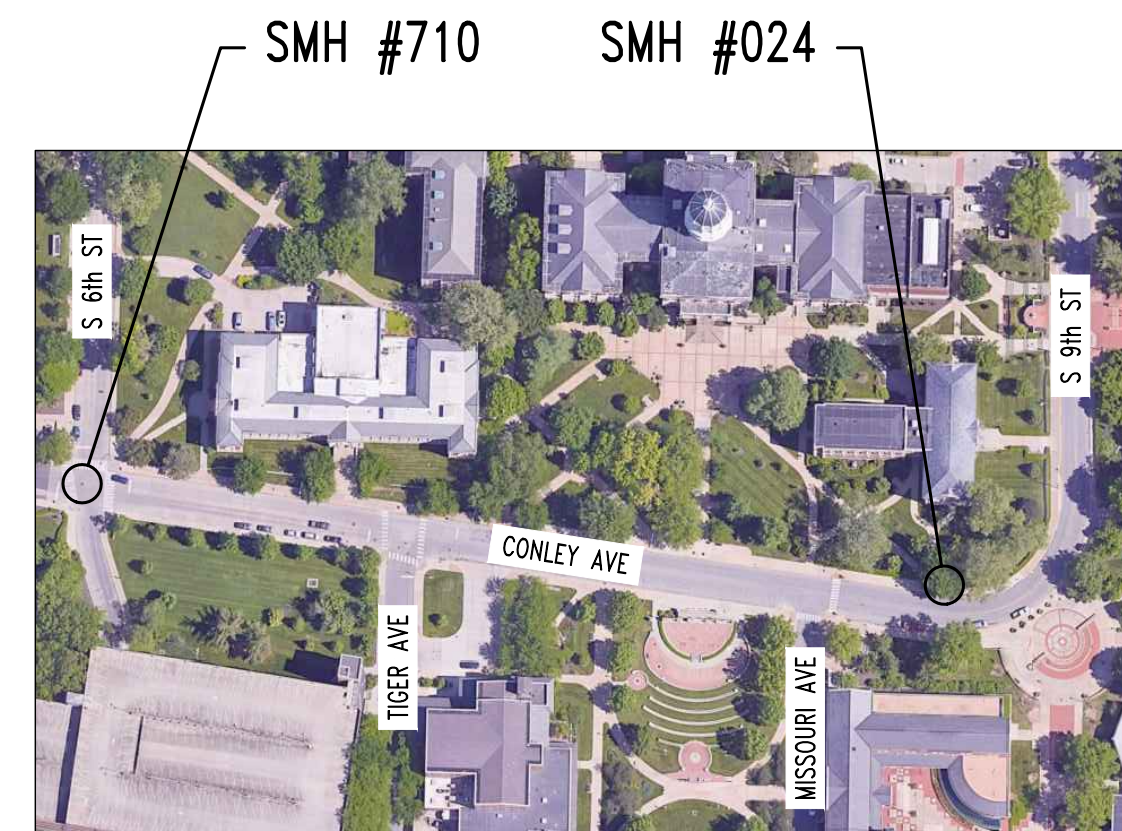


University of Missouri
For
The Curators of the University of Missouri
MU Project number CP240081
Advertisement Date: January 18, 2024
Various Locations - Repair Concrete in Steam Manholes

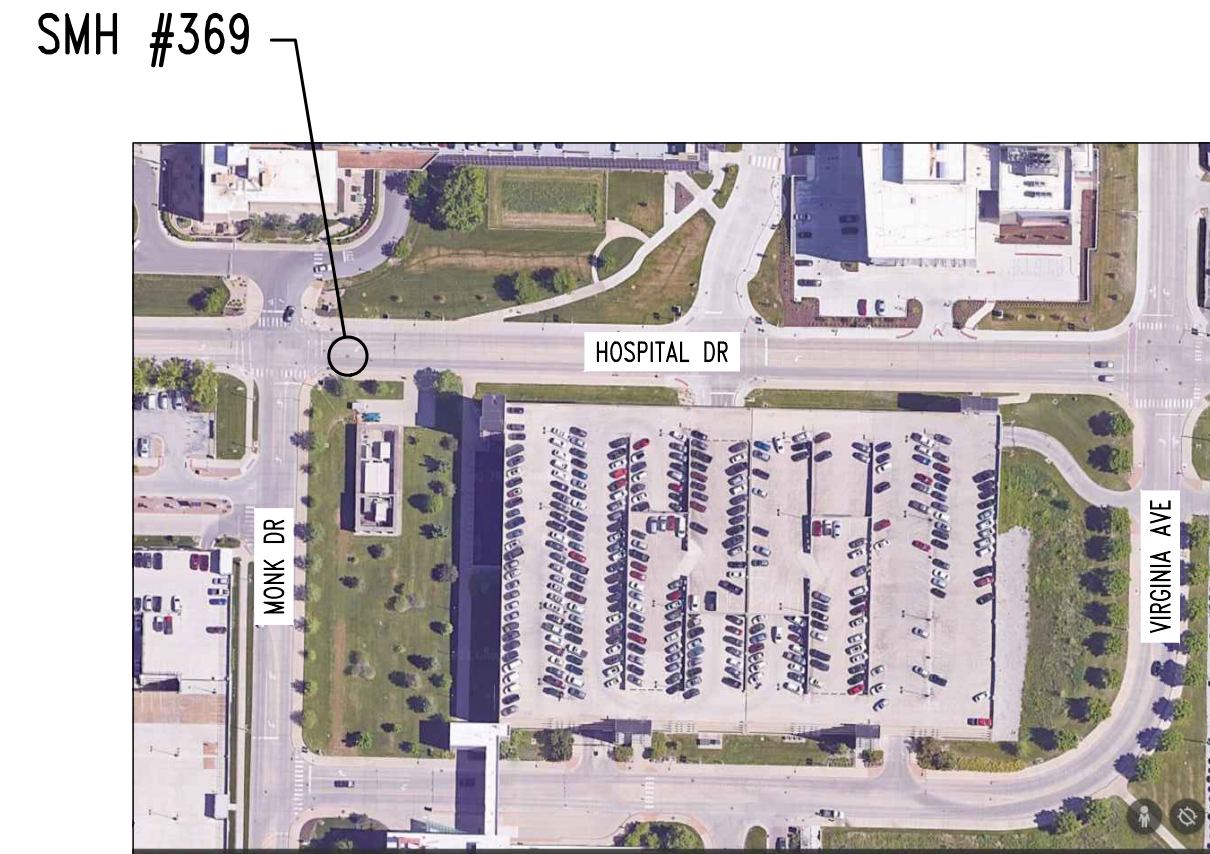
Columbia, Boone County, Missouri



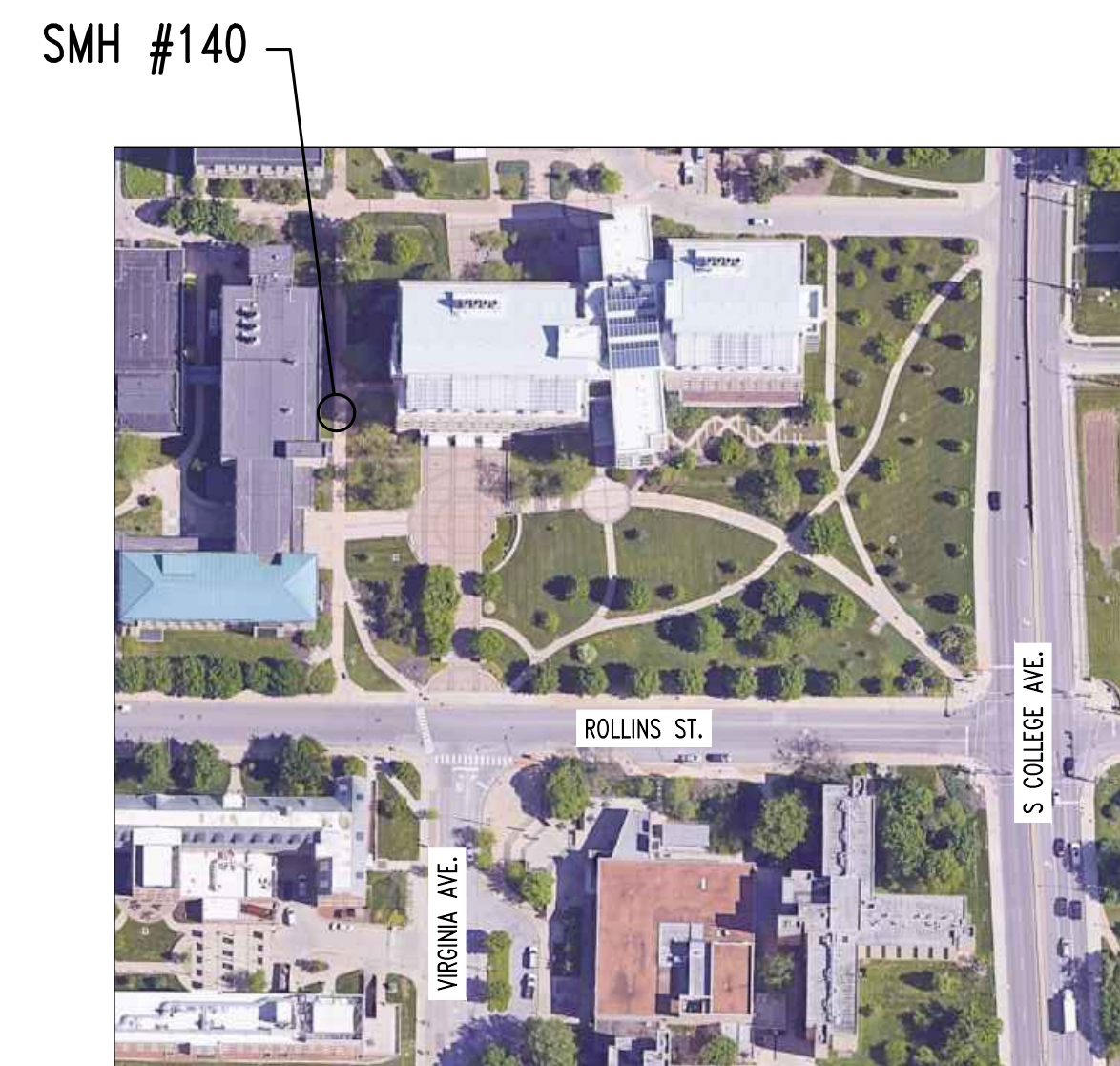
STEAM MANHOLE REPAIR SITE PLAN



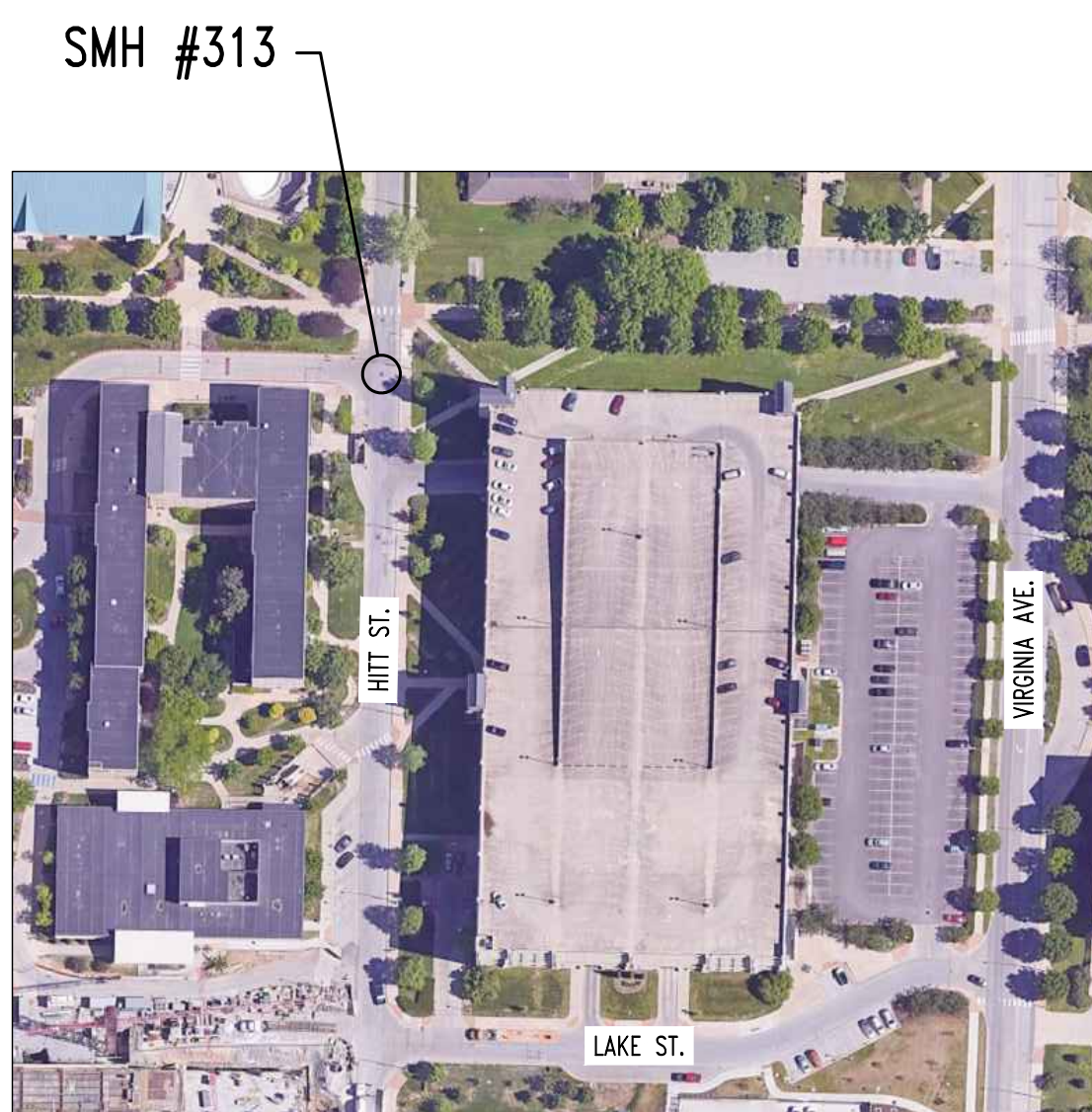
STEAM MANHOLE REPAIR SITE PLAN



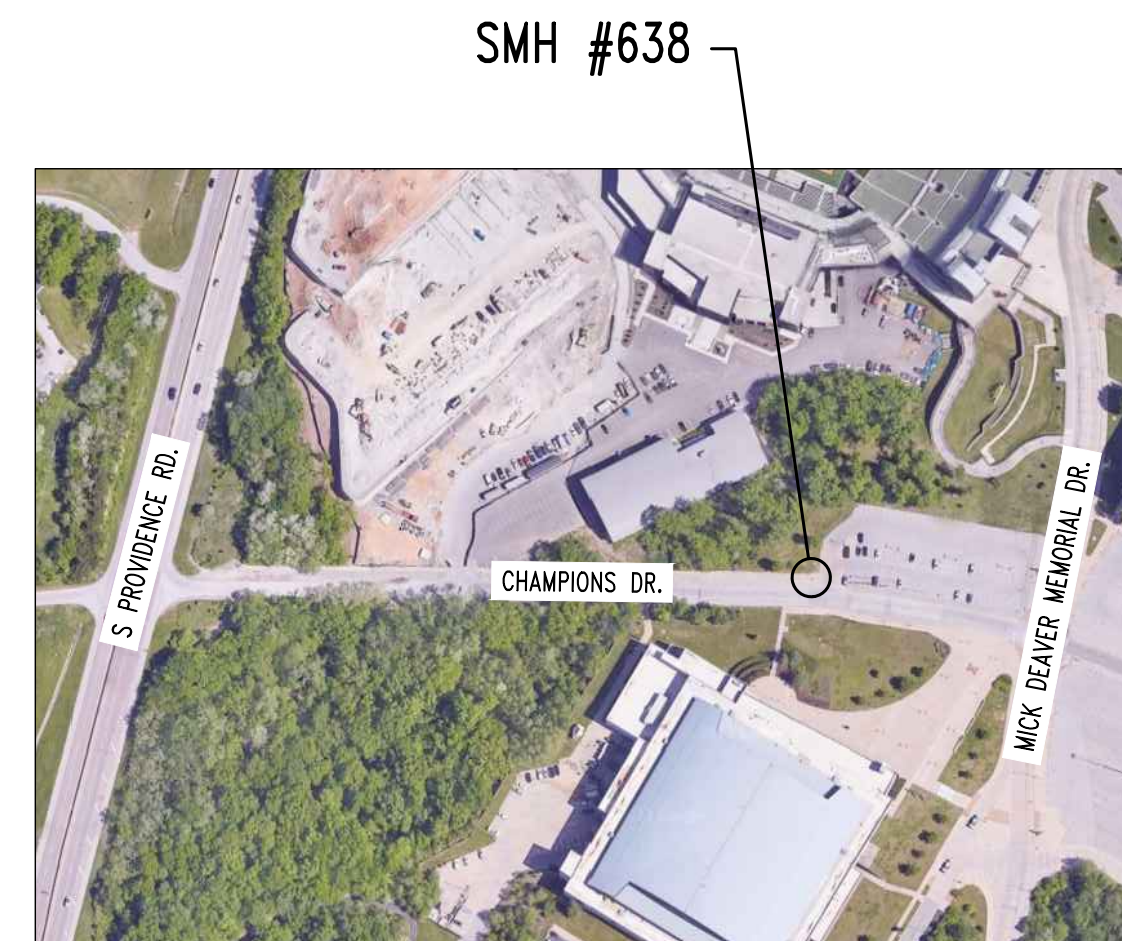
STEAM MANHOLE REPAIR SITE PLAN



STEAM MANHOLE REPAIR SITE PLAN



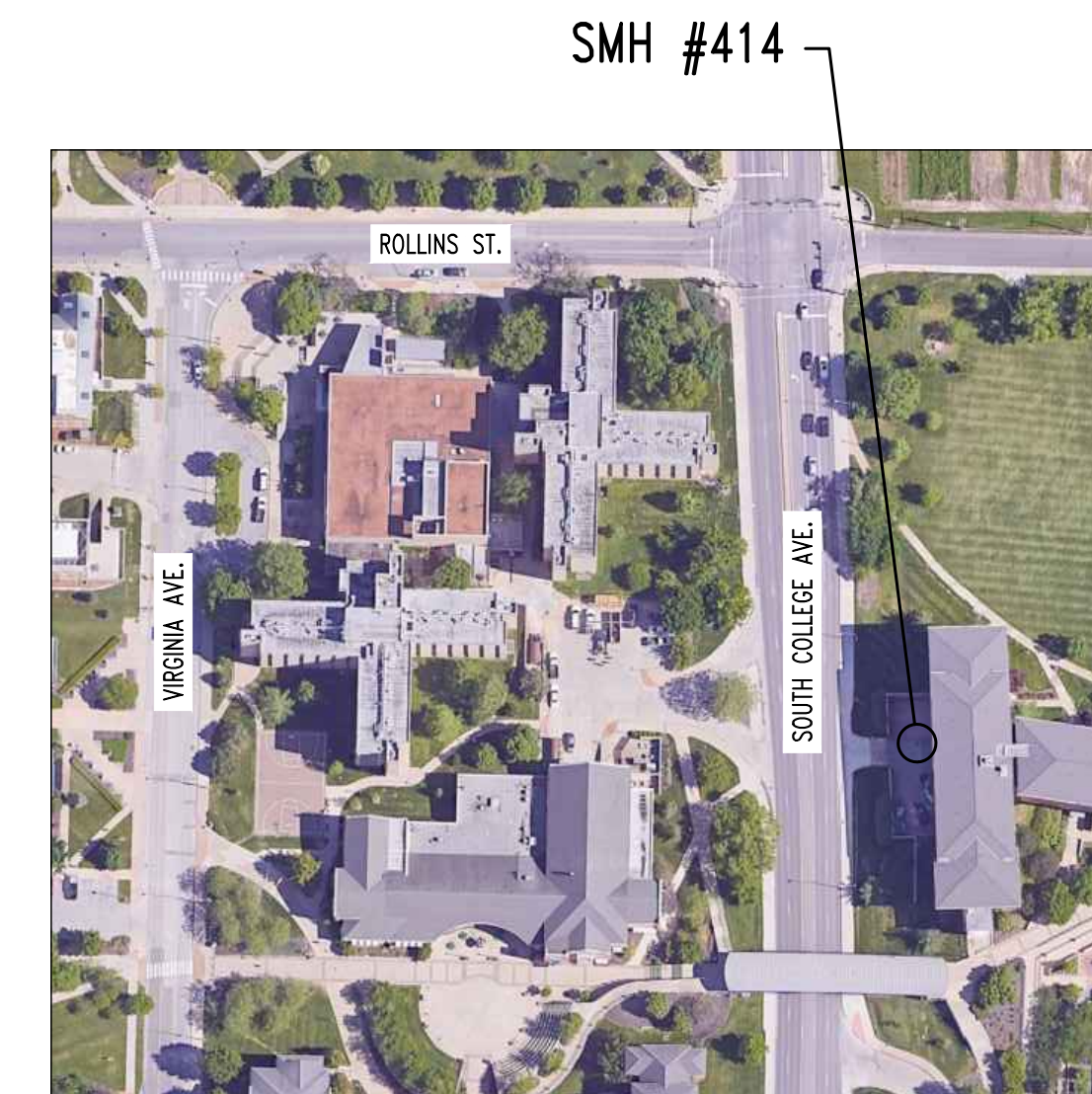
STEAM MANHOLE REPAIR SITE PLAN



STEAM MANHOLE REPAIR SITE PLAN (ALTERNATE #1)



STEAM MANHOLE REPAIR SITE PLAN (ALTERNATE #2)



STEAM MANHOLE REPAIR SITE PLAN (ALTERNATE #3)

NOTE:

1. DISTURBANCE OF LANDSCAPE BEDS IS PROHIBITED & WILL BE REPAIRED @ CONTRACTOR'S EXPENSE.
2. CONTRACTOR IS NOT TO DISRUPT TRAFFIC FLOW.

CERTIFICATION:

"I HEREBY CERTIFY THESE DRAWINGS AND / OR SPECIFICATIONS HAVE BEEN PREPARED BY ME, OR UNDER MY SUPERVISION, 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"

SIGNATURE: *Gregory L. Linneman*

SPECIAL INSPECTIONS

THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE.

- a. CONCRETE GROUT DESIGN MIX (PERIODIC)
- b. PLACING OF CONCRETE AND REINFORCING STEEL (CONTINUOUS OF CONCRETE SAMPLING / PERIODIC OF REINFORCING)
- c. BOLTS & ANCHORS EMBEDDED IN CONCRETE (PERIODIC)
- d. POST INSTALLED ANCHORS IN CONCRETE (CONTINUOUS)

THE CONTRACTOR SHALL REQUEST SPECIAL INSPECTION OF THE ITEMS LISTED ABOVE PRIOR TO THOSE ITEMS BECOMING UNACCESSIBLE AND UNOBSERVABLE DUE TO PROGRESSION OF THE WORK.

SHEET INDEX:

CIVIL:

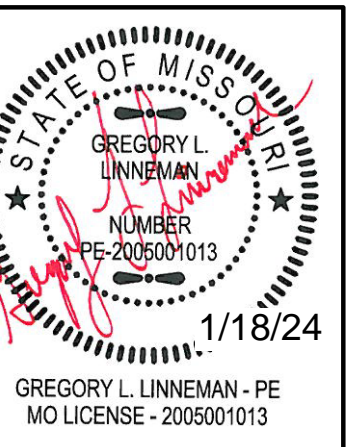
- CE1 - DEMOLITION AND SITE PLAN
- TCP-1 - CONLEY AVE. & 6th ST. TRAFFIC CONTROL PLAN
- TCP-2 - HOSPITAL DR. & MONK ST. TRAFFIC CONTROL PLAN & LANE SHIFT DETAIL

STRUCTURAL:

- S100-S104 - MANHOLE PLANS AND SECTIONS
- S105-S107 - MANHOLE PLANS AND SECTIONS (ALTERNATE)
- S200 - MANHOLE REPAIR DETAILS



No.	Date
BID SET	01/18/2024



STRUCTURAL ENGINEER:
CROCKETT
 ENGINEERING CONSULTANTS
 1000 W. MISSOURI ST. SUITE 400
 COLUMBIA, MISSOURI 65203
 www.crockettengineering.com
 (314) 447-0292
 Missouri License Authority
 2005001013

CLIENT:
 UNIVERSITY OF MISSOURI
 225 UNIVERSITY HALL
 COLUMBIA, MISSOURI 65211

**CP240081 - VARIOUS LOCATIONS
 REPAIR CONCRETE IN STEAM MANHOLES**
 UNIVERSITY OF MISSOURI
 COLUMBIA, BOONE COUNTY, MISSOURI

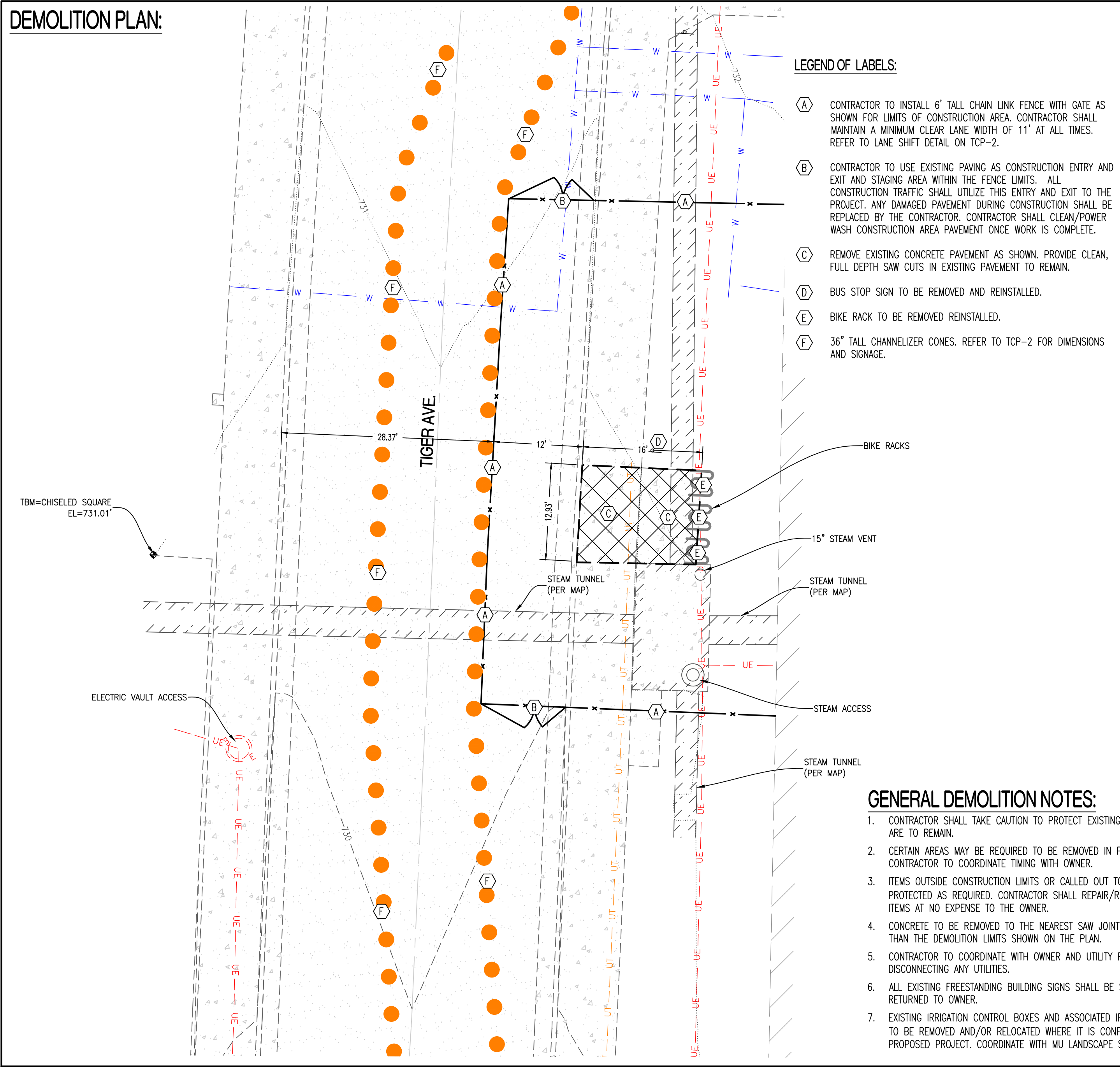
DRAWING INCLUDES:

COVER SHEET

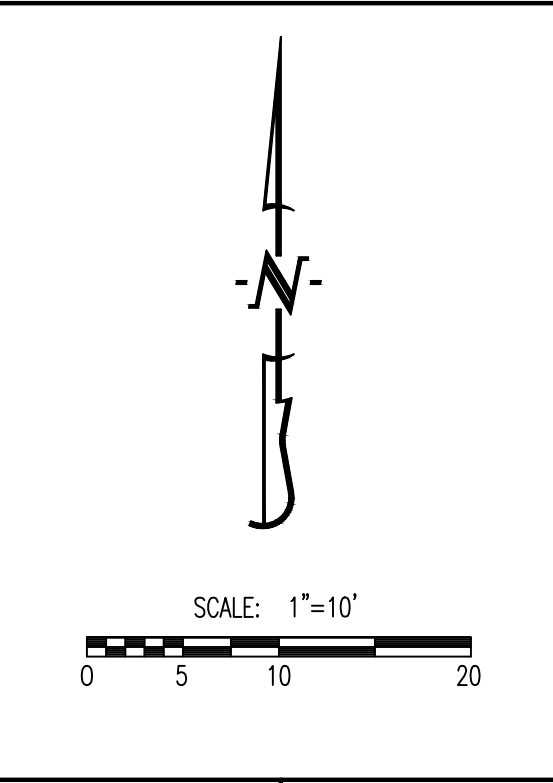
DESIGNED: GLL
 DRAWN: ZMP
 PROJECT NO.: 180016
 MU PROJECT NO.: CP240081

SHEET: COVER

DEMOLITION PLAN:



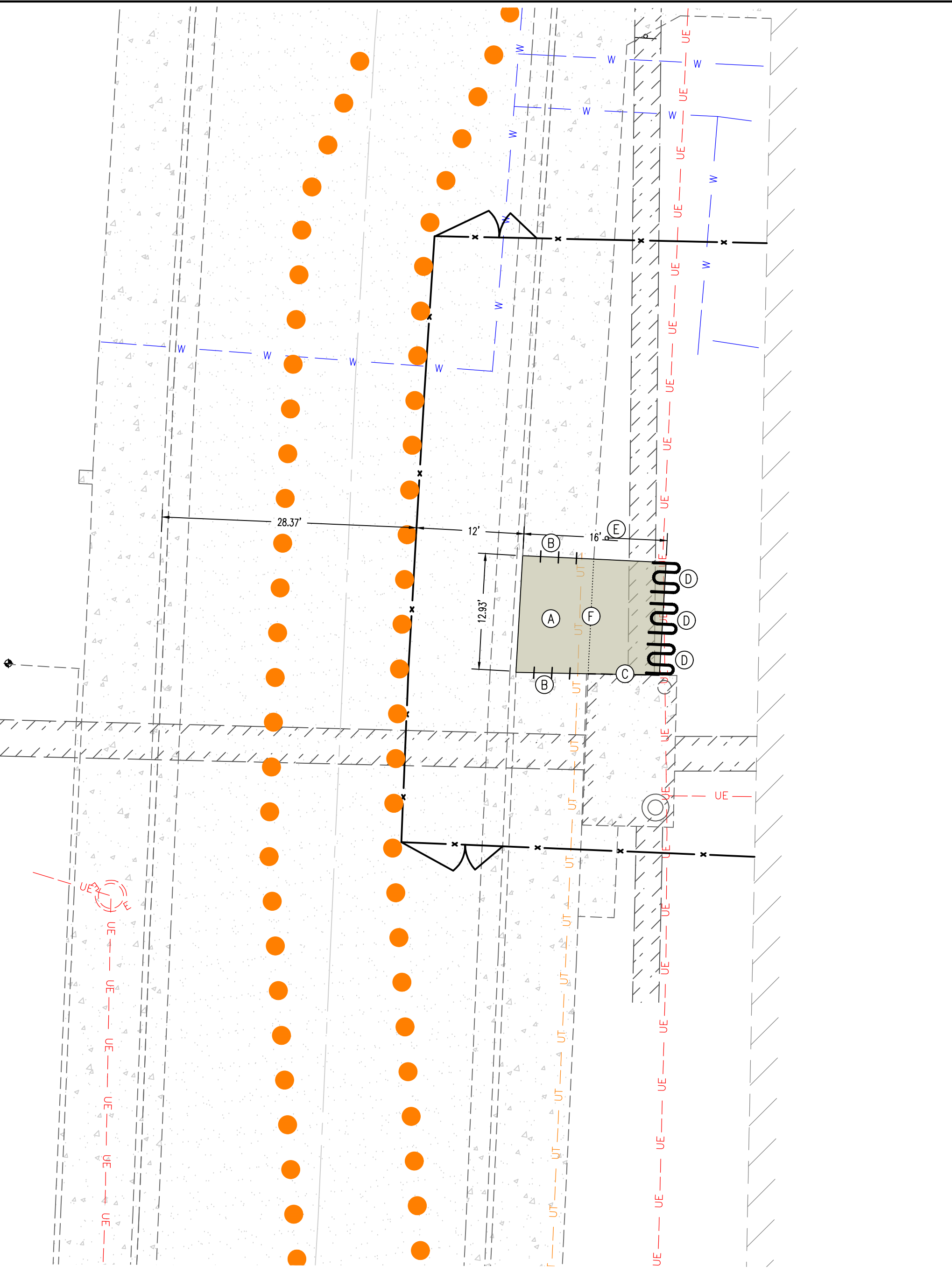
- LEGEND OF LABELS:**
- (A) CONTRACTOR TO INSTALL 6' TALL CHAIN LINK FENCE WITH GATE AS SHOWN FOR LIMITS OF CONSTRUCTION AREA. CONTRACTOR SHALL MAINTAIN A MINIMUM CLEAR LANE WIDTH OF 11' AT ALL TIMES. REFER TO LANE SHIFT DETAIL ON TCP-2.
 - (B) CONTRACTOR TO USE EXISTING PAVING AS CONSTRUCTION ENTRY AND EXIT AND STAGING AREA WITHIN THE FENCE LIMITS. ALL CONSTRUCTION TRAFFIC SHALL UTILIZE THIS ENTRY AND EXIT TO THE PROJECT. ANY DAMAGED PAVEMENT DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR. CONTRACTOR SHALL CLEAN/POWER WASH CONSTRUCTION AREA PAVEMENT ONCE WORK IS COMPLETE.
 - (C) REMOVE EXISTING CONCRETE PAVEMENT AS SHOWN. PROVIDE CLEAN, FULL DEPTH SAW CUTS IN EXISTING PAVEMENT TO REMAIN.
 - (D) BUS STOP SIGN TO BE REMOVED AND REINSTALLED.
 - (E) BIKE RACK TO BE REMOVED AND REINSTALLED.
 - (F) 36" TALL CHANNELIZER CONES. REFER TO TCP-2 FOR DIMENSIONS AND SIGNAGE.



SITE PLAN:

- LEGEND OF LABELS:**
- (A) CONSTRUCT CONCRETE SIDEWALK AT BACK OF CURB AS SHOWN IN DETAIL ON THIS SHEET REFER TO PLAN FOR WIDTH (MAXIMUM CROSS SLOPE AT 1:50).
 - (B) INSTALL TYPE D TRANSVERSE CONSTRUCTION JOINT IN BETWEEN EXISTING AND PROPOSED CONCRETE. REFER TO DETAIL ON THIS SHEET.
 - (C) INSTALL 1/2" EXPANSION JOINT FULL DEPTH BETWEEN PROPOSED CONCRETE AND STEAM MANHOLE.
 - (D) INSTALL BIKE RACK REMOVED DURING DEMOLITION.
 - (E) INSTALL BUS STOP SIGN REMOVED DURING DEMOLITION.
 - (F) TYPE C CONTROL JOINT. REFER TO DETAIL ON THIS SHEET.

- GENERAL NOTES:**
- CONTRACTOR SHALL FINE GRADE, SEED, AND MULCH ANY DAMAGED SOD WITHIN PROJECTS LIMITS PRIOR TO TURNING SITE OVER TO OWNER.



GENERAL DEMOLITION NOTES:

- CONTRACTOR SHALL TAKE CAUTION TO PROTECT EXISTING UTILITIES THAT ARE TO REMAIN.
- CERTAIN AREAS MAY BE REQUIRED TO BE REMOVED IN PHASES. CONTRACTOR TO COORDINATE TIMING WITH OWNER.
- ITEMS OUTSIDE CONSTRUCTION LIMITS OR CALLED OUT TO REMAIN SHALL BE PROTECTED AS REQUIRED. CONTRACTOR SHALL REPAIR/REPLACE DAMAGED ITEMS AT NO EXPENSE TO THE OWNER.
- CONCRETE TO BE REMOVED TO THE NEAREST SAW JOINT, BUT NOT LESS THAN THE DEMOLITION LIMITS SHOWN ON THE PLAN.
- CONTRACTOR TO COORDINATE WITH OWNER AND UTILITY PROVIDER PRIOR TO DISCONNECTING ANY UTILITIES.
- ALL EXISTING FREESTANDING BUILDING SIGNS SHALL BE SALVAGED AND RETURNED TO OWNER.
- EXISTING IRRIGATION CONTROL BOXES AND ASSOCIATED IRRIGATION SYSTEM TO BE REMOVED AND/OR RELOCATED WHERE IT IS CONFLICTING WITH THE PROPOSED PROJECT. COORDINATE WITH MU LANDSCAPE SERVICES.

GENERAL NOTES:

CONTRACTOR TO INSTRUCT ALL CONCRETE TRUCKS TO WASH OUT AT PLANT.

EXISTING UTILITIES SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE LOCATES PRIOR TO ANY EXCAVATION.

ALL EXCAVATION TO BE IN ACCORDANCE WITH SECTIONS 319.010-319.050, REVISED STATUTES OF THE STATE OF MISSOURI. SUCH COMPLIANCE SHALL NOT, HOWEVER, EXCUSE ANY PERSON MAKING ANY EXCAVATION FROM DOING SO IN A CAREFUL AND PRUDENT MANNER, NOR SHALL IT EXCUSE SUCH PERSON FROM LIABILITY FOR ANY DAMAGE OR INJURY TO UNDERGROUND UTILITIES RESULTING FROM THE EXCAVATION.

IT IS THE INTENT OF THESE PLANS TO COMPLY WITH THE REQUIREMENTS OF THE MoDNR CLEAN WATER COMMISSION.

THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES AND REMOVING THEM ONCE THE SITE IS STABILIZED.

CONTRACTOR TO PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND PAVEMENT THAT IS TO REMAIN. ALL DAMAGED ITEMS OUTSIDE THE SCOPE OF WORK TO BE REPLACED OR REPAIRED TO ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.

ALL PAVEMENTS, SIDEWALKS, ABANDONED SEWERS, PIPELINES, EXCESS EARTHWORK, OR OTHER OBSTRUCTIONS TO CONSTRUCTION THAT ARE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS SPECIFICALLY NOTED AND SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH STATE REGULATION 10 CSR 80-2.010 (9)(A).

ALL DISTURBED AREAS WITHIN THE "LIMITS OF DISTURBANCE" THAT ARE NOT TO BE PAVED, SHALL BE FINE GRADED BY CONTRACTOR TO AN ELEVATION OF 6" BELOW FINISHED GRADE. VEGETATION WILL BE REESTABLISHED BY OWNER.

MISSOURI DNR LAND DISTURBANCE PERMIT NOT NEEDED FOR THIS PROJECT.

ALL WORK SHALL BE SCHEDULED WITH THE OWNER'S REPRESENTATIVE AND BE SUBJECT TO THE OWNER'S APPROVAL PRIOR TO PROCEEDING.

UTILITY COMPANIES:

- LOCATES:**
MISSOURI ONE CALL INC.
1022 B NORTHEAST DRIVE
JEFFERSON CITY, MO 65109
1-800-344-7483
- TELEPHONE:**
UNIVERSITY OF MISSOURI, DIVISION OF I.T.
615 LOCUST ST.
COLUMBIA, MO 65211
573-882-5000
- CABLE TELEVISION:**
CHARTER COMMUNICATIONS
1510 CHARTER BOONE
INDUSTRIAL BOULEVARD
COLUMBIA, MO 65202
573-875-8875
- STEAM & MEDIUM VOLTAGE ELECTRIC:**
MU ENERGY MANAGEMENT
180 GENERAL SERVICES BUILDING
COLUMBIA, MO 65211
573-882-8211



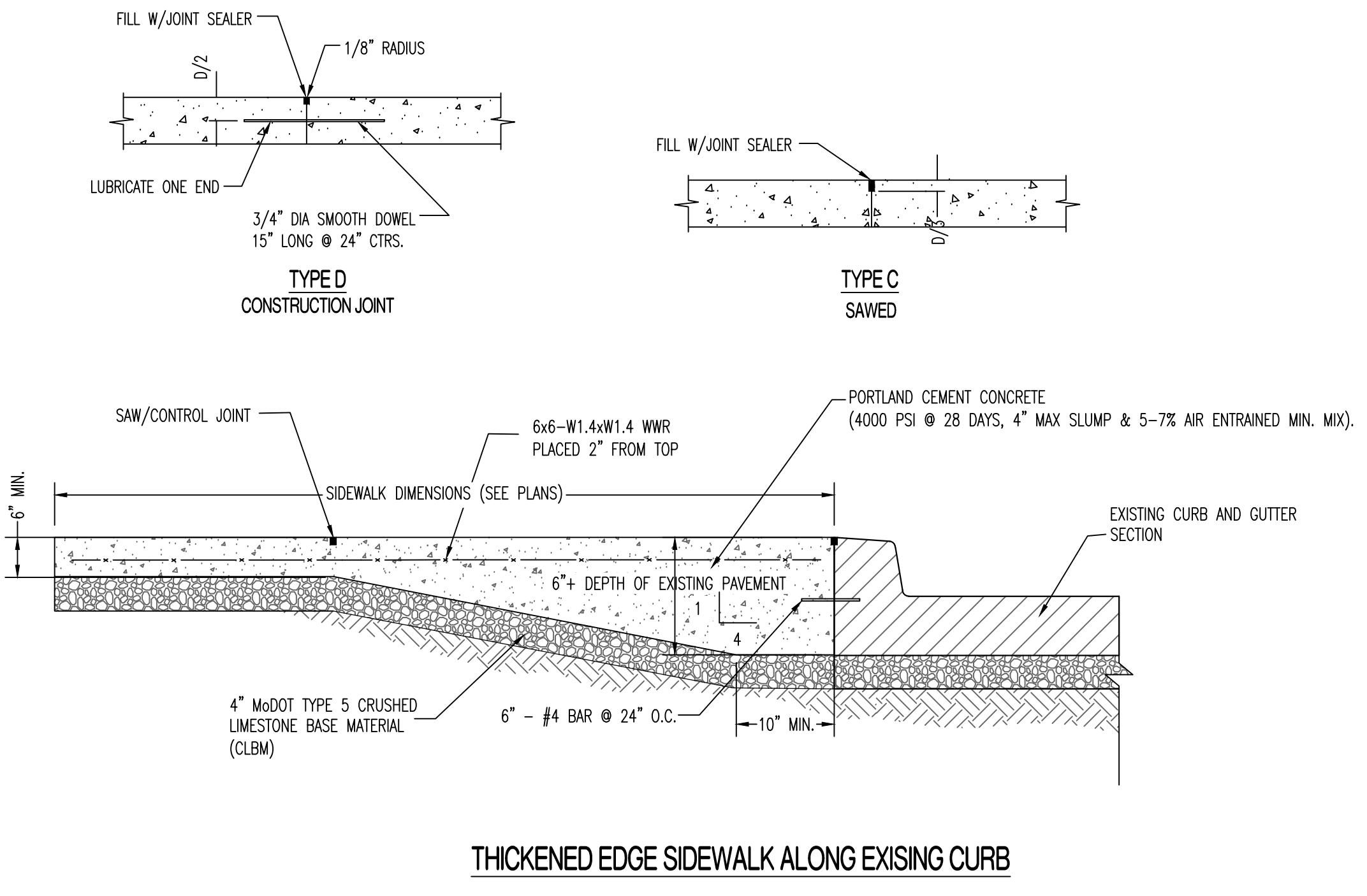
- WATER:**
ENERGY MANAGEMENT
417 S. 5TH ST.
COLUMBIA, MO 65211
573-882-3094
- STORM/SANITARY SEWER & SECONDARY ELECTRIC:**
UNIVERSITY CAMPUS FACILITY OPERATIONS
180 GENERAL SERVICES BUILDING
COLUMBIA, MO 65211
573-882-8211
- NATURAL GAS:**
AMEREN MISSOURI
2001 MAGUIRE BLVD.
COLUMBIA, MO 65201
573-876-3030

LEGEND OF SYMBOLS:

- [Hatched Box] EXISTING CONCRETE PAVEMENT
- [Dotted Box] EXISTING ASPHALT PAVEMENT
- [Solid Grey Box] PROPOSED ASPHALT PAVEMENT
- [Solid Light Grey Box] PROPOSED CONCRETE PAVEMENT
- [Cross-hatched Box] EXISTING STRUCTURE
- [Dashed Line] DEMOLITION LIMITS
- [Blue Line] EXISTING WATERLINE
- [Blue Line with W] EXISTING WATERLINE (PER MAP - NOT LOCATED)
- [Blue Line with V] EXISTING WATER VALVE
- [Blue Line with M] EXISTING WATER METER
- [Blue Line with H] EXISTING FIRE HYDRANT
- [Blue Line with W] NEW WATERLINE
- [Blue Line with CW] EXISTING CHILLED WATERLINE (PER MAP - NOT LOCATED)
- [Orange Line with PCN?] EXISTING UNDERGROUND MU FIBER OPTIC (PER MAP - NOT LOCATED)
- [Green Line with S] EXISTING SANITARY SEWER
- [Green Line with SS] EXISTING SANITARY SEWER (PER MAP - NOT LOCATED)
- [Green Circle] EXISTING MANHOLE
- [Orange Line with FO] EXISTING UNDERGROUND FIBER OPTIC
- [Orange Line with FO?] EXISTING UNDERGROUND FIBER OPTIC (PER MAP - NOT LOCATED)
- [Blue Line with G] EXISTING GAS LINE
- [Red Line with UE] EXISTING UNDERGROUND ELECTRIC
- [Grey Line] EXISTING STEAM CHASE
- [Grey Line with S] EXISTING STORM SEWER
- [Circle with X] EXISTING TREE
- [Circle with O] EXISTING SIGN
- [Line with X] CONSTRUCTION FENCE

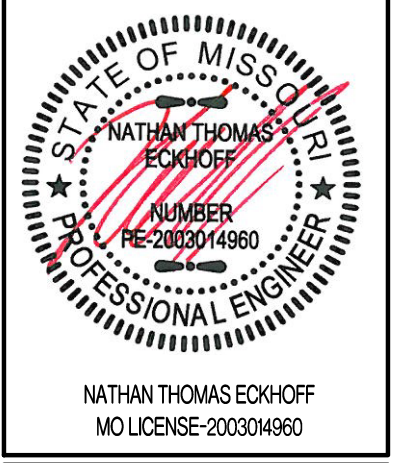
PROJECT BENCHMARK:

TBM #1 - CHISELED SQUARE ON SOUTHWEST CORNER OF THE BUS STOP PAD ACROSS TIGER AVE FROM THE PROJECT LOCATION. ELEVATION = 731.01'



REVISIONS:

No.	Date
BID SET	07/18/2024



CROCKETT ENGINEERING CONSULTANTS
1000 W. HIRSH BLVD., BLDG. 1
COLUMBIA, MO 65203
www.crockettengineering.com
Missouri License #2000151301

UNIVERSITY OF MISSOURI
225 UNIVERSITY HALL
COLUMBIA, MISSOURI 65211

CLIENT:

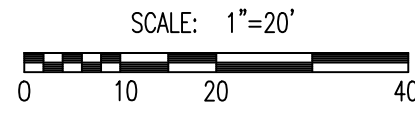
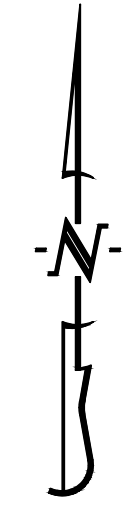
CP240081 - VARIOUS LOCATIONS REPAIR CONCRETE IN STEAM MANHOLES

UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:

DEMOLITION AND SITE PLAN

DESIGNED: NTE
DRAWN: MWB
PROJECT NO.: 180016
MU PROJECT NO.: CP240081
SHEET: CE 1



TRAFFIC CONTROL DEVICE LEGEND	
•	PLACE STANDARD 36" MIN. TALL CHANNELIZER CONE W/ RETROREFLECTIVE STRIPING PER MUTCD STANDARDS
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # W20-1 SHOULD READ "ROAD WORK AHEAD"). SIGN SHALL BE 24" X 24" MIN.
	VEHICLE TO BE USED WITH WARNING DEVICE TO HELP WARN PASSING TRAFFIC AND CREATE A BARRIER TO WORKING AREA.

GENERAL NOTES

TRAFFIC CONTROL DEVICES SHALL COMPLY WITH THE MUTCD.

CONTRACTOR SHALL MAINTAIN A MINIMUM CLEAR LANE WIDTH OF 11' AT ALL TIMES.

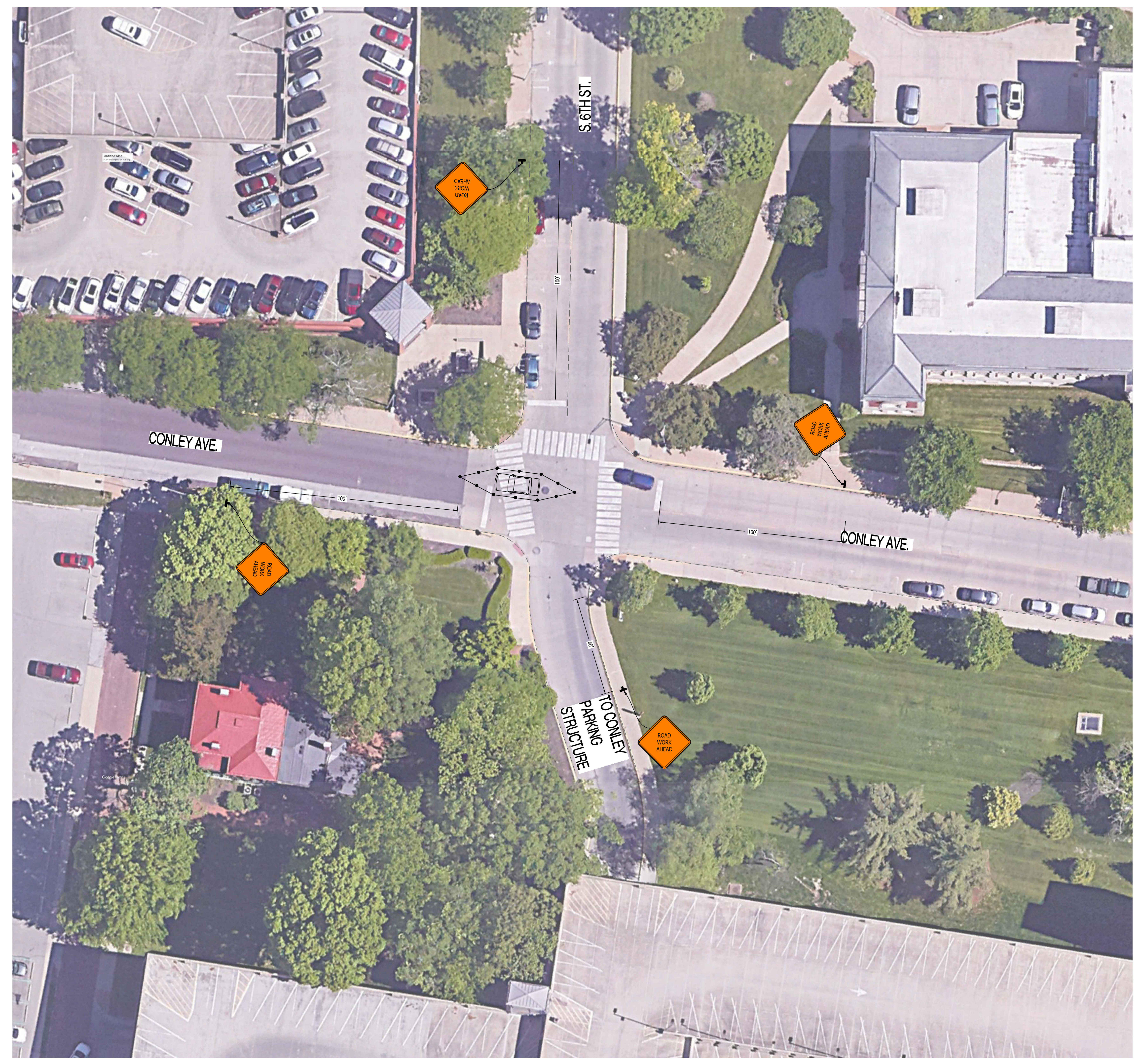
CONTRACTOR SHALL REFER TO THE CURRENT EDITION OF THE MUTCD MANUAL OF TRAFFIC CONTROL FOR FIELD OPERATIONS FOR INFORMATION ON THE PROPER DEPLOYMENT OF TRAFFIC CONTROL DEVICES. REFER TO SECTION 616 OF THE MUTCD STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL PROCEDURES. ALL WARNING SIGNS WITH "XXXX-X" IN THE LEGEND ABOVE SHALL BE BLACK LETTERING WITH ORANGE BACKGROUND.

SCHEDULING OF CLOSURES

THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING CITY OF COLUMBIA SITE DEVELOPMENT AT LEAST ONE WEEK PRIOR TO THE START OF ANY CLOSURE ONCE CLOSURE APPROVAL HAS BEEN GIVEN.

