

GENERAL SITE - TELECOM DUCT BANK IMPROVEMENTS CARRIE FRANKIE DRIVE TO CHAMPIONS DRIVE AND 6TH STREET FROM CONLEY AVENUE TO STEWART ROAD UNIVERSITY OF MISSOURI FOR THE CURATORS OF THE UNIVERSITY OF MISSOURI MU PROJECT NUMBER CP232751

ISSUE DATE: 01 / 24 / 2023

UTILITY COMPANIES:

ELECTRIC:
CITY OF COLUMBIA
WATER & LIGHT DEPT.
P.O. BOX 6015
COLUMBIA, MO 65205
573-874-7738

NATURAL GAS:
AMEREN UE
2001 MAGUIRE BLVD
COLUMBIA, MO 65201
573-876-3063

TELEPHONE:
CENTURYLINK
625 CHERRY STREET
COLUMBIA, MO 65205
573-886-3505

CABLE TV:
MEDIACOM
1211 WILKES BLVD
COLUMBIA, MO 65201
573-874-7250

SANITARY SEWER:
CITY OF COLUMBIA
PUBLIC WORKS DEPT.
P.O. BOX 6015
COLUMBIA, MO 65205
573-874-7250

STORM SEWER:
CITY OF COLUMBIA
PUBLIC WORKS DEPT.
COLUMBIA, MO 65205
573-874-7250

UNIVERSITY OF MISSOURI:
ENERGY MANAGEMENT OFFICE
417 SOUTH FIFTH STREET
COLUMBIA, MO 65211
573-892-3094

LOCATES:
MISSOURI ONE CALL, INC
1022 B. NORTHEAST DRIVE
JEFFERSON CITY, MO 65109
1-800-344-7483 (DIG-RITE)



CALL BEFORE YOU DIG 1-800-DIG-RITE

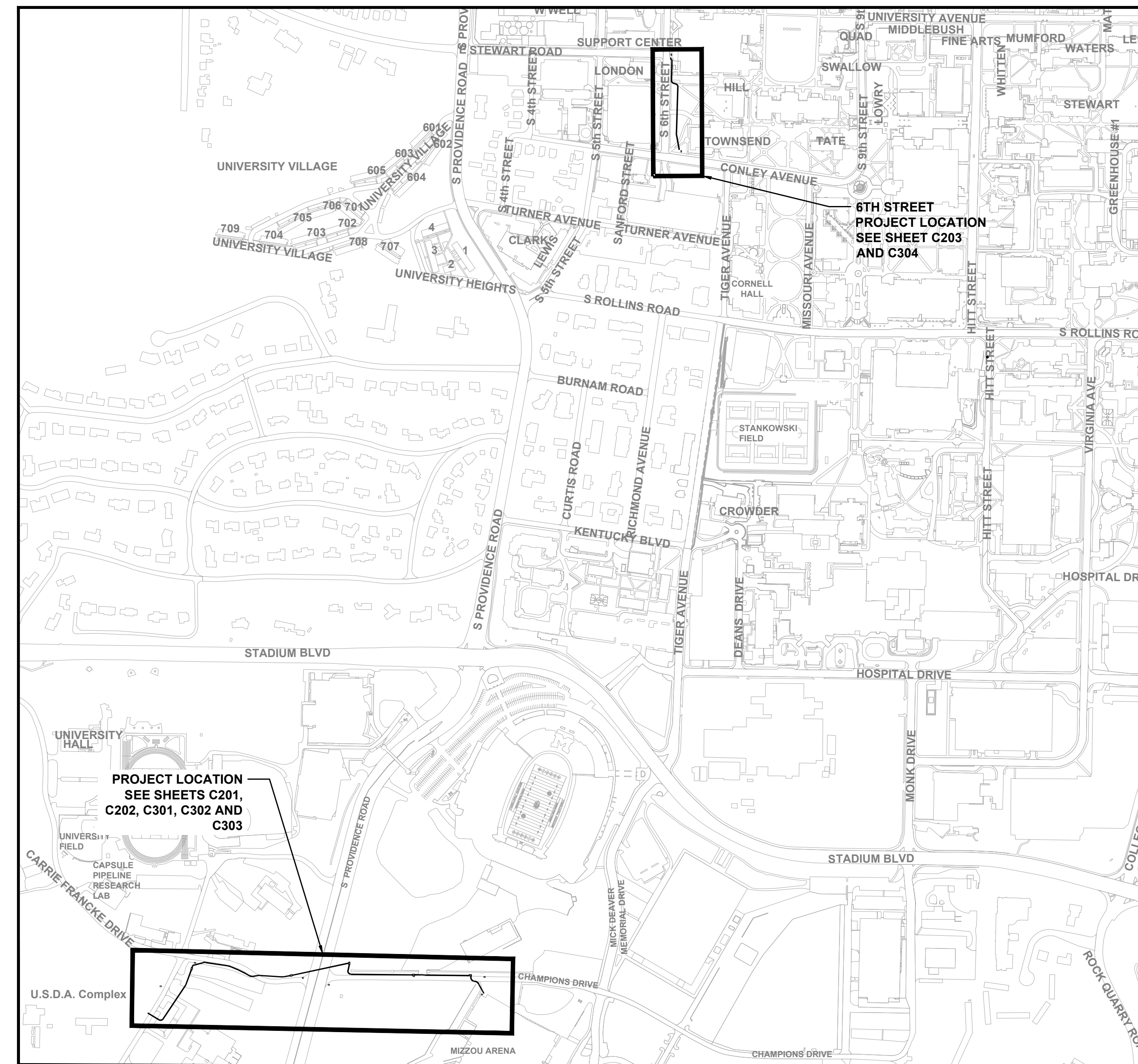
NOTES TO THE CONTRACTOR:

UNDERGROUND FACILITIES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS AND THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS AT PRESENT NOT KNOWN. VERIFICATION OF THE LOCATIONS OF UNDERGROUND UTILITIES, SHOWN OR NOT SHOWN, WILL BE THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR. THE CONTRACTOR SHALL MAKE SUITABLE AND TIMELY REQUESTS TO UNIVERSITY OF MISSOURI TO HAVE ALL NECESSARY ADJUSTMENTS OF PUBLIC OR PRIVATE UTILITIES, PIPE LINES, OR OTHER APPURTENANCES WITHIN, OR ADJACENT TO THE LIMITS OF CONSTRUCTION, AS SOON AS PRACTICAL OR POSSIBLE.

CIVIL ENGINEERING CERTIFICATION

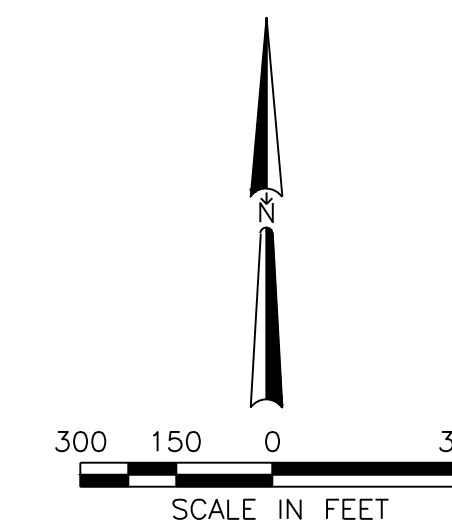
I hereby certify the Sheets C100 to C302 have been prepared by me, or under my supervision and that I am a duly Registered Professional Engineer under the laws of the State of Missouri. I further certify that to the best of my knowledge these drawings and/or specifications are as required by and in compliance with the Building Codes of the University of Missouri

<u>SASSAN MAHOBIAN, P.E.</u>	<u>E-20961</u>	<u>DATE</u>
	License number	DATE



SITE LOCATION MAP

SK
SK Design Group, Inc.
4600 College Boulevard, Suite 100
Overland Park, Kansas 66211
913-451-1818 Fax 913-451-7599



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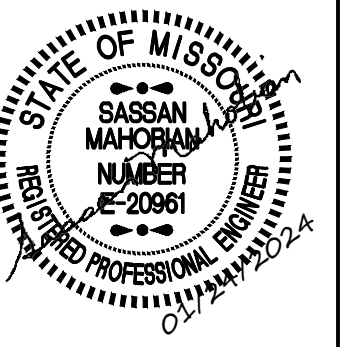
CONSTRUCTION PHASING & SCHEDULE:

- THE PROJECT SHALL BE COMPLETED AS NECESSARY TO PROVIDE UNINTERRUPTED OPERATION OF THE SITE UTILITY SYSTEMS. THE SEQUENCING AND SCHEDULING OF ALL WORK SHALL BE DEPENDENT ON AND SUBJECT TO UTILITY SYSTEM OPERATIONS.
- THE NATURE OF THIS PROJECT REQUIRES A HIGH LEVEL OF COORDINATION BY CONTRACTOR AND OWNER.
- DEMOLITION AND NEW CONSTRUCTION SHALL BE PHASED AS REQUIRED TO MAINTAIN THE OPERATION OF THE SITE UTILITIES.
- ALL WORK SHALL BE SCHEDULED WITH THE OWNER'S REPRESENTATIVE AND BE SUBJECT TO THE OWNER'S APPROVAL PRIOR TO PROCEEDING.
- THE PROJECT REQUIRES NUMEROUS OUTAGES TO UTILITY SYSTEMS. CONTRACTOR SHALL COMPLETE ALL REQUIRED WORK TO THE MAXIMUM EXTENT POSSIBLE PRIOR TO THE START OF OUTAGES. CONTRACTOR SHALL HAVE ALL REQUIRED MATERIALS ON SITE PRIOR TO START OF OUTAGES.
- TIE-INS TO MU UTILITY SYSTEMS SHALL BE MADE ON WEEKENDS AND WORK SHALL BE DONE AROUND-THE-CLOCK UNTIL THE TIE-IN IS COMPLETED.
- WEATHER CONDITIONS WILL IMPACT SCHEDULING OF STEAM OUTAGES.
- SITE UTILITY TIE-INS SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE AND ARE WEATHER DEPENDENT. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE TWO (2) WEEKS IN ADVANCE OF DESIRED TIE-IN TIME. OWNER'S REPRESENTATIVE WILL GIVE CONTRACTOR 72 HOURS ADVANCE NOTICE OF ACTUAL TIME FOR TIE-INS.
- DETAILED SEQUENCING OF ALL WORK SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE.

PROJECT GENERAL NOTES:

- EXISTING UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM EXISTING RECORDS AND THEIR LOCATIONS ARE APPROXIMATE ONLY. OTHER UTILITIES OR OBSTRUCTIONS MAY ALSO BE ENCOUNTERED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF ALL EXISTING UNDERGROUND UTILITIES AND TO AVOID DAMAGE TO SAME DURING CONSTRUCTION. IF IT CAN BE DETERMINED BY THE OWNER'S REPRESENTATIVE THAT ANY EXISTING UTILITY HAS BEEN, OR CAN BE ABANDONED, CONTRACTOR SHALL REMOVE SAME, AT HIS EXPENSE, TO FACILITATE CONSTRUCTION. ENDS OF REMAINING CONDUITS OR PIPES SHALL BE PLUGGED OR CAPPED.
- FIELD VERIFY UTILITY LOCATIONS, ELEVATIONS, AND SLOPES PRIOR TO CONSTRUCTING NEW UTILITIES.
- SUPPORT AND PROTECT UTILITIES CROSSING EXCAVATIONS. RESTORE DAMAGED UTILITIES TO ORIGINAL CONDITIONS PRIOR TO BACKFILLING EXCAVATIONS. OBTAIN INSPECTION AND APPROVAL OF OWNER'S REPRESENTATIVE PRIOR TO BACKFILLING EXCAVATIONS.
- DO NOT STORE EQUIPMENT OR MATERIAL IN AREA OF TREES. PROTECT TREES FROM DAMAGE UNLESS NOTED OTHERWISE. OWNER WILL TRIM TREES AS REQUIRED PRIOR TO CONSTRUCTION. COORDINATE WITH OWNER'S REPRESENTATIVE.
- INSTALL CONSTRUCTION FENCING AROUND THE DRIP LINES OF ALL TREES IN WORK AREAS.
- COORDINATE CONSTRUCTION FENCE LOCATION WITH OWNER'S REPRESENTATIVE PRIOR TO PROCEEDING.
- REMOVE ALL PAVING, SIDEWALKS, CURBS, GUTTERS, DRAINAGE STRUCTURES, SIGNS, PARKING METERS, LIGHTS, BIKE RACKS, ETC. AS REQUIRED TO COMPLETE CONSTRUCTION. SAWCUT PAVEMENT AT NEAREST JOINT.
- REPLACE ALL PAVING, SIDEWALKS, CURBS, GUTTERS, DRAINAGE STRUCTURES, PAVEMENT MARKING, SIGNS, PARKING METERS, LIGHTS, BIKE RACKS, ETC. REMOVED OR DAMAGED DURING CONSTRUCTION. COMPLY WITH CITY OF COLUMBIA OR MU STANDARDS, AS APPROPRIATE.
- CONTRACTOR SHALL NOT BLOCK ACCESS TO ANY MANHOLE OR VALVE BOX.
- EROSION, SEDIMENTATION AND WATER POLLUTION CONTROL MEASURES SHALL BE PROVIDED AT ALL LOCATIONS WHERE DRAINAGE IS LEAVING THE SITE. COMPLY WITH EPA AND MISSOURI DNR RULES AND REGULATIONS & BEST MANAGEMENT PROCEDURES FOR STORM WATER POLLUTION PREVENTION.
- CONTRACTOR SHALL PROTECT EXCAVATIONS FROM WATER INFILTRATION AND MAINTAIN EXCAVATIONS IN A DEWATERED CONDITION AT ALL TIMES.
- THE STORM WATER POLLUTION PREVENTION MEASURES INDICATED ARE THE MINIMUM MEASURES TO BE USED. PROVIDE ADDITIONAL SITE SPECIFIC MEASURES AS NECESSARY TO PREVENT STORM WATER POLLUTION & TO COMPLY WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
- CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES FOR STREET CLOSURES AND DETOURS SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE & CITY OF COLUMBIA.
- LAYDOWN AREAS IN PLANTED AREAS SHALL BE COVERED WITH GEOTEXTILE FABRIC AND 4" OF GRAVEL. REMOVE GRAVEL AND FABRIC WHEN LAYDOWN AREA IS VACATED.
- TEMPORARY WALKS & RAMPS SHALL BE ADA COMPLIANT WITH NON-SLIP SURFACE AND HANDRAILS, SUITABLE FOR MANUAL AND MOTORIZED WHEELCHAIRS, WITH MINIMUM 1,000 LB LOAD RATING, AND SUBJECT TO APPROVAL OF OWNER'S REPRESENTATIVE.
- CONTRACTOR SHALL PROVIDE TEMPORARY GATES TO SECURE TUNNEL OPENINGS FROM UNAUTHORIZED ACCESS AT ALL TIMES.
- GATES SHALL BE SECURED WITH CHAIN AND LOCKS PROVIDED BY CONTRACTOR.
- OWNER WILL PROVIDE ADDITIONAL LOCKS ON CHAINS FOR OWNER'S USE.

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**GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI**

For the Curators of the
University of
Missouri
MU PROJECT #
CP 232751

#	DATE	DESCRIPTION

UNIVERSITY OF
MISSOURI
COLUMBIA MO
CONTRACT
DOCUMENTS

COVER SHEET

DATE: 01 / 24 / 24
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CHECKED: SM

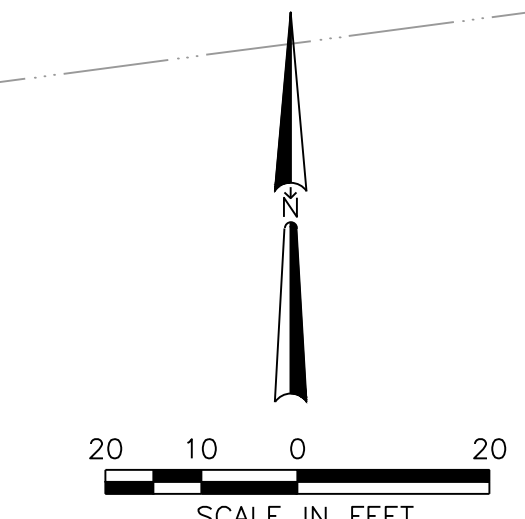
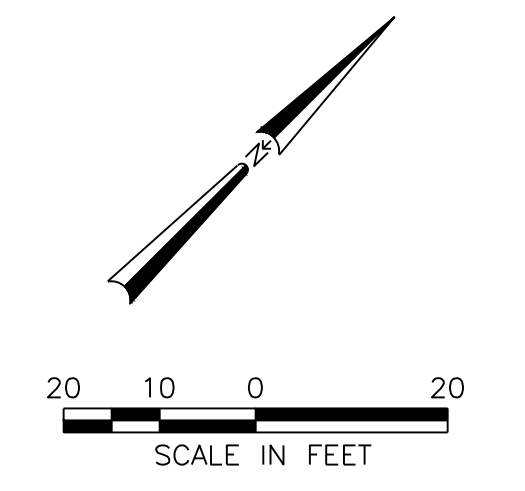
SHEET #
C100

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LEGEND:

- CONCRETE SIDEWALK REPLACEMENT
RE: 1/C-501
- ASPHALT PAVEMENT REPLACEMENT
RE: 2/C-501
- CONCRETE PAVEMENT REPAIR
RE: 3/C-501
- LAYDOWN AREA
- NEW TYPE CG-1 CURB & GUTTER
RE: 4/C-501
- REMOVE EXISTING TREE
- SAVE EXISTING TREE



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COLUMBIA MO
CONTRACT DOCUMENTS
**SITE PAVING
PLAN - 1**



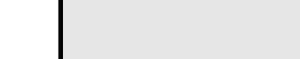


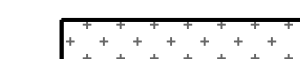
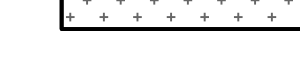
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SHEET #
C201

TREE PROTECTION NOTES

- TREE PROTECTION FENCING SHALL BE INSTALLED WHERE SHOWN ON THE PLAN AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO ANY LAND DISTURBANCE ACTIVITIES. AT NO TIME CAN THE FENCE BE MOVED OR RELOCATED WITHOUT THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
 - MARK DESIGNATED DRIP LINE OF TREETED AREA AND TREES TO REMAIN.
 - INSTALL 6' TALL TREE PROTECTION FENCE PER DETAIL 5 / C501.
 - LOCATE THE TREE PROTECTION FENCE A MINIMUM 1' BEYOND THE DRIPLINE.
 - THE TREE PROTECTION AREA SHALL NOT BE MODIFIED OR REMOVED PRIOR TO CONSENT OF THE OWNER'S REPRESENTATIVE. ANY DIGGING, EXCAVATING, TRENCHING, CHANGING OF GRADE, OR OTHER ACTIONS THAT MAY POTENTIALLY IMPACT THE ROOTING ENVIRONMENT MUST BE AUTHORIZED BY THE OWNER'S REPRESENTATIVE PRIOR TO WORK COMMENCEMENT.
 - CONTRACTOR MAY INSTALL A CONTINUOUS FENCE AROUND TREES WHICH ARE CLOSE TOGETHER IN LIEU OF INDIVIDUAL FENCING FOR EACH TREE.
 - MATERIALS, DEBRIS, EQUIPMENT, AND/OR SITE AMENITIES SHALL NOT BE STORED WITHIN THE TREE PROTECTION AREA.
- FENCING SHALL REMAIN ERECT THROUGHOUT ALL PHASES OF THE PROJECT AND ONLY BE REMOVED ONCE FINAL LANDSCAPE IS INSTALLED.
- NO DISTURBANCE SHALL OCCUR WITHIN THE FENCED AREA OF TREE PROTECTION. THIS INCLUDES BUT IS NOT LIMITED TO; GRADING, FILLING, TRENCHING, STORAGE OF CONSTRUCTION MATERIAL, VEHICLE PARKING, CONCRETE WASHOUT, ETC.
- TREES APPROVED FOR REMOVAL SHALL BE REMOVED IN A MANNER THAT DOES NOT IMPACT TREES TO BE PRESERVED.
- PRUNING OF LIMBS AND ROOTS SHALL BE DONE BY THE MU LANDSCAPE SERVICES DEPARTMENT.
- LARGE EQUIPMENT USE AFTER EXISTING PAVEMENT DEMOLITION SHALL BE LIMITED WHILE AREA IS EXPOSED.
- PAVEMENT SHALL BE REMOVED AND REPLACED AS QUICKLY AS POSSIBLY TO LIMIT COMPACTION OF EXISTING TREE ROOTS.
- COORDINATE WITH OWNER'S REPRESENTATIVE DURING CONSTRUCTION.
- CONTRACTOR SHALL CLEAR AND GRUB INSIDE THE LIMITS OF CONSTRUCTION. ALL TREES OUTSIDE THE LIMITS OF CONSTRUCTION SHALL NOT BE REMOVED WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE.

LEGEND:

-  CONCRETE SIDEWALK REPLACEMENT
RE: 1/C-501
-  ASPHALT PAVEMENT REPLACEMENT
RE: 2/C-501
-  CONCRETE PAVEMENT REPAIR
RE: 3/C-501
-  LAYDOWN AREA
-  NEW TYPE CG-1 CURB & GUTTER
RE: 4/C-501
-  REMOVE EXISTING TREE
-  SAVE EXISTING TREE

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**GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI**

PROJECT:
For the Curators of the
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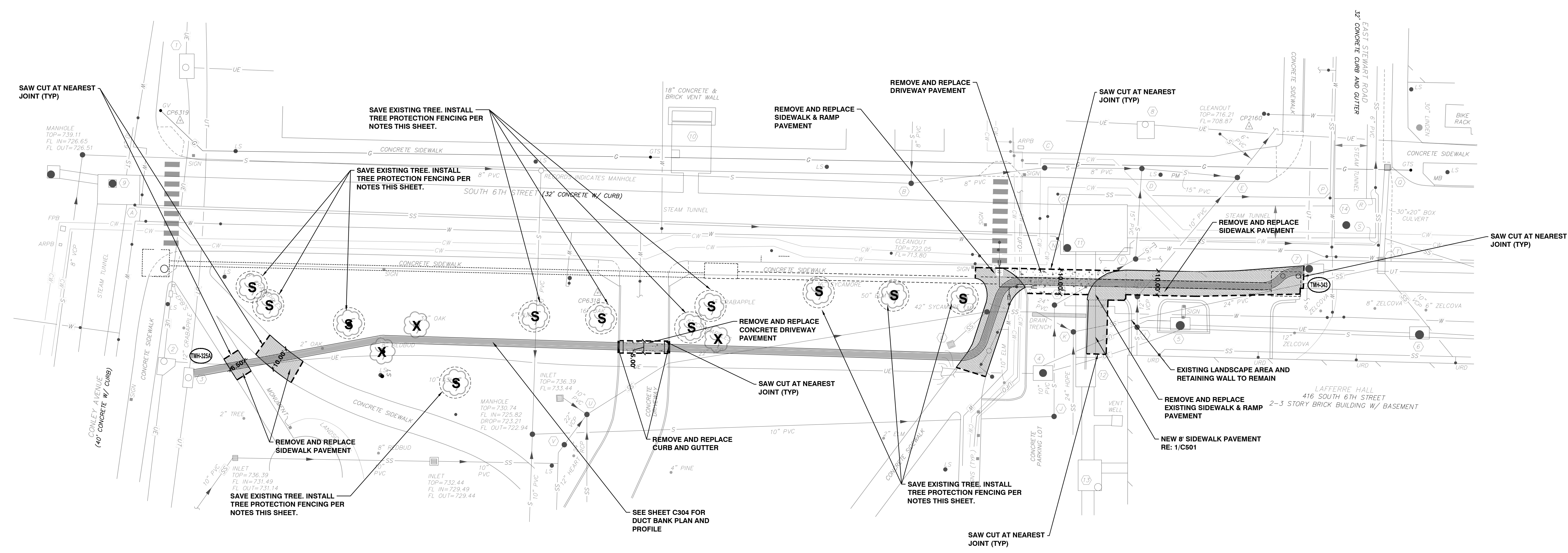
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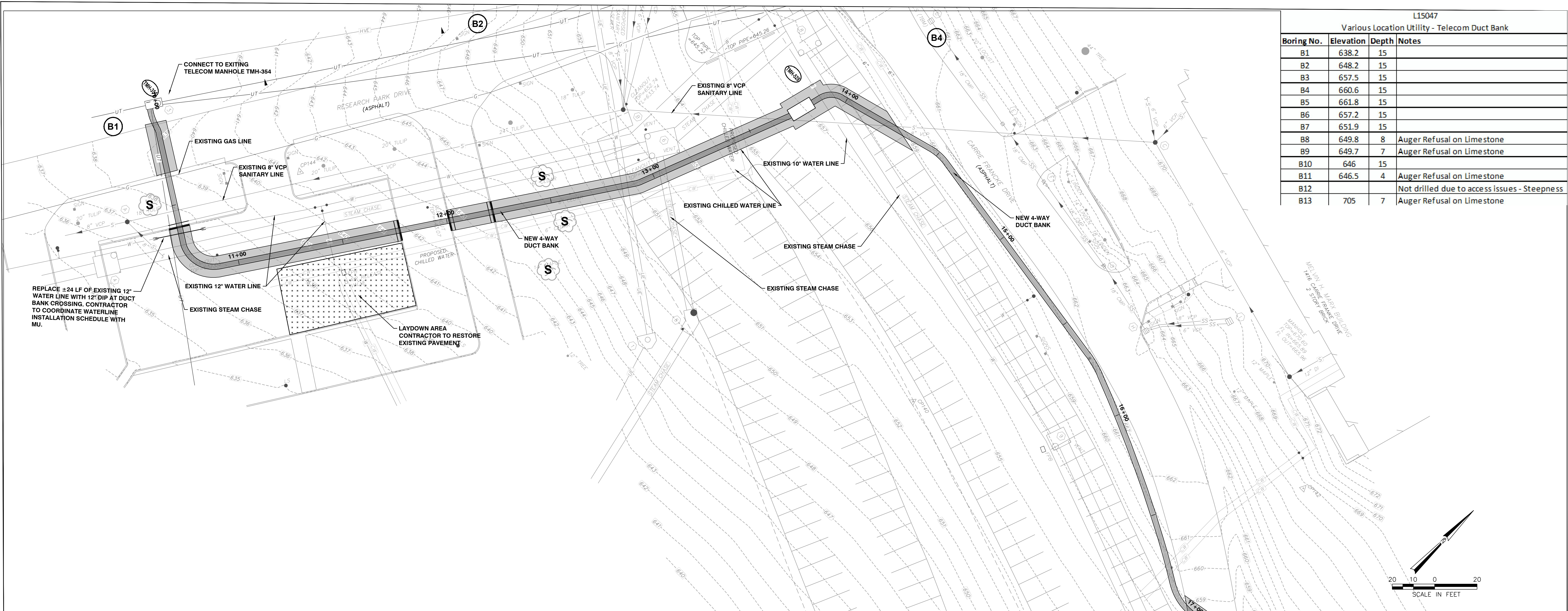
UNIVERSITY OF
MISSOURI
COLUMBIA MO
CONTRACT
DOCUMENTS

**SITE PAVING
PLAN - 3**

DATE: 01/24/24
DRAWN: TB
CHECKED: SM

C203





L15047
Various Location Utility - Telecom Duct Bank

Boring No.	Elevation	Depth	Notes
B1	638.2	15	
B2	648.2	15	
B3	657.5	15	
B4	660.6	15	
B5	661.8	15	
B6	657.2	15	
B7	651.9	15	
B8	649.8	8	Auger Refusal on Limestone
B9	649.7	7	Auger Refusal on Limestone
B10	646	15	
B11	646.5	4	Auger Refusal on Limestone
B12			Not drilled due to access issues - Steepness
B13	705	7	Auger Refusal on Limestone

