

G:\12720\Civil_3D\Production Drawings\Water Main Plans\Lee's Summit\1272000100.dwg Layout: 1 Title Sheet -- Friday, July 10, 2020, 8:36am -- Copyright 2020, George Butler Associates, Inc.\Architect 00212, Professional Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

WATER MAIN EXTENSION PLANS
FOR
PARAGON STAR DEVELOPMENT
Sections 34–Township 48–Range 32
City of Lee’s Summit
Jackson County, Missouri

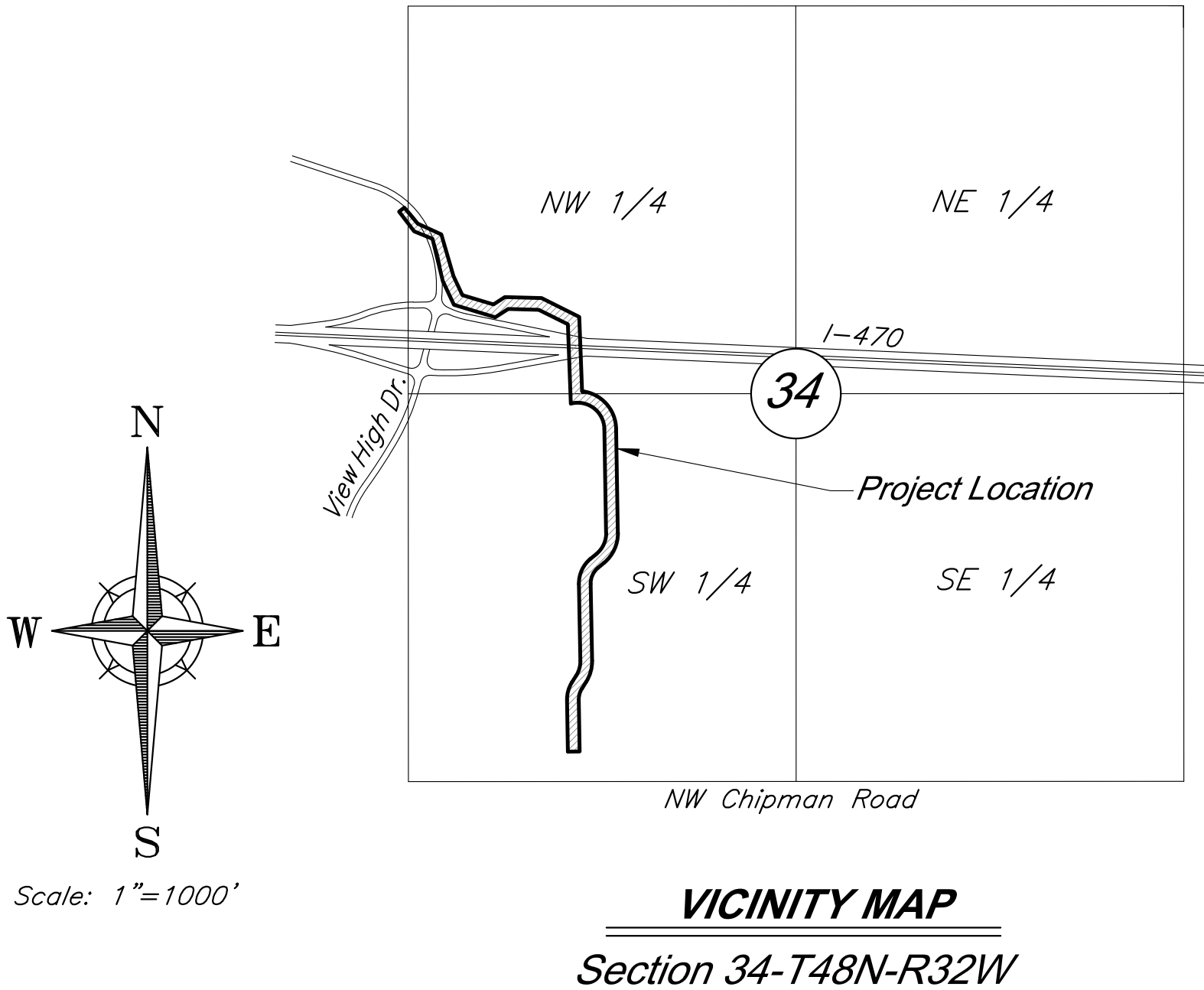
SUMMARY OF QUANTITES

Item No.	Description	Unit	Approx. Unit Quantity
1	12" C900, Class 235 PVC	LF	2,500
2	12" C900, Class 305 PVC	LF	2,722
3	8" C900, Class 235 PVC	LF	275
4	Fire Hydrant Assembly	EA	11
5	Straddle Block	EA	6
6	Air Release Valve	EA	3
7	12" Butterfly Valve	EA	13
8	8" Gate Valve	EA	2
9	Tees	EA	8
10	Plugs	EA	5
11	Horizontal Bends	EA	30
12	Vertical Bends	EA	22
13	Reducers	EA	4
14	Connections to Existing Waterlines	EA	4
15	Backflow Preventer Vault	EA	1
16	20" Steel Casing Pipe	LF	400
17	Chipman Rd Patching	LS	1
18	Cedar Creek Ln Patching	LS	1
19	18" HDPE Pipe	LF	71
20	18" End Section w/Toewall	EA	2
21	Riprap	SY	34
22	Restoration	AC	5
23	Cut	CY	69
24	Fill	CY	217
25	Gravel	SY	3,000
26	Erosion Control	LS	1

UTILITY CONTACTS

Sanitary Sewers	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Gas	Mr. Donnie Richards Missouri Gas Energy 7500 E. 35th Terrace Kansas City, MO 64129 (816) 472-9464 Fax (816) 472-3488 email: donnie.richards@sug.com
	Mr. Jeff Shook Little Blue Valley Sewer District 21101 East 78 Highway Independence, MO 64057 (816) 285-1522 email: jshook@lbvwd.net		Cable Television
Water	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Telephone	Ms. Glenda Charles AT&T 1425 Oak Street Kansas City, MO 64106 (816) 365-1669 Fax (816) 275-1109 email: gc6954@att.com
	Mr. Nathan Michael Kansas City Power & Light P.O. Box 418679 Kansas City, MO 64141 (816) 220-5210 Fax (816) 245-3623 email: Nathan.Michael@kcpl.com		
Electric Service			

Missouri One Call System 1-800-344-7483 (DIG-RITE)



VICINITY MAP
Section 34-T48N-R32W

PROJECT BENCHMARK:

BM #11 – Chiseled “L” on top
Northeast corner of concrete guardrail
at the Northeast corner of I470 bridge
spanning View High Drive.
EL=833.80

INDEX OF SHEETS

Sht. No.	Description
1	Title Sheet
2	General Layout
3-7	Water Main Plan & Profile - Line A
8	Water Main Plan & Profile - Line B
9-10	Water Main Details
11-13	Grading and Erosion Control Plan
14-15	Construction Details

APPROVED BY:
STATE OF MISSOURI
DEPARTMENT OF HEALTH & ENVIRONMENT
DIVISION OF ENVIRONMENT

ENGINEER:	DATE:
PROJECT ENGINEER:	DATE:
APPROVED:	
CITY ENGINEER:	DATE:

DEVELOPED AND OWNED BY:
PARAGON STAR LLC
801 NORTHWEST COMMERCE CENTER
LEE’S SUMMIT, MISSOURI 64086
PHONE: (816) 802-6801
CONTACT: Mr. Flip Short
EMAIL: fshort@legacytouch.com

PREPARED & SUBMITTED BY:
GEORGE BUTLER ASSOCIATES, INC.
9801 RENNER BOULEVARD
LENEXA, KANSAS 66219
PHONE: 913-492-0400
FAX: 913-577-8312
CONTACT: CLINT LOUMASTER P.E.
EMAIL: CLOUMASTER@GBATEAM.COM

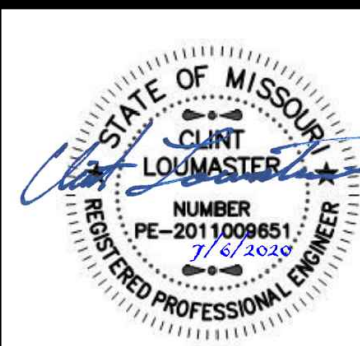
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7-6-20
6-11-20
5-15-20
4-16-20
7-26-19



Numerous Utilities on Site. Contractor to verify location and elevation of all utilities prior to commencing construction.



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PROJECT NO.: 12720	
SHEET NO.	TOTAL SHEETS
3	15

Clint Loumaster
Professional Engineer
License No. 201100965

Water Main Extension Plans
Paragon Star Development

Lee's Summit, Missouri

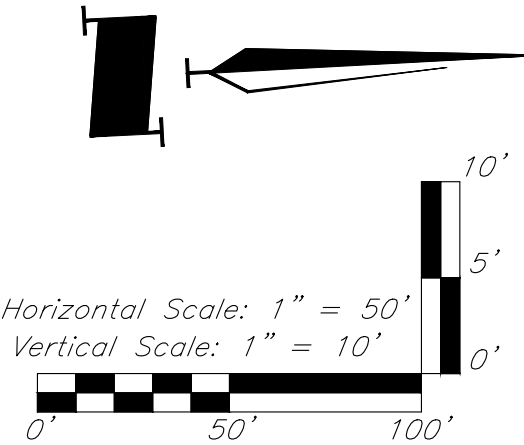
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2	4/17/20		City Comments - 3/1/20		
3	4/28/20		Bid Package		
4	5/15/20		City Resubmittal		
5	6/11/20		City Comments - 6/1/20		
6	7/6/20		City Comments - 6/19/20		

Note:

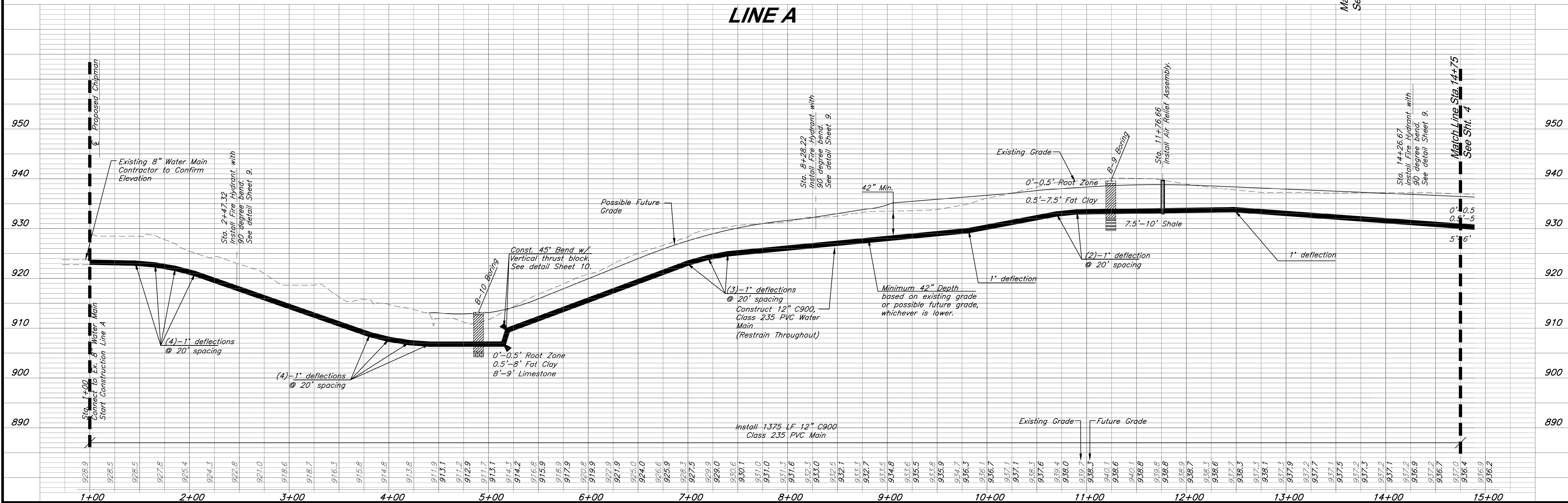
- 1. Contractor shall be responsible for all traffic control required to complete construction.*
- 2. Contractor to patch roadway and driveways with matching pavement section.*