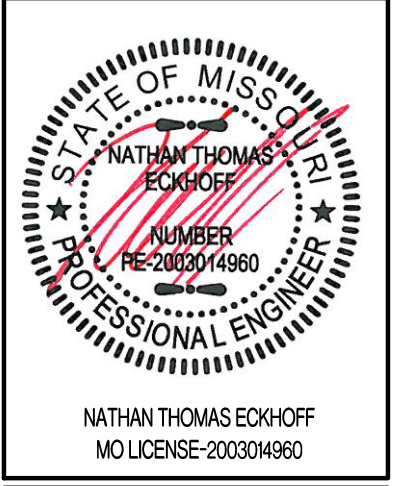
CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE FOLLOWING AGENCIES, AS REQUIRED, IMMEDIATELY PRIOR TO CLOSURE OF STREET, DURING CONSTRUCTION FOR INSPECTIONS AND AGAIN WHEN WORK IS COMPLETE AND STREET IS REOPENED:

- SITE DEVELOPMENT (ROW INSPECTIONS) 874-7474
- BUILDING SAFETY (PLUMBING/BUILDING INSPECTIONS) 874-7474
- JOINT COMMUNICATIONS (EMERGENCY SERVICES) 874-8471
- COLUMBIA TRANSIT (CITY BUSES) 874-7282
- PARKING ENFORCEMENT (PARKING METERS) 874-7674
- PUBLIC WORKS STREET DIVISION (STREET PATCHING) 874-6289
- UNIVERSITY OF MISSOURI POLICE DEPARTMENT 862-7201



REVISIONS:

No.	Date
BID SET	07/18/2024



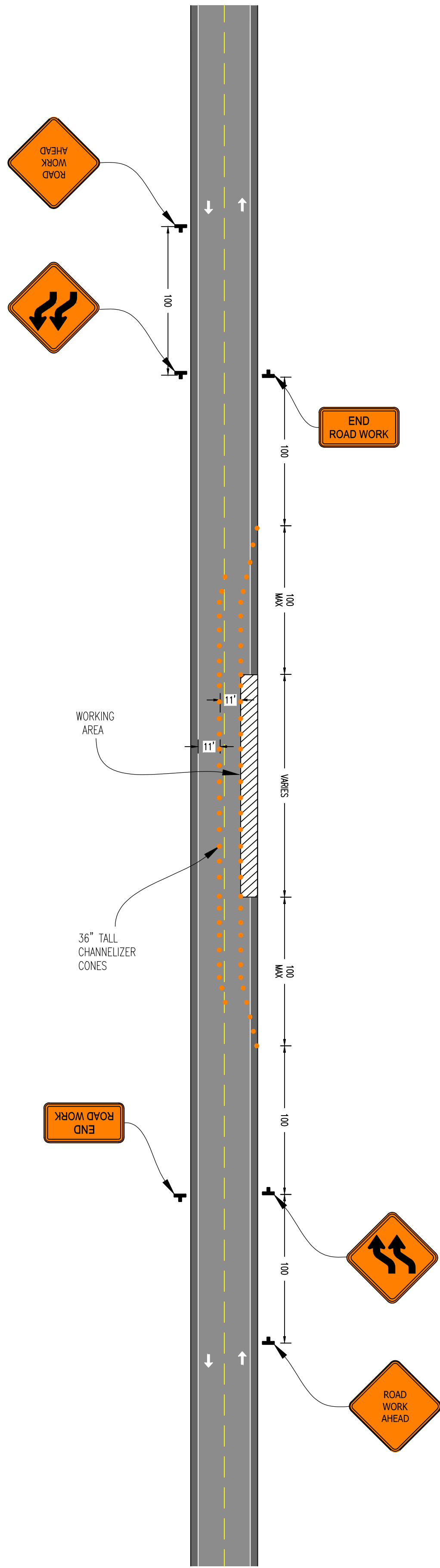
CIVIL ENGINEER:
CROCKETT
 ENGINEERING CONSULTANTS
 1000 W. High Blvd., Bldg. 1
 Columbia, MO 65203
 (573) 447-9292
 www.crockettengineering.com
 Crockett Engineering Consultants, LLC
 Missouri #2200151301

CLIENT:
 UNIVERSITY OF MISSOURI
 225 UNIVERSITY HALL
 COLUMBIA, MISSOURI 65211

CP240081 - VARIOUS LOCATIONS
 REPAIR CONCRETE IN STEAM MANHOLES
 UNIVERSITY OF MISSOURI
 COLUMBIA, BOONE COUNTY, MISSOURI

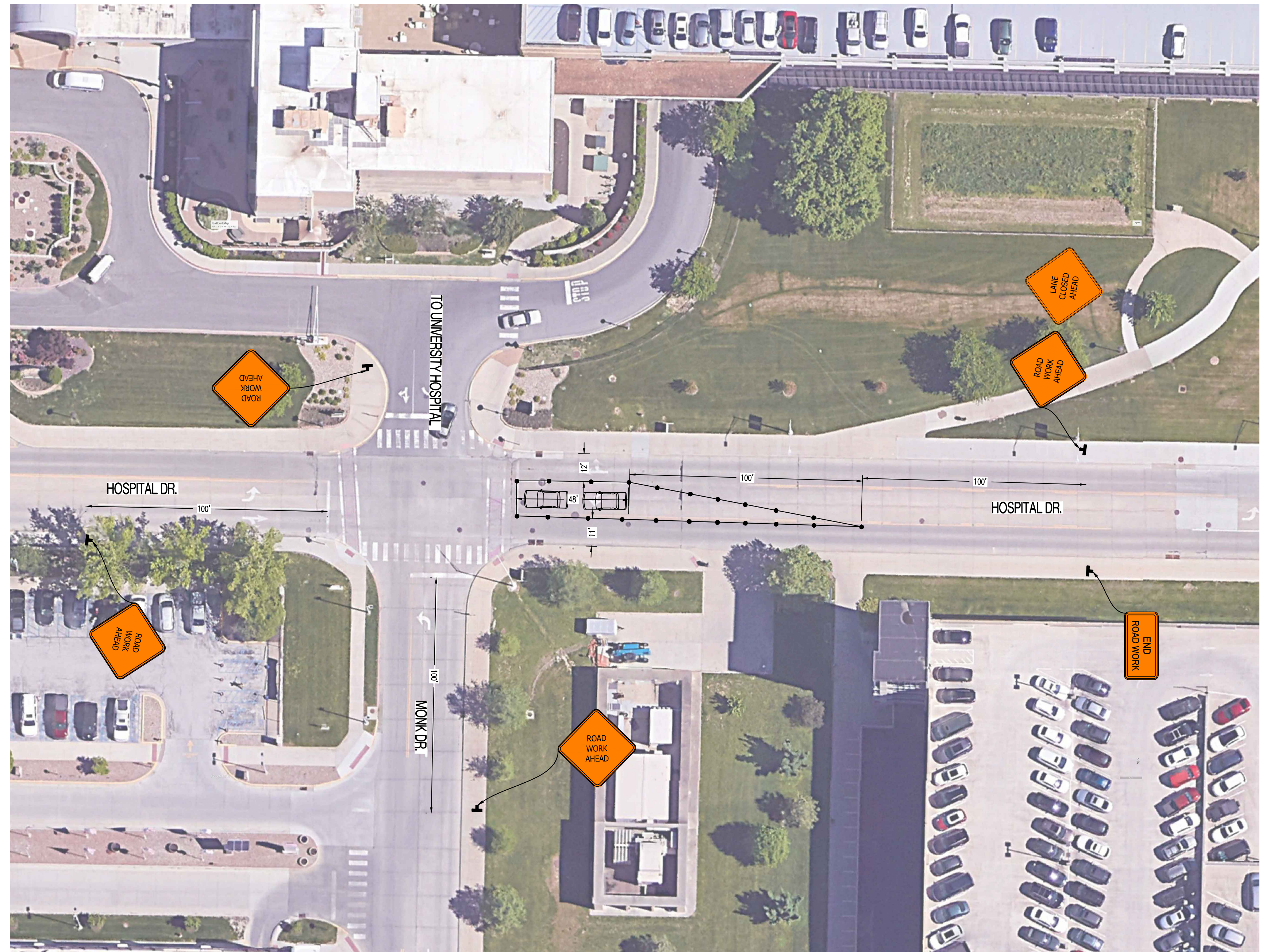
DRAWING INCLUDES:
 CONLEY AVE. & 6TH ST.
 TRAFFIC CONTROL
 PLAN

DESIGNED: NTE
 DRAWN: MWB
 PROJECT NO.: 180016
 MU PROJECT NO.: CP240081
 SHEET:
 TCP-1



DEANS DRIVE LANE SHIFT DETAIL

TRAFFIC CONTROL DEVICE LEGEND	
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # W20-5 SHOULD READ "LANE CLOSED AHEAD"). SIGN SHALL BE 24" X 24" MIN.
	PLACE STANDARD 36" MIN. TALL CHANNELIZER CONE W/ RETROREFLECTIVE STRIPING PER MUTCD STANDARDS
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # W20-1 SHOULD READ "ROAD WORK AHEAD"). SIGN SHALL BE 24" X 24" MIN.
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # C20-2 SHOULD READ "END ROAD WORK"). SIGN SHALL BE 18" X 36".
	VEHICLE TO BE USED WITH WARNING DEVICE TO HELP WARN PASSING TRAFFIC AND CREATE A BARRIER TO WORKING AREA.
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # W1-4b). SIGN SHALL BE 24" X 24" MIN.
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # W1-4bR). SIGN SHALL BE 24" X 24" MIN.
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # W20-1 SHOULD READ "ROAD WORK AHEAD"). SIGN SHALL BE 24" X 24" MIN.
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # C20-2 SHOULD READ "END ROAD WORK"). SIGN SHALL BE 18" X 36".



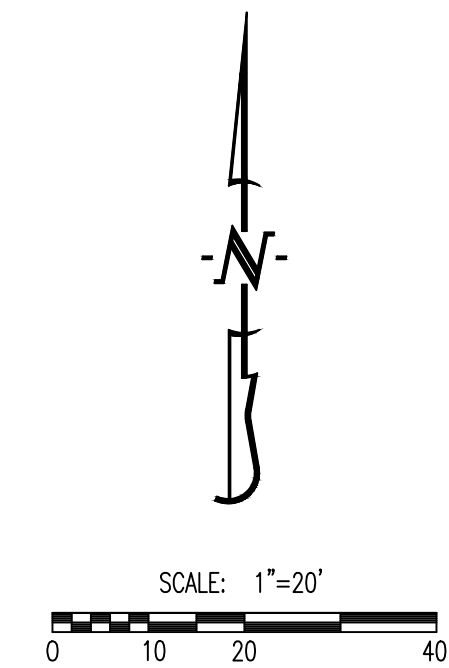
GENERAL NOTES

TRAFFIC CONTROL DEVICES SHALL COMPLY WITH THE MUTCD.
 CONTRACTOR SHALL MAINTAIN A MINIMUM CLEAR LANE WIDTH OF 11' AT ALL TIMES.
 CONTRACTOR SHALL REFER TO THE CURRENT EDITION OF THE MODOOT MANUAL OF TRAFFIC CONTROL FOR FIELD OPERATIONS FOR INFORMATION ON THE PROPER DEPLOYMENT OF TRAFFIC CONTROL DEVICES. REFER TO SECTION 616 OF THE MODOOT STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL PROCEDURES. ALL WARNING SIGNS WITH "WOXIX-X" IN THE LEGEND ABOVE SHALL BE BLACK LETTERING WITH ORANGE BACKGROUND.

SCHEDULING OF CLOSURES

THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING CITY OF COLUMBIA SITE DEVELOPMENT AT LEAST ONE WEEK PRIOR TO THE START OF ANY CLOSURE ONCE CLOSURE APPROVAL HAS BEEN GIVEN.
 CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE FOLLOWING AGENCIES, AS REQUIRED, IMMEDIATELY PRIOR TO CLOSURE OF STREET, DURING CONSTRUCTION FOR INSPECTIONS AND AGAIN WHEN WORK IS COMPLETE AND STREET IS REOPENED:

- SITE DEVELOPMENT (ROW INSPECTIONS) 874-7474
- BUILDING SAFETY (PLUMBING/BUILDING INSPECTIONS) 874-7474
- JOINT COMMUNICATIONS (EMERGENCY SERVICES) 874-8471
- COLUMBIA TRANSIT (CITY BUSES) 874-7282
- PARKING ENFORCEMENT (PARKING METERS) 874-7674
- PUBLIC WORKS STREET DIVISION (STREET PATCHING) 874-6289
- UNIVERSITY OF MISSOURI POLICE DEPARTMENT 882-7201



REVISIONS:

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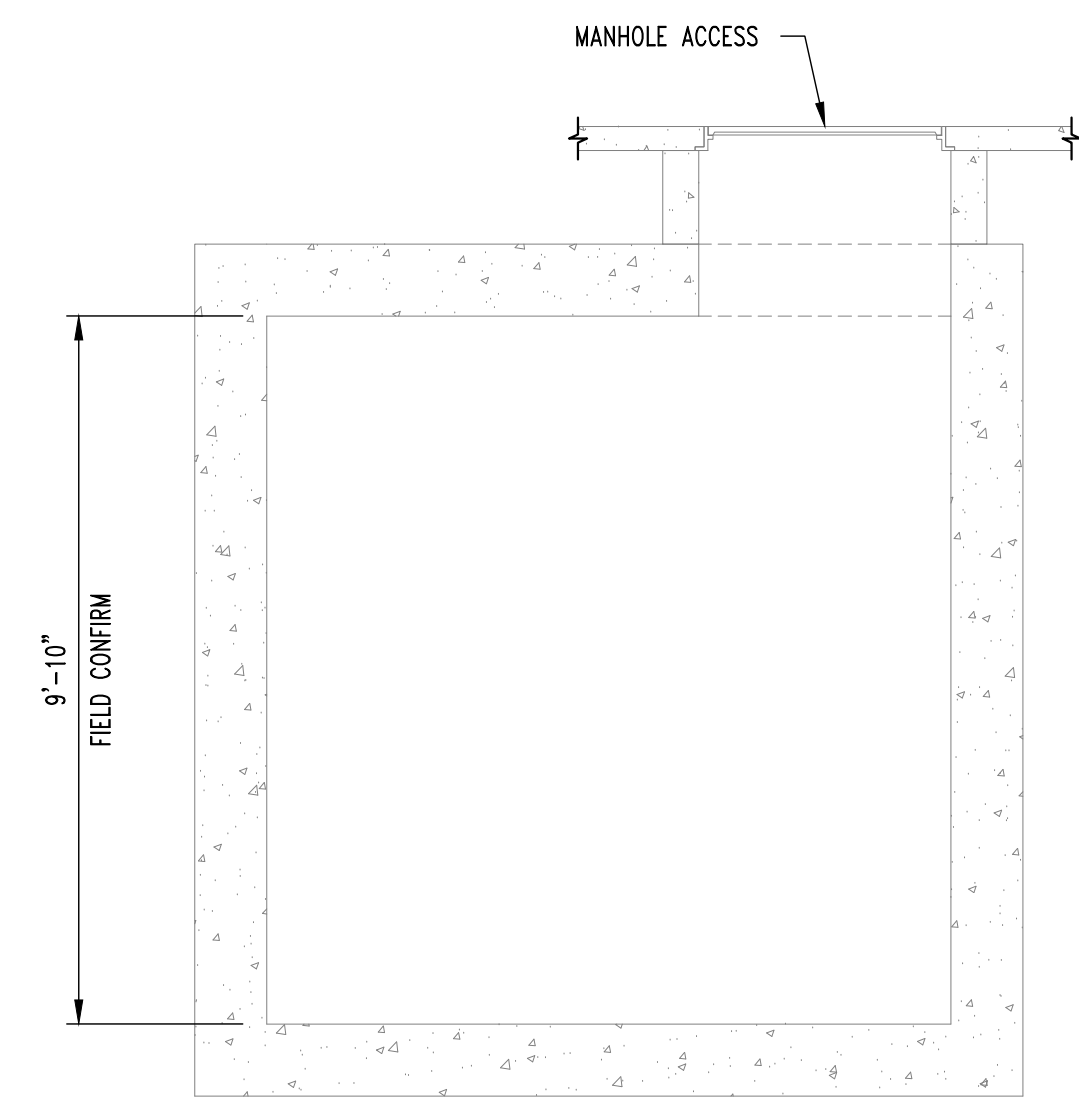
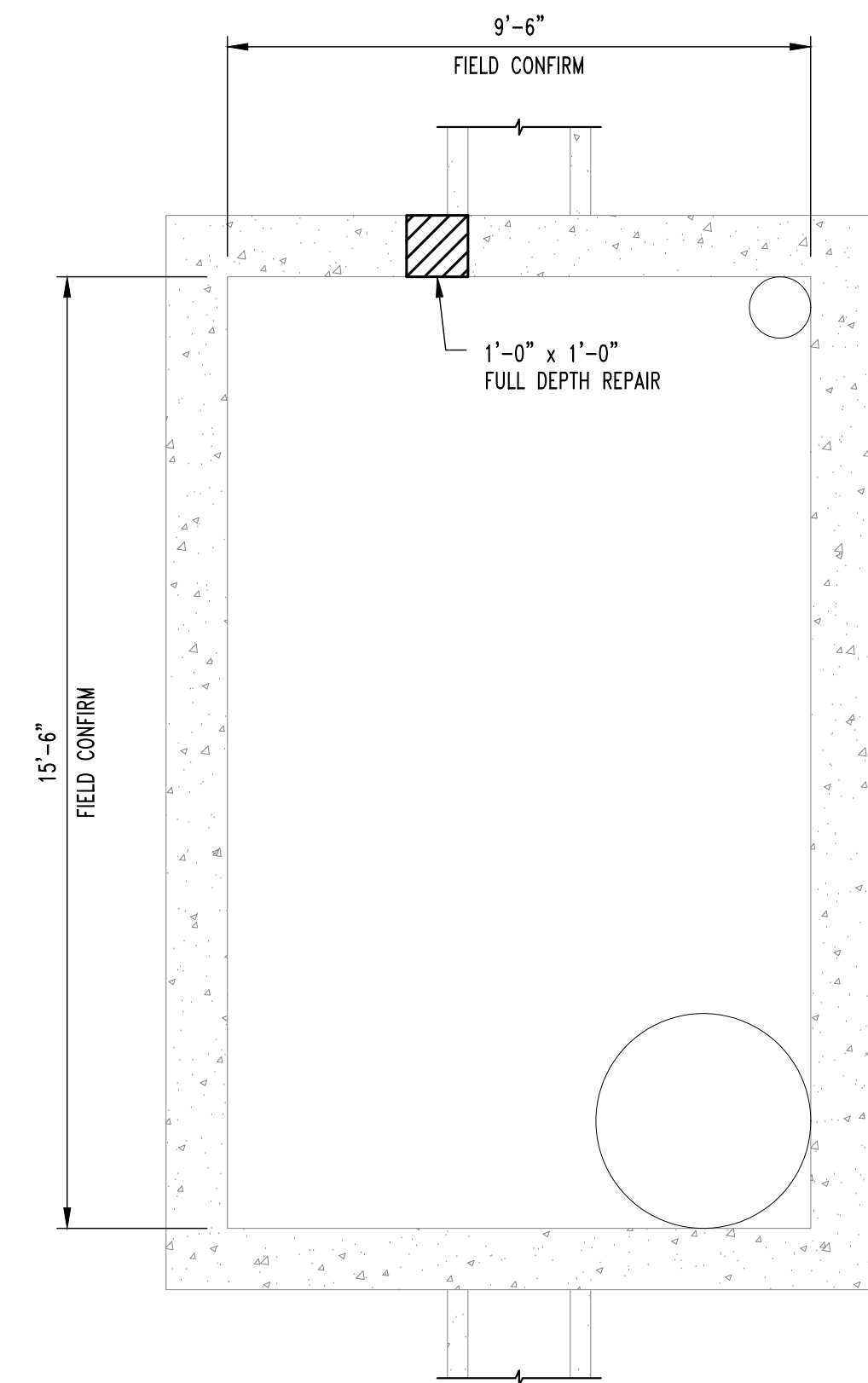
UNIVERSITY OF MISSOURI
 225 UNIVERSITY HALL
 COLUMBIA, MISSOURI 65211

**CP240081 - VARIOUS LOCATIONS
 REPAIR CONCRETE IN STEAM MANHOLES**

UNIVERSITY OF MISSOURI
 COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:
 HOSPITAL DR. & MONK ST.
 TRAFFIC CONTROL PLAN
 &
 DEANS DRIVE TRAFFIC CONTROL PLAN

DESIGNED: NTE
 DRAWN: MWB
 PROJECT NO.: 180016
 MU PROJECT NO.: CP240081
 SHEET: TCP-2



1
S100

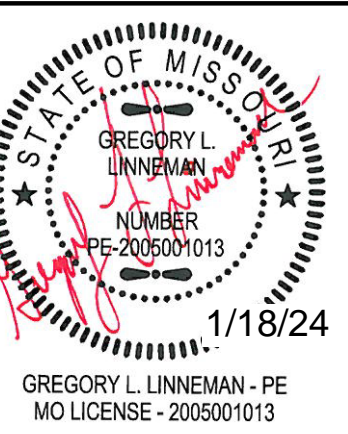
STEAM MANHOLE #338
SCALE: 3/8" = 1'-0"

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY COOLING AND VENTILATION AS NEEDED TO PERFORM WORK INSIDE THE MANHOLES AND TUNNEL. COOLING AND VENTILATION WILL BE REQUIRED FOR PORTIONS OF THIS PROJECT.
- ALL CONCRETE PATCHING/REPAIR DETAILS AND NOTES ARE PROVIDED ON SHEET S200.
- ALL REINFORCING TO BE MMFX/CHROME X REBAR.
- ALL DAMAGE TO GALVANIZING TO BE REPAIRED w/ HOT GALVANIZING BY CONTRACTOR.
- ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

No.	Date
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1000 W. MISSOURI DRIVE
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Crockett Engineering Consultants, LLC
Missouri License #2005001013

CLIENT:
UNIVERSITY OF MISSOURI
225 UNIVERSITY HALL
COLUMBIA, MISSOURI 65211

CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES
UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:

SMH #338
PLAN & PHOTOS

DESIGNED: GLL

DRAWN: ZMP

PROJECT NO.: 180016

MU PROJECT NO.: CP240081

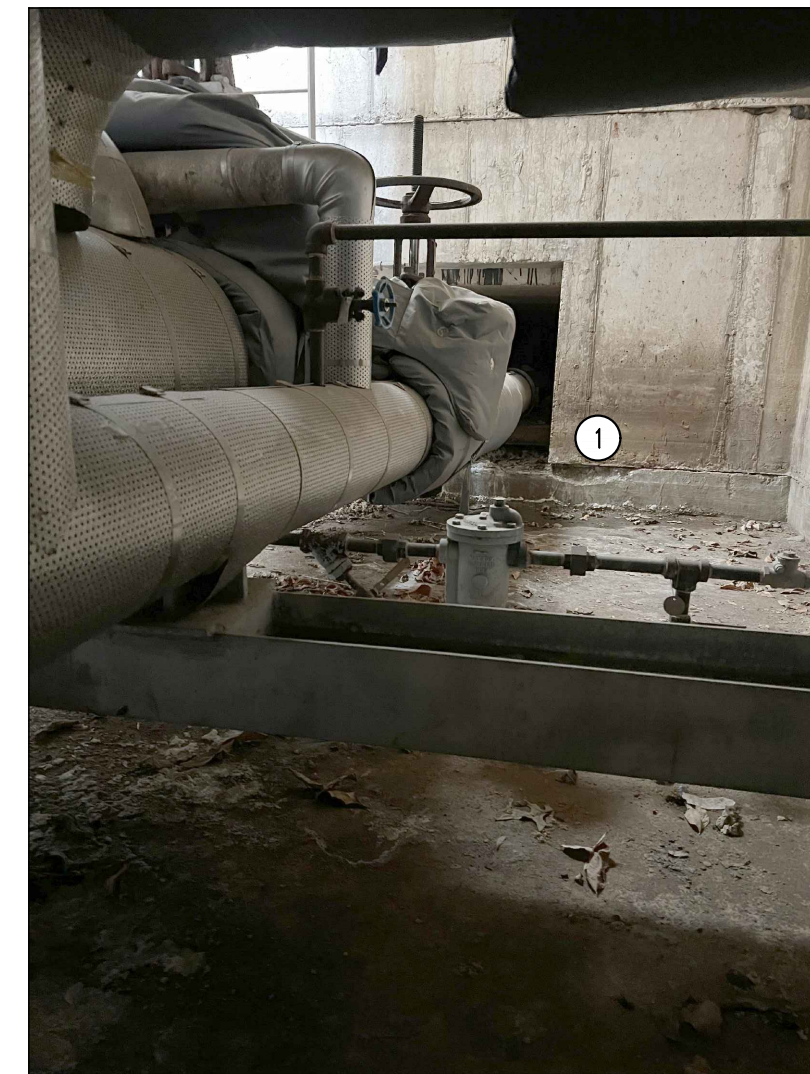
SHEET:

S100



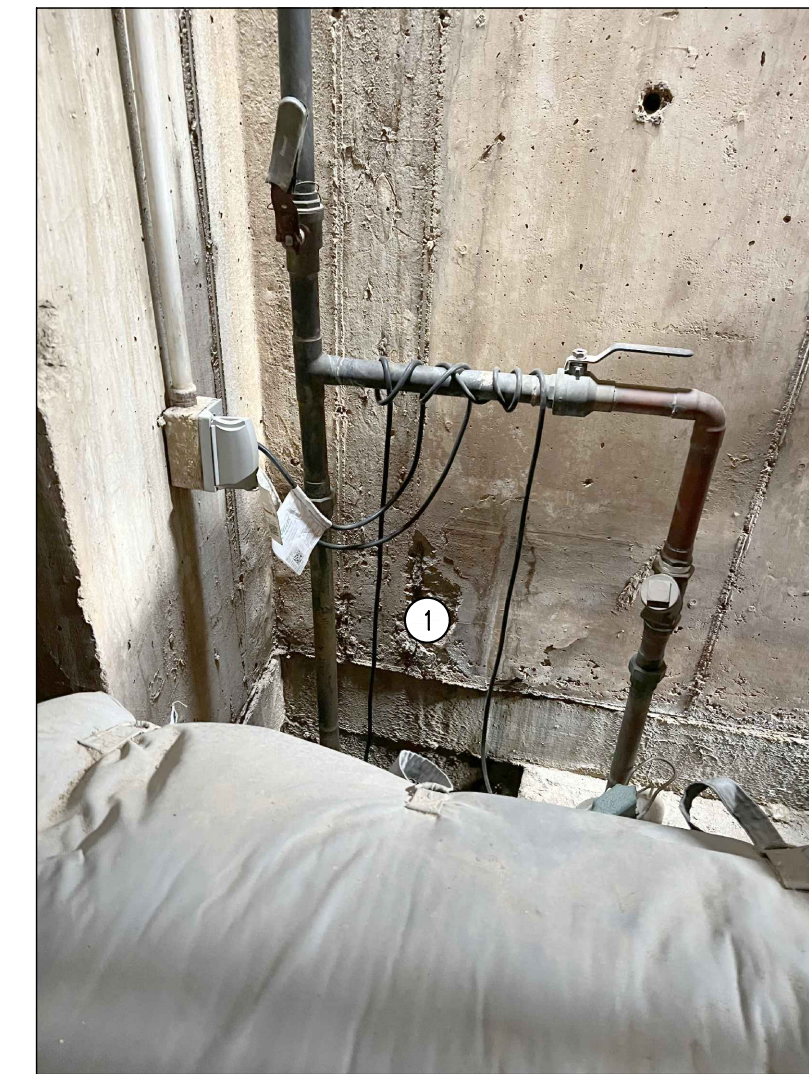
- 1 EXPOSED REBAR, SEE REPAIR NOTE 1.
- 2 1'-0"x1'-0" FULL DEPTH REPAIR, SEE DETAIL ON SHEET S200. EXCAVATING IS REQUIRED OUTSIDE OF MANHOLE FOR REPAIR. APPLY WATERPROOFING TO REPAIR AREA, REFER TO WATERPROOFING DETAIL ON SHEET S200

SMH #338 - TIGER AVENUE



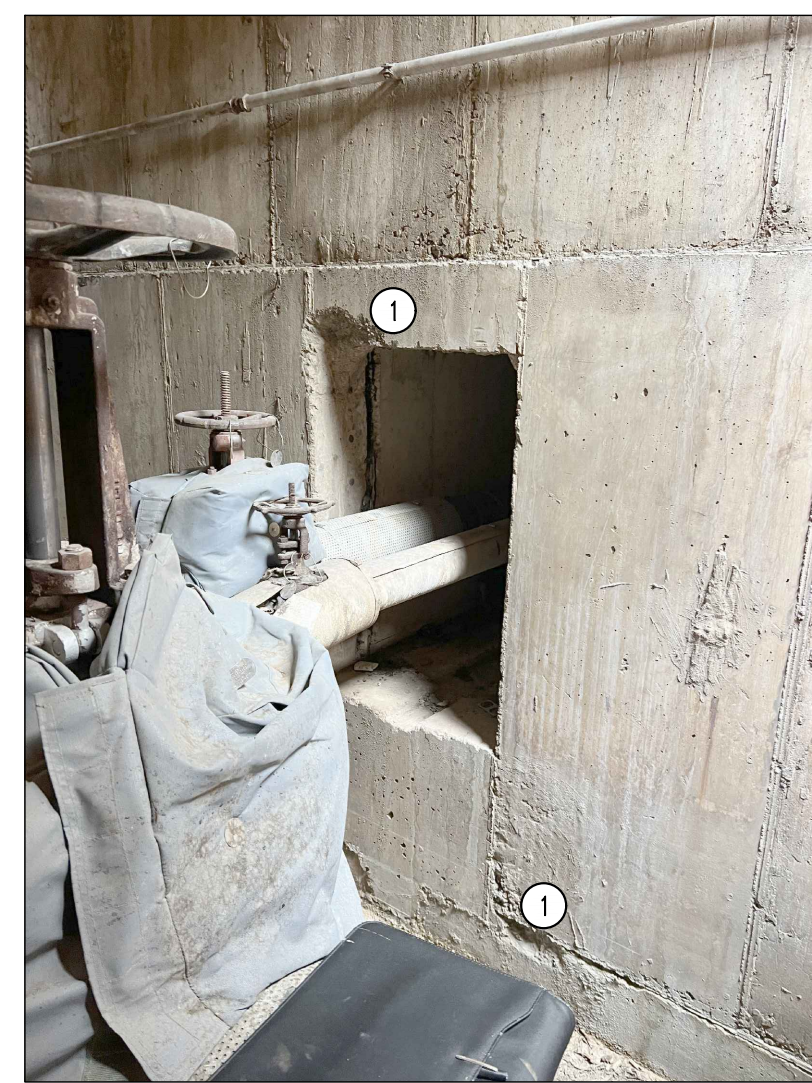
- 1 SPALLED CONCRETE, SEE REPAIR NOTE 2.

SMH #338 - TIGER AVENUE



- 1 SPALLED CONCRETE, SEE REPAIR NOTE 3.

