



# GENERAL SITE - CULVERT UNDER CAPEN PARK DRIVE REPLACEMENT

## FOR THE CURATORS OF THE UNIVERSITY OF MISSOURI PROJECT NO. CP232061

LOCATION MAP NOT TO SCALE



### GENERAL NOTES:

CONTRACTOR WILL BE RESPONSIBLE FOR PLACEMENT AND MAINTENANCE OF TRAFFIC CONTROL DEVICES NECESSARY TO COMPLETE THEIR PORTION OF WORK. THE DEVICES AND METHODS EMPLOYED WILL COMPLY WITH THE CURRENT VERSION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).

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 MGDNR 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)1.

ALL SLOPES ARE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.

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.

TOTAL DISTURBED AREA = 0.15 AC.

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.

ALL STORM SEWER PIPE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. REFER TO DETAIL FOR PIPE BEDDING REQUIREMENTS.

ALL PUBLIC STREET, STORM DRAIN, AND SANITARY SEWER CONSTRUCTION TO BE IN ACCORDANCE WITH THE CITY OF COLUMBIA "STREET, STORM DRAIN, AND SANITARY SEWER SPECIFICATIONS AND STANDARDS" (CURRENT EDITION).

ALL BOX CULVERT CONSTRUCTION SHALL BE IN CONFORMANCE WITH MODOT "MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION" (CURRENT EDITION) AND "MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" (CURRENT EDITION).

ANY CITY OF COLUMBIA DETAILS SHOWN ON THIS SET OF PLANS ARE FOR REFERENCE ONLY. CONTRACTOR TO HAVE A COPY OF THE CITY'S LATEST EDITION OF SPECIFICATIONS AND STANDARDS FOR ALL STREET, STORM, AND SANITARY CONSTRUCTION ON SITE AT ALL TIMES DURING CONSTRUCTION. REFER TO <https://www.columbiagov.org/publicworks/specs-and-standards/>

EXCEPT FOR THE BOX CULVERT, THE STORM SEWER NETWORK DESIGN FOR THIS PROJECT IS BASED ON OPEN CHANNEL FLOW; THEREFORE THE HYDRAULIC GRADE LINE IS AT OR LESS THAN THE CROWN OF THE PIPE.

ALL LAND DISTURBANCE ACTIVITIES SHALL BE IN ACCORDANCE WITH CHAPTER 12A OF THE CITY OF COLUMBIA CODE OF ORDINANCES.

ANY FILL PLACEMENT WITHIN STREET RIGHT-OF-WAY SHALL BE INSPECTED BY THE CITY OF COLUMBIA.

ALL EXCAVATION WITHIN THE STREET RIGHT-OF-WAY SHALL BE BACKFILLED PER CURRENT CITY OF COLUMBIA SPECIFICATIONS.

LAND DISTURBANCE SITES SHOULD BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 48 HOURS AFTER ANY STORM EVENT EQUAL TO OR GREATER THAN A 2-YEAR, 24-HOUR STORM HAS CEASED DURING A NORMAL WORK DAY OR WITHIN 72 HOURS IF THE RAIN EVENT CEASES DURING A NON-WORK DAY SUCH AS A WEEKEND OR HOLIDAY. ANY DEFICIENCIES SHALL BE CORRECTED WITHIN SEVEN CALENDAR DAYS.

### Sheet List Table

Sheet Number	Sheet Title	BID SET	REVISION 1	REVISION 2
CE 0	COVER SHEET	X		
CE 1	DEMOLITION PLAN	X		
CE 2	EROSION CONTROL PLAN	X		
CE 3	GRADING PLAN	X		
CE 4	UTILITY PLAN	X		
CE 5	STORM SEWER PROFILES	X		
CE 6	SITE PLAN	X		
CE 7	TRAFFIC CONTROL PLAN	X		
CE 8	DETAILS	X		
CE 9	DETAILS CONTINUED	X		

