP TO TRAFFIC.
- THE CONTRACTOR SHALL INSTALL A CENTRAL CONCRETE WASHOUT LOCATION AND PROVIDE A SIGN TO IDENTIFY THE CONCRETE WASHOUT AREA. THE CONTRACTOR SHALL CONSTRUCT A PIT TO PREVENT WASHOUT WATER FROM FLOWING TO THE STORM WATER COLLECTION SYSTEM.

LIST OF CITY OF MANDAN STANDARD DETAILS:

- 1308A - SANITARY SEWER MANHOLE
- 1325A - WATER-SEWER MAIN CROSSING
- 1326 - CONCRETE TRUST BLOCKING
- 1327 - PIPE BACKFILL

BENCHMARKS

| PT # | DESCRIPTION | NORTHING | EASTING | ELEVATION |
|------|---------------------------|------------|-------------|-----------|
| 11 | MA NAIL IN ASPHALT #154 | 416073.473 | 1881325.653 | 1637.066 |
| 13 | 3/4" RBR LATA 5008 | 414878.664 | 1883085.464 | 1635.584 |
| 400 | 2 1/2" AL CAP IN MON. BOX | 416112.792 | 1883763.046 | 1634.374 |
| 404 | YLW CAP LS 4623 | 415115.200 | 1883473.954 | 1639.669 |
| 405 | 3" BRASS CAP | 416101.722 | 1881119.378 | 1636.951 |
| 406 | 1" AL CAP RLS 2615 | 414788.122 | 1881622.916 | 1637.288 |

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| 4 | 4/27/16 | UTILITY REVISIONS 2 |

DRAFTED
AJW
REVIEWED
ADW
PROJECT NUMBER
14615136
ISSUE DATE
2/27/16

LAKELWOOD 9TH ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA
GENERAL NOTES

SHEET
3



| NO. | DATE | REVISION |
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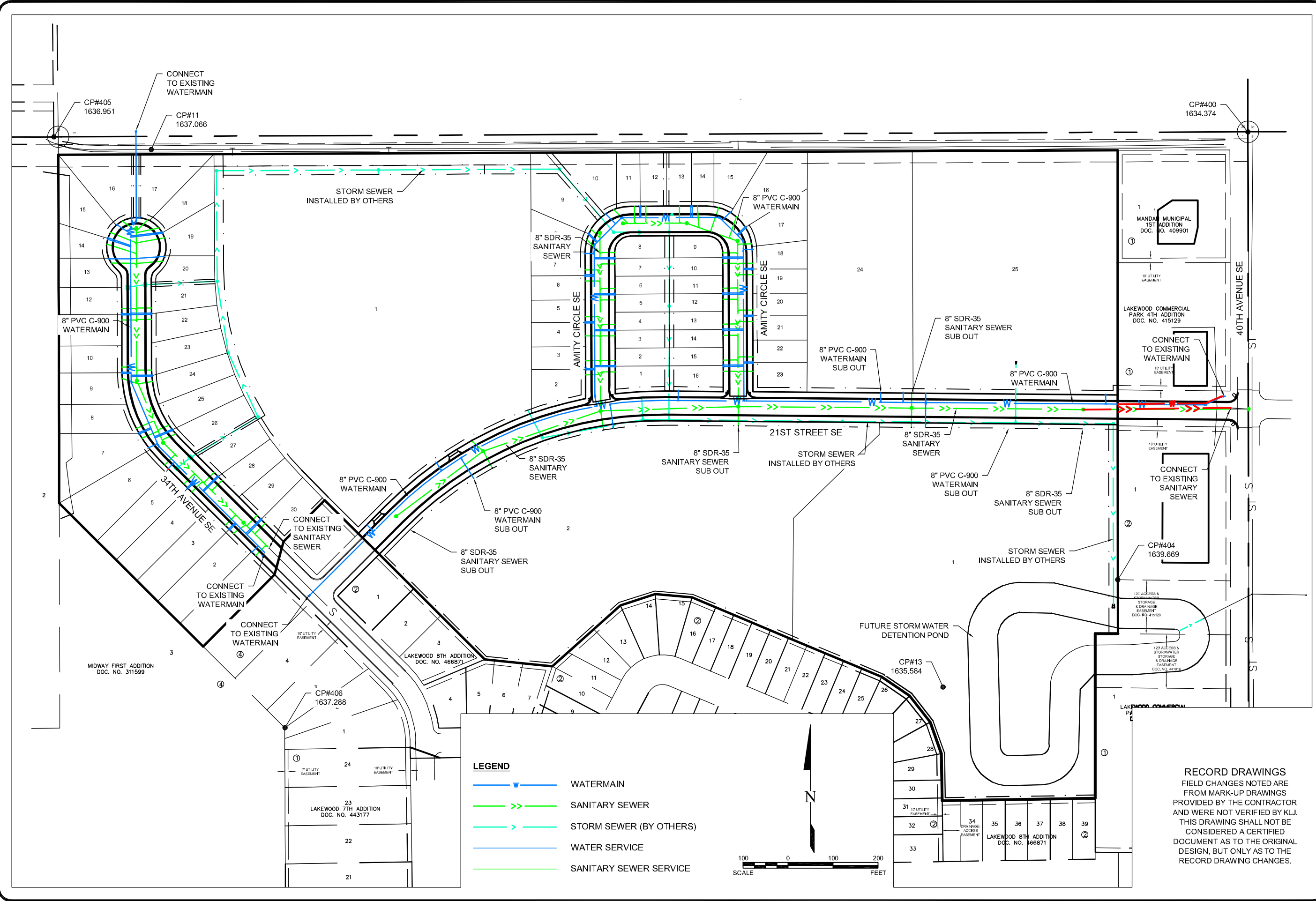
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| DRAFTED A.J.W. |
| REVIEWED A.D.W. |
| PROJECT NUMBER 14615136 |
| ISSUE DATE 2/27/16 |

LAKWOOD 9TH ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA

UTILITIES SCOPE OF WORK

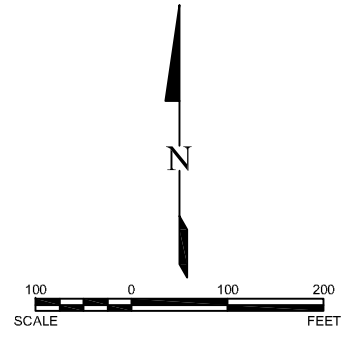
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SHEET
4



LEGEND

| | |
|--|-------------------------|
| | WATERMAIN |
| | SANITARY SEWER |
| | STORM SEWER (BY OTHERS) |
| | WATER SERVICE |
| | SANITARY SEWER SERVICE |





STRUCTURE SUMMARY

- SANITARY SEWER MANHOLE CASTING:
- NEENAH FOUNDRY COMPANY R-1733
 - EAST JORDAN IRON WORKS 1205
 - MUNICIPAL CASTINGS, INC 301
 - APPROVED EQUAL.

SSMH1
Concentric Cylindrical Structure
STA. 3+57.54, 0.00'
RIM = 1639.48
NE INV= 1629.82

SSMH6
Concentric Cylindrical Structure
STA. 19+50.00, 0.00'
RIM = 1638.05
W INV= 1622.59
E INV= 1622.49

SSMH11
Concentric Cylindrical Structure
STA. 49+23.35, 14.80' LT
RIM = 1638.76
S INV= 1629.13

SSMH2
Concentric Cylindrical Structure
STA. 6+00.00, 0.00'
RIM = 1638.98
SW INV= 1628.78
NW INV= 1628.78
SE INV= 1628.80
E INV= 1628.69

SSMH7
Concentric Cylindrical Structure
STA. 27+32.61, 0.00'
RIM = 1642.57
S INV= 1634.37

SSMH12
Concentric Cylindrical Structure
STA. 49+72.42, 2.00' LT
RIM = 1638.82
E INV= 1628.89

SSMH3
Concentric Cylindrical Structure
STA. 8+76.94, 0.00'
RIM = 1637.87
W INV= 1627.65
N INV= 1627.55
S INV= 1627.52
E INV= 1627.40

SSMH8
Concentric Cylindrical Structure
STA. 30+72.05, 1.14' RT
RIM = 1640.97
N INV= 1633.01
SE INV= 1632.91

SSMH13
Concentric Cylindrical Structure
STA. 51+13.91, 0.00' RT
RIM = 1638.61
W INV= 1628.32
E INV= 1628.22

SSMH4
Concentric Cylindrical Structure
STA. 11+83.53, 0.00'
RIM = 1638.57
E INV= 1626.11
W INV= 1626.17
N INV= 1626.17
S INV= 1626.17

SSMH9
Concentric Cylindrical Structure
STA. 32+23.39, 0.88' RT
RIM = 1640.37
NW INV= 1632.32
SE INV= 1632.21

SSMH14
Concentric Cylindrical Structure
STA. 52+38.78, 5.63' LT
RIM = 1638.99
W INV= 1627.74
S INV= 1627.64

SSMH5
Concentric Cylindrical Structure
STA. 15+68.72, 0.00'
RIM = 1638.72
N INV= 1624.36
S INV= 1624.36
E INV= 1624.26
W INV= 1624.36

SSMH10
Concentric Cylindrical Structure
STA. 34+75.01, 0.00'
RIM = 1639.52
NW INV= 1631.21
SE INV= 1631.11

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| |
|----------------------------|
| DRAFTED A.J.W |
| REVIEWED ADW |
| PROJECT NUMBER 14615136 |
| ISSUE DATE 2/27/16 |