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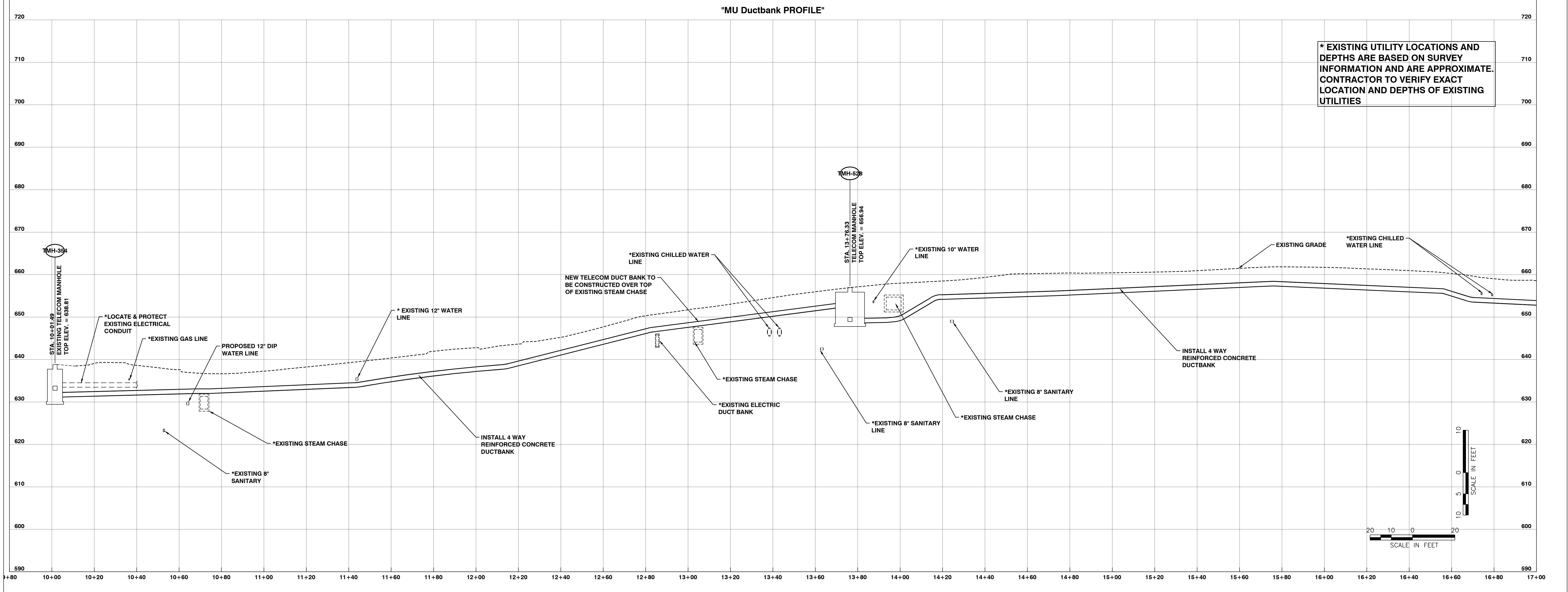
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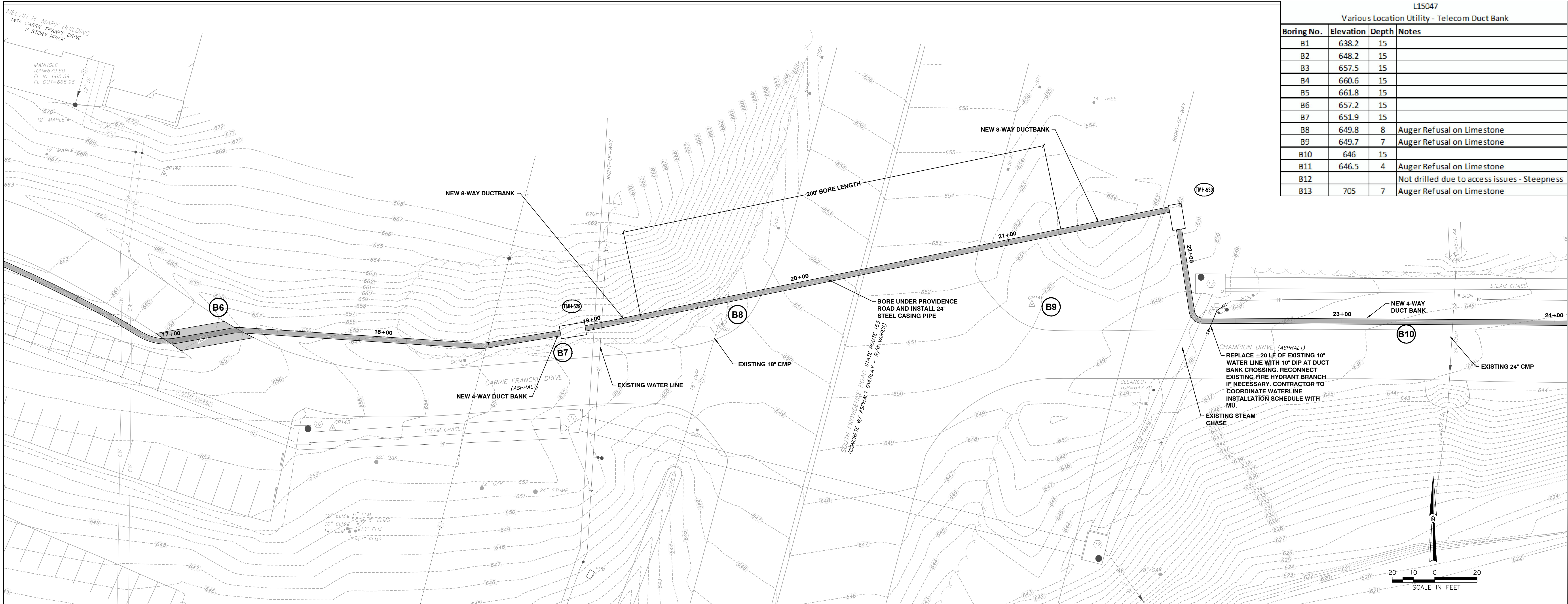
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COLUMBIA MO
CONTRACT DOCUMENTS
SITE TELECOM PLAN & PROFILE - 1
DATE: 01/24/24
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C301



* EXISTING UTILITY LOCATIONS AND DEPTHS ARE BASED ON SURVEY INFORMATION AND ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATION AND DEPTHS OF EXISTING UTILITIES

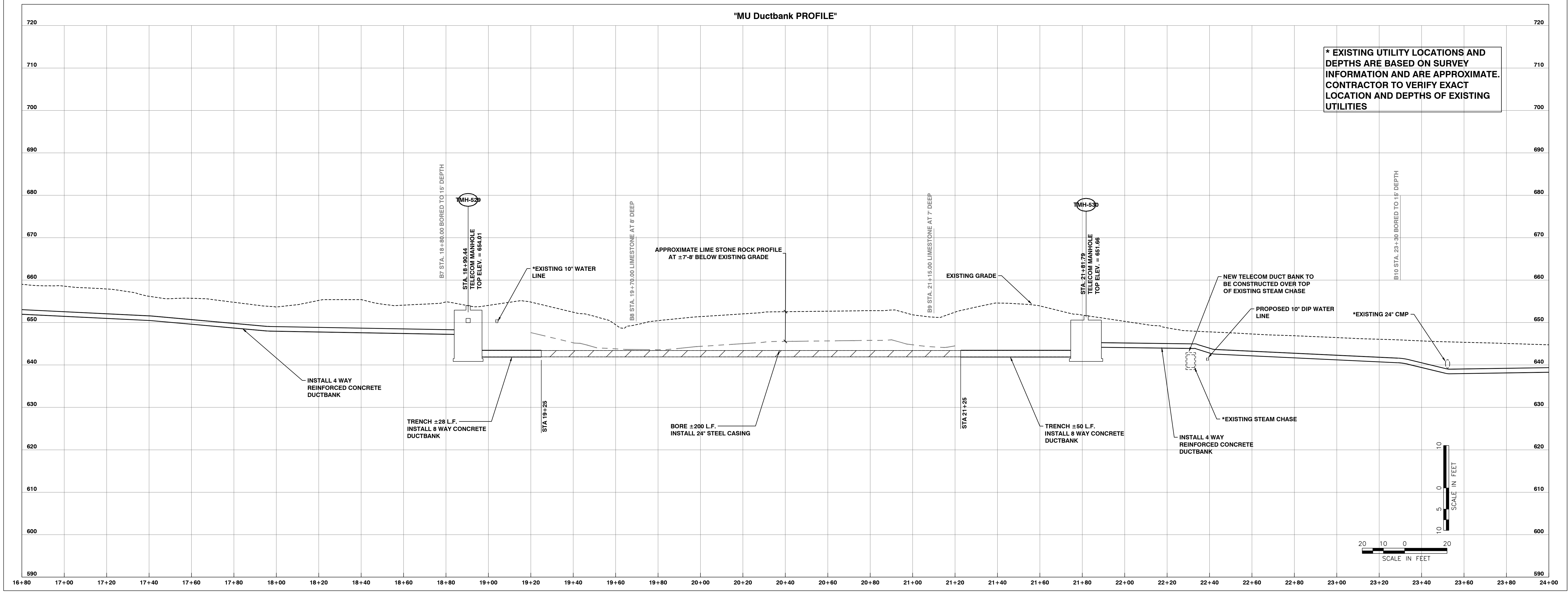
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L15047
Various Location Utility - Telecom Duct Bank

Boring No.	Elevation	Depth	Notes
B1	638.2	15	
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B3	657.5	15	
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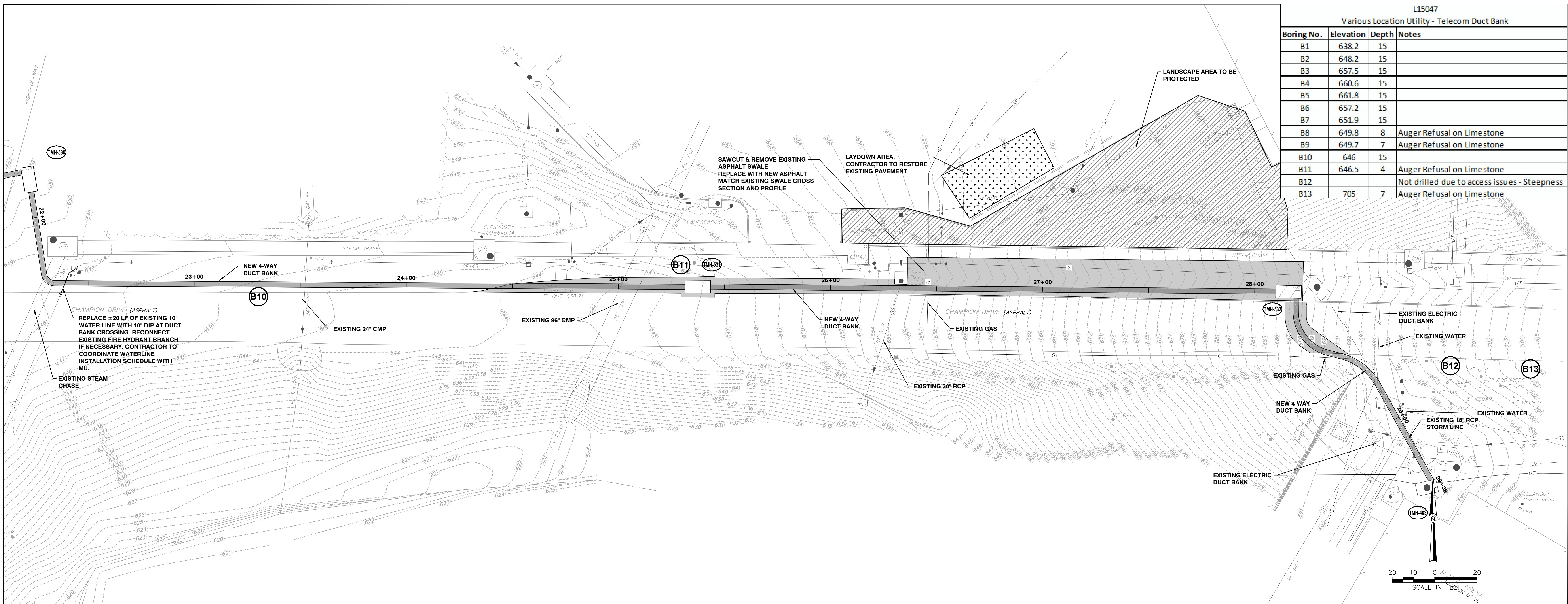
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UNIVERSITY OF
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**SITE TELECOM
PLAN &
PROFILE - 2**

DATE: 01/24/24
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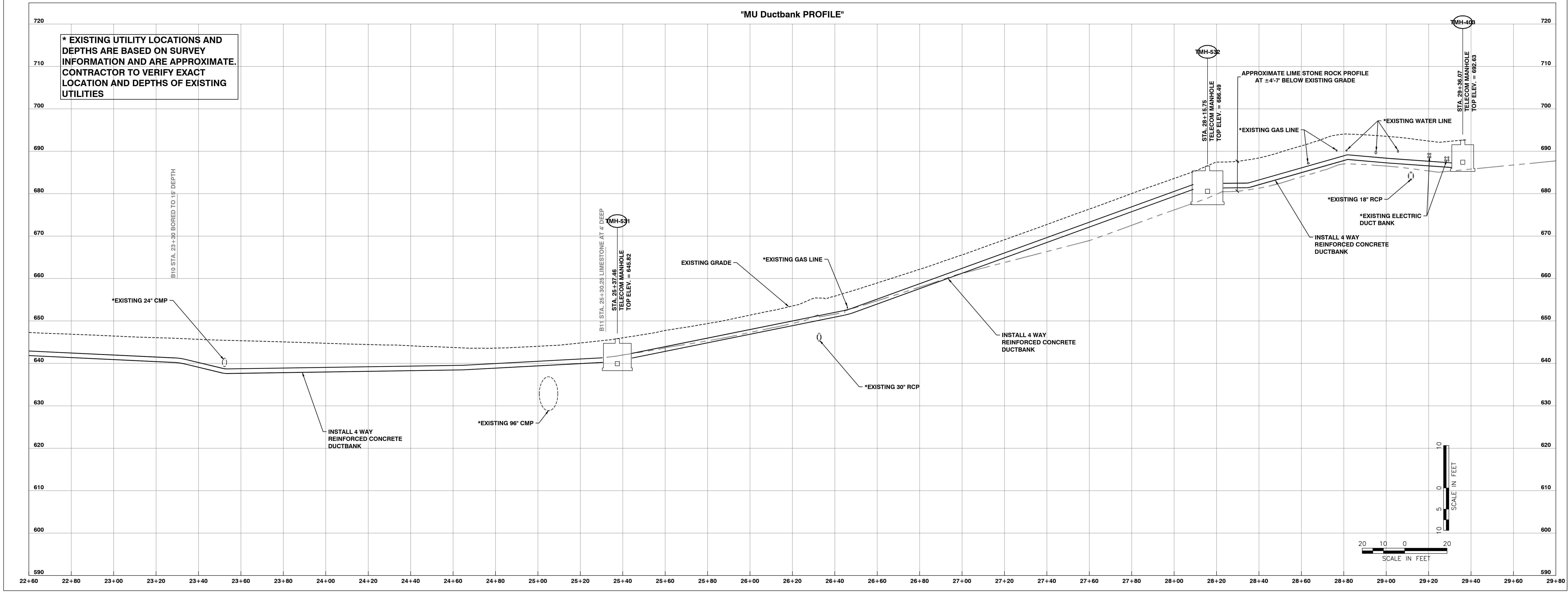
SHEET:
C302



L15047 Various Location Utility - Telecom Duct Bank			
Boring No.	Elevation	Depth	Notes
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B2	648.2	15	
B3	657.5	15	
B4	660.6	15	
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UNIVERSITY OF MISSOURI
COLUMBIA MO
CONTRACT DOCUMENTS

SITE TELECOM
PLAN &
PROFILE - 3

DATE: 01/24/24
DRAWN: SM

SHEET: C303

6 5 4 3 2 1

E

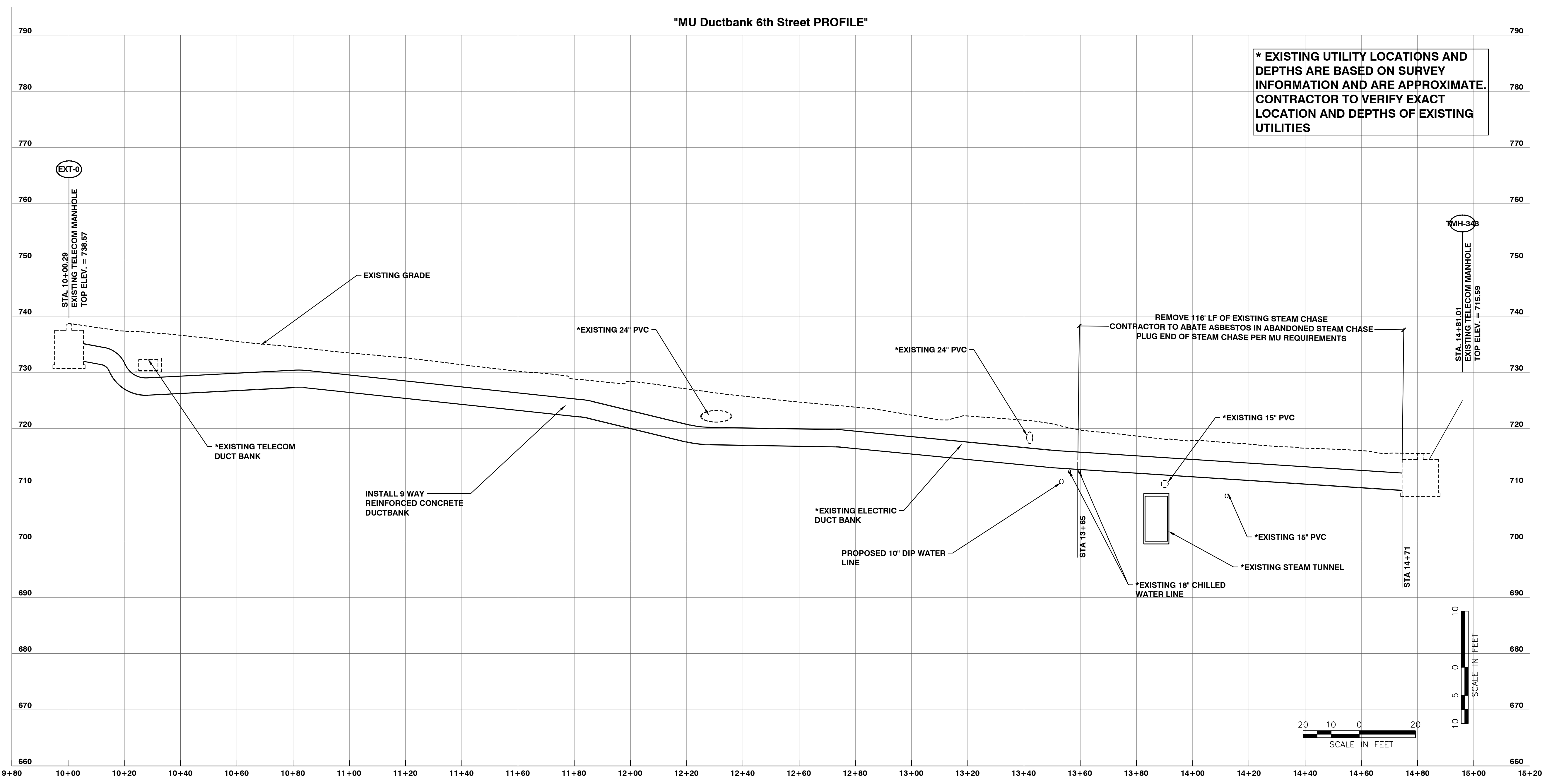
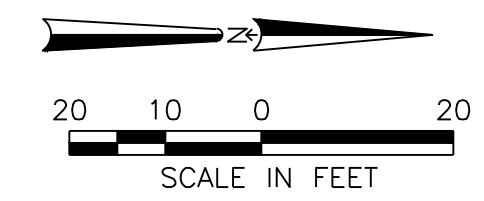
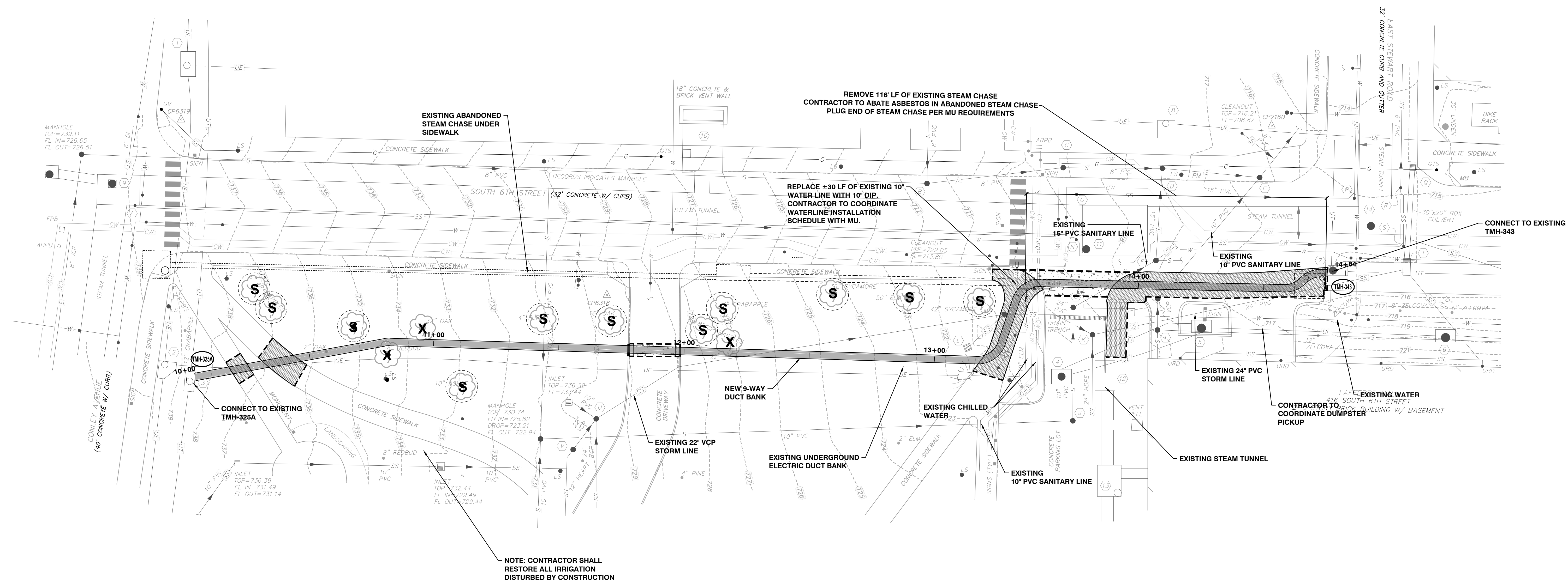
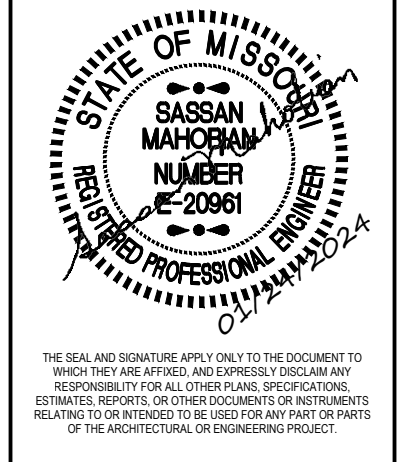
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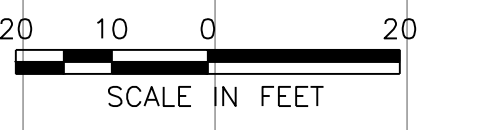
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A

FILE LOCATION: U:\2023\23-1621-dwg\c301 Telecom Plan & Profile.dwg



* EXISTING UTILITY LOCATIONS AND DEPTHS ARE BASED ON SURVEY INFORMATION AND ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATION AND DEPTHS OF EXISTING UTILITIES