### LEGEND OF SYMBOLS:

---	EXISTING CURB	FF-XXXX	FINISH FLOOR OF STRUCTURE
---	PROPOSED CURB	XXX.XX TC	PROPOSED TOP OF CURB ELEVATION
---	RIP RAP	XXX.XX TP	PROPOSED TOP OF PAVEMENT ELEVATION
---	EXISTING STRUCTURE	XXX.XX FG	PROPOSED FINISH GRADE ELEVATION
---	EXISTING TREELINE	XXX.XX TW	PROPOSED TOP OF WALL
---	PROPOSED TREELINE	XX	LOT NUMBER
---	EDGE OF WATERWAY	X	STORM SEWER STRUCTURE LABEL
---	EXISTING WATERLINE	X	SANITARY SEWER STRUCTURE LABEL
---	PROPOSED WATERLINE	HP.	HIGH POINT
---	EXISTING GAS LINE	LP.	LOW POINT
---	PROPOSED GAS LINE	---	EXISTING SIGNS
---	EXISTING UNDERGROUND TELEPHONE	---	EXISTING POWER POLE
---	EXISTING UNDERGROUND CABLE TELEVISION	---	EXISTING GAS VALVE
---	EXISTING HIGH VOLTAGE ELECTRIC	---	EXISTING WATER VALVE
---	EXISTING OVERHEAD ELECTRIC	---	EXISTING GAS METER
---	EXISTING UNDERGROUND ELECTRIC	---	EXISTING WATER METER
---	EXISTING OVERHEAD ELEC. & TV	---	EXISTING FIRE HYDRANT
---	EXISTING OVERHEAD ELEC., TV & TELE.	---	MANHOLE
---	EXISTING SANITARY SEWER	---	EXISTING SANITARY SEWER LATERAL
---	PROPOSED SANITARY SEWER	---	PROPOSED SANITARY SEWER LATERAL
---	EXISTING MINOR CONTOUR	---	PROPOSED TRACER WIRE TEST STATION BOX
---	EXISTING MAJOR CONTOUR	---	EXISTING AIR CONDITIONER
---	PROPOSED MINOR CONTOUR	---	EXISTING TELEPHONE PEDESTAL
---	PROPOSED MAJOR CONTOUR	---	EXISTING ELECTRICAL TRANSFORMER
---	100 YEAR FLOOD PLAIN	---	EXISTING ELECTRIC METER
---	FLOODWAY	---	EXISTING LIGHT POLE
---	ORDINARY HIGH WATER MARK	---	EXISTING GUY WIRE
---	STREAM SIDE BUFFER	---	CONSTRUCTION BARRIER FENCING
---	OUTER STREAM BUFFER	---	
---	DEMOLITION LIMITS	---	
---	SILT FENCE	---	

### PROJECT BENCHMARK:

TM #1 - CHISELED SQUARE IN NORTHERNMOST CORNER OF CONCRETE WALL APPROX. 40' WEST OF CAPEN PARK DR. AND APPROX. 100' SOUTHEAST OF SOUTHEASTERN BUILDING CORNER. ELEVATION = 619.40'

### FLOOD PLAIN STATEMENT:

PART OF THIS TRACT IS LOCATED WITHIN THE 100-YEAR FLOODPLAIN AS PER THE BOONE COUNTY FIRM MAP #2900340287E DATED APRIL 19, 2017.