SMH #338 - TIGER AVENUE



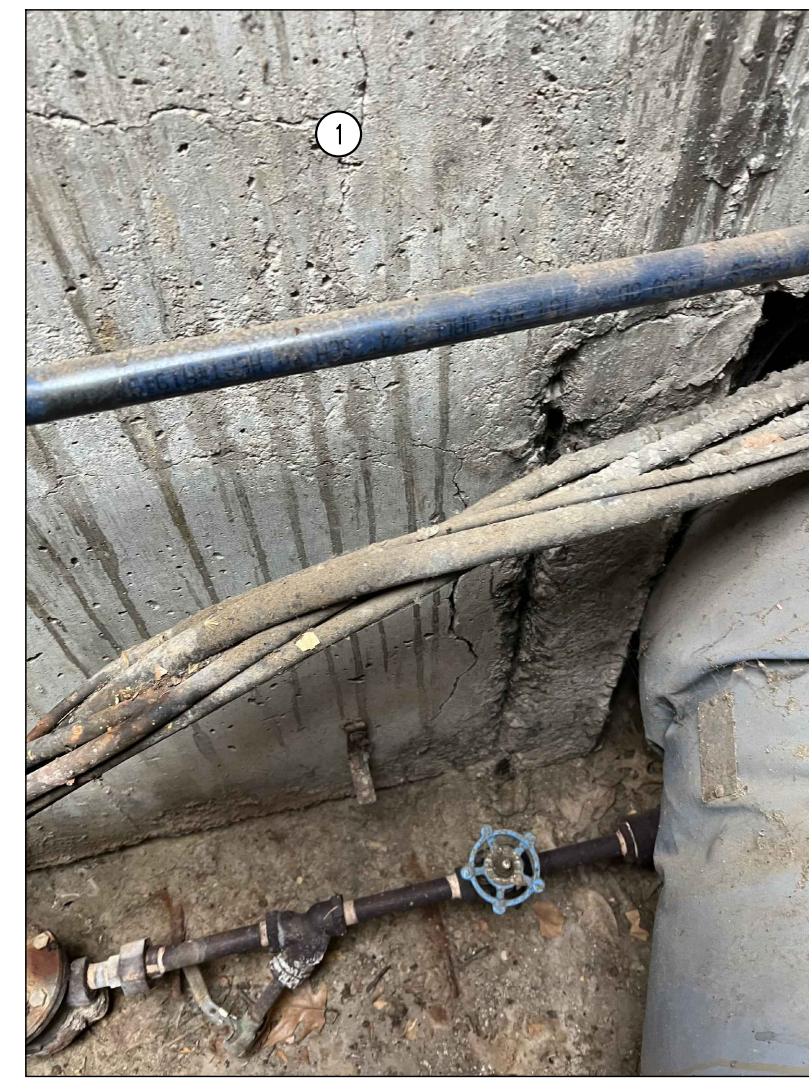
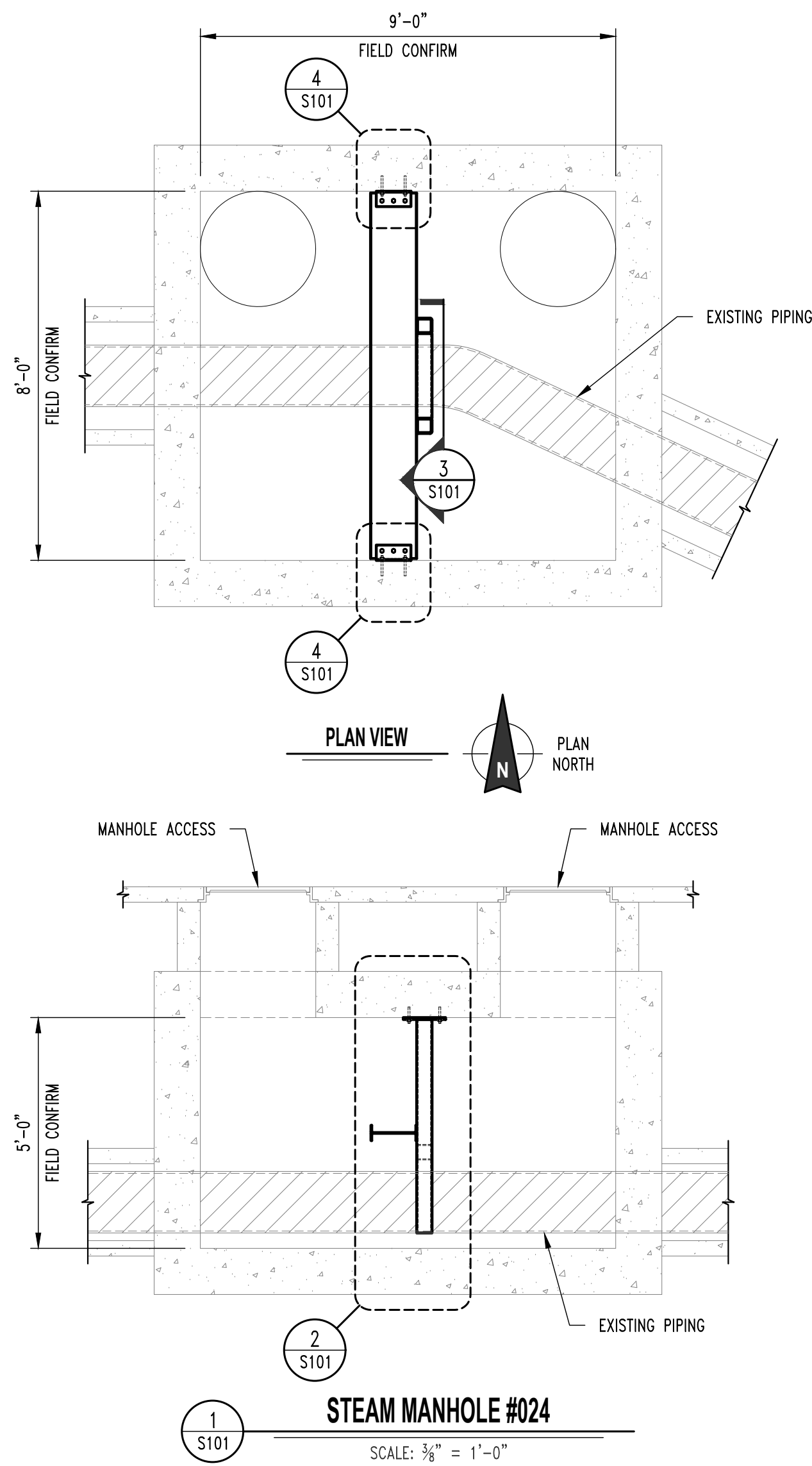
- 1 SPALLED CONCRETE, SEE REPAIR NOTE 4.

SMH #338 - TIGER AVENUE

REPAIR NOTES

SMH #338 APPROXIMATE REPAIR AREAS

- 18"x3'-6" AREA OF EXPOSED REBAR ON NORTH WALL NEXT TO CHASE. (REPAIR #2)
- SPALLED CONCRETE ON THE SOUTH WALL EAST SIDE NEXT TO CHASE, 0'-6"x2'-0" AREA. (REPAIR #2)
- SPALLED CONCRETE WEST WALL NEXT TO CHASE, 2'-0"x2'-0" AREA. (REPAIR #2)
- DEEP SPALL ON WEST WALL UNDER CHASE, 1'-0"x1'-0" AREA (2 TOTAL). (REPAIR #3)



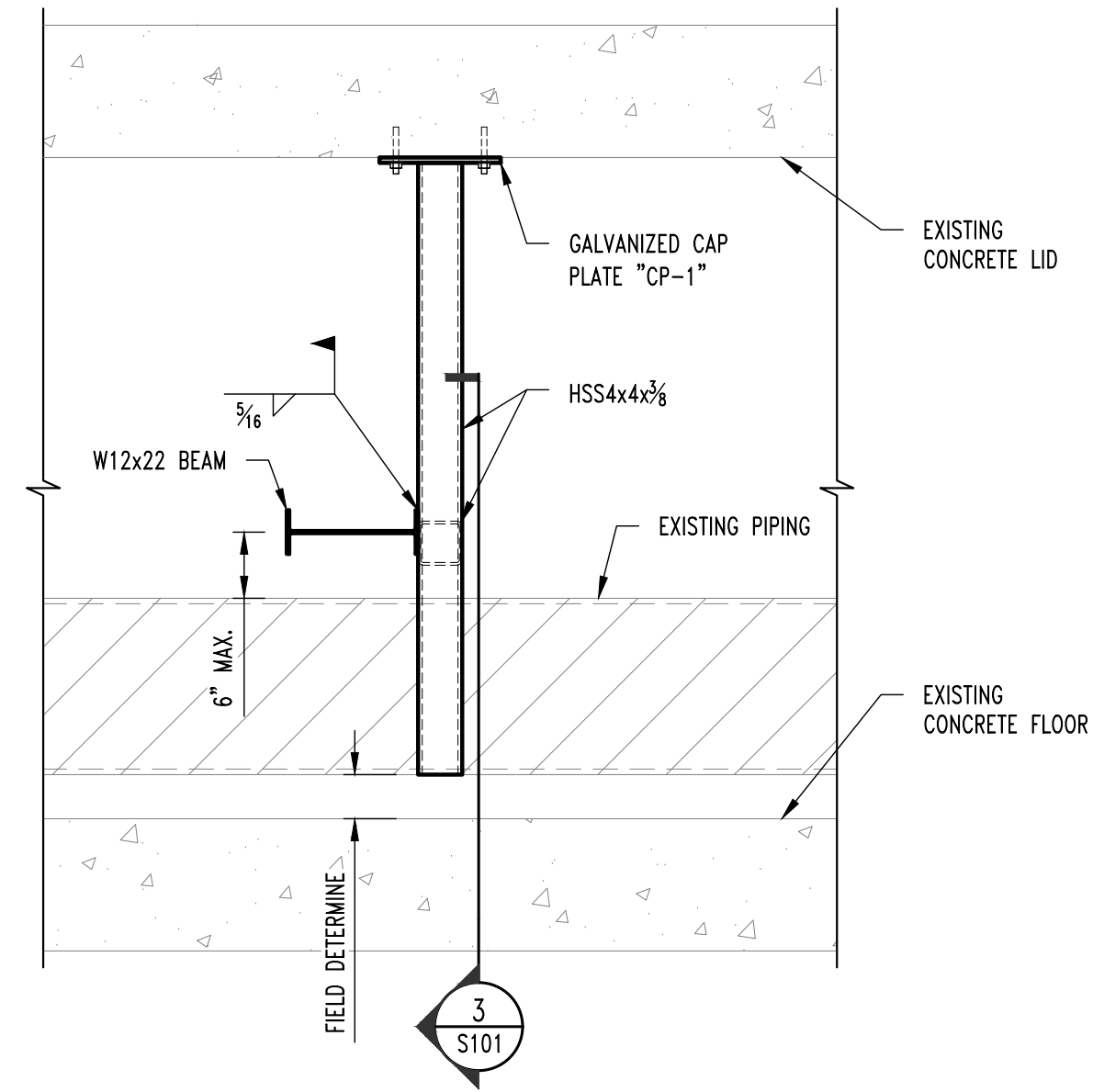
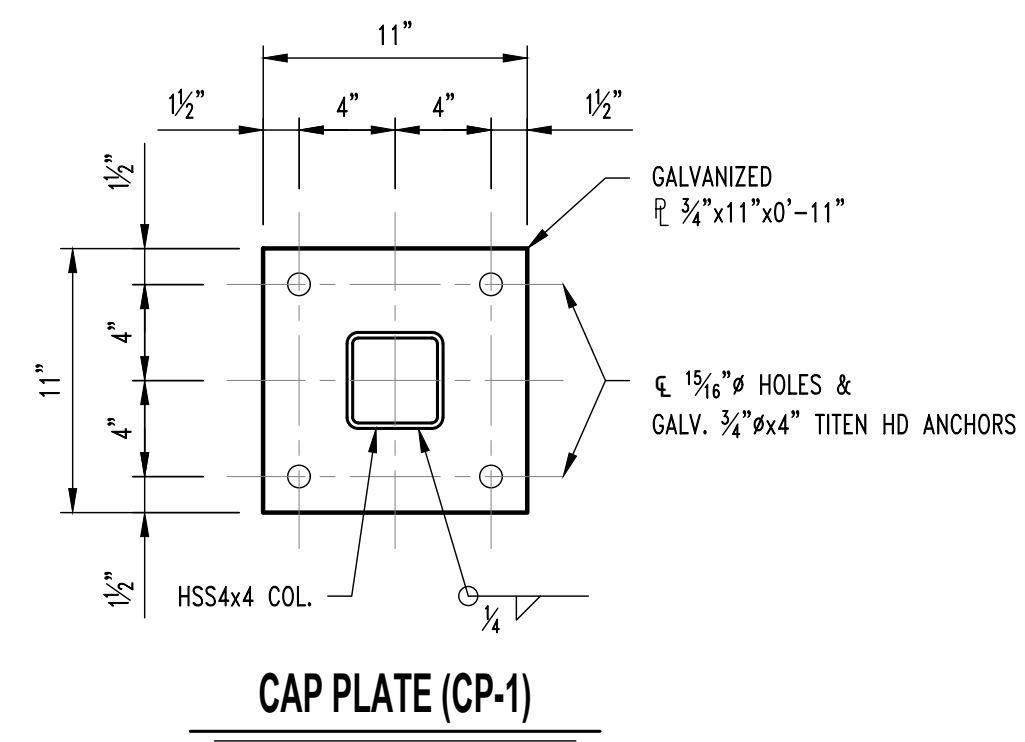
1 SPALLED CONCRETE, SEE REPAIR NOTE 1.

SMH #024 - CONLEY AVE.

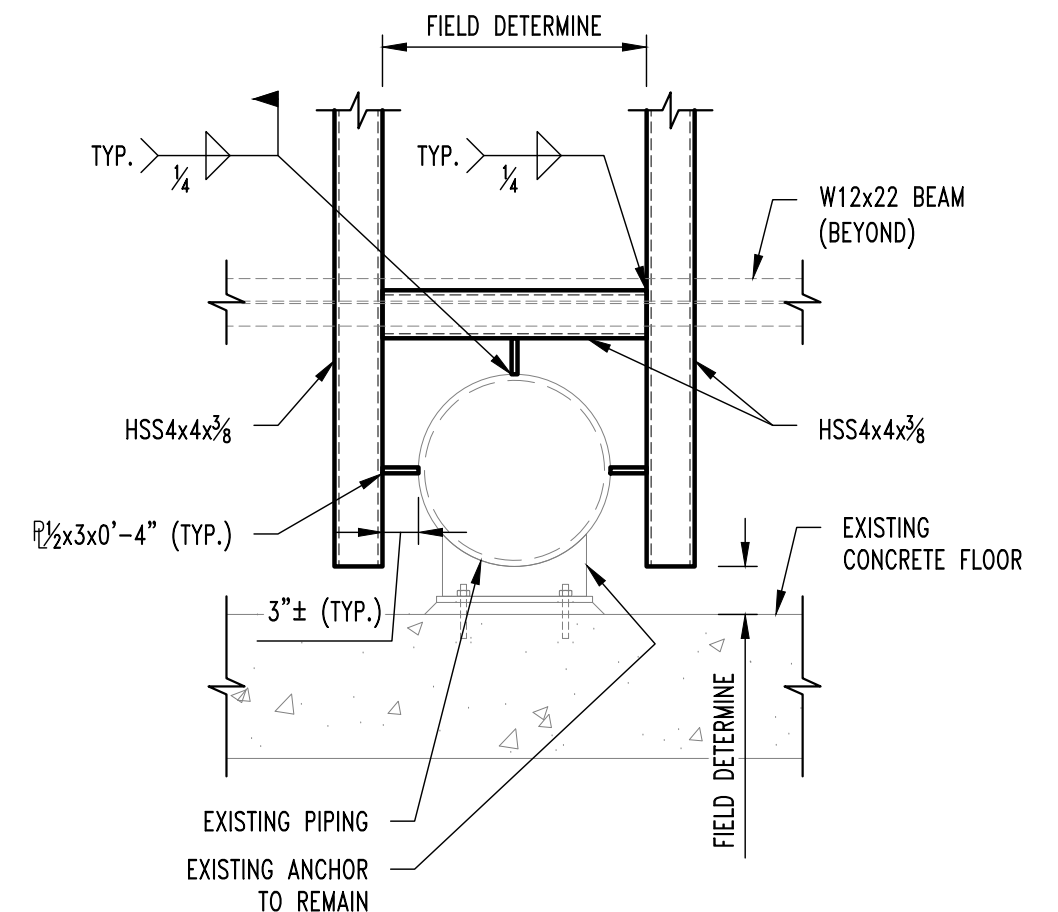


1 SPALLED CONCRETE, SEE REPAIR NOTE 2.

SMH #024 - CONLEY AVE.



- NOTE:**
1. ALL STEEL TO BE HOT-DIPPED GALVANIZED. COAT ALL EXPOSED STEEL & TOUCH UP AREAS w/ HOT GALVANIZING.



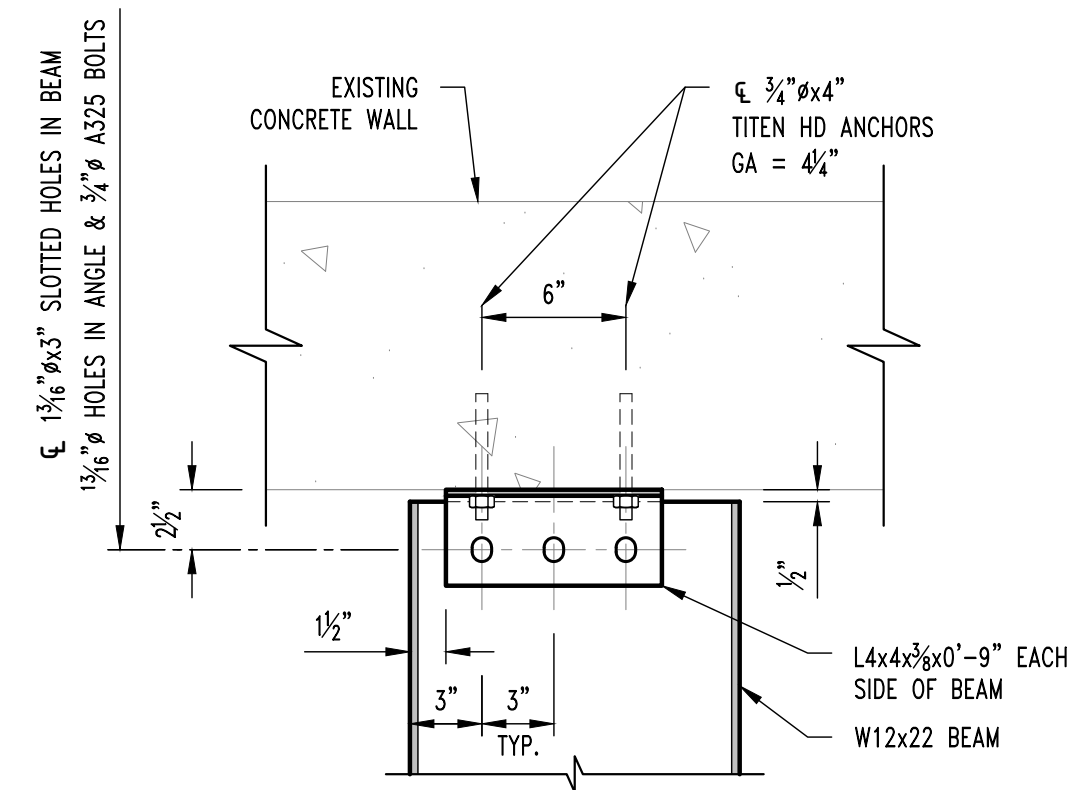
- NOTE:**
1. ALL STEEL TO BE HOT-DIPPED GALVANIZED. COAT ALL EXPOSED STEEL & TOUCH UP AREAS w/ HOT GALVANIZING.

REPAIR NOTES

- SMH #024 APPROXIMATE REPAIR AREAS**
1. 4'-0"x6'-0" SPALLED AREA EAST WALL. (REPAIR #2)
 2. SPALLED AREA AROUND CHASE. (REPAIR #2)

REPAIR NOTES

- SMH #710 APPROXIMATE REPAIR AREAS**
1. SPALLED AREA IN RISER. (REPAIR #3)



- NOTE:**
1. ALL STEEL TO BE HOT-DIPPED GALVANIZED. COAT ALL EXPOSED STEEL & TOUCH UP AREAS w/ HOT GALVANIZING.



- 1 SPALLED CONCRETE, SEE REPAIR NOTE 1.
- 2 REMOVE MANHOLE SECURITY GATE PRIOR TO REPAIR, REINSTALL ONCE REPAIR IS COMPLETE.

SMH #710 - CONLEY AVE.



- 1 SPALLED CONCRETE, SEE REPAIR NOTE 1.
- 2 REMOVE MANHOLE SECURITY GATE PRIOR TO REPAIR, REINSTALL ONCE REPAIR IS COMPLETE.

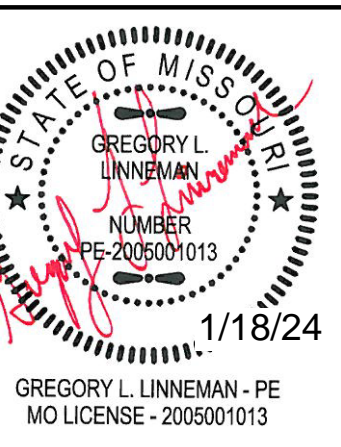
SMH #710 - CONLEY AVE.

GENERAL NOTES

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2. ALL CONCRETE PATCHING/REPAIR DETAILS AND NOTES ARE PROVIDED ON SHEET S200.
3. ALL REINFORCING TO BE MMFX/CHROME X REBAR.
4. ALL DAMAGE TO GALVANIZING TO BE REPAIRED w/ HOT GALVANIZING BY CONTRACTOR.
5. ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

No.	Date
BID SET	01/18/2024



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Missouri License #2005001013

CLIENT:
UNIVERSITY OF MISSOURI
225 UNIVERSITY HALL
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CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES
UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:

SMH #024 & #710
PLAN & PHOTOS

DESIGNED: GLL

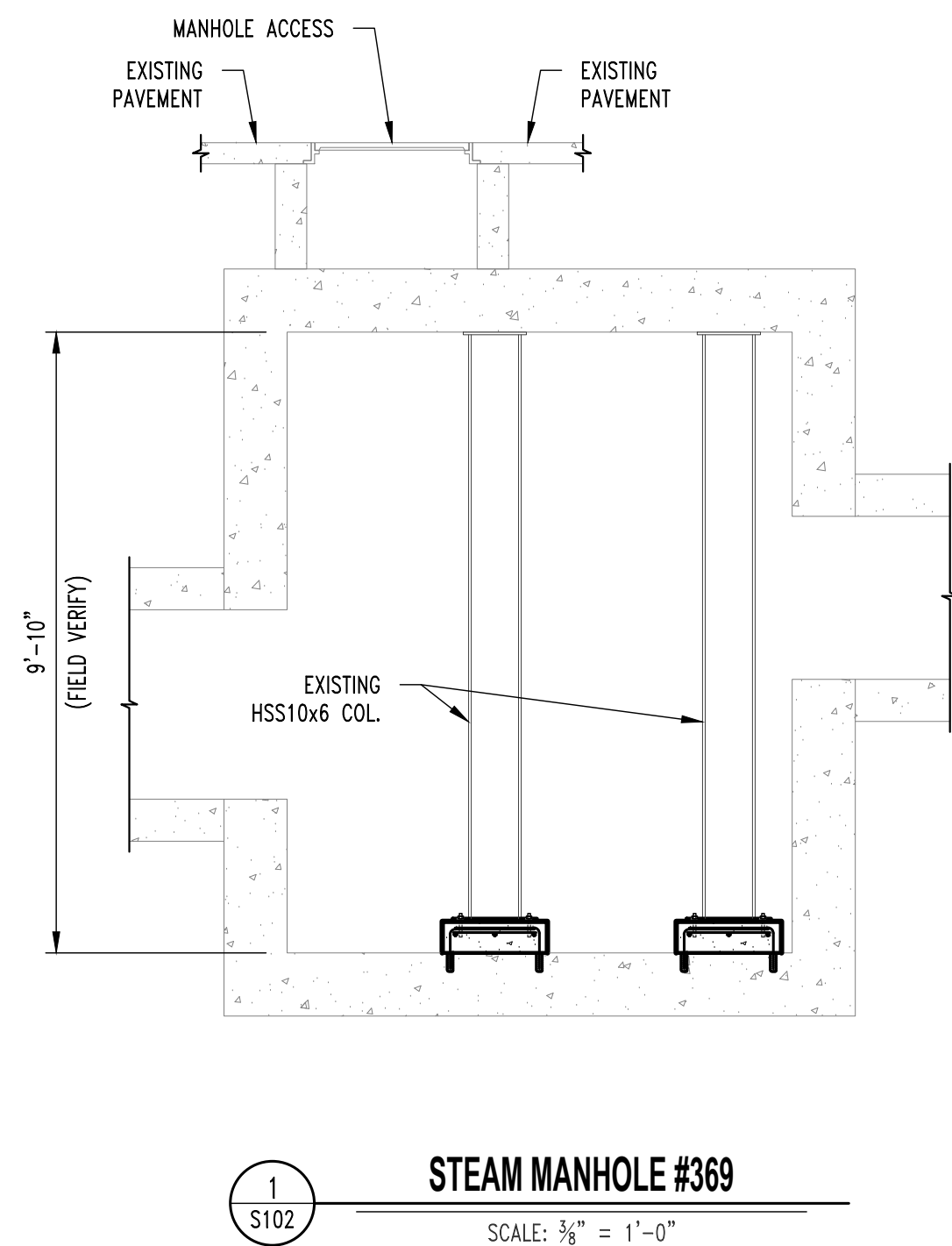
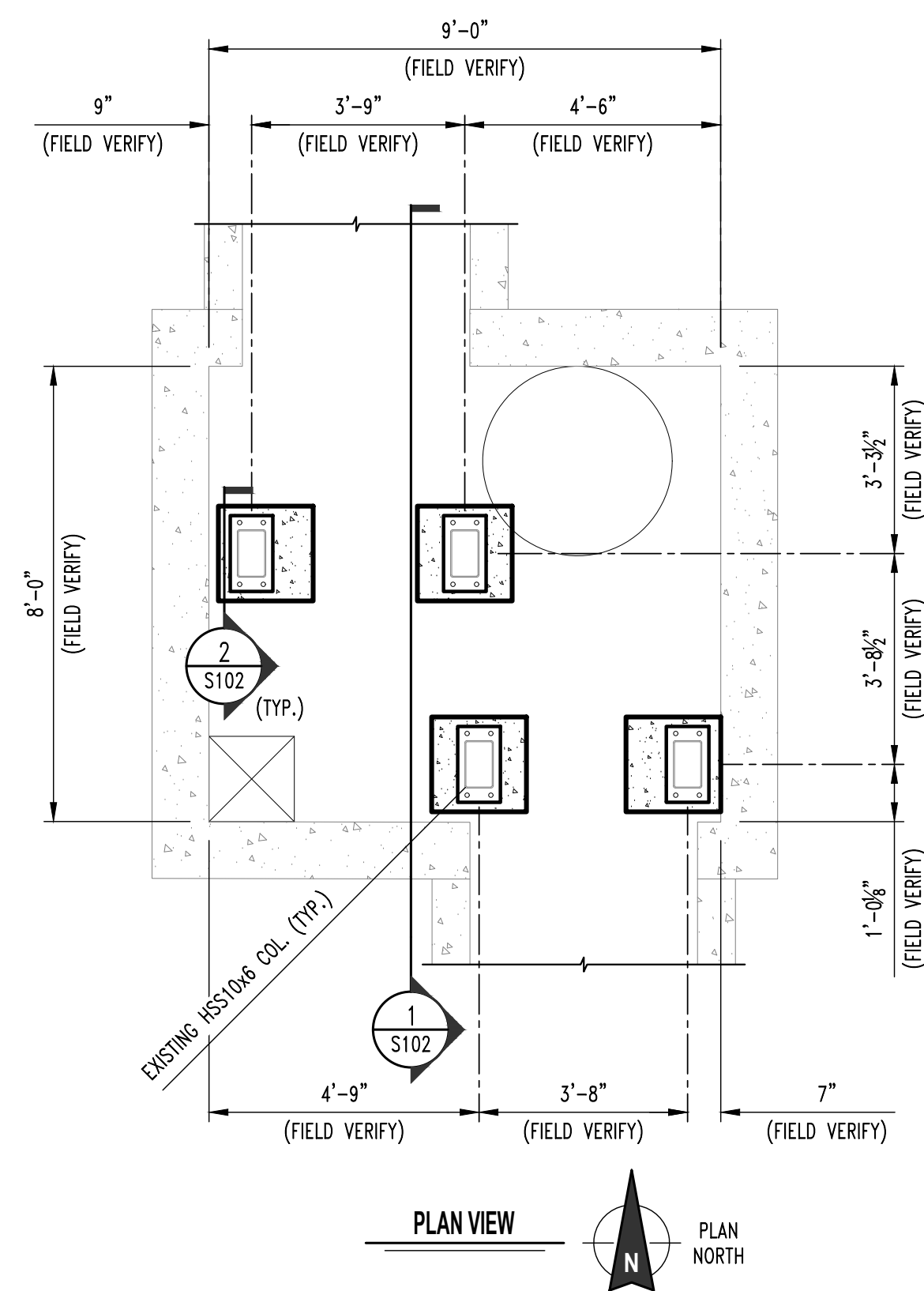
DRAWN: ZMP