BENCHMARK:
BM #11 - Chiseled "L" on top
Northeast corner of concrete guardrail
at the Northeast corner of 1470 bridge
spanning View High Drive.
EL=833.80

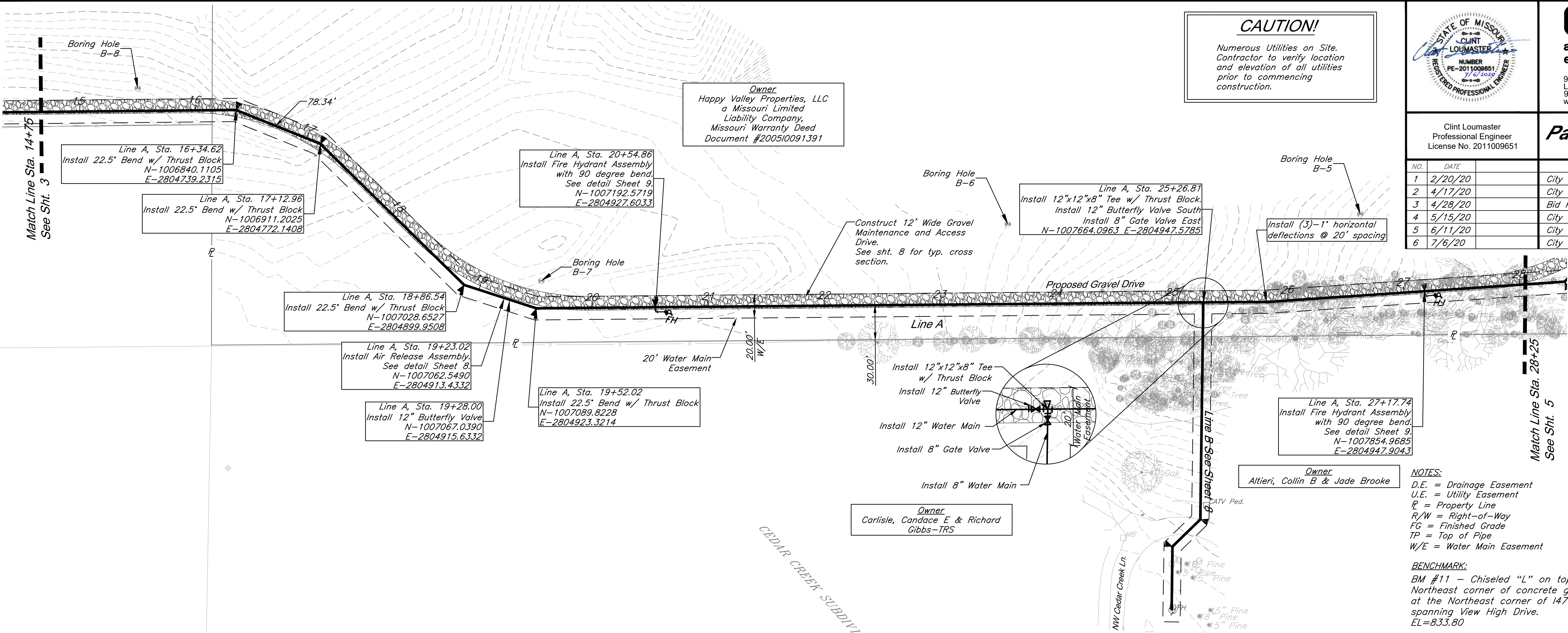
NOTES:
D.E. = Drainage Easement
U.E. = Utility Easement
ℙ = Property Line
R/W = Right-of-Way
FG = Finished Grade
TP = Top of Pipe



LINE A



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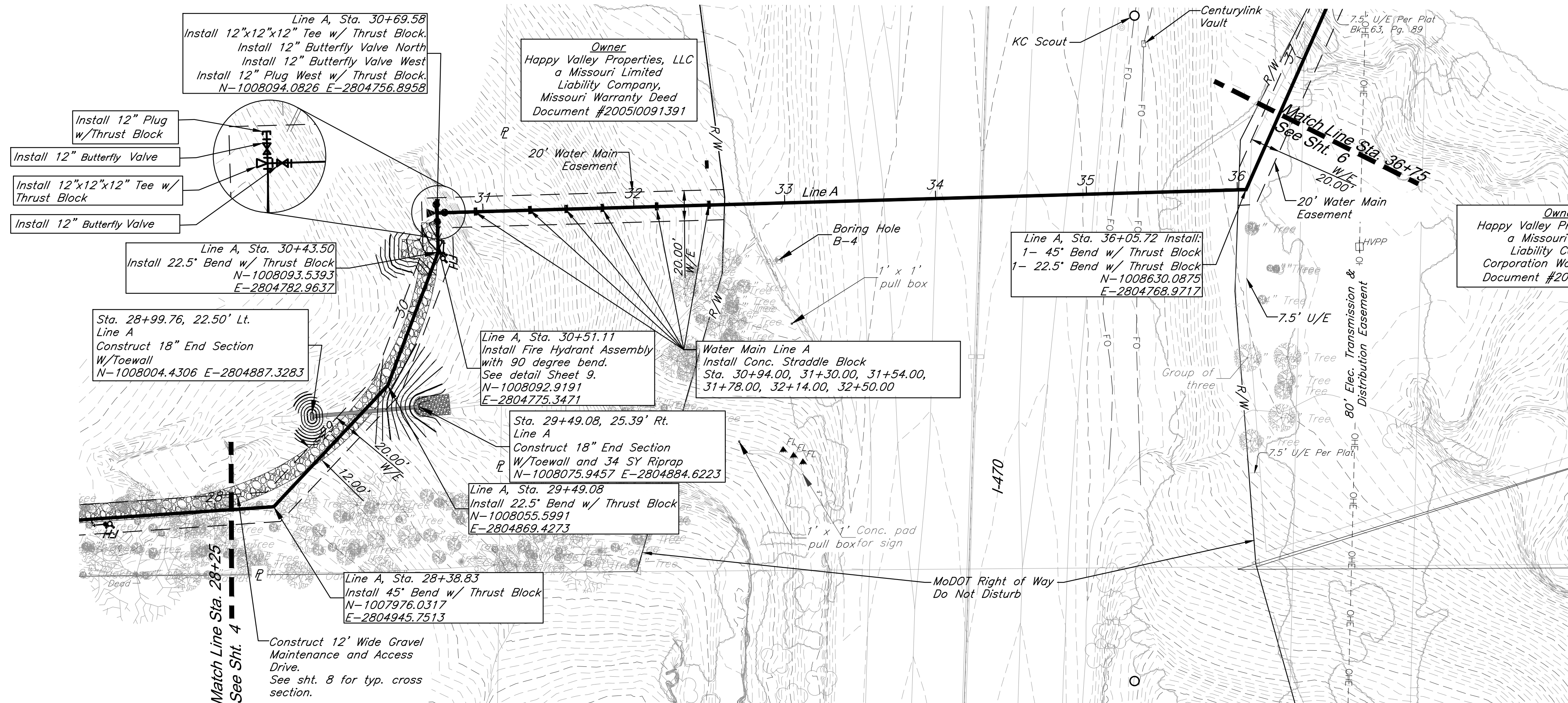
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Lee's Summit, Missouri

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1	2/20/20	City Comments - 10/21/19		
2	4/17/20	City Comments - 3/1/20		
3	4/28/20	Bid Package		
4	5/15/20	City Resubmittal		
5	6/11/20	City Comments - 6/1/20		
6	7/6/20	City Comments - 6/19/20		



CAUTION!

*Numerous Utilities on Site.
Contractor to verify location
and elevation of all utilities
prior to commencing
construction.*

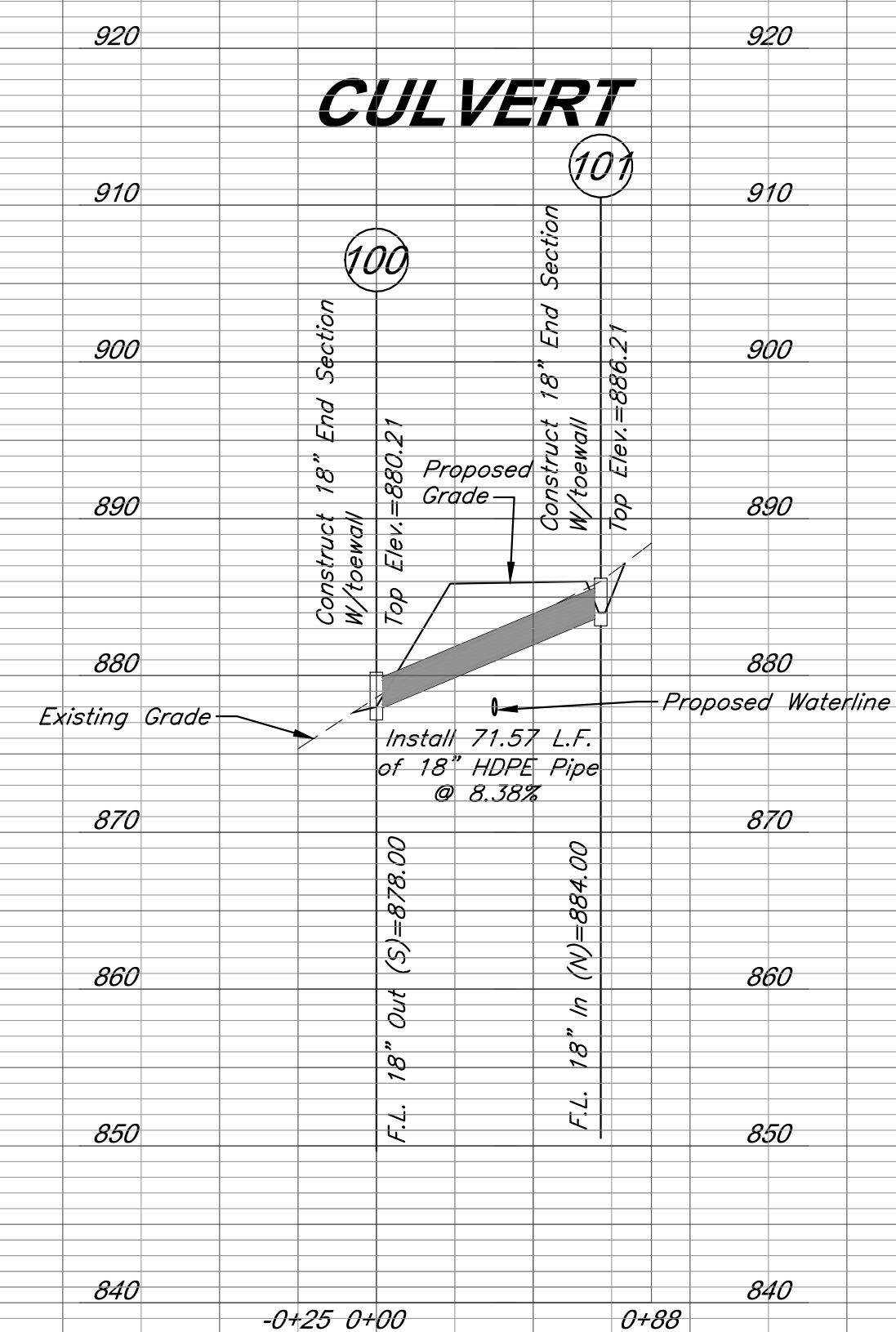
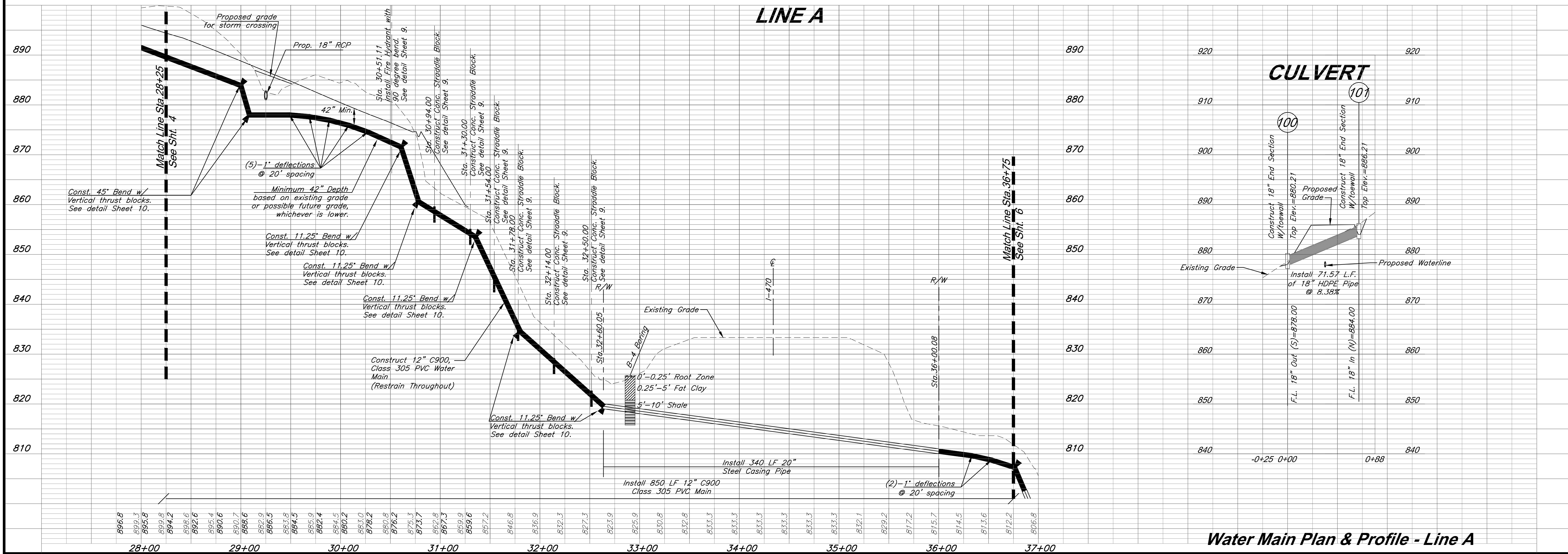
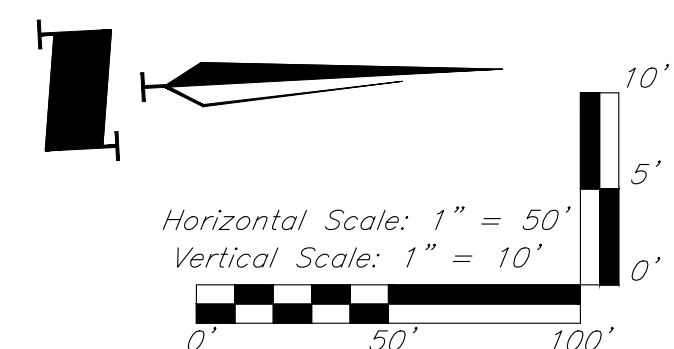
NOTES:

D.E. = Drainage Easement
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P = Property Line
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FG = Finished Grade
TP = Top of Pipe
W/E = Water Main Easement

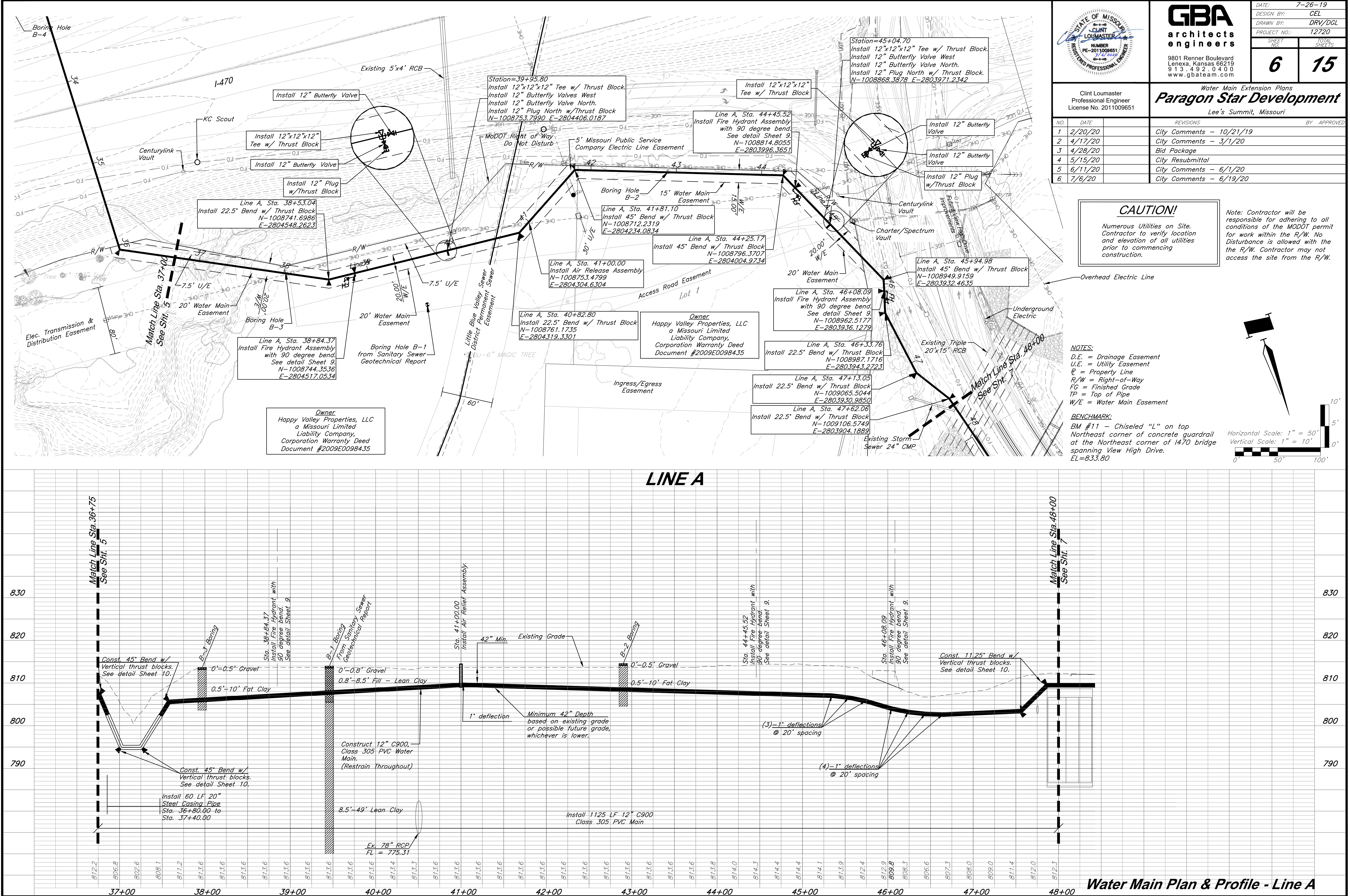
BENCHMARK:

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at the Northeast corner of 1470 bridge
spanning View High Drive.
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Note: Contractor will be responsible for adhering to all conditions of the MODOT permit for work within the R/W. No Disturbance is allowed with the the R/W. Contractor may not access the site from the R/W.



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SHEET NO.	TOTAL SHEETS
7	15

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Professional Engineer
License No. 2011009651

Water Main Extension Plans
Paragon Star Development
Lee's Summit, Missouri

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1	2/20/20	City Comments - 10/21/19		
2	4/17/20	City Comments - 3/1/20		
3	4/28/20	Bid Package		
4	5/15/20	City Resubmittal		
5	6/11/20	City Comments - 6/1/20		
6	7/6/20	City Comments - 6/19/20		

CAUTION!

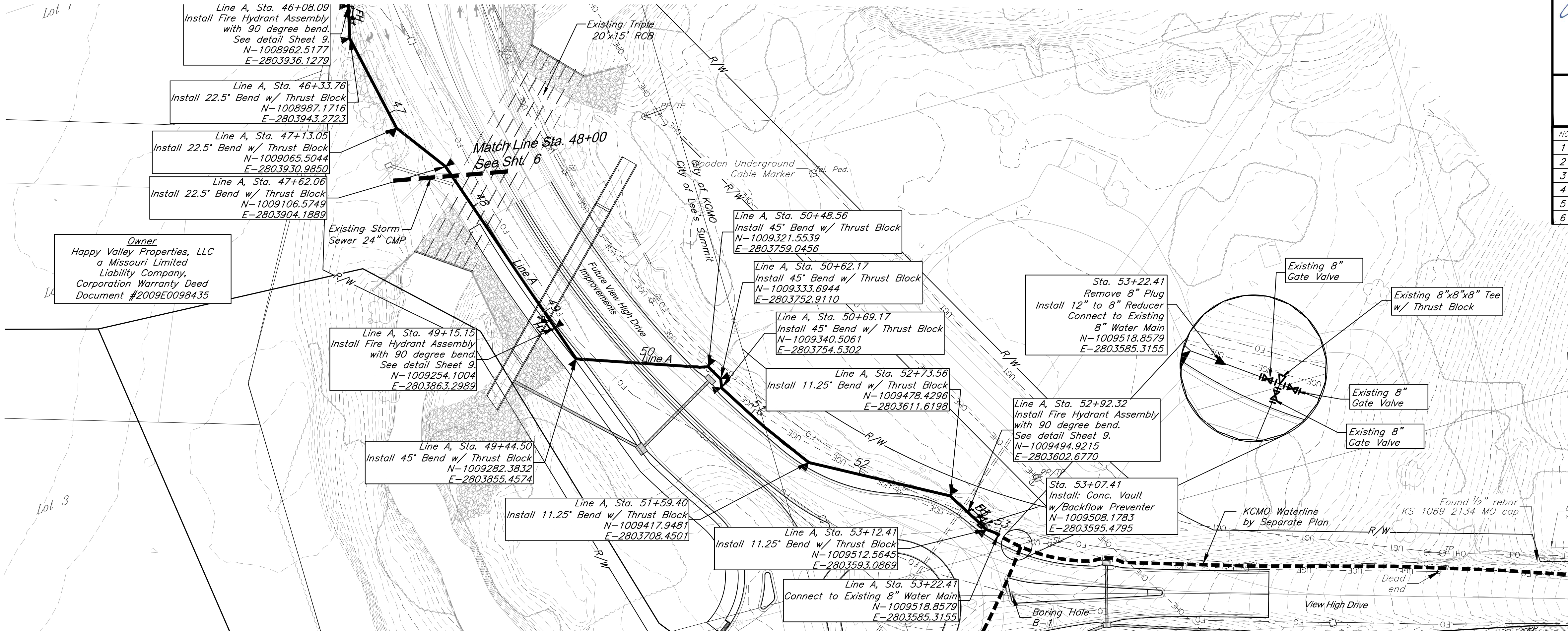
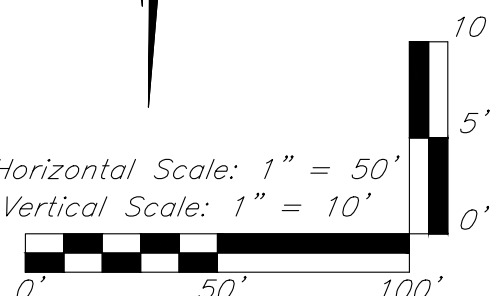
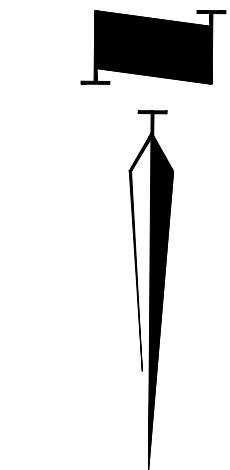
Numerous Utilities on Site.
Contractor to verify location
and elevation of all utilities
prior to commencing
construction.

