

Permit Review Drawings For

# CREEKSIDE AT RAINTREE LOTS 1 THRU 31 AND TRACTS A THRU F WATER MAIN PLANS

IN THE CITY OF LEE'S SUMMIT  
JACKSON & CASS COUNTY, MISSOURI

SECTION 31, TOWNSHIP 47 N, RANGE 31 W  
SECTION 32, TOWNSHIP 47 N, RANGE 31 W  
SECTION 5, TOWNSHIP 46 N, RANGE 31 W

HDR Project No.  
10028402-276408

Lee's Summit, MO  
February 2017

## PLAN SHEET INDEX

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## UTILITIES

|                                                         |              |
|---------------------------------------------------------|--------------|
| ELECTRIC: KCP&L                                         | 816-471-5275 |
| GAS: LACLEDE GAS,<br>MISSOURI GAS ENERGY DIVISION       | 816-756-5252 |
| TELEPHONE: AT&T                                         | 816-325-5607 |
| CABLE: TIME WARNER                                      | 816-358-8833 |
| WATER: LEE'S SUMMIT WATER UTILITIES                     | 816-969-1900 |
| SEWER: LEE'S SUMMIT PUBLIC WORKS                        | 816-969-1800 |
| INTERCEPTOR SEWER: LITTLE BLUE<br>VALLEY SEWER DISTRICT | 816-796-7660 |



3741 NE TROON DR  
LEE'S SUMMIT, MO 64064  
816.347.1100

MO STATE CERTIFICATE OF  
AUTHORITY #000856

PROJECT FOR

**LANDROCK  
DEVELOPMENT, LLC**

**CREEKSIDE AT RAINTREE  
LOTS 1 THRU 31  
LEE'S SUMMIT, MISSOURI**

|      |            |                  |
|------|------------|------------------|
| B    | 04/14/2017 | CITY RESUBMITTAL |
| A    | 03/08/2017 | CITY SUBMITTAL   |
| MARK | DATE       | DESCRIPTION      |

|                |                 |
|----------------|-----------------|
| PROJECT NUMBER | 10028825-276408 |
| ORIGINAL ISSUE | MARCH 7, 2017   |

|                  |                   |
|------------------|-------------------|
| PROJECT MANAGER  | SIMON SUN         |
| PROJECT ENGINEER | WILL NEDS, E.I.T. |



**"AS-BUILT"**  
October 29, 2018

SHEET NAME

**COVER SHEET**

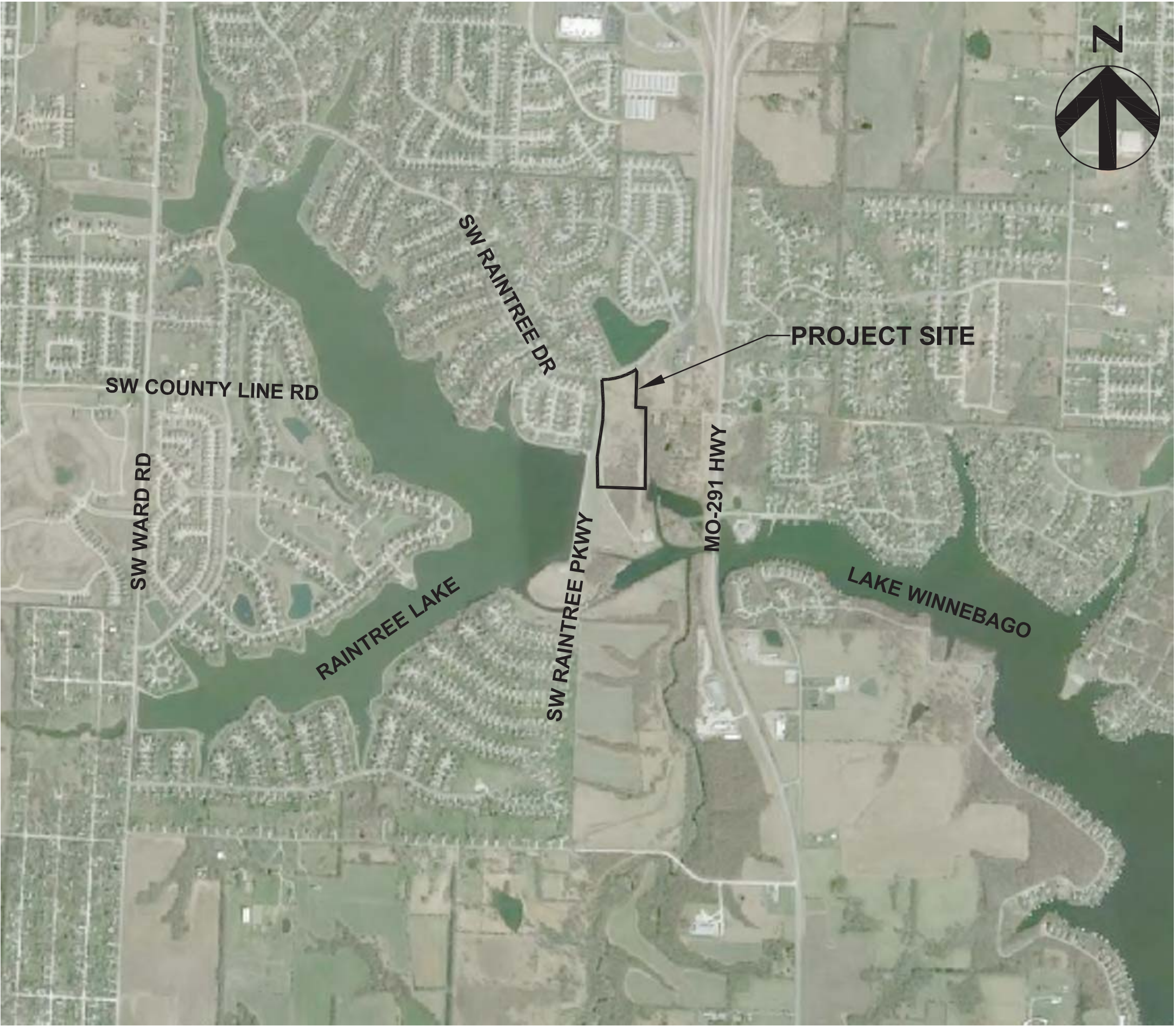
SCALE  
NO SCALE

SHEET NUMBER

**01C-CR-WA-00**

FILE NAME | 01C-CR-WA-00.dwg

PERMIT REVIEW DRAWINGS



## OWNER CONTACT

J.P. Roberts  
Landrock Development, LLC  
4335 McGee St  
Kansas City, MO 64111  
jp@landrocksignaturehomes.com  
(816) 863-5588

## CONSULTANT CONTACT

Simon Sun  
HDR Engineering, Inc.  
4435 Main St, Suite 1000  
Kansas City, MO 64111  
simon.sun@hdrinc.com  
(816) 360-2765



Know what's below.  
Call before you dig.

UTILITY NOTES:  
VISUAL INDICATIONS OF UTILITIES ARE AS SHOWN. UNDERGROUND LOCATIONS SHOWN, AS FURNISHED BY THEIR LESSORS, ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD AT THE TIME OF CONSTRUCTION. FOR ACTUAL FIELD LOCATIONS OF UNDERGROUND UTILITIES IN MISSOURI, CALL 1-800-344-7483.