LAKWOOD 9TH ADDITION
 VE LAND COMPANY LLC.
 MANDAN, NORTH DAKOTA
STRUCTURE & CASTING SUMMARY



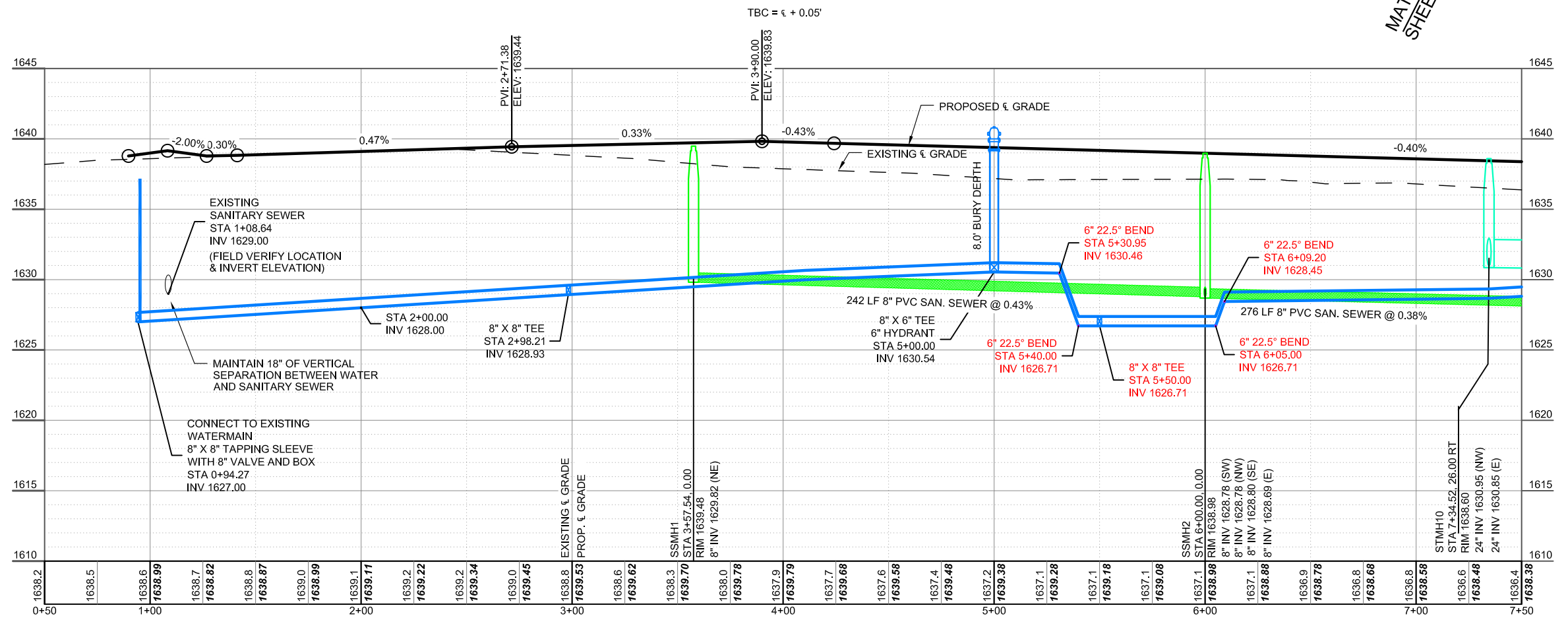
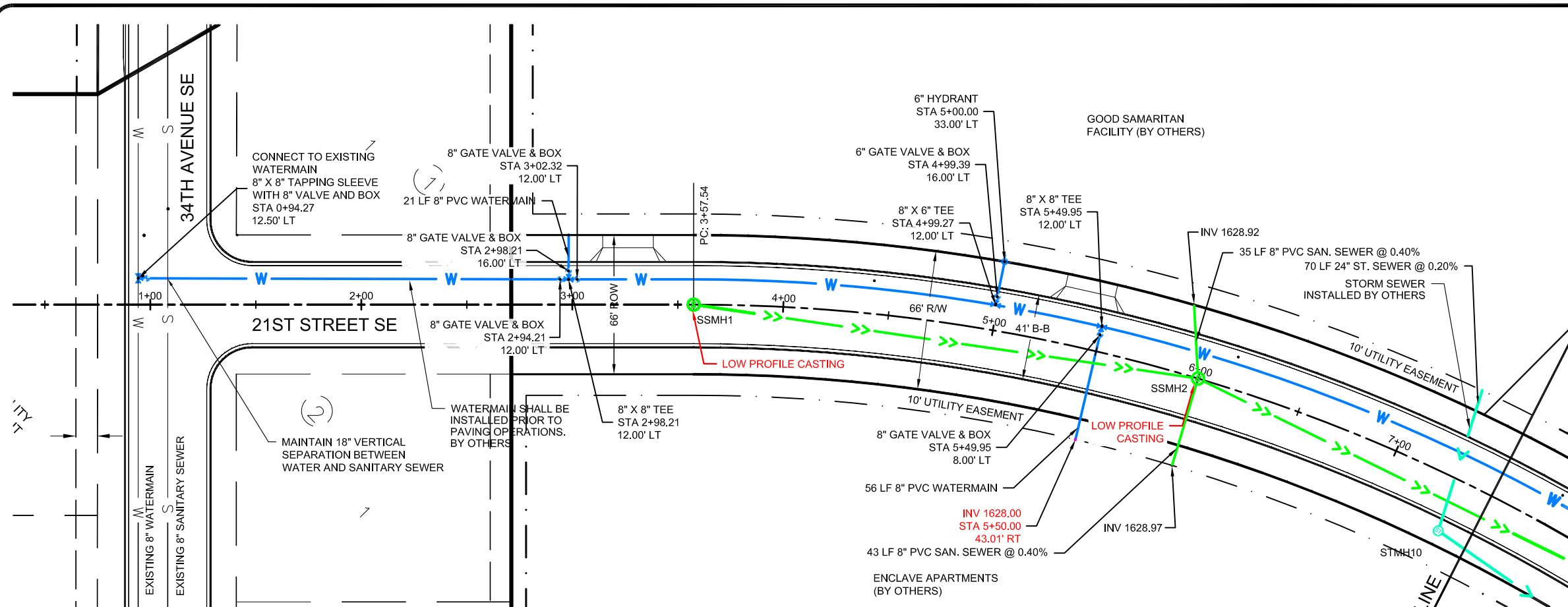
QUANTITIES THIS SHEET

SANITARY SEWER

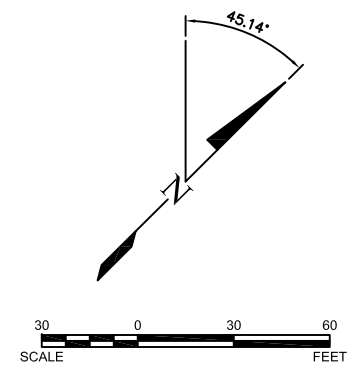
| | |
|------------------------------|--------|
| 48" SANITARY SEWER MANHOLE | 2 EA |
| 8" SDR-35 PVC SANITARY SEWER | 470 LF |

WATERMAIN

| | |
|---------------------------------|--------|
| 8" PVC C-900 WATERMAIN | 733 LF |
| 6" PVC C-900 WATERMAIN | 21 LF |
| 6" HYDRANT | 1 EA |
| 8" GATE VALVE & BOX | 4 EA |
| 6" GATE VALVE & BOX | 1 EA |
| 8" TAPPING SLEEVE WITH 8" VALVE | 1 EA |



| PIPE DIA. (INCH) | PIPE LENGTH (FT) | MIN RADIUS (FT) | MAX OFFSET (INCH) |
|------------------|------------------|-----------------|-------------------|
| 6 | 20 | 165 | 15 |
| | 40 | 165 | 30 |
| 8 | 20 | 215 | 11 |
| | 40 | 215 | 45 |
| 10 | 20 | 265 | 10 |
| | 40 | 265 | 36 |



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LAKewood 9TH ADDITION
 VE LAND COMPANY LLC.
 MANDAN, NORTH DAKOTA
21ST STREET PLAN & PROFILE, STA 0+50 - 7+50 SURVEY