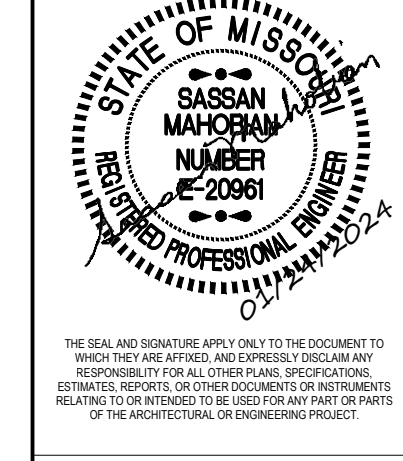
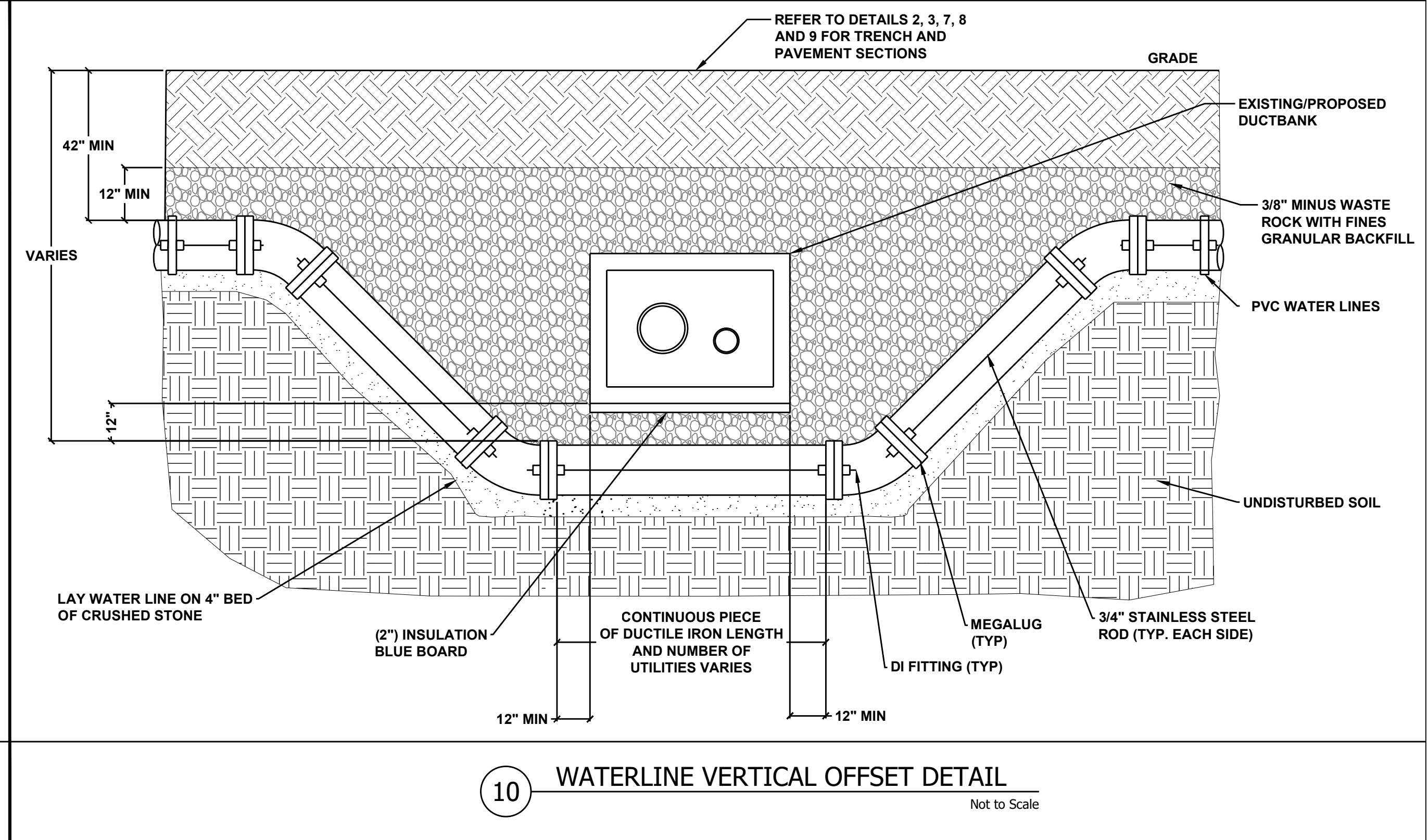
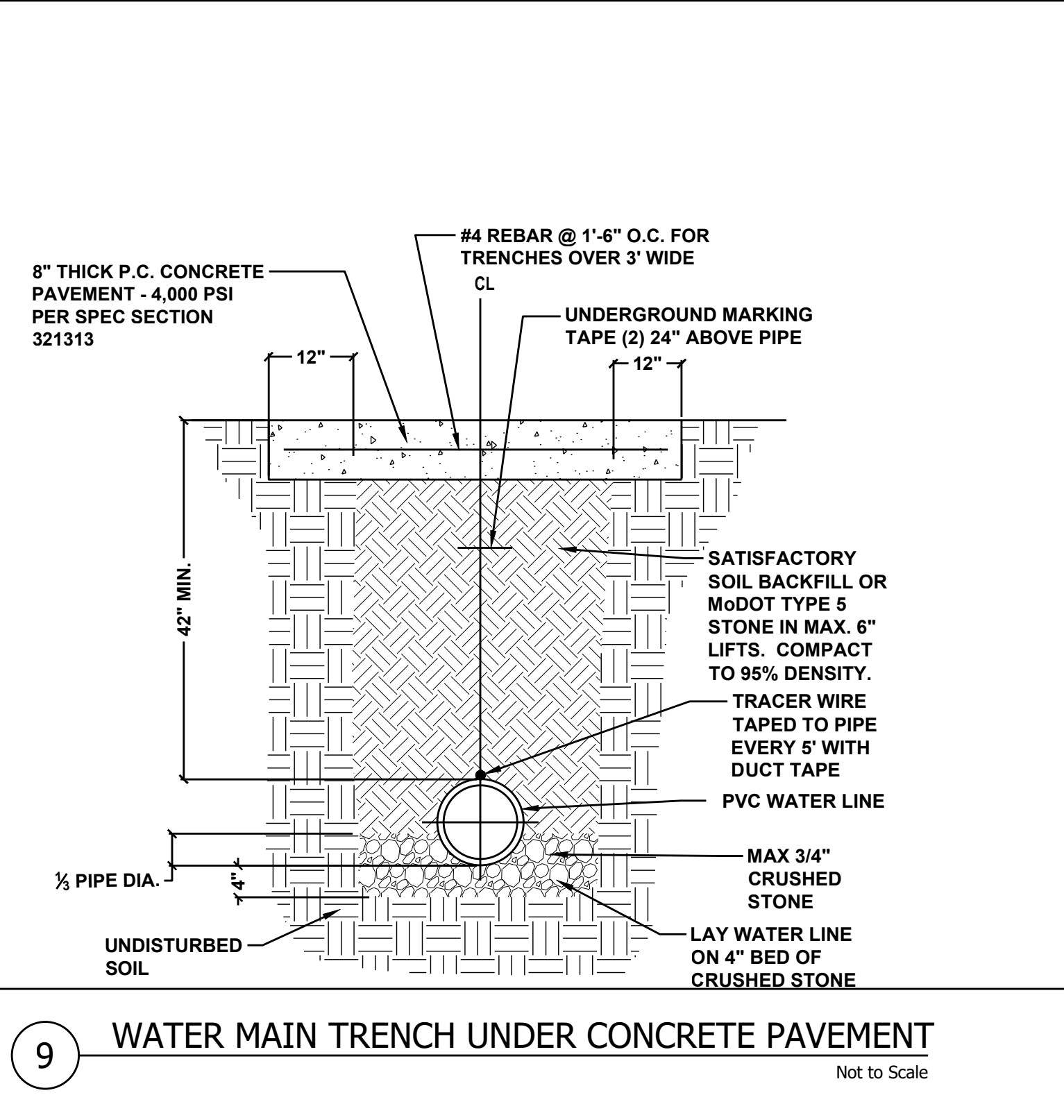
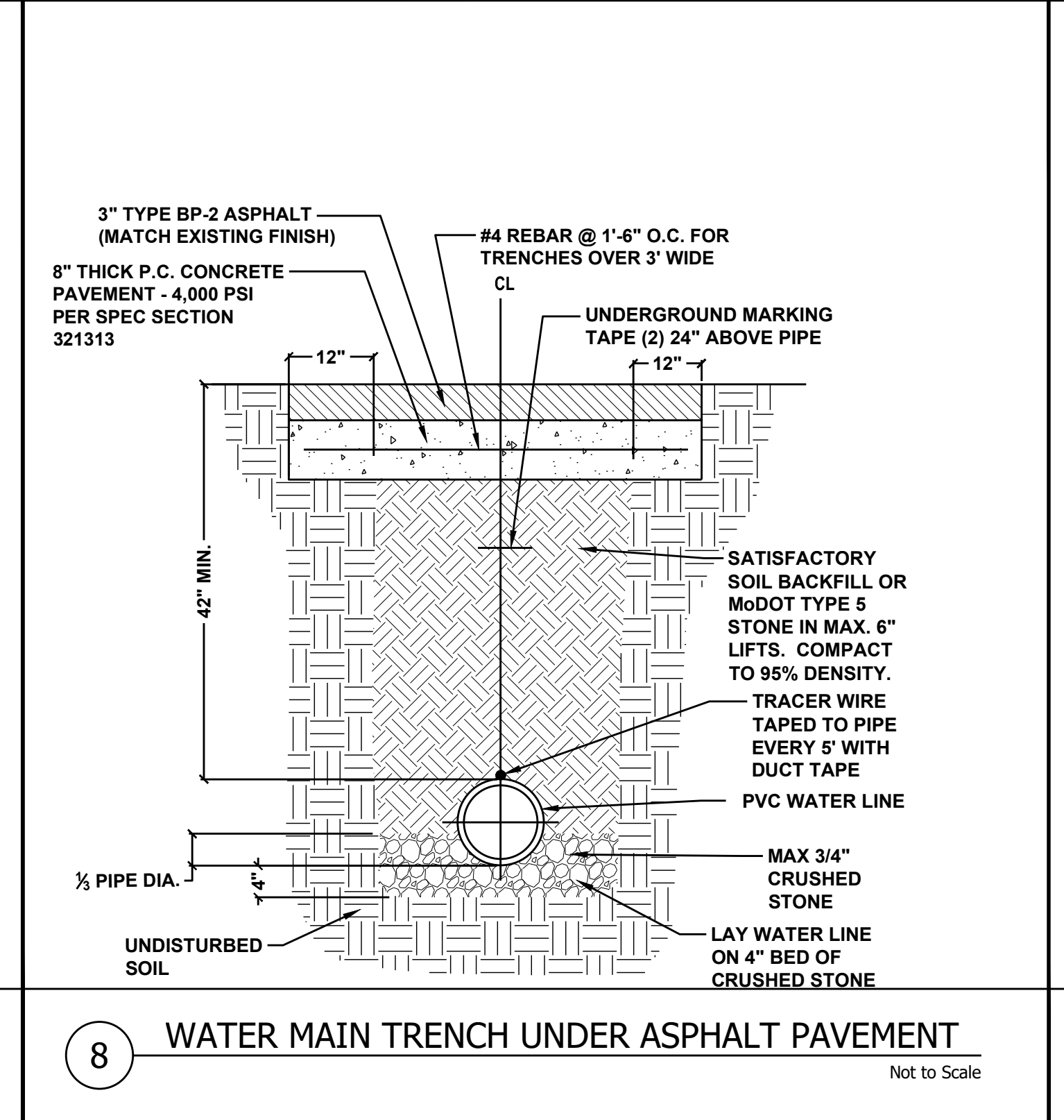
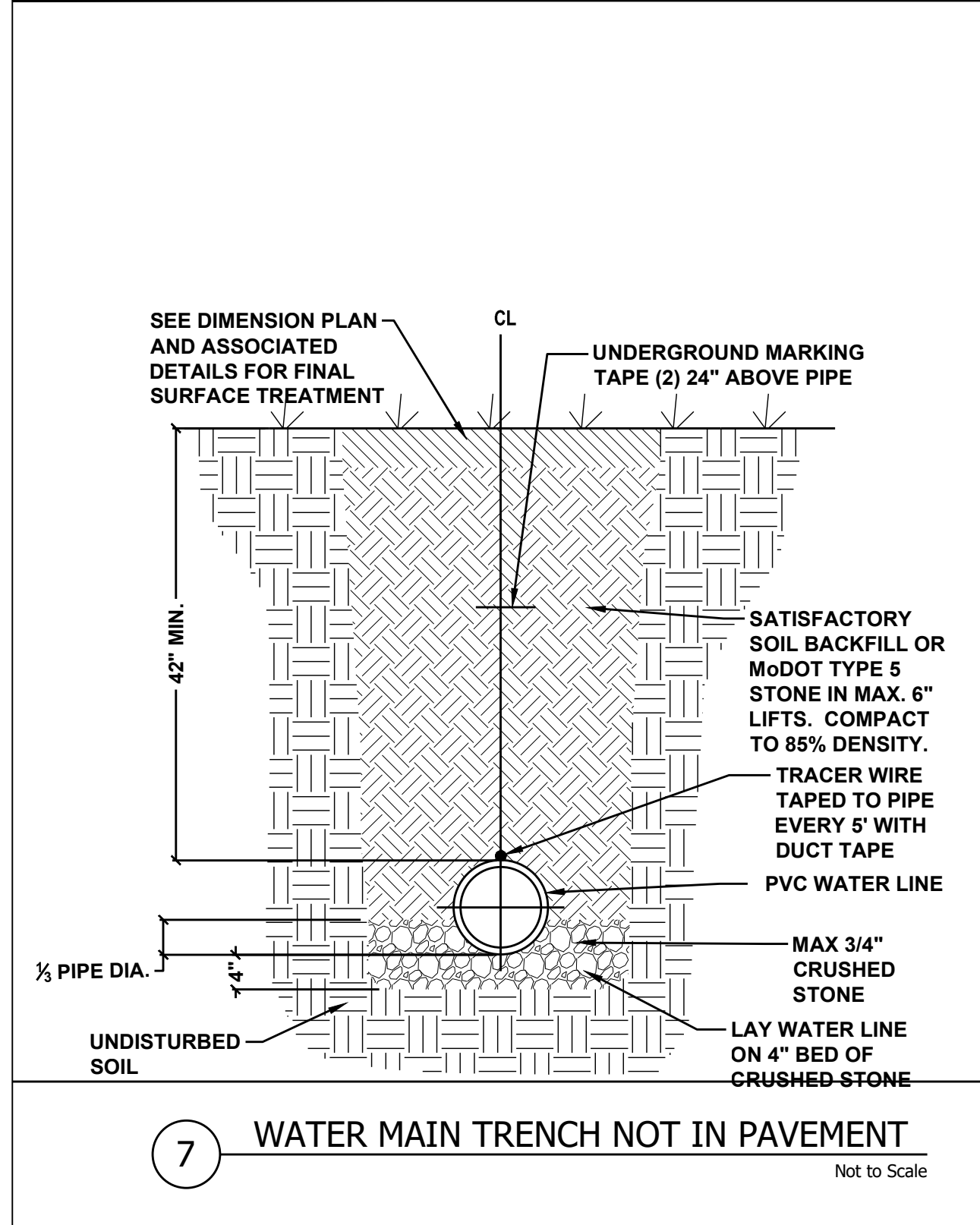
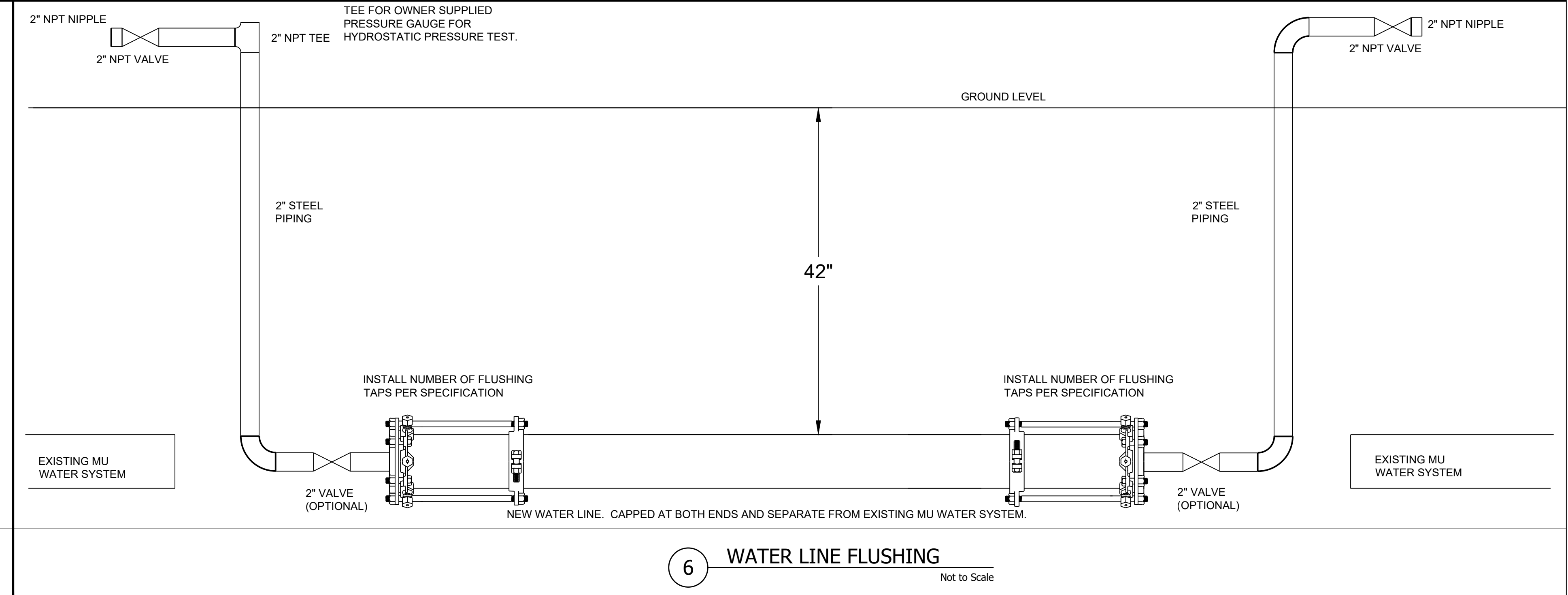
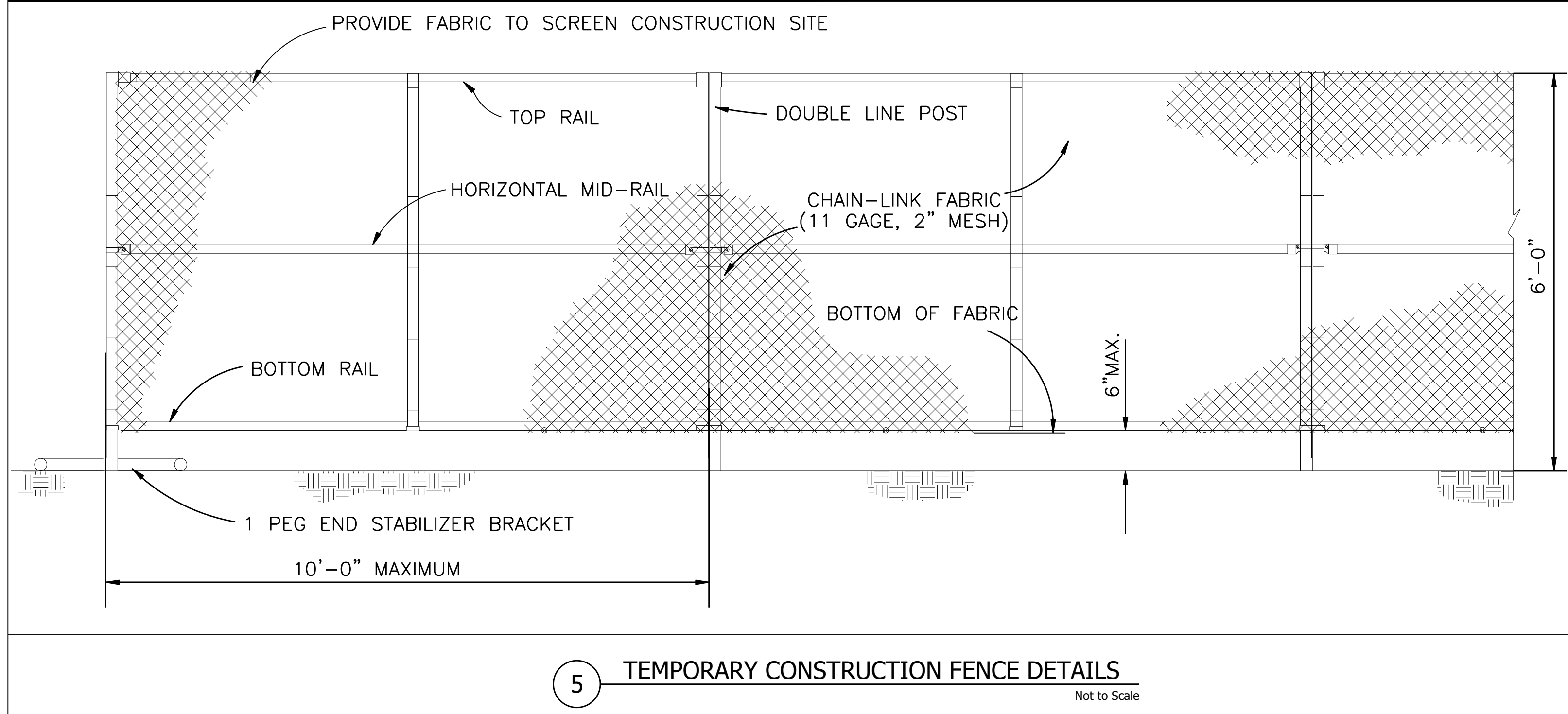
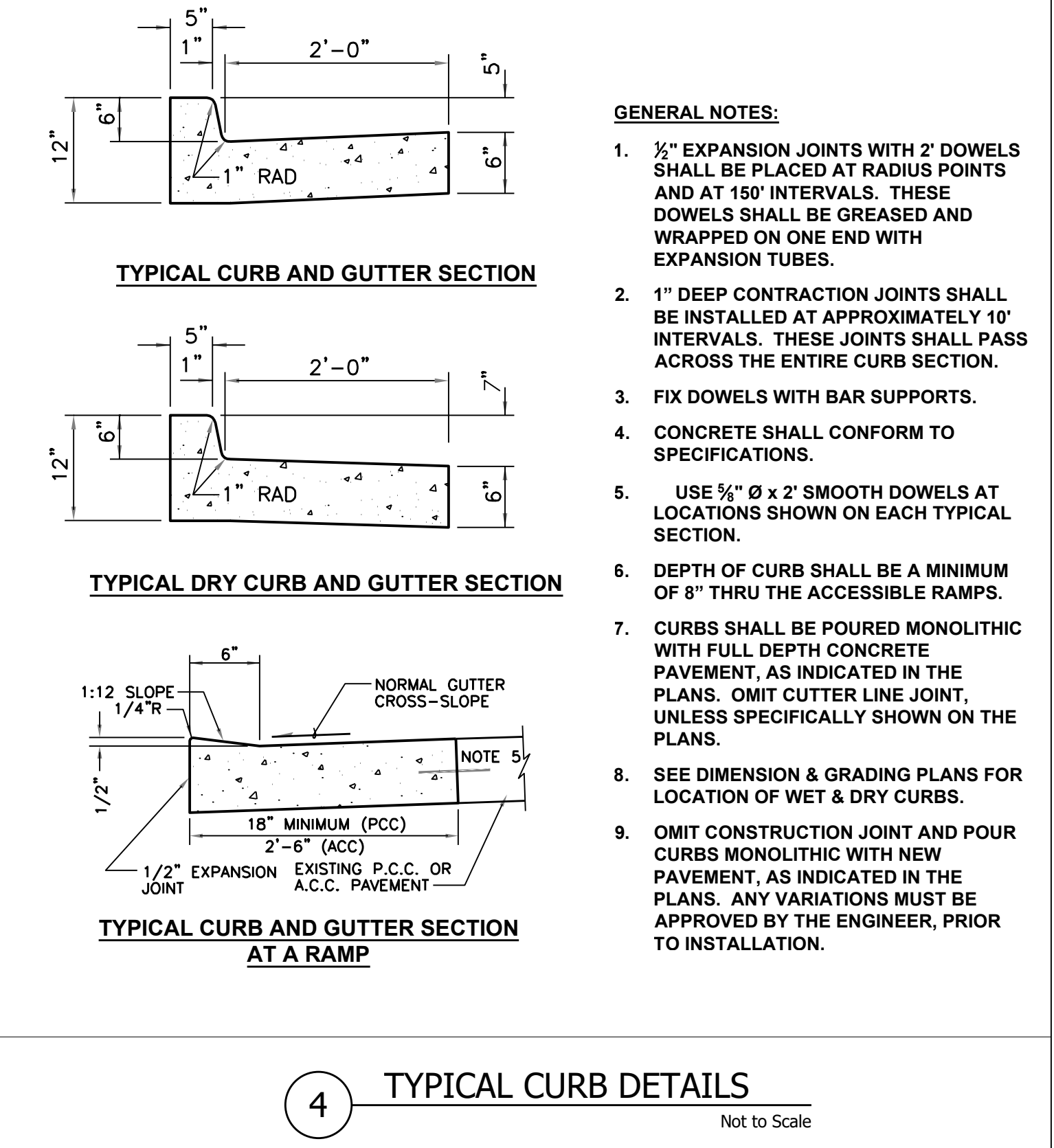
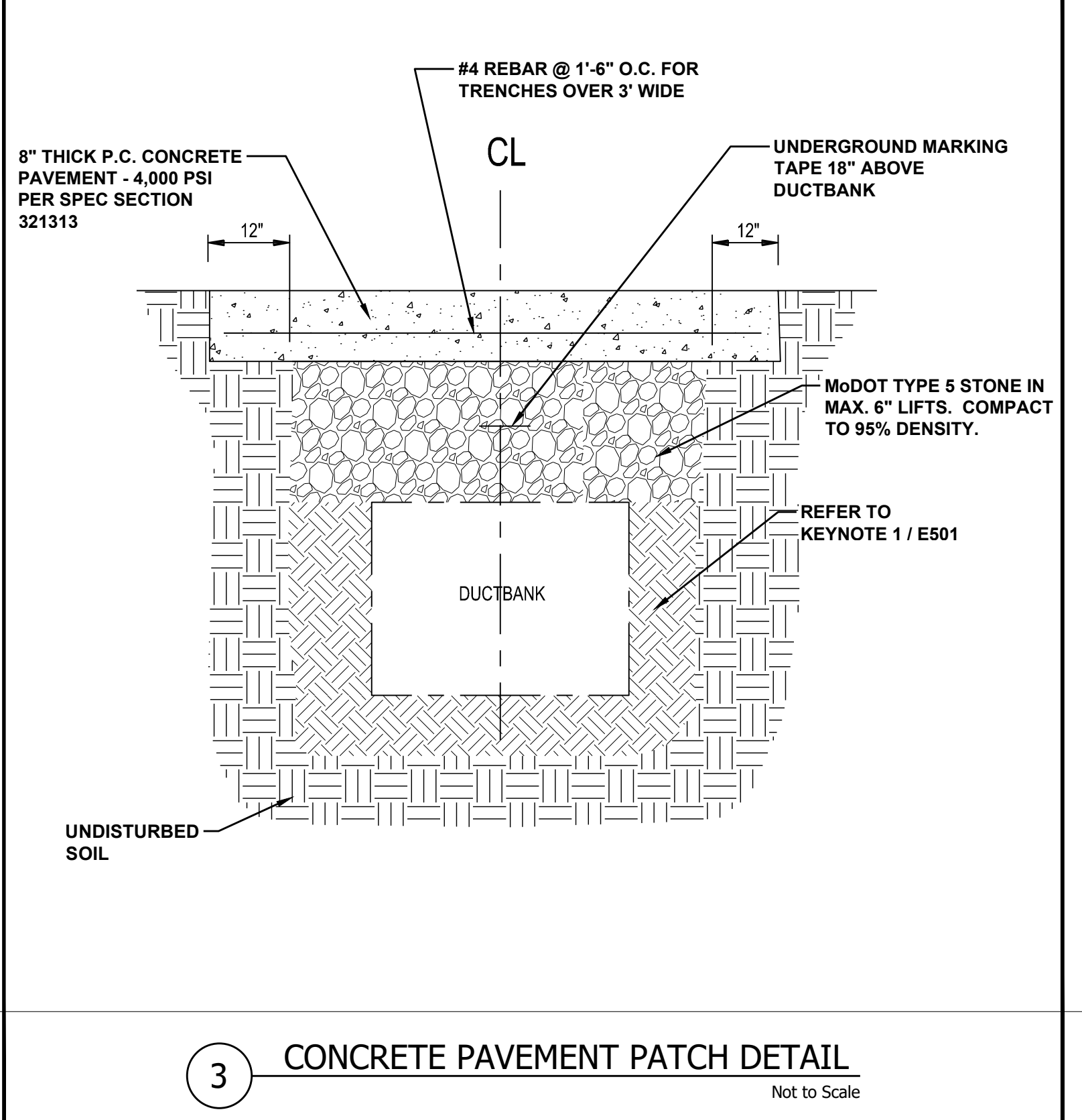
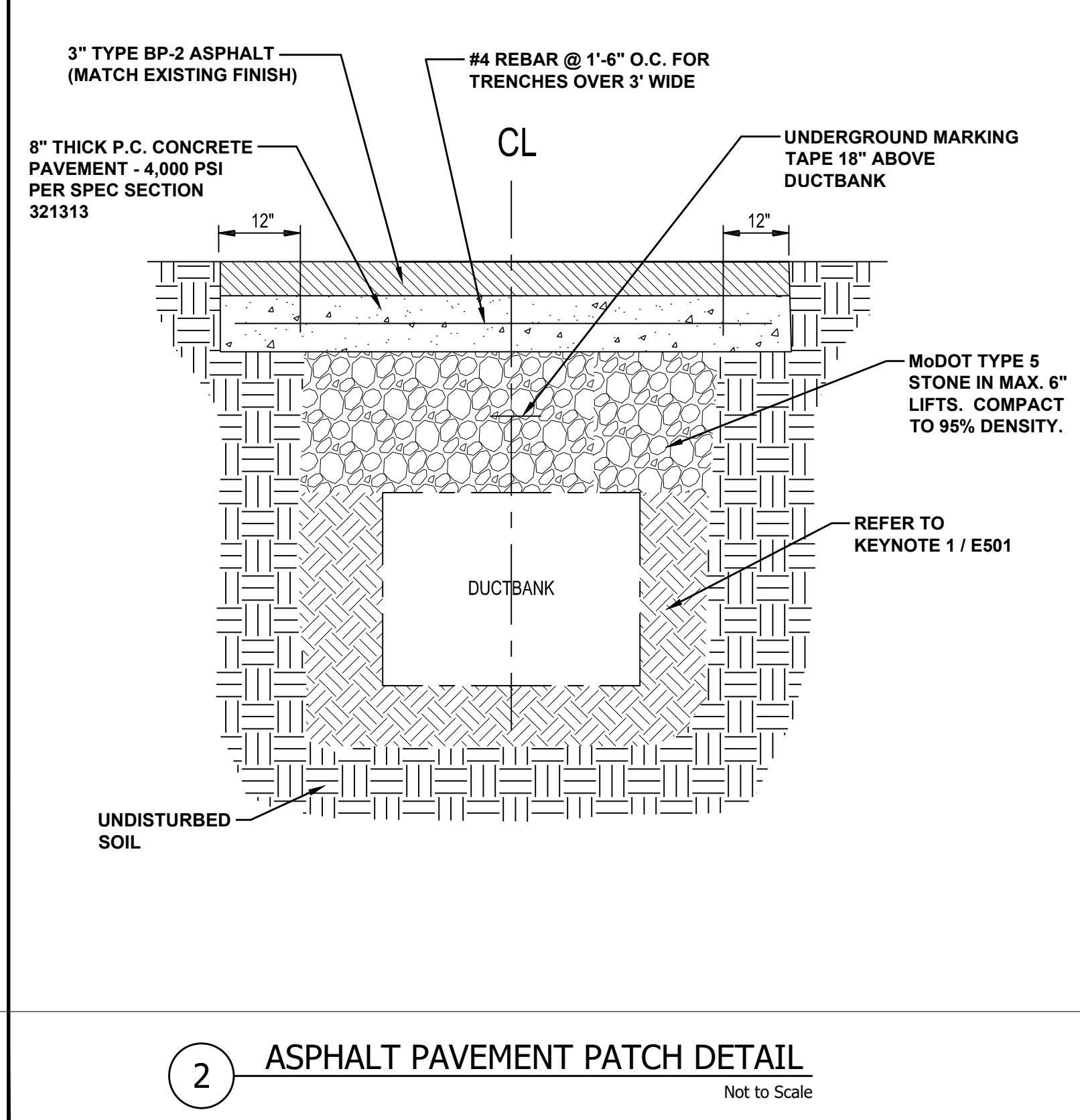
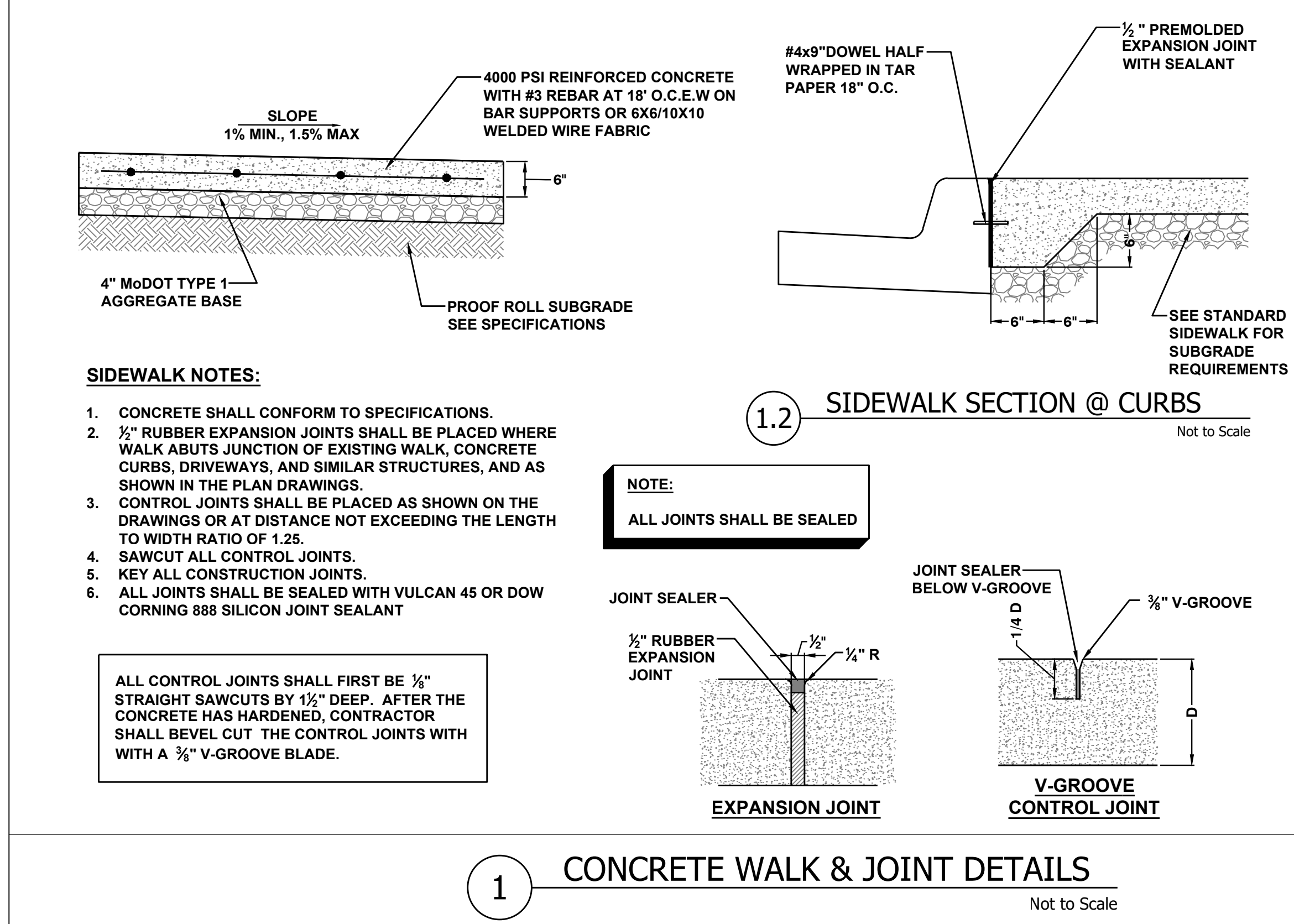
**GENERAL SITE
 TELECOM DUCT BANK INSTALLATIONS
 UNIVERSITY OF MISSOURI**