PROJECT NO.: 180016

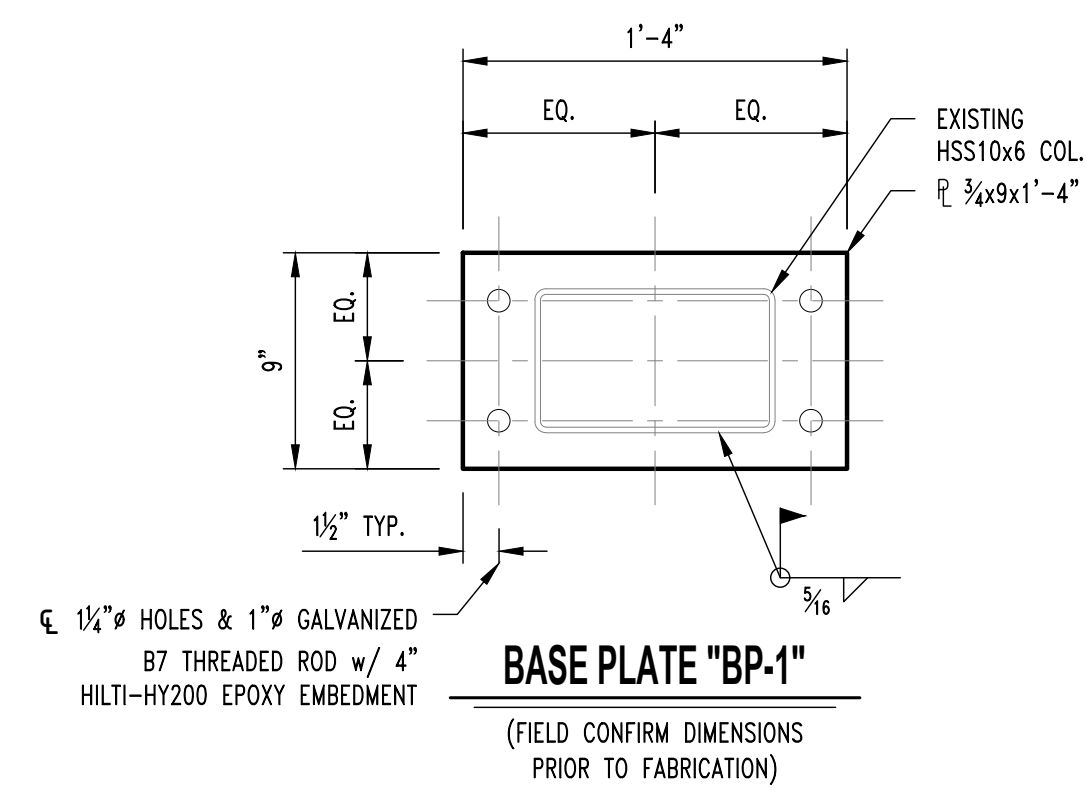
MU PROJECT NO.: CP240081

SHEET:

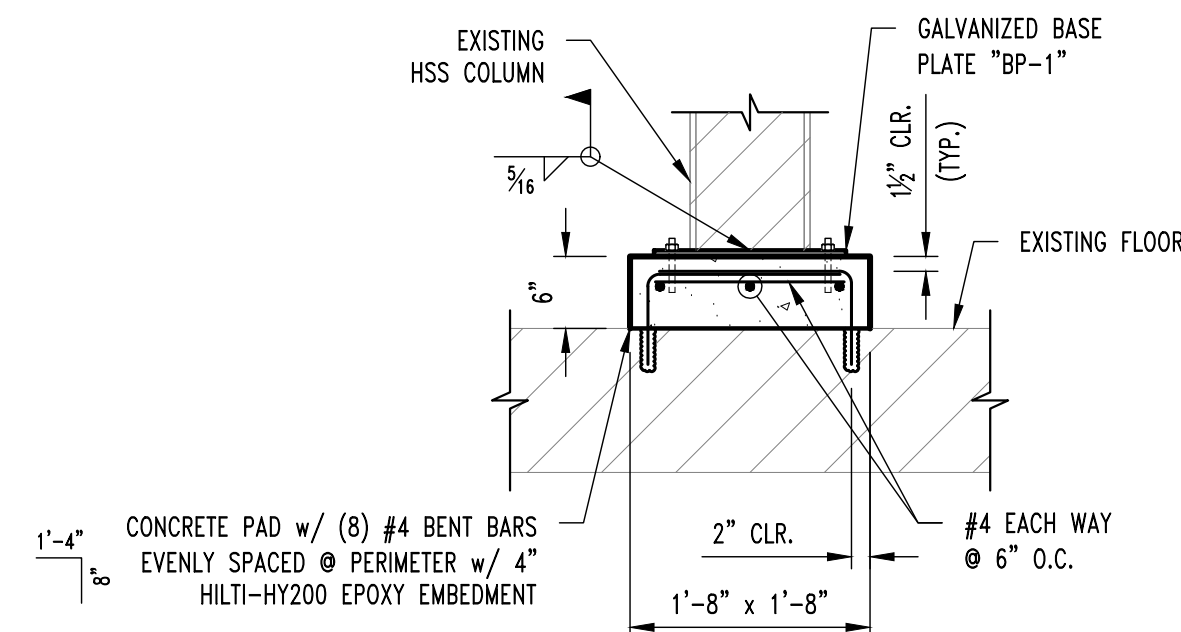
S101



1
S102
STEAM MANHOLE #369
SCALE: 3/8" = 1'-0"



2
S102
BASE PLATE "BP-1"
(FIELD CONFIRM DIMENSIONS PRIOR TO FABRICATION)



2
S102
BASE ANCHORAGE SECTION
SCALE: 3/4" = 1'-0"



1 DAMAGED BASE PLATE, SEE REPAIR NOTE 1.

SMH #369 - HOSPITAL DR.

REPAIR NOTES

SMH #369 APPROXIMATE REPAIR AREAS

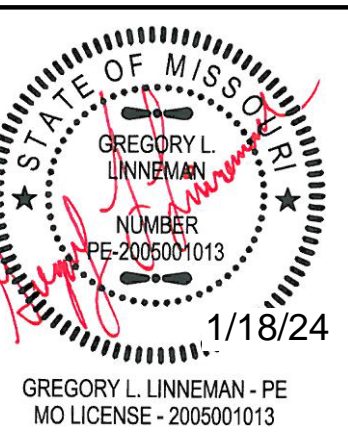
- (4) EXISTING HSS COLUMNS REQUIRE NEW BASEPLATES. SEE DETAIL 2/S102. PRIOR TO REPAIR, STEAM SYSTEM WILL NEED TO BE SHUT DOWN TO WORK ON THIS ELEMENT, STEAM LINES WILL ONLY BE ABLE TO BE SHUT DOWN ONE AT A TIME AND ANCHORS WILL ONLY BE ABLE TO BE REPLACED ONE AT A TIME. CONTRACTOR SHALL COORDINATE WITH OWNER ONE WEEK IN ADVANCE FOR SYSTEM SHUT DOWN. REMOVE TEMPORARY BRACING ONCE NEW BASE PLATES ARE INSTALLED. ADDITIONALLY, ALL RUST ON COLUMNS SHALL BE REMOVED & SHALL BE HOT GALV. FINISHED.

GENERAL NOTES

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- ALL CONCRETE PATCHING/REPAIR DETAILS AND NOTES ARE PROVIDED ON SHEET S200.
- ALL REINFORCING TO BE MMFX/CHROME X REBAR.
- ALL DAMAGE TO GALVANIZING TO BE REPAIRED w/ HOT GALVANIZING BY CONTRACTOR.
- ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

No.	Date
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**CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES**
**UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI**

DRAWING INCLUDES:

SMH #369
PLAN & DETAILS

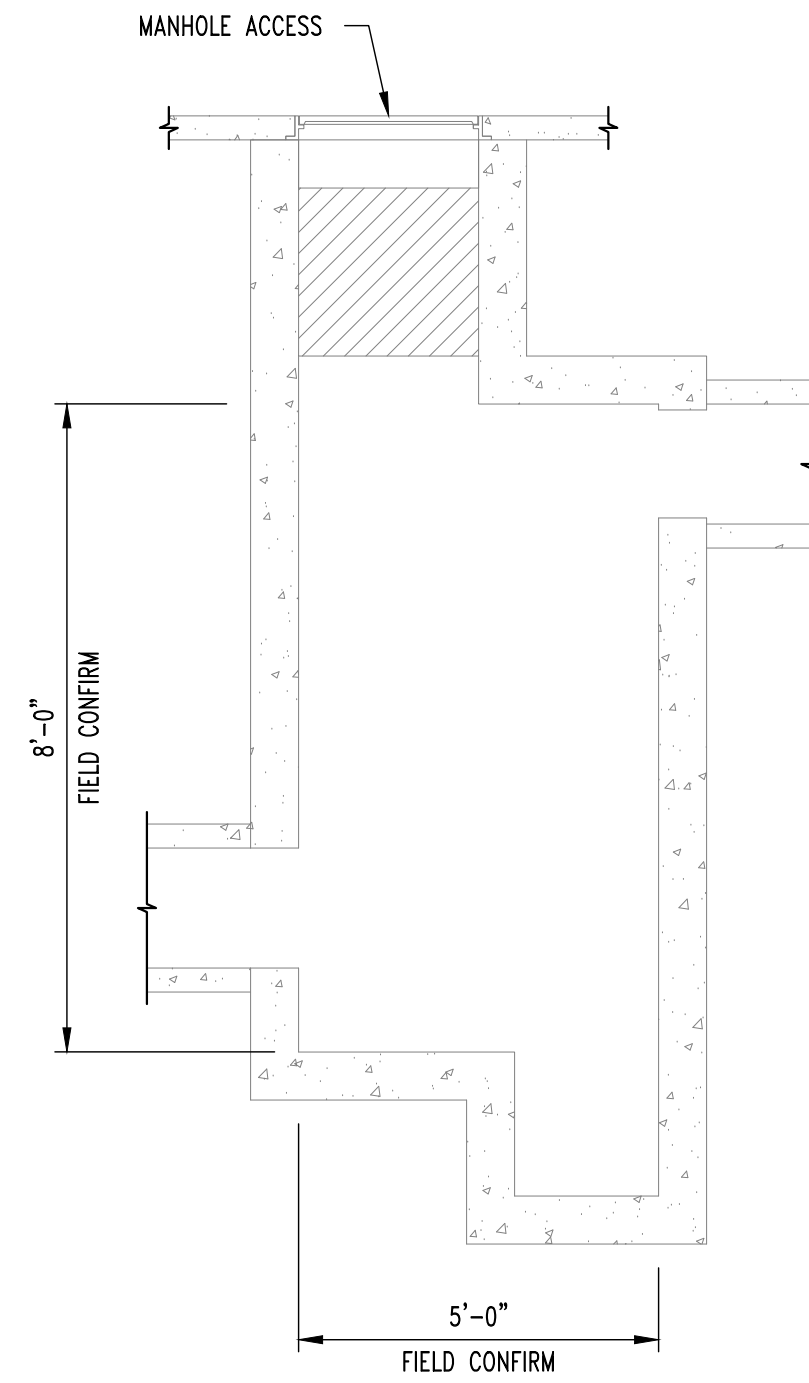
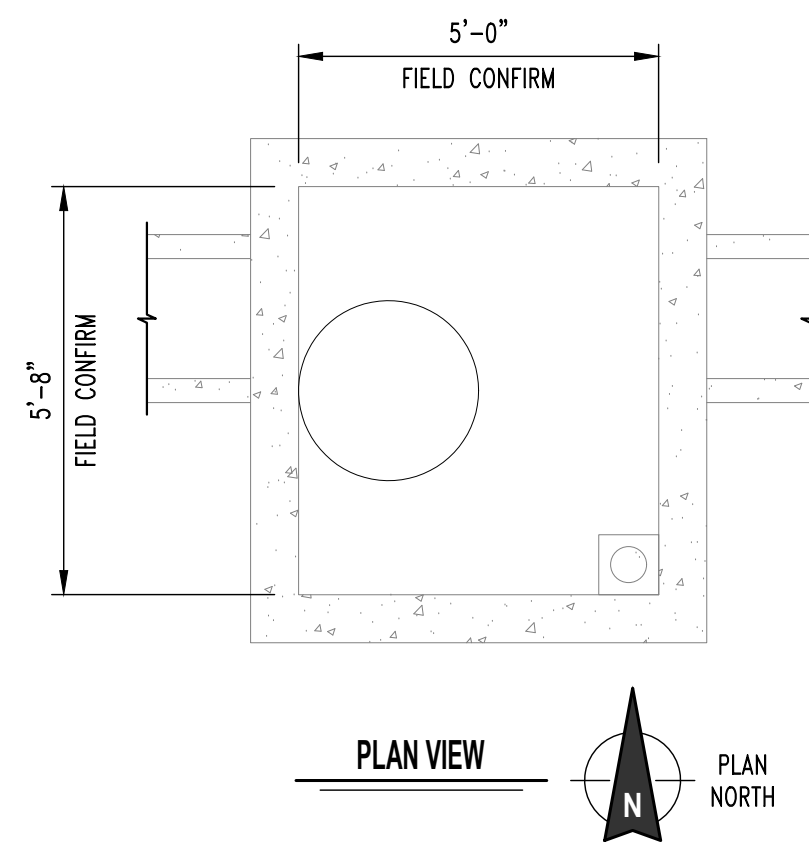
DESIGNED: GLL

DRAWN: ZMP

PROJECT NO.: 180016

MU PROJECT NO.: CP240081

SHEET:
S102

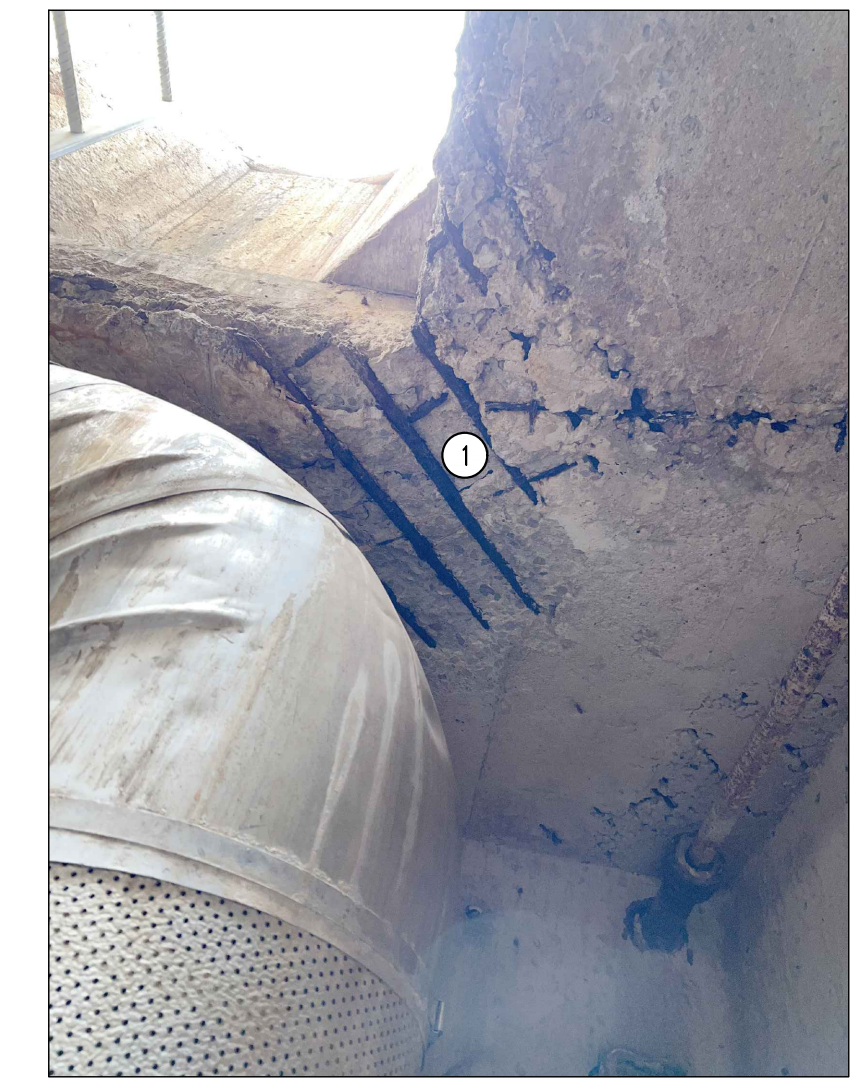


1 S103
STEAM MANHOLE #140
 SCALE: 3/8" = 1'-0"



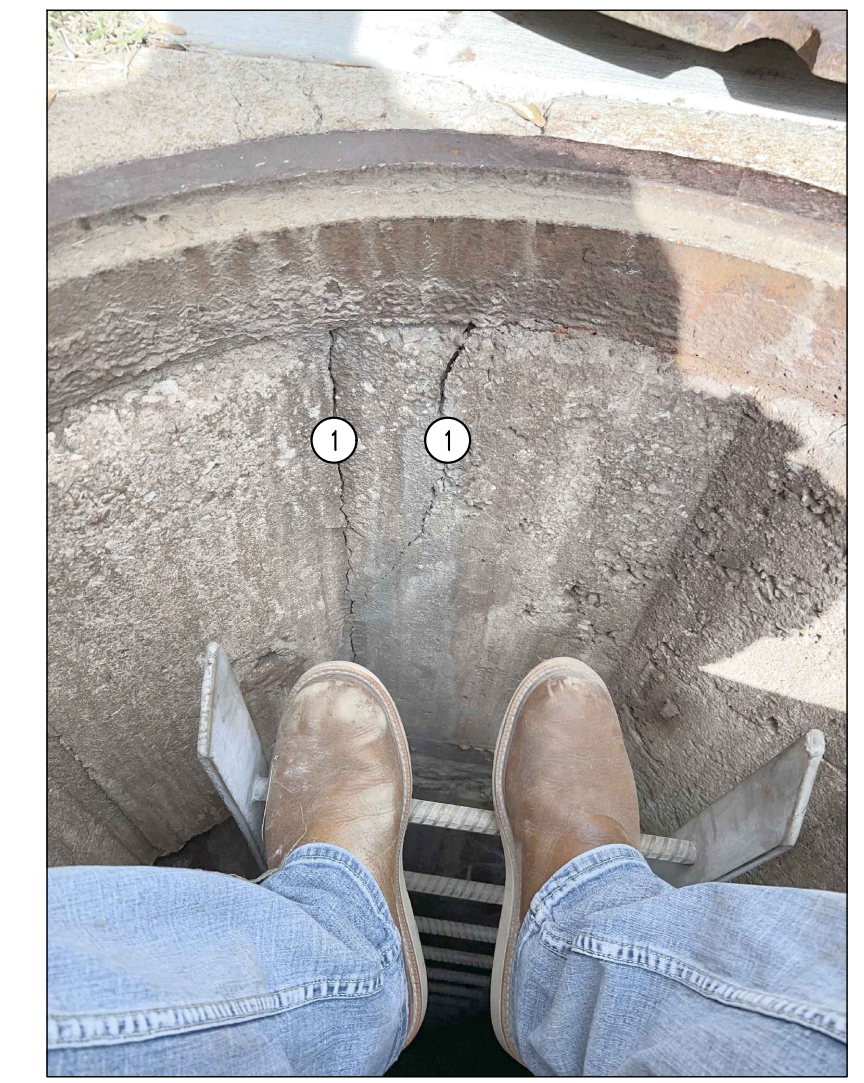
① SPALLED CONCRETE, SEE REPAIR NOTE 1.
 ② CONCRETE CRACKING, SEE CRACK REPAIR DETAIL ON SHEET S200.

SMH #140 - ROLLINS ST.



① EXPOSED REBAR, SEE REPAIR NOTE 2.

SMH #140 - ROLLINS ST.



① CONCRETE CRACKING, SEE REPAIR NOTE 3.

SMH #140 - ROLLINS ST.

REPAIR NOTES

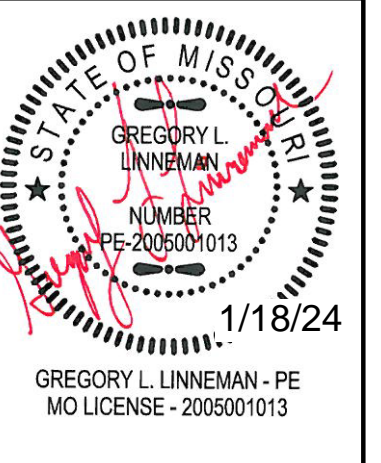
- SMH #140 APPROXIMATE REPAIR AREAS
1. 18" HIGH x 3' LONG SPALLED CONCRETE BEHIND LADDER. (REPAIR #3)
 2. EXPOSED REBAR ON ROOF UNDER RISER, 2'-0"x2'-0" AREA. (REPAIR #2)
 3. 18" STRIP 2" TALL CRACKING IN RING. (REPAIR #4)

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY COOLING AND VENTILATION AS NEEDED TO PERFORM WORK INSIDE THE MANHOLES AND TUNNEL. COOLING AND VENTILATION WILL BE REQUIRED FOR PORTIONS OF THIS PROJECT.
2. ALL CONCRETE PATCHING/REPAIR DETAILS AND NOTES ARE PROVIDED ON SHEET S200.
3. ALL REINFORCING TO BE MMFX/CHROME X REBAR.
4. ALL DAMAGE TO GALVANIZING TO BE REPAIRED w/ HOT GALVANIZING BY CONTRACTOR.
5. ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

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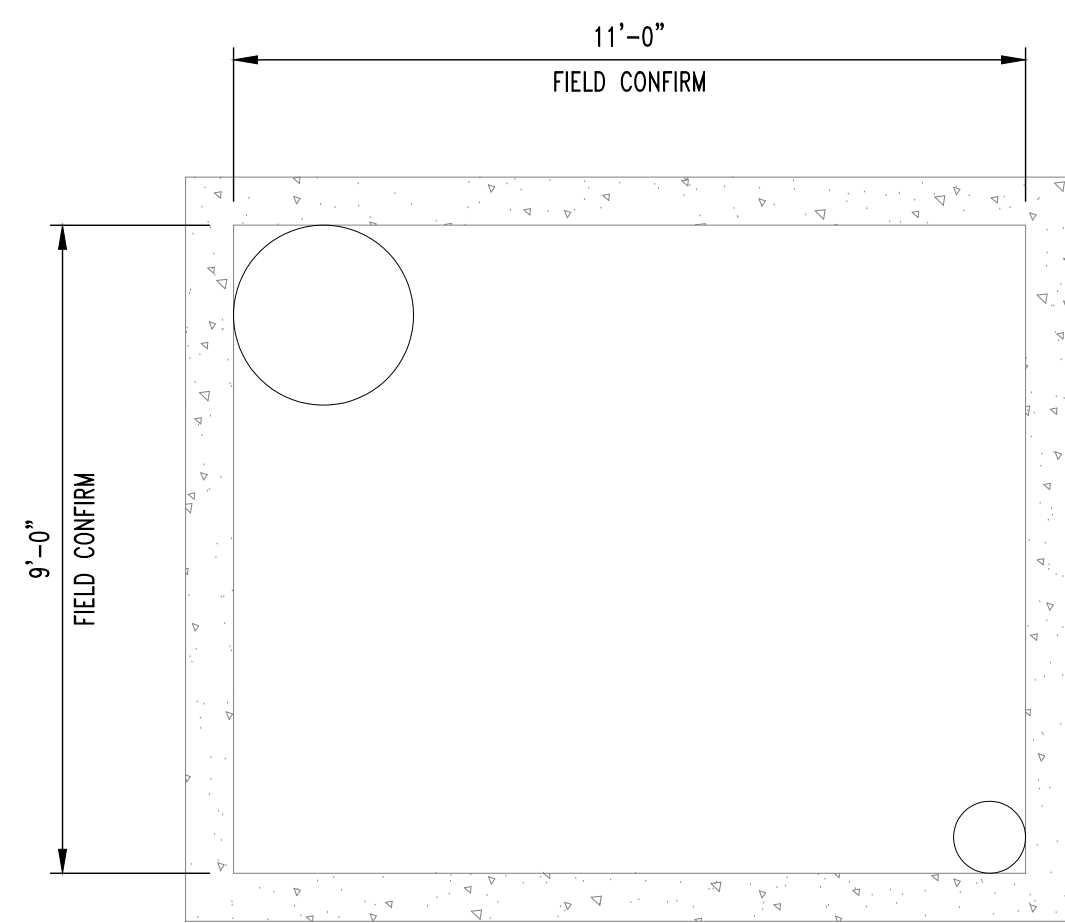
CLIENT:
UNIVERSITY OF MISSOURI
 225 UNIVERSITY HALL
 COLUMBIA, MISSOURI 65211

**CP240081 - VARIOUS LOCATIONS
 REPAIR CONCRETE IN STEAM MANHOLES**
 UNIVERSITY OF MISSOURI
 COLUMBIA, BOONE COUNTY, MISSOURI

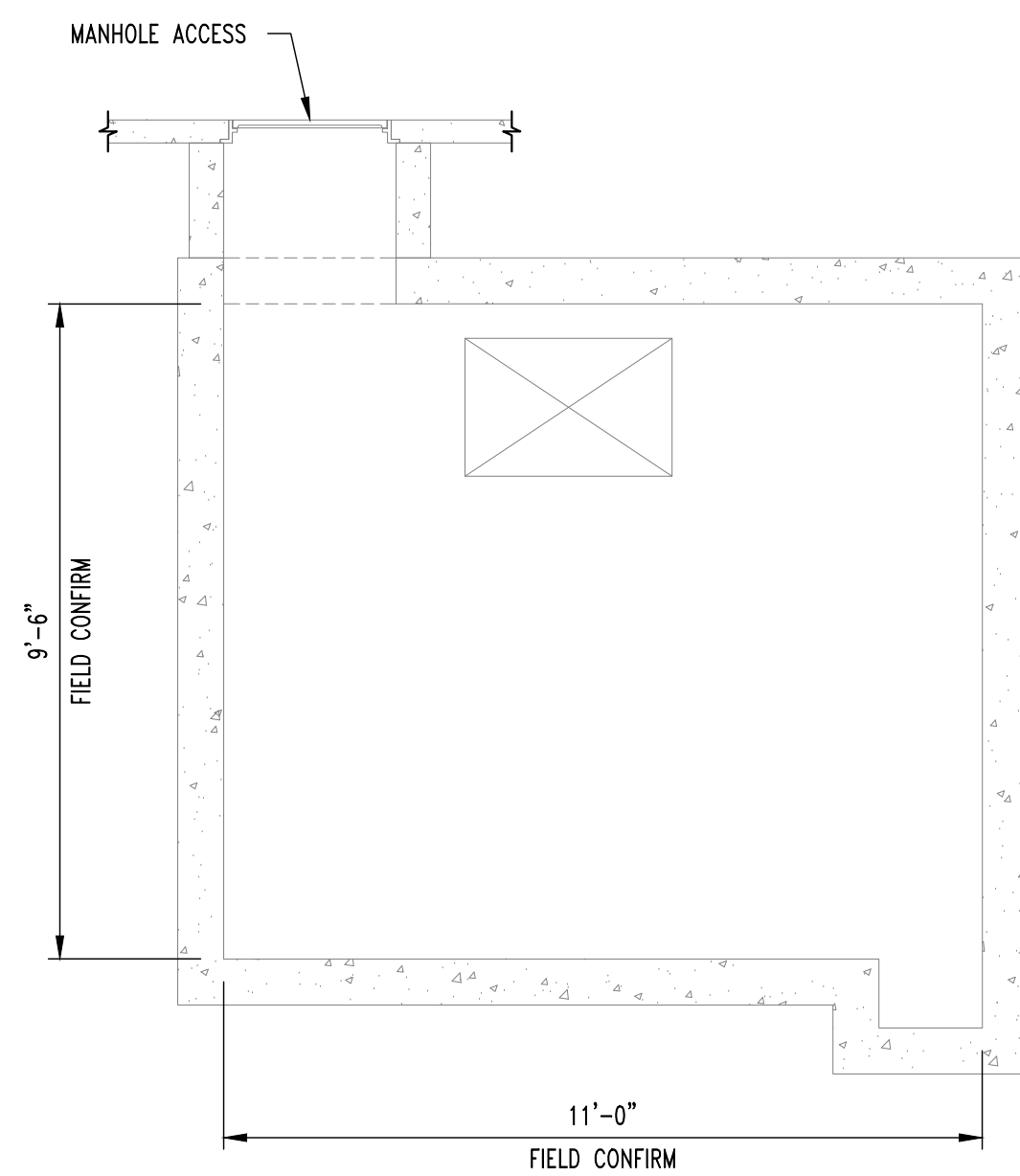
DRAWING INCLUDES:
 SMH #140
 PLAN & PHOTOS

DESIGNED: GLL
 DRAWN: ZMP
 PROJECT NO.: 180016
 MU PROJECT NO.: CP240081

SHEET:
 S103



PLAN VIEW
PLAN NORTH

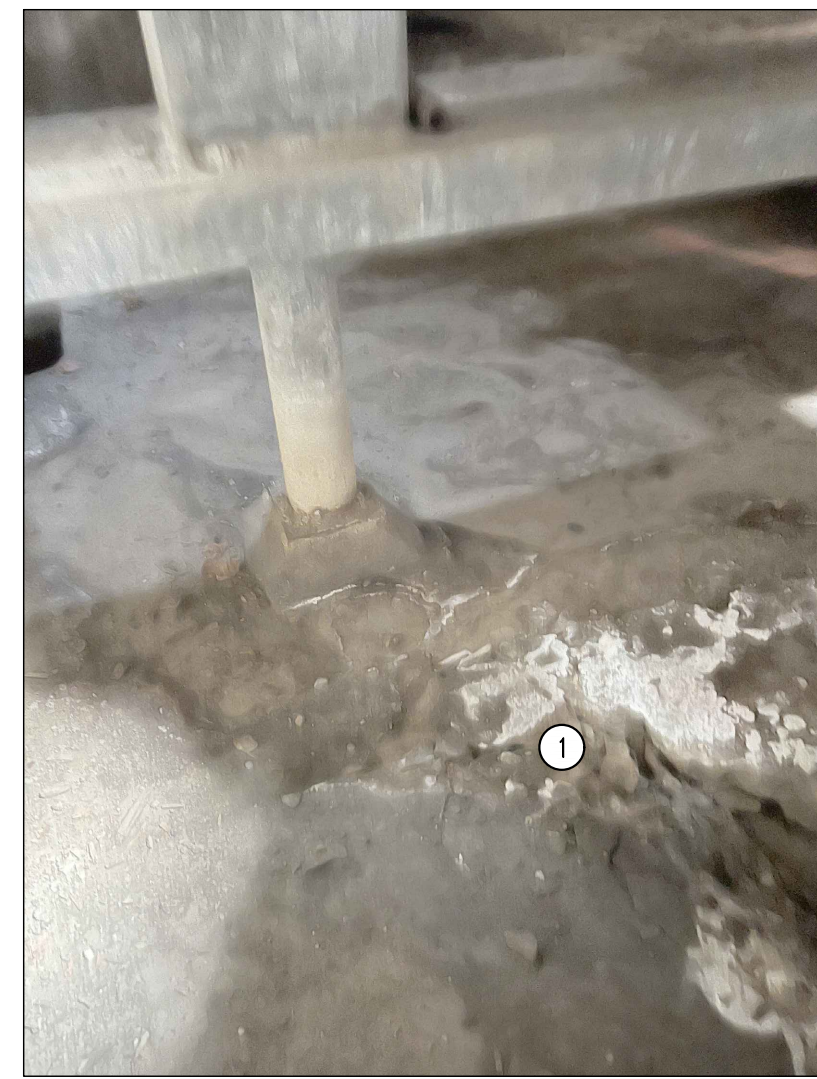


1
S104
STEAM MANHOLE #313
SCALE: 3/8" = 1'-0"



1 CONCRETE CRACKING, SEE REPAIR NOTE 1.

SMH #313 - HITT ST.