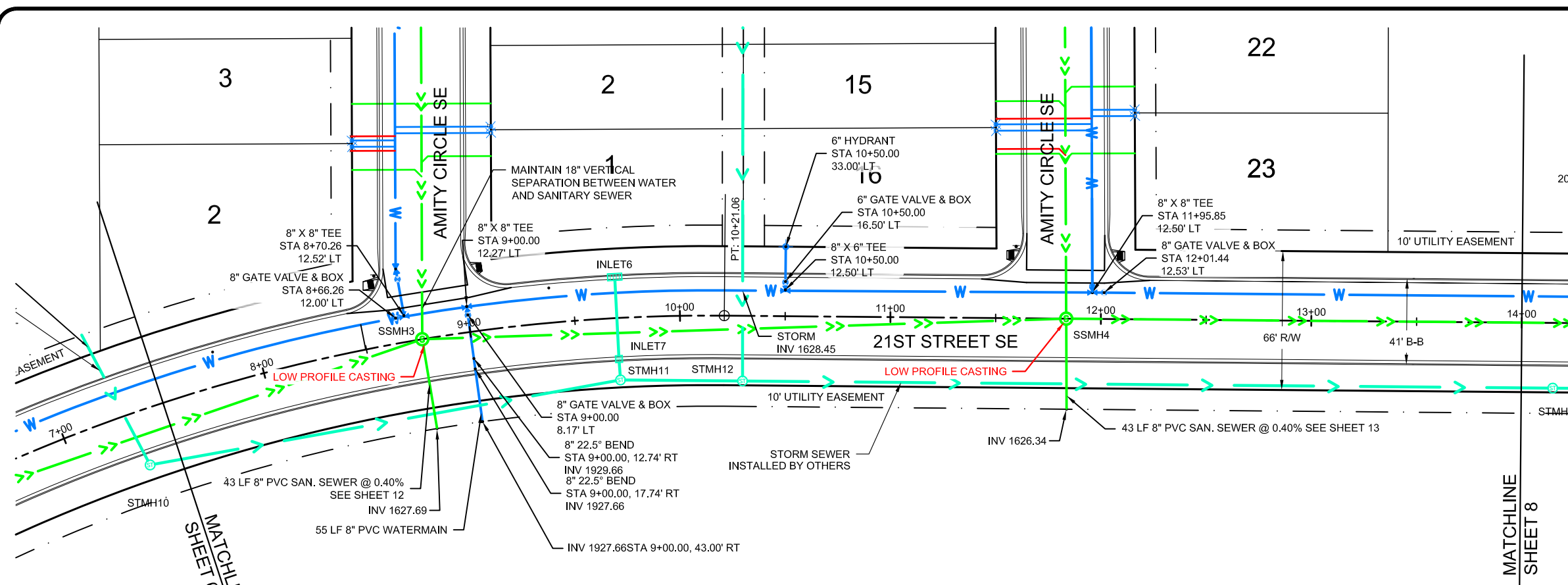


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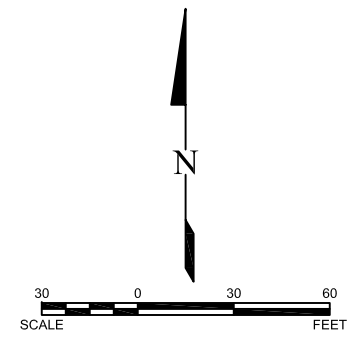
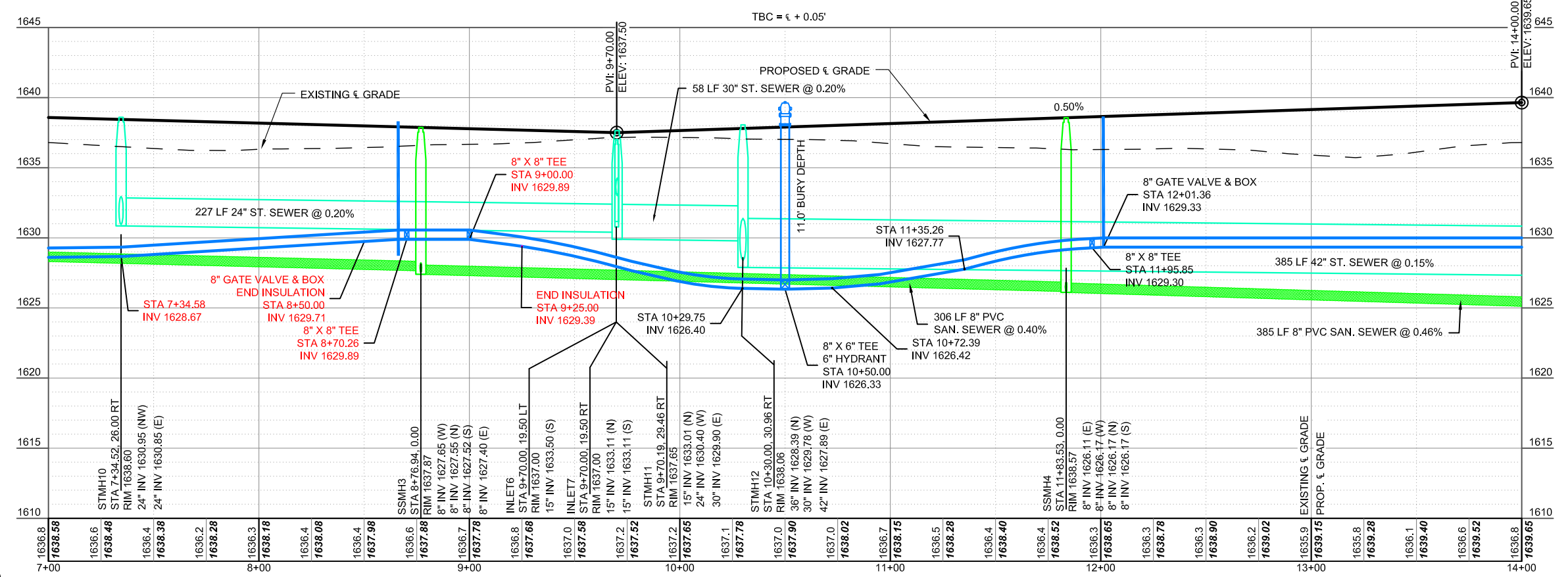
| SANITARY SEWER | |
|------------------------------|--------|
| 48" SANITARY SEWER MANHOLE | 2 EA |
| 8" SDR-35 PVC SANITARY SEWER | 649 LF |
| WATERMAIN | |
| 8" PVC C-900 WATERMAIN | 712 LF |
| 6" PVC C-900 WATERMAIN | 19 LF |
| 6" HYDRANT | 1 EA |
| 8" GATE VALVE & BOX | 3 EA |
| 6" GATE VALVE & BOX | 1 EA |

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2/27/16



| PRESSURE PIPE BENDING ALLOWANCE | | | |
|---------------------------------|------------------|-----------------|-------------------|
| PIPE DIA. (INCH) | PIPE LENGTH (FT) | MIN RADIUS (FT) | MAX OFFSET (INCH) |
| 6 | 20 | 165 | 15 |
| | 40 | 165 | 30 |
| 8 | 20 | 215 | 11 |
| | 40 | 215 | 45 |
| 10 | 20 | 265 | 10 |
| | 40 | 265 | 36 |



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LAKewood 9th ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA

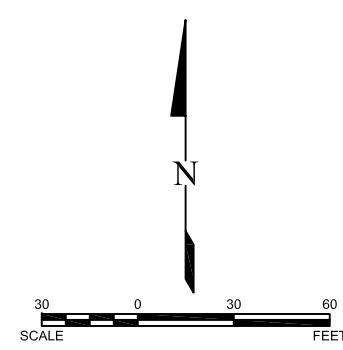
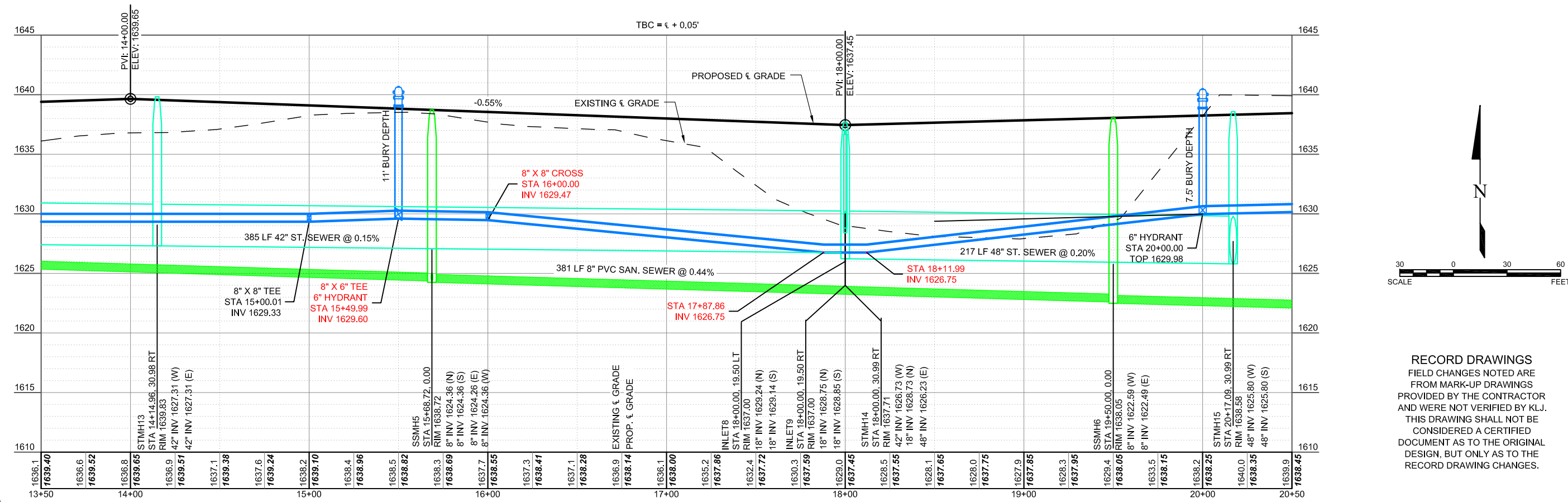
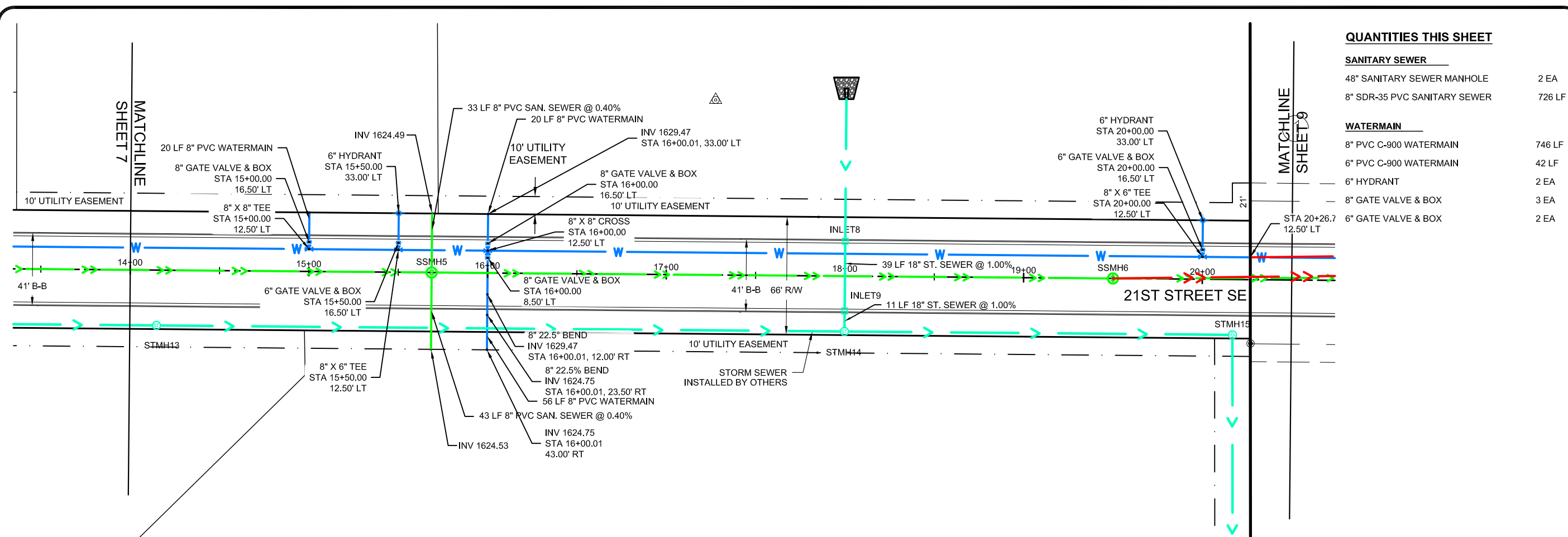
21ST STREET PLAN & PROFILE; STA 7+50 - 14+00 SURVEY