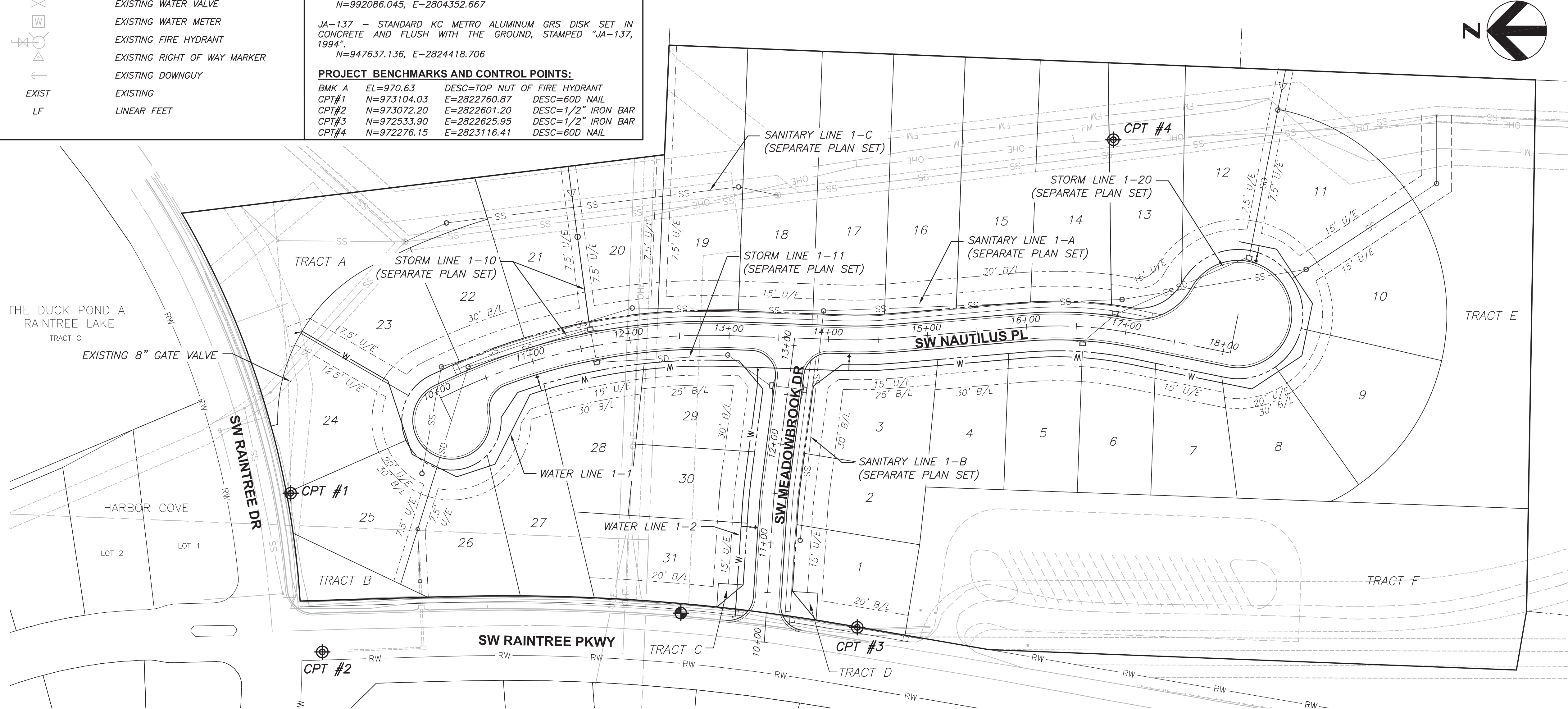
| LEGEND AND SYMBOLS |                                    |
|--------------------|------------------------------------|
|                    | EXISTING WATER LINE                |
|                    | EXISTING SANITARY SEWER LINE       |
|                    | EXISTING SANITARY SEWER FORCE MAIN |
|                    | EXISTING STORM SEWER LINE          |
|                    | EXISTING GAS LINE                  |
|                    | EXISTING UNDERGROUND TELEPHONE     |
|                    | EXISTING UNDERGROUND FIBER OPTIC   |
|                    | EXISTING OVERHEAD ELECTRIC         |
|                    | EXISTING UNDERGROUND ELECTRIC      |
|                    | EXISTING CENTERLINE                |
|                    | EXISTING BOTTOM OF DITCH           |
|                    | EXISTING PROPERTY LINE             |
|                    | EXISTING ROW                       |
|                    | EXISTING FENCE                     |
|                    | EXISTING VEGETATION/BRUSH LINE     |
|                    | EXISTING TREE                      |
|                    | EXISTING SHRUB                     |
|                    | EXISTING SIGN                      |
|                    | EXISTING CABLE T.V. PEDESTAL       |
|                    | EXISTING TELEPHONE PEDESTAL        |
|                    | EXISTING POWER POLE                |
|                    | EXISTING LIGHT POLE                |
|                    | EXISTING GAS METER                 |
|                    | EXISTING STORM DRAINAGE MANHOLE    |
|                    | EXISTING SANITARY MANHOLE          |
|                    | EXISTING WATER VALVE               |
|                    | EXISTING WATER METER               |
|                    | EXISTING FIRE HYDRANT              |
|                    | EXISTING RIGHT OF WAY MARKER       |
|                    | EXISTING DOWNGUY                   |
|                    | EXISTING                           |
|                    | LINEAR FEET                        |

| PROPOSED IMPROVEMENTS |                                |
|-----------------------|--------------------------------|
|                       | PROPOSED BOUNDARY LINE         |
|                       | PROPOSED ROW                   |
|                       | PROPOSED LOT LINE              |
|                       | PROPOSED STREET CENTERLINE     |
|                       | PROPOSED CURB AND GUTTER       |
|                       | PROPOSED SANITARY SEWER LINE   |
|                       | PROPOSED STORM SEWER LINE      |
|                       | PROPOSED WATER LINE            |
|                       | PROPOSED EASEMENT LINE         |
|                       | PROPOSED BUILDING LINE         |
|                       | PROPOSED FIRE HYDRANT ASSEMBLY |
|                       | PROPOSED WATER VALVE           |
|                       | PROPOSED MANHOLE               |
|                       | PROPOSED STORM INLET BOX       |
|                       | PROPOSED STORM JUNCTION BOX    |
|                       | PROJECT CONTROL POINT          |
|                       | PROJECT BENCHMARK              |

| ENGINEERING CONTROL GENERAL NOTE                                                                                                                                                                                                                                                                                             |                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| PROJECT COORDINATES ARE BASED ON THE MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE, UTILIZING JACKSON, MISSOURI GEOGRAPHIC REFERENCE SYSTEM MONUMENTS JA-50 & JA-137 (2003 ADJUSTMENT) AND ARE MODIFIED FROM STATE PLANE TO GROUND COORDINATES BY APPLYING A GRID SCALE FACTOR OF 0.9999011 AT REFERENCE MONUMENT JA-50. |                                                   |
| JA-50 - STANDARD KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND FLUSH WITH THE GROUND, STAMPED "JA-50, 1988".<br>N=992086.045, E=-2804352.667                                                                                                                                                                                |                                                   |
| JA-137 - STANDARD KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND FLUSH WITH THE GROUND, STAMPED "JA-137, 1994".<br>N=947637.136, E=-2824418.706                                                                                                                                                                              |                                                   |
| <b>PROJECT BENCHMARKS AND CONTROL POINTS:</b>                                                                                                                                                                                                                                                                                |                                                   |
| BMK A                                                                                                                                                                                                                                                                                                                        | EL=970.63    DESC=TOP NUT OF FIRE HYDRANT         |
| CPT#1                                                                                                                                                                                                                                                                                                                        | N=973104.03    E=2822760.87    DESC=60D NAIL      |
| CPT#2                                                                                                                                                                                                                                                                                                                        | N=973072.20    E=2822601.20    DESC=1/2" IRON BAR |
| CPT#3                                                                                                                                                                                                                                                                                                                        | N=972533.90    E=2822625.95    DESC=1/2" IRON BAR |
| CPT#4                                                                                                                                                                                                                                                                                                                        | N=972276.15    E=2823116.41    DESC=60D NAIL      |

- GENERAL NOTES:
- ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
  - ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE ENGINEERING DEPARTMENT OF THE CITY OF LEE'S SUMMIT, MISSOURI.
  - LINEAL FOOT MEASUREMENTS SHOWN ON THE PLANS ARE HORIZONTAL MEASUREMENTS, NOT SLOPE MEASUREMENTS.
  - NO RECENT GEOLOGICAL INVESTIGATION HAS BEEN PERFORMED ON THIS PROJECT.
  - THE UTILITY LOCATIONS SHOWN ON THESE PLANS ARE TAKEN FROM UTILITY COMPANY RECORDS AND APPARENT FIELD LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.
  - THE CONTRACTOR SHALL ADHERE TO THE PROVISIONS OF THE SENATE BILL NUMBER 583, 78TH GENERAL ASSEMBLY OF THE STATE OF MISSOURI. THE BILL REQUIRES THAT ANY PERSON OR FIRM DOING EXCAVATION ON PUBLIC RIGHT-OF-WAY DO SO ONLY AFTER GIVING NOTICE TO, AND OBTAINING INFORMATION FROM, UTILITY COMPANIES. STATE LAW REQUIRES 72 HOURS ADVANCE NOTICE. THE CONTRACTOR MAY ALSO UTILIZE THE FOLLOWING TOLL FREE PHONE NUMBER PROVIDED BY "MISSOURI ONE CALL SYSTEM, INC.": 1-(800)-DIG RITE OR 811. THIS PHONE NUMBER IS APPLICABLE ANYWHERE WITHIN THE STATE OF MISSOURI. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL NOTIFY ALL THOSE COMPANIES WHICH HAVE FACILITIES IN THE NEAR VICINITY OF THE CONSTRUCTION TO BE PERFORMED.
  - PRIOR TO ORDERING PRECAST STRUCTURES, SHOP DRAWINGS SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.
  - THE CONTRACTOR SHALL PROTECT ALL MAJOR TREES FROM DAMAGE, OUTSIDE OF THE GRADING LIMITS. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE.
  - CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES.