NOTES:

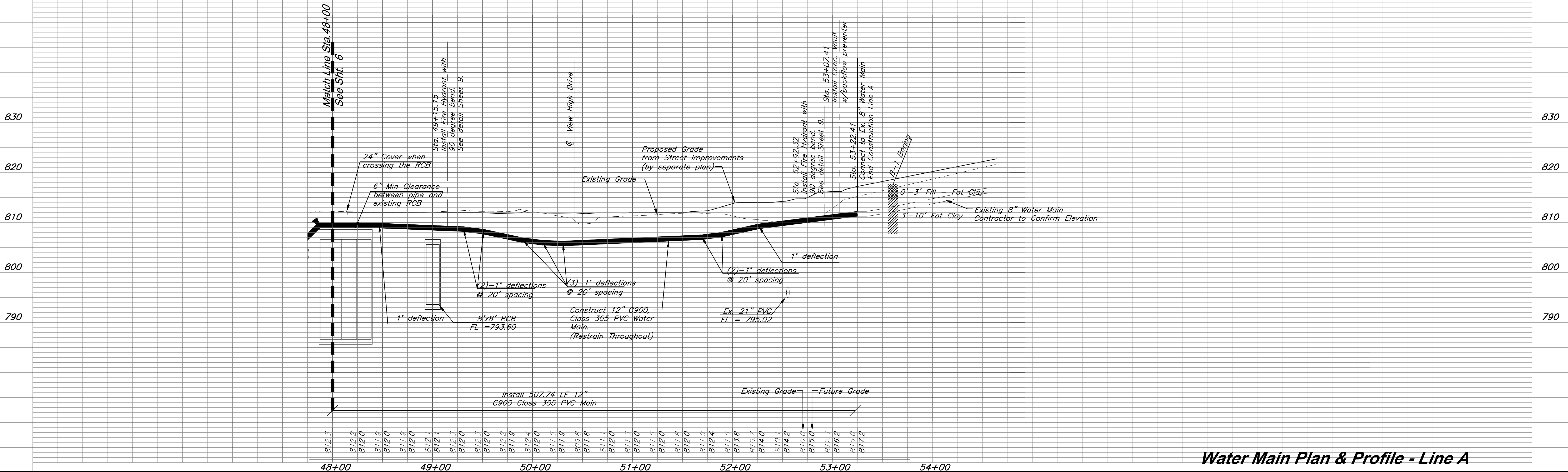
D.E. = Drainage Easement
U.E. = Utility Easement
P = Property Line
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W/E = Water Main Easement

BENCHMARK:

BM #11 - Chiseled "L" on top
Northeast corner of concrete guardrail
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EL=833.80



LINE A



Water Main Plan & Profile - Line A

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CAUTION!
Numerous Utilities on Site.
Contractor to verify location
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construction.



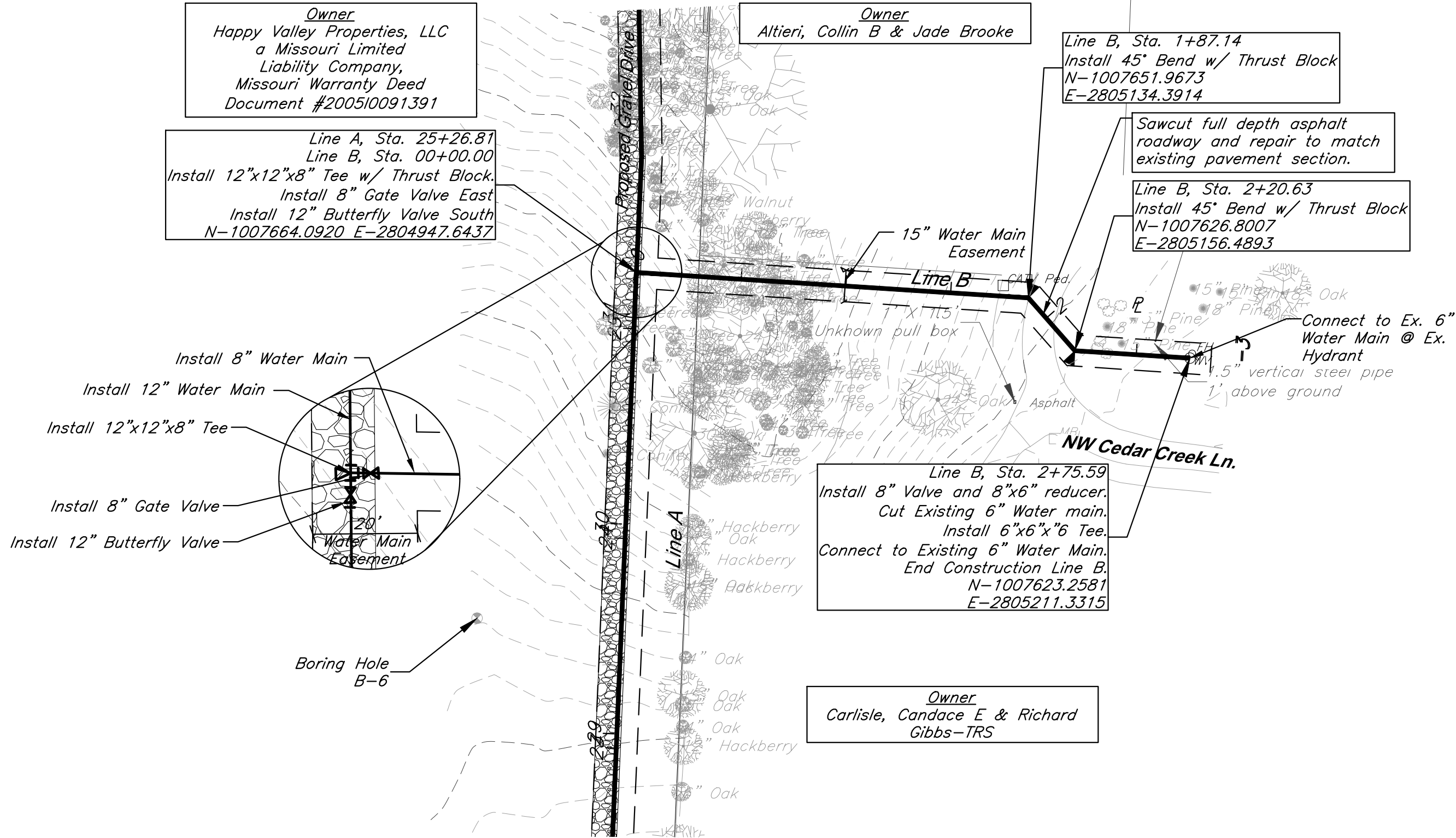
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DATE: 7-26-19
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SHEET NO. 8
TOTAL SHEETS 15

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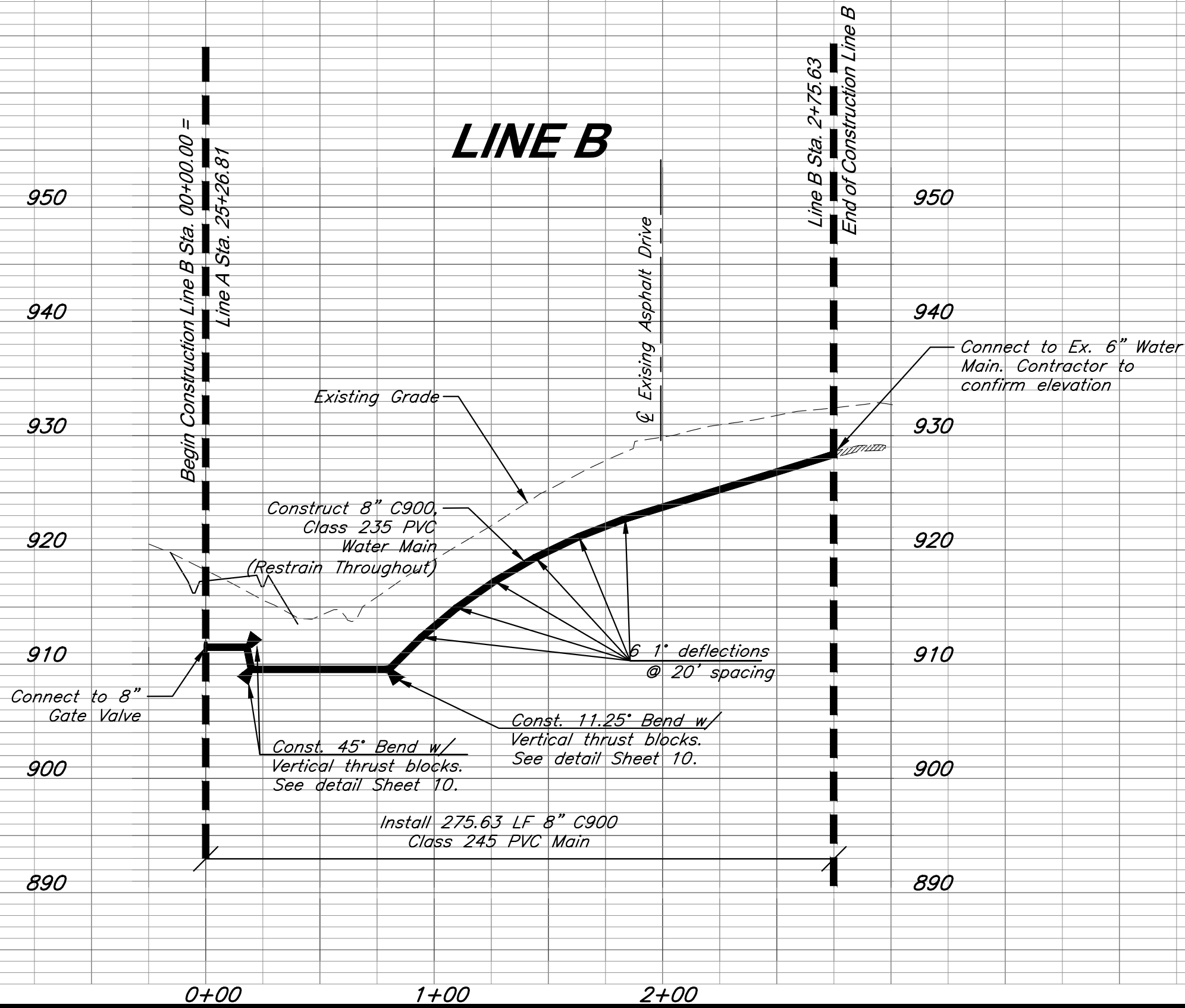
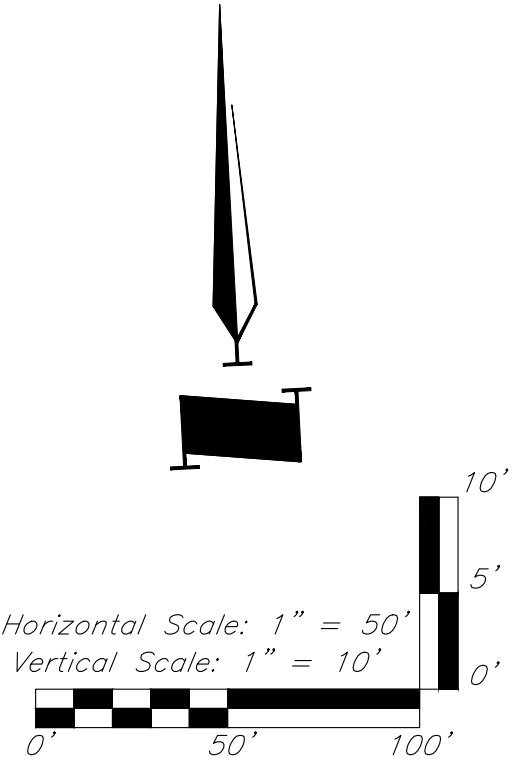
Water Main Extension Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
1	2/20/20	City Comments - 10/21/19		
2	4/17/20	City Comments - 3/1/20		
3	4/28/20	Bid Package		
4	5/15/20	City Resubmittal		
5	6/11/20	City Comments - 6/1/20		
6	7/6/20	City Comments - 6/19/20		