1 SPALLED CONCRETE, SEE REPAIR NOTE 2.

SMH #313 - HITT ST.



1 SPALLED CONCRETE, SEE REPAIR NOTE 3.

SMH #313 - HITT ST.

REPAIR NOTES

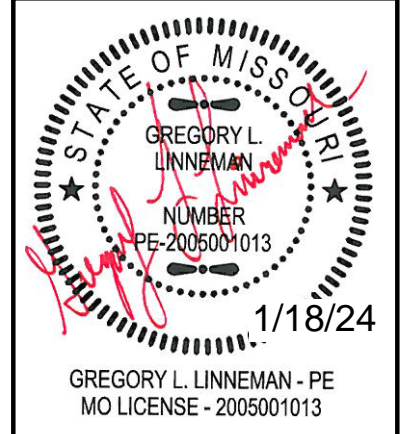
- SMH #313 APPROXIMATE REPAIR AREAS
1. CRACKING ON NORTH WALL, 10 LINEAR FEET. (REPAIR #4)
 2. 18"x18" SPALLED AREA ON FLOOR. (REPAIR #3)
 3. SPALLED CONCRETE ON LID, 4'-0"x4'-0" AREA. (REPAIR #3)

GENERAL NOTES

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3. ALL REINFORCING TO BE MMFX/CHROME X REBAR.
4. ALL DAMAGE TO GALVANIZING TO BE REPAIRED w/ HOT GALVANIZING BY CONTRACTOR.
5. ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

No.	Date
BID SET	01/18/2024



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1000 W. MISSOURI BLVD. SUITE 400
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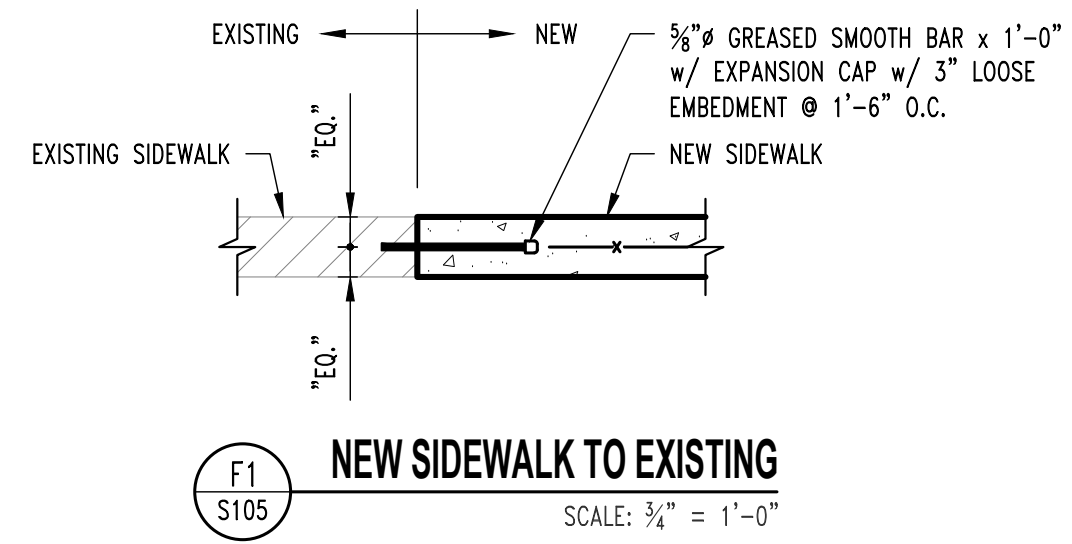
CLIENT:
UNIVERSITY OF MISSOURI
225 UNIVERSITY HALL
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**CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES**
**UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI**

DRAWING INCLUDES:
SMH #313
PLAN & PHOTOS

DESIGNED: GLL
DRAWN: ZMP
PROJECT NO.: 180016
MU PROJECT NO.: CP240081

SHEET:
S104



F1
S105
NEW SIDEWALK TO EXISTING
SCALE: 3/8" = 1'-0"

GENERAL NOTES

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REVISIONS:

No.	Date
BID SET	01/18/2024

STATE OF MISSOURI
GREGORY L. LINNEMAN - PE
NUMBER PE-2005001013
1/18/24
GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

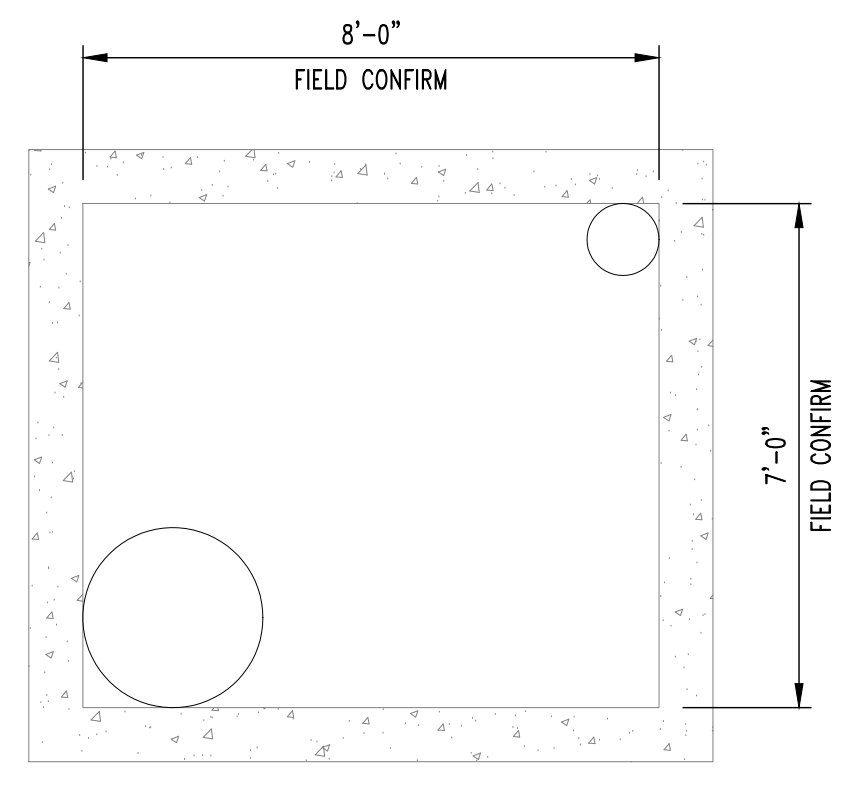
STRUCTURAL ENGINEER
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(314) 447-0292
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CLIENT:
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**CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES**
UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI

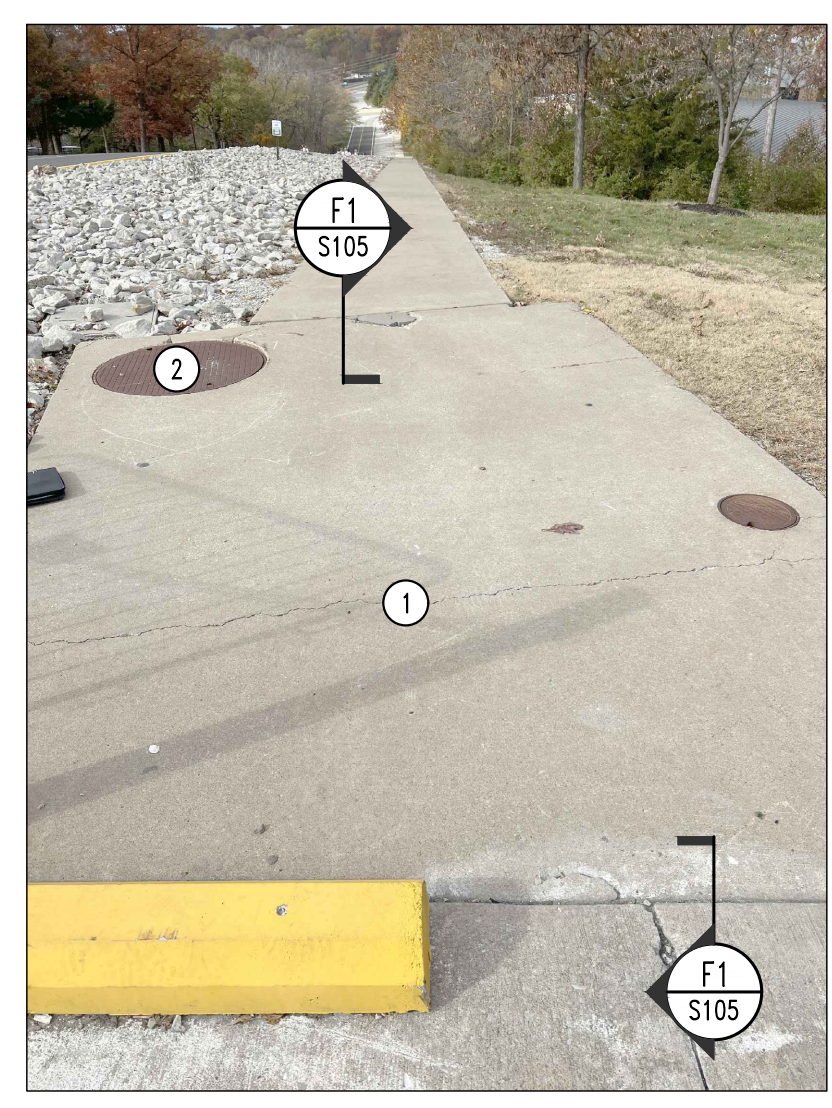
DRAWING INCLUDES:
SMH #638
PLAN & PHOTOS
(ALTERNATE #1)

DESIGNED:	GLL
DRAWN:	ZMP
PROJECT NO.:	180016
MU PROJECT NO.:	CP240081
SHEET:	S105



1 DEAD SPOT UNDER CHASE, SEE REPAIR NOTE 1.

SMH #638 - CHAMPIONS DR.



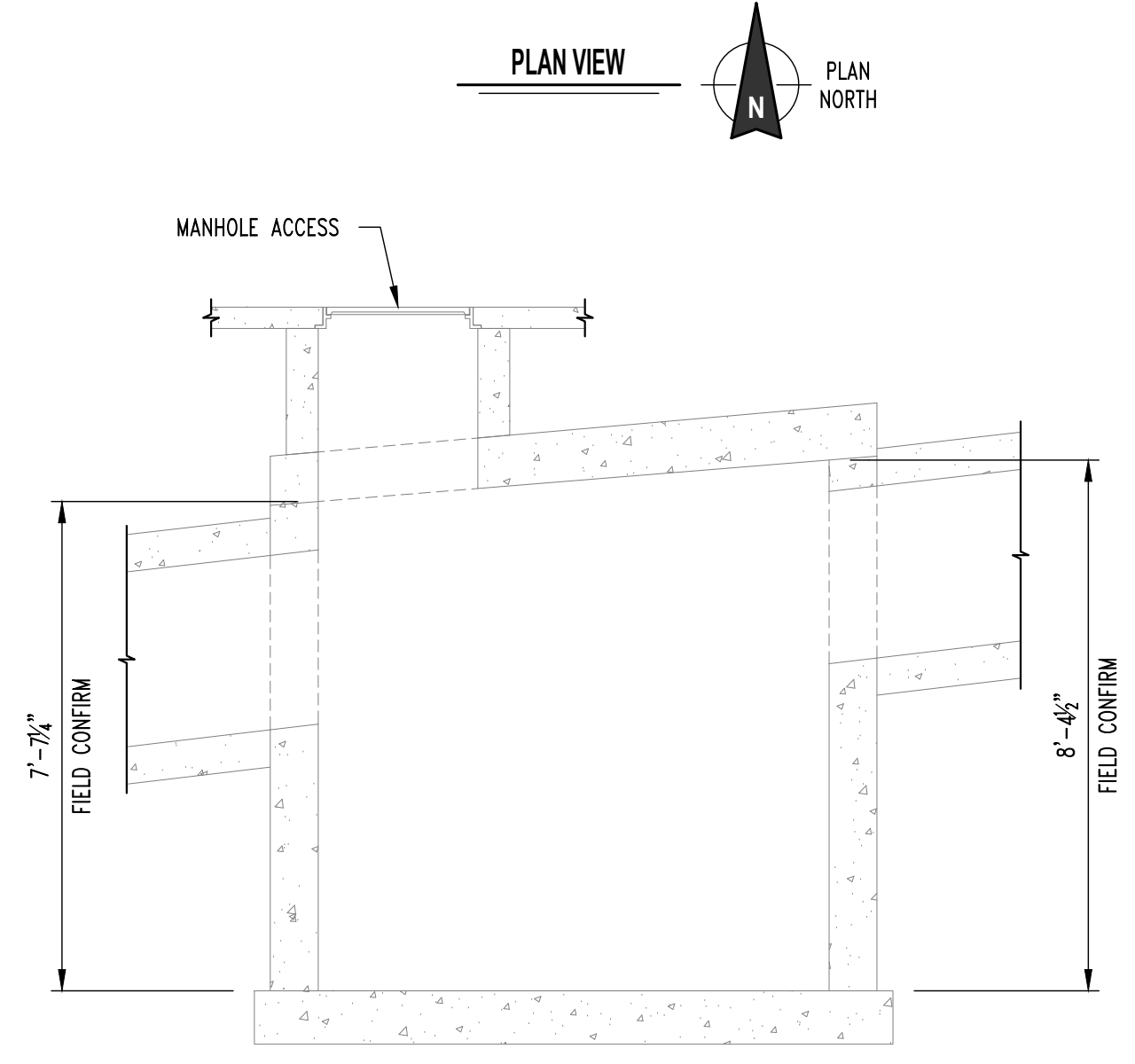
1 REPLACE SIDEWALK, SEE REPAIR NOTE 2.
2 REPLACE EXISTING LID w/ NEW FIBRELITE LID.

SMH #638 - CHAMPIONS DR.



1 SPALLED CONCRETE, SEE REPAIR NOTE 3.

SMH #638 - CHAMPIONS DR.

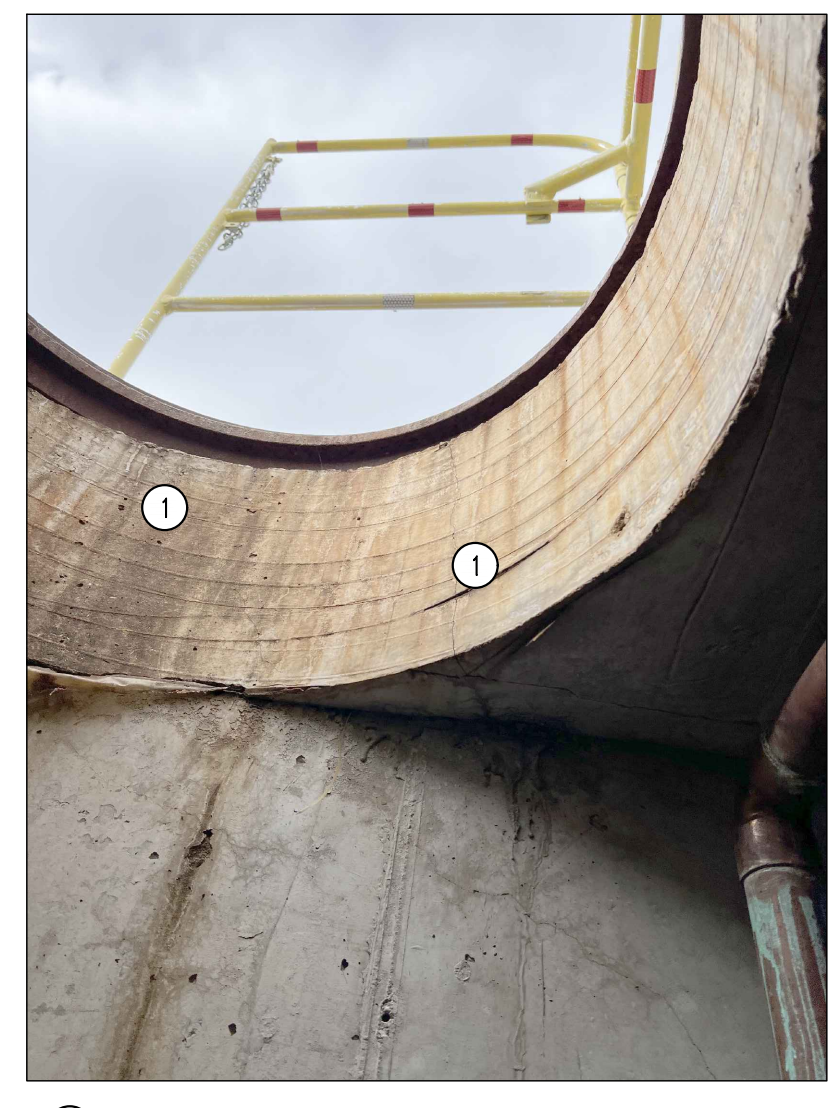


1
S105
STEAM MANHOLE #638
SCALE: 3/8" = 1'-0"



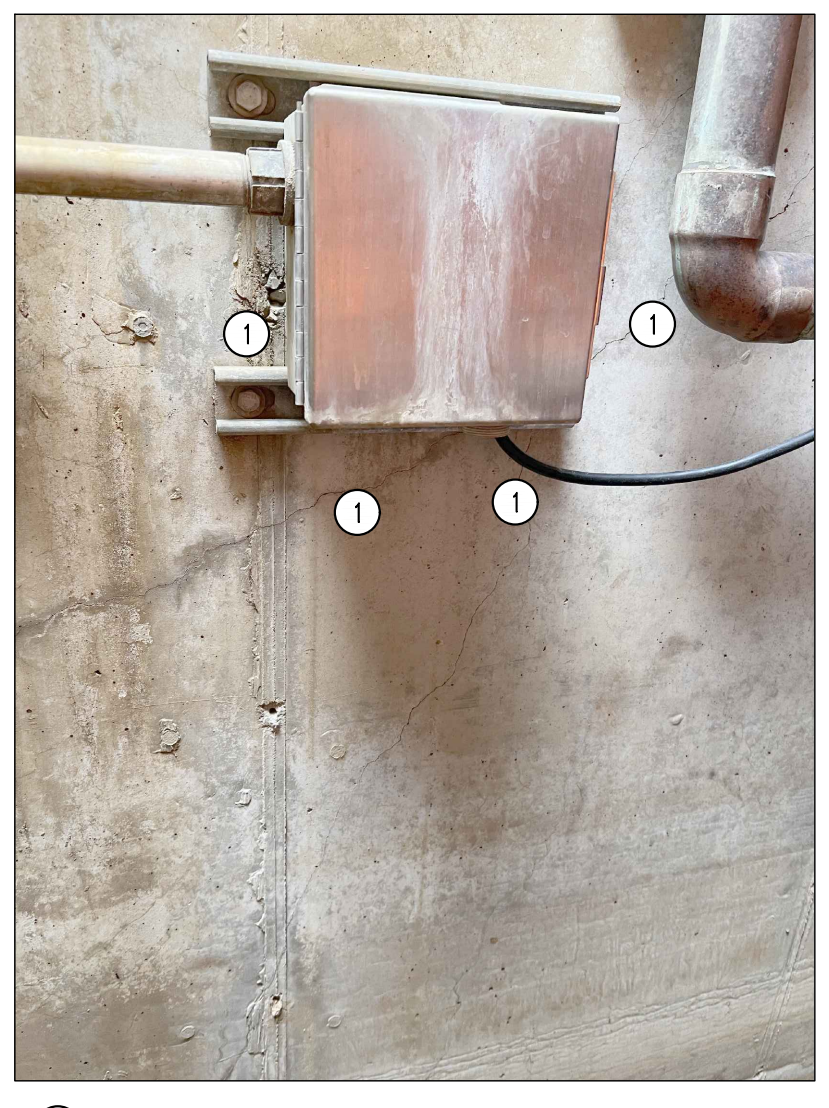
1 SPALLED CONCRETE, SEE REPAIR NOTE 4.

SMH #638 - CHAMPIONS DR.



1 CONCRETE CRACKING, SEE REPAIR NOTE 5.

SMH #638 - CHAMPIONS DR.

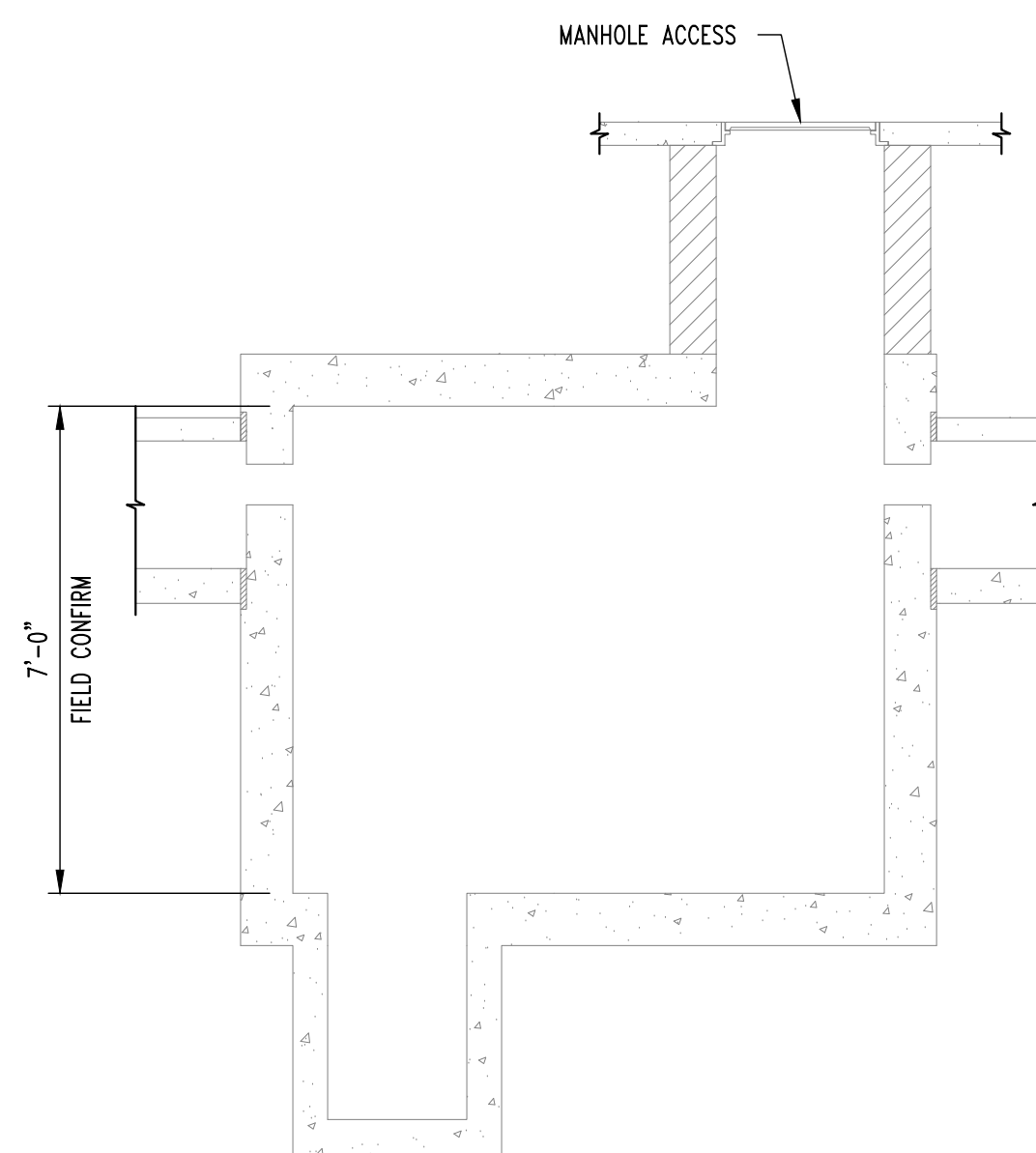
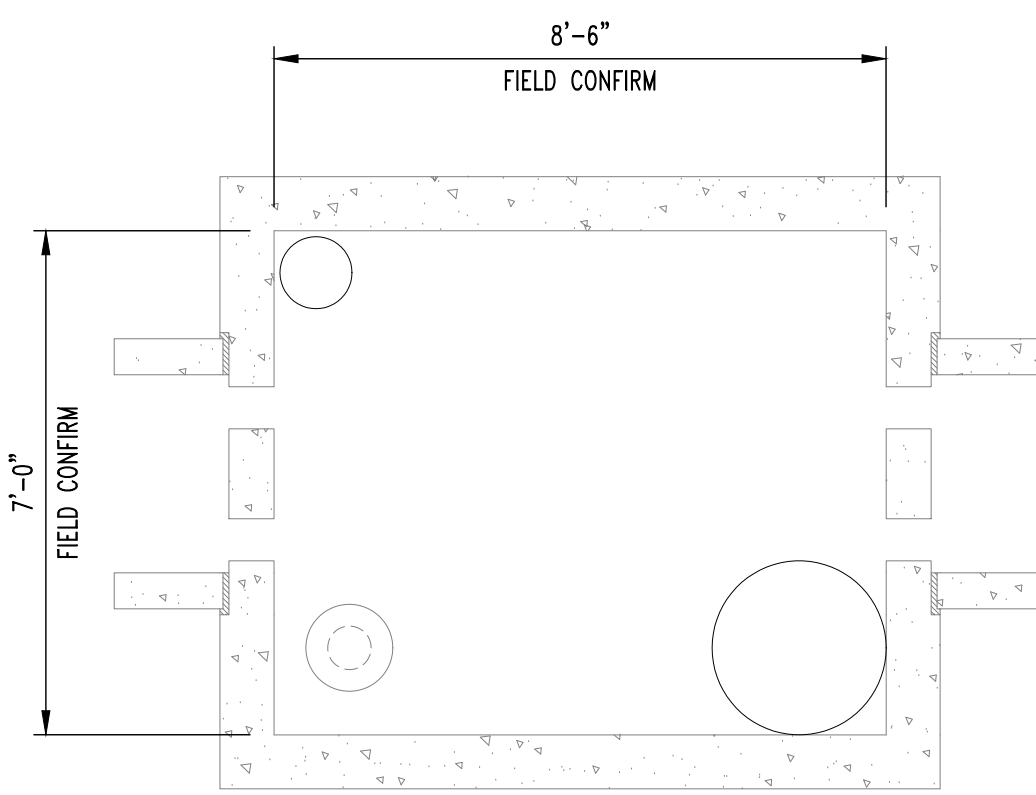


1 CONCRETE CRACKING, SEE CRACK REPAIR DETAIL ON SHEET S200.

SMH #638 - CHAMPIONS DR.