- ALL WASTE MATERIAL RESULTING FROM THE PROJECT SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR, OR AS DIRECTED BY THE OWNER.
- ALL EXCAVATION SHALL BE UNCLASSIFIED.
- THE CONTRACTOR SHALL CONTROL THE EROSION AND SILTATION DURING ALL PHASES OF CONSTRUCTION, AND SHALL KEEP THE STREETS CLEAN OF MUD AND DEBRIS.
- ALL MANHOLES, CATCH BASINS, UTILITY VALVES AND METER PITS TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED. ALL EXISTING UTILITIES SHALL BE ADJUSTED AS REQUIRED.
- SUBGRADE SOIL FOR ALL CONCRETE STRUCTURES, REGARDLESS OF THE TYPE OR LOCATION, SHALL BE FIRM, DENSE AND THOROUGHLY COMPACTED AND CONSOLIDATED; SHALL BE FREE FROM MUCK AND MUD; AND SHALL BE SUFFICIENTLY STABLE TO REMAIN FIRM AND INTACT UNDER THE FEET OF THE WORKMEN OR MACHINERY ENGAGED IN SUBGRADE SURFACING, LAYING REINFORCING STEEL, AND DEPOSITING CONCRETE THEREON. IN ALL CASES WHERE SUBSOIL IS MUCKY OR WORKS INTO MUD OR MUCK DURING SUCH OPERATION, A SEAL COURSE OF EITHER CONCRETE OR ROCK SHALL BE PLACED BELOW SUBGRADE TO PROVIDE A FIRM BASE FOR WORKING AND FOR PLACING THE FLOOR SLAB.
- THE CONTRACTOR SHALL CONTACT PUBLIC WORKS INSPECTIONS AT 816-969-1800 TO OBTAIN A PUBLIC WORKS CONSTRUCTION PERMIT. A MINIMUM 48 HOUR NOTICE SHALL BE GIVEN PRIOR TO PERMIT ISSUANCE.
- THE CONTRACTOR SHALL CONTACT THE CITY'S EROSION CONTROL SPECIALIST AT 816-969-1800 PRIOR TO ANY LAND DISTURBANCE.
- THE CONTRACTOR SHALL CONTACT THE RIGHT-OF-WAY INSPECTOR AT 816-969-1800 PRIOR TO ANY LAND DISTURBANCE ACTIVITIES WITHIN THE RIGHT-OF-WAY. THESE ACTIVITIES MAY REQUIRE A PERMIT.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TRAFFIC HANDLING MEASURES NECESSARY TO ENSURE THAT THE GENERAL PUBLIC IS PROTECTED AT ALL TIMES. TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD - LATEST EDITION).



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MO STATE CERTIFICATE OF  
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PROJECT FOR

LANDROCK  
DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE  
LOTS 1 THRU 31  
LEE'S SUMMIT, MISSOURI

|      |            |                  |
|------|------------|------------------|
| B    | 04/14/2017 | CITY RESUBMITTAL |
| A    | 03/08/2017 | CITY SUBMITTAL   |
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|                  |                   |
|------------------|-------------------|
| PROJECT MANAGER  | SIMON SUN         |
| PROJECT ENGINEER | WILL NEDS, E.I.T. |



SHEET NAME

GENERAL LAYOUT  
AND NOTES



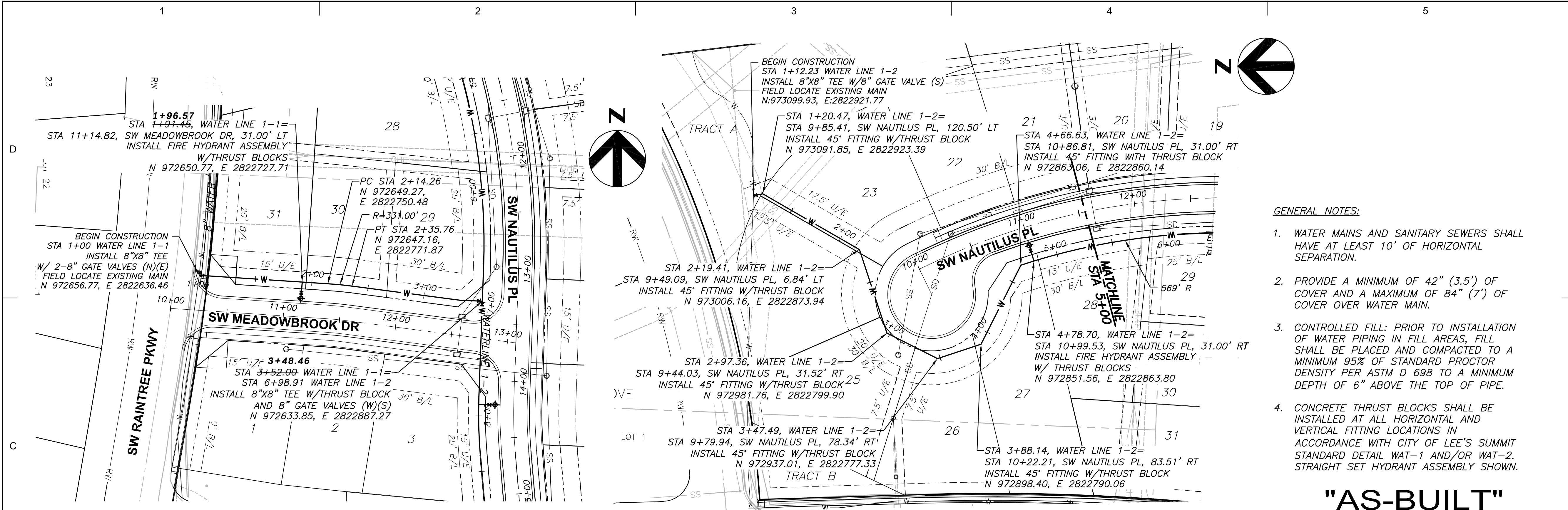
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01C-CR-WA-01