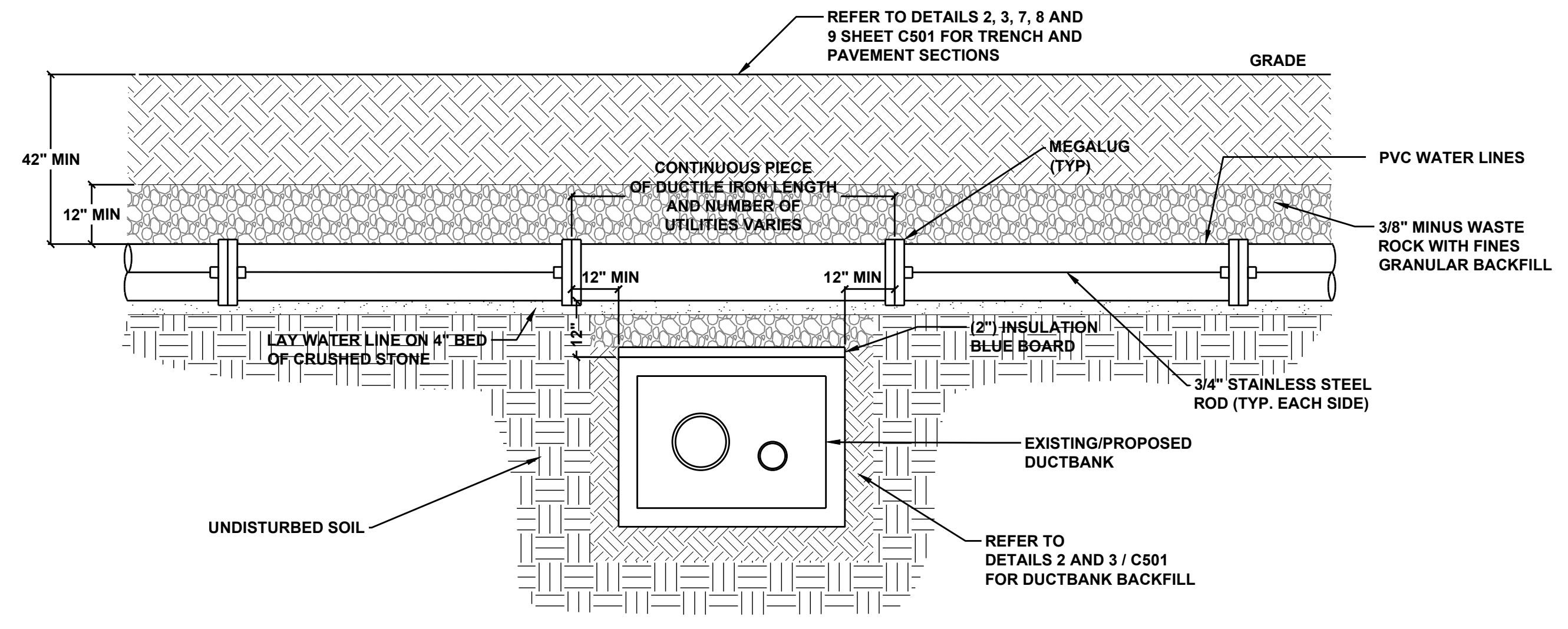
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 MU PROJECT #
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#	DATE	DESCRIPTION

UNIVERSITY OF MISSOURI
 COLUMBIA MO
 CONTRACT DOCUMENTS
SITE TELECOM PLAN & PROFILE - 4
 DATE: 01/24/24
 DRAWN: TB
 CHECKED: SM

C304





1 WATERLINE REPLACEMENT OVER DUCTBANK
Not to Scale

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**GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI**

PROJECT:
For the Curators of the
University of
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MU PROJECT #
CP 232751

#	DATE	DESCRIPTION

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CONTRACT
DOCUMENTS

DETAILS - 2

DATE:	01 / 24 / 24
DRAWN:	DESIGNED:
TB	SM

SHEET #
C502

Author

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FILE LOCATION: \\fs01.020\proj\projdata\design\12305 - 5600 MU CP232751 TELECOM DUCT BANKS\2305 Drawings\2305-E-001.dwg

ELECTRICAL SYMBOLS

J	JUNCTION BOX	1
•LS	LIGHT STANDARD	
⊗	GROUNDING ROD	

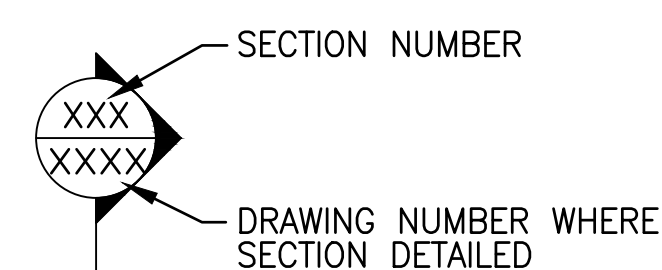
KEYNOTE: SPECIFICALLY REFERENCED TO AN ITEM ON THE FIELD OF THE DRAWING. DIGITS IDENTIFY NOTE NUMBER.

ELECTRICAL ABBREVIATIONS

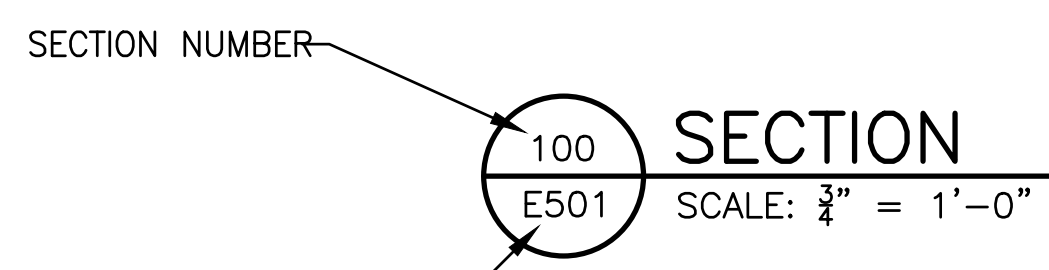
A	AMPERE(S)	M	MOTOR STARTING CONTACTOR OR METER
AC	ALTERNATING CURRENT	MCP	MAIN CIRCUIT BREAKER
AF	AMP FUSE	MCP	MOTOR CIRCUIT PROTECTOR
AFF	ABOVE FINISHED FLOOR	MDP	MAIN DISTRIBUTION PANELBOARD
AFG	ABOVE FINISHED GRADE	MLO	MAIN LUG ONLY
AIC	AMPERE INTERRUPTING CAPACITY (RMS SYMMETRICAL)	MS	MOTOR STARTER
AL	ALUMINUM	MTD	MOUNTED
APPROX	APPROXIMATELY	N/A	NOT APPLICABLE
ASC	APPLICATION SPECIFIC CONTROLLER	N.C.	NORMALLY CLOSED
AUTO	AUTOMATIC	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAUGE	NEUT	NEUTRAL
BAS	BUILDING AUTOMATION SYSTEM	NF	NON FUSED
BFG	BELOW FINISHED GRADE	NIC	NOT IN CONTRACT
BLDG	BUILDING	N.O.	NORMALLY OPEN
BSMT	BASEMENT	NP	NAMEPLATE
C	CONDUIT	NTS	NOT TO SCALE
CB	CIRCUIT BREAKER	OL	OVERLOAD
CCP	COMPACT CIRCUIT PROTECTOR	P	POLE(S)
CFL	COMPACT FLUORESCENT	PE	PHOTOEYE
CKT	CIRCUIT	PL	PILOT LIGHT
CNTRL	CONTROL	PP	POWER PANELBOARD
COMP	COMPRESSOR	PNL	PANEL
CONC	CONCRETE	PNLBD	PANELBOARD
CP	CONTROL PANEL	PRI	PRIMARY
CPT	CONTROL POWER TRANSFORMER	PVC	SCHEDULE 40 POLYVINYLCHLORIDE CONDUIT
CT	CURRENT TRANSFORMER	RAC	RIGID ALUMINUM CONDUIT
CTR	CENTER	RECPT	RECEPTACLE
CU	COPPER	REQD	REQUIRED
DC	DIRECT CURRENT	REQMTS	REQUIREMENTS
DISC	DISCONNECT	RGS	RIGID GALVANIZED STEEL
DN	DOWN	RM	ROOM
DP	DEEP OR DISTRIBUTION PANELBOARD	RMC	RIGID METAL CONDUIT
DS	DISCONNECT SWITCH OR DOOR SWITCH	RMS	ROOT MEAN SQUARE
DWG	DRAWING	SCH	SCHEDULE
EL OR ELEV	ELEVATION	SE	SERVICE ENTRANCE
ELEC	ELECTRICAL	SEC	SECONDARY
EMERG	EMERGENCY	SHLD	SHIELDED
EMT	ELECTRICAL METALLIC TUBING	SMH	STEAM MANHOLE
EXH	EXHAUST	SS	STAINLESS STEEL OR SELECTOR SWITCH
EXIST	EXISTING	ST	SHUNT TRIP
EXP	EXPANSION	STA	STATION
F	FUSE OR FUSIBLE	STL	STEEL
FDR	FEEDER	STRD	STRANDED
FL	FLOOR	SW	SWITCH
FO	FIBER OPTIC	SYM	SYMMETRICAL
FOR	FORWARD	TB	TERMINAL BLOCK
GALV	GALVANIZED	TE	TEMPERATURE ELEMENT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (6mA)	TEMP	TEMPERATURE OR TEMPORARY
GRC	GALVANIZED RIGID STEEL CONDUIT	TEFC	TOTALLY ENCLOSED FAN COOLED
GRD	GROUND	TT	TEMPERATURE TRANSMITTER
HP	HORSEPOWER	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
HZ	FREQUENCY IN CYCLES PER SECOND	TYP	TYPICAL
INS	INSULATED	UE	UNDERGROUND ELECTRIC
INSTR	INSTRUMENT OR INSTRUMENTATION	UG	UNDERGROUND
J, JB OR J-BOX	JUNCTION BOX	V	VOLT(S)
KA	KILOAMPERES	VA	VOLT AMPERE(S)
KAIC	KILOAMPERE INTERRUPTING CAPACITY (RMS SYMMETRICAL)	VFD	VARIABLE-FREQUENCY MOTOR DRIVE
KCM	THOUSAND CIRCULAR MILS	W/	WITH
KV	KILOVOLTS	W/G	WITH GROUND
KVA	KILOVOLT-AMPERES	W/O	WITHOUT
KW	KILOWATTS	WP	WEATHERPROOF
LFAC	LIQUIDTIGHT FLEXIBLE ALUMINUM CONDUIT	WW	WIREWAY
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT	XFMR	TRANSFORMER
LP	LIGHTING PANELBOARD	XMTR	TRANSMITTER
LSH	LEVEL SWITCH (HIGH)	Z	IMPEDANCE
LTG	LIGHTING	&	AND
mA	MILLIAMPERES	Δ	DELTA
		#	NUMBER
		%	PERCENT
		Ø	PHASE

GENERAL ELECTRICAL NOTES:

- A. THE CONTRACTOR SHALL PROVIDE ALL OPENINGS IN MANHOLE WALLS AS REQUIRED FOR CONDUIT DUCT BANK CONNECTIONS. SEAL PENETRATIONS IN ACCORDANCE WITH THE SPECIFICATIONS.
- B. COORDINATE EXACT LOCATIONS OF DUCT BANKS WITH EXISTING CONDITIONS AND WITH THE OWNER'S REPRESENTATIVE. INDICATE FINAL ROUTING OF ALL DUCT BANKS ON "AS BUILT" DRAWINGS.
- C. ALL INFORMATION CONTAINED ON THIS DRAWING APPLIES TO ES AND E SERIES DRAWINGS.
- D. THERE MAY BE SYMBOLS AND/OR ABBREVIATIONS SHOWN ON THIS SHEET THAT ARE NOT APPLICABLE TO THIS PROJECT.
- E. INSTALL AN 1800LB MULE TAPE IN EVERY CONDUIT PER SPECIFICATION SECTION 338128.

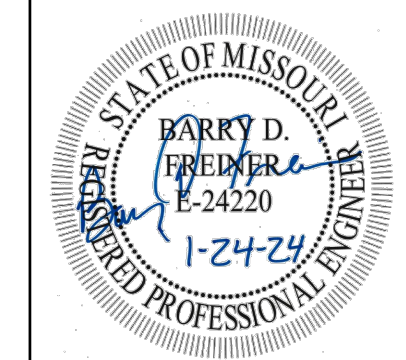


SECTION MARK



SECTION IDENTIFICATION SYMBOL

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**GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI**

For the Curators of the
University of Missouri
MU PROJECT #
CP 232751

DATE DESCRIPTION

UNIVERSITY OF MISSOURI
COLUMBIA, MO
CONTRACT DOCUMENTS

SYMBOLS, ABBREVIATIONS, AND GENERAL ELECTRICAL NOTES

DATE: 01 / 24 / 24
DRAWN: KET
CHECKED: BDF

SHEET #
E001

Author

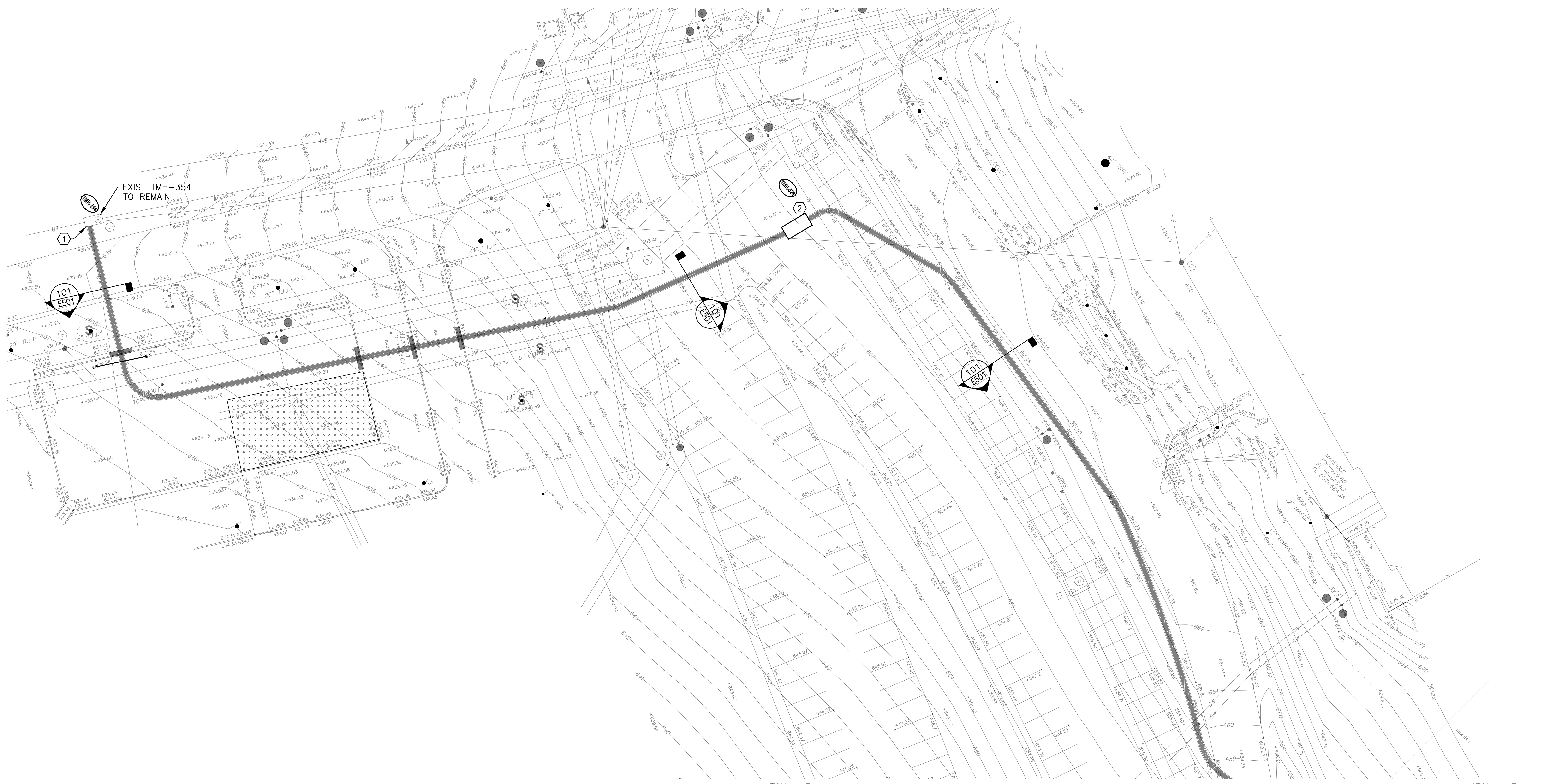
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MATCH LINE
SEE DWG ES102

MATCH LINE
SEE DWG ES102

TELECOM ELECTRICAL SITE PLAN
SCALE: 1"=20'-0"
NORTH

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. EXIST SITE UTILITIES ARE SHOWN FROM SURVEY BY ES&S DATED 12-01-23. HAVE ALL UG UTILITIES FIELD LOCATED PRIOR TO DIGGING.

KEY NOTES:

- 1. CONNECT NEW DUCT BANK TO EXIST TMH. SEE DETAILS ON DWG E502.
- 2. PROVIDE NEW PRECAST MANHOLE PER SPECIFICATION SECTION 338126 AND THE DETAILS ON DWG E503.

FILE LOCATION: \\192.168.0.200\projects\design\12305 - SKDG MU CP232751 TELECOM DUCT BANKS\3305 Drawings\3305-ES-01.dwg

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1-24-20
REGISTERED PROFESSIONAL ENGINEER

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**GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI**

PROJECT:
For the Curators of the
University of
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MU PROJECT #
CP 232751

DATE DESCRIPTION

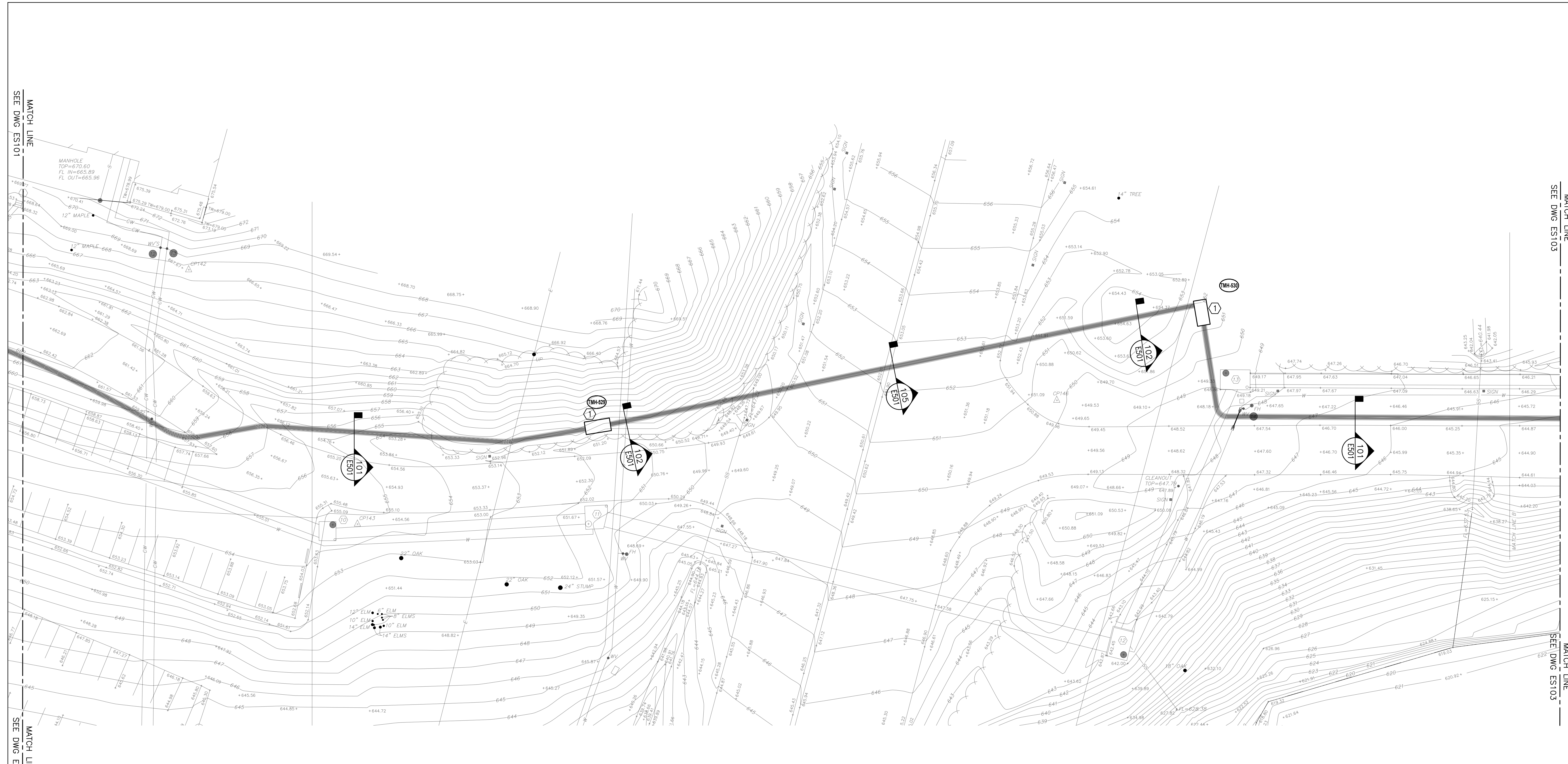
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DOCUMENTS

TELECOM ELECTRICAL SITE
PLAN - 1

DATE: 01/24/24
DRAWN: MNS CHECKED: BDF

SHEET #
ES101

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TELECOM ELECTRICAL SITE PLAN
 NORTH SCALE: 1"=20'-0"
 0 20' 40'

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. EXIST SITE UTILITIES ARE SHOWN FROM SURVEY BY ES&S DATED 12-01-23. HAVE ALL UG UTILITIES FIELD LOCATED PRIOR TO DIGGING.
- C. THE DUCT BANK BORE UNDER PROVIDENCE ROAD CAN BE A MAX OF (9) 4" SCH 40 PVC CONDUITS IN A 36" O.D. STEEL CASING WITH 9-WAY CONDUIT DUCT BANK CONNECTIONS TO TMH-529 AND TMH-530 IF BORING CONTRACTOR DOES NOT HAVE A 24" ROCK BIT FOR INSTALLATION PER DETAIL 105 ON DWG E501.

KEY NOTE:

- 1. PROVIDE NEW PRECAST MANHOLE PER SPECIFICATION SECTION 338126 AND THE DETAILS ON DWG E503.

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**GENERAL SITE
 TELECOM DUCT BANK INSTALLATIONS
 UNIVERSITY OF MISSOURI**

For the Curators of the
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 MU PROJECT #
 CP 232751

#	DATE	DESCRIPTION

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CONTRACT DOCUMENTS

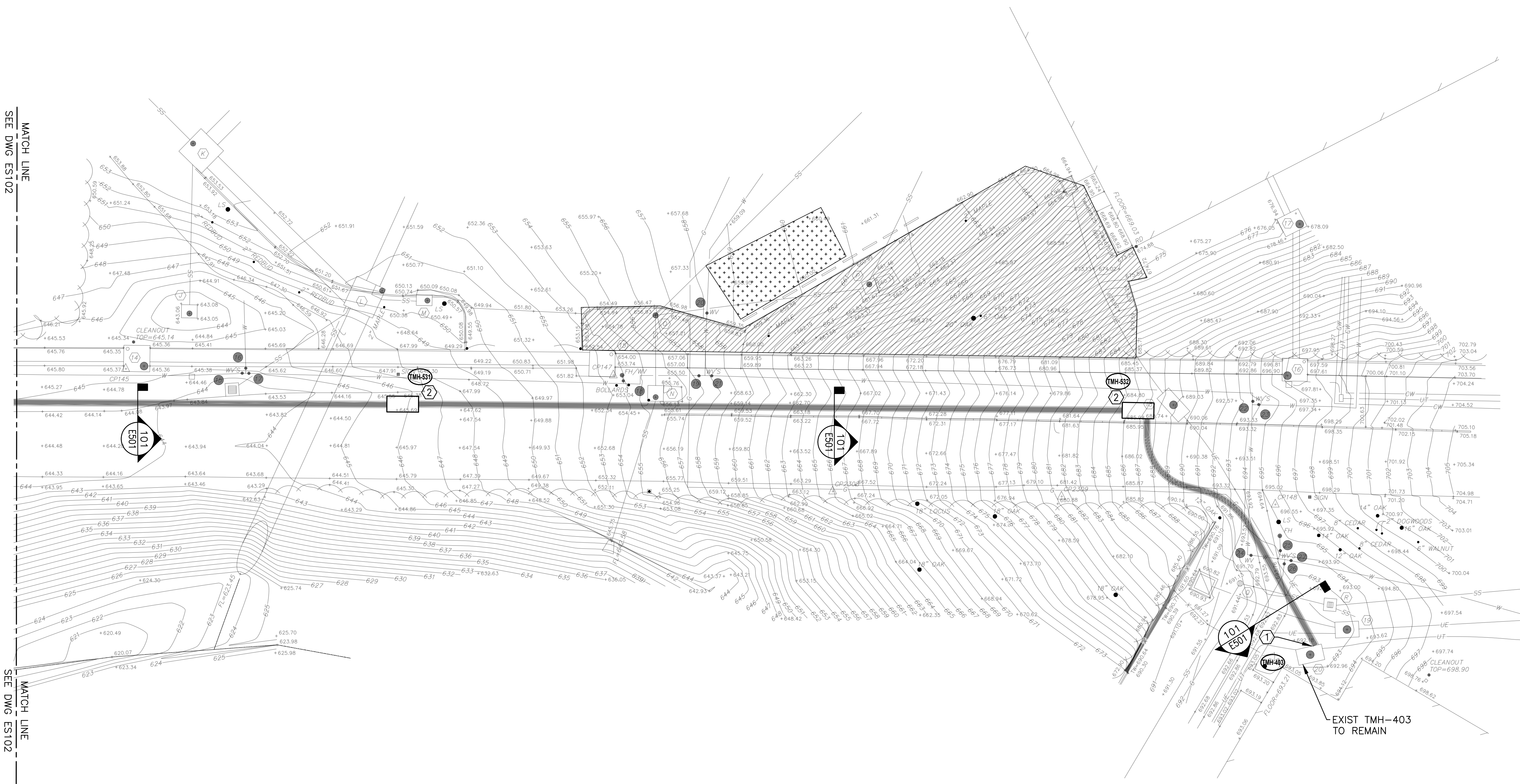
TELECOM ELECTRICAL SITE PLAN - 2

DATE:	01 / 24 / 24
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CHECKED:	BDF

SHEET #
ES102

MATCH LINE SEE DWG E5102

MATCH LINE SEE DWG E5102



TELECOM ELECTRICAL SITE PLAN
 SCALE: 1"=20'-0"
 NORTH

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. EXIST SITE UTILITIES ARE SHOWN FROM SURVEY BY ES&S DATED 12-01-23. HAVE ALL UT UTILITIES FIELD LOCATED PRIOR TO DIGGING.

KEY NOTES:

- 1. CONNECT NEW DUCT BANK TO EXIST TMH. SEE DETAILS ON DWG E502.
- 2. PROVIDE NEW PRECAST MANHOLE PER SPECIFICATION SECTION 338126 AND THE DETAILS ON DWG E503.

