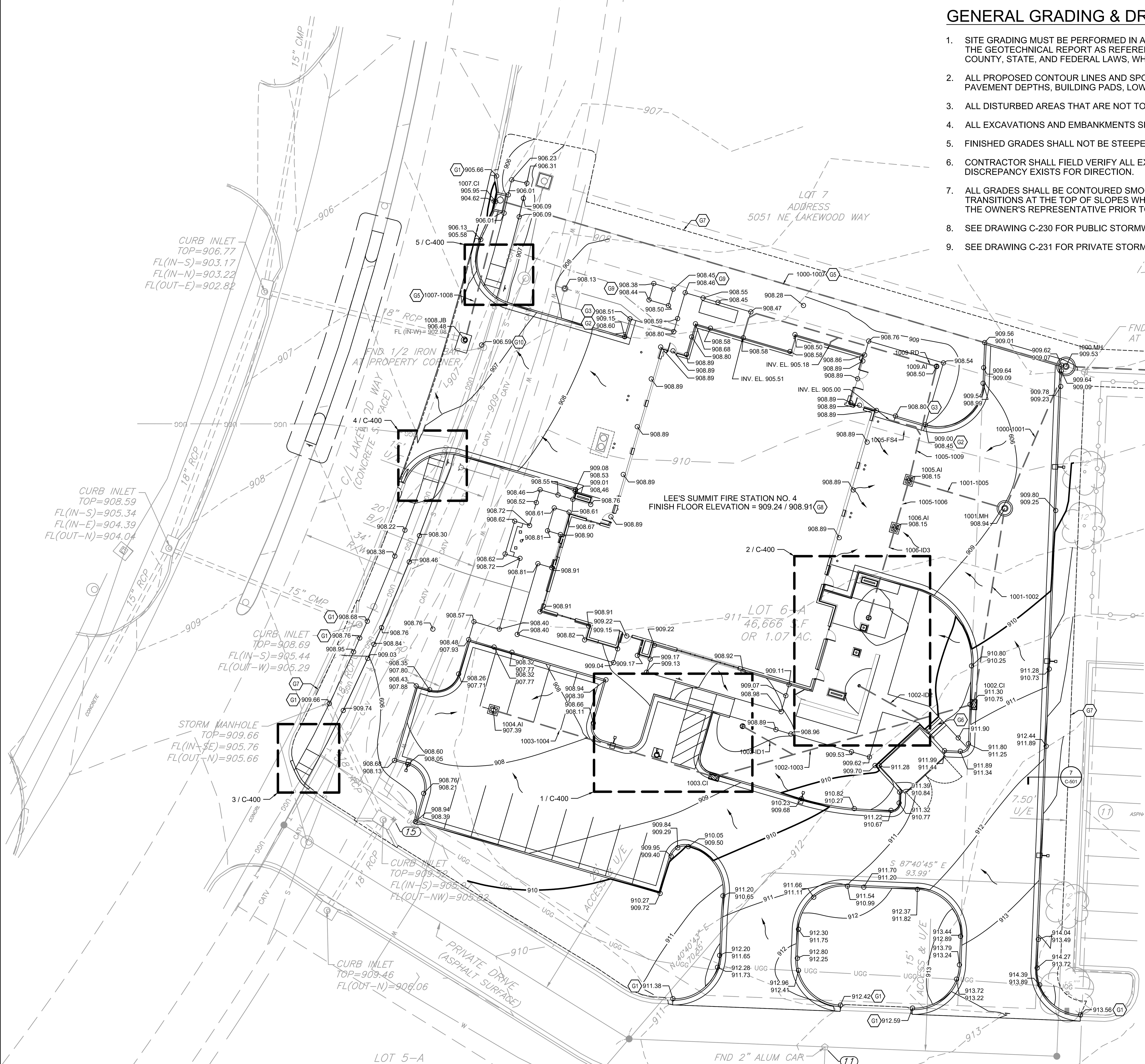
GENERAL GRADING & DRAINAGE NOTES:

1. SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS, AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AS REFERENCED IN THIS PLAN SET. THE CONTRACTOR MUST FOLLOW THE REQUIREMENTS OF ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS, WHICH HAVE JURISDICTION OVER THIS PROJECT.
2. ALL PROPOSED CONTOUR LINES AND SPOT ELEVATIONS SHOWN ARE FINISH GROUND ELEVATIONS. CONTRACTOR SHALL ACCOUNT FOR PAVEMENT DEPTHS, BUILDING PADS, LOW VOLUME CHANGE MATERIAL, TOPSOIL, ETC. WHEN GRADING THE SITE.
3. ALL DISTURBED AREAS THAT ARE NOT TO BE PAVED (GREEN SPACES) SHALL BE FINISH GRADED WITH A MINIMUM OF SIX INCHES OF TOPSOIL.
4. ALL EXCAVATIONS AND EMBANKMENTS SHALL COMPLY WITH THE RECOMMENDATIONS PROVIDED BY THE GEOTECHNICAL ENGINEER.
5. FINISHED GRADES SHALL NOT BE STEEPER THAN 3:1, UNLESS NOTED OTHERWISE ON THE PLANS.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS OF CONNECTION POINTS AS SHOWN ON GRADING PLANS. NOTIFY ENGINEER IF DISCREPANCY EXISTS FOR DIRECTION.
7. ALL GRADES SHALL BE CONTOURED SMOOTHLY WITH GENTLE ROUNDING/SHAPING OF ALL AFFECTED LAND SURFACES. ABRUPT TRANSITIONS AT THE TOP OF SLOPES WHERE PROPOSED GRADES MEET EXISTING ARE NOT ACCEPTABLE. GRADING SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO THE ADDITION OF THE TOPSOIL LAYER.
8. SEE DRAWING C-230 FOR PUBLIC STORMWATER PLAN & PROFILES.
9. SEE DRAWING C-231 FOR PRIVATE STORMWATER PROFILES.



LEGEND

1289.00	SPOT ELEVATION	--- 430 ---	EXISTING CONTOUR
MEE	MATCH EXISTING ELEVATION		FLOWLINE ARROW
1289.00 / 1288.45	TOP OF CURB ELEVATION / FLOWLINE ELEVATION		PROPOSED STORM SEWER
1289.00 TW / 1279.00 BW	TOP OF RETAINING WALL / BOTTOM OF RETAINING WALL		PROPOSED CURB INLET
430	PROPOSED MAJOR CONTOUR		PROPOSED STORMWATER MANHOLE
429	PROPOSED MINOR CONTOUR		PROPOSED AREA INLET

1 GRADING & DRAINAGE PLAN

1" = 20'-0"

0 20' 40'
GRAPHIC SCALE 20'

N

GRADING & DRAINAGE KEYNOTES

- G1 (+/-) MATCH EXISTING ELEVATION. NOTIFY ENGINEER IF SIGNIFICANT DISCREPANCY EXISTS.
- G2 START TRANSITION FROM FULL-DEPTH CURB
- G3 FLUSH CURB
- G4 4" CURB
- G5 PUBLIC STORMWATER LINE. STORMWATER LINES NOT DENOTED WITH KEYNOTE G5 SHALL BE PRIVATE LINES. SEE DRAWING C-230.
- G6 CONCRETE STEPS REF: 12 / C-500
- G7 LIMITS OF DISTURBANCE
- G8 FINISH GRADE AT DOORS SET 1/4" BELOW FINISH FLOOR ELEVATIONS TO ACCOUNT FOR THRESHOLDS
- G9 ELEVATION DENOTES FINISH GRADE AT PAD EDGE AND NOT TOP OF PAD.
- G10 1.5% CROSS SLOPE TO BE MAINTAINED THROUGH DRIVEWAY SIDEWALK, TYPICAL. REF: 1 / C-502

STORMWATER PIPE TABLE

NAME	3D LENGTH, SIZE, MATERIAL & SLOPE
EX MH-1000	152.83 LF OF 36" HDPE @ 0.50%
1000-1007	185.42 LF OF 30" HDPE @ 0.50%
1000-1001	45.21 LF OF 12" HDPE @ 1.00%
1001-1005	28.61 LF OF 12" HDPE @ 3.75%
1001-1002	60.86 LF OF 12" HDPE @ 1.00%
1002-ID2	22.23 LF OF 12" HDPE @ 3.00%*
1002-ID1	18.72 LF OF 12" HDPE @ 3.00%*
1002-1003	84.59 LF OF 12" HDPE @ 1.00%
1003-1004	72.02 LF OF 12" HDPE @ 1.00%
1005-FS4	11.57 LF OF 6" HDPE @ 3.00%
1005-1009	35.83 LF OF 12" HDPE @ 3.00%
1005-1006	13.75 LF OF 12" HDPE @ 2.00%
1006-ID3	28.17 LF OF 12" HDPE @ 2.00%*
1007-1008	41.14 LF OF 24" HDPE @ 0.70%
1009-RD	72.89 LF OF 6" HDPE @ 1.00%

STORMWATER PIPE & STRUCTURE TABLE NOTES:

* LENGTH OF PIPE AND SLOPE SHOWN EXCLUDE VERTICAL PORTION OF INLINE DRAIN.

** EXISTING INCOMING OR OUTGOING PIPES TO REMAIN ARE NOT SHOWN IN TABLE FOR CLARITY. CONTRACTOR TO PLUG AND GROUT EXISTING PENETRATIONS IN STRUCTURE NO LONGER REQUIRED PER CITY OF LEE'S SUMMIT STANDARDS.