FILE NAME | 01C-CR-WA-01.dwg

PERMIT REVIEW DRAWINGS

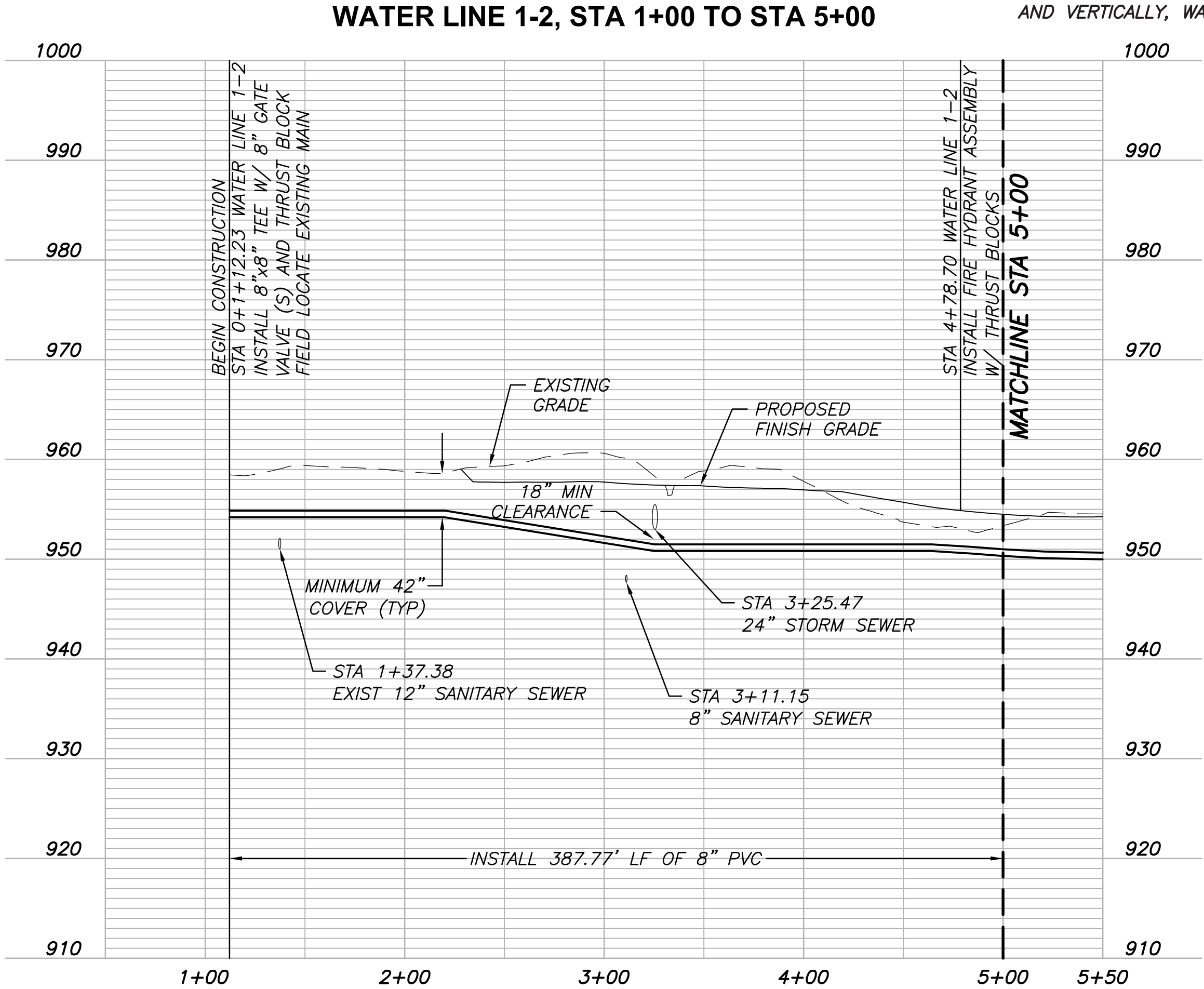
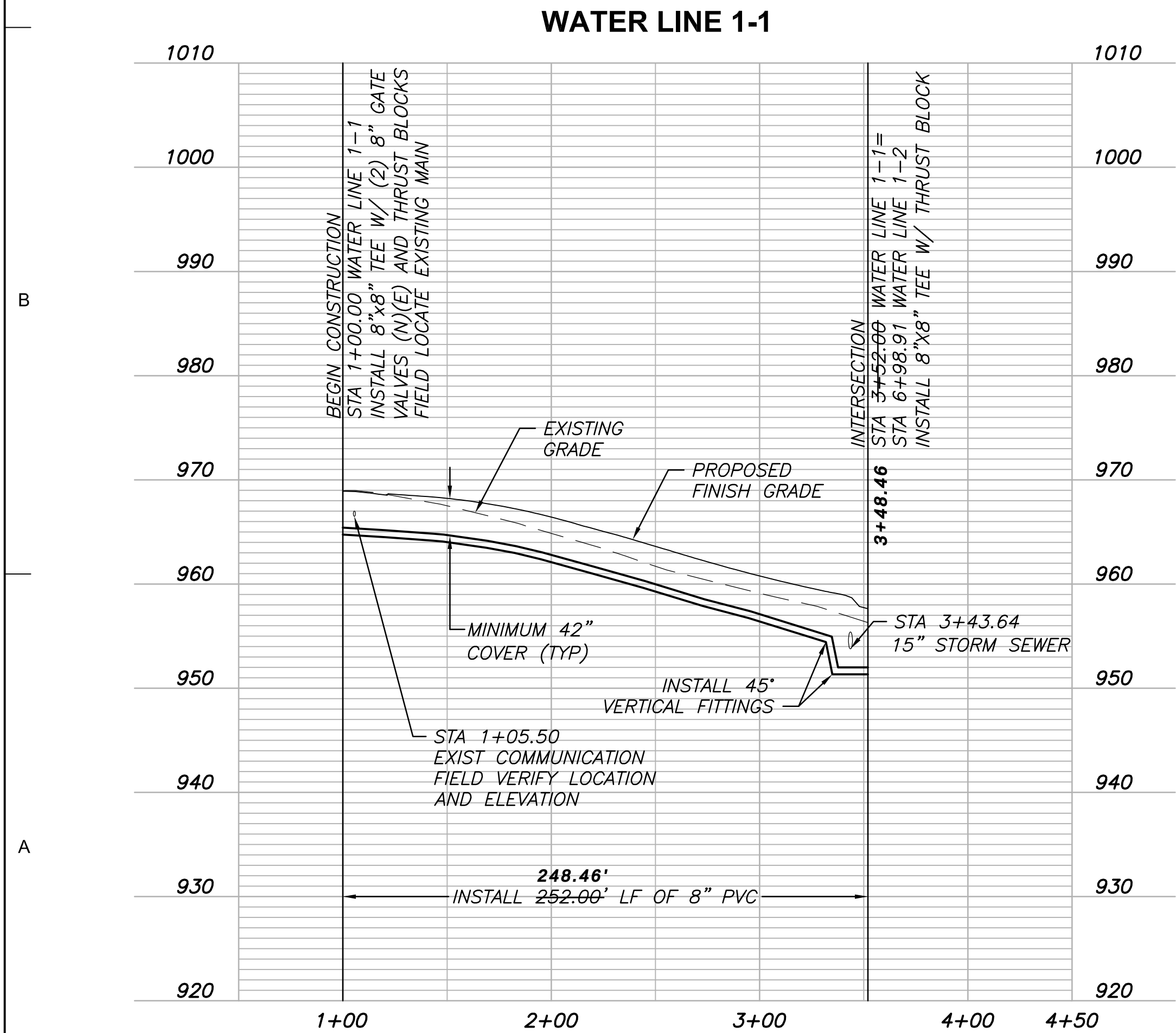
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- GENERAL NOTES:
- WATER MAINS AND SANITARY SEWERS SHALL HAVE AT LEAST 10' OF HORIZONTAL SEPARATION.
  - PROVIDE A MINIMUM OF 42" (3.5') OF COVER AND A MAXIMUM OF 84" (7') OF COVER OVER WATER MAIN.
  - CONTROLLED FILL: PRIOR TO INSTALLATION OF WATER PIPING IN FILL AREAS, FILL SHALL BE PLACED AND COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR DENSITY PER ASTM D 698 TO A MINIMUM DEPTH OF 6" ABOVE THE TOP OF PIPE.
  - CONCRETE THRUST BLOCKS SHALL BE INSTALLED AT ALL HORIZONTAL AND VERTICAL FITTING LOCATIONS IN ACCORDANCE WITH CITY OF LEE'S SUMMIT STANDARD DETAIL WAT-1 AND/OR WAT-2. STRAIGHT SET HYDRANT ASSEMBLY SHOWN.

"AS-BUILT"  
October 29, 2018

ONLY WATER VALVES AND FIRE HYDRANT ASSEMBLIES WERE AS-BUILT. THE ACTUAL LOCATION OF THE WATER MAIN, HORIZONTALLY AND VERTICALLY, WAS NOT FIELD VERIFIED.



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PROJECT FOR

LANDROCK  
DEVELOPMENT, LLC

CREEKSIDE AT RAIN TREE  
LOTS 1 THRU 31  
LEE'S SUMMIT, MISSOURI

|      |            |                  |
|------|------------|------------------|
| C    | 10/29/2018 | AS-BUILT         |
| B    | 05/01/2017 | CITY RESUBMITTAL |
| A    | 03/08/2017 | CITY SUBMITTAL   |
| MARK | DATE       | DESCRIPTION      |

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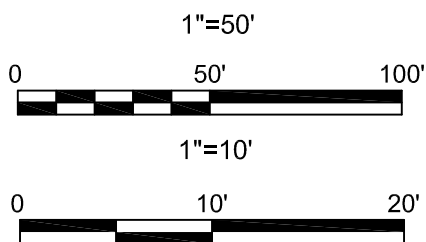
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|------------------|-------------------|
| PROJECT MANAGER  | SIMON SUN         |
| PROJECT ENGINEER | WILL NEDS, E.I.T. |