REPAIR NOTES

- SMH #638 APPROXIMATE REPAIR AREAS
1. AREA UNDER CHASE 6'-0"x2'-0"x0'-3" TALL. (REPAIR #3 EXPECTED)
 2. REPLACE SIDEWALK ABOVE STEAM MAN HOLE, 15'-0"x10'-0" w/ 5" SLAB w/ 6x6 W2.9xW2.9WWF.
 3. AROUND THE CHASE THERE ARE CRACKS NEEDING INJECTED, APPROX. 10 LINEAR FEET. (REPAIR #4)
 4. SPALLED AREA 12"x24" ABOVE CHASE. (REPAIR #2)
 5. VERTICAL CRACK PRESENT IN RISER, APPROX. 2 LINEAR FEET. (REPAIR #4)

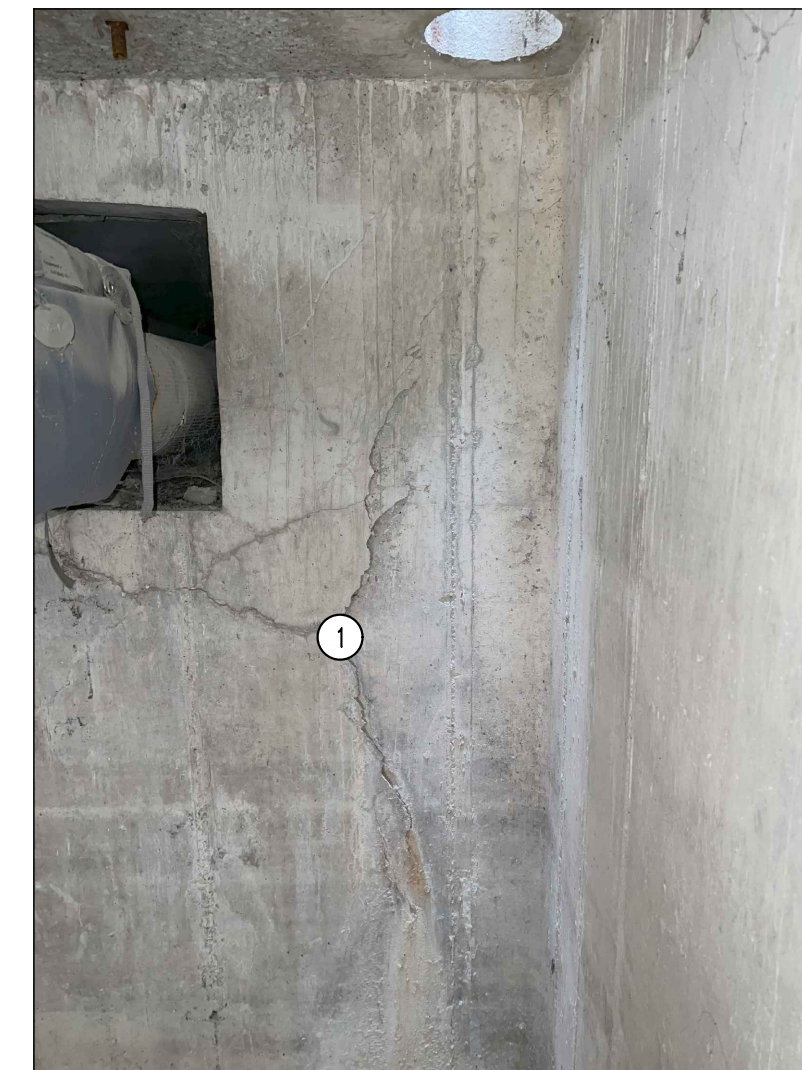


1
S106
STEAM MANHOLE #310
SCALE: 3/8" = 1'-0"



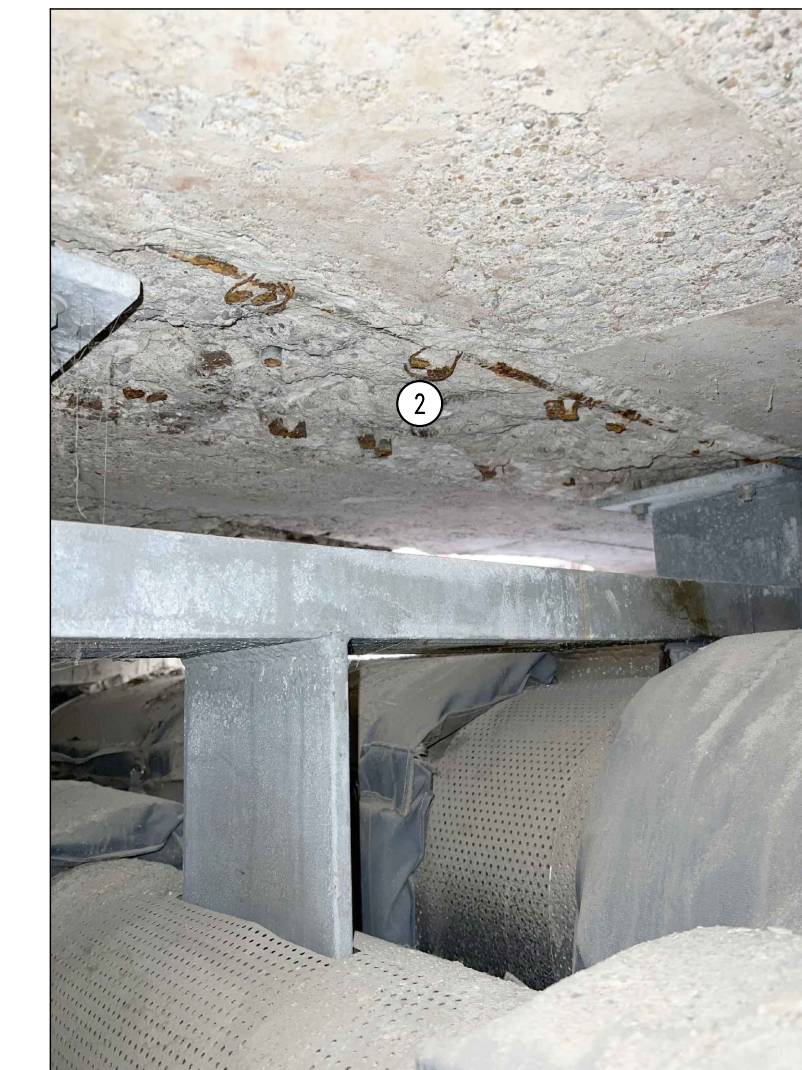
- ① REBAR EXPOSED, SEE REPAIR NOTE 1.
- ② LADDER DOES NOT MEET CODE, REMOVE AND REPLACE.

SMH #310 - JOHNSTON HALL



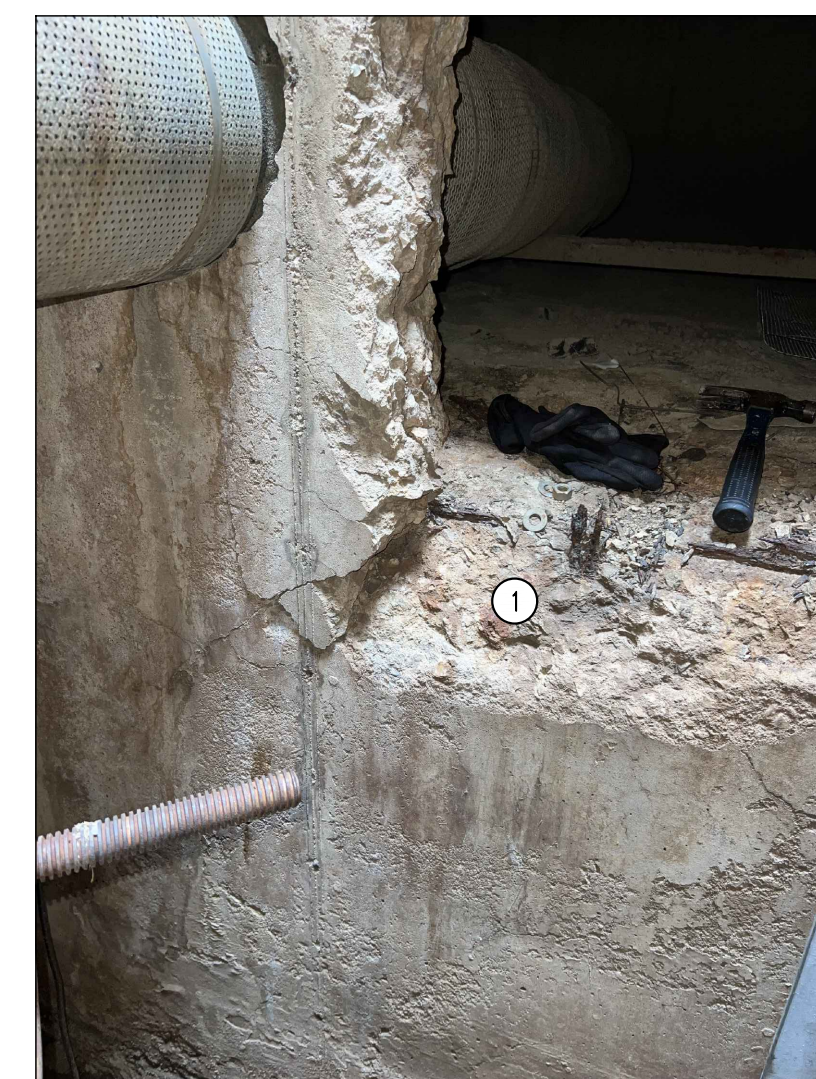
- ① CONCRETE CRACKING, SEE REPAIR NOTE 2.

SMH #310 - JOHNSTON HALL



- ① SPALLED CONCRETE, SEE REPAIR NOTE 3.
- ② COAT EXISTING REBAR REBAR w/ UNDERCOATING TO PREVENT CORROSION.

SMH #310 - JOHNSTON HALL



- ① SPALLED CONCRETE, SEE REPAIR NOTE 4.

SMH #310 - JOHNSTON HALL

GENERAL NOTES

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5. ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

No.	Date
BID SET	01/18/2024



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CLIENT:
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**CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES**
**UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI**

DRAWING INCLUDES:

SMH #310
PLAN & PHOTOS
(ALTERNATE #2)

DESIGNED: GLL

DRAWN: ZMP

PROJECT NO.: 180016

MU PROJECT NO.: CP240081

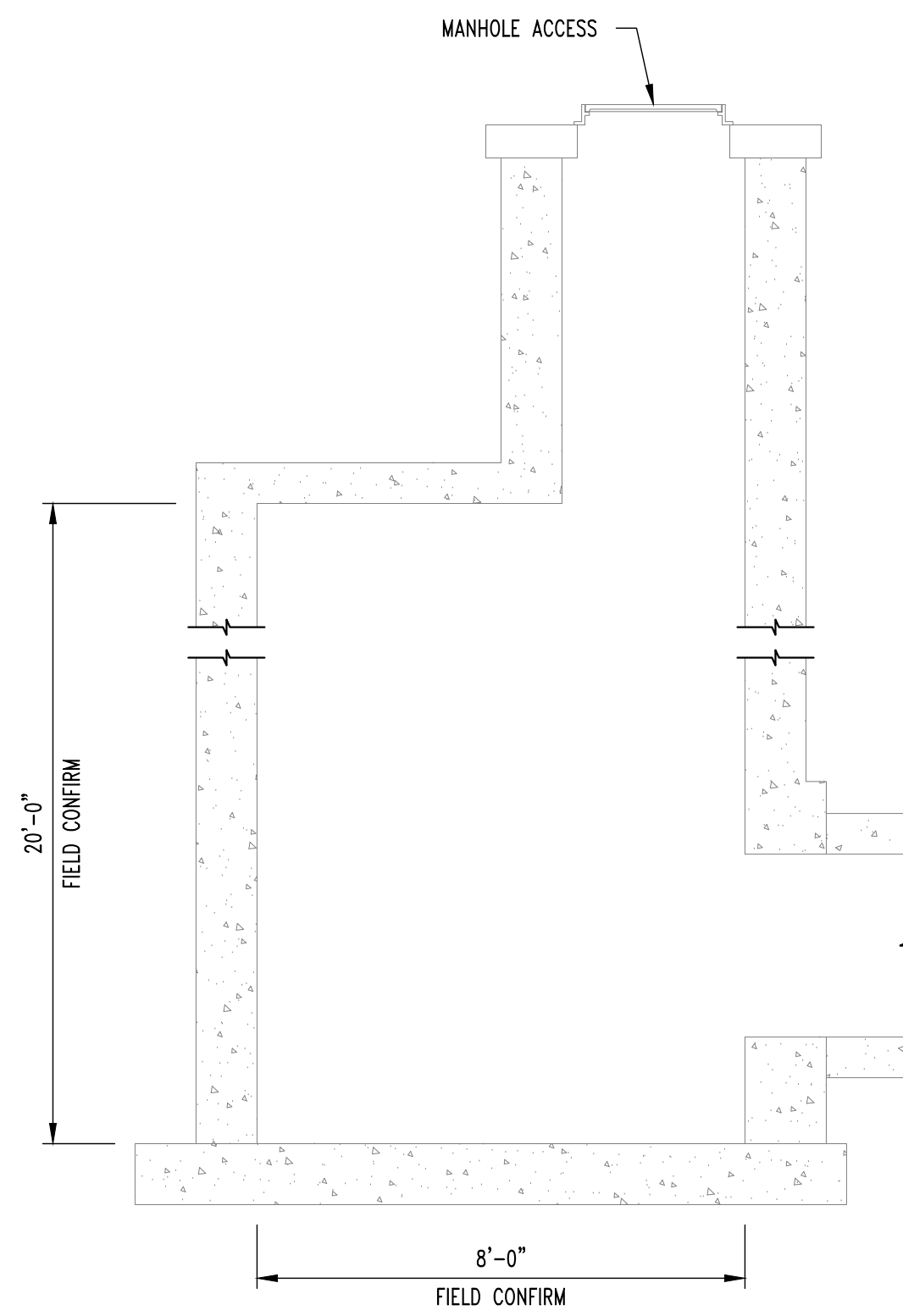
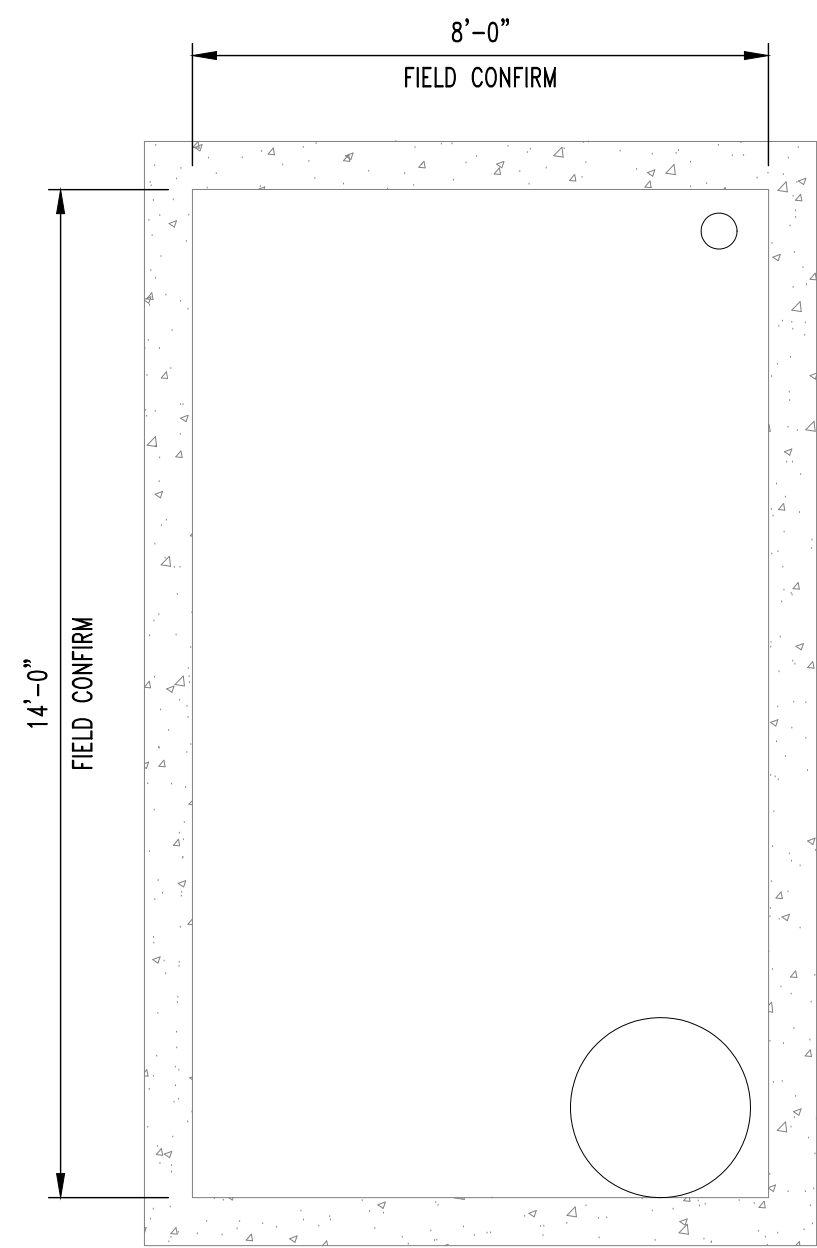
SHEET:

S106

REPAIR NOTES

SMH #310 APPROXIMATE REPAIR AREAS

1. EXPOSED REBAR ON ROOF, APPROX. 2'-0"x3'-0" AREA. (REPAIR #2)
2. 18"x 6'-0" AREA CRACKING NORTH WALL EAST SIDE. (REPAIR #4)
3. SPALLING ON ENTIRE LID. (REPAIR #2 AND/OR REPAIR #3)
4. SPALLING AROUND CHASE, APPROX. 1'-0"x3'-0" AREA. (REPAIR #3)

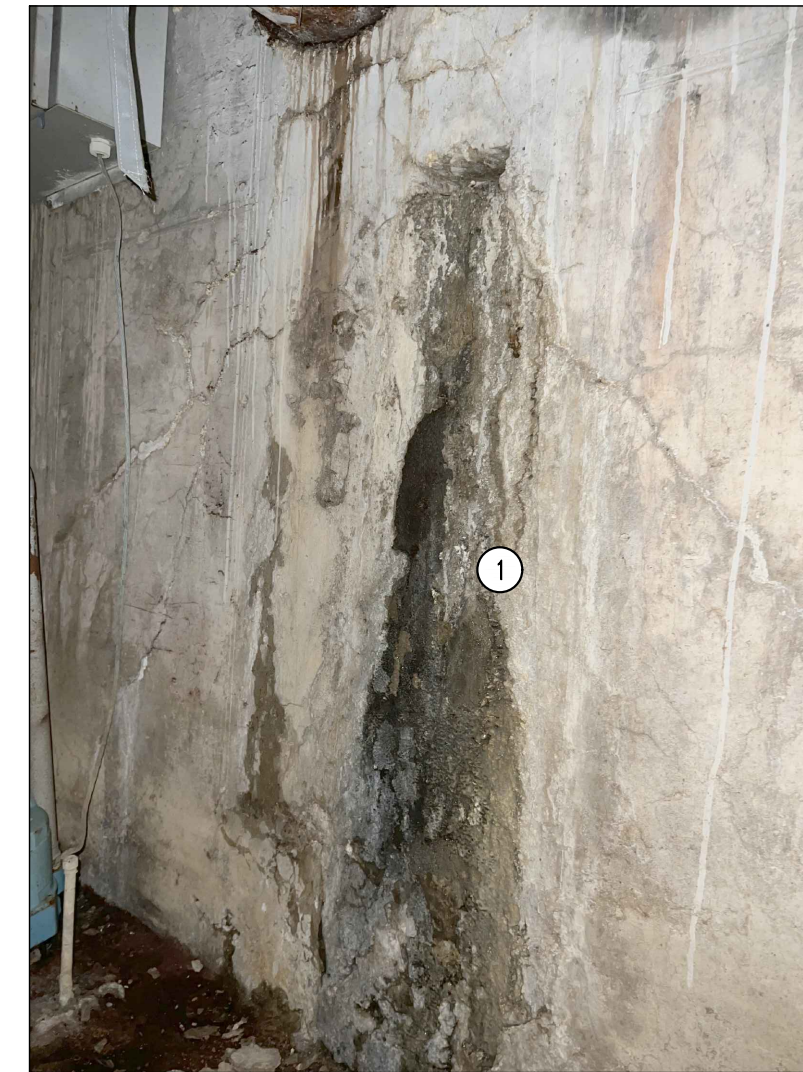


1
S107
STEAM MANHOLE #414
SCALE: 3/8" = 1'-0"



1 SPALLED CONCRETE, SEE REPAIR NOTE 1.

SMH #414 - SOUTH COLLEGE AVE.



1 DEEP SPALL, SEE REPAIR NOTE 2.

SMH #414 - SOUTH COLLEGE AVE.



1 REBAR ANCHORAGE EXPOSED, SEE REPAIR NOTE 3.

SMH #414 - SOUTH COLLEGE AVE.



1 CONCRETE CRACKING, SEE REPAIR NOTE 4.
2 OWNER TO REMOVE PRIOR TO REPAIRS.

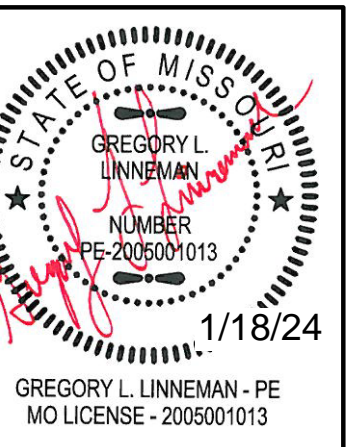
SMH #414 - SOUTH COLLEGE AVE.

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY COOLING AND VENTILATION AS NEEDED TO PERFORM WORK INSIDE THE MANHOLES AND TUNNEL. COOLING AND VENTILATION WILL BE REQUIRED FOR PORTIONS OF THIS PROJECT.
2. ALL CONCRETE PATCHING/REPAIR DETAILS AND NOTES ARE PROVIDED ON SHEET S200.
3. ALL REINFORCING TO BE MMFX/CHROME X REBAR.
4. ALL DAMAGE TO GALVANIZING TO BE REPAIRED w/ HOT GALVANIZING BY CONTRACTOR.
5. ALL EXPOSED STEEL TO BE HOT DIPPED GALVANIZED INCLUDING BOLTS, WASHERS, ETC.

REVISIONS:

No.	Date
BID SET	01/18/2024



CLIENT:
UNIVERSITY OF MISSOURI
225 UNIVERSITY HALL
COLUMBIA, MISSOURI 65211

**CP240081 - VARIOUS LOCATIONS
REPAIR CONCRETE IN STEAM MANHOLES**
UNIVERSITY OF MISSOURI
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:

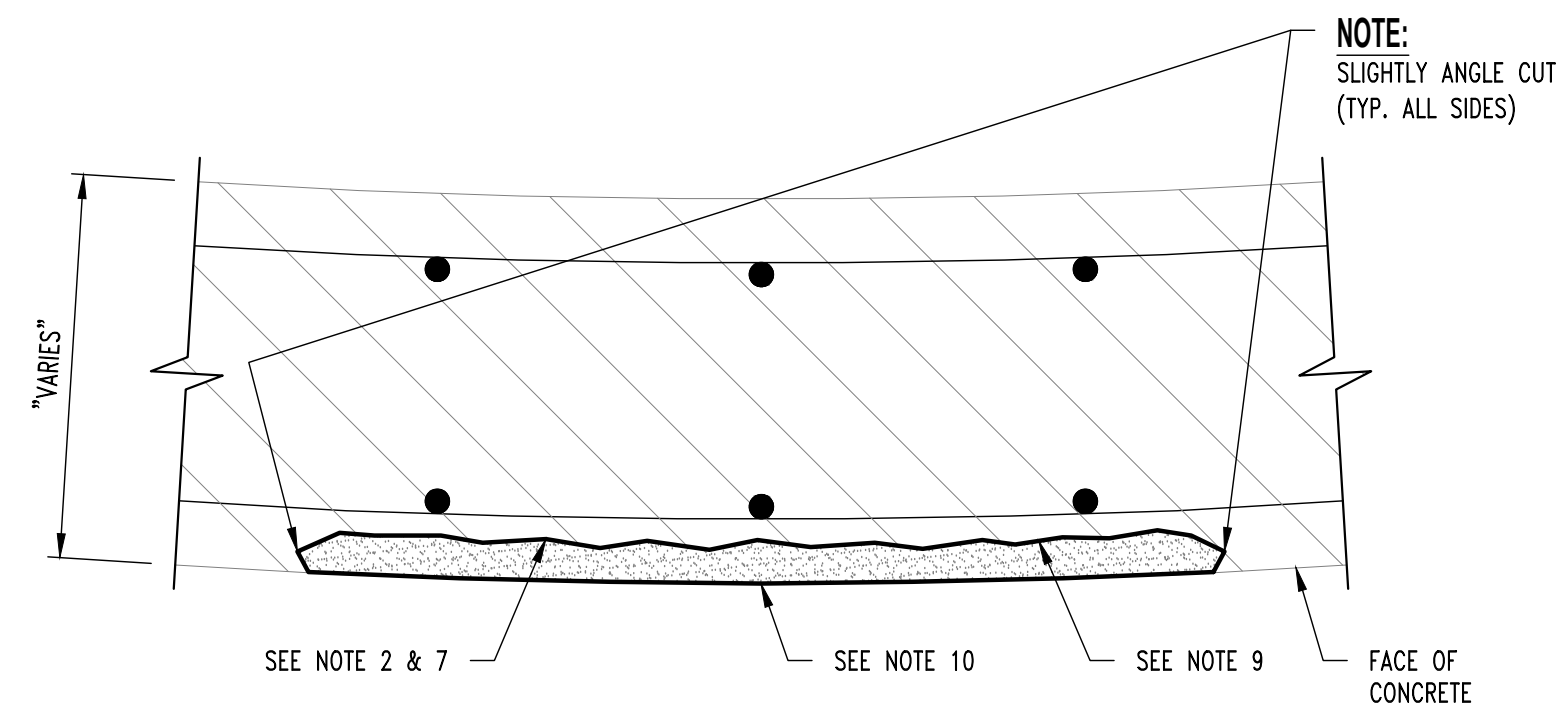
SMH #414
PLAN & PHOTOS
(ALTERNATE #3)

DESIGNED: GLL
DRAWN: ZMP
PROJECT NO.: 180016
MU PROJECT NO.: CP240081

SHEET:
S107

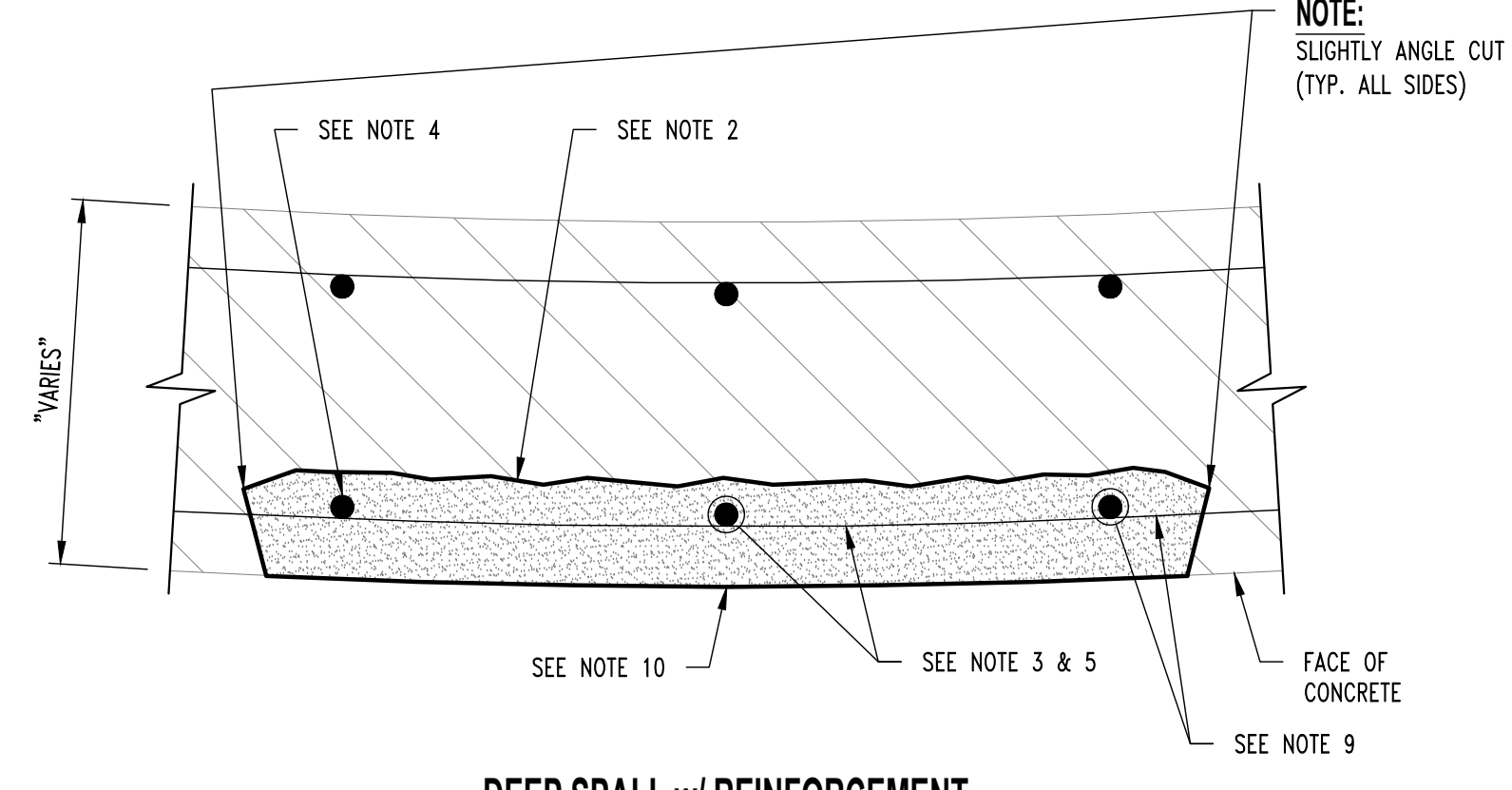
REPAIR NOTES

- SMH #414 APPROXIMATE REPAIR AREAS**
1. SPALLING ON LID, 6" @ PERIMETER OF MANHOLE OPENING. (REPAIR #2)
 2. SOUTH WALL REPAIR SPALL, 3'-0"x4'-0" AREA. (REPAIR #2)
 3. REBAR ANCHORAGE CONCRETE REPAIR, 1'-0"x2'-0" AREA. (REPAIR #2)
 4. CRACKING ON WALL, 1'-0"x1'-0" AREA. (REPAIR #3)



SURFACE SPALL REPAIR
REPAIR #1

NOTE:
DETAIL APPLIES TO SURFACE SPALLS WITH NO REINFORCEMENT EXPOSED.