### UTILITY COMPANIES:

#### LOCATES:

MISSOURI ONE CALL INC.  
1022 B NORTHEAST DRIVE  
JEFFERSON CITY, MO 65109  
1-800-344-7463



#### NATURAL GAS:

AMEREN MISSOURI  
2001 MAGUIRE BLVD.  
COLUMBIA, MO 65201  
573-876-3030

#### FIBER & TELEVISION:

CHARTER COMMUNICATIONS  
1510 CHARTER BOONE  
INDUSTRIAL BOULEVARD  
COLUMBIA, MO 65202  
573-875-8875

#### TELEVISION:

MEDIACOM  
1211 WILKES BLVD  
COLUMBIA, MO 65201  
(855) 633-4226

#### FIBER:

MNA-BLUEBIRD  
573-777-4200

#### OVERHEAD CABLE:

BRIGHT SPEED  
JARED HANES  
SRO COLUMBIA, MO  
(573) 823-3962

#### TELEPHONE:

UNIVERSITY OF MISSOURI, DIVISION OF I.T.  
615 LOCUST ST.  
COLUMBIA, MO 65211  
573-882-5000

#### WATER/ELECTRIC/FIBER/SEWERMAIN:

CITY OF COLUMBIA  
P.O. BOX 6015  
WATER & LIGHT DEPARTMENT  
COLUMBIA, MO 65205  
573-874-7325

#### STORM, SANITARY SEWER LATERAL & SECONDARY ELECTRIC:

UNIVERSITY CAMPUS FACILITY OPERATIONS  
180 GENERAL SERVICES BUILDING  
COLUMBIA, MO 65211  
573-882-8211

### SPECIAL INSPECTIONS:

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

- PLACING OF CONCRETE AND REINFORCING STEEL (CONTINUOUS OF CONCRETE SAMPLING / PERIODIC OF REINFORCING)
- IN-SITU SOILS, EXCAVATIONS, FILLING & COMPACTION (PERIODIC)

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

### DEFERRED SUBMITTALS:

NONE.

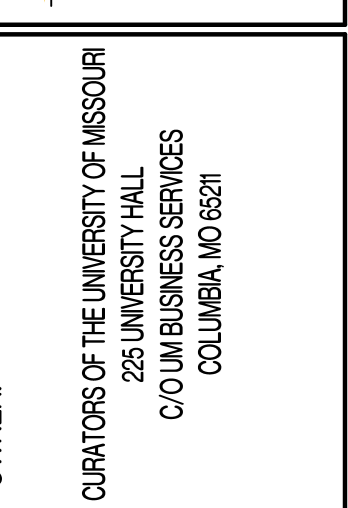
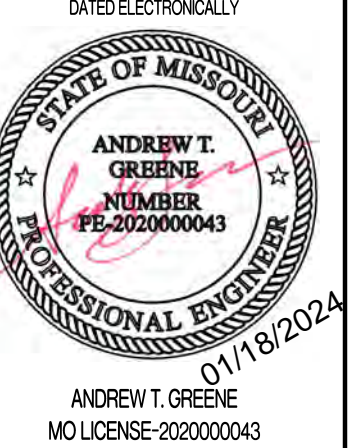
### ENGINEER CERTIFICATION:

BY SIGNING AND AFFIXING MY SEAL TO THESE PLANS, 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.

### REVISIONS:

NO.	DATE
BID SET	01/18/2024

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY



**CP232061 - GENERAL SITE - CULVERT UNDER  
CAPEN PARK DRIVE REPLACEMENT**  
COLUMBIA, BOONE COUNTY, MISSOURI

### DRAWING INCLUDES:

COVER SHEET

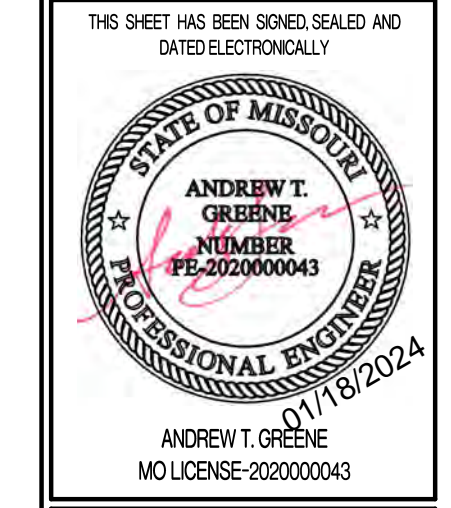
DESIGNED: ATG

DRAWN: ATG

PROJECT NO.: 230082

SHEET:  
CE 0

REVISIONS:	
NO.	DATE
BID SET	01/18/2024



PREPARED BY:  
**CROCKETT**  
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 Columbia, Missouri 65203  
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 www.crockettengineering.com  
 Crockett Engineering Consultants, LLC  
 Missouri Certificate of Authority  
 #00000001