SHEET NAME

WATER MAIN PLAN  
AND PROFILE

LINE 1-1 AND 1-2

SCALE



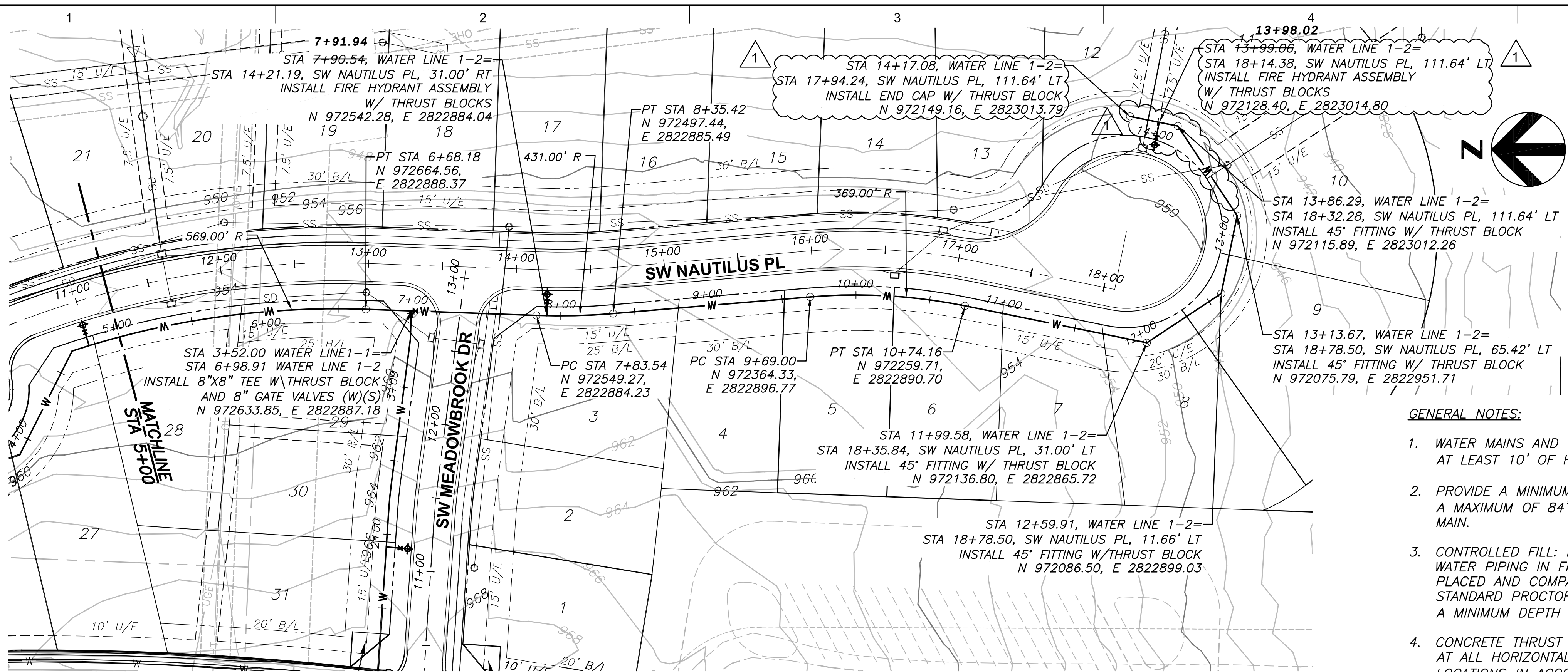
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01C-CR-WA-02

FILE NAME | 01C-CR-WA-02.dwg

PERMIT REVIEW DRAWINGS

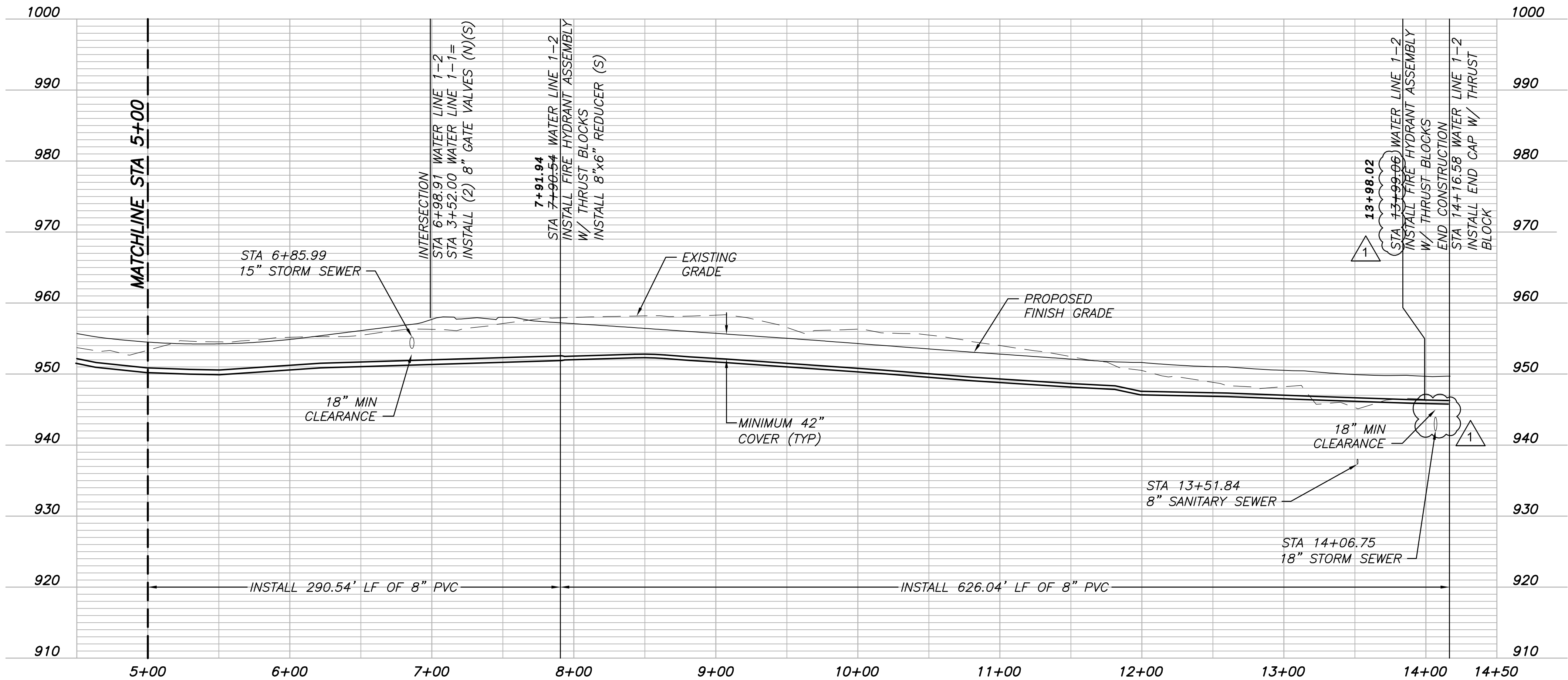
C:\pwworking\jordan\21231101C-CR-WA-03.dwg, 01C-CR-WA-03, 10/29/2018 1:29:44 PM, VNEDS



GENERAL NOTES:

1. WATER MAINS AND SANITARY SEWERS SHALL HAVE AT LEAST 10' OF HORIZONTAL SEPARATION.
2. PROVIDE A MINIMUM OF 42" (3.5') OF COVER AND A MAXIMUM OF 84" (7') OF COVER OVER WATER MAIN.
3. CONTROLLED FILL: PRIOR TO INSTALLATION OF WATER PIPING IN FILL AREAS, FILL SHALL BE PLACED AND COMPACTED TO A MINIMUM 95% OF STANDARD PROCTOR DENSITY PER ASTM D 698 TO A MINIMUM DEPTH OF 6" ABOVE THE TOP OF PIPE.
4. CONCRETE THRUST BLOCKS SHALL BE INSTALLED AT ALL HORIZONTAL AND VERTICAL FITTING LOCATIONS IN ACCORDANCE WITH CITY OF LEE'S SUMMIT STANDARD DETAIL WAT-1 AND/OR WAT-2. STRAIGHT SET HYDRANT ASSEMBLY SHOWN.

WATER LINE 1-2, STA 5+00 TO END



"AS-BUILT"  
October 29, 2018

ONLY WATER VALVES AND FIRE HYDRANT ASSEMBLIES WERE AS-BUILT. THE ACTUAL LOCATION OF THE WATER MAIN, HORIZONTALLY AND VERTICALLY, WAS NOT FIELD VERIFIED.



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CREEKSIDE AT RAINTREE  
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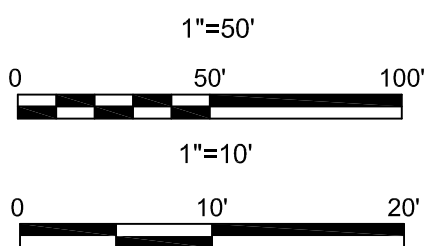
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|------------------|-------------------|
| PROJECT MANAGER  | SIMON SUN         |
| PROJECT ENGINEER | WILL NEDS, E.I.T. |

SHEET NAME

WATER MAIN PLAN  
AND PROFILE

LINE 1-2, STA 5+00 TO END

SCALE



SHEET NUMBER

01C-CR-WA-03

FILE NAME | 01C-CR-WA-03.dwg

PERMIT REVIEW DRAWINGS



3741 NE TROON DR  
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816.347.1100

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| PROJECT ENGINEER | WILL NEDS, E.I.T. |