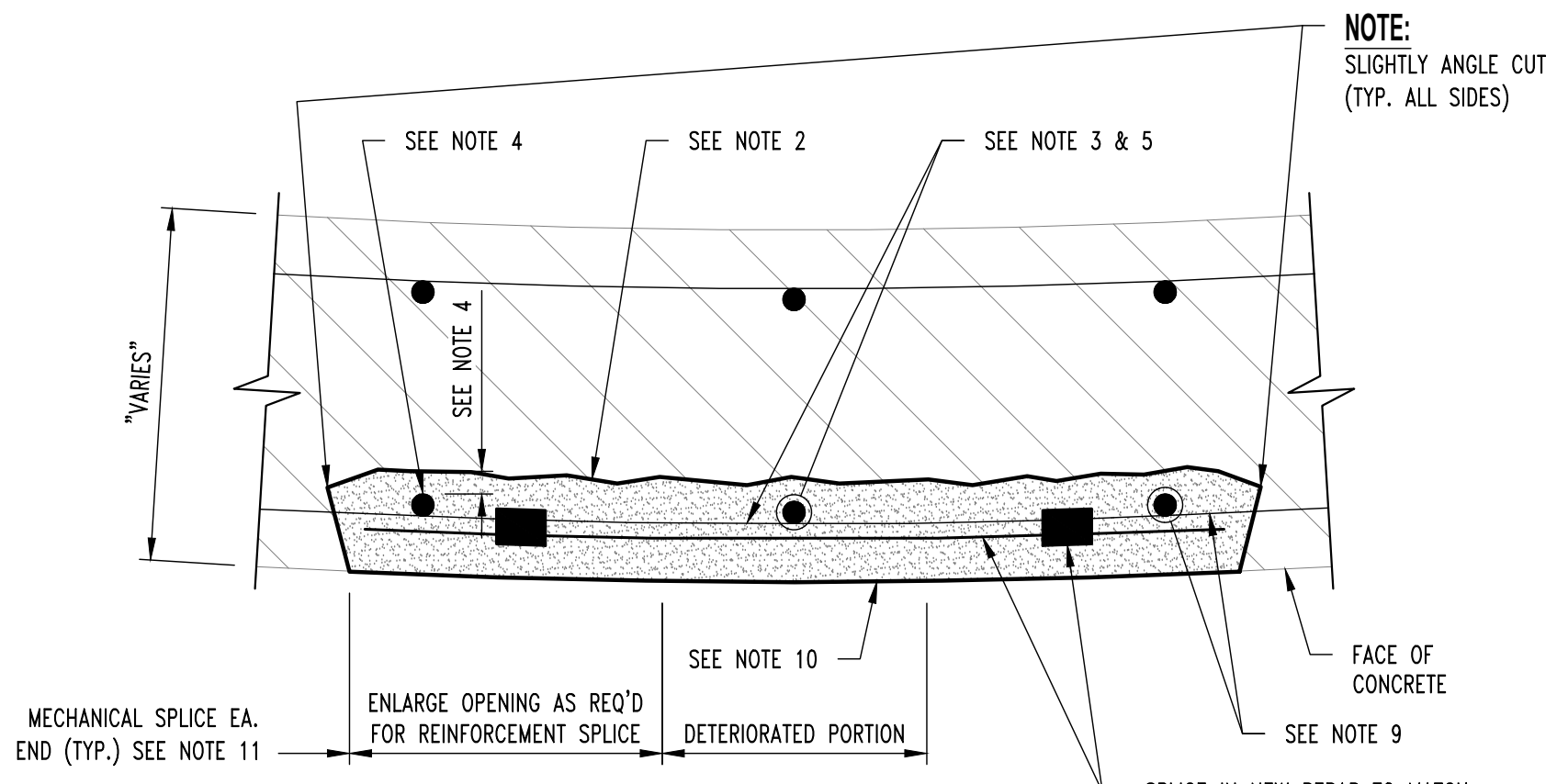


DEEP SPALL w/ REINFORCEMENT SECTION LOSS LESS THAN OR EQUAL TO 25%
REPAIR #2

NOTE:
DETAIL APPLIES TO SURFACE SPALLS WITH REINFORCEMENT EXPOSED.

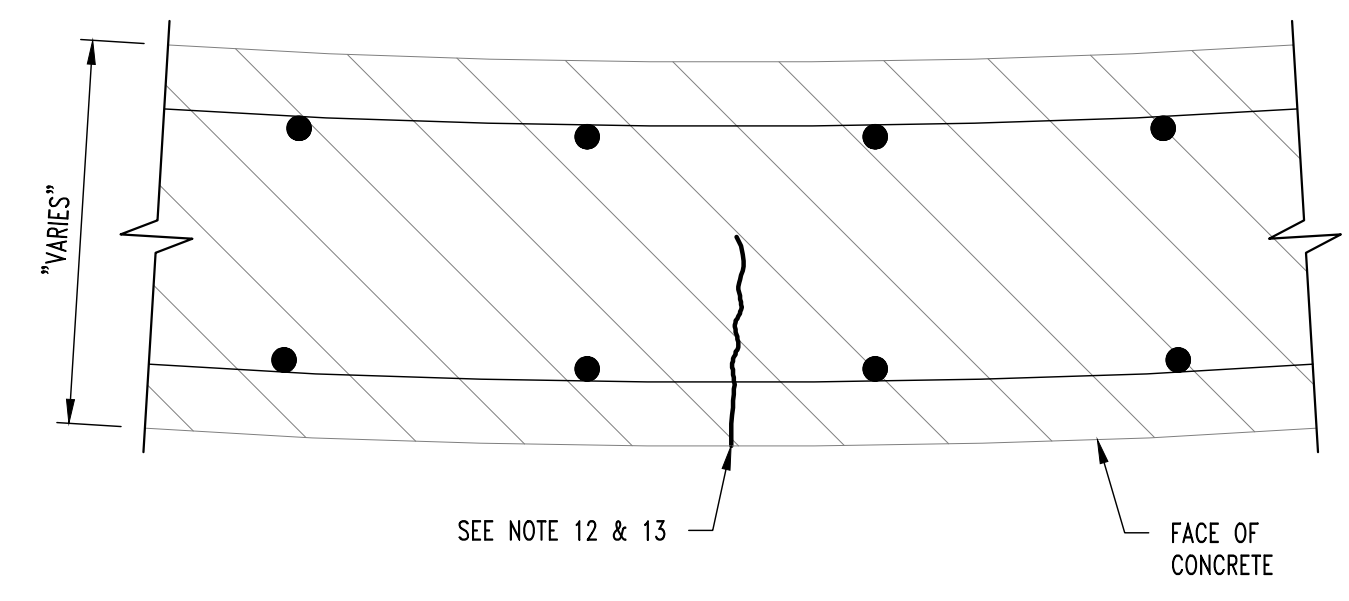
BAR SIZE	NOMINAL DIAMETER (IN.)	MINIMUM ALLOWABLE DIAMETER (IN.)
#3	0.375	0.325
#4	0.500	0.433
#5	0.625	0.541
#6	0.750	0.650
#7	0.875	0.758
#8	1.000	0.866
#9	1.128	0.977
#10	1.270	1.100

REINFORCING BAR DIAMETER TABLE



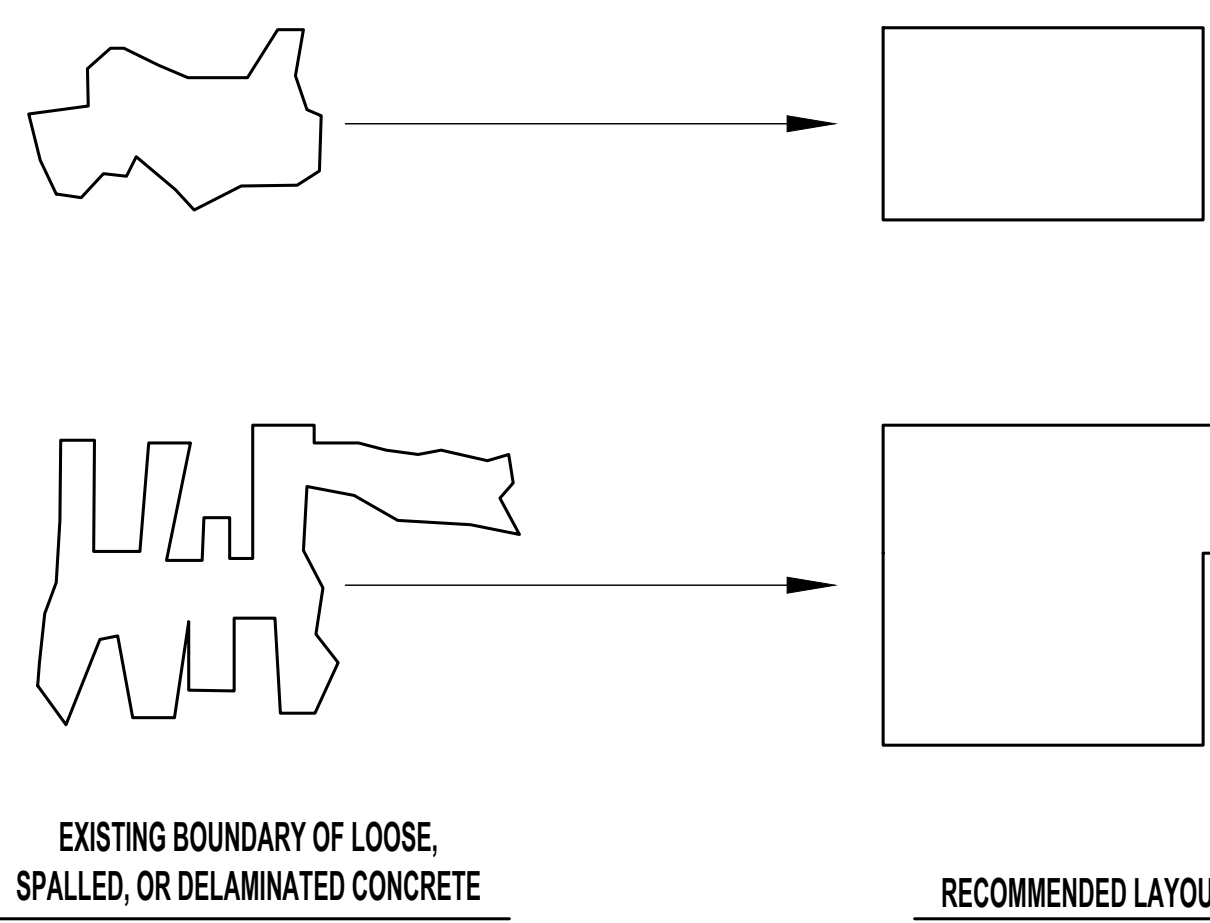
DEEP SPALL w/ REINFORCEMENT SECTION LOSS GREATER THAN OR EQUAL TO 25%
REPAIR #3

NOTE:
DETAIL APPLIES TO SURFACE SPALLS WITH REINFORCEMENT EXPOSED.



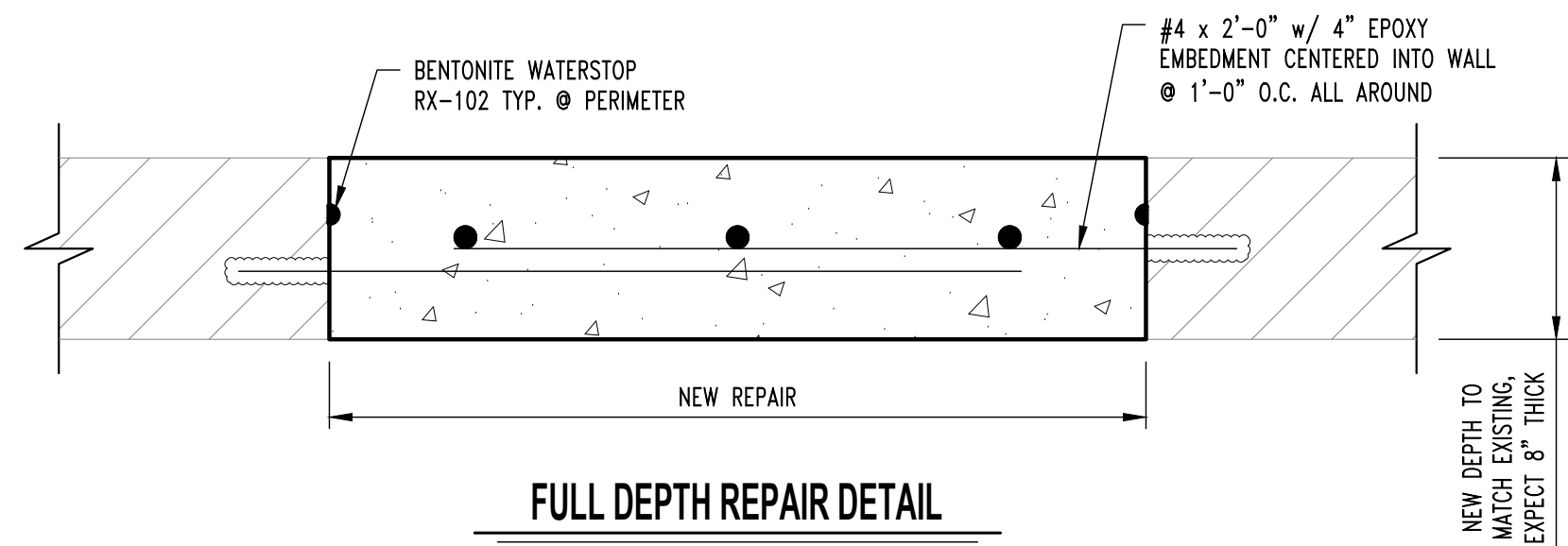
CRACK REPAIR
REPAIR #4

NOTE:
DETAIL APPLIES TO CRACKS LARGER THAN 0.03".



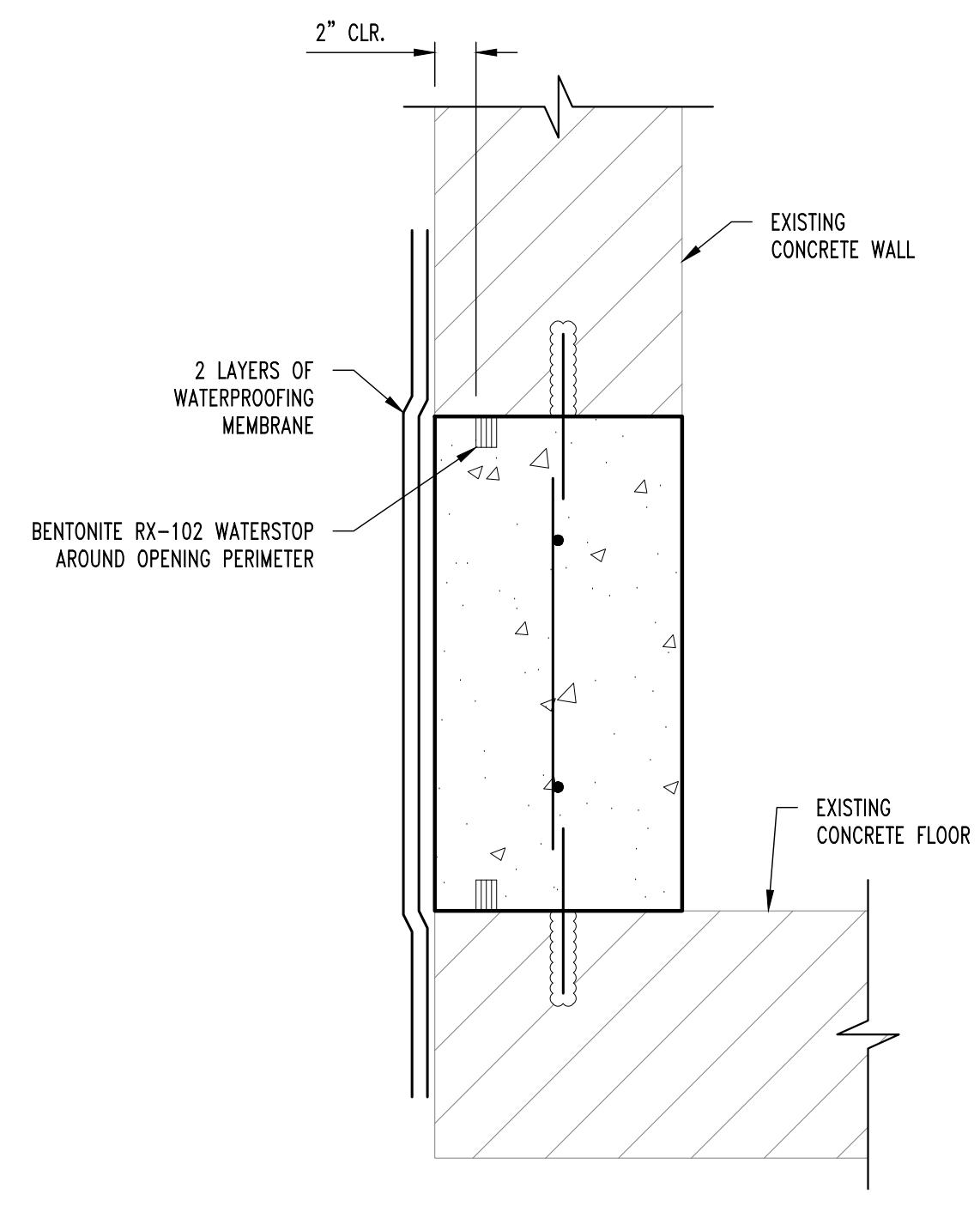
DETERIORATED CONCRETE SURFACE REPAIR

NOTE:
1. REPAIR CONFIGURATIONS TO BE KEPT AS SIMPLE AS POSSIBLE.
2. CORNERS MUST BE SQUARED TO AVOID FEATHERED EDGES.



FULL DEPTH REPAIR DETAIL

NEW DEPTH TO MATCH EXISTING. EXPECT 8" THICK



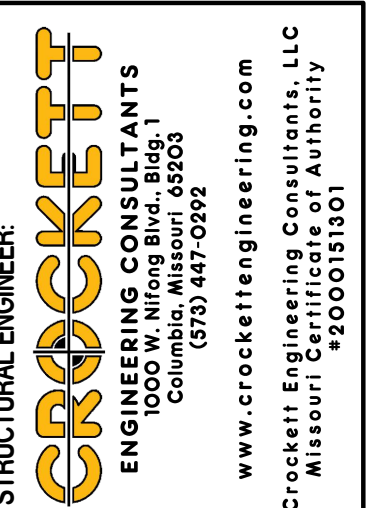
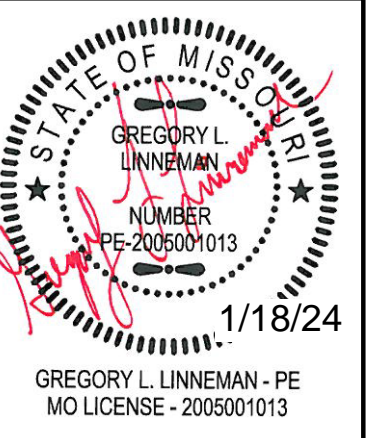
FULL DEPTH REPAIR WATERPROOFING DETAIL

CONCRETE REPAIR NOTES

- PRIOR TO PERFORMING ANY CONCRETE REPAIRS, CONTRACTOR SHALL EXAMINE THE ENTIRE CONCRETE SURFACE BY SOUNDING TO DETECT ANY DEFICIENCIES NOT SHOWN ON THE CONTRACT DOCUMENTS. IF DEFICIENCIES ARE DETECTED, MARK OUTLINE ON CONCRETE SURFACE AND NOTIFY OWNER'S REPRESENTATIVE. PROVIDE OWNER'S REPRESENTATIVE WITH APPROXIMATE SIZE AND LOCATION OF EACH DEFICIENCY NOTED.
- REMOVE ALL LOOSE AND DETERIORATED CONCRETE. CHIP OUT AND PATCH AREA 1/2" MIN. BEYOND SPALLED SURFACE. AT BOUNDARIES OF DETERIORATED CONCRETE, SAWCUT BOUNDARY TO A MINIMUM DEPTH OF 3/4". DO NOT FEATHER EDGES.
- CARE SHOULD BE EXERCISED NOT TO DAMAGE EXISTING REINFORCING STEEL DURING CONCRETE REMOVAL. CONCRETE REMOVAL SHALL EXTEND TO WHERE BAR IS WELL BONDED TO SURROUNDING SOUND CONCRETE. CARE SHALL BE EXERCISED NOT TO DAMAGE THE BAR'S BOND TO SURROUNDING CONCRETE. IF BOND BETWEEN BAR AND CONCRETE IS BROKEN, UNDERCUTTING OF THE BAR IS REQUIRED AS SPECIFIED IN ITEM 4 BELOW.
- IF HALF OF THE THICKNESS OF THE REINFORCEMENT BAR OR MORE IS EXPOSED PROVIDE A MINIMUM OF 1/2" CLEARANCE BETWEEN EXPOSED REINFORCEMENT AND SURROUNDING CONCRETE FOR HAND APPLIED REPAIR MATERIALS AND A MINIMUM OF 1" CLEARANCE FOR SPRAY APPLIED REPAIR MATERIALS.
- MECHANICALLY CLEAN STEEL BY SANDBLASTING OR WIRE BRUSH TO WHITE METAL CONDITION TO REMOVE CORROSION. AFTER CLEANING REINFORCING STEEL, MEASURE DIAMETER AT NARROWEST POINT. IF SECTION LOSS IS GREATER THAN 25% (SEE "REINFORCING BAR DIAMETER TABLE" ON THIS SHEET) ADD NEW REINFORCING BAR MATCHING SIZE OF EXISTING. MAINTAIN A MINIMUM OF 1/2" CONCRETE COVER AT ALL NEW AND EXISTING REINFORCEMENT, ANY REINFORCEMENT TO BE DRILLED AND GROUTED INTO EXISTING CONCRETE SHALL USE HILTI HIT HY 200 MAX EPOXY ADHESIVE (OR APPROVED EQUAL).
- SCARIFY CONCRETE SURFACE TO OBTAIN CONCRETE SURFACE PROFILE ROUGHENED.
- MINIMUM DEPTH OF PATCH TO BE 3/8".
- SUBSTRATE SHOULD BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER DURING APPLICATION.
- APPLY CONCRETE PRIMER TO SUBSTRATE PER MANUFACTURERS SPECIFICATIONS. APPLY TWO COATS OF ANTI-CORROSION COATING PER MANUFACTURERS SPECIFICATIONS TO ALL EXPOSED REINFORCEMENT ALLOWING TO PROPERLY DRY BETWEEN COATS. SIKAFERR 901 OR APPROVED EQUAL.
- WHILE CONCRETE PRIMER IS STILL WET, APPLY PATCH MATERIAL PER MANUFACTURERS SPECIFICATIONS. FOR APPLICATIONS GREATER THAN 1" IN DEPTH, APPLY PATCH MATERIAL IN LIFTS. SCORE THE TOP SURFACE OF EACH LIFT AND ALLOW EACH LIFT TO REACH FINAL SET THEN REPEAT FROM STEP 8.
- PROVIDE MECHANICAL SPLICE CAPABLE OF DEVELOPING 125% F_y. MAINTAIN A MINIMUM OF 1/2" CONCRETE COVER AT ALL NEW AND EXISTING REINFORCEMENT.
- CLEAN CRACK SURFACES AND REMOVE ANY FOREIGN MATTER AND DEPOSITS.
- INSTALL POLYMER MODIFIED CEMENTITIOUS PATCHING MATERIAL PER MANUFACTURERS SPECIFICATION AND TOOL SURFACE TO MATCH SURROUNDING SURFACE. SIKATOP-123 OR APPROVED EQUAL.
- LID REPAIRS REQUIRE SHORING TO BE INSTALLED PRIOR TO DAMAGED CONCRETE BEING REMOVED. SHORING SHALL PROVIDE ADEQUATE SUPPORT TO STRUCTURE UNTIL PATCH IS INSTALLED AND CURED.
- ALL UTILITIES IN AREA OF MANHOLE WILL REMAIN ACTIVE DURING THE DURATION OF THE PROJECT INCLUDING THE STEAMLINES INSIDE THE MANHOLE. ALL INSULATION, PIPING EQUIPMENT, STEAM CONDENSATE, ETC. NEEDS TO BE PROTECTED AS TO NOT DAMAGE DURING CONSTRUCTION. ANY DAMAGED MATERIALS WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

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COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:
REPAIR DETAILS & NOTES

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DRAWN: ZMP
PROJECT NO.: 180016
MU PROJECT NO.: CP240081
SHEET: S200