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|-----|----------|----------|---------------------|
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| 3 | 4/22/16 | | UTILITY REVISIONS |
| 4 | 4/27/16 | | UTILITY REVISIONS 2 |

| |
|----------------------------|
| DRAFTED AJW |
| REVIEWED ADW |
| PROJECT NUMBER 14615136 |
| ISSUE DATE 2/27/16 |

LAKELWOOD 9TH ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA
21ST STREET PLAN & PROFILE, STA 14+00- 20+50 SURVEY

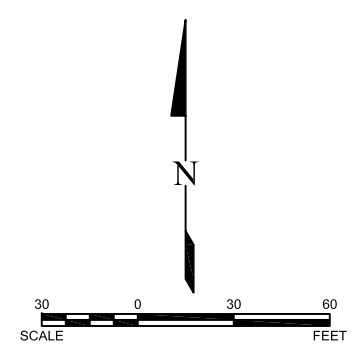
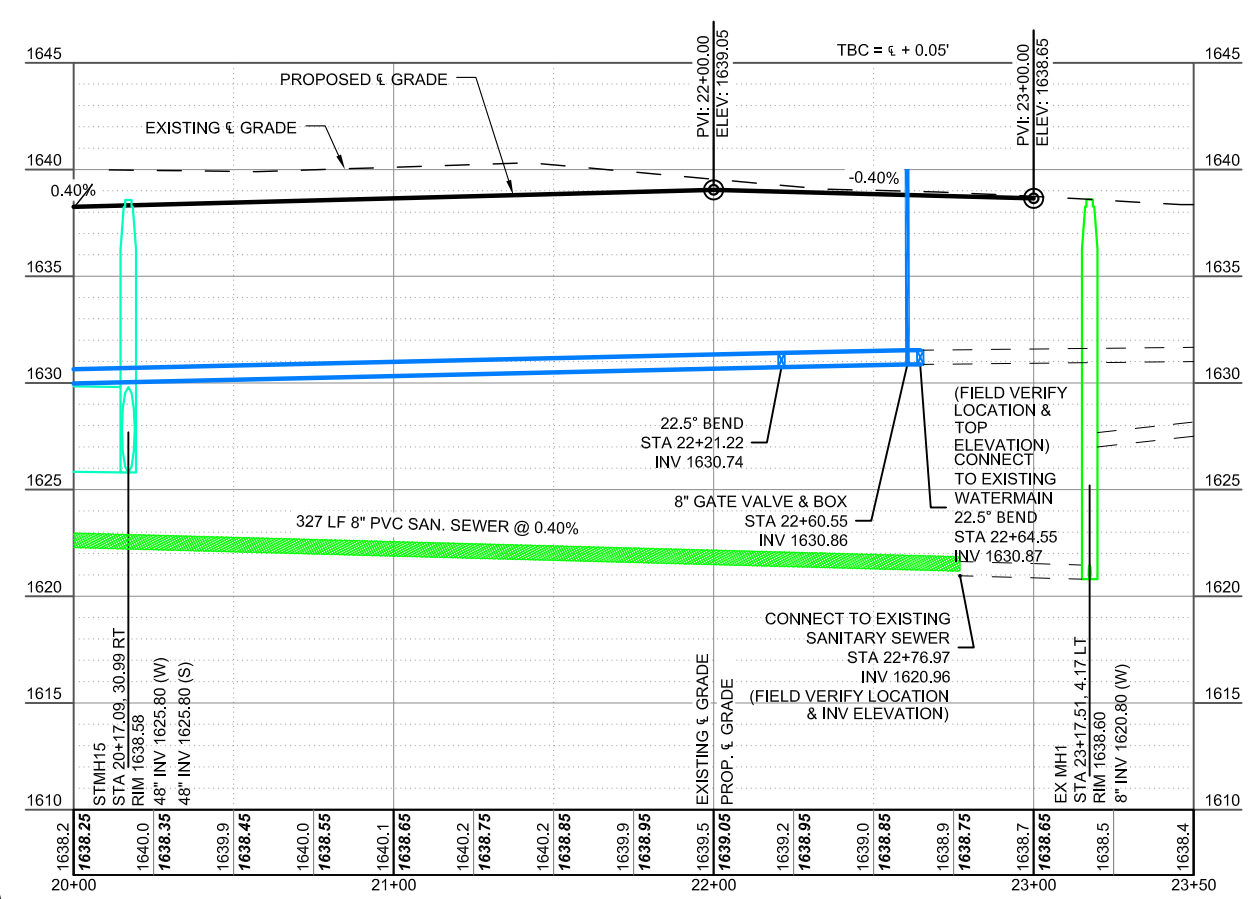
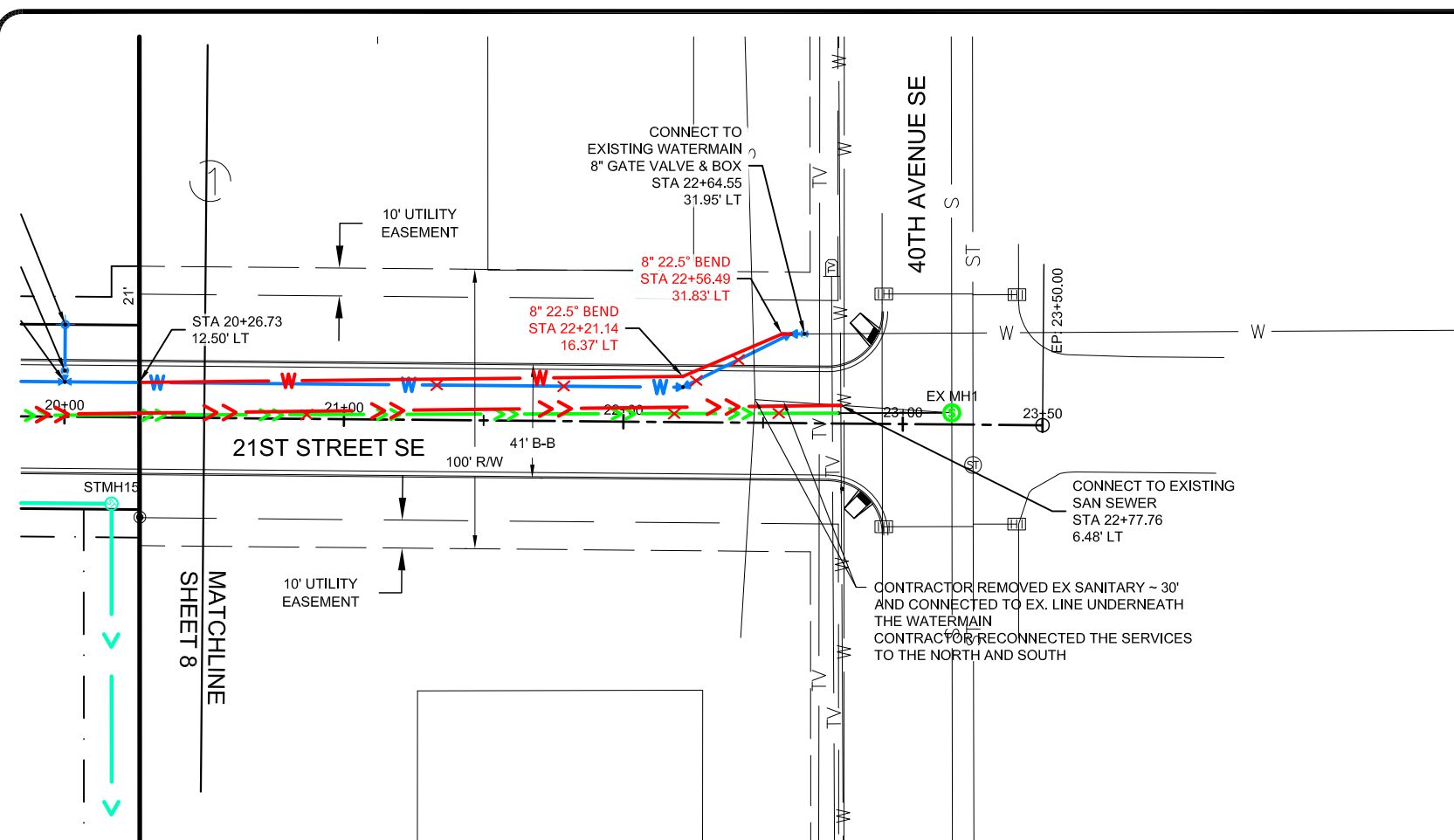


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RECORD DRAWING CHANGES.