SHEET NAME

WATER MAIN  
DETAILS

SCALE  
NO SCALE

SHEET NUMBER

01C-CR-WA-04

FILE NAME | 01C-CR-WA-04.dwg

PERMIT REVIEW DRAWINGS

1

2

3

4

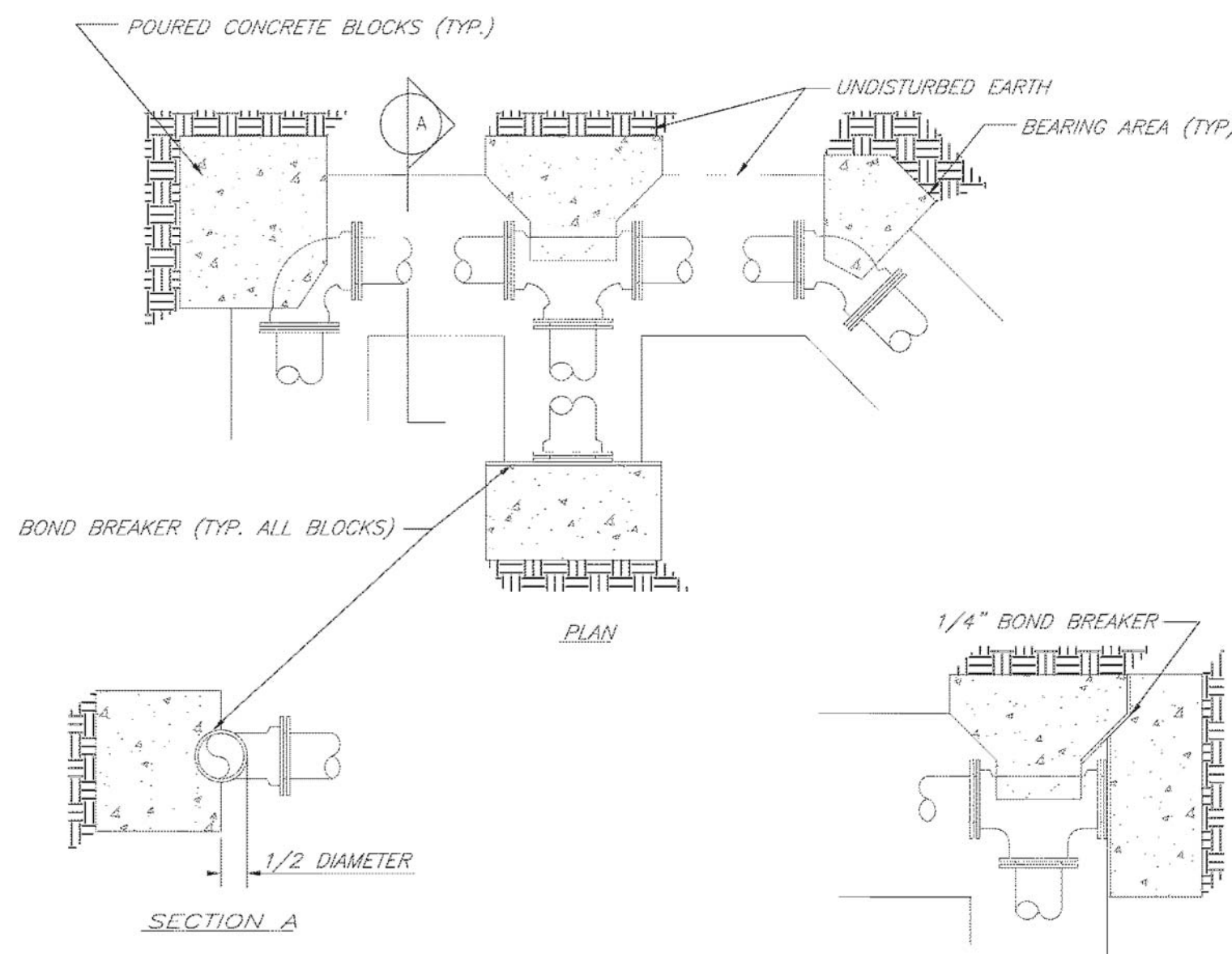
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D

| REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF) |                  |            |            |              |               |
|---------------------------------------------------|------------------|------------|------------|--------------|---------------|
| NOM. DIA.<br>(INCHES)                             | 180<br>TEE, PLUG | 90<br>BEND | 45<br>BEND | 22.5<br>BEND | 11.25<br>BEND |
| 6                                                 | 4.7              | 6.7        | 4.0        | 4.0          | 4.0           |
| 8                                                 | 8.4              | 11.6       | 6.4        | 4.0          | 4.0           |
| 10                                                | 13.1             | 18.5       | 10.0       | 5.1          | 4.0           |
| 12                                                | 18.8             | 26.7       | 14.4       | 7.4          | 4.0           |
| 14                                                | 25.7             | 36.3       | 19.6       | 10.0         | 5.0           |
| 16                                                | 33.5             | 47.4       | 25.6       | 13.1         | 6.6           |
| 18                                                | 42.4             | REST. JT.  | 32.5       | 16.5         | 8.3           |
| 20                                                | REST. JT.        | REST. JT.  | 40.1       | 20.4         | 10.3          |
| 24                                                | REST. JT.        | REST. JT.  | REST. JT.  | 29.4         | 14.8          |

NOTES:

1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

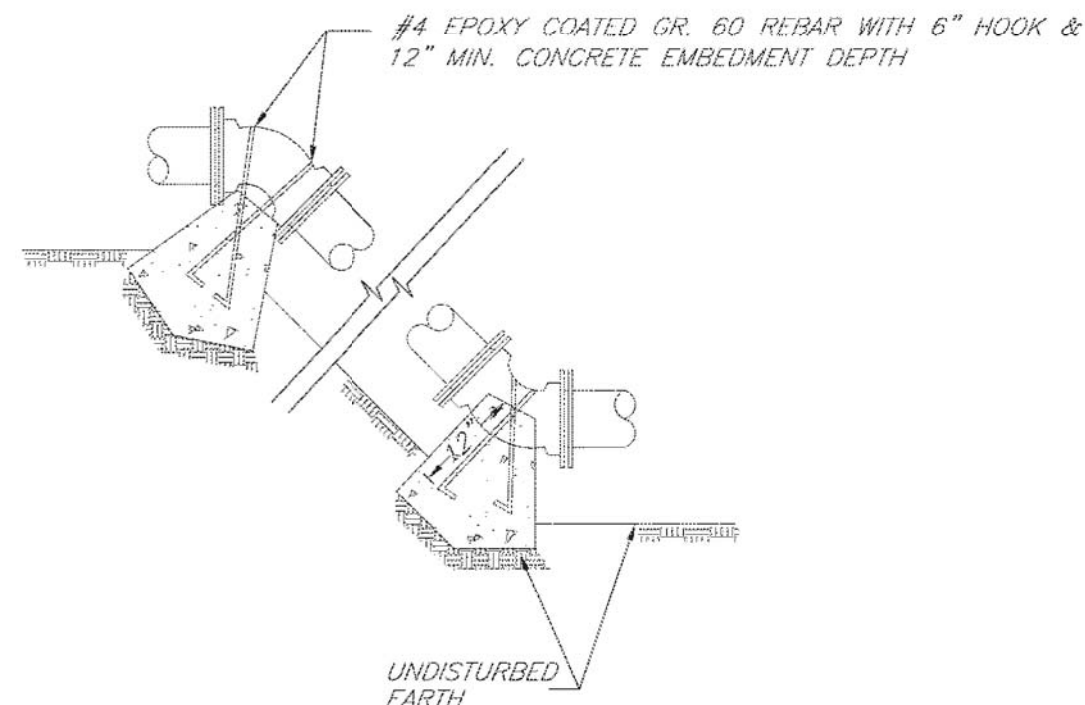


|                                                                                     |                                                                                                                                           |             |                |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|
|  | <b>LEE'S SUMMIT</b><br><b>MISSOURI</b><br><small>PUBLIC WORKS ENGINEERING DIVISION   220 SE GREEN STREET   LEE'S SUMMIT, MO 64063</small> |             | Date: 02/13    |
|                                                                                     | <b>HORIZONTAL THRUST BLOCKS</b>                                                                                                           |             | Drawn By: JN   |
|                                                                                     |                                                                                                                                           |             | Checked By: DL |
|                                                                                     |                                                                                                                                           | FILE: WAT-1 |                |
|                                                                                     |                                                                                                                                           | Rev: 1/14   |                |
|                                                                                     |                                                                                                                                           | Rev:        |                |

WAT-1

NOTES:

1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
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3. BEARING MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.



|                                                                                       |                                                                                                                            |  |                |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--|----------------|
|  | <b>LEE'S SUMMIT</b><br><b>MISSOURI</b><br>PUBLIC WORKS ENGINEERING DIVISION   220 SE GREEN STREET   LEE'S SUMMIT, MO 64063 |  | Date: 02/13    |
|                                                                                       | <b>VERTICAL THRUST BLOCKS</b>                                                                                              |  | Drawn By: JN   |
|                                                                                       |                                                                                                                            |  | Checked By: DL |
|                                                                                       | FILE: WAT-2                                                                                                                |  |                |
|                                                                                       | Rev: 1/14                                                                                                                  |  |                |
|                                                                                       |                                                                                                                            |  | Rev:           |