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**GENERAL SITE
 TELECOM DUCT BANK INSTALLATIONS
 UNIVERSITY OF MISSOURI**

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TELECOM ELECTRICAL SITE PLAN - 3

DATE:	01 / 24 / 24
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ES103

Author

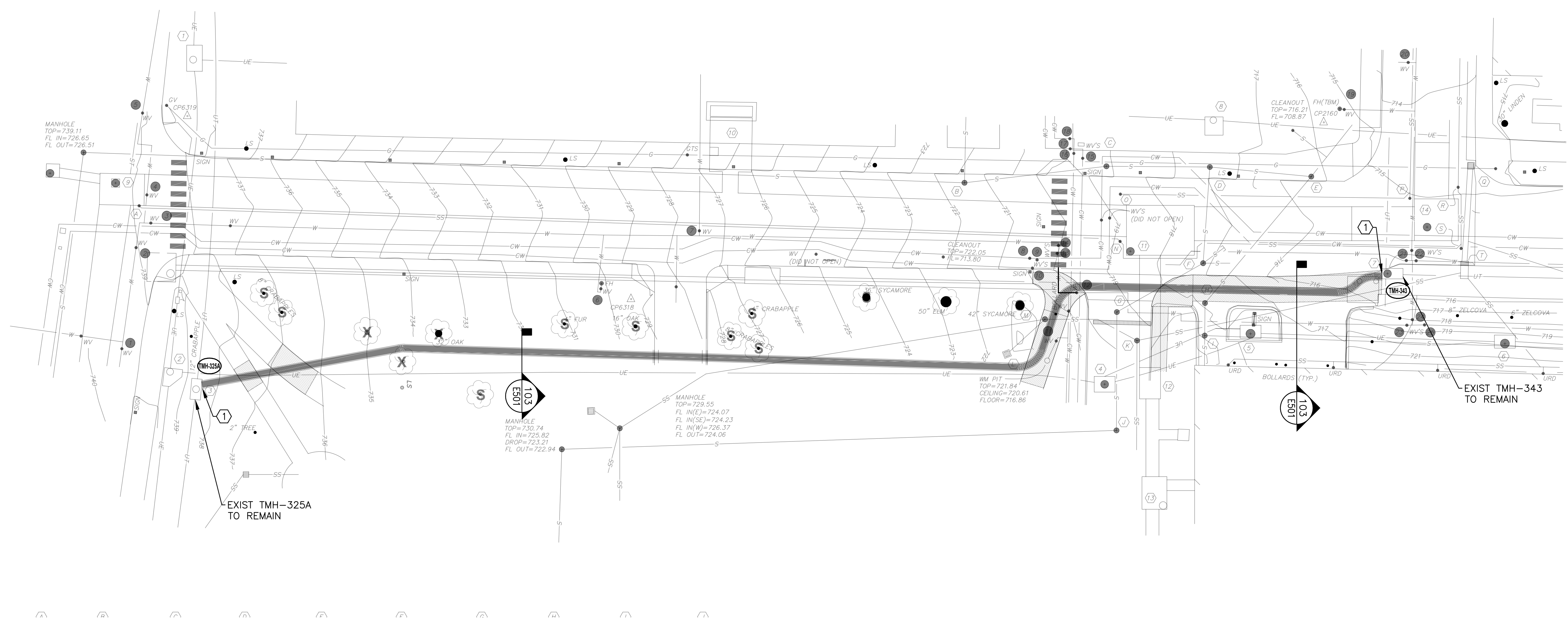
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TELECOM ELECTRICAL SITE PLAN
 SCALE: 1"=20'-0"
 NORTH

GENERAL NOTES:

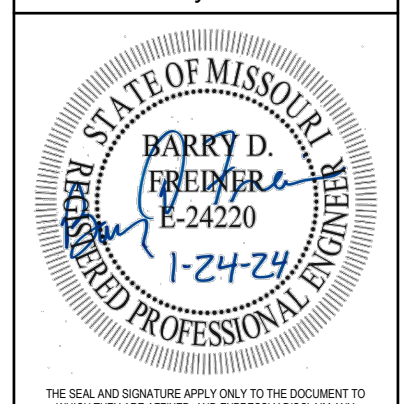
- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. EXIST SITE UTILITIES ARE SHOWN FROM SURVEY BY ES&S DATED 11-20-23. HAVE ALL UG UTILITIES FIELD LOCATED PRIOR TO DIGGING.

KEY NOTE:

- 1. CONNECT NEW DUCT BANK TO EXIST TMH. SEE DETAILS ON DWG E502.

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GENERAL SITE TELECOM DUCT BANK INSTALLATIONS UNIVERSITY OF MISSOURI

For the Curators of the University of Missouri
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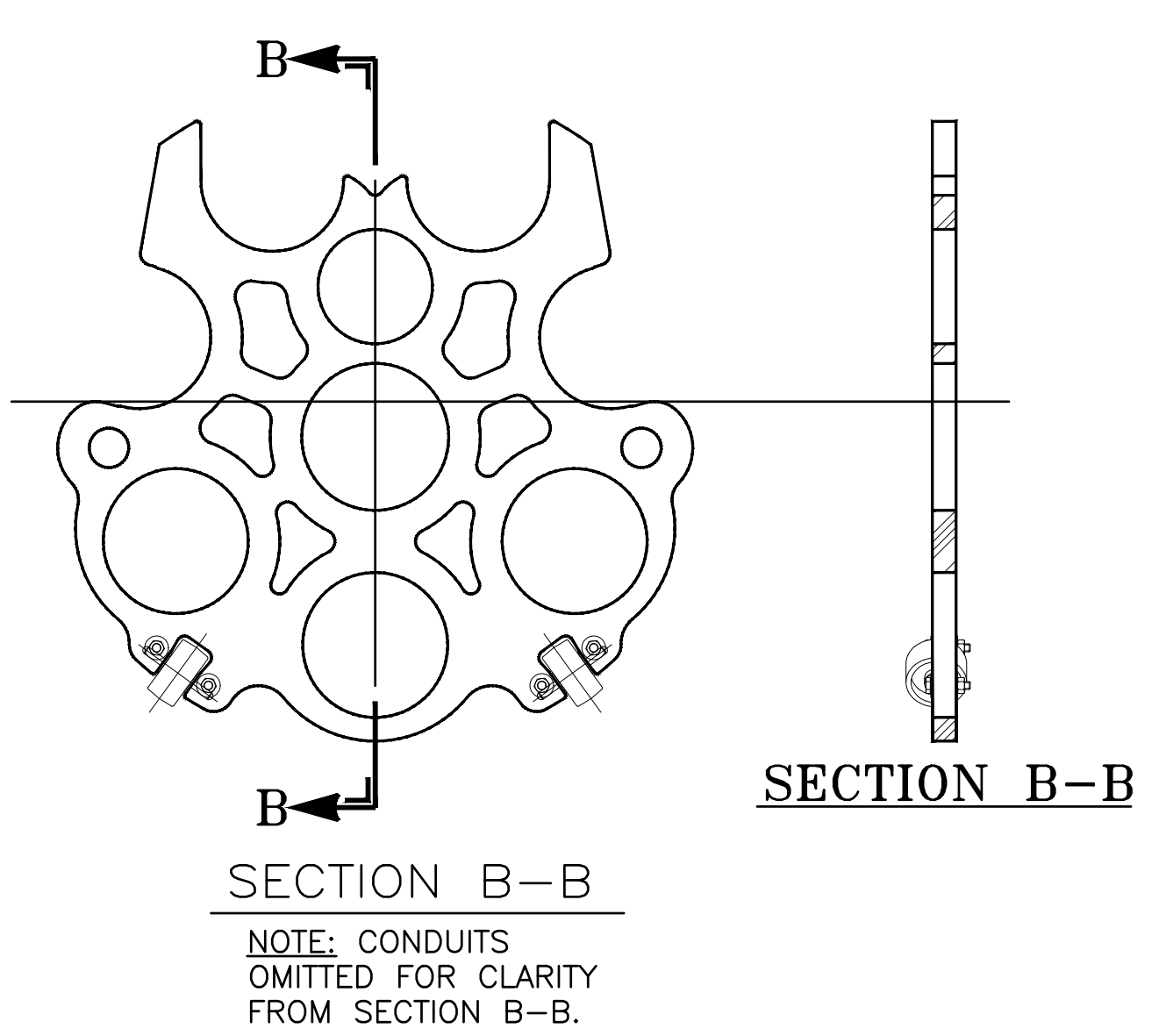
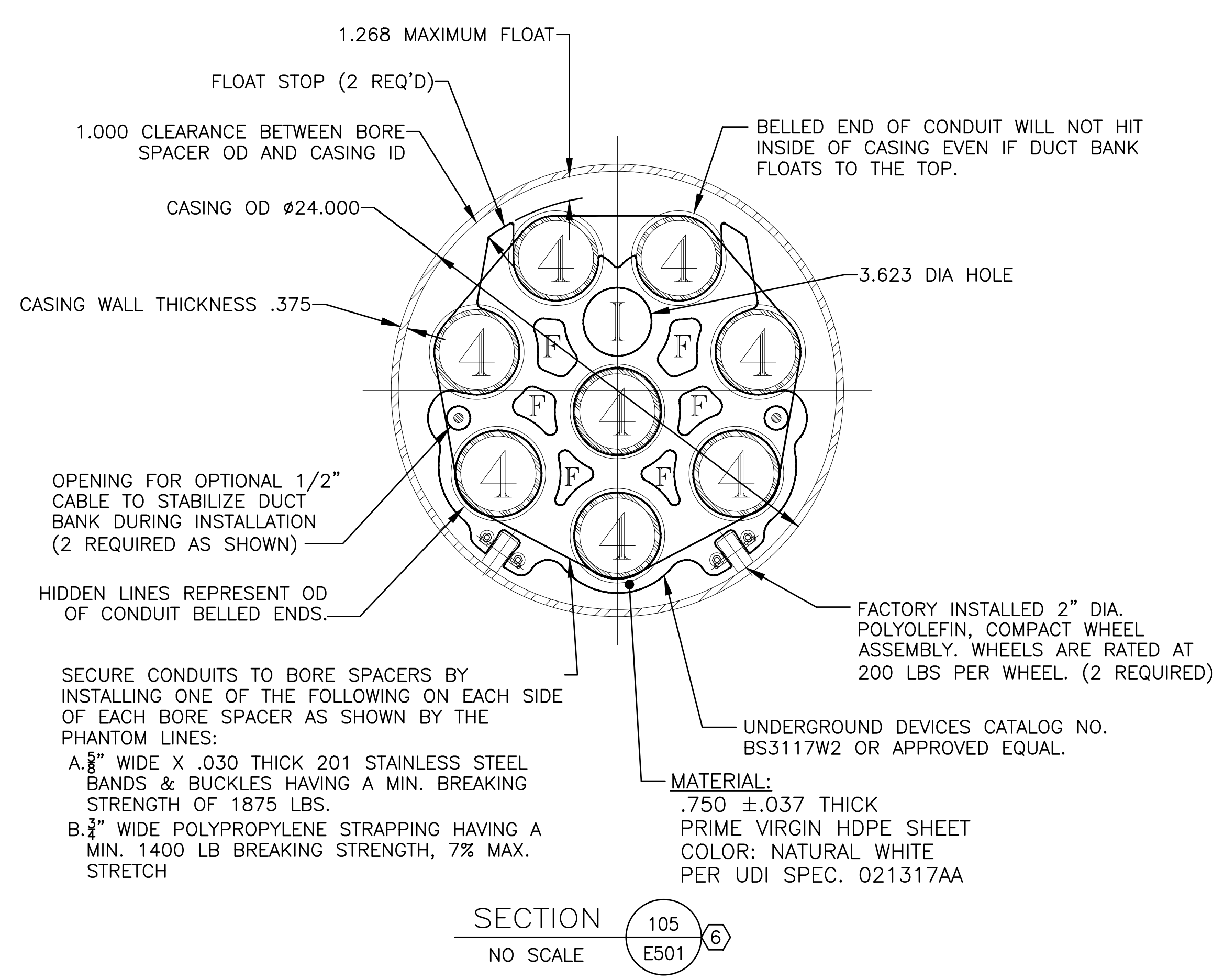
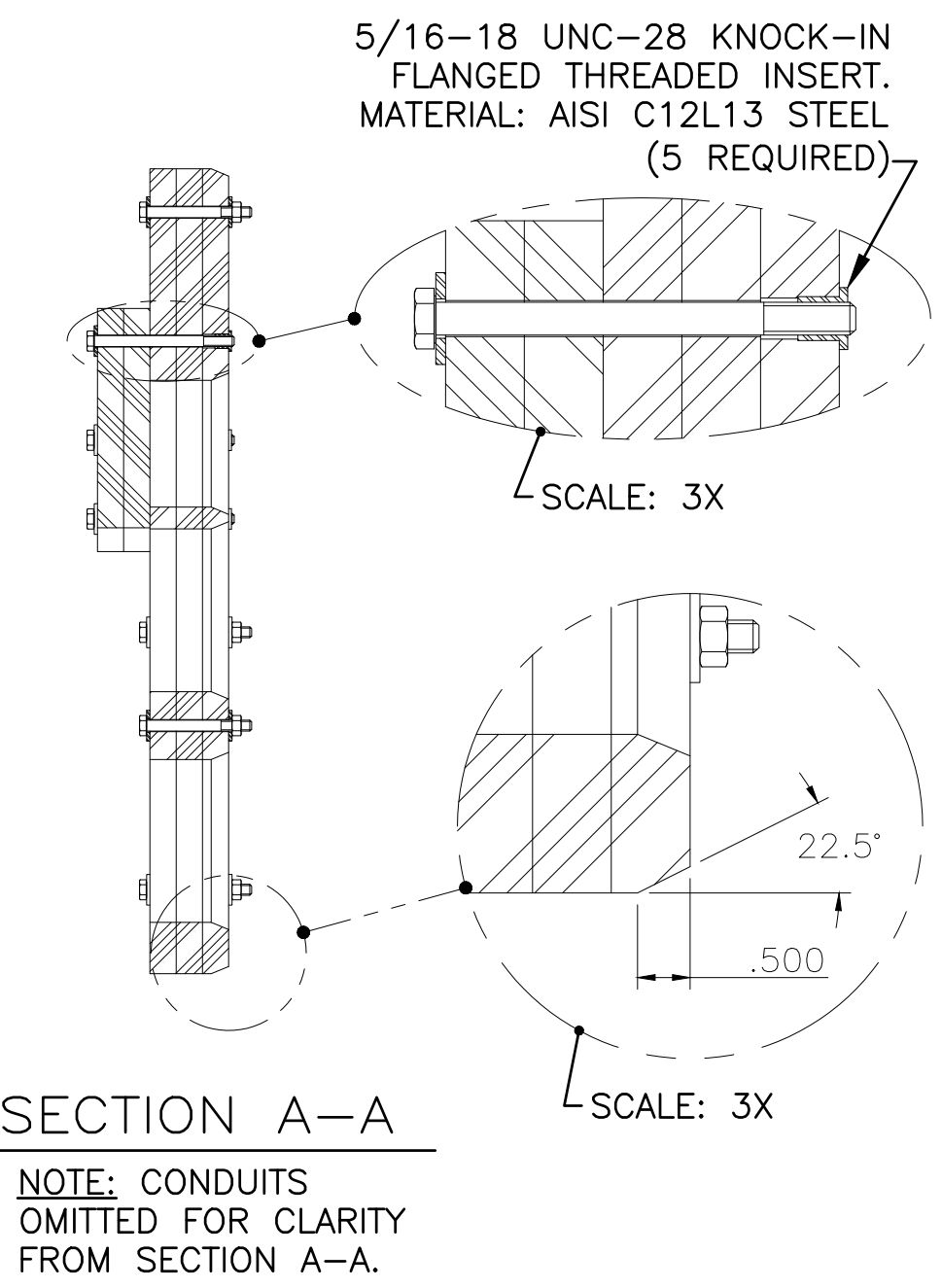
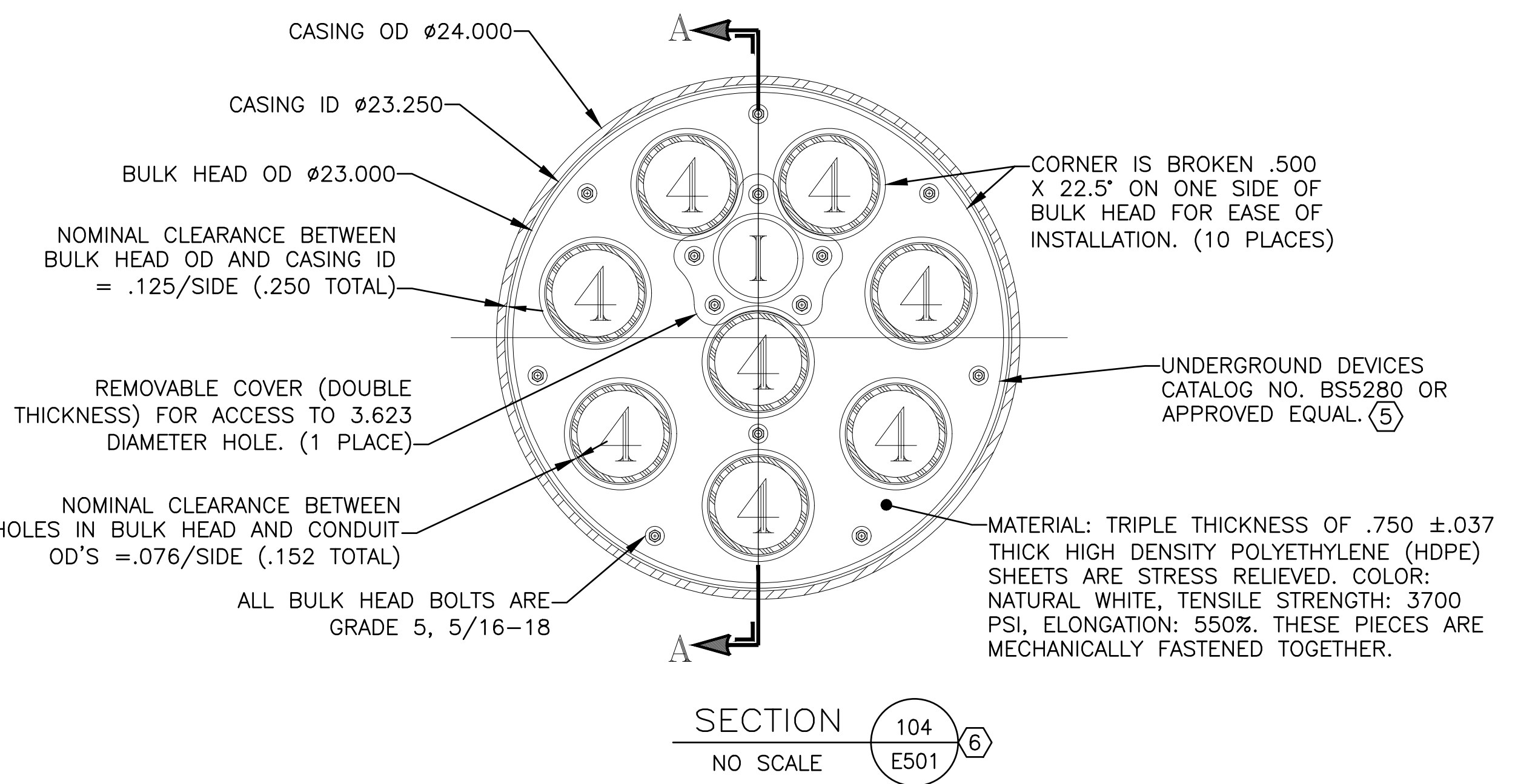
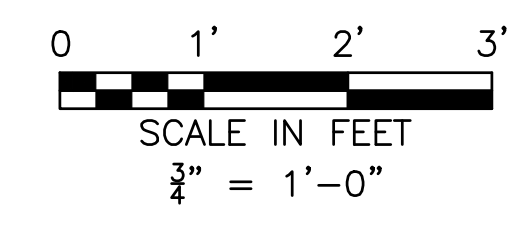
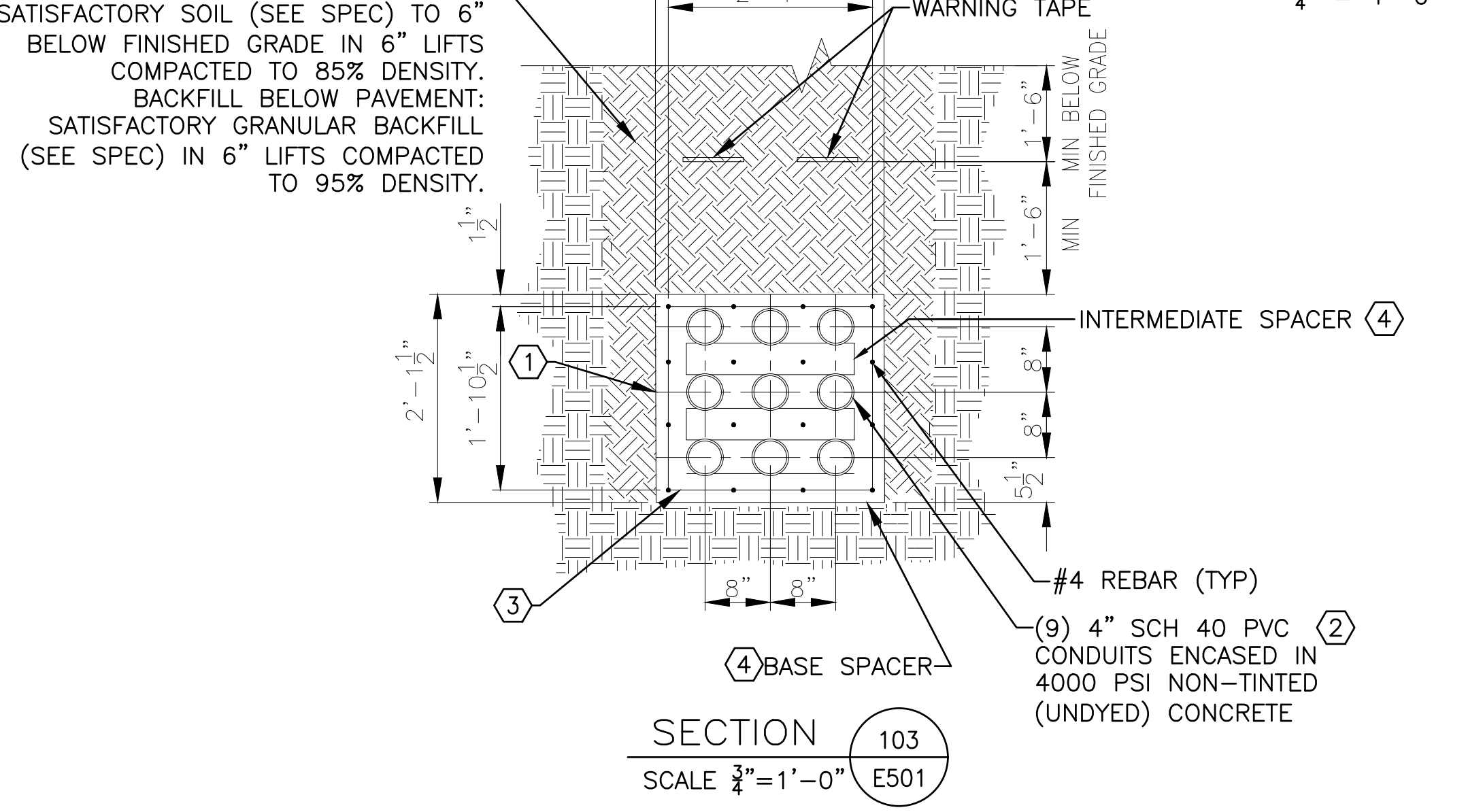
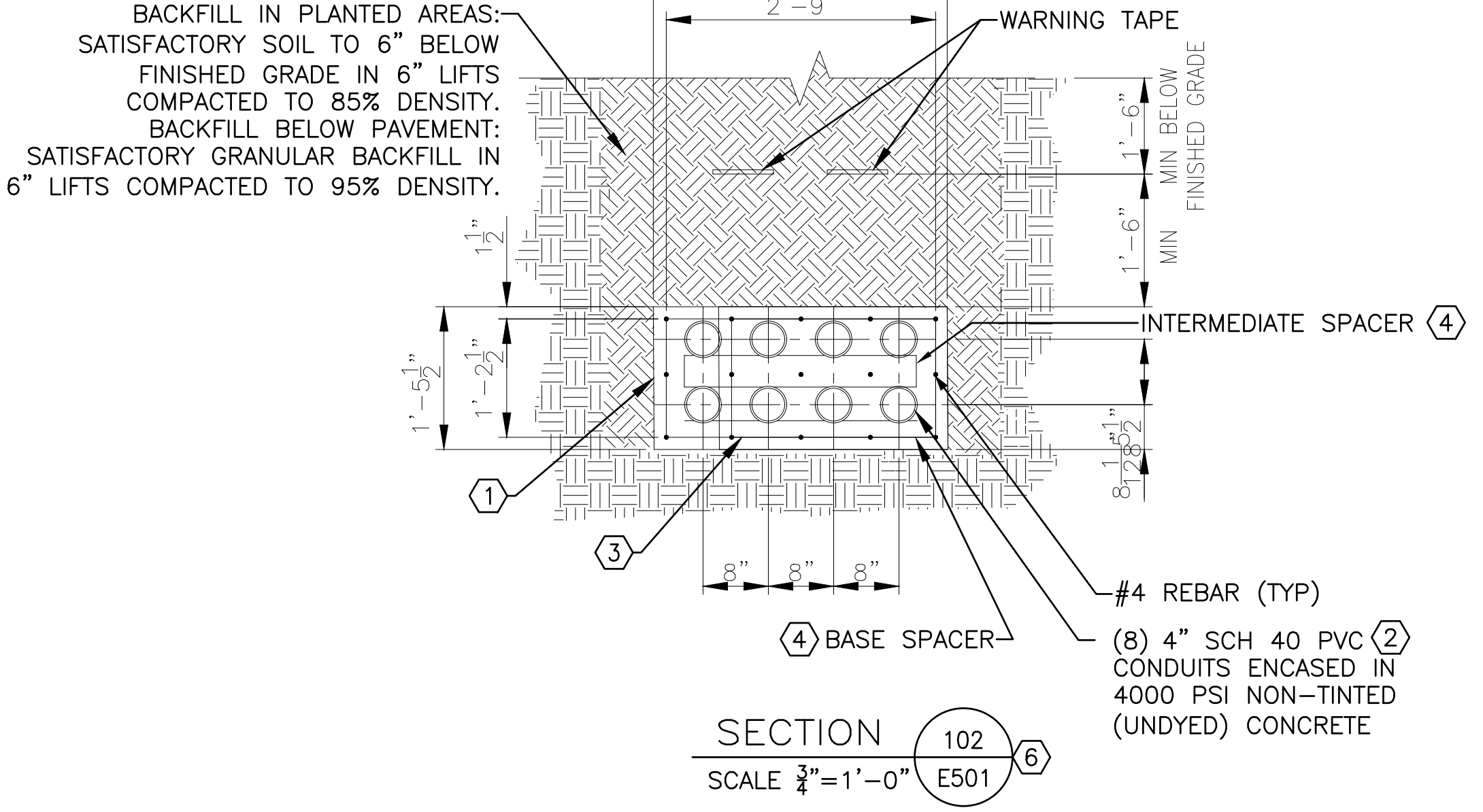
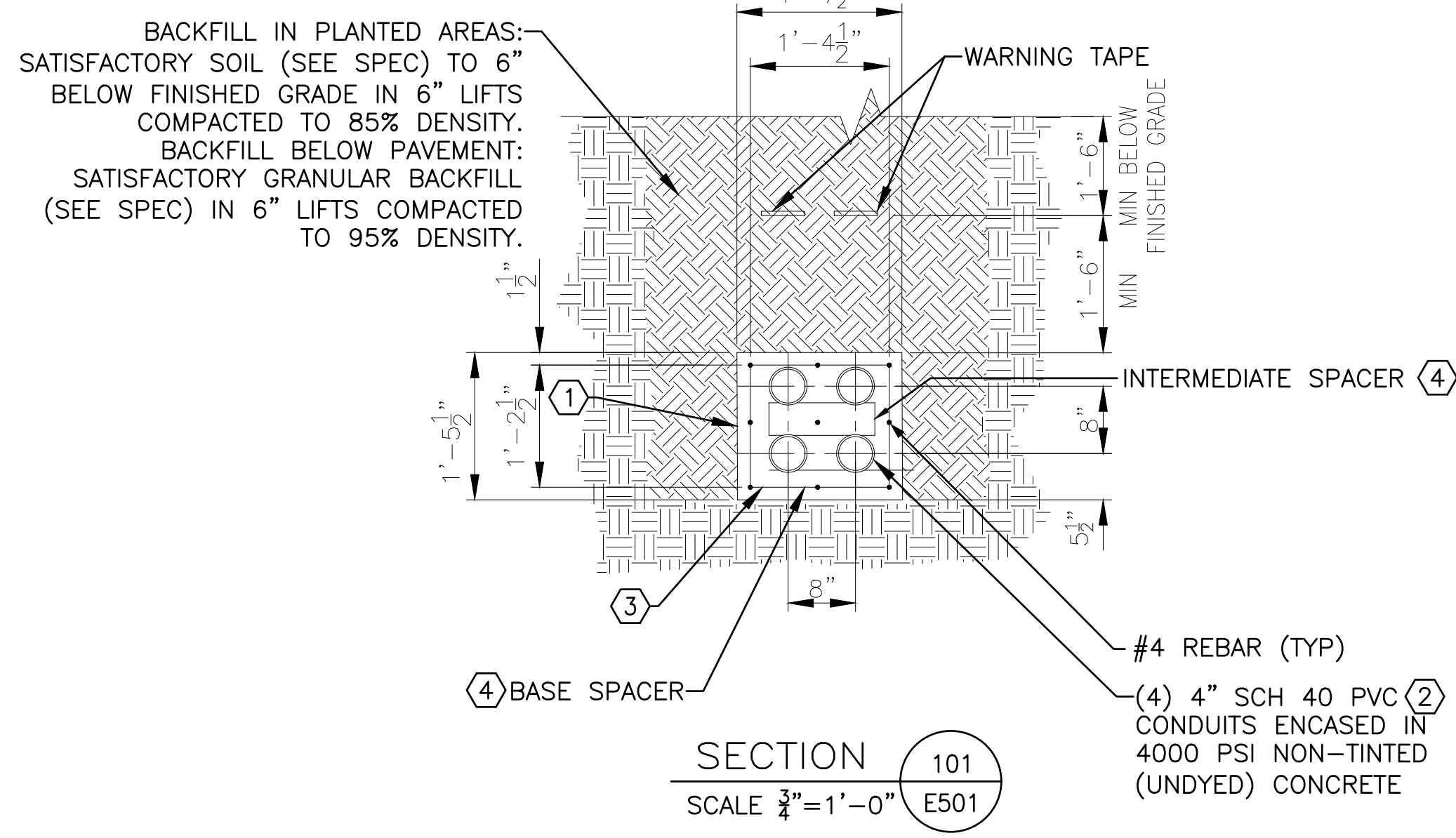
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TELECOM ELECTRICAL SITE PLAN - 4

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GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. EACH UNDERGROUND CONDUIT MUST HAVE A MINIMUM 3" CONCRETE ENVELOPE IN EACH DIRECTION AND MAXIMUM 6" VERTICAL AND MAXIMUM 12" HORIZONTAL. THE NUMBER AND CONFIGURATION OF CONDUITS IN DUCT BANKS SHALL BE AS INDICATED.