*** ALL STORMWATER PIPING SHALL BE HDPE (ADS N-12 OR APPROVED EQUAL), UNLESS NOTED OTHERWISE. 3

ADA NOTES

1. ALL ACCESSIBLE (A.K.A. ADA) COMPONENTS AND ACCESSIBLE ROUTES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF: (A) THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 ET SEQ. AND 42 U.S.C. § 4151 ET SEQ.); AND (B) ANY APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AND ALL AMENDMENTS TO BOTH, WHICH ARE IN EFFECT WHEN THESE PLANS WERE COMPLETED.
2. THE CONTRACTOR MUST REVIEW ALL DOCUMENTS REFERENCED IN THESE NOTES FOR ACCURACY, COMPLIANCE, AND CONSISTENCY WITH INDUSTRY GUIDELINES.
3. THE CONTRACTOR MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ACCESSIBLE (ADA) COMPONENTS AND ACCESSIBLE ROUTES FOR THE SITE. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACES, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, AND INTER-BUILDING ACCESS TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT MUST COMPLY WITH THE ACCESSIBLE GUIDELINES AND REQUIREMENTS WHICH INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   - 3.1. ACCESSIBLE PARKING SPACES AND ACCESS AISLES SLOPES MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION.
   - 3.2. PATH OF TRAVEL ALONG ACCESSIBLE ROUTE MUST PROVIDE A 48-INCHES MINIMUM WIDTH. UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS) MUST NOT REDUCE THIS MINIMUM WIDTH. THE SLOPE MUST NOT EXCEED 1:20 (5.0%) IN THE DIRECTION OF TRAVEL AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE ACCESSIBLE PATH OF TRAVEL IS GREATER THAN 1:20 (5.0%), AN ACCESSIBLE RAMP MUST BE PROVIDED. ALONG THE ACCESSIBLE PATH OF TRAVEL, OPENINGS MUST NOT EXCEED 1/2-INCH IN WIDTH. VERTICAL CHANGES OF UP TO 1/2-INCH ARE PERMITTED ONLY IF THEY INCLUDE A 1/4-INCH BEVEL AT A SLOPE NOT STEEPER THAN 1:2. NO VERTICAL CHANGES OVER 1/4-INCH ARE PERMITTED.
   - 3.3. ACCESSIBLE RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%) AND A RISE OF 30-INCHES. LEVEL LANDINGS MUST BE PROVIDED AT EACH END OF ACCESSIBLE RAMPS. LANDING MUST PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES, AND MUST NOT EXCEED 1:50 (2.0%) SLOPE IN ANY DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS MUST HAVE A CLEAR LANDING OF A MINIMUM OF 60-INCHES BY 60-INCHES. HANDRAILS ON BOTH SIDES OF THE RAMP MUST BE PROVIDED ON AN ACCESSIBLE RAMP WITH A RISE GREATER THAN 6-INCHES.
   - 3.4. ACCESSIBLE CURB RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%). WHERE FLARED SIDES ARE PROVIDED, THEY MUST NOT EXCEED 1:10 (10%) SLOPE. LEVEL LANDING MUST BE PROVIDED AT RAMPS TOP AT A MINIMUM OF 36-INCHES LONG (48-INCHES PREFERRED). IN ALTERATIONS, WHEN THERE IS NO LANDING AT THE TOP, FLARE SIDES SLOPES MUST NOT EXCEED A SLOPE OF 1:12 (8.3%).
   - 3.5. DOORWAY LANDINGS AREAS MUST BE PROVIDED ON THE EXTERIOR SIDE OF ANY DOOR LEADING TO AN ACCESSIBLE PATH OF TRAVEL. THIS LANDING MUST BE SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE. THIS LANDING AREA MUST BE NO FEWER THAN 60-INCHES (5 FEET) LONG, EXCEPT WHERE OTHERWISE CLEARLY PERMITTED BY ACCESSIBLE STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2009 AND OTHER REFERENCES INCORPORATED BY CODE).
   - 3.6. WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO ACCESSIBLE COMPONENTS FROM EXISTING DOORWAYS OR SURFACES, THE CONTRACTOR MUST VERIFY ALL EXISTING ELEVATIONS SHOWN ON THE PLAN. NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES IN RARE CIRCUMSTANCES. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR IN ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS BEFORE COMMENCING. ANY CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ACCESSIBLE GUIDELINES.
   - 3.7. THE CONTRACTOR MUST VERIFY ALL OF THE SLOPES OF THE CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE EXISTS OR IS OBSERVED OR DISCOVERED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, PRIOR TO POURING CONCRETE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL COSTS TO REMOVE, REPAIR AND/OR REPLACE NON-CONFORMING CONCRETE AND/OR PAVEMENT SURFACES.
4. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION TO ENSURE SAME IS CONSISTENT WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCING CONSTRUCTION.

STORMWATER STRUCTURE TABLE

STRUCTURE NAME	GRATE / RIM ELEVATION	PIPES IN	PIPES OUT	CL NORTHING & EASTING	NOTES
1000.MH	909.53	1000-1001, 12" INV IN =900.63 1000-1007, 30" INV IN =900.33	EX MH-1000, 36" INV OUT =900.13	N: 1032977.32 E: 2830362.52	STANDARD PRECAST MANHOLE REF: 3-4 / C-530 & 3 / C-540
1001.MH	908.94	1001-1002, 12" INV IN =901.28 1001-1005, 12" INV IN =901.58	1000-1001, 12" INV OUT =901.08	N: 1032931.67 E: 2830342.87	STANDARD PRECAST MANHOLE REF: 3-4 / C-530 & 3 / C-540
1002.CI	910.75	1002-1003, 12" INV IN =902.39	1001-1002, 12" INV OUT =901.89	N: 1032868.61 E: 2830332.81	2'X3' CURB INLET REF: 1-2 / C-531 & 2 / C-532
1003.CI	908.71	1003-1004, 12" INV IN =903.74	1002-1003, 12" INV OUT =903.24	N: 1032845.41 E: 2830249.41	2'X3' CURB INLET REF: 1-2 / C-531 & 2 / C-532
1004.AI	907.39		1003-1004, 12" INV OUT =904.46	N: 1032866.83 E: 2830178.44	STANDARD DOUBLE GRATE INLET REF: 4 / C-532
1005.AI	908.15	1005-1006, 12" INV IN =903.15 1005-1009, 12" INV IN =903.25	1001-1005, 12" INV OUT =902.65	N: 1032940.69 E: 2830312.07	STANDARD DOUBLE GRATE INLET REF: 4 / C-532
1006.AI	908.15	1006-ID3, 12" INV IN =903.62	1005-1006, 12" INV OUT =903.42	N: 1032925.34 E: 2830307.57	STANDARD DOUBLE GRATE INLET REF: 4 / C-532
1007.CI	905.98	1007-1008, 24" INV IN =901.56	1000-1007, 30" INV OUT =901.26	N: 1033029.98 E: 2830180.60	STANDARD CURB INLET REF: 1, 3, & 4 / C-530
1008.JB	3 906.48		1007-1008, 24" INV OUT =901.85	N: 1032984.96 E: 2830168.78	CONVERT CI TO JUNCTION BOX** REF: 2-5 / C-530
1009.AI	908.50	1009-RD, 6" INV IN =904.82	1005-1009, 12" INV OUT =904.32	N: 1032977.32 E: 2830320.93	NYLOPLAST 18" DRAIN BASIN AND STANDARD GRATE REF: 1 & 4 / C-531 AND 5 / C-532
EX MH	908.59	EX MH-1000, 36" INV IN =899.37		N: 1032970.53 E: 2830516.95	EXISTING MANHOLE**

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FIRE STATION #4
CITY OF LEE'S SUMMIT
5031 NORTHEAST LAKEWOOD WAY
LEE'S SUMMIT, MISSOURI 64064

100% CONSTRUCTION DOCUMENT DRAWINGS

REVISIONS:

#	Description	Date
1	ASI 01	11.16.2022
3	ASI 03	12.08.2022

STATE OF MISSOURI
DERICK M. HOLMES
NUMBER
PE-2022005196
PROFESSIONAL ENGINEER
2022-12-07

DERICK HOLMES - CIVIL ENGINEER
MO# PE-2022005196

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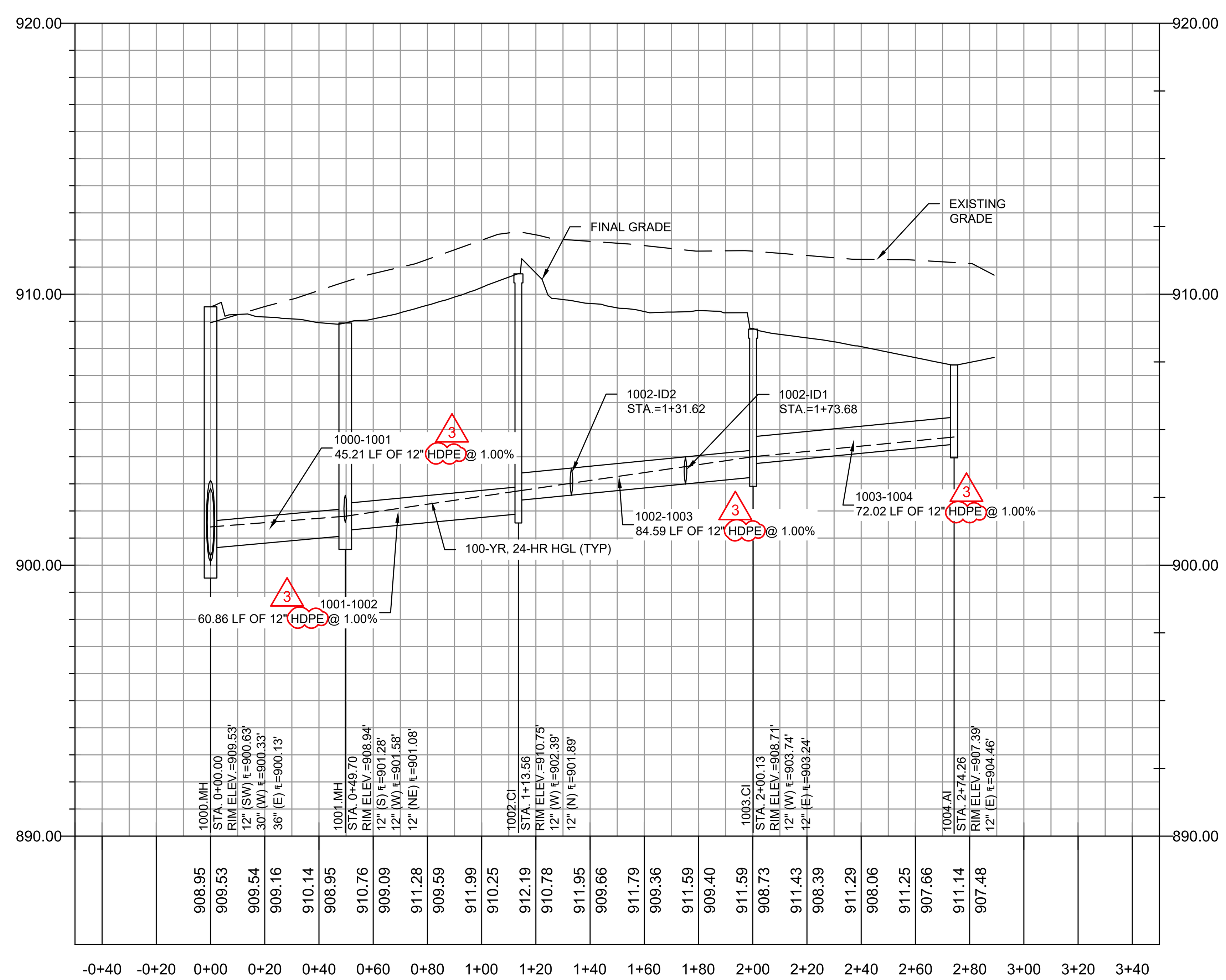
PROJECT NO:	18225R21001
DATE:	10.19.2022
DRAWN BY:	DMH
CHK'D BY:	ALM