QUANTITIES THIS SHEET

| | |
|------------------------------|--------|
| SANITARY SEWER | |
| 8" SDR-35 PVC SANITARY SEWER | 227 LF |
| WATERMAIN | |
| 8" PVC C-900 WATERMAIN | 218 LF |
| 8" GATE VALVE & BOX | 2 EA |

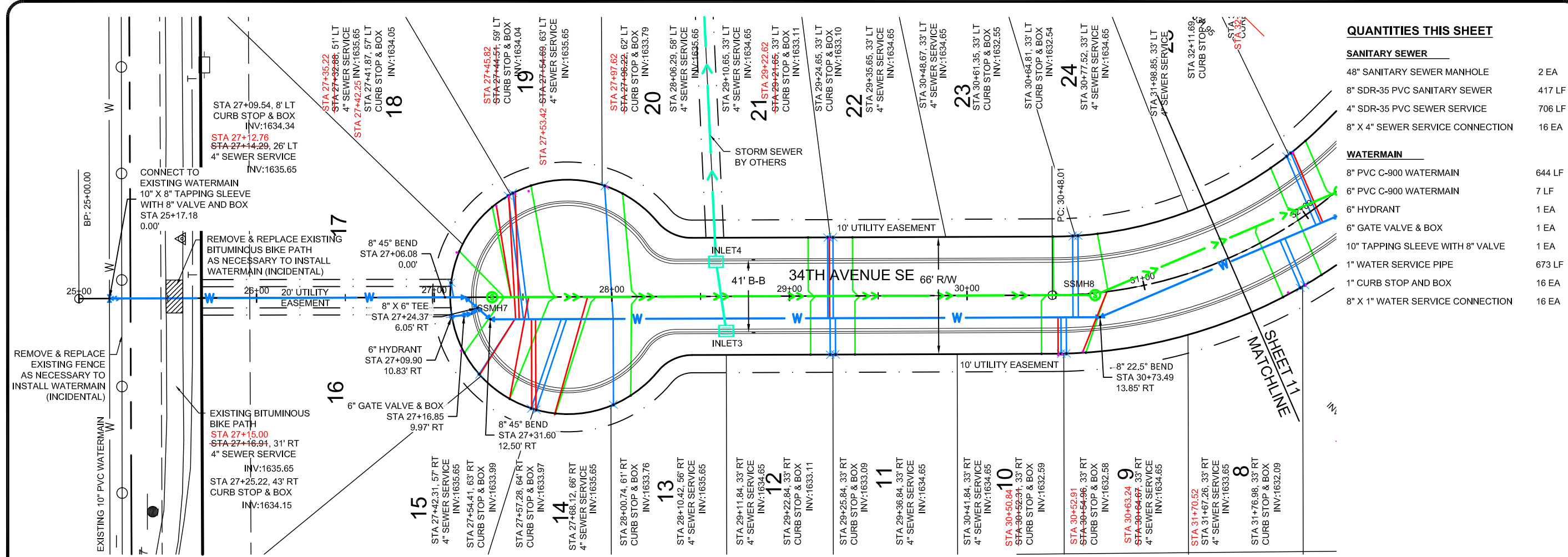


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| 4 | 4/27/16 | UTILITY REVISIONS 2 |

DRAFTED
A.J.W.
 REVIEWED
A.D.W.
 PROJECT NUMBER
14615136
 ISSUE DATE
2/27/16

LAKWOOD 9TH ADDITION
 VE LAND COMPANY LLC,
 MANDAN, NORTH DAKOTA
21ST STREET PLAN & PROFILE, STA 20+50 - 23+50 SURVEY

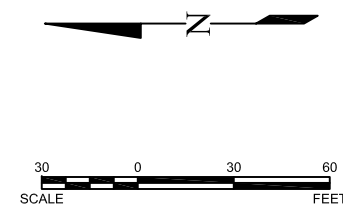
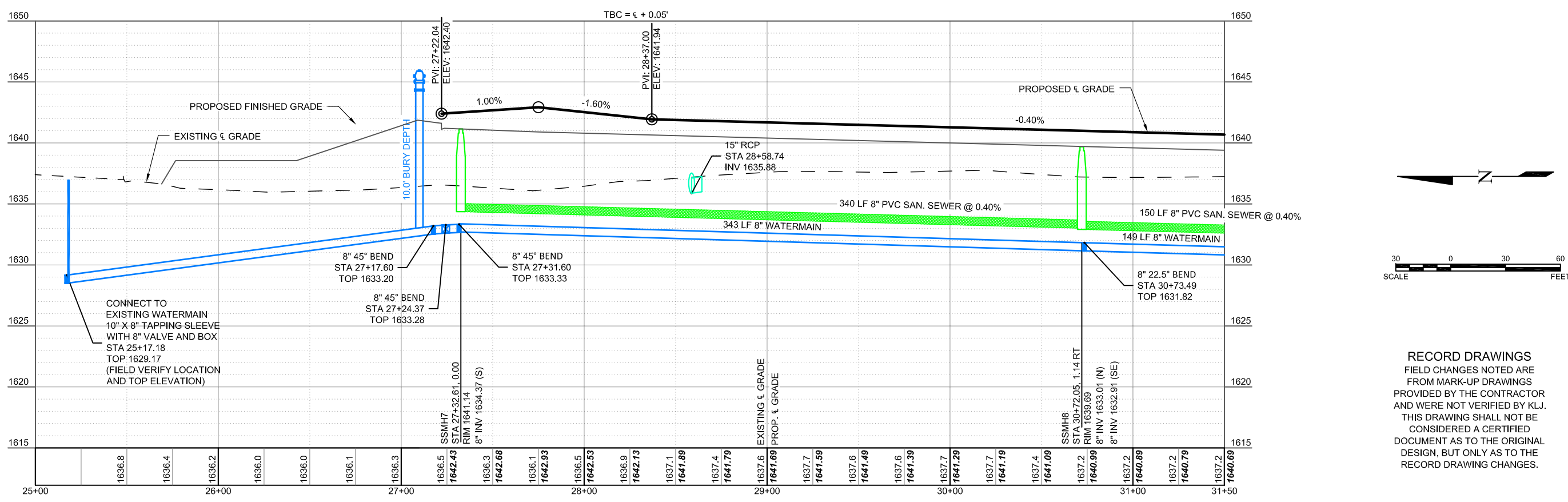


QUANTITIES THIS SHEET

| SANITARY SEWER | |
|----------------------------------|--------|
| 48" SANITARY SEWER MANHOLE | 2 EA |
| 8" SDR-35 PVC SANITARY SEWER | 417 LF |
| 4" SDR-35 PVC SEWER SERVICE | 706 LF |
| 8" X 4" SEWER SERVICE CONNECTION | 16 EA |
| WATERMAIN | |
| 8" PVC C-900 WATERMAIN | 644 LF |
| 6" PVC C-900 WATERMAIN | 7 LF |
| 6" HYDRANT | 1 EA |
| 6" GATE VALVE & BOX | 1 EA |
| 10" TAPPING SLEEVE WITH 8" VALVE | 1 EA |
| 1" WATER SERVICE PIPE | 673 LF |
| 1" CURB STOP AND BOX | 16 EA |
| 8" X 1" WATER SERVICE CONNECTION | 16 EA |