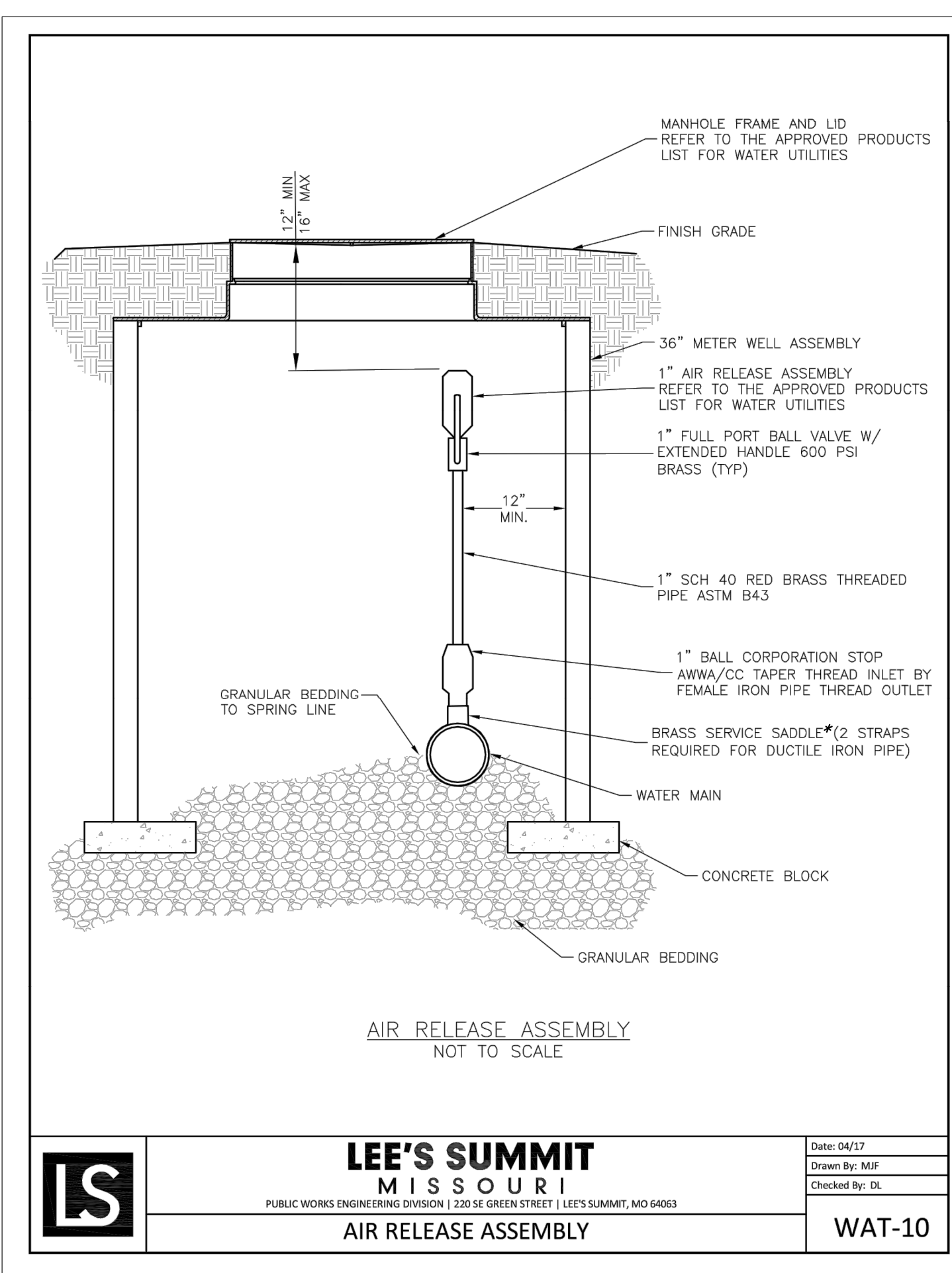
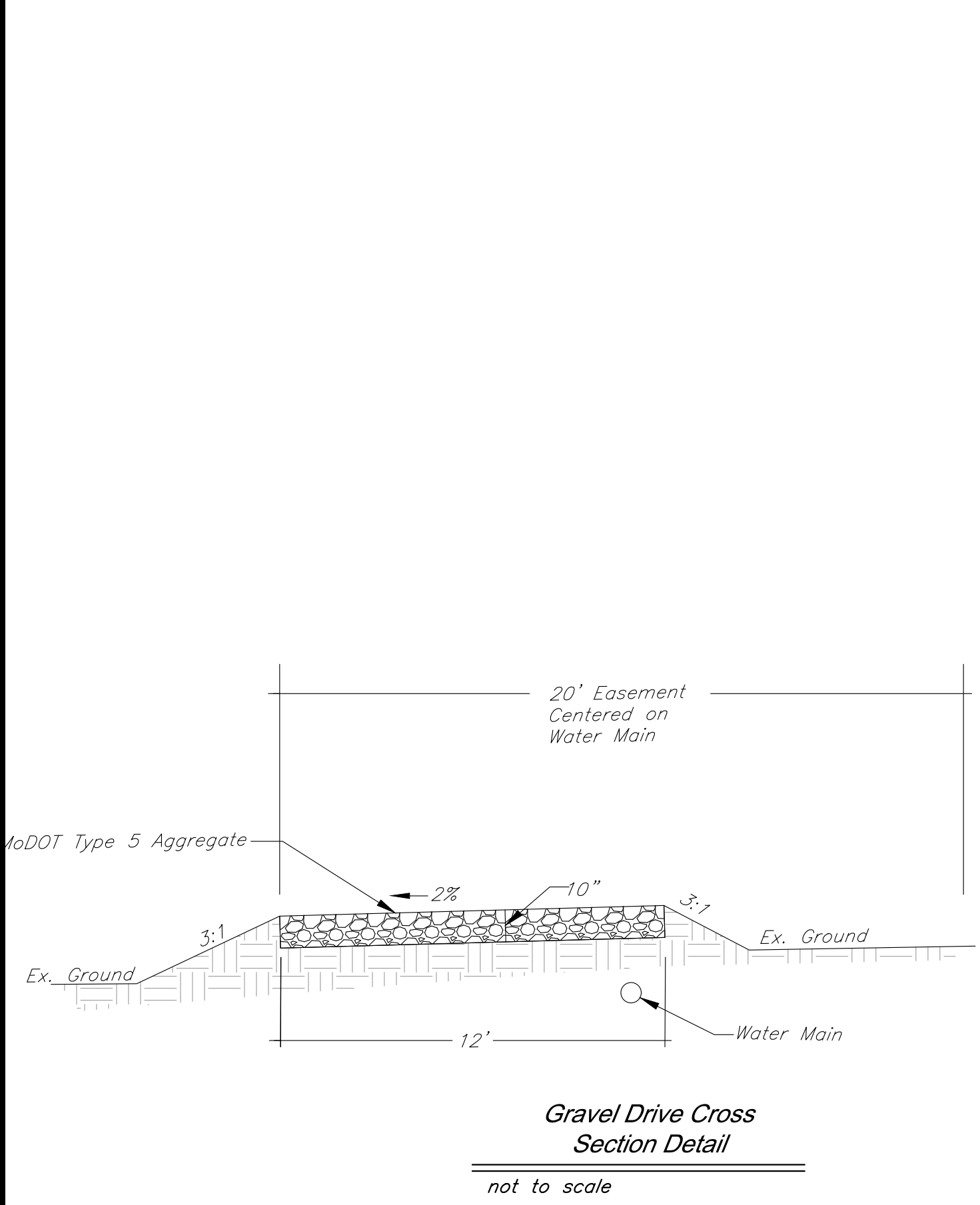


NOTES:
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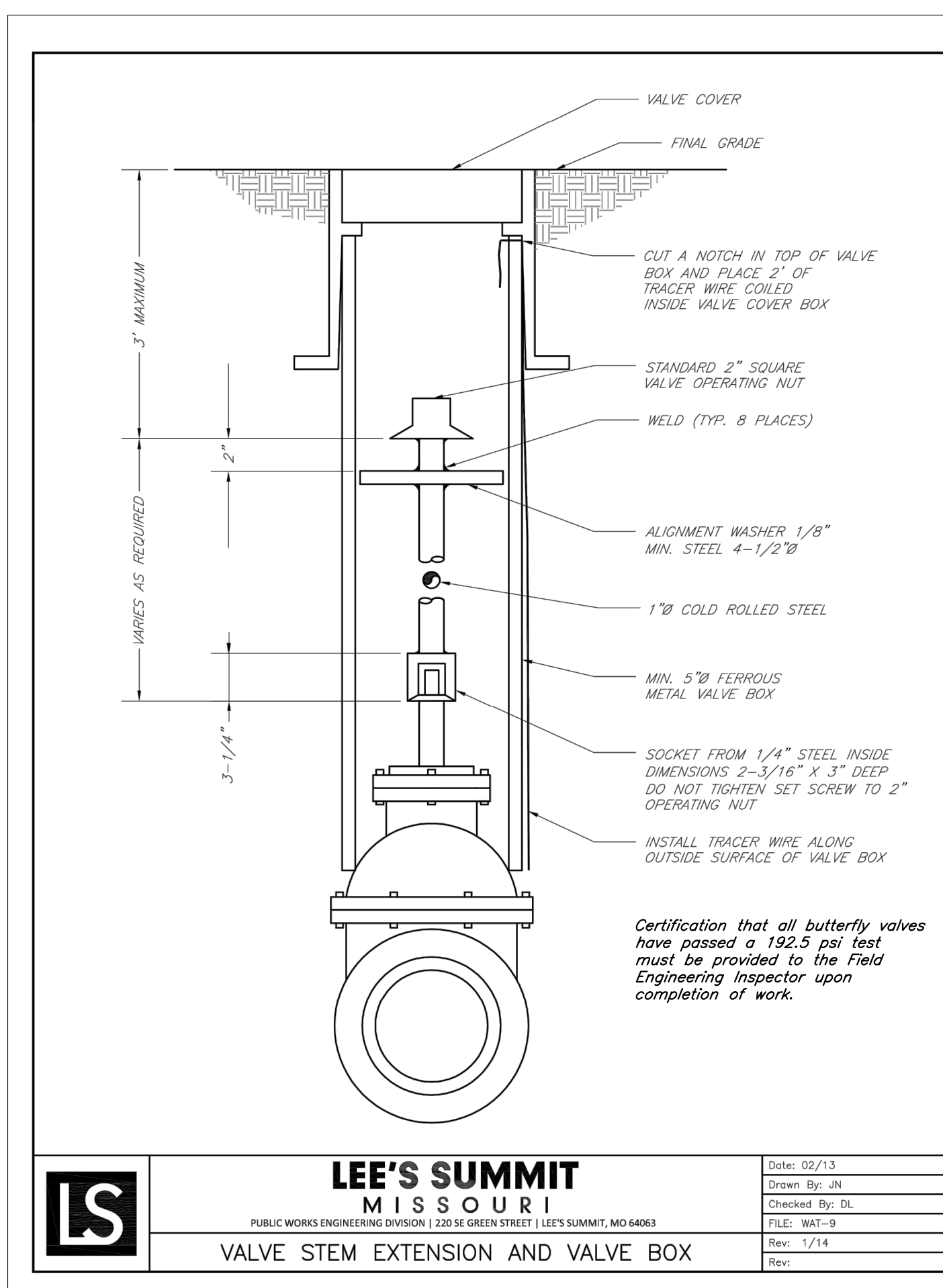
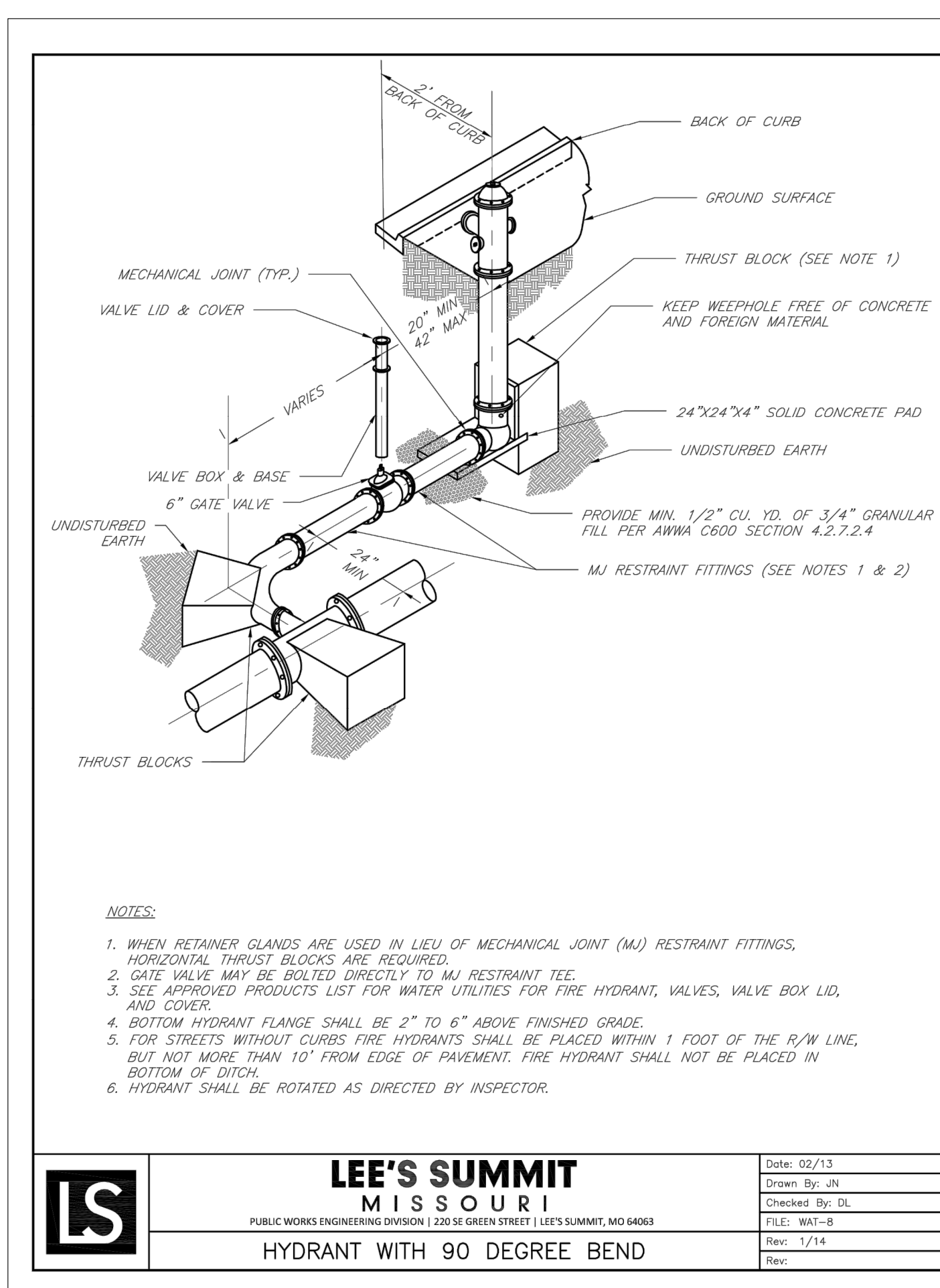
BENCHMARK:
BM #11 - Chiseled "L" on top
Northeast corner of concrete guardrail
at the Northeast corner of 1470 bridge
spanning View High Drive.
EL=833.80