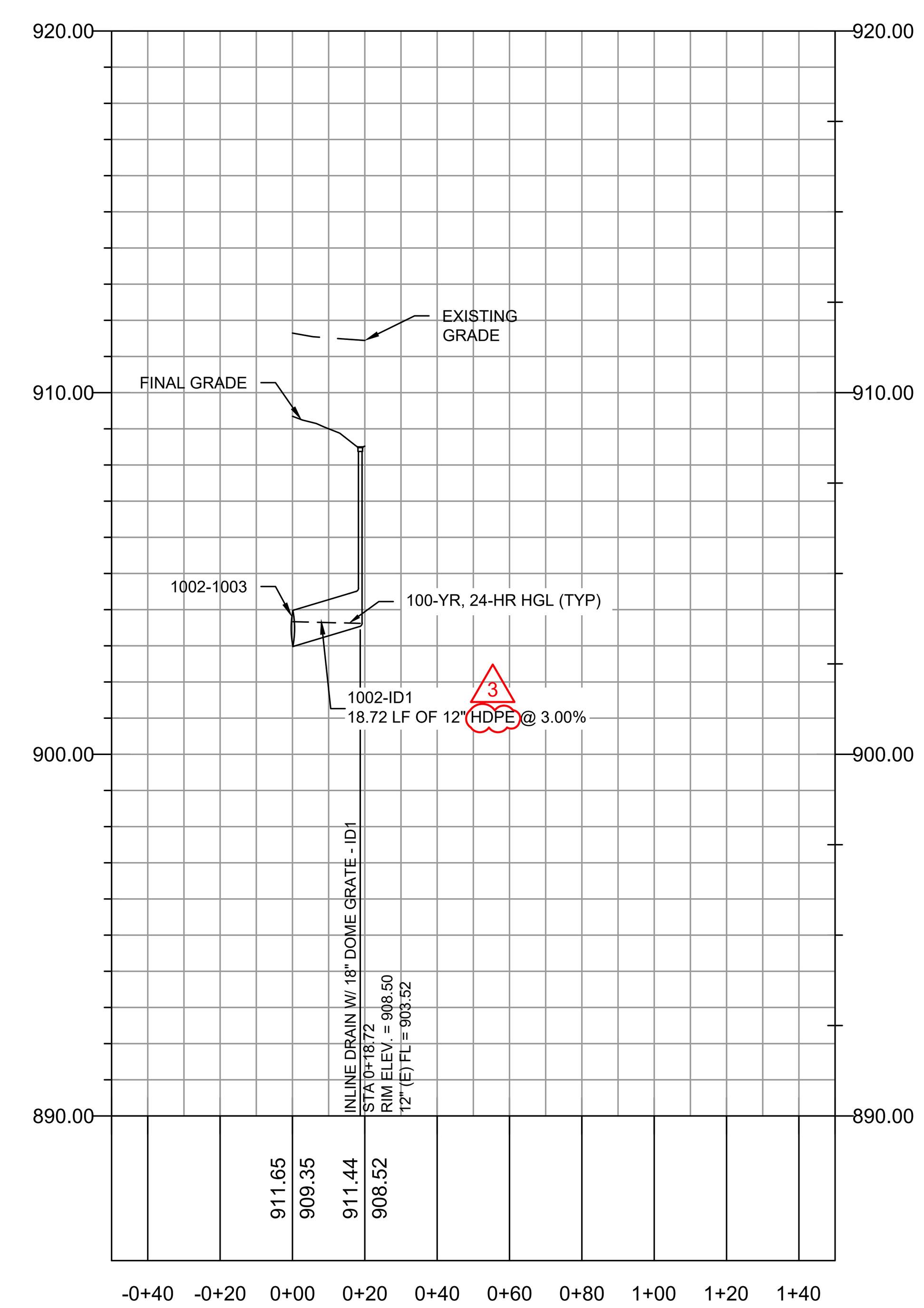
GRADING & DRAINAGE PLAN

C-104



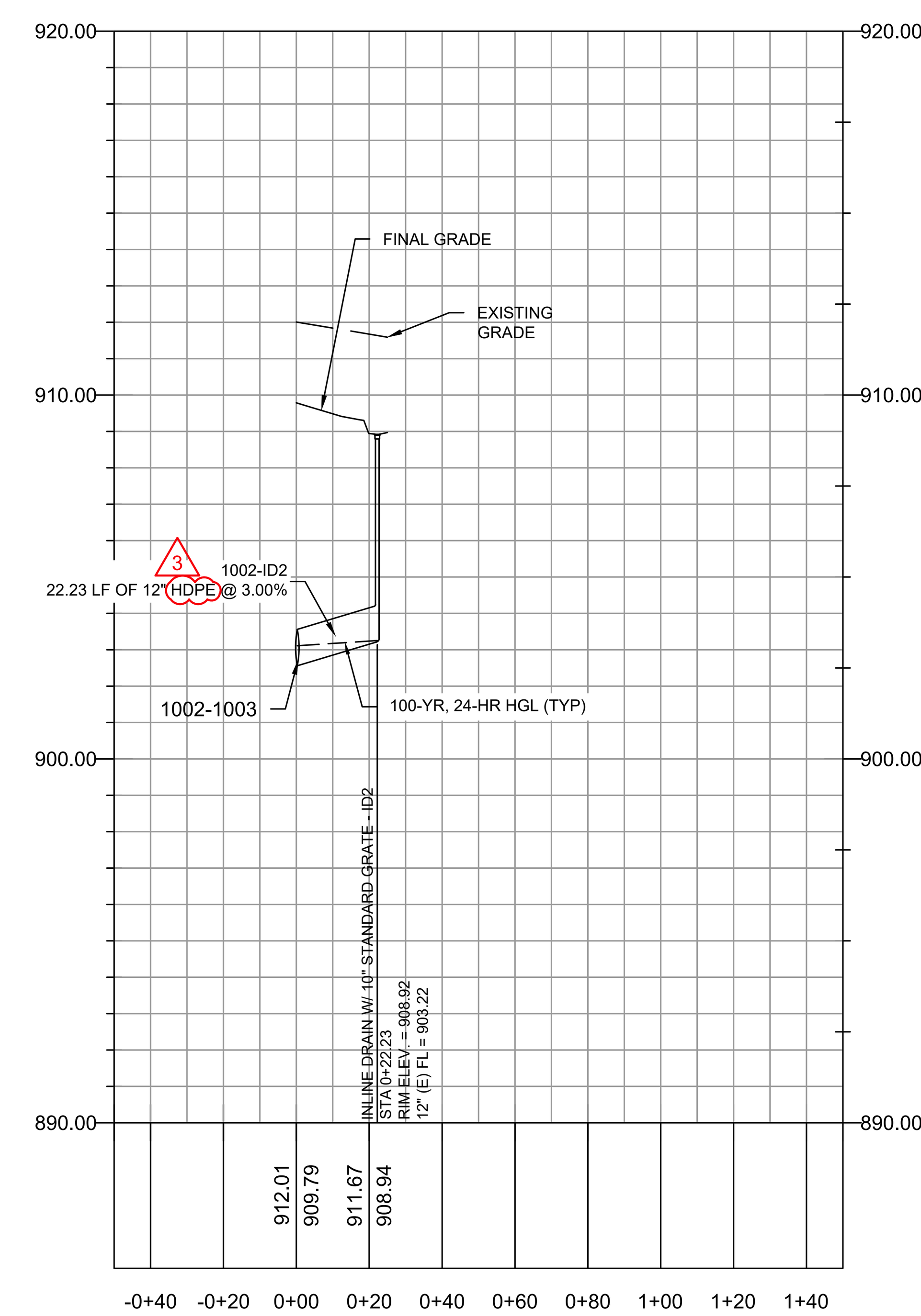
1 1000.MH - 10004.AI STORMWATER PROFILE

SCALE: HORIZONTAL 1"=40' SCALE: VERTICAL 1"=4'



2 PIPE 1002-1003 - INLINE DRAIN 1

SCALE: HORIZONTAL 1"=40' SCALE: VERTICAL 1"=4'

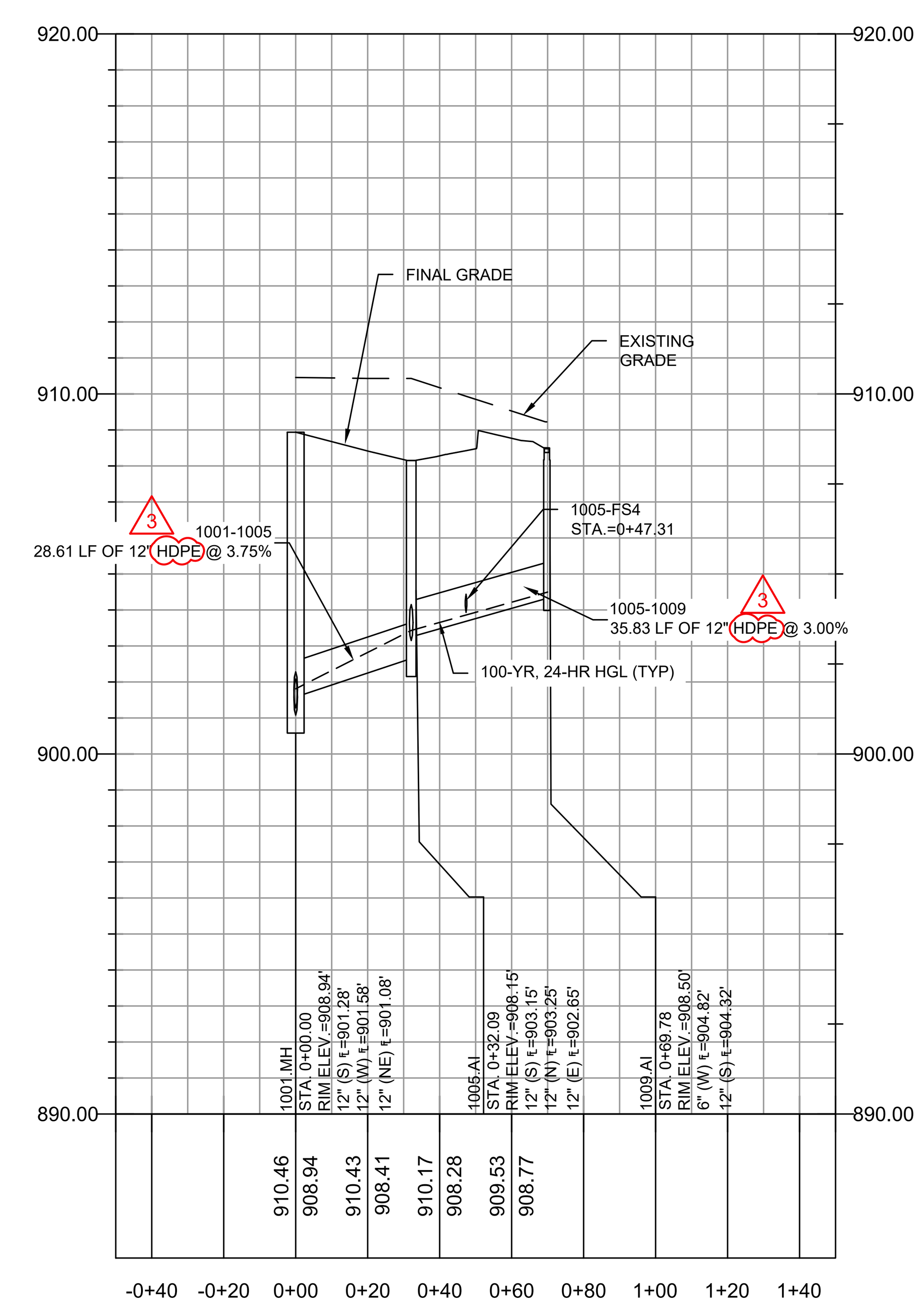


3 PIPE 1002-1003 - INLINE DRAIN 2

SCALE: HORIZONTAL 1"=40' SCALE: VERTICAL 1"=4'

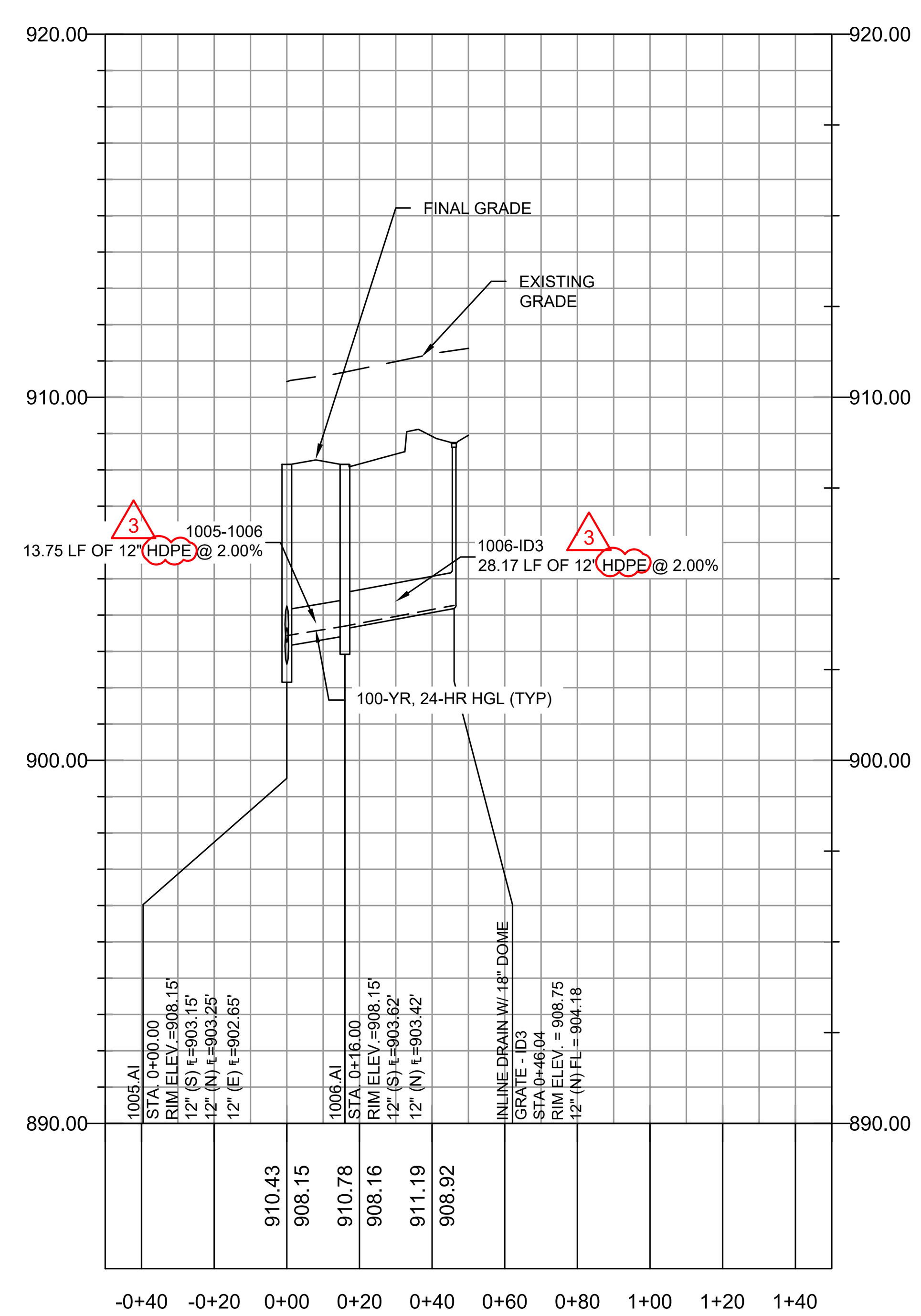
GENERAL NOTES:

1. CONSTRUCTION OF STORMWATER IMPROVEMENTS SHALL BE AS PER CITY OF LEE'S SUMMIT, MO AND PROJECT SPECIFICATIONS.
2. THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES FOR FIELD LOCATION OF ALL UNDERGROUND UTILITY LINES PRIOR TO ANY EXCAVATION AND FOR MAKING HIS OWN VERIFICATION AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
3. PROTECT ALL COMPONENTS DURING DEMOLITION / CONSTRUCTION PROCESS. MAINTAIN BMP'S THROUGHOUT THE DURATION OF CONSTRUCTION.
4. CONTRACTOR TO PROVIDE DETAILED AS-BUILT DRAWINGS TO OWNER, ENGINEER, AND CITY OF LEE'S SUMMIT, MO UPON COMPLETION OF ALL IMPROVEMENTS.



4 1001.MH - 1009.AI

SCALE: HORIZONTAL 1"=40' SCALE: VERTICAL 1"=4'



5 1005.AI - INLINE DRAIN 3

SCALE: HORIZONTAL 1"=40' SCALE: VERTICAL 1"=4'

100-YR, 24-HR STORM EVENT

PIPE NAME	UPSTREAM NODE	DOWNSTREAM NODE	LENGTH (FT)	INLET INVERT ELEVATION (FT)	OUTLET INVERT ELEVATION (FT)	SLOPE (%)	PIPE DIAMETER (INCHES)	MANNING'S ROUGHNESS (N)	ENTRANCE LOSSES	EXIT/BEND LOSSES	PEAK FLOW (CFS)	TIME OF PEAK FLOW OCCURRENCE (DAYS HH:MM)	MAX FLOW VELOCITY (FT/SEC)	TRAVEL TIME (MIN)	DESIGN FLOW CAPACITY (CFS)	MAX FLOW / DESIGN FLOW RATIO	MAX FLOW DEPTH (FT)	MAX FLOW DEPTH / TOTAL DEPTH RATIO
1000-1001	1001.MH	1000.MH	45.21	901.08	900.63	1.00	12	0.012	0.50	0.80	1.89	0 12:05	4.89	0.15	3.85	0.49	0.50	0.50
1001-1002	1002.CI	1001.MH	60.86	901.89	901.28	1.00	12	0.012	0.50	0.90	1.03	0 12:05	4.18	0.24	3.86	0.27	0.35	0.35
1001-1005	1005.AI	1001.MH	28.61	902.65	901.58	3.75	12	0.012	0.50	0.90	0.86	0 12:05	6.34	0.08	7.46	0.12	0.23	0.23
1002-1003	1003.CI	1002.CI	84.59	903.24	902.39	1.00	12	0.012	0.50	0.70	1.00	0 12:05	4.12	0.17	3.91	0.26	0.35	0.35
1002-ID1	ID1	WYE	18.72	903.52	902.98	3.00	12	0.012	0.50	0.70	0.09	0 12:05	2.95	0.11	6.56	0.01	0.08	0.08
1002-ID2	ID2	WYE	22.23	903.22	902.56	3.00	12	0.012	0.50	0.70	0.01	0 10:15	1.69	0.22	6.65	0.00	0.03	0.03
1003-1004	1004.AI	1003.CI	72.02	904.46	903.74	1.00	12	0.012	0.50	0.60	0.61	0 12:05	3.60	0.33	3.86	0.16	0.27	0.27
1005-1006	1006.AI	1005.AI	13.75	903.42	903.15	2.00	12	0.012	0.50	0.80	0.25	0 12:05	3.52	0.07	5.41	0.05	0.15	0.15
1005-1009	1009.AI	1005.AI	35.83	904.32	903.25	3.00	12	0.012	0.50	0.80	0.47	0 11:40	4.92	0.12	6.67	0.07	0.18	0.18
1006-ID3	ID3	1006.AI	28.17	904.18	903.62	2.00	12	0.012	0.50	0.50	0.08	0 12:05	2.50	0.19	5.44	0.01	0.08	0.08

100-YR, 24-HR STORM EVENT

STRUCTURE NAME	MAX HGL ELEVATION (FT)
1001.MH	901.81
1002.CI	902.74
1003.CI	904.01
1004.AI	904.73
1005.AI	903.43
1006.AI	903.70
1009.AI	904.50

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100% CONSTRUCTION DOCUMENT DRAWINGS

FIRE STATION #4
CITY OF LEE'S SUMMIT

5031 NORTHEAST LAKEWOOD WAY
LEE'S SUMMIT, MISSOURI 64064

REVISIONS:

#	Description	Date
1	ASI 01	11.16.2022
3	ASI 03	12.08.2022

STATE OF MISSOURI
DERICK M. HOLMES
NUMBER
PE-2022005196
PROFESSIONAL ENGINEER
2022-12-07

DERICK HOLMES - CIVIL ENGINEER
MO# PE-2022005196

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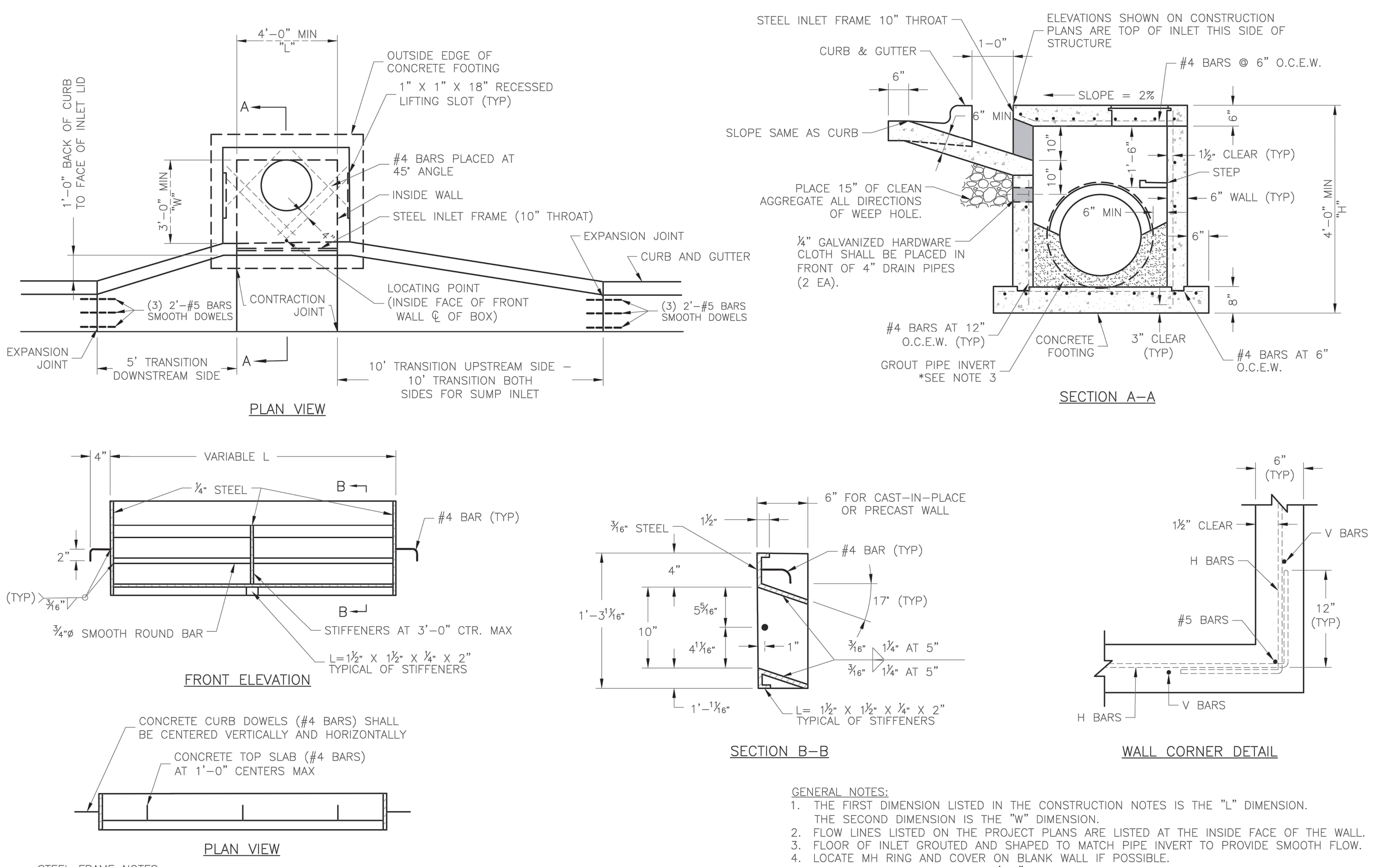
PROJECT NO:	18225R21001
DATE:	10.19.2022
DRAWN BY:	HFL
CHK'D BY:	DMH