KEY NOTES:

- 1. EARTH FORMING OF DUCT BANK IS ACCEPTABLE WHERE SIDES OF TRENCH CONSISTS OF FIRM, UNDISTURBED SOIL. WHEN DUCT BANK IS TRENCHED THROUGH ROCK, DUCT BANK CAN BE POURED AGAINST THE ROCK SIDES OF EXCAVATION.
- 2. IN PLACING CONCRETE, USE A DELIVERY CHUTE TO MINIMIZE FALL OF CONCRETE INTO THE TRENCH. USE A SPLASH BOARD TO DIVERT THE FLOW OF CONCRETE AWAY FROM THE TRENCH SIDES AND AVOID DISLODGING SOIL AND STONES. CONCRETE SLUMP SHALL HAVE CONSISTENCY TO INSURE FLOWING OF CONCRETE BETWEEN, UNDER AND ALL AROUND DUCTS. UTILIZE A MECHANICAL VIBRATOR TO ENSURE THAT THERE ARE NO VOIDS AND AIR POCKETS AND TO PREVENT DUCTS FROM FLOATING.
- 3. #4 REBAR TIE LOOP EVERY 48" MAXIMUM O.C.. SPACING BETWEEN LONGITUDINAL REINFORCING REBARS SHALL BE 12" MAXIMUM.
- 4. INSTALL SPACERS AT A MAXIMUM OF EVERY 8 FEET.
- 5. INSTALL BULK HEAD DEVICE BETWEEN 8" AND 12" INSIDE BOTH ENDS OF BORE CASING AND EXTEND REINFORCED CONCRETE ENCASEMENT OF UNDERGROUND DUCT BANK UP TO BULK HEAD TO ELIMINATE A SHEAR POINT FOR THE CONDUITS AT THE CONCRETE ENCASED DUCT BANK TO BORED DUCT BANK INTERFACES.
- 6. THE DUCT BANK BORE CAN BE A MAX OF (9) 4" SCH 40 PVC CONDUITS IN A 30" OR 36" O.D. STEEL CASING WITH 9-WAY CONDUIT DUCT BANK CONNECTIONS TO TMH-529 AND TMH-530 IF BORING CONTRACTOR DOES NOT HAVE A 24" ROCK BIT FOR INSTALLATION PER THE DETAILS ON THIS SHEET.

GENERAL BORE SPACER NOTES:

- A. USE ONE BORE SPACER FOR EVERY 5 FEET OF DUCT BANK.
- B. THE CASING ID MUST BE SMOOTH AND FREE FROM RIDGES, PROJECTIONS, AND SEAMS THAT MIGHT IMPEDE THE ROLLING OF WHEELS.
- C. INSTALL BORE SPACERS PERPENDICULAR TO CONDUITS TO REDUCE THE TENDENCY OF DUCT BANK TO CORKSCREW.
- D. A TROUGH OR FEEDER BRIDGE SHOULD BE CONSTRUCTED AT THE LEADING END OF THE CASING TO SUPPORT SECTIONS OF DUCT BANK AS THEY ARE ASSEMBLED AND PULLED INTO THE CASING.
- E. BORE CASING MUST BE STRAIGHT AND TRUE.
- F. TO PREVENT THE DUCT BANK FROM ROTATING (CORKSCREWING) AS IT IS PULLED THRU THE CASING "STABILIZATION CABLES" SHALL BE USED.
- G. BORE SPACER SHALL BE SUITABLE FOR "NO GROUT" APPLICATIONS.

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1-24-24
REGISTERED PROFESSIONAL ENGINEER

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-800-1551
MISSOURI STATE CERTIFICATE OF AUTHORITY #000408

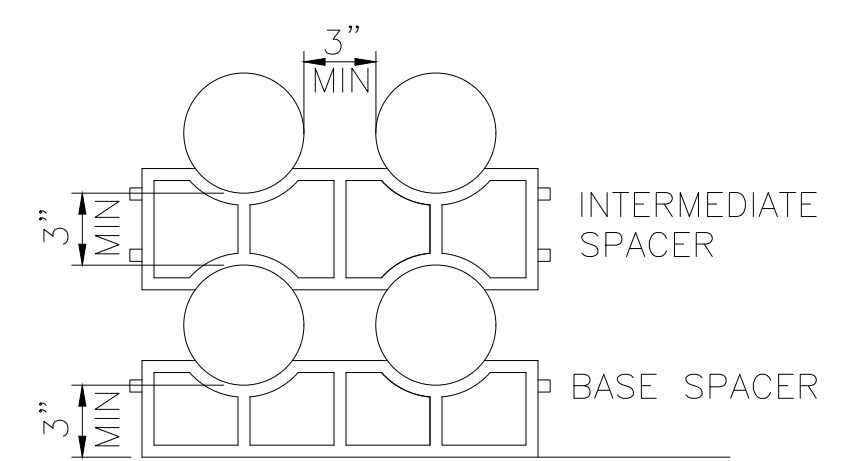
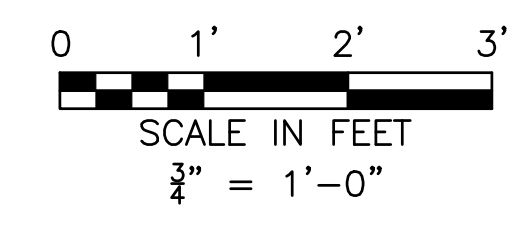
GENERAL SITE TELECOM DUCT BANK INSTALLATIONS UNIVERSITY OF MISSOURI

For the Curators of the University of Missouri
MU PROJECT # CP 232751

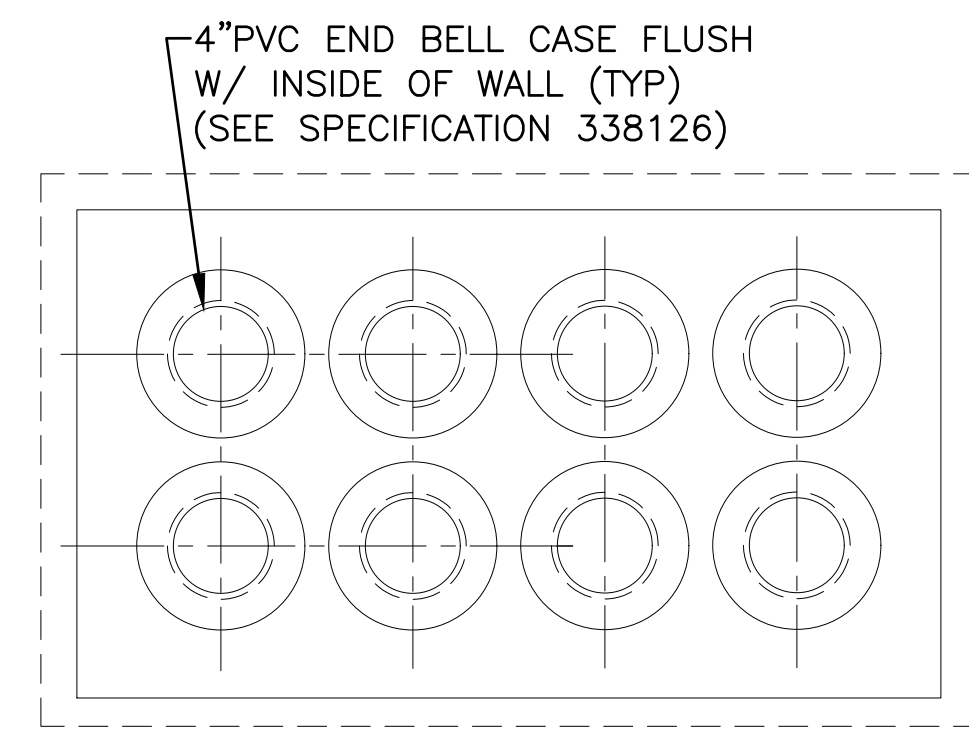
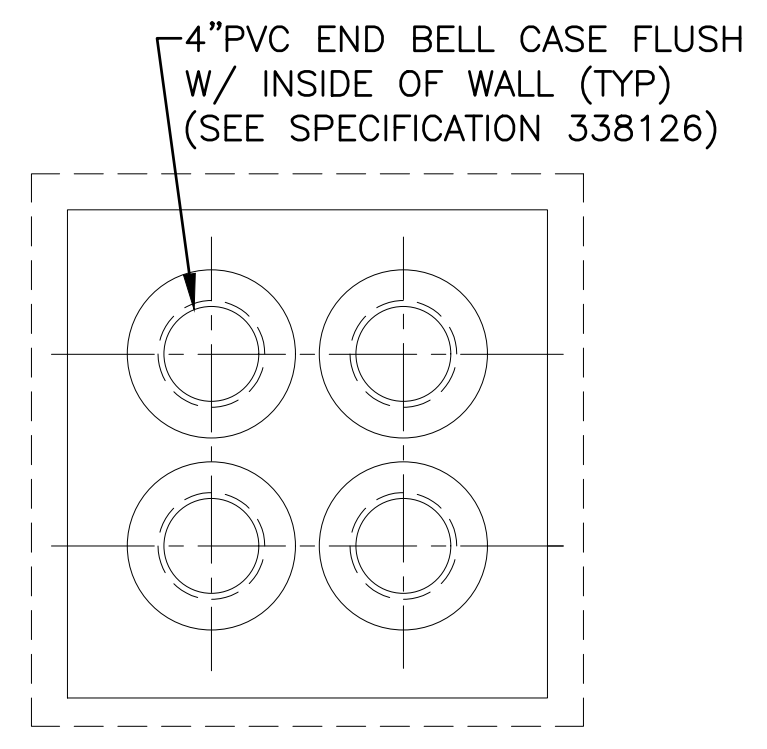
UNIVERSITY OF MISSOURI COLUMBIA MO
CONTRACT DOCUMENTS
DUCT BANK SECTIONS

DATE: 01/24/24
DRAWN: KET
CHECKED: BDF
SHEET # E501

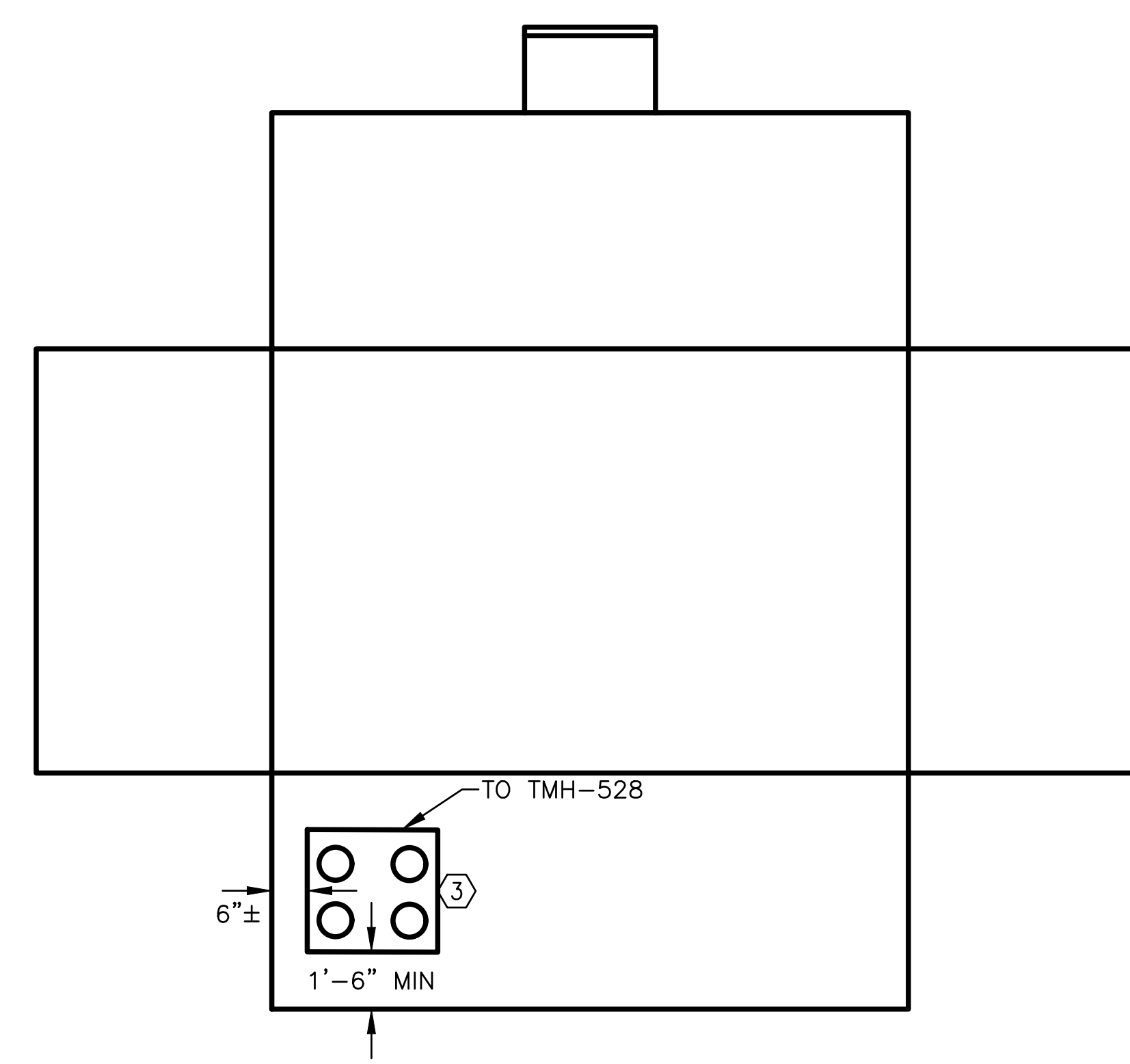
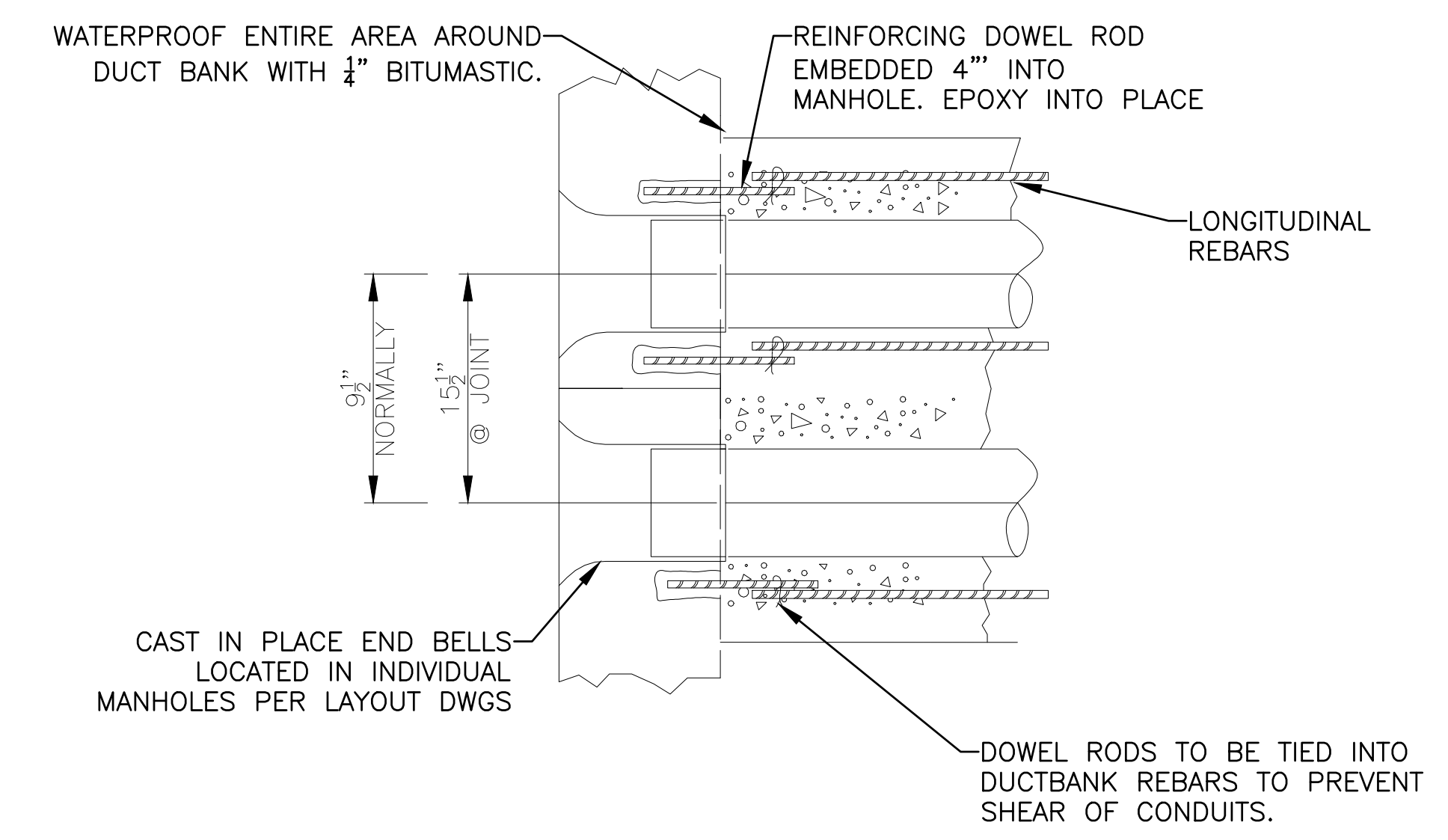
Author
E
D
C
B
A
FILE LOCATION: \\192.168.0.200\projects\design\12305 - SKDG MU CP232751 TELECOM DUCT BANKS\305 Drawings\305-E-502.dwg



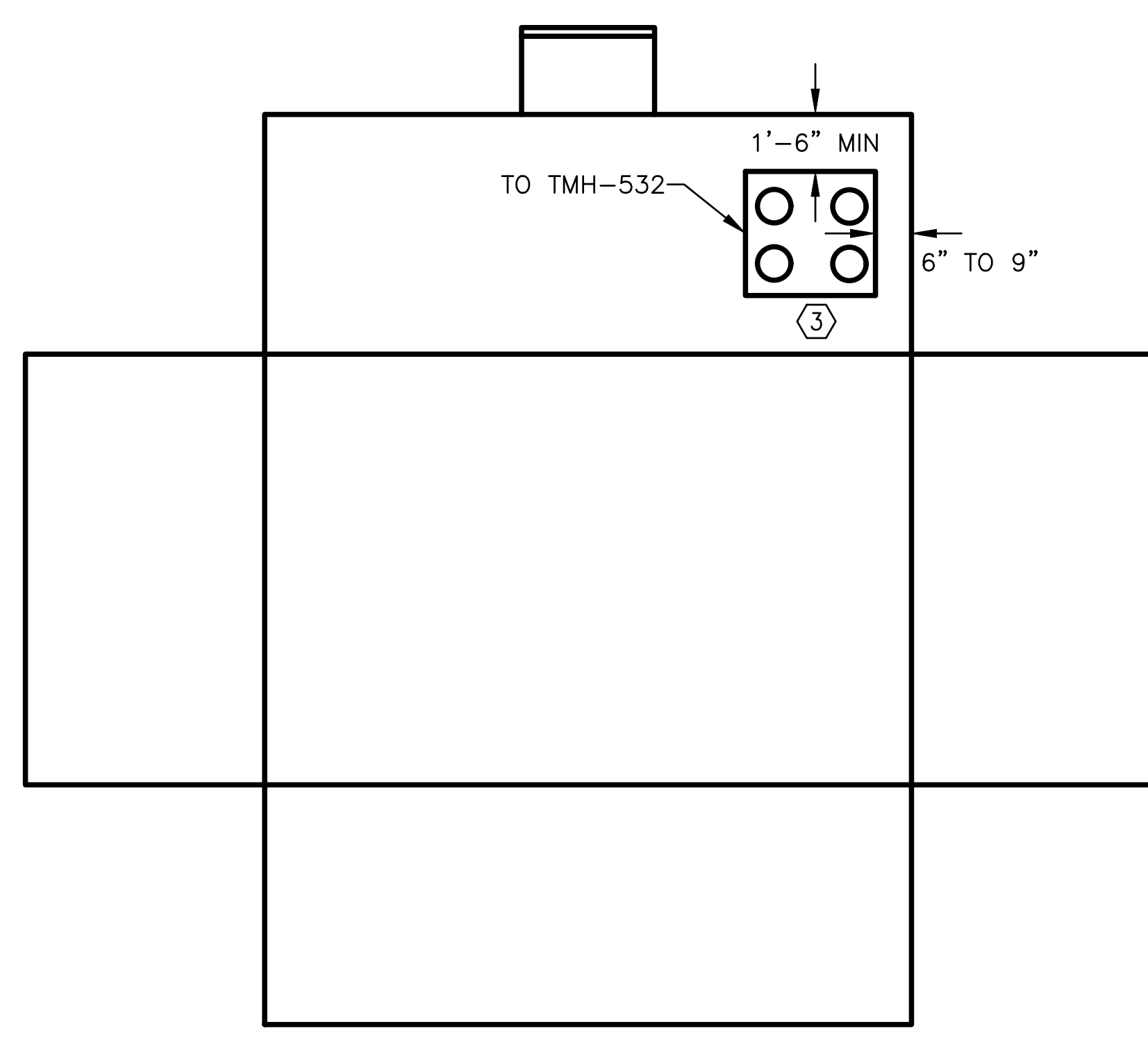
201 TYPICAL DUCT BANK SPACER DETAIL (1)
E502 NO SCALE



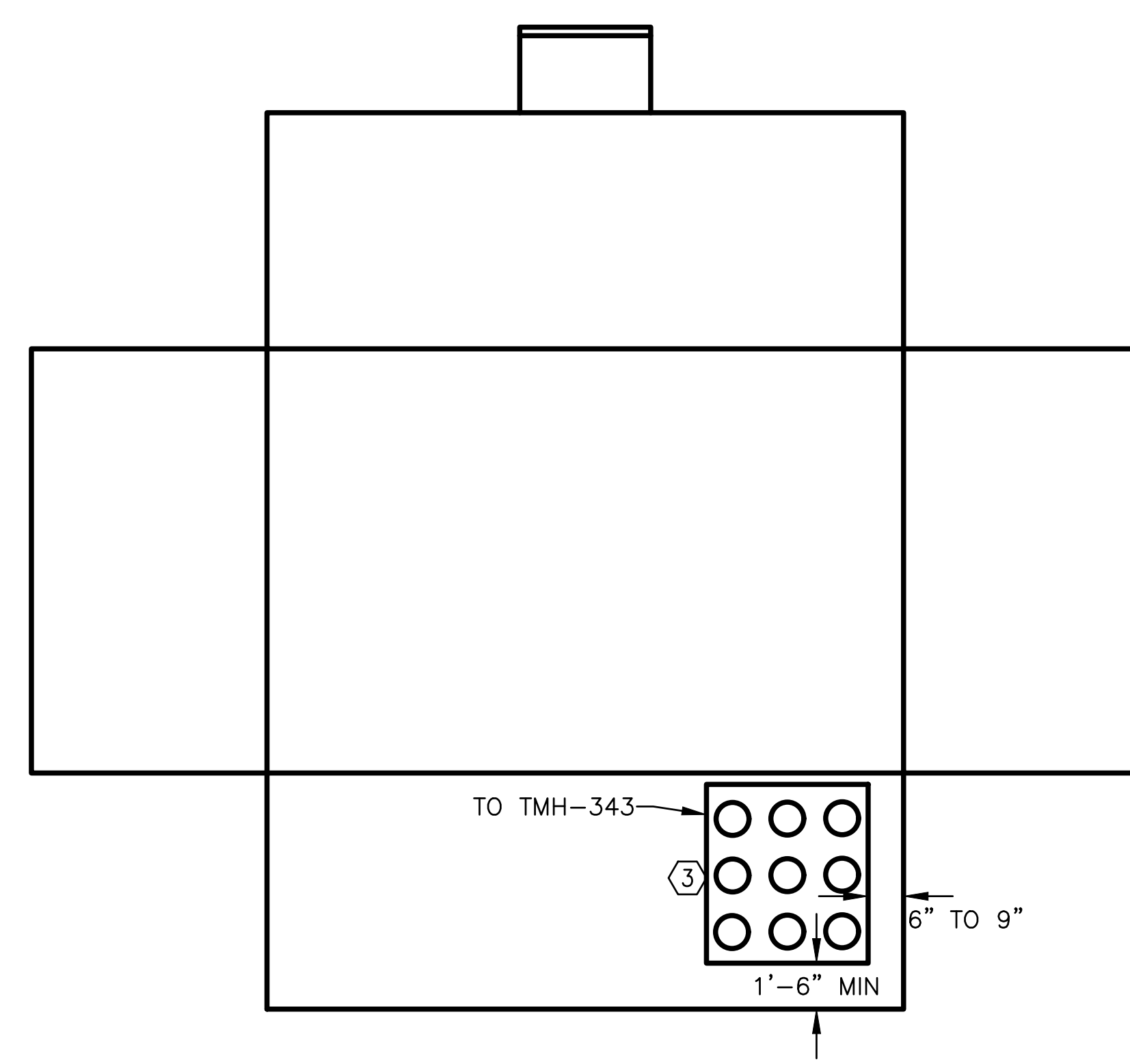
202 TYPICAL NEW TELECOM DUCT BANK AT NEW MANHOLE DETAILS
E502 NO SCALE



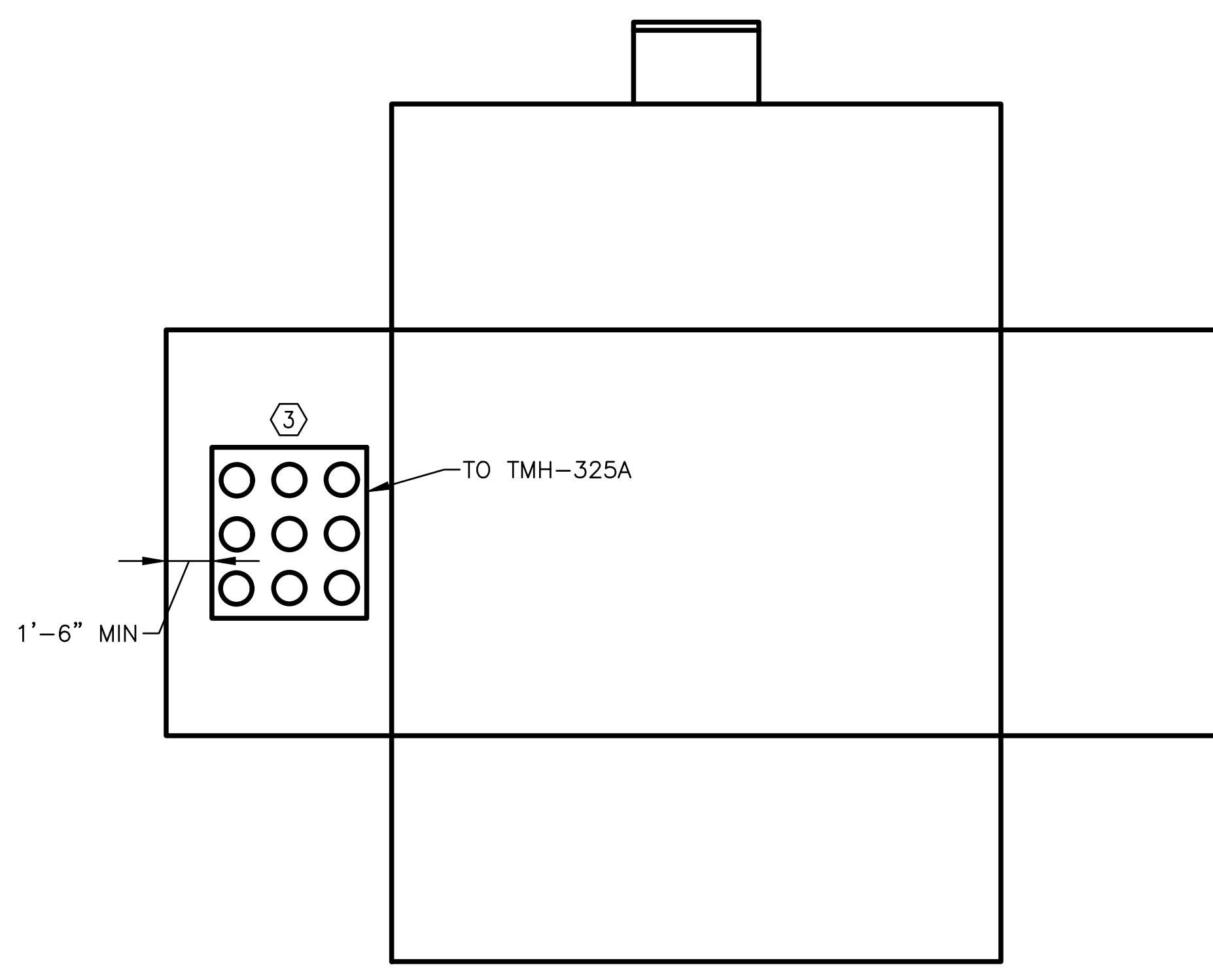
203 TMH-354 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL (2)
E502 NO SCALE



204 TMH-403 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL (2)
E502 NO SCALE



205 TMH-325A MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL (2)
E502 NO SCALE



206 TMH-343 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL (2)
E502 NO SCALE

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. EACH UNDERGROUND CONDUIT MUST HAVE A MINIMUM 3" CONCRETE ENVELOPE IN EACH DIRECTION AND MAXIMUM 6" VERTICAL AND MAXIMUM 12" HORIZONTAL. THE NUMBER AND CONFIGURATION OF CONDUITS IN DUCT BANKS SHALL BE AS INDICATED.