WAT-2

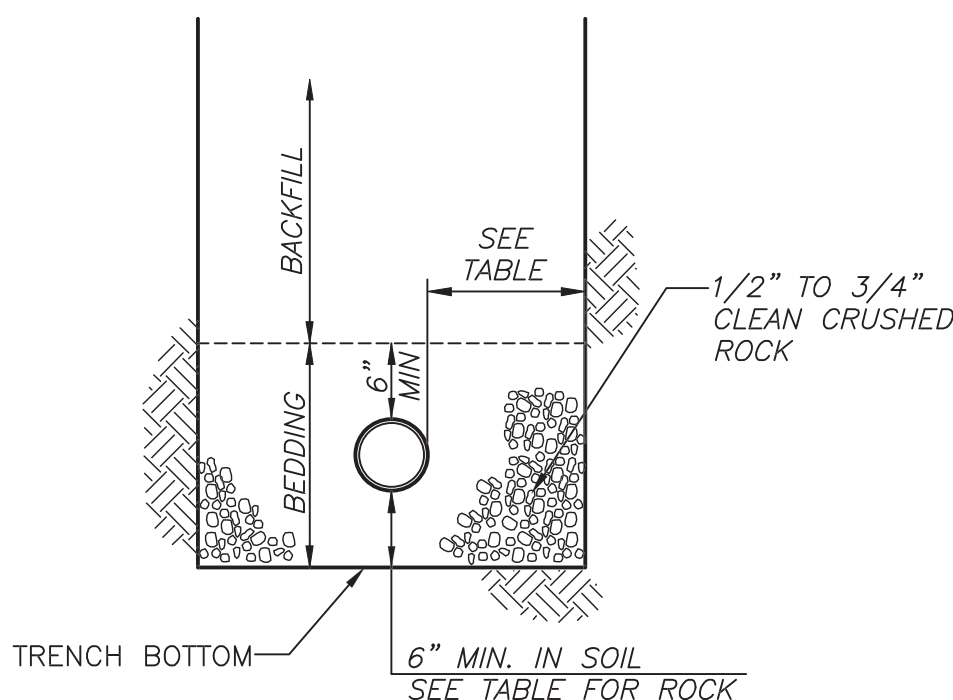
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|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--|----------------|
|  | <b>LEE'S SUMMIT</b><br><b>MISSOURI</b><br>PUBLIC WORKS ENGINEERING DIVISION   220 SE GREEN STREET   LEE'S SUMMIT, MO 64063 |  | Date: 02/13    |
|                                                                                       | <b>STRADDLE BLOCK</b>                                                                                                      |  | Drawn By: JN   |
|                                                                                       |                                                                                                                            |  | Checked By: DL |
|                                                                                       |                                                                                                                            |  | FILE: WAT-3    |
|                                                                                       |                                                                                                                            |  | Rev: 1/14      |
| Rev:                                                                                  |                                                                                                                            |  |                |

WAT-3

| MINIMUM TRENCH WIDTHS AND PIPE CLEARANCES (IN) |              |                                 |                                   |
|------------------------------------------------|--------------|---------------------------------|-----------------------------------|
| NOMINAL PIPE DIAMETER                          | TRENCH WIDTH | PIPE SIDE CLEARANCE (SOIL/ROCK) | PIPE BOTTOM CLEARANCE (SOIL/ROCK) |
| 6                                              | 22           | 6/6                             | 6/6                               |
| 8                                              | 22           | 6/6                             | 6/6                               |
| 10                                             | 24           | 6/6                             | 6/6                               |
| 12                                             | 27           | 6/6                             | 6/6                               |

NOTES:

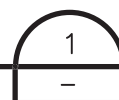
1. BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 2100 OF THE KCMETRO APWA SPECIFICATIONS.
2. BEDDING MATERIAL SHALL BE 1/2" TO 3/4" CLEAN CRUSHED ROCK.
3. TRENCH BANKS SHALL BE CUT BACK ON SLOPES IN ACCORDANCE WITH CURRENT OSHA REGULATIONS. SLOPES MUST NOT EXTEND BELOW TOP OF BEDDING.
4. ALL PUBLIC WATER MAINS SHALL BE 6" PVC, C900.
5. ALL WATER LINES SHALL HORIZONTALLY CLEAR STORM SEWER STRUCTURES BY 5' AND SANITARY SEWER STRUCTURES BY 10'. WATER MAINS SHALL VERTICALLY CLEAR STORM SEWER STRUCTURES AND SANITARY SEWER STRUCTURES BY 18".
6. MAXIMUM TRENCH WIDTH SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATIONS. MAXIMUM TRENCH WIDTH IS DEFINED AS THE HORIZONTAL PLANE MEASURED 6" ABOVE THE TOP OF PIPE, PERPENDICULAR TO THE WATER ALIGNMENT.



TYP PIPE ENVELOPE (PVC)

UNDERGROUND PIPE INSTALLATION FOR WATER MAIN LINES

NOT TO SCALE



1

2

3

4

5



3741 NE TROON DR  
LEE'S SUMMIT, MO 64064  
816.347.1100

MO STATE CERTIFICATE OF  
AUTHORITY #000856

PROJECT FOR

LANDROCK  
DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE  
LOTS 1 THRU 31  
LEE'S SUMMIT, MISSOURI

|      |            |                  |
|------|------------|------------------|
| B    | 04/14/2017 | CITY RESUBMITTAL |
| A    | 03/08/2017 | CITY SUBMITTAL   |
| MARK | DATE       | DESCRIPTION      |

|                |                 |
|----------------|-----------------|
| PROJECT NUMBER | 10028825-276408 |
| ORIGINAL ISSUE | MARCH 7, 2017   |

|                  |                   |
|------------------|-------------------|
| PROJECT MANAGER  | SIMON SUN         |
| PROJECT ENGINEER | WILL NEDS, E.I.T. |



SHEET NAME

WATER MAIN  
DETAILS

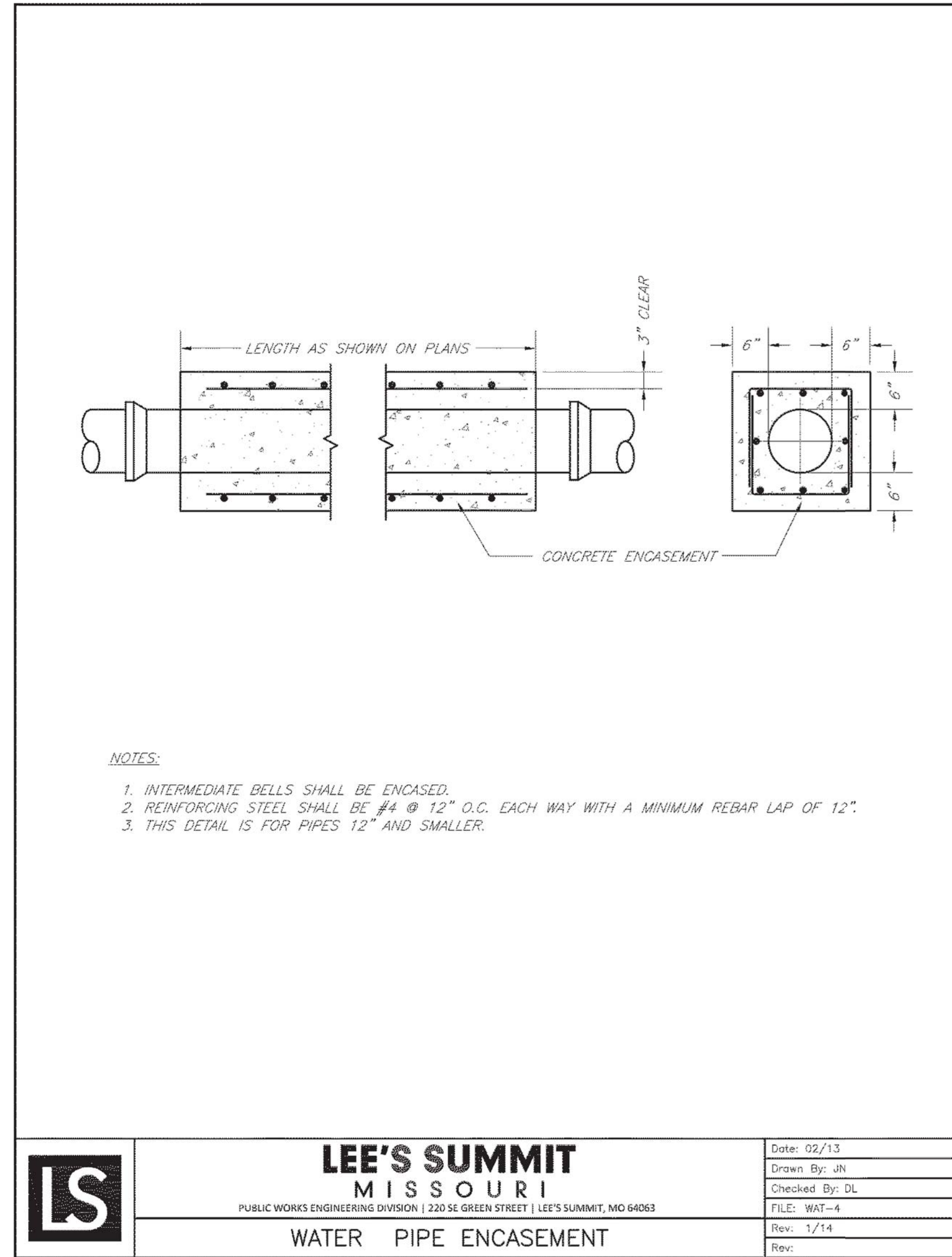
SCALE  
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SHEET NUMBER