PRIVATE STORMWATER PROFILES

C-231

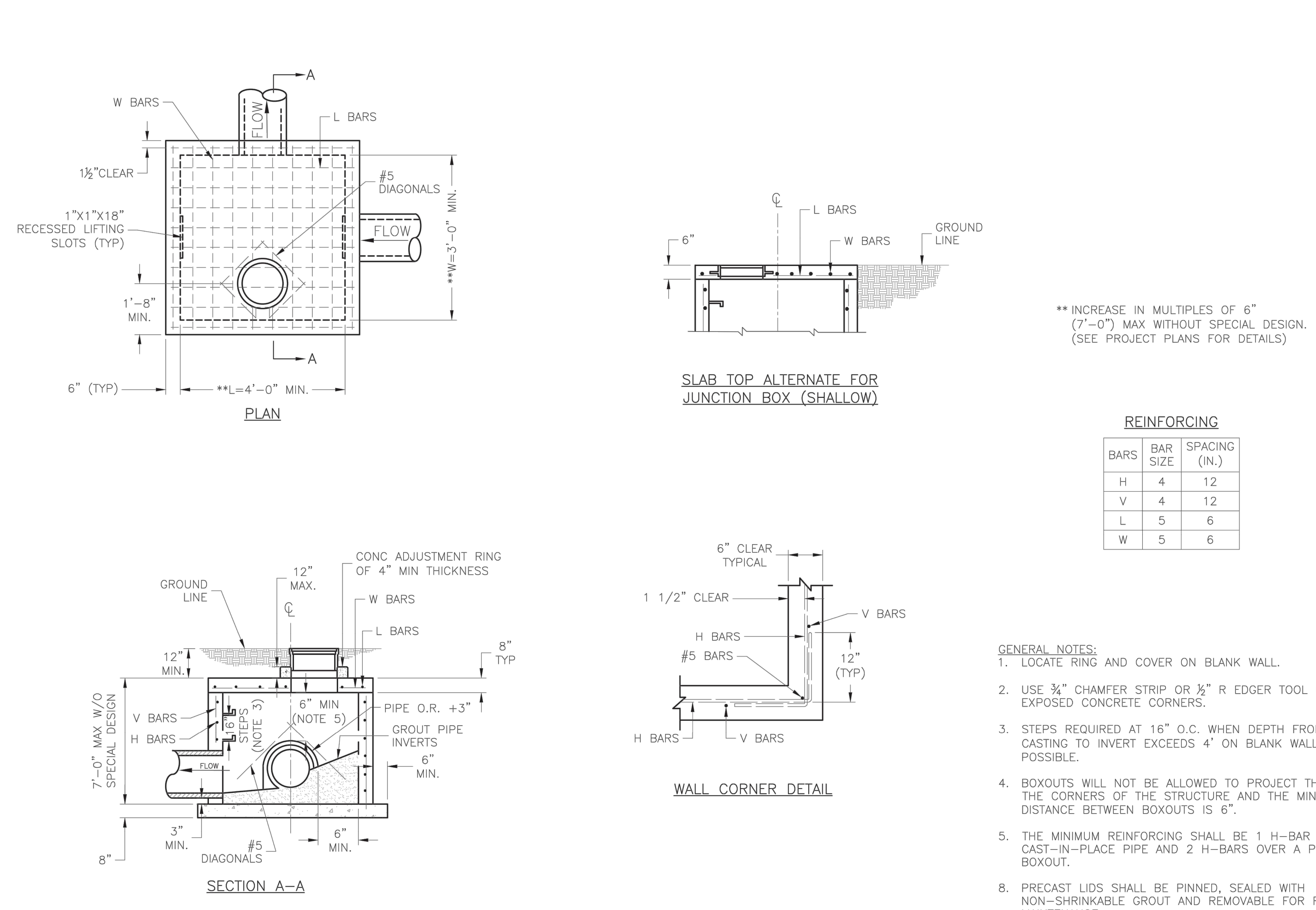


STEEL FRAME NOTES:
1. ALL WELDS SHALL BE PERFORMED IN ACCORDANCE WITH APPROPRIATE AWS SPECIFICATIONS AND PROCEDURES.
2. ALL WELDS ON EXPOSED SURFACES SHALL BE DRESSED SO AS TO PROVIDE A PLEASING FINISHED APPEARANCE.
3. THE ENTIRE FRAME SHALL BE PAINTED A SINGLE COAT OF CHEM–PRIME #37H–78 PRIMER (GRAY) OR EQUAL.

GENERAL NOTES:
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. LOCATE MH RING AND COVER ON BLANK WALL IF POSSIBLE.
5. STEPS SHALL BE SPACED AT 1'–4" O.C. VERTICALLY ON BLANK WALL IF POSSIBLE.
6. BEVEL ALL EXPOSED EDGES WITH ¾"CHAMFER OR ½" TOOLED EDGE.
7. ON–GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. LIFTING RINGS SHALL BE REMOVED AND SEALED WITH NON–SHRINKABLE GROUT
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063
Project: STANDARD DETAILS CITY OF LEE'S SUMMIT, MO LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: CURB INLET DETAIL
Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:
STM-1

1 CURB INLET DETAIL
NTS



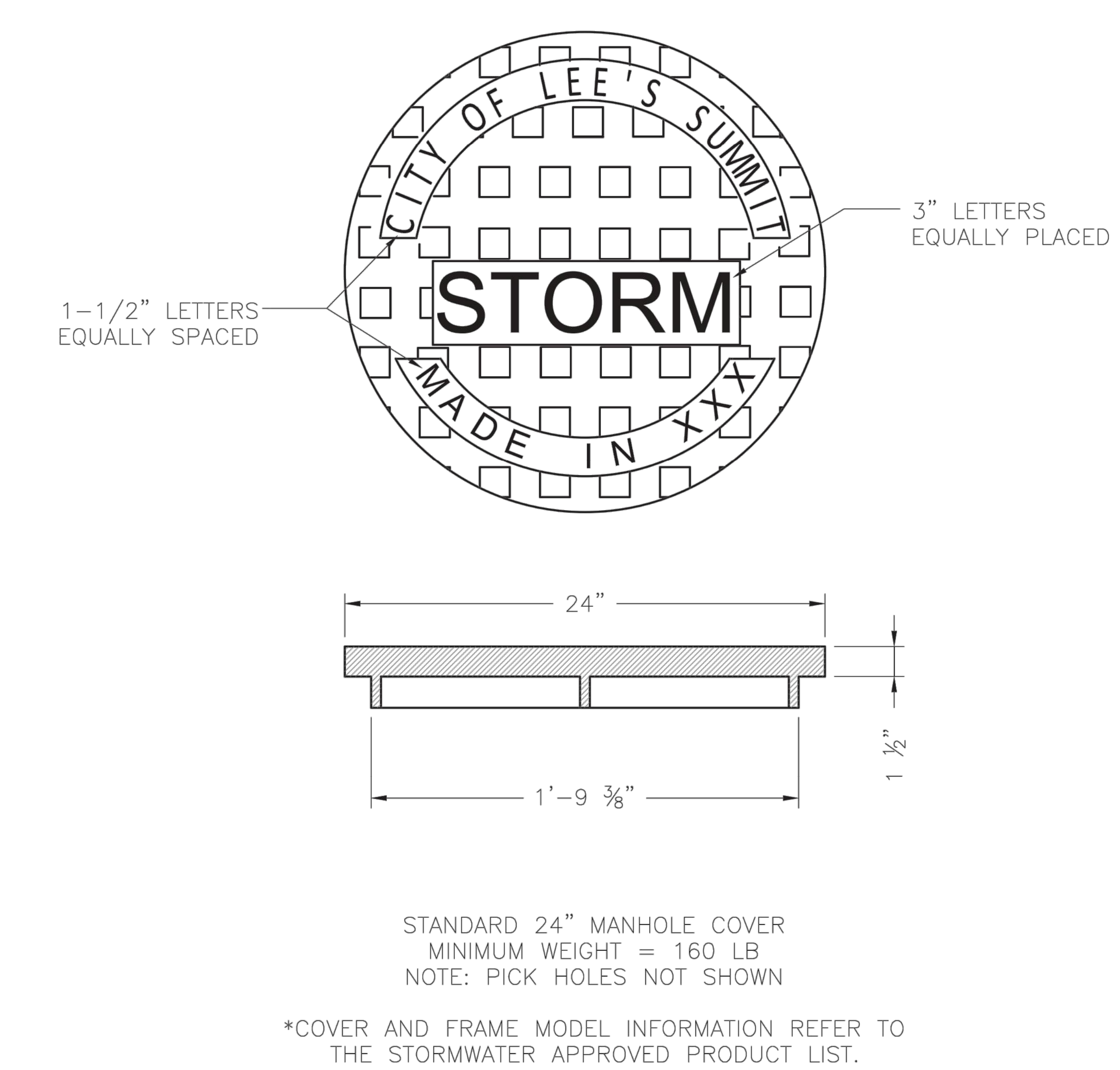
REINFORCING

BARS	BAR SIZE	SPACING (IN.)
H	4	12
V	4	12
L	5	6
W	5	6

GENERAL NOTES:
1. LOCATE RING AND COVER ON BLANK WALL.
2. USE ¾" CHAMFER STRIP OR ½" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
3. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4' ON BLANK WALL IF POSSIBLE.
4. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE AND THE MINIMUM DISTANCE BETWEEN BOXOUTS IS 6".
5. THE MINIMUM REINFORCING SHALL BE 1 H–BAR OVER A CAST–IN–PLACE PIPE AND 2 H–BARS OVER A PRECAST BOXOUT.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. REINFORCING OF COVERS IN STREETS REQUIRE SPECIAL DESIGN.
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

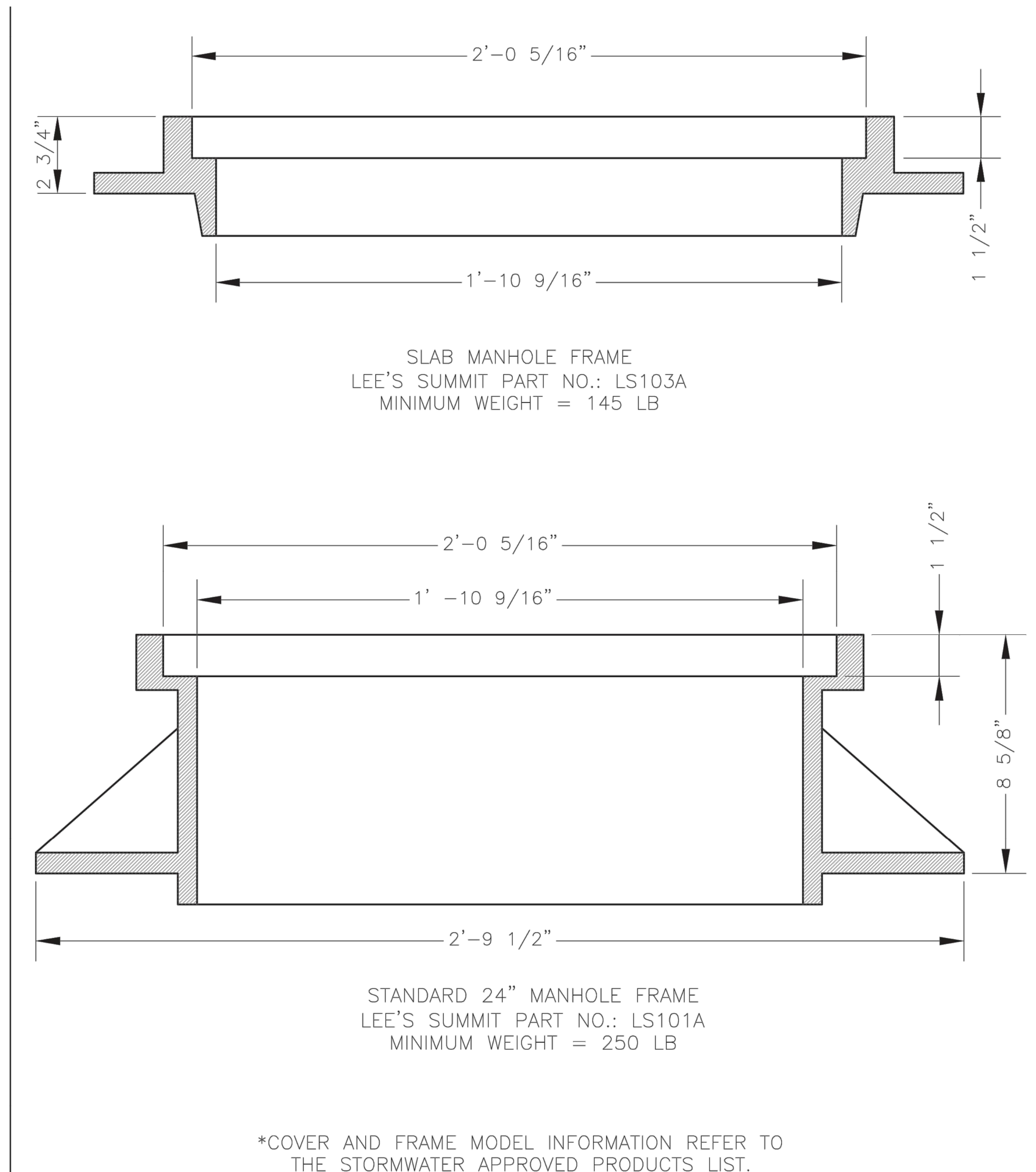
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063
Project: STANDARD DETAILS CITY OF LEE'S SUMMIT, MO LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: JUNCTION BOX DETAIL
Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:
STM-3