OWNER:  
 CURATORS OF THE UNIVERSITY OF MISSOURI  
 225 UNIVERSITY HALL  
 COLUMBUS BUSINESS SERVICES  
 COLUMBIA, MO 65211

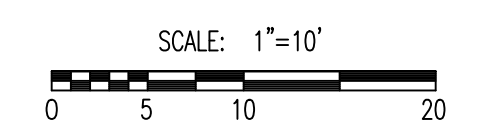
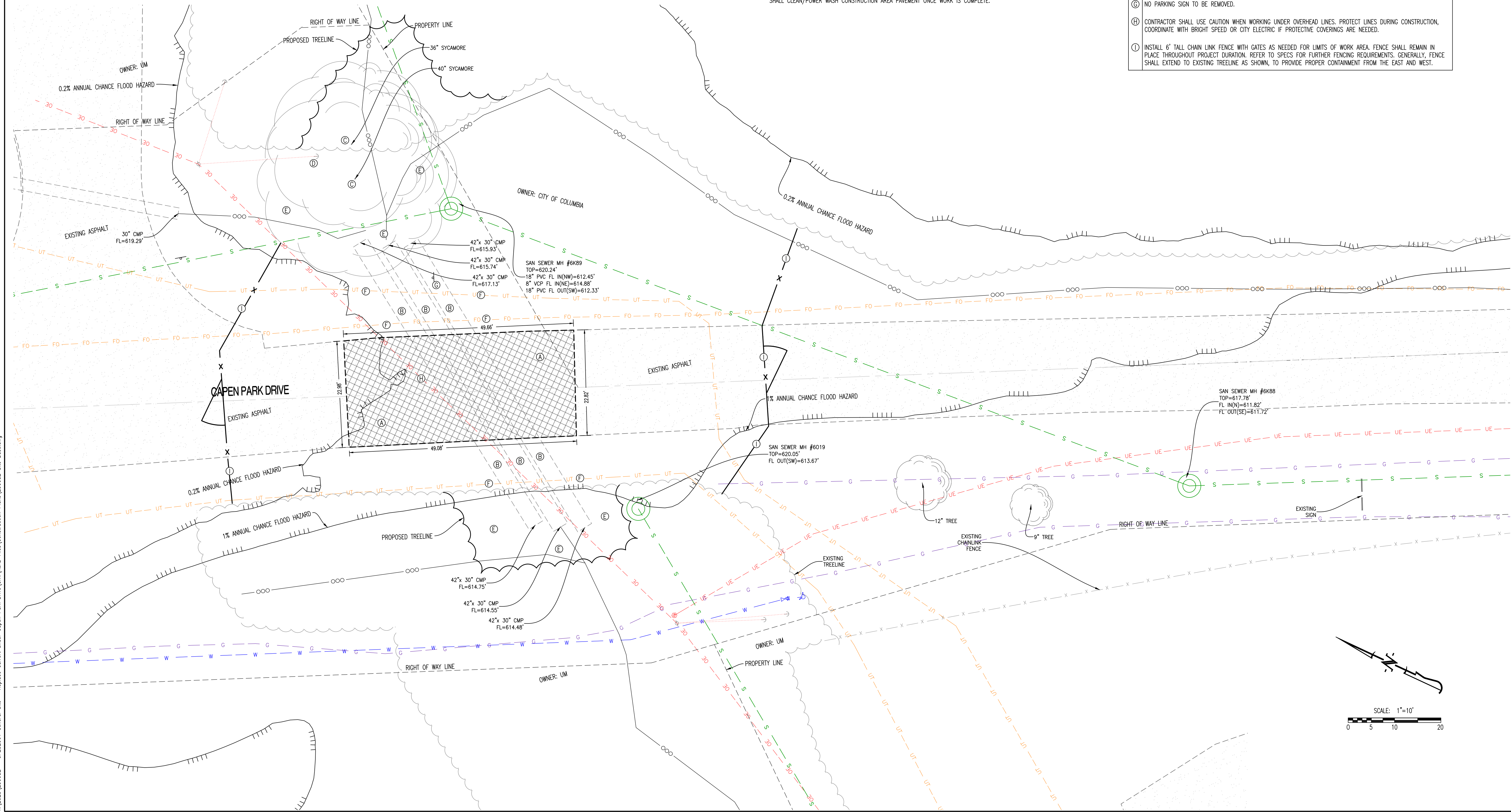
**CP232061 - GENERAL SITE - CULVERT UNDER  
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 COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:  
 DEMOLITION PLAN