Water Main Plan & Profile - Line B



* Air Release Assembly at Sta. 41+00.00 must use Steel Saddle specified below or approved equivalent due to pressure.



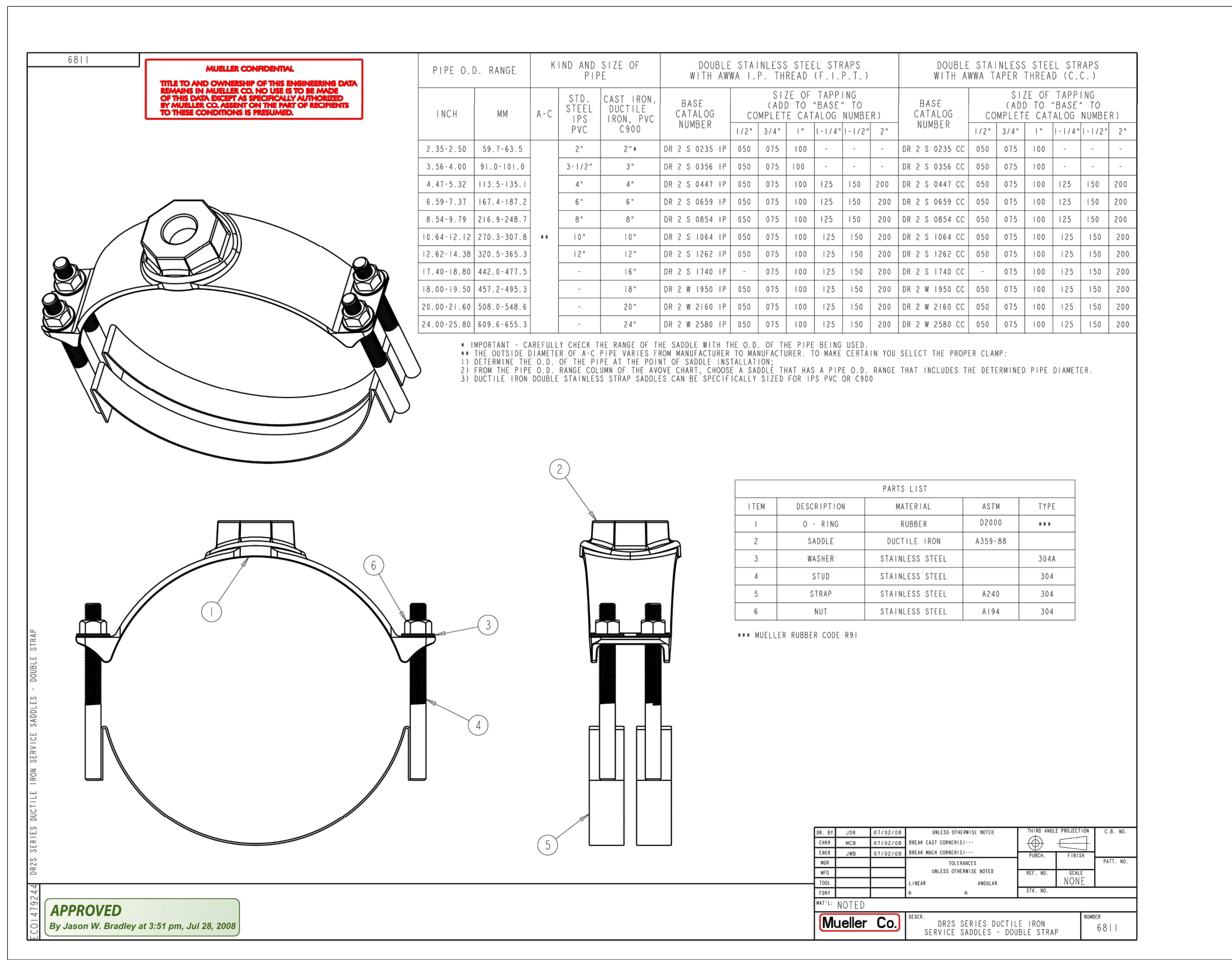
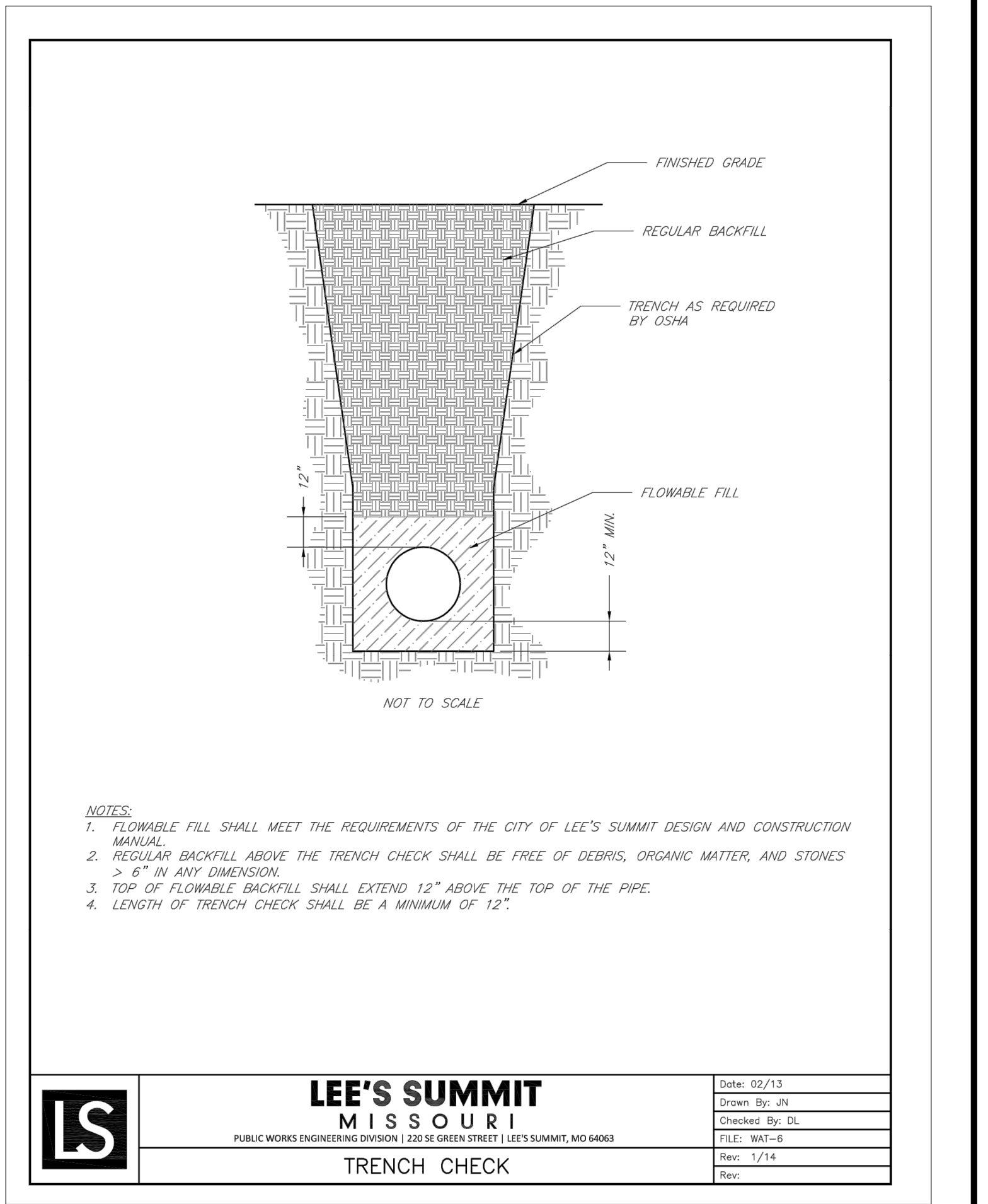
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DATE: 7-26-19
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PROJECT NO.: 12720
SHEET NO.: 9
TOTAL SHEETS: 15

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License No. 2011009651

Water Main Extension Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
1	2/20/20	City Comments - 10/21/19		
2	4/17/20	City Comments - 3/1/20		
3	4/28/20	Bid Package		
4	5/15/20	City Resubmittal		
5	6/11/20	City Comments - 6/1/20		
6	7/6/20	City Comments - 6/19/20		



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NOT TO SCALE

NOTES:
1. REFER TO SPECIFICATION SECTION 3900 FOR ADDITIONAL INFORMATION.
2. LENGTH, DIAMETER, AND WALL THICKNESS TO BE SHOWN ON CONSTRUCTION PLANS.

**LEE'S SUMMIT
MISSOURI**
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: WAT-5
Rev: 1/14
Rev:

WATER CASING PIPE DETAIL

NOTES:
1. INTERMEDIATE BELLS SHALL BE ENCASED.
2. REINFORCING STEEL SHALL BE #4 @ 12" O.C. EACH WAY WITH A MINIMUM REBAR LAP OF 12".
3. THIS DETAIL IS FOR PIPES 12" AND SMALLER.

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Date: 02/13
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FILE: WAT-4
Rev: 1/14
Rev:

WATER PIPE ENCASEMENT

REQUIRED CONCRETE VOLUME (CUBIC FEET - CF)

NOM. DIA. (INCHES)	TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	50.5	71.4	38.6	19.7	9.9
8	80.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	281.1	154.6	78.8	39.6
14	267.0	367.1	204.4	107.3	53.9
16	325.0	447.1	240.1	140.1	70.4
18	377.0	521.1	277.3	177.3	89.1
20	424.0	589.1	315.1	215.1	110.0
24	512.0	704.1	384.1	264.1	135.4

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 MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

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 MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

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Date: 02/13
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Checked By: DL
FILE: WAT-2
Rev: 1/14
Rev:

VERTICAL THRUST BLOCKS

GENERAL NOTES:
1. METER VAULT WALLS TO BE POURED OR PRECAST CONCRETE. METER VAULT ROOF TO BE REINFORCED CONCRETE WITH OPENING CENTERED OVER DETECTOR METER. REINFORCED WALLS AND SLABS ARE TO BE DESIGNED BY THE OWNER'S ENGINEER OR PRECAST ENGINEER.
2. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA AND WHERE SURFACE WATER WILL NOT DRAIN INTO IT. PROVIDE CONCRETE SUMP TO DRAIN TO AN ABOVE GROUND DISCHARGE POINT.
3. ALL PIPE AND FITTINGS FROM THE CITY WATER MAIN THROUGH THE VAULT SHALL BE PROVIDED WITH RESTRAINED JOINT FITTINGS.
4. ALL FITTINGS FOR THE DETECTOR METER TO BE BRASS.
5. STEPS SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST FOR WATER UTILITIES AND SHALL BE ON 16" CENTERS.
6. ALL VALVES SHALL HAVE RISING STEMS.
7. MANHOLE COVER SHALL BE A BILCO K-1 MODEL UNLESS IN A VEHICLE TRAFFIC AREA. SEE THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR TRAFFIC CONDITIONS. THE COVER SHALL HAVE A 1-3/4" Ø HOLE DRILLED FOR A TOUCH/READ DEVICE.
8. A MINIMUM OF 18" CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING, VALVES, APPURTENANCES, ETC.
9. CONTACT PUBLIC WORKS ENGINEERING FOR VAULTS THAT INCLUDE A FIRE DEPARTMENT CONNECTION OR A 3" OR LARGER METER.