2 JUNCTION BOX DETAIL
NTS



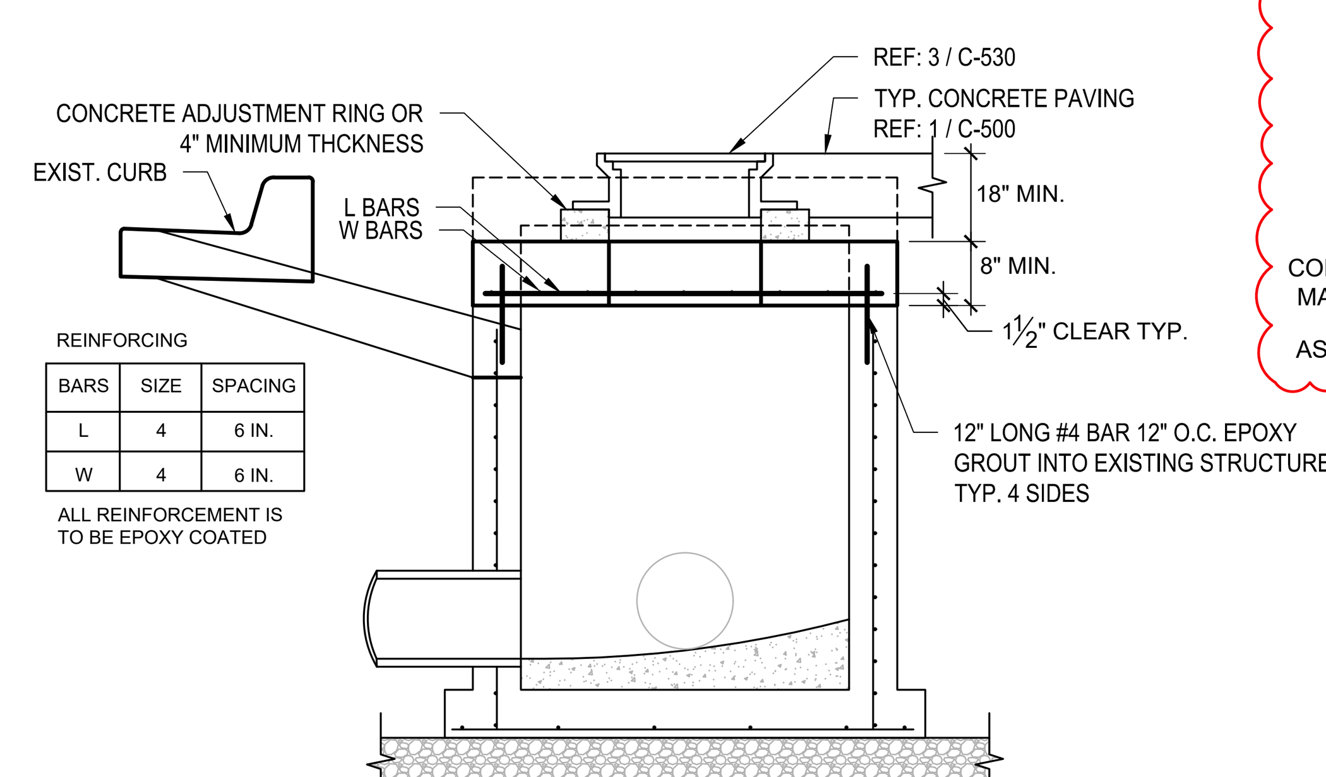
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063
STORM MANHOLE COVER DETAIL
Date: 05/2021
Drawn By: MJF
Checked By: DL
STM-6

3 STORM MANHOLE COVER DETAIL
NTS



LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063
STORM MANHOLE FRAME DETAIL
Date: 05/2021
Drawn By: MJF
Checked By: DL
DWG-7

4 STORM MANHOLE FRAME DETAIL
NTS

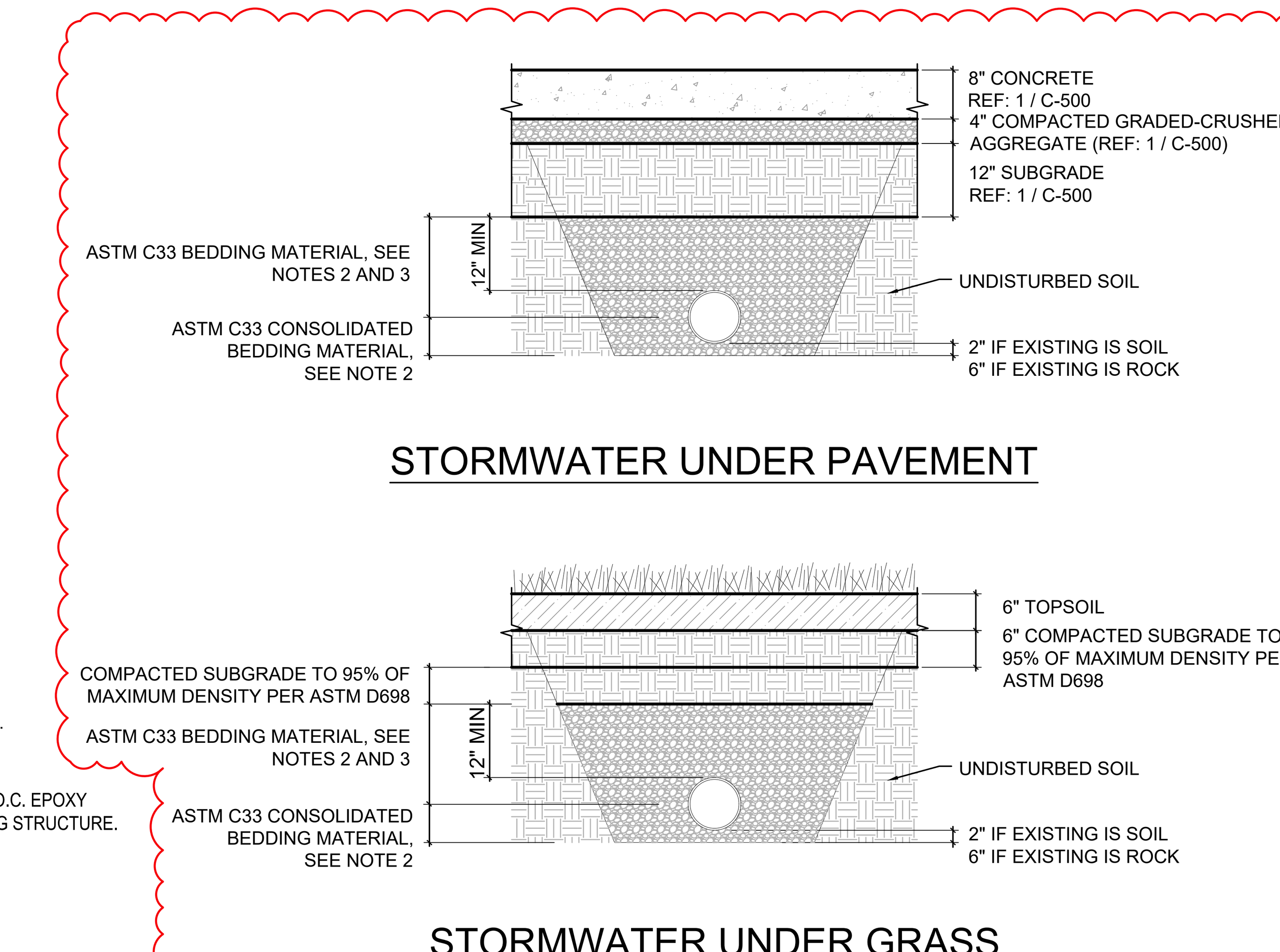


REINFORCING

BARS	SIZE	SPACING
L	4	6 IN.
W	4	6 IN.

5 CURB INLET TO JUNCTION BOX
NTS

3



NOTES:
1. INSTALLATION SHALL BE AS PER THE KANSAS CITY METROPOLITAN CHAPTER OF THE AMERICAN PUBLIC WORKS ASSOCIATION (KC APWA) SPECIFICATION 2100, GRADING AND SITE PREPARATION.
2. BEDDING MATERIAL SHALL MEET THE REQUIREMENTS OF KC APWA SPECIFICATION 2102.4.G. PLACE BEDDING PER SECTION 2102.4.H.
3. BEDDING MATERIAL TO BE HAND COMPACTED TO 95% OF MAX DENISTY (ASTM D698).

6 TRENCHING & BACKFILL DETAIL
NTS

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CIVIL ENGINEER & LANDSCAPE ARCH.
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SECURITY & IT ENGINEERS
HENDERSON ENGINEERS
MISSOURI COA # 000556
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
(816) 663-8700 PHONE

100% CONSTRUCTION DOCUMENT DRAWINGS

FIRE STATION #4
CITY OF LEE'S SUMMIT
5031 NORTHEAST LAKEWOOD WAY
LEE'S SUMMIT, MISSOURI 64064

REVISIONS:

#	Description	Date
1	ASI 01	11.16.2022
3	ASI 03	12.08.2022

STATE OF MISSOURI — DERICK M. HOLMES — NUMBER PE-2022005196 — PROFESSIONAL ENGINEER
2022-12-07

DERICK HOLMES - CIVIL ENGINEER
MO# PE-2022005196

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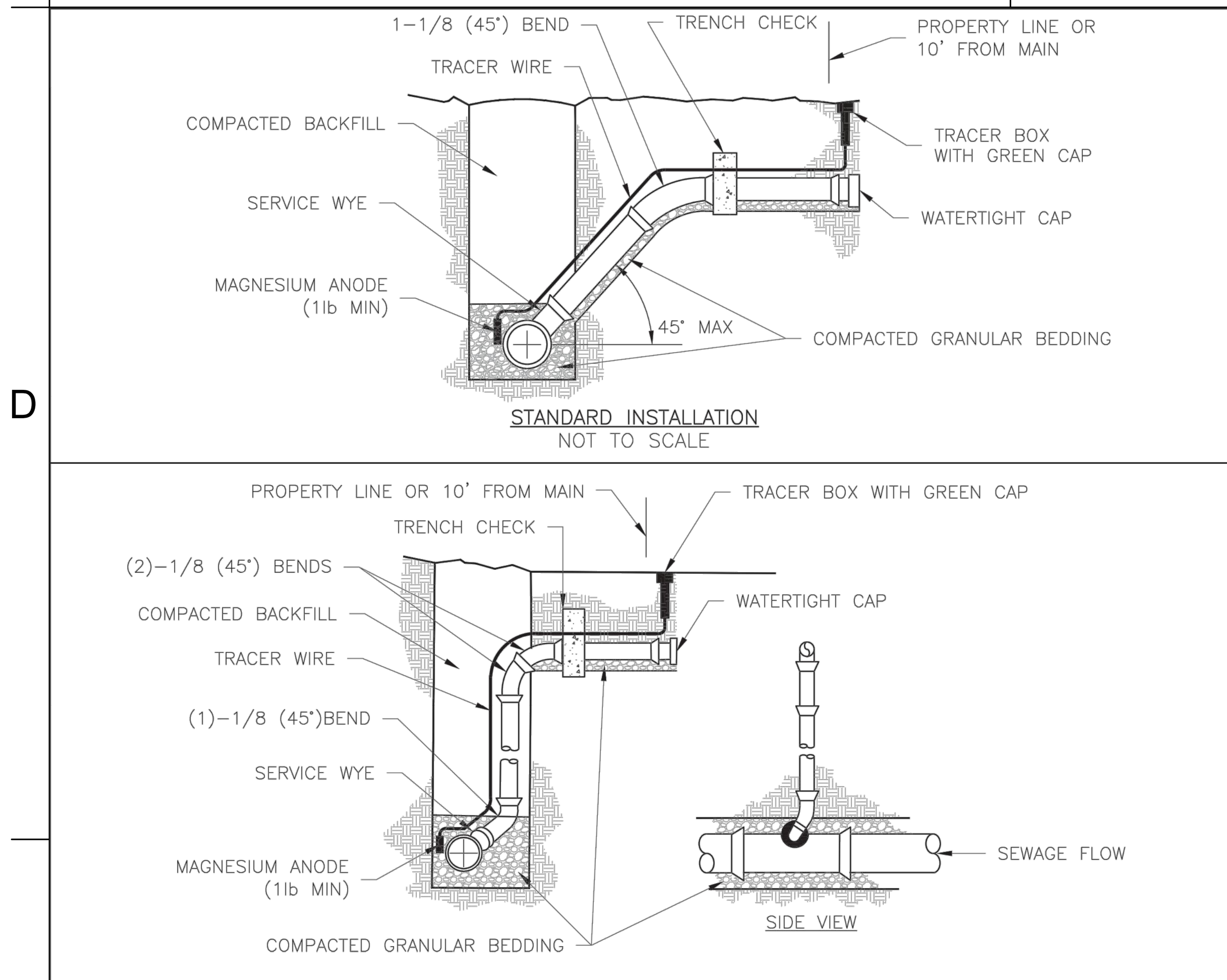
PROJECT NO:	18225R21001
DATE:	10.19.2022
DRAWN BY:	DMH
CHK'D BY:	SJB