DESIGNED: ATG  
 DRAWN: ATG  
 PROJECT NO: 230082  
 SHEET:  
 CE1

- LEGEND OF LABELS**
- Ⓐ EXISTING PAVEMENT TO BE REMOVED AS SHOWN. PROVIDE CLEAN, FULL DEPTH SAWCUT AT LIMITS OF EXISTING PAVEMENT TO REMAIN. PAVEMENT CUTS AND PATCHES SHALL BE PERFORMED PER CITY STANDARDS. SEE CITY DETAILS 120.01, 120.02, & 120.03A/B.
  - Ⓑ EXISTING CULVERTS (3) TO BE REMOVED.
  - Ⓒ TWO (2) LARGER TREES TO BE REMOVED.
  - Ⓓ EXISTING GUY WIRE AND ANCHOR TO BE PROTECTED DURING TREE REMOVAL. TEMPORARY REMOVAL OF GUY WIRE AND ANCHOR MAY BE REQUIRED TO REMOVE THE TREES, COORDINATE WITH CITY OF COLUMBIA ELECTRIC DEPARTMENT.
  - Ⓔ EXISTING TREES, VEGETATION, AND DEBRIS TO BE REMOVED AS NEEDED TO INSTALL PROPOSED IMPROVEMENTS.
  - Ⓕ EXISTING CONDUITS/CABLES TO BE PROTECTED DURING WORK. THESE LINES WILL BE PLACED ON TOP OF THE NEW CULVERT. TEMPORARY SUPPORT OF THESE LINES WILL BE REQUIRED DURING CONSTRUCTION.
  - Ⓖ NO PARKING SIGN TO BE REMOVED.
  - Ⓖ CONTRACTOR SHALL USE CAUTION WHEN WORKING UNDER OVERHEAD LINES. PROTECT LINES DURING CONSTRUCTION, COORDINATE WITH BRIGHT SPEED OR CITY ELECTRIC IF PROTECTIVE COVERINGS ARE NEEDED.
  - Ⓗ INSTALL 6' TALL CHAIN LINK FENCE WITH GATES AS NEEDED FOR LIMITS OF WORK AREA. FENCE SHALL REMAIN IN PLACE THROUGHOUT PROJECT DURATION. REFER TO SPECS FOR FURTHER FENCING REQUIREMENTS. GENERALLY, FENCE SHALL EXTEND TO EXISTING TREELINE AS SHOWN, TO PROVIDE PROPER CONTAINMENT FROM THE EAST AND WEST.

- 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 OUTSIDE PROJECT SCOPE OF WORK 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 PRIOR TO DISCONNECTING ANY UTILITIES.
  - ANY PAVEMENT DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR. CONTRACTOR SHALL CLEAN/POWER WASH CONSTRUCTION AREA PAVEMENT ONCE WORK IS COMPLETE.



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**CP232061 - GENERAL SITE - CULVERT UNDER  
 CAPEN PARK DRIVE REPLACEMENT**  
 COLUMBIA, BOONE COUNTY, MISSOURI

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