KEY NOTES:

- 1. INSTALL SPACERS AT A MAXIMUM OF EVERY 8 FEET.
- 2. EXIST DUCT BANK ENTRIES ARE NOT SHOWN.
- 3. NEW DUCT BANK CONDUIT ENTRIES SHALL BE CORE DRILLED INTO WALL OF EXIST MANHOLE AND THE DUCT BANK PINNED TO THE MANHOLE WALL WITH REINFORCING STEEL.

SK
SK Design Group, Inc.
Civil Engineers
4600 College Blvd., Suite 100
Overland Park, KS 66211
(913) 451-1818
fax (913) 451-7599
www.skdg.com
MO State Certificate of Authority: 001274

STATE OF MISSOURI
BARRY D. FEDERER
E-24220
1-24-21
REGISTERED PROFESSIONAL ENGINEER

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ENGINEERING CO., P.C.
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ST. LOUIS, MO 63026
PHONE: 636-800-1551
MISSOURI STATE CERTIFICATE OF AUTHORITY #000408

**GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI**

For the Curators of the
University of Missouri
MU PROJECT #
CP 232751

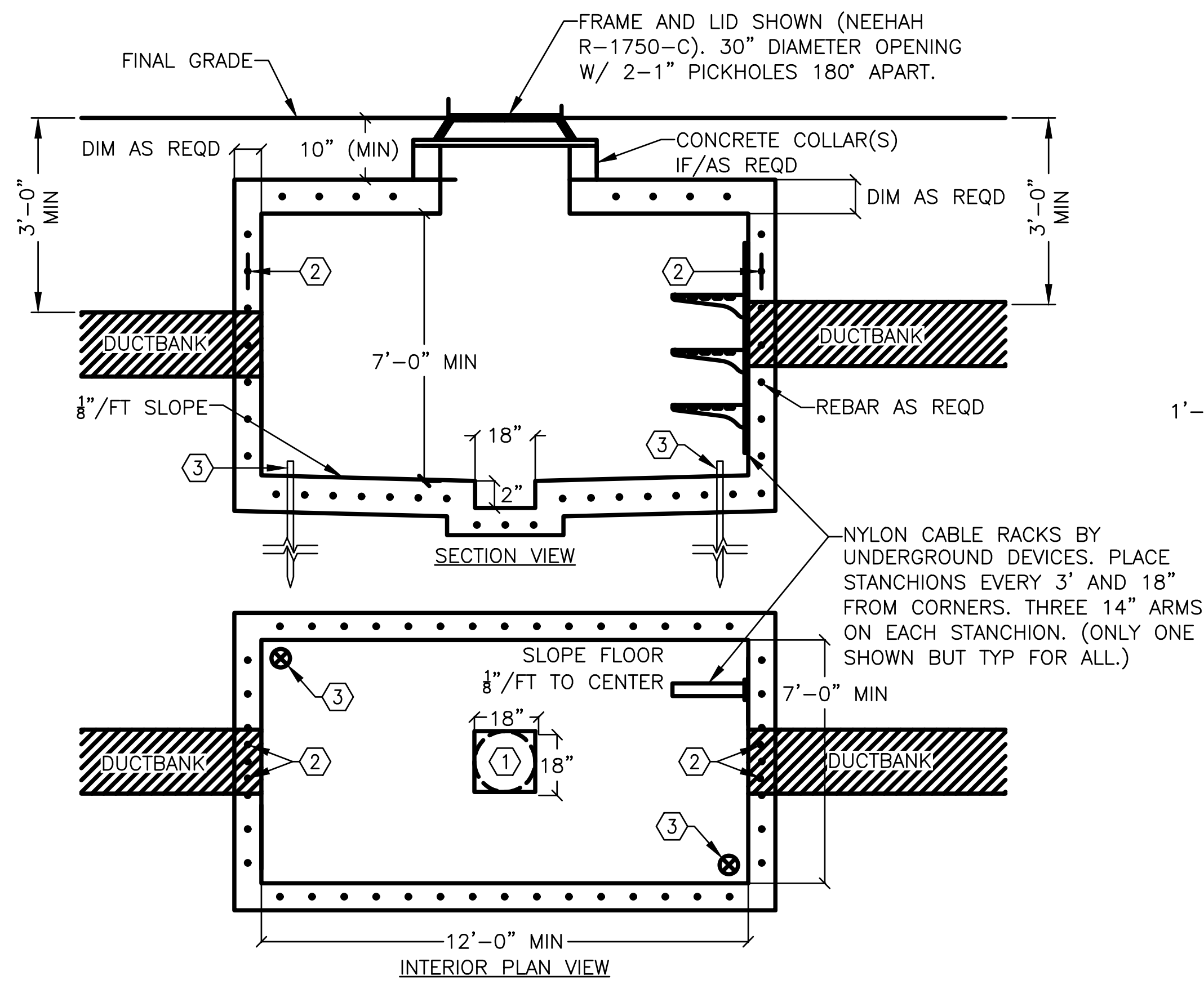
#	DATE	DESCRIPTION

UNIVERSITY OF MISSOURI
COLUMBIA MO
CONTRACT DOCUMENTS

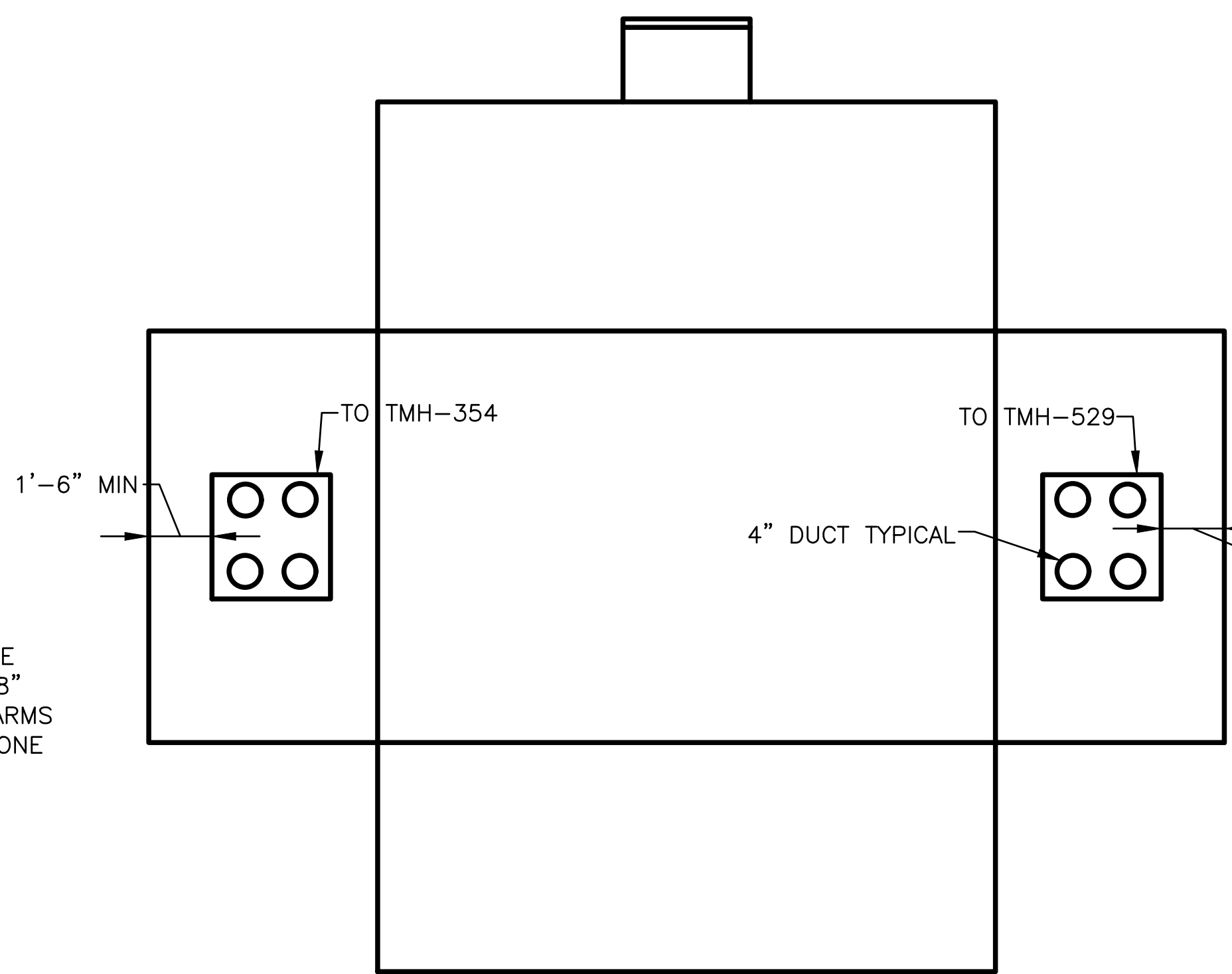
DUCT BANK & EXIST TELECOM MANHOLE DETAILS

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DRAWN:	KET
CHECKED:	BDF

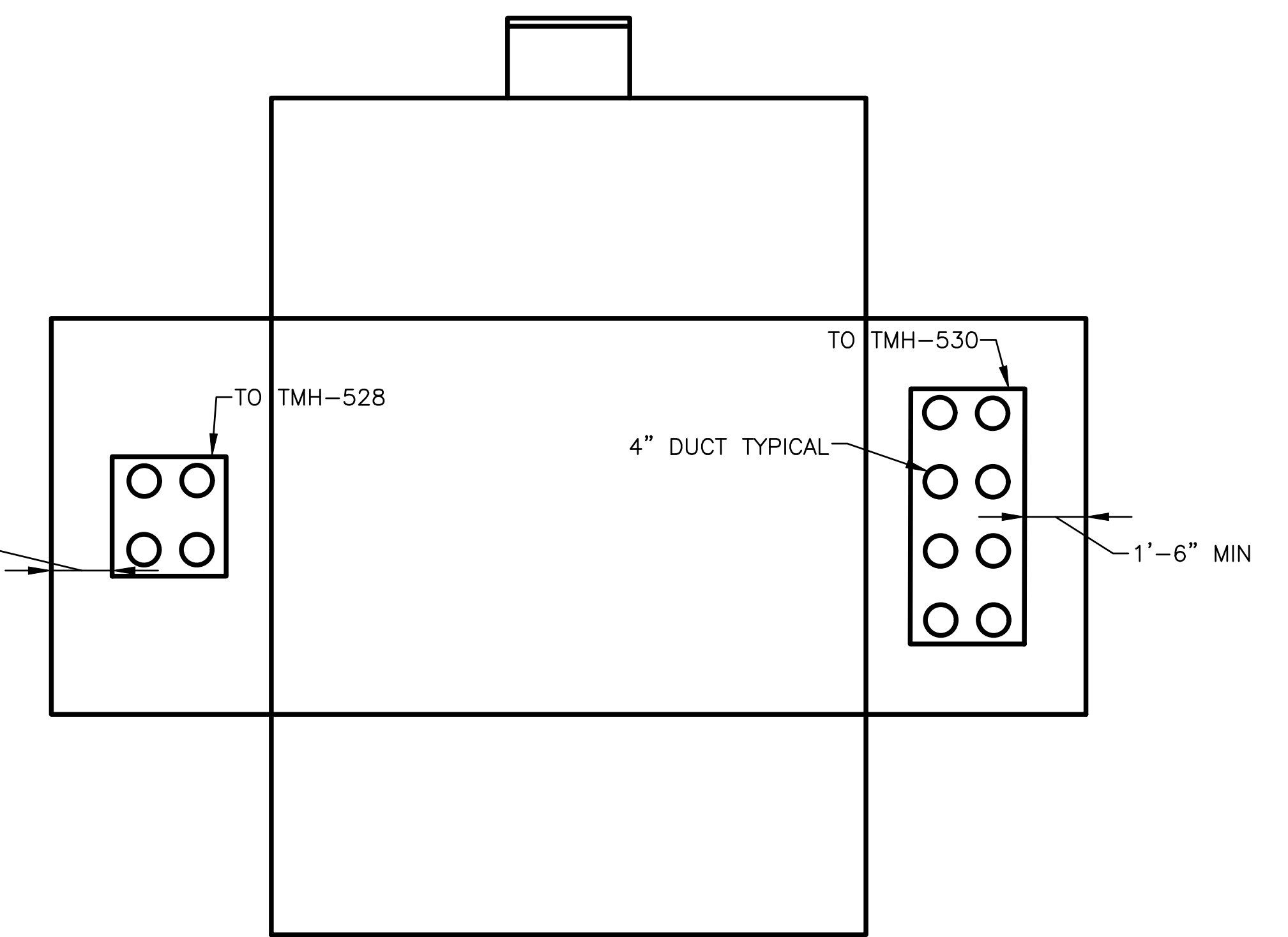
SHEET #
E502



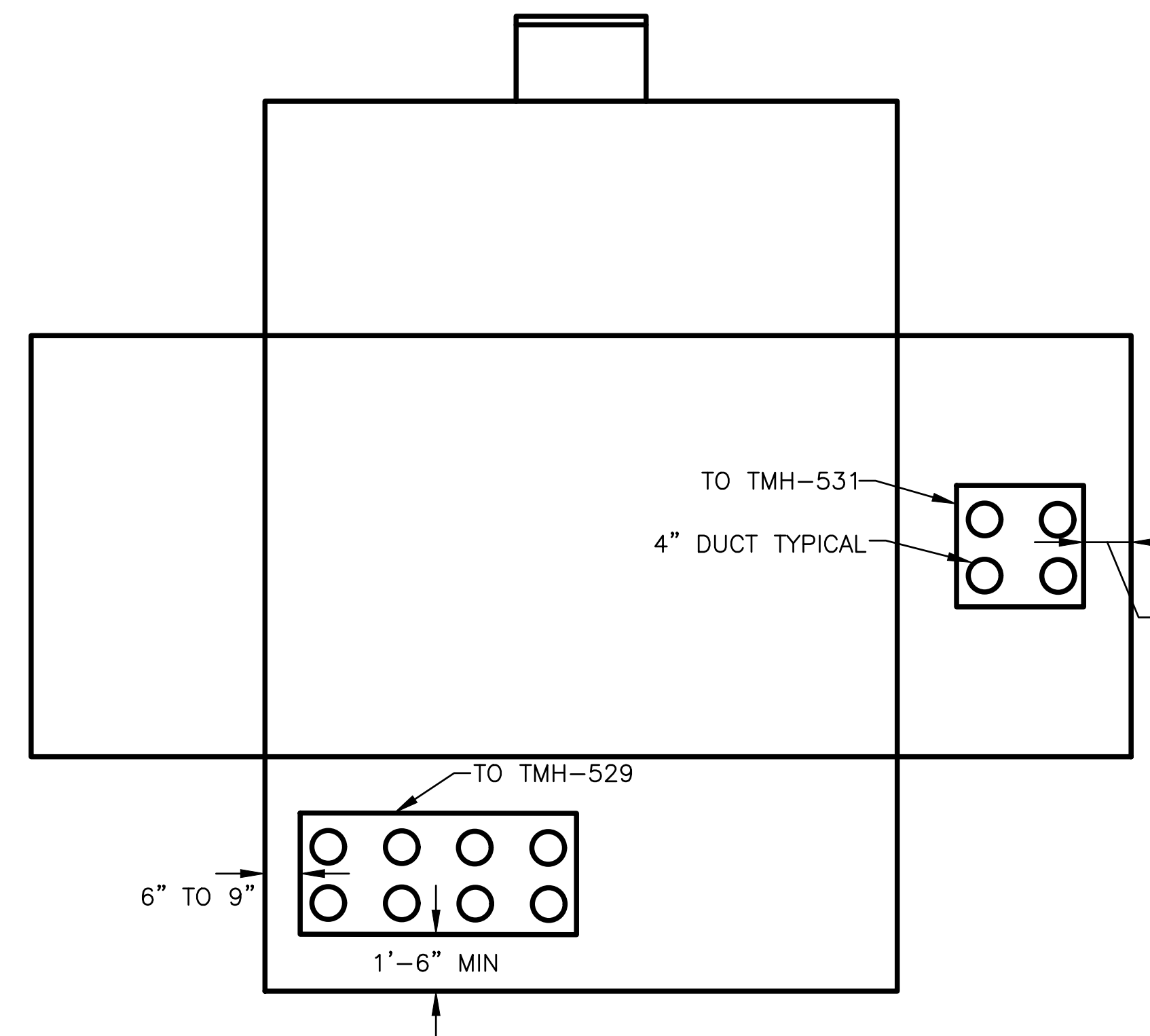
301
E503
TYPICAL TELECOM MANHOLE CONSTRUCTION DETAIL
NO SCALE



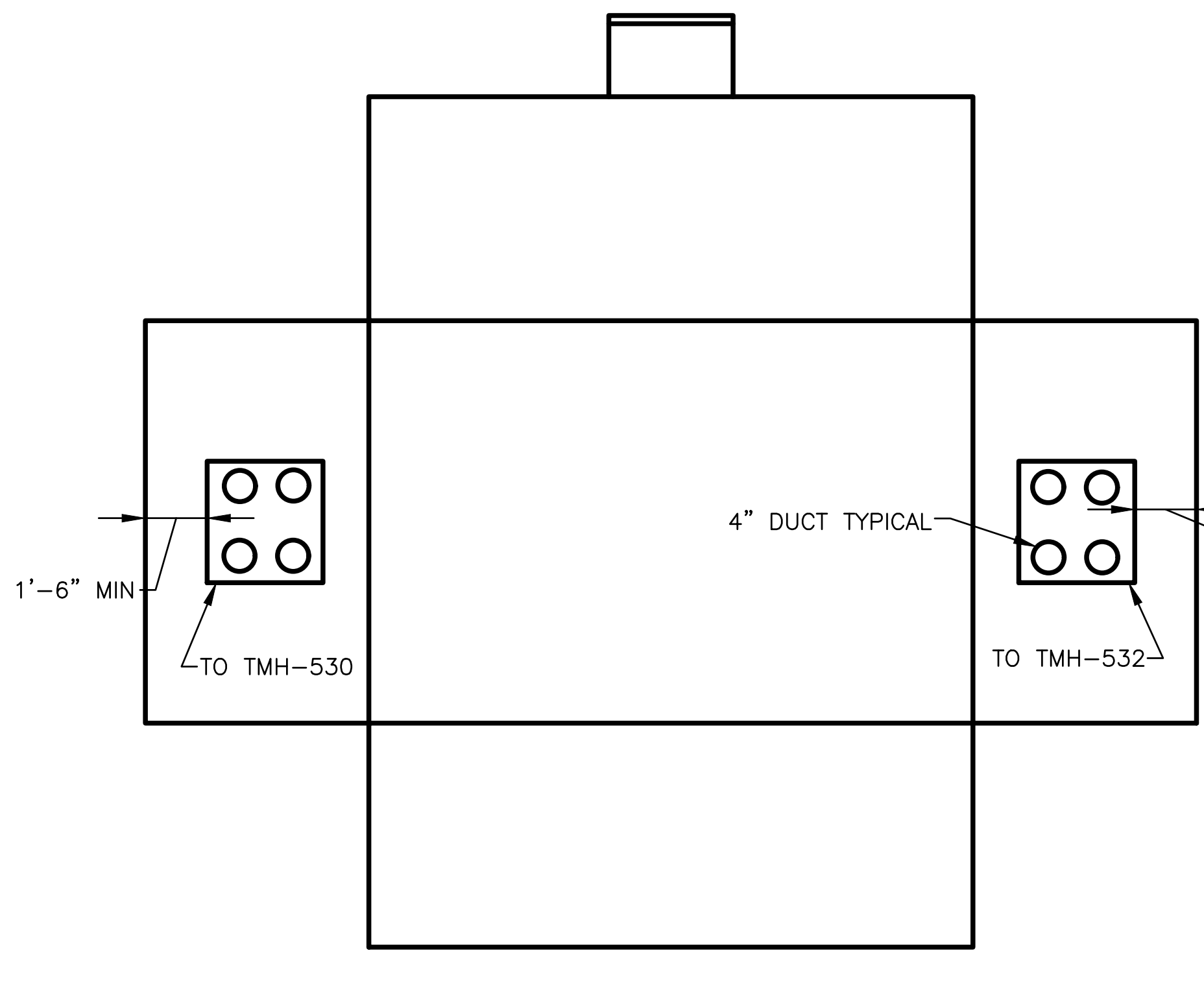
302
E503
TMH-528 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL
NO SCALE



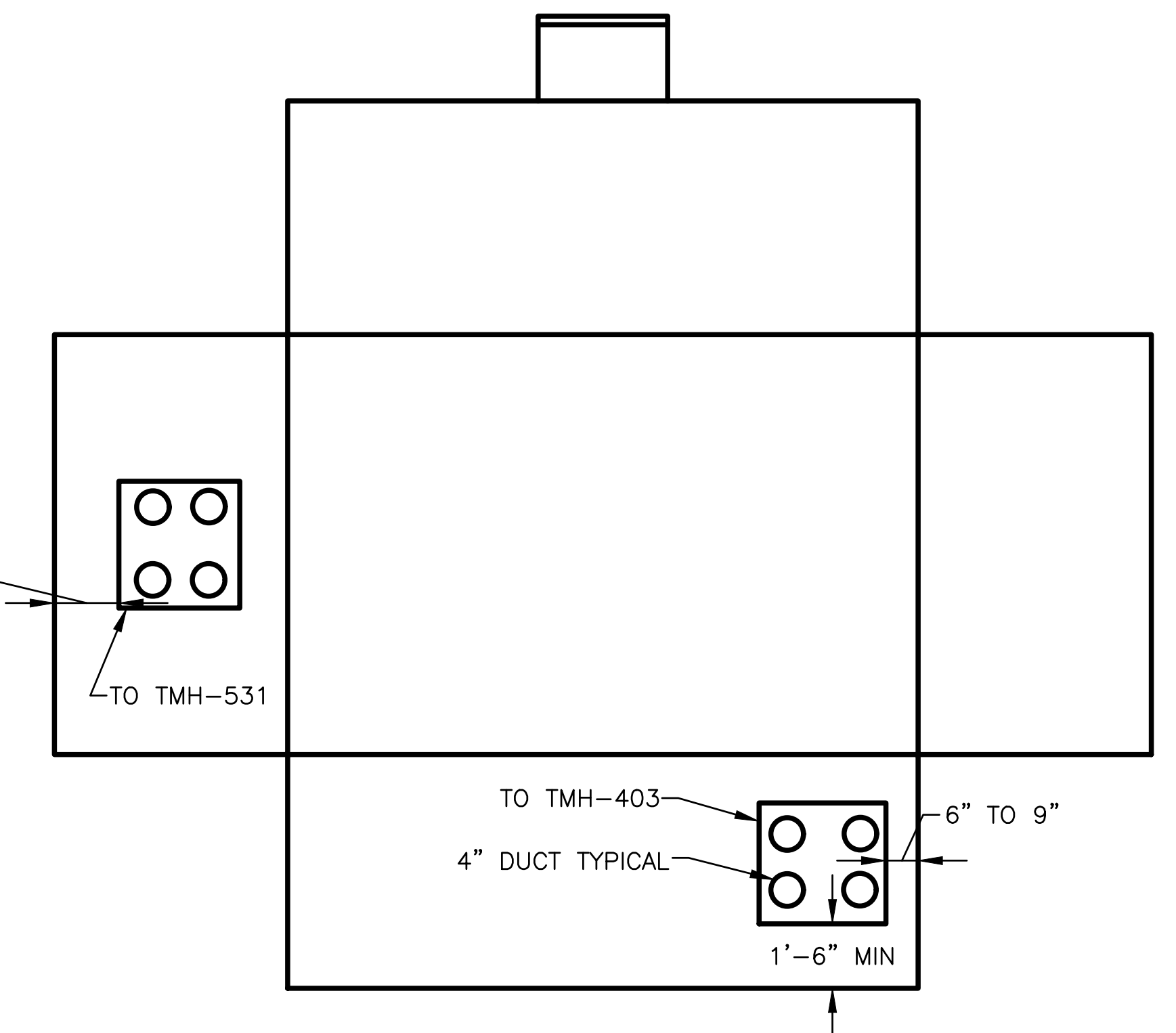
303
E503
TMH-529 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL
NO SCALE



304
E503
TMH-530 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL
NO SCALE



305
E503
TMH-531 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL
NO SCALE



306
E503
TMH-532 MANHOLE DUCT BANK ENTRY CONFIGURATION DETAIL
NO SCALE

GENERAL NOTES:

- A. FIELD VERIFY EXIST SITE CONDITIONS PRIOR TO INSTLLATION OF NEW MANHOLES.
- B. PROVIDE NEW TELECOM MANHOLES IN ACCORDANCE WITH SPECIFICATION SECTION 338126.
- C. INSTALL DUCT BANK OPENINGS IN NEW TMH WALLS WHERE NEEDED.
- D. NO CORE DRILLING UNLESS DUCT BANK IS PINNED TO MANHOLE WITH REINFORCING STEEL.
- E. CONCRETE THICKNESS OF TOP AND WALLS AND REINFORCING TO BE DESIGNED FOR LOADING REQUIREMENTS PER SPECIFICATION SECTION 338126.

KEY NOTES:

- 1. SUMP SHALL BE 18"x18" IN DIAMETER, SHALL BE SQUARE OR ROUND, SHALL BE LOCATED IN CENTER OF MANHOLE FLOOR AND SHALL HAVE NO GRATE.
- 2. LOCATE 7/8" PULLING IRONS OPPOSITE DUCT ENTRY.
- 3. 5/8"x8'L COPPERCLAD STL GRD ROD WITH TOP AT 3" AFF.

SK
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MO State Certificate of Authority: 001274

STATE OF MISSOURI
BARRY D. FREDERICK
E-24220
REGISTERED PROFESSIONAL ENGINEER

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GENERAL SITE
TELECOM DUCT BANK INSTALLATIONS
UNIVERSITY OF MISSOURI

For the Curators of the University of Missouri
MU PROJECT # CP 232751

#	DATE	DESCRIPTION

UNIVERSITY OF MISSOURI
COLUMBIA MO

CONTRACT DOCUMENTS

NEW TELECOM MANHOLE DETAILS

DATE:	01/24/24
DRAWN:	MNS
CHECKED:	BDF

SHEET #
E503

CARRIE FRANKE DRIVE & CHAMPION DRIVE - GENERAL SITE TELECOM INSTALLATION

COLUMBIA, BOONE COUNTY, MISSOURI
UNIVERSITY OF MISSOURI PROJECT # CP200001
DECEMBER 1, 2023



UTILITY NOTES

ALL UTILITIES ARE UNIVERSITY OF MISSOURI, EXCEPT AS NOTED BELOW. THE LOCATIONS, SIZES, AND MATERIAL TYPES OF UNDERGROUND UTILITIES INDICATED ON THE PLAN, NOT VISIBLE OR APPARENT FROM THE SURFACE, ARE SHOWN IN THEIR APPROXIMATE LOCATIONS FROM A MISSOURI ONE CALL SYSTEM LOCATE, OR UTILITY COMPANY RECORDS AND WERE NOT VERIFIED IN THE FIELD. IRRIGATION LINES WERE NOT LOCATED. UNDERGROUND ELECTRIC LINES TO LIGHTS WERE NOT LOCATED.