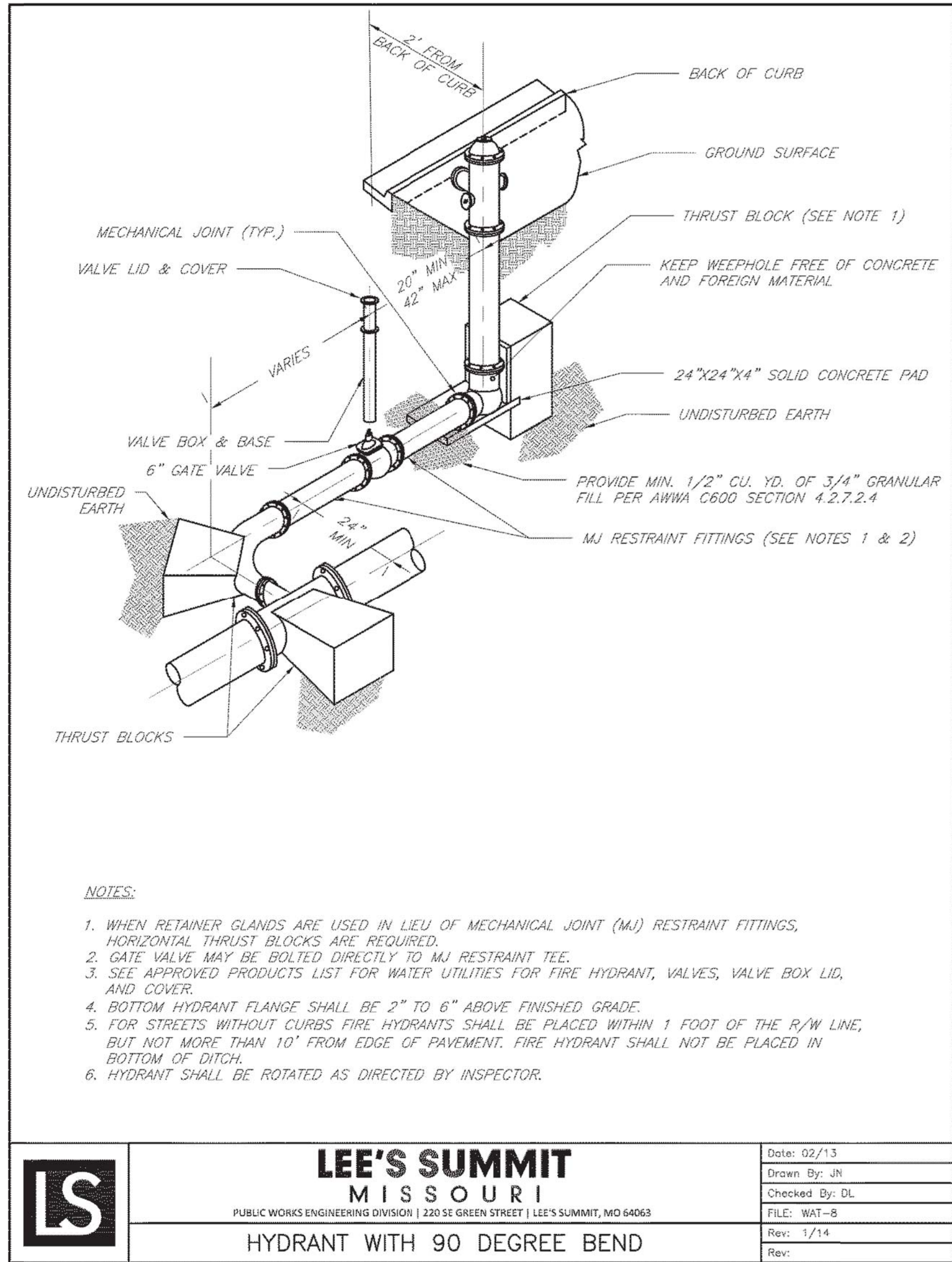
01C-CR-WA-05

FILE NAME | 01C-CR-WA-05.dwg

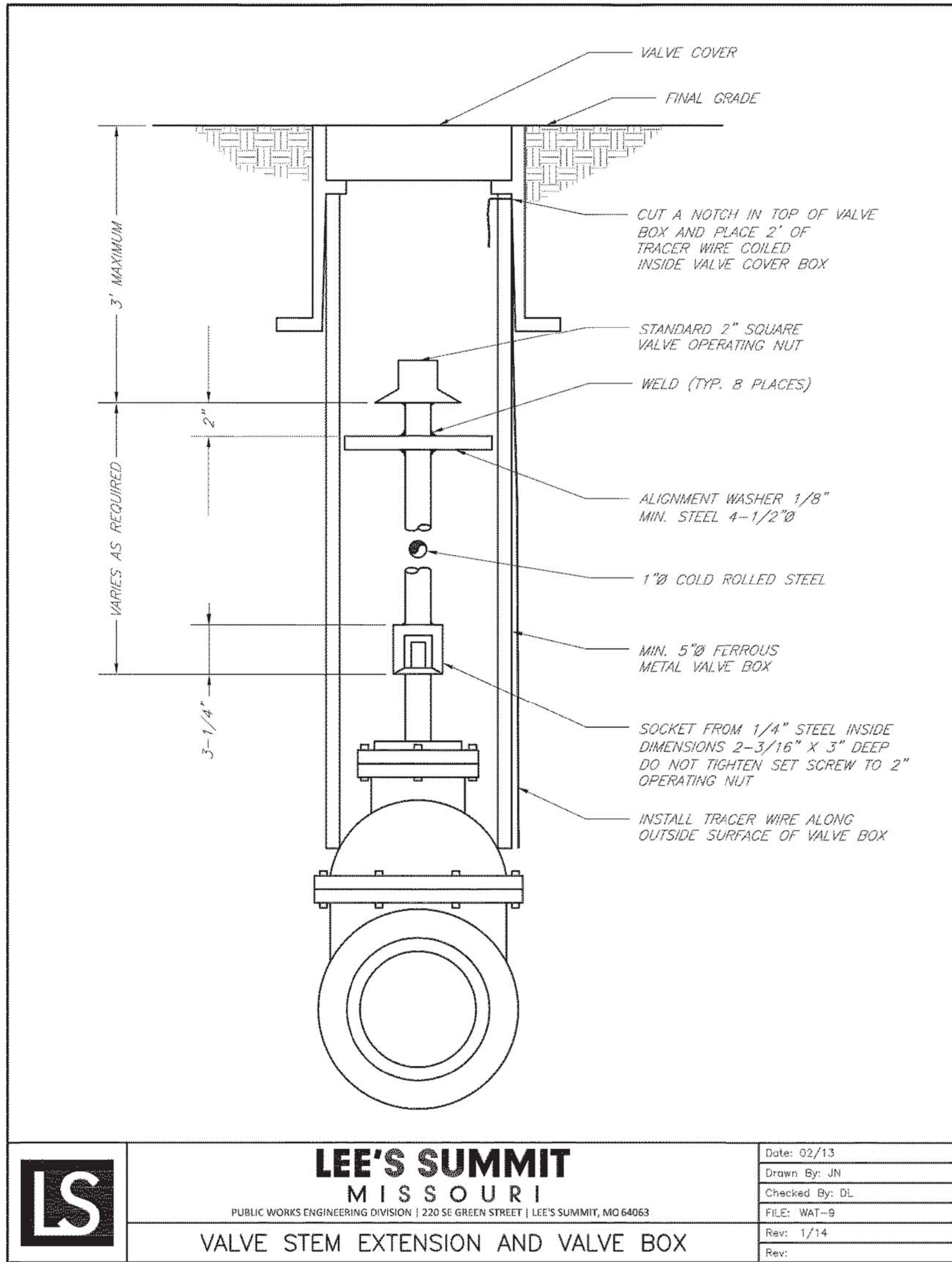
PERMIT REVIEW DRAWINGS



WAT-4



WAT-8



WAT-9