| NO. | DATE | REVISION | CITY COMMENTS | UTILITY REVISIONS |
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REVIEWED
ADW
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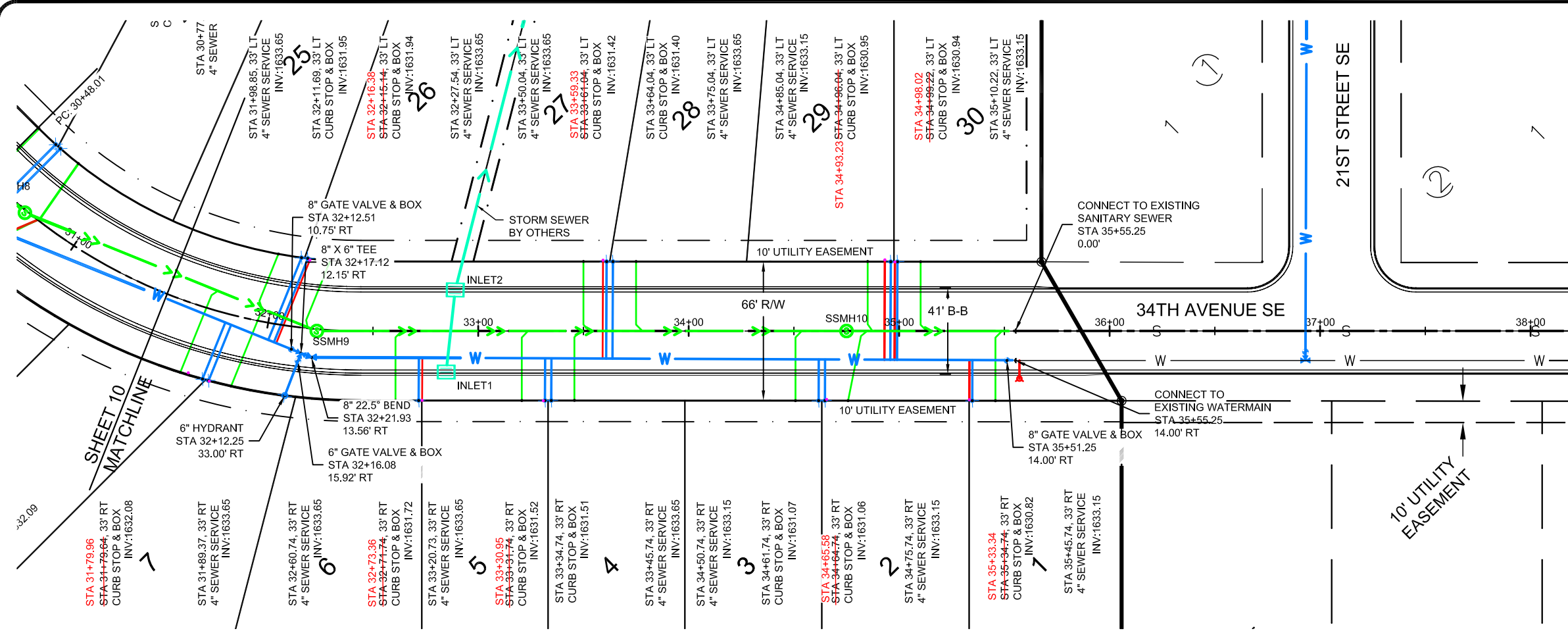


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LAKewood 9th ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA

34TH AVENUE PLAN & PROFILE; STA. 25+00 - 31+50

SHEET
10

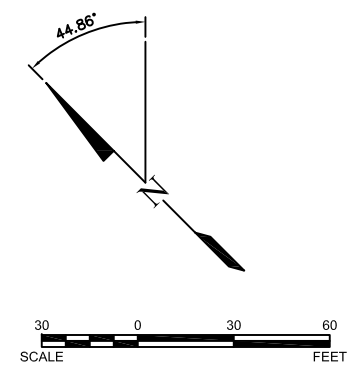
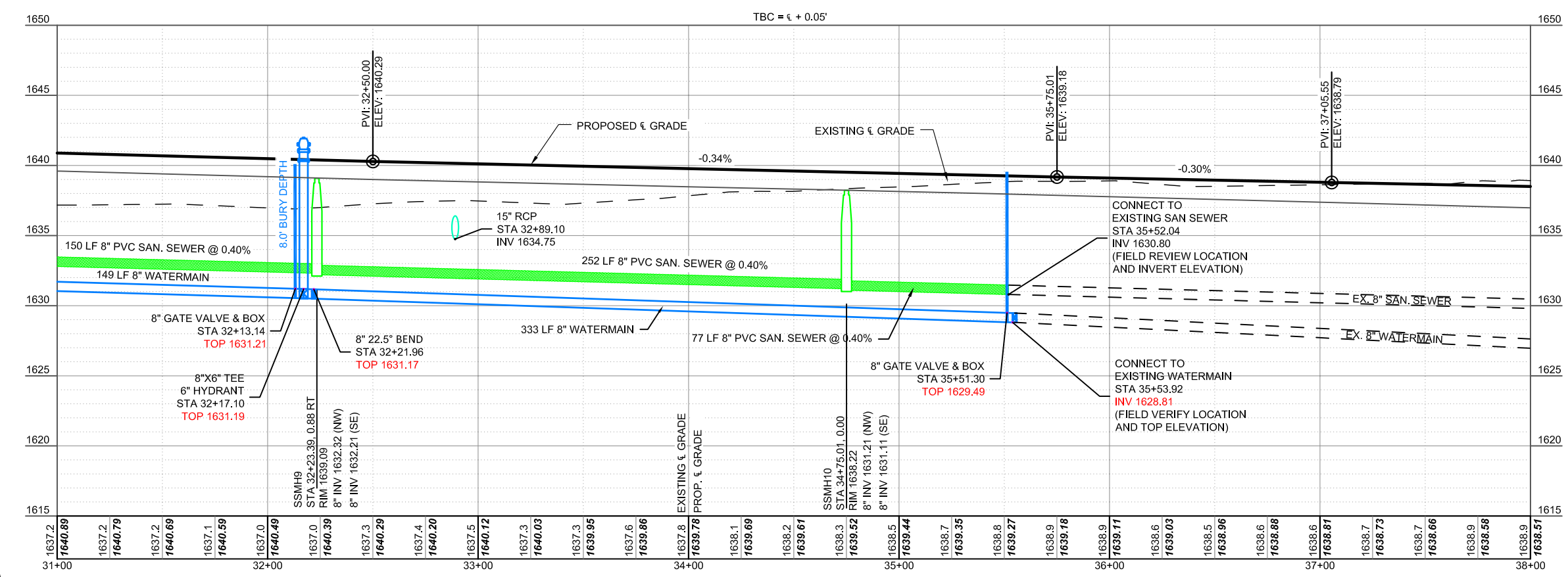


QUANTITIES THIS SHEET

| SANITARY SEWER | |
|----------------------------------|--------|
| 48" SANITARY SEWER MANHOLE | 2 EA |
| 8" SDR-35 PVC SANITARY SEWER | 405 LF |
| 4" SDR-35 PVC SEWER SERVICE | 476 LF |
| 8" X 4" SEWER SERVICE CONNECTION | 14 EA |
| WATERMAIN | |
| 8" PVC C-900 WATERMAIN | 410 LF |
| 6" PVC C-900 WATERMAIN | 20 LF |
| 6" HYDRANT | 1 EA |
| 8" GATE VALVE & BOX | 2 EA |
| 6" GATE VALVE & BOX | 1 EA |
| 1" WATER SERVICE PIPE | 447 LF |
| 1" CURB STOP AND BOX | 14 EA |
| 8" X 1" WATER SERVICE CONNECTION | 14 EA |

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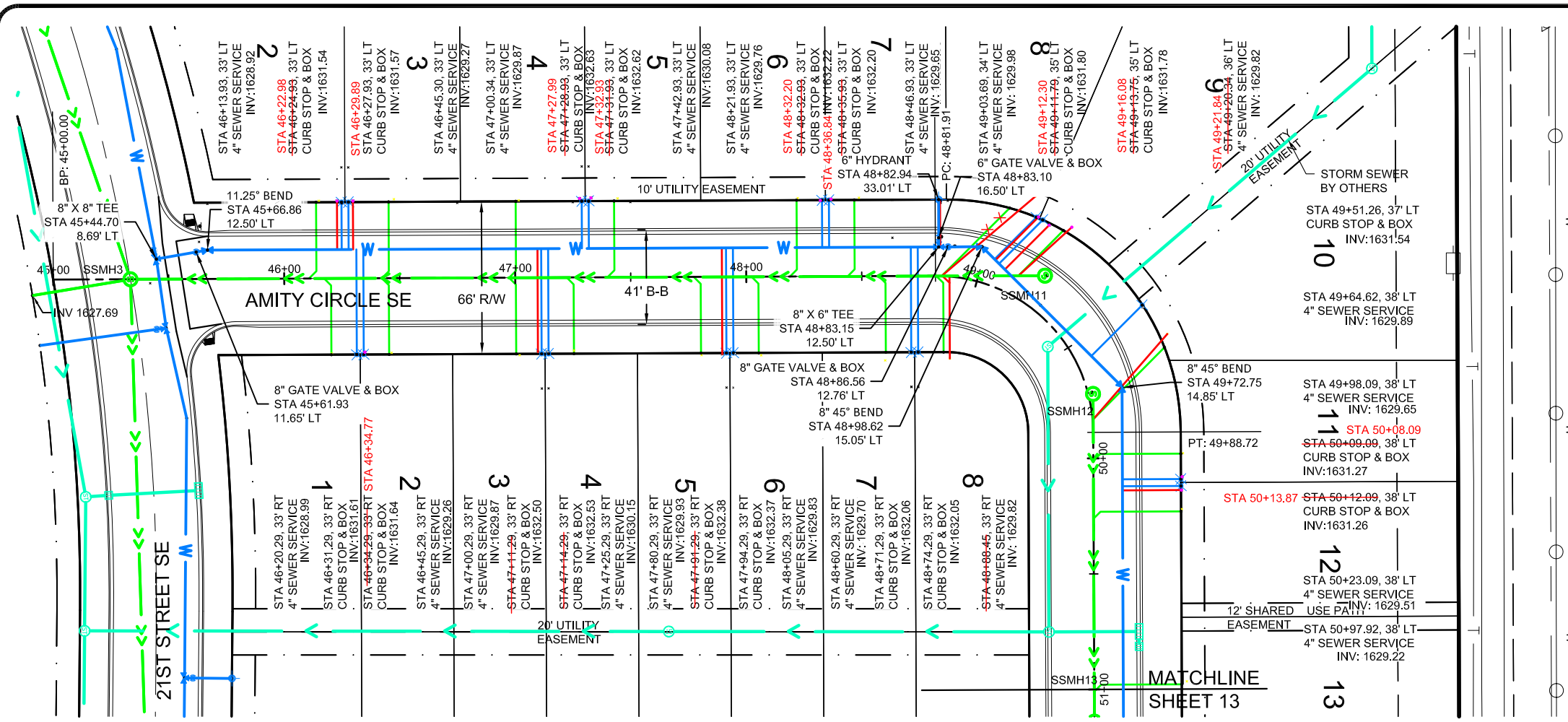
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LAKELWOOD 9TH ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA

34TH AVENUE PLAN & PROFILE, STA. 31+50 - 38+00



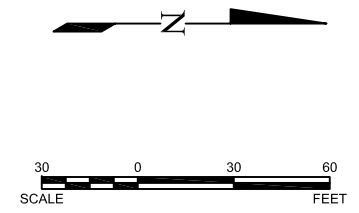
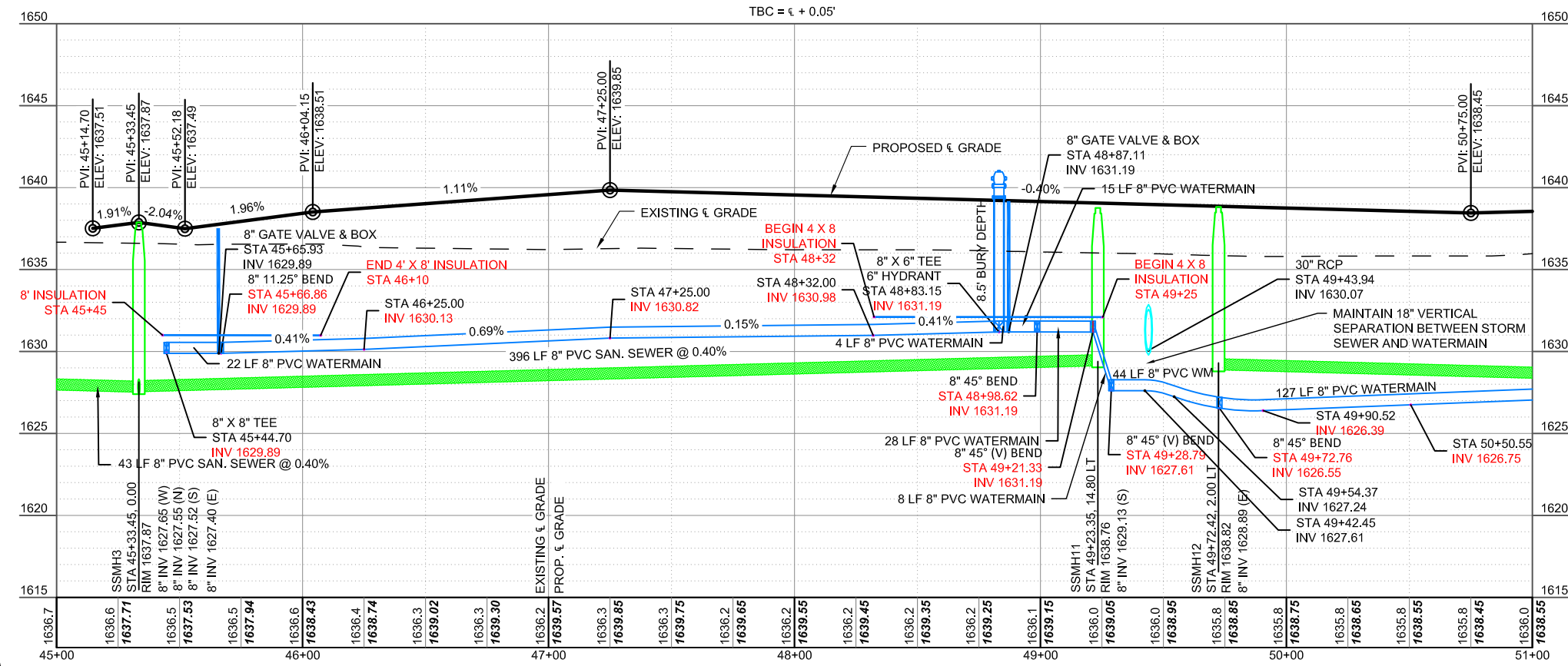
QUANTITIES THIS SHEET

| SANITARY SEWER | |
|----------------------------------|--------|
| 48" SANITARY SEWER MANHOLE | 2 EA |
| 8" SDR-35 PVC SANITARY SEWER | 524 LF |
| 4" SDR-35 PVC SEWER SERVICE | 648 LF |
| 8" X 4" SEWER SERVICE CONNECTION | 19 EA |

| WATERMAIN | |
|----------------------------------|--------|
| 8" PVC C-900 WATERMAIN | 560 LF |
| 6" PVC C-900 WATERMAIN | 19 LF |
| 6" HYDRANT | 1 EA |
| 8" GATE VALVE & BOX | 2 EA |
| 6" GATE VALVE & BOX | 1 EA |
| 1" WATER SERVICE PIPE | 605 LF |
| 1" CURB STOP AND BOX | 19 EA |
| 8" X 1" WATER SERVICE CONNECTION | 19 EA |

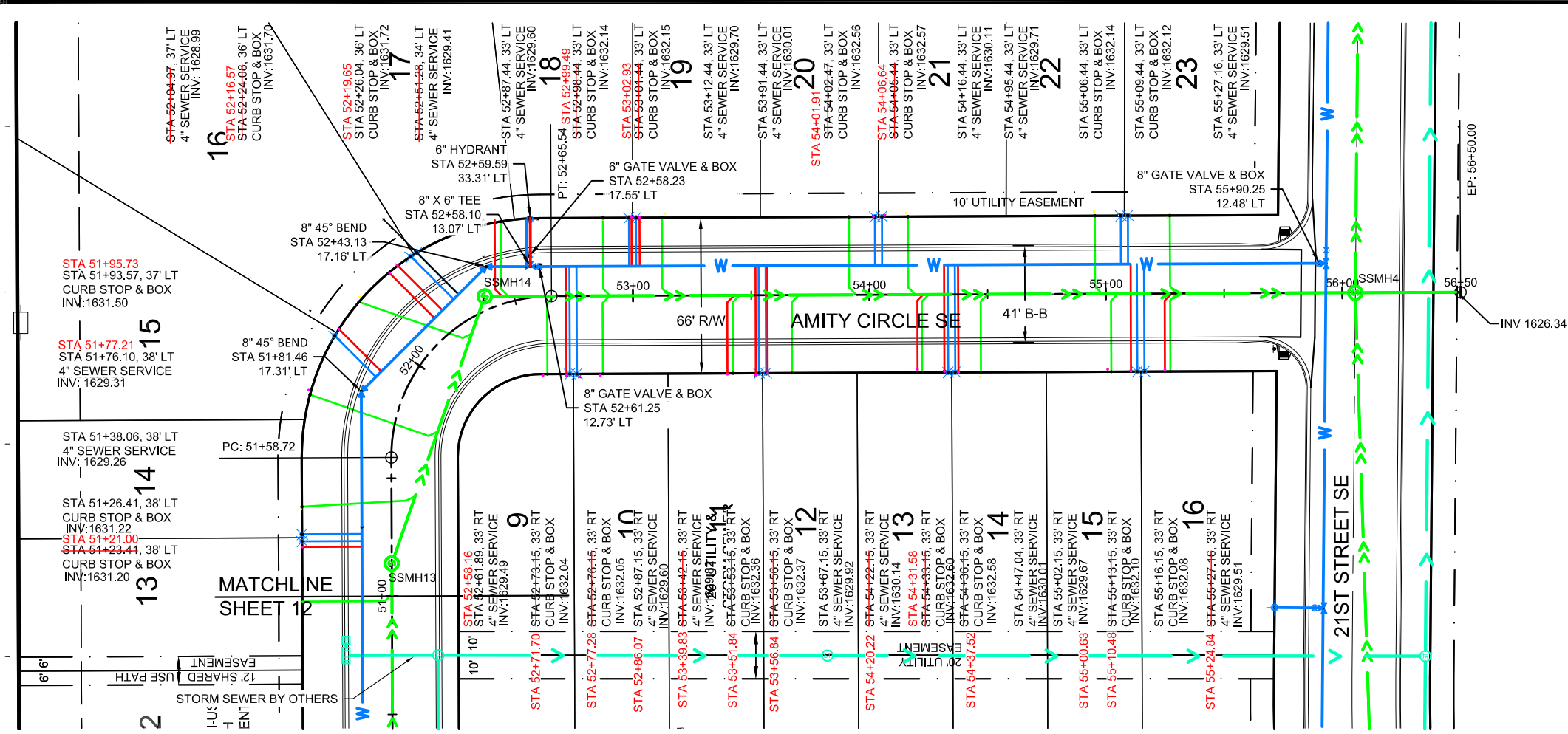
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LAKewood 9th ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA
AMITY CIRCLE PLAN & PROFILE, STA. 45+00 - 51+00