**CITY OF LEE'S SUMMIT, MO
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION**
LEE'S SUMMIT, MO 64063

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: WAT-1
Rev: 1/14
Rev:

STANDARD DRAWINGS

NOTE:
THIS DETAIL NOT TO BE USED FOR PIPE GREATER THAN 12"

**LEE'S SUMMIT
MISSOURI**
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: WAT-3
Rev: 1/14
Rev:

STRADDLE BLOCK

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DATE: 7-26-19
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DRAWN BY: DRW/DGL
PROJECT NO.: 12720
SHEET NO. 10
TOTAL SHEETS 15

**Water Main Extension Plans
Paragon Star Development
Lee's Summit, Missouri**

Clint Loumaster
Professional Engineer
License No. 2011009651

NO.	DATE	REVISIONS	BY	APPROVED
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6	7/6/20	City Comments - 6/19/20		

REQUIRED CONCRETE BEARING AREA (SQUARE FEET - SF)

NOM. DIA. (INCHES)	TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.8	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	59.1	32.5	16.5	8.3
20	51.2	71.4	40.1	20.4	10.3
24	60.0	84.1	48.1	24.4	12.8

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.

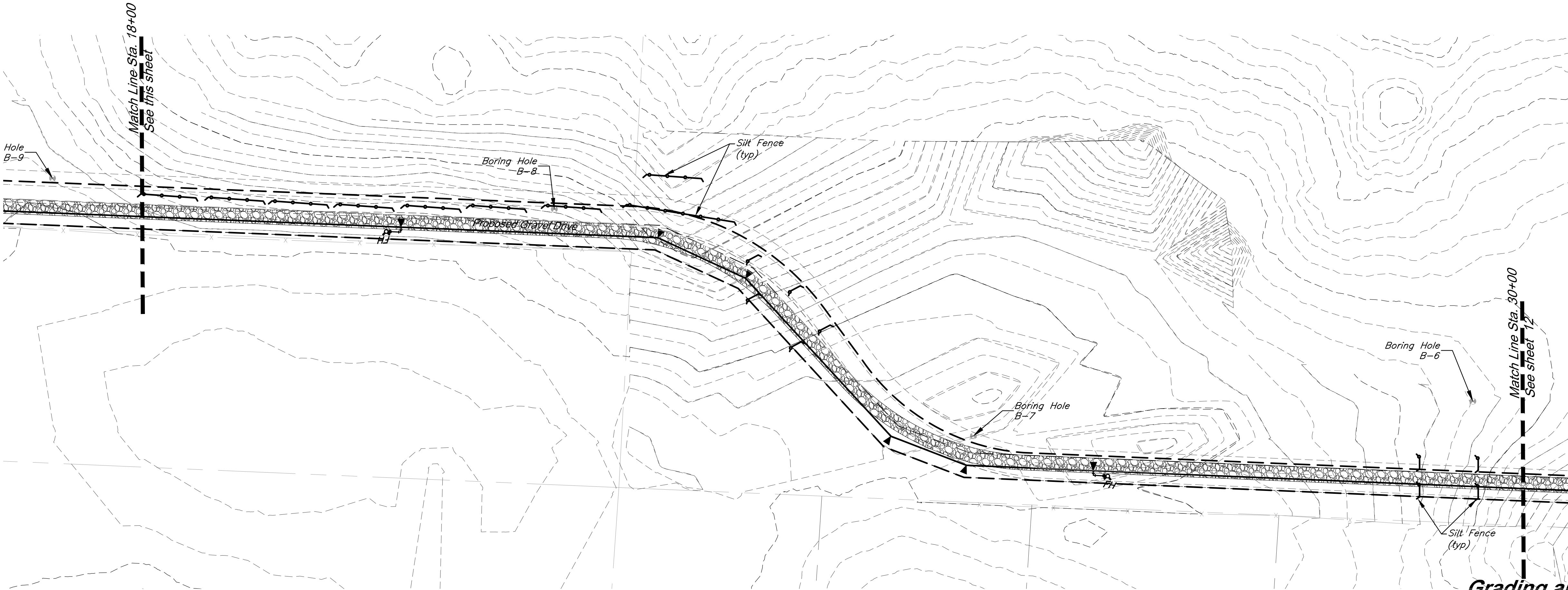
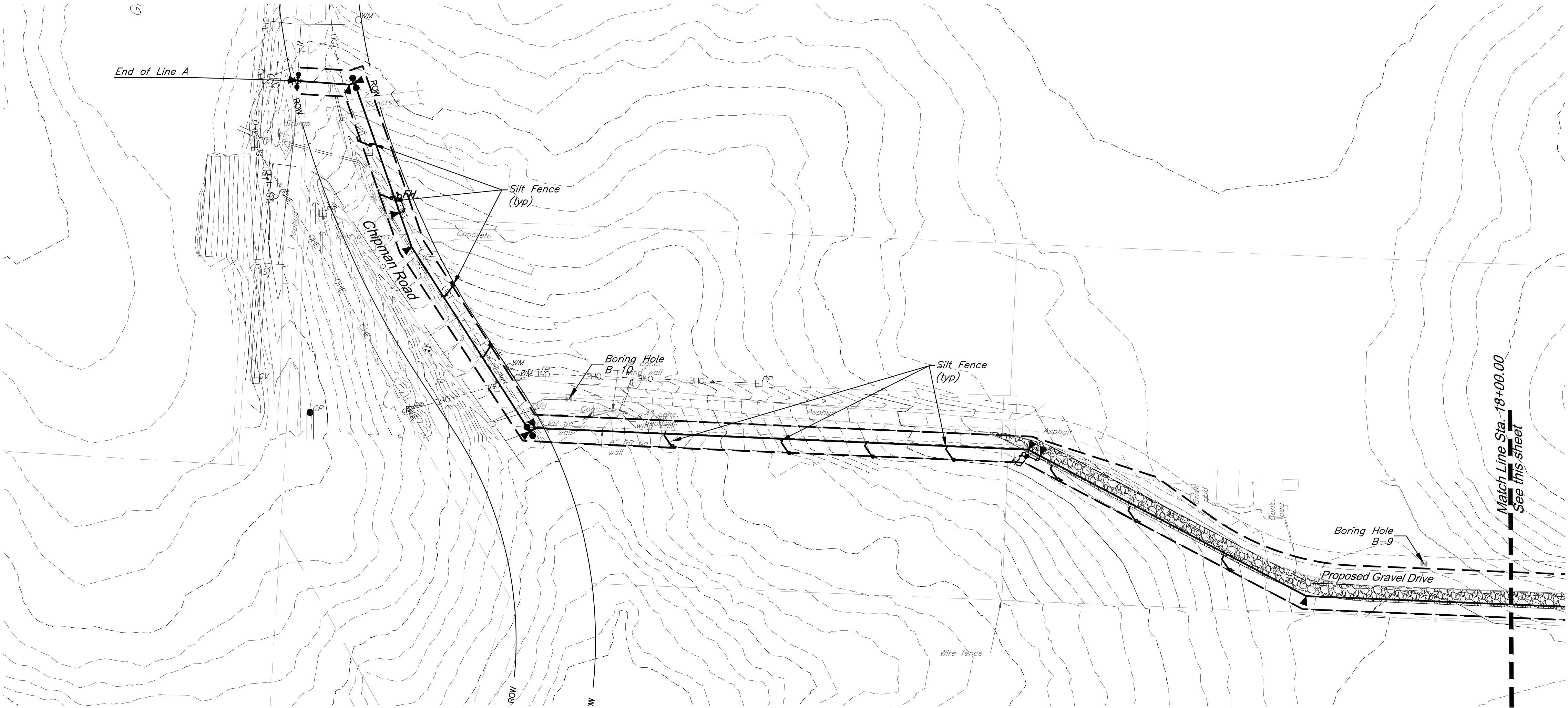
NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.

**LEE'S SUMMIT
MISSOURI**
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: WAT-1
Rev: 1/14
Rev:

HORIZONTAL THRUST BLOCKS

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Lenexa, Kansas 66219
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DATE: 7-26-19
DESIGN BY: CEL
DRAWN BY: DRV/DGL
PROJECT NO.: 12720
SHEET NO.: 11
TOTAL SHEETS: 15

Clint Loumaster
Professional Engineer
License No. 2011009651

Water Main Extension Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
1	2/20/20	City Comments - 10/21/19		
2	4/17/20	City Comments - 3/1/20		
3	4/28/20	Bid Package		
4	5/15/20	City Resubmittal		
5	6/11/20	City Comments - 6/1/20		
6	7/6/20	City Comments - 6/19/20		

Note:
Contractor shall strip vegetation, including trees, along the water main alignment and dispose of off site. Entire disturbed area shall be re-vegetated per seeding notes below.

EROSION CONTROL LEGEND

- Gravel Inlet Protection
 - Silt Fence
 - Rock Ditch Check
- Note: All disturbed area to be seeded.

- Seeding Notes:**
- Contractor shall uniformly spread the topsoil over disturbed area. Seed and straw mulch shall be placed as soon as practicable.
 - Between November 1 and March 15, temporary stabilization shall include a straw mulch cover at 2.25 tons/acre.
 - Between March 15 and May 31, drill or hydroseed all disturbed areas with K-31 fescue at 90 lbs PLS per acre and rye grass at 50 lbs PLS per acre. Reapply straw mulch cover at 1.5 tons per acre.
 - Immediately water after seeding and continue to water as necessary to establish permanent vegetation.

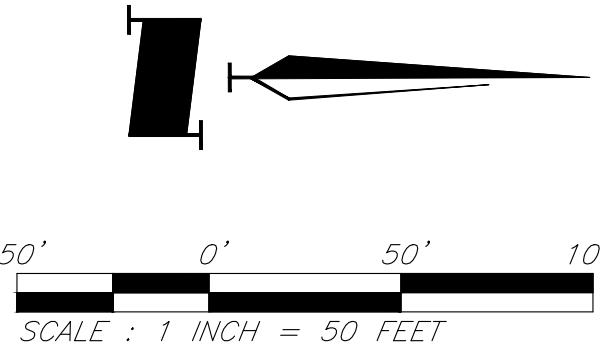
Earthwork

Cut = 69 CY
Fill* = 217 CY
Net = 148 CY Fill

*Fill factor of 1.15

CAUTION!

Numerous Utilities on Site.
Contractor to verify location and elevation of all utilities prior to commencing construction.