STORMWATER DETAILS

C-530



VERTICAL RISER
NOT TO SCALE

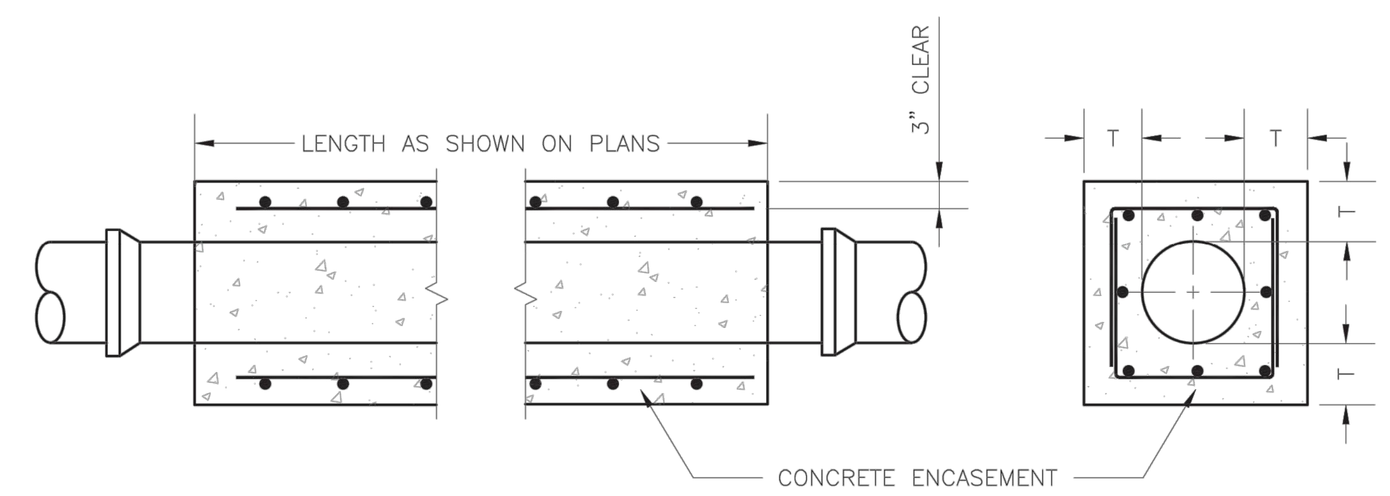
NOTES:

1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN, WHICHEVER IS GREATER. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
3. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
4. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
5. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
6. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
7. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
8. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

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

SANITARY SEWER STUB DETAIL	Date: 12/2015 Drawn By: MJF Checked By: DL SAN-1

1 SANITARY SEWER STUB
NTS



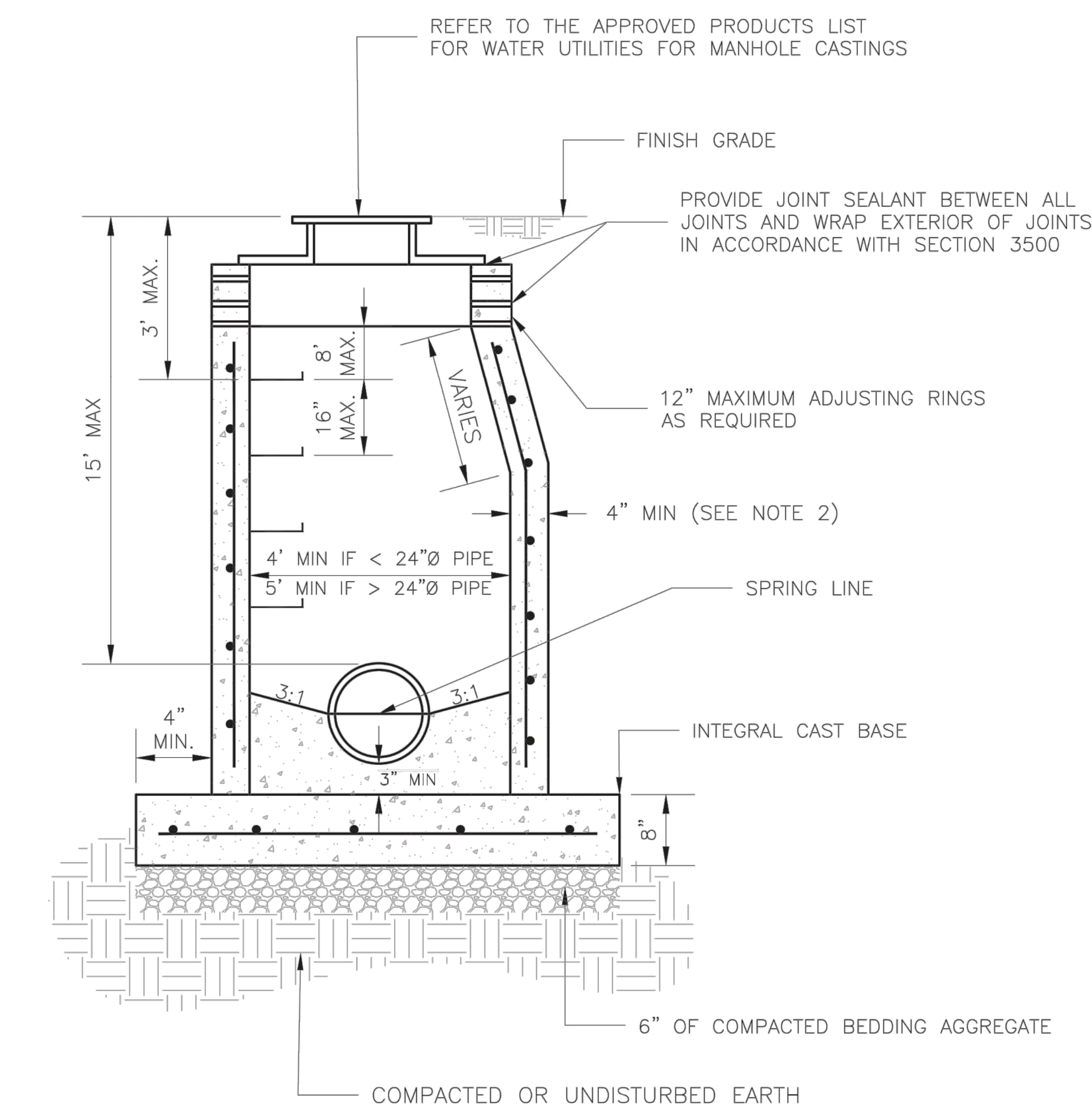
NOTES:

1. FOR PIPES LESS THAN 15", T = 6" MIN.
2. FOR PIPES 15" THRU 36", T = 8" MIN.
3. INTERMEDIATE BELLS SHALL BE ENCASED.
4. REINFORCING STEEL SHALL BE #4 @ 12" O.C. EACH WAY WITH A MINIMUM REBAR LAP OF 12".

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

PIPE ENCASEMENT DETAIL	Date: 01/2016 Drawn By: JN Checked By: DL SAN-7

2 PIPE ENCASEMENT
NTS



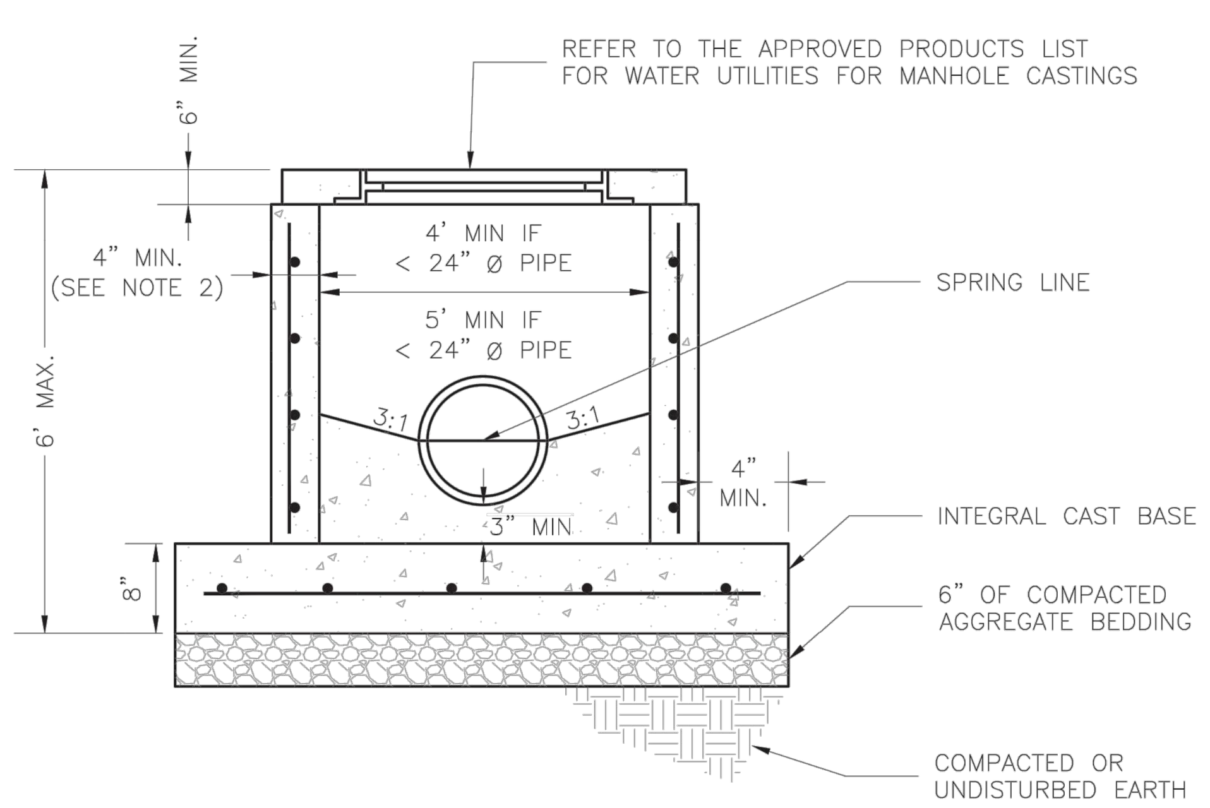
NOTES:

1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE-TWELFTH (1/12) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER, SHALL BE USED WHEN THE MANHOLE DEPTH IS LESS THEN 15'.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 14 MILS OF BITUMINOUS COATING.
4. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
6. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR APPROVED MANHOLE GASKET MODELS.
7. REFER TO THE APPROVED PRODUCTS LIST FOR APPROVED STEPS.