UNIVERSITY OF MISSOURI
ENERGY MANAGEMENT OFFICE
417 SOUTH FIFTH STREET
COLUMBIA, MISSOURI 65211
CONTACT: 573-882-3094
ELECTRIC, TELECOMMUNICATIONS, STEAM, WATER,
CHILLED WATER, SANITARY SEWER, STORM SEWER

WATER
CITY OF COLUMBIA WATER & LIGHT DEPARTMENT
P.O. BOX 6015
COLUMBIA, MISSOURI 65205
CONTACT: JOE STRODTMAN 573-874-6308
NONE WITHIN SURVEYED AREA

ELECTRIC
CITY OF COLUMBIA WATER & LIGHT DEPARTMENT
P.O. BOX 6015
COLUMBIA, MISSOURI 65205
CONTACT: DAN CLARK 573-874-7738

GAS
AMEREN MISSOURI
2001 MAGUIRE BOULEVARD
COLUMBIA, MISSOURI 65201
CONTACT: CHAD WARREN 573-876-3063
8" PLASTIC ALONG THE EAST SIDE OF
RESEARCH PARK DRIVE

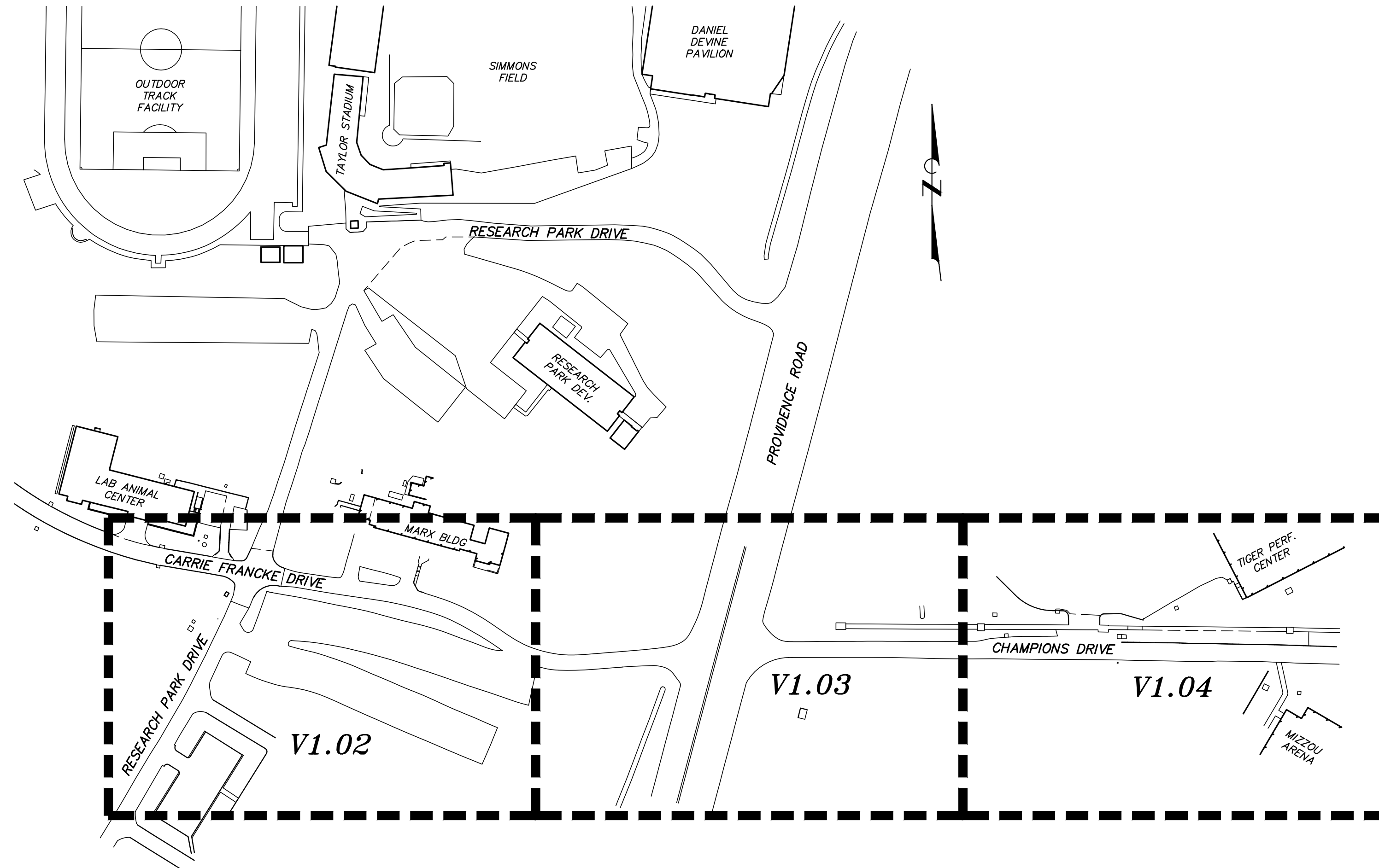
TELECOMMUNICATIONS
CENTURYLINK
625 E. CHERRY STREET
COLUMBIA, MISSOURI 65201
CONTACT: DUANE MCGEE 573-886-3503
MANHOLES & CONDUITS ARE CENTURYLINK,
LINES ARE UNIVERSITY OF MISSOURI AS SHOWN

MEDIACOM
901 N. COLLEGE AVENUE
COLUMBIA, MISSOURI 65201
CONTACT: BOB BONER 573-443-1536
NONE WITHIN SURVEYED AREA

SANITARY SEWER
CITY OF COLUMBIA UTILITIES DEPARTMENT
P.O. BOX 6015
COLUMBIA, MISSOURI 65205
CONTACT: STEVE HUNT 573-874-7250
NONE WITHIN SURVEYED AREA

STORM SEWER
CITY OF COLUMBIA UTILITIES DEPARTMENT
P.O. BOX 6015
COLUMBIA, MISSOURI 65205
CONTACT: TOM HELLMAN 573-874-7250
NONE WITHIN SURVEYED AREA

MoDOT
MoDOT - CENTRAL DISTRICT
P.O. BOX 718
1511 MISSOURI BOULEVARD
JEFFERSON CITY, MISSOURI 65102
CONTACT: JOHN KUHLMAN 573-522-6806
STORM SEWER ALONG STADIUM BOULEVARD



KEY MAP

NOT TO SCALE

WATER VALVE ELEVATIONS

1 WV TOP=640.19 NUT=639.2	7 WV TOP=659.47 NUT=656.6	13 WV TOP=669.89 NUT=664.10	19 WV TOP=657.28 NUT=655.43	25 WV TOP=693.79 NUT=689.78
2 WV TOP=640.20 NUT=638.7	8 WV TOP=650.56 NUT=655.6	14 WV TOP=647.30 NUT=644.99	20 WV TOP=658.13 NUT=655.88	26 WV TOP=693.19 NUT=690.11
3 WV TOP=640.48 NUT=639.5	9 WV TOP=657.49 NUT=656.5	15 WV TOP=645.44 NUT=641.61	21 WV TOP=657.99 NUT=655.99	27 WV TOP=693.07 NUT=690.48
4 WV TOP=651.62 NUT=646.9	10 WV TOP=657.59 NUT=655.7	16 WV TOP=645.45 NUT=638.92	22 WV TOP=693.66 NUT=693.03	
5 WV TOP=656.37 NUT=652.6	11 WV TOP=659.19 NUT=657.57	17 WV TOP=645.50 NUT=641.73	23 WV TOP=694.05 NUT=692.56	
6 WV TOP=656.72 NUT=652.8	12 WV TOP=669.79 NUT=664.23	18 WV TOP=653.72 NUT=650.70	24 WV TOP=693.47 NUT=690.26	

LEGEND

—	PROPERTY LINE
—	ELECTRIC LINE
—	UNDERGROUND ELECTRIC LINE
—	HVE
—	HIGH VOLTAGE ELECTRIC LINE
—	UT
—	UNDERGROUND TELECOMMUNICATIONS LINE
—	S
—	SANITARY SEWER LINE
—	SS
—	STORM SEWER LINE
—	ST
—	STEAM LINE
—	G
—	GAS LINE
—	W
—	WATER LINE
—	CW
—	CHILLED WATER LINE
—	X
—	FENCE
—	TREE & BRUSH LINE
—	DRAINAGE SWALE
—	EXISTING CONTOUR
750	R/W MARKER
△ CP#	CONTROL POINT
CMP	CORRUGATED METAL PIPE
EPB	ELECTRIC PULLBOX
FES	FLARED END SECTION
FL	FIRE HYDRANT
FL	FLOW LINE
FPB	FIBER OPTIC PULLBOX
HDPE	HIGH DENSITY POLYETHYLENE PIPE
GV	GAS VALVE
LS	LIGHT STANDARD
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
TPB	TELECOMMUNICATIONS PULLBOX
TW	TOP OF WALL
URD	UNDERGROUND ROOF DRAIN
VCP	VITRIFIED CLAY PIPE
WM	WATER METER
WV	WATER VALVE

BENCH MARK

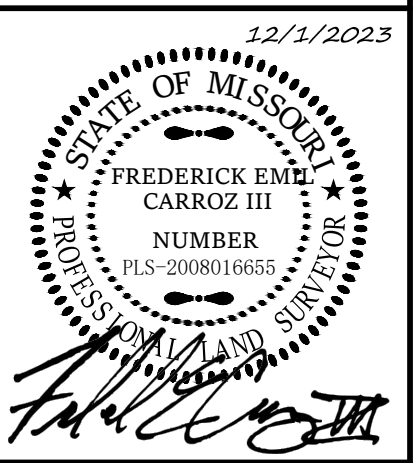
- BM - NCS BRASS PLATE STAMPED "UNIVERSITY OF MISSOURI RESET, 2005" IN A CONCRETE HEADWALL FOR A SPOTLIGHT LOCATED 30 FEET SOUTHWEST OF THE WEST COLUMN IN THE FRANCIS QUADRANGLE. ELEVATION = 743.80
- BM - UNIVERSITY OF MISSOURI CONTROL MONUMENT "CP024", BRASS DISK IN CONCRETE LOCATED ON THE SOUTHWEST CORNER OF STEAM MANHOLE 648 AT THE SOUTHWEST CORNER OF THE INTERSECTION OF RESEARCH PARK DRIVE AND CARRIE FRANKE DRIVE. ELEVATION = 656.95
- TBM - CHISELED SQUARE ON SOUTH FACE OF LIGHT STANDARD BASE LOCATED 2 FEET NORTH OF NORTH EDGE OF CARRIE FRANKE DRIVE AND 45 FEET NORTHEAST OF THE NORTHWEST CORNER OF ASPHALT PARKING LOT FOR MELVIN H. MARK BUILDING. ELEVATION = 661.59

SURVEY CONTROL POINTS

POINT #	NORTH	EAST	ELEVATION	DESCRIPTION
CP140	1128799.20	1686304.62	653.09	IRON
CP142	1128900.43	1686463.69	667.47	IRON
CP143	1128780.55	1686543.27	654.42	IRON
CP144	1128671.53	1686023.70	641.50	IRON
CP145	1128843.06	1687151.79	645.38	MAG NAIL
CP146	1128838.91	1686873.04	649.97	IRON
CP147	1128840.60	1687336.50	653.51	DRILLHOLE
CP148	1128791.67	1687587.18	695.12	IRON
CP150	1128892.59	1686081.39	656.95	MU CP024

- NOTES:
- ACCURATE ELEVATIONS HAVE BEEN SURVEYED AS SHOWN. CONTOURS SHOWN ARE INTERPOLATED BASED ON THESE ELEVATIONS.
 - THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY SUITABLE FOR RECORDING AS DEFINED BY THE CURRENT MISSOURI STANDARDS FOR BOUNDARY SURVEYS.
 - NO TITLE WORK WAS PERFORMED. EASEMENTS AND OTHER SPECIAL CONDITIONS AFFECTING THE PROPERTY MAY NOT BE SHOWN.

UNIVERSITY OF MISSOURI
CARRIE FRANKE DR. & CHAMPIONS DR.
GENERAL SITE TELECOM INSTALLATIONS
UNIVERSITY OF MISSOURI PROJECT # CP232751
COLUMBIA, BOONE COUNTY, MISSOURI



FREDERICK E. CARROZ III
PROFESSIONAL LAND SURVEYOR
PLS - 2008016655

Date
DECEMBER 1, 2023

Revised

Surveyed: GW Drawn: SK

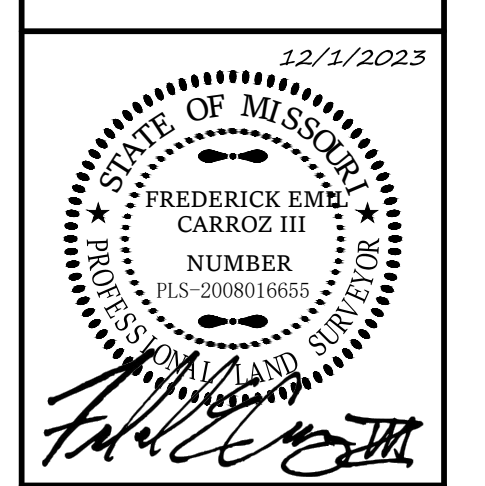
CARRIE FRANKIE
TOPOGRAPHIC
SURVEY - 1
RS001

TOPOGRAPHIC SURVEY
Sheet
V1.01
1 of 4
ES&S PROJECT NO. 16139



ES&S
Engineering Surveys & Services
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 573-449-2646
 802 El Dorado Drive, Jefferson City, MO 65101
 873-636-3003
 1775 West Main Street, Sedalia, MO 65201
 660-826-9618
 www.es-s-inc.com
 MO Land Surveying Corp. # 2004004672

UNIVERSITY OF MISSOURI
CARRIE FRANKIE DR. & CHAMPIONS DR.
GENERAL SITE TELECOM INSTALLATIONS
 UNIVERSITY OF MISSOURI PROJECT # CP232751
 COLUMBIA, BOONE COUNTY, MISSOURI



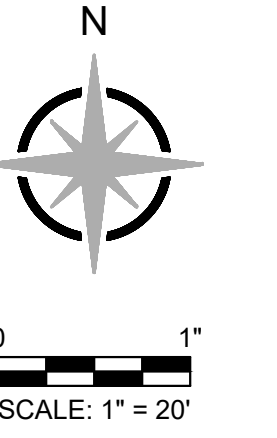
FREDERICK E. CARROZ III
 PROFESSIONAL LAND SURVEYOR
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IF ORIGINAL SIGNATURE OR DIGITAL AUTHENTICATION IS NOT PRESENT THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.
 Date
DECEMBER 1, 2023

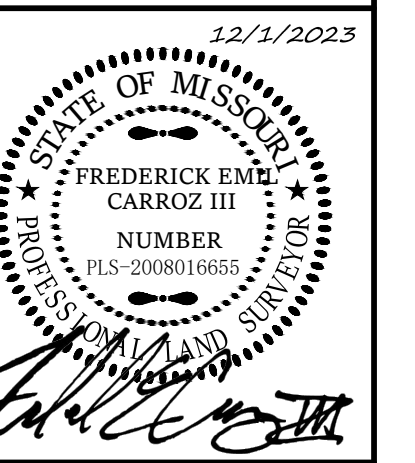
Revised
 Surveyed: GW Drawn: SK

TOPOGRAPHIC SURVEY
 Sheet
V1.02
 2 of 4
 ES&S PROJECT NO. 16139

CARRIE FRANKIE TOPOGRAPHIC SURVEY - 2
 RS002



UNIVERSITY OF MISSOURI
CARRIE FRANKIE DR. & CHAMPIONS DR.
GENERAL SITE TELECOM INSTALLATIONS
UNIVERSITY OF MISSOURI PROJECT # CP232751
COLUMBIA, BOONE COUNTY, MISSOURI



FREDERICK E. CARROZ III
PROFESSIONAL LAND SURVEYOR
PLS - 2008016655

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Date
DECEMBER 1, 2023

Revised

Surveyed: GW Drawn: SK

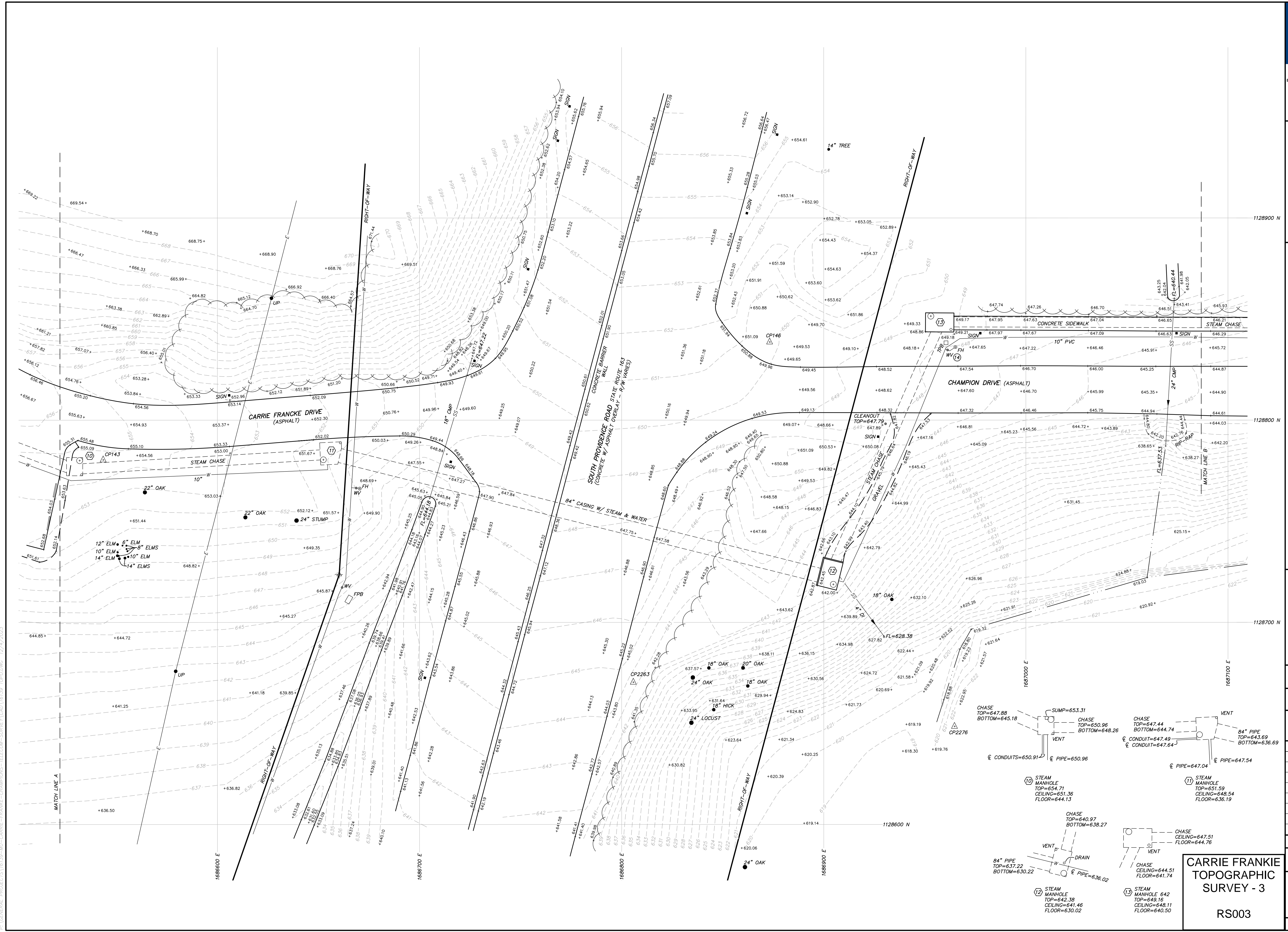
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Sheet
V1.03

RS003

3 of 4

ES&S PROJECT NO. 16139



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SIXTH STREET - GENERAL SITE - TELECOM DUCT BANK INSTALLATION

COLUMBIA, BOONE COUNTY, MISSOURI
UNIVERSITY OF MISSOURI PROJECT #CP232751
NOVEMBER 20, 2023



UTILITY NOTES

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UNIVERSITY OF MISSOURI
ENERGY MANAGEMENT OFFICE
417 SOUTH FIFTH STREET
COLUMBIA, MISSOURI 65211
CONTACT: 573-882-3094
ELECTRIC, TELECOMMUNICATIONS, STEAM, WATER,
CHILLED WATER, SANITARY SEWER, STORM SEWER

TELECOMMUNICATIONS
CENTURYLINK
625 E. CHERRY STREET
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CONTACT: DAVID ROBERTS 573-886-3503

WATER
CITY OF COLUMBIA WATER & LIGHT DEPARTMENT
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COLUMBIA, MISSOURI 65205
CONTACT: JOE STRODTMAN 573-874-6308

SANITARY SEWER
CITY OF COLUMBIA UTILITIES DEPARTMENT
P.O. BOX 6015
COLUMBIA, MISSOURI 65205
CONTACT: ERIN KEYS 573-874-7502
AS SHOWN

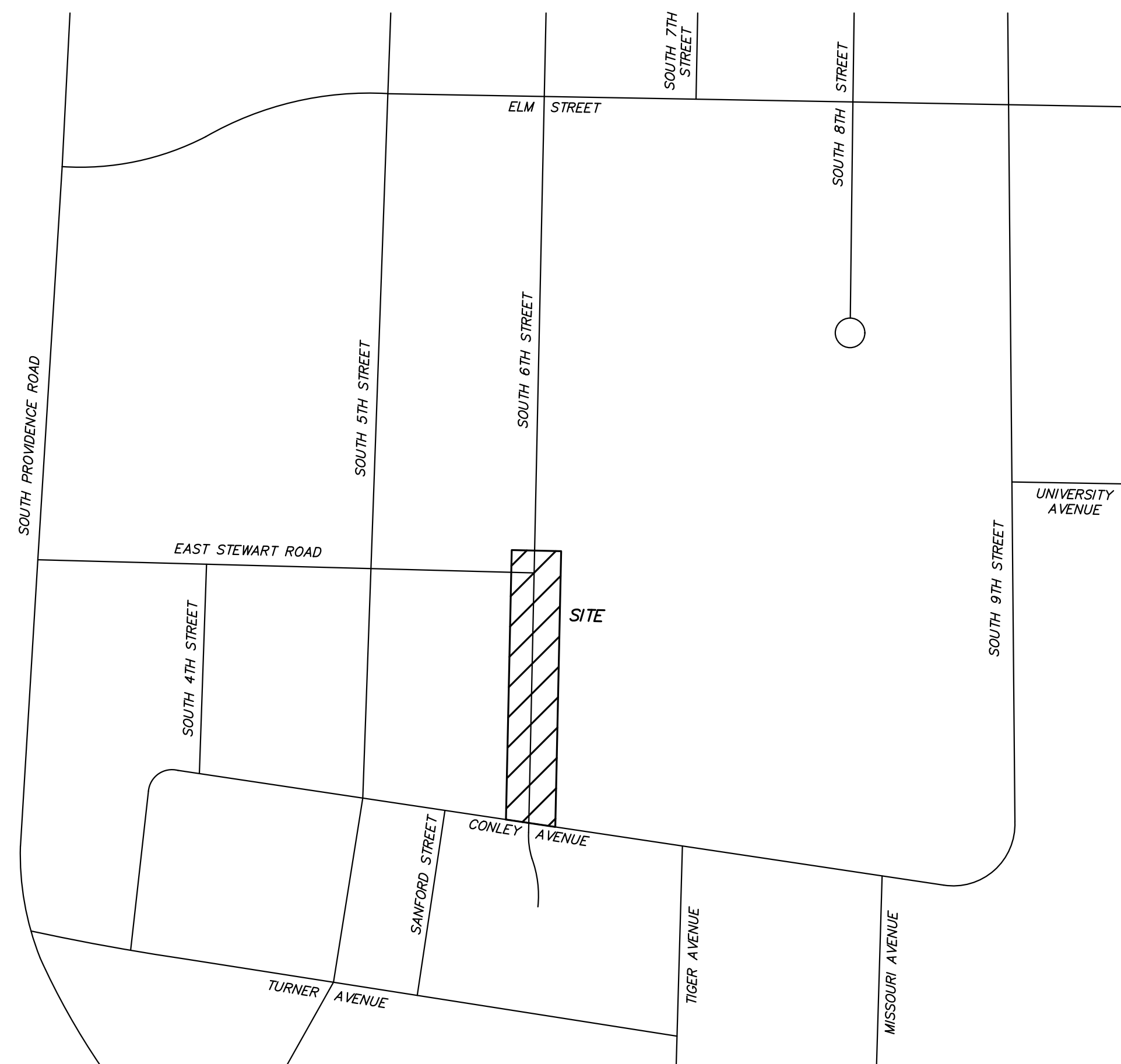
ELECTRIC
CITY OF COLUMBIA WATER & LIGHT DEPARTMENT
P.O. BOX 6015
COLUMBIA, MISSOURI 65205
CONTACT: JOHN BLAKEMORE 573-874-7313
AS SHOWN

STORM SEWER
CITY OF COLUMBIA UTILITIES DEPARTMENT
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COLUMBIA, MISSOURI 65205
CONTACT: TOM WELLMAN 573-874-7250
AS SHOWN

GAS
AMEREN MISSOURI
2001 MAGUIRE BOULEVARD
COLUMBIA, MISSOURI 65201
SOUTH OF I-70 CONTACT: TRENT SNODGRASS 573-876-3063

LEGEND

—UE—	UNDERGROUND ELECTRIC LINE
—UT—	UNDERGROUND TELECOMMUNICATIONS LINE
—S—	SANITARY SEWER LINE
—SS—	STORM SEWER LINE
—ST—	STEAM LINE
—G—	GAS LINE
—W—	WATER LINE
—CW—	CHILLED WATER LINE
---	EXISTING CONTOUR
750	
△CP#	CONTROL POINT
ARP#	AIR RELEASE PULLBOX
DI	DUCTILE IRON PIPE
EPB	ELECTRIC PULLBOX
FH	FIRE HYDRANT
FL	FLOW LINE
FPB	FIBER OPTIC PULLBOX
GV	GAS VALVE
GTS	GAS TEST STATION
HDPE	HIGH DENSITY POLYETHYLENE PIPE
LS	LIGHT STANDARD
PM	PARKING METER
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
TW	TOP OF WALL
UP	UTILITY POLE
URD	UNDERGROUND ROOF DRAIN
VCP	VITRIFIED CLAY PIPE
WM	WATER METER
WV	WATER VALVE



SITE LOCATION MAP

NOT TO SCALE

SURVEY CONTROL POINTS

MODIFIED STATE PLANE COORDINATES
NAD 83, MISSOURI CENTRAL ZONE, NAVD 88, U.S. SURVEY FEET

POINT #	NORTH	EAST	ELEVATION	DESCRIPTION
CP2160	1133305.45	1688459.65	715.65	IRON
CP6318	1133040.12	1688527.32	729.82	IRON
CP6319	1132870.16	1688457.23	739.23	IRON

BENCH MARK

- BM - NGS BRASS PLATE STAMPED "UNIVERSITY OF MISSOURI RESET, 2005" IN A CONCRETE HEADWALL FOR A SPOTLIGHT LOCATED 30 FEET SOUTHWEST OF THE WEST COLUMN IN THE FRANCIS QUADRANGLE. ELEVATION = 743.60
- TBM - CHISELED PLUS ON THE NORTHEAST BOLT OF FIRE HYDRANT LOCATED 15 FEET SOUTH OF THE SOUTHERN EDGE OF BACK OF CURB CONCRETE OF EAST STEWART ROAD AND 27 FEET WEST OF THE WESTERN EDGE OF BACK OF CURB CONCRETE OF SOUTH SIXTH STREET. ELEVATION = 717.07

- NOTES:
- ACCURATE ELEVATIONS HAVE BEEN SURVEYED AS SHOWN. CONTOURS SHOWN ARE INTERPOLATED BASED ON THESE ELEVATIONS.
 - THIS DOES NOT CONSTITUTE A BOUNDARY SURVEY SUITABLE FOR RECORDING AS DEFINED BY THE CURRENT MISSOURI STANDARDS FOR BOUNDARY SURVEYS.
 - NO TITLE WORK WAS PERFORMED, EASEMENTS AND OTHER SPECIAL CONDITIONS AFFECTING THE PROPERTY MAY NOT BE SHOWN.



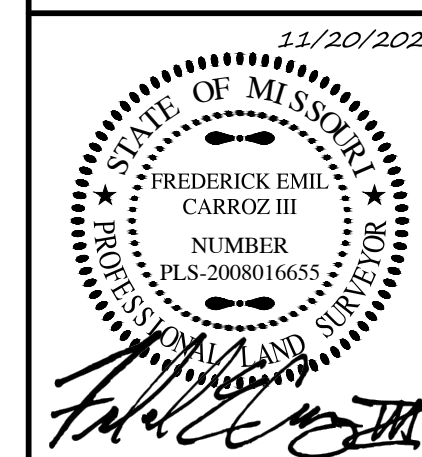
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UNIVERSITY OF MISSOURI PROJECT #CP232751
COLUMBIA, BOONE COUNTY, MISSOURI



FREDERICK E. CARROZ III
PROFESSIONAL LAND SURVEYOR
PLS - 2008016655

IF ORIGINAL SIGNATURE OR DIGITAL AUTHENTICATION IS NOT PRESENT THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT.

Date
NOVEMBER 20, 2023

Revised

Surveyed: DH Drawn: EF

TOPOGRAPHIC SURVEY

Sheet
V1.01

1 of 2

ES&S PROJECT NO. 16138

6TH STREET
TOPOGRAPHIC
SURVEY - 1
RS005

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