Grading and Erosion Control Plan

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DATE: 7-26-19
DESIGN BY: CEL
DRAWN BY: DRW/DGL
PROJECT NO.: 12720
SHEET NO.: 12
TOTAL SHEETS: 15

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Professional Engineer
License No. 2011009651

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Paragon Star Development
Lee's Summit, Missouri

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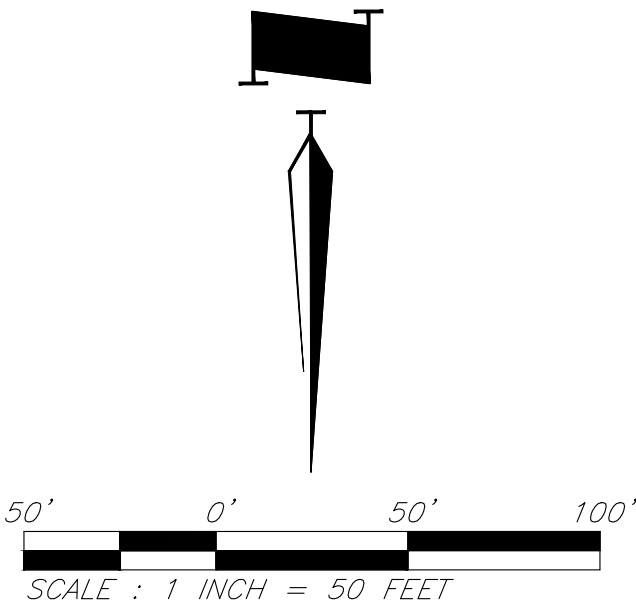
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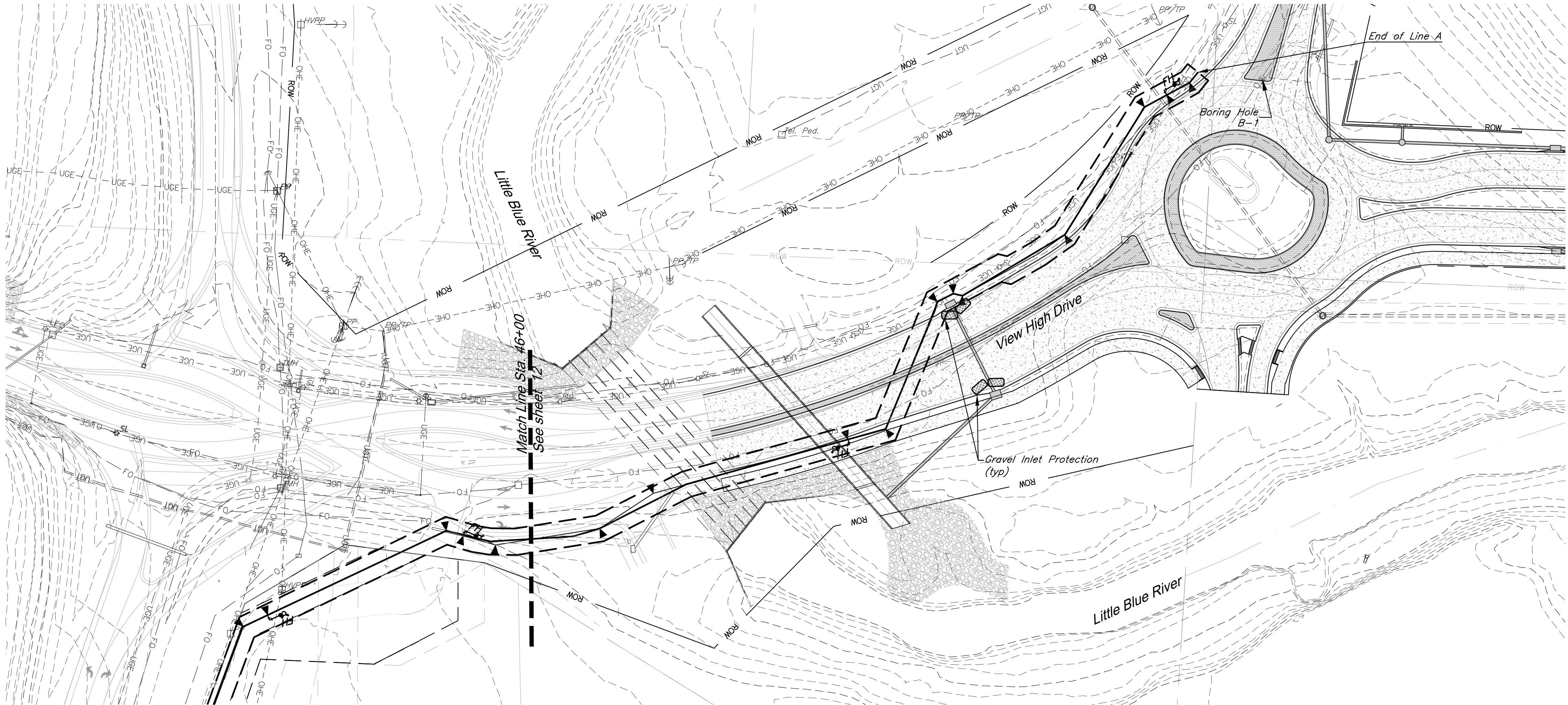
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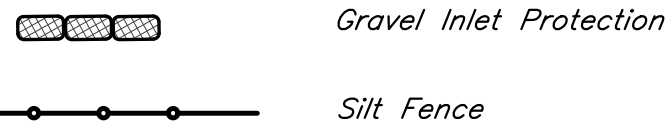


Grading and Erosion Control Plan

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EROSION CONTROL LEGEND



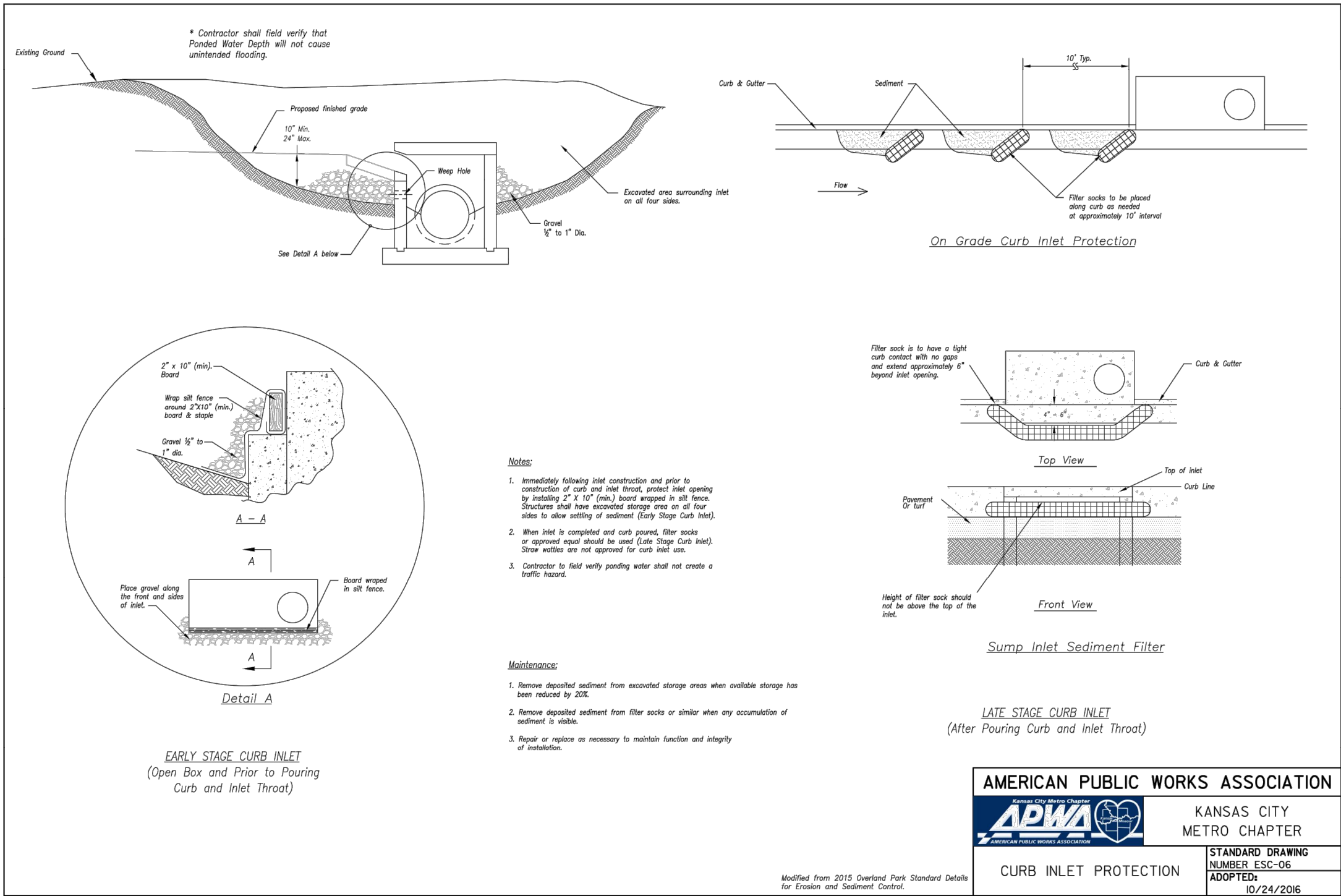
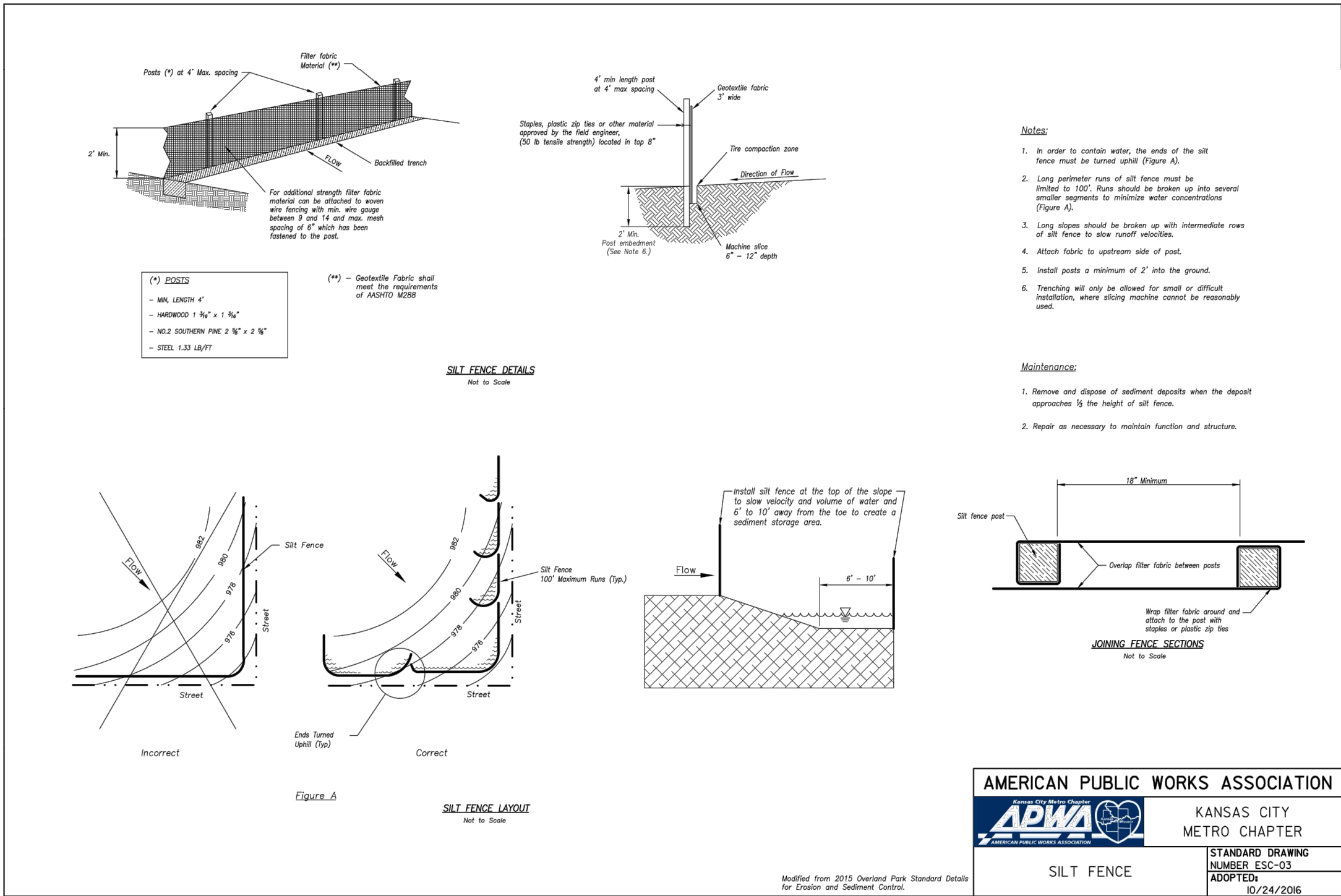
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TOTAL SHEETS 15

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Water Main Extension Plans
Paragon Star Development
Lee's Summit, Missouri

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