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

STANDARD SANITARY PRECAST MANHOLE	Date: 12/2015 Drawn By: SC Checked By: DL SAN-2

3 STANDARD SANITARY PRECAST MANHOLE
NTS



NOTES:

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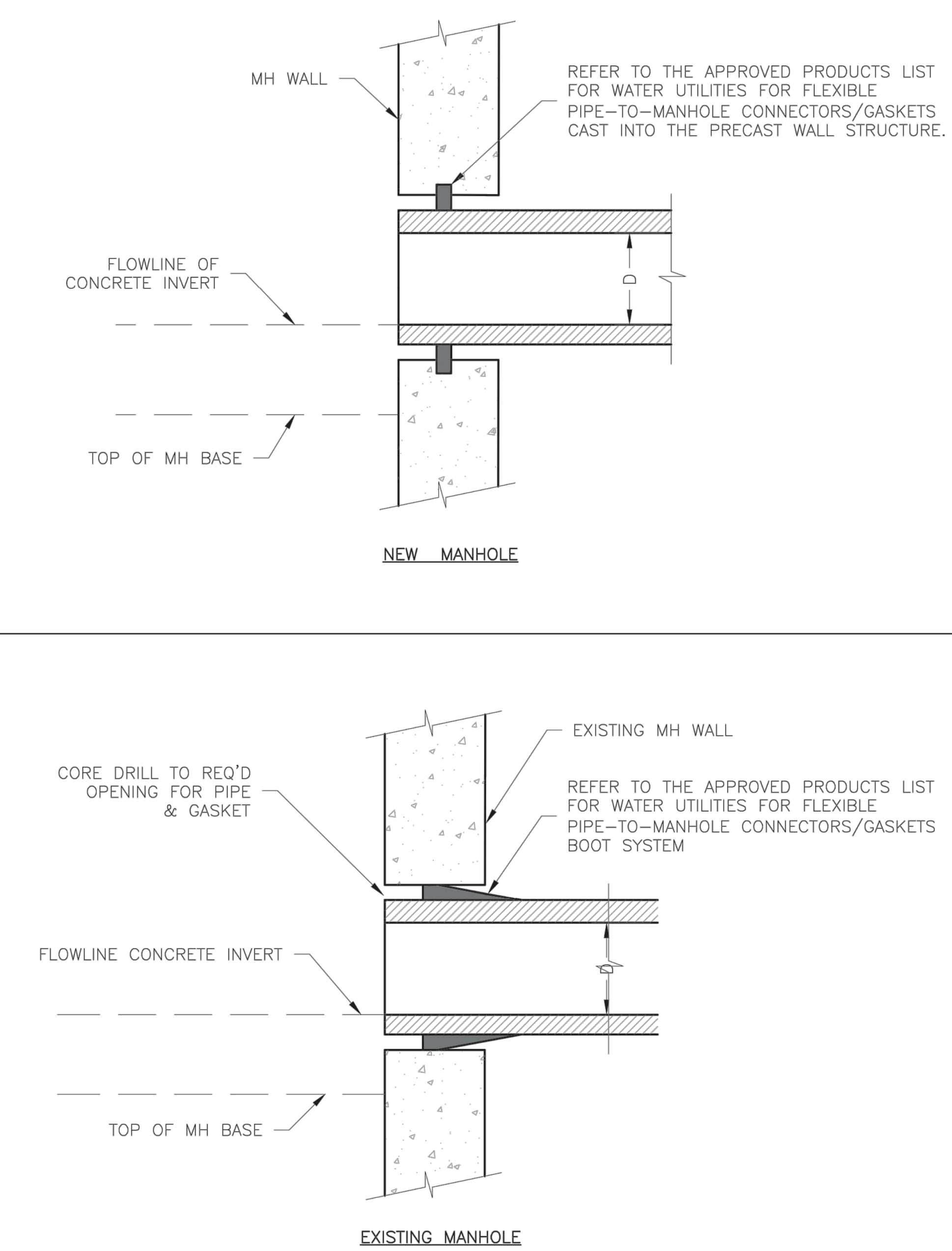
4. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
5. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR MANHOLE GASKET MODELS.
6. PROVIDE STEPS AS SHOWN ON THE APPROVED PRODUCTS LIST FOR MANHOLE DEPTHS GREATER THAN 4'.

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

STANDARD SHALLOW SANITARY PRECAST MANHOLE	Date: 12/2015 Drawn By: MJF Checked By: DL SAN-3

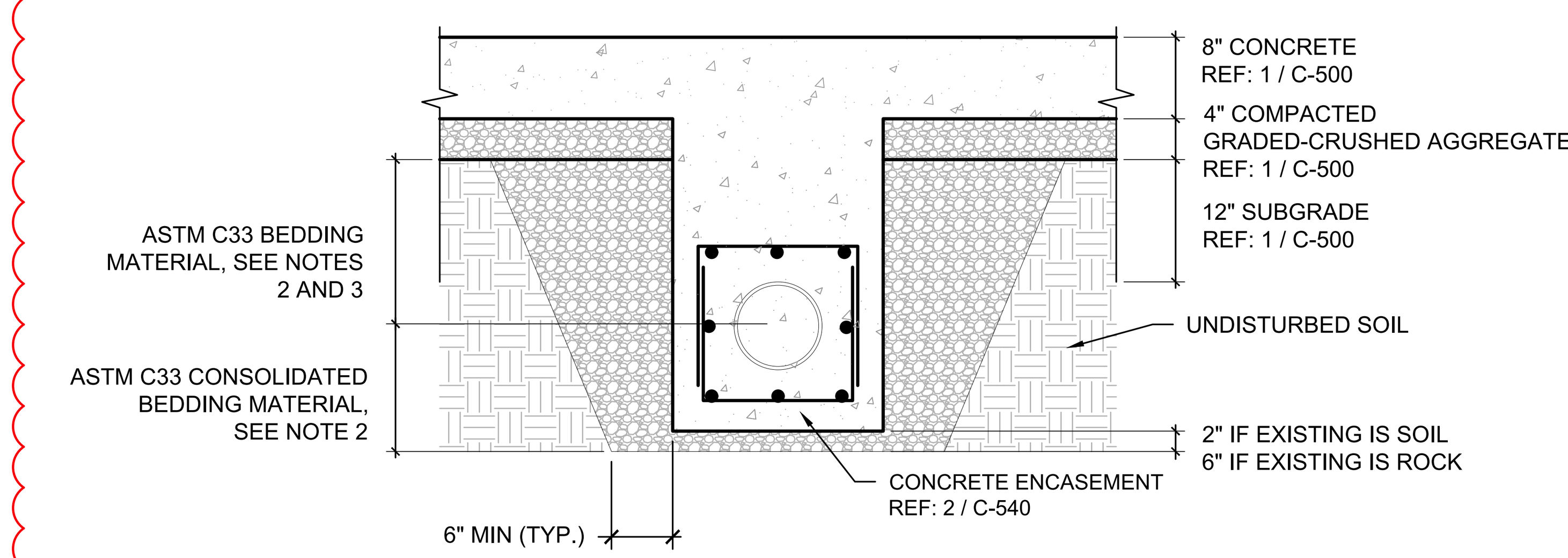
4 STANDARD SHALLOW SANITARY PRECAST MANHOLE
NTS



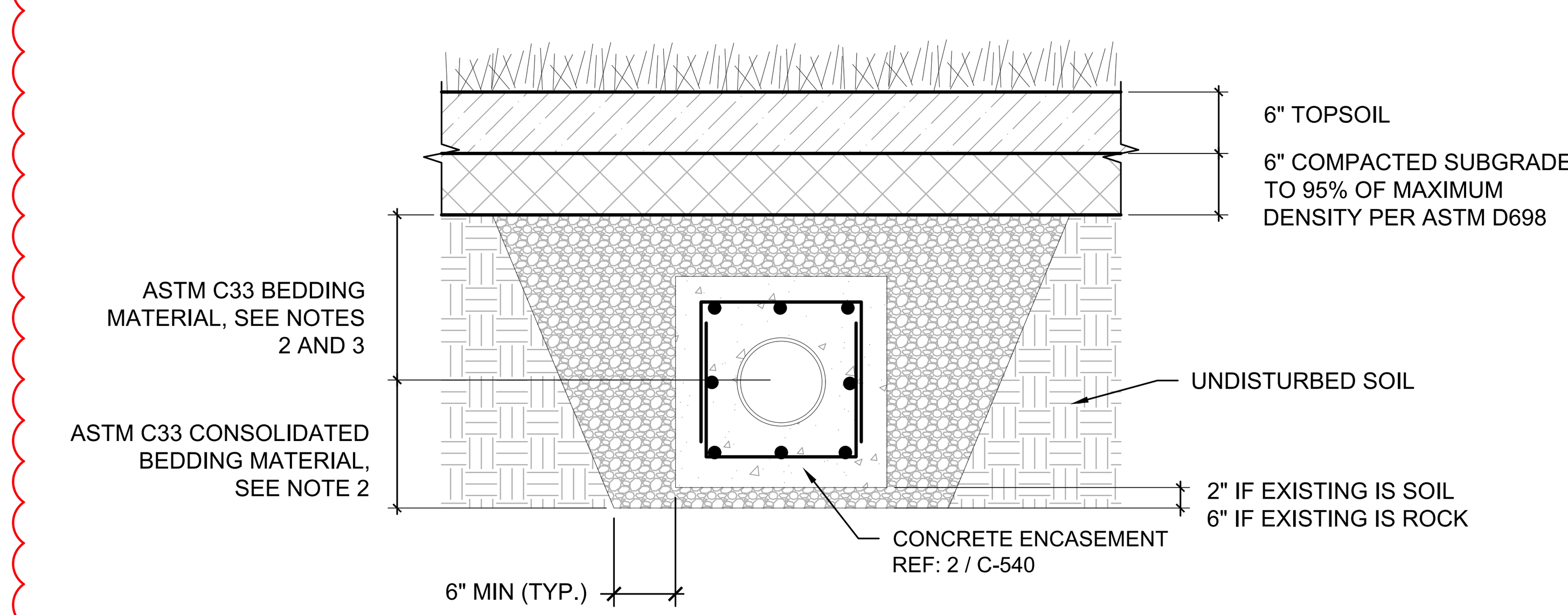
LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

MANHOLE WALL CONNECTION	Date: 02/2013 Drawn By: MJF Checked By: DL SAN-5

5 MANHOLE WALL CONNECTION
NTS



SANITARY SEWER UNDER PAVEMENT



SANITARY SEWER UNDER GRASS

NOTES:

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3

6 TRENCHING & BACKFILL DETAIL
NTS

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100% CONSTRUCTION DOCUMENT DRAWINGS

FIRE STATION #4
CITY OF LEE'S SUMMIT
5031 NORTHEAST LAKEWOOD WAY
LEE'S SUMMIT, MISSOURI 64064

REVISIONS:

#	Description	Date
3	ASI 03	12.08.2022

STATE OF MISSOURI
DERICK M. HOLMES
NUMBER
PE-2022005196
PROFESSIONAL ENGINEER
2022-12-07

DERICK HOLMES - CIVIL ENGINEER
MO# PE-2022005196

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PROJECT NO:	18225R21001
DATE:	10.19.2022
DRAWN BY:	DMH
CHK'D BY:	SJB

SANITARY SEWER DETAILS

C-540