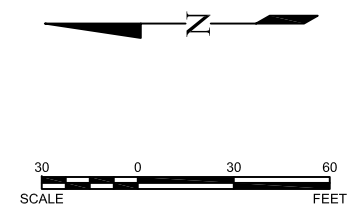
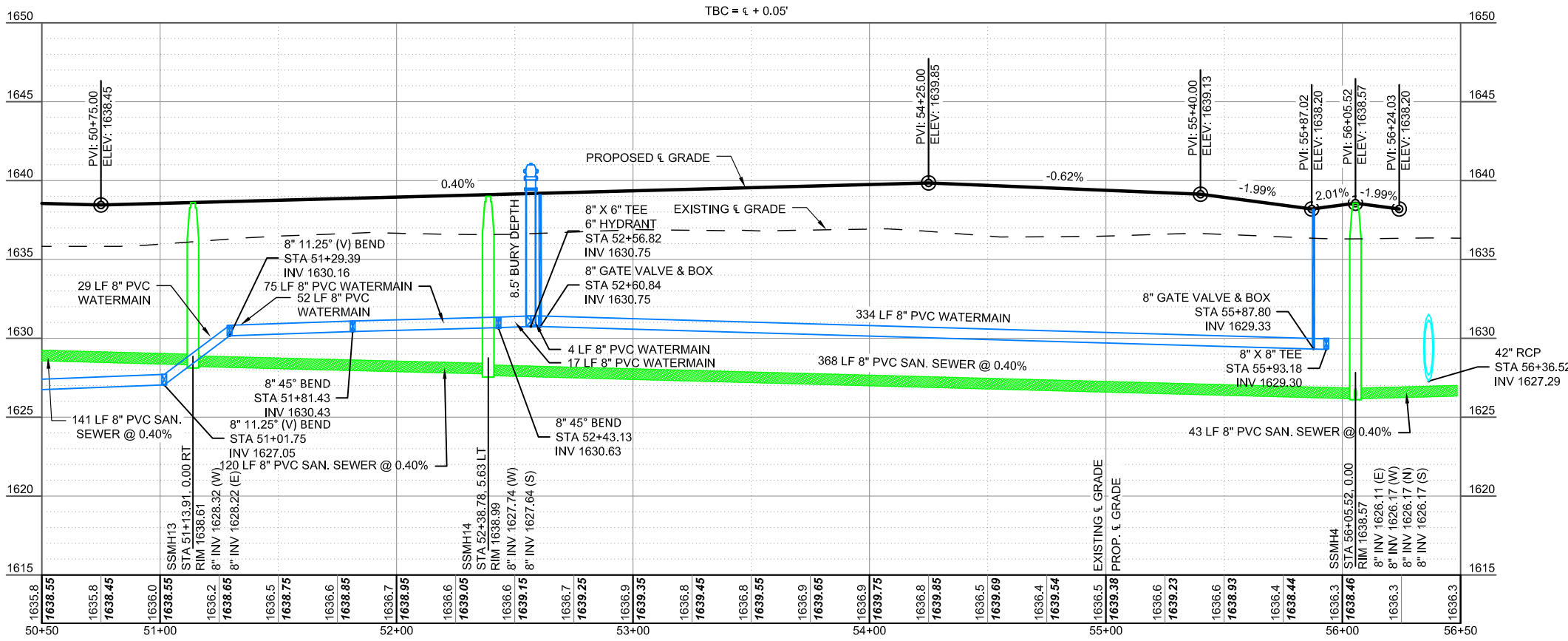


QUANTITIES THIS SHEET

| SANITARY SEWER | |
|----------------------------------|--------|
| 48" SANITARY SEWER MANHOLE | 2 EA |
| 8" SDR-35 PVC SANITARY SEWER | 502 LF |
| 4" SDR-35 PVC SEWER SERVICE | 689 LF |
| 8" X 4" SEWER SERVICE CONNECTION | 19 EA |
| WATERMAIN | |
| 8" PVC C-900 WATERMAIN | 499 LF |
| 6" PVC C-900 WATERMAIN | 18 LF |
| 6" HYDRANT | 1 EA |
| 8" GATE VALVE & BOX | 2 EA |
| 6" GATE VALVE & BOX | 1 EA |
| 1" WATER SERVICE PIPE | 613 LF |
| 1" CURB STOP AND BOX | 19 EA |
| 8" X 1" WATER SERVICE CONNECTION | 19 EA |

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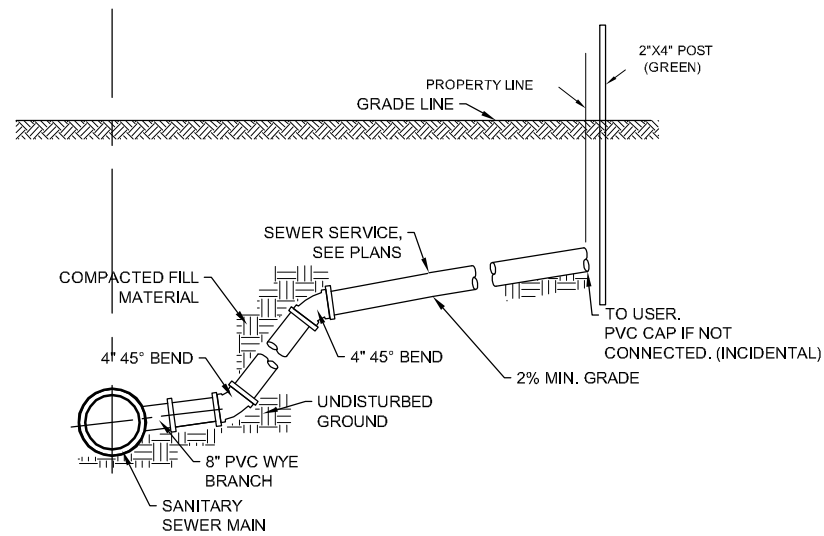
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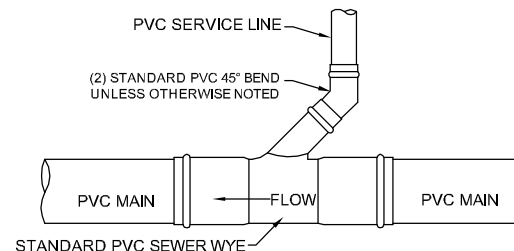
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LAKewood 9th ADDITION
 VE LAND COMPANY LLC.
 MANDAN, NORTH DAKOTA

AMITY CIRCLE PLAN & PROFILE, STA. 51+00 - 56+00

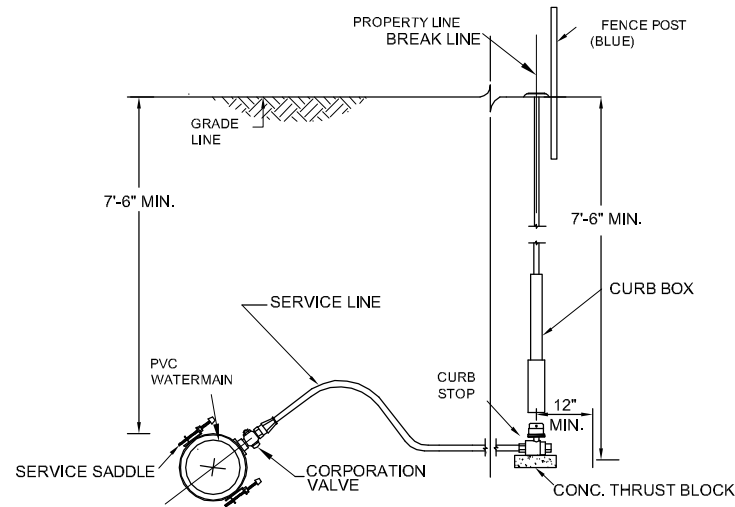


SANITARY SEWER SERVICE CONNECTION



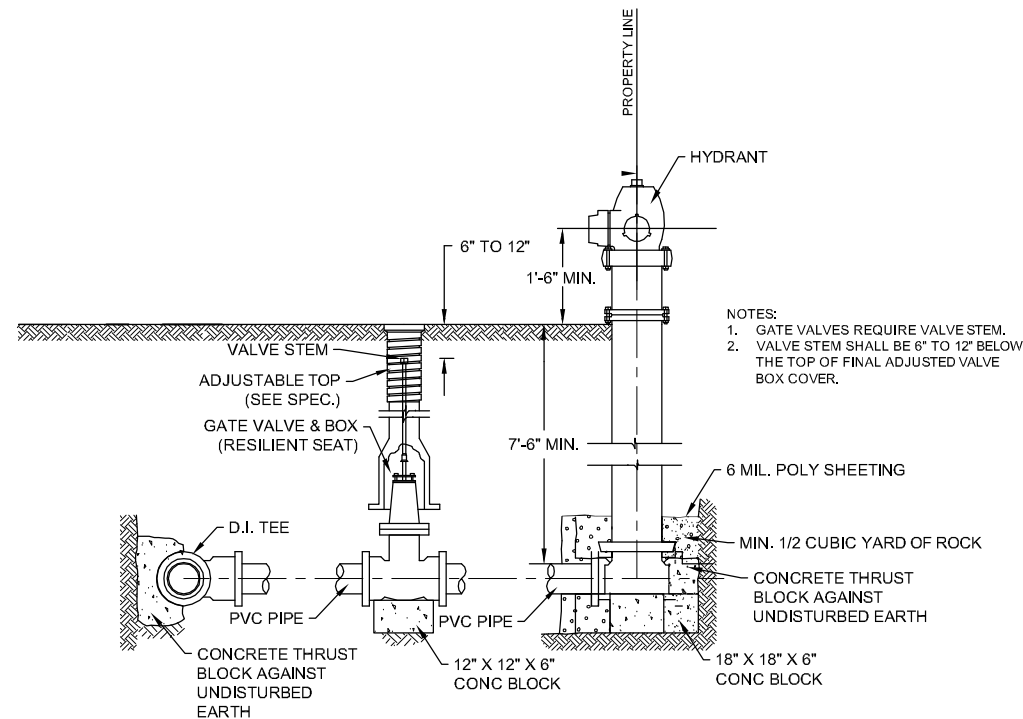
SANITARY SEWER CONNECTION

NO SCALE



WATER SERVICE LINE CONNECTION

NO SCALE



TYPICAL HYDRANT & GATE VALVE DETAIL

NO SCALE

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LAKWOOD 9TH ADDITION
VE LAND COMPANY LLC.
MANDAN, NORTH DAKOTA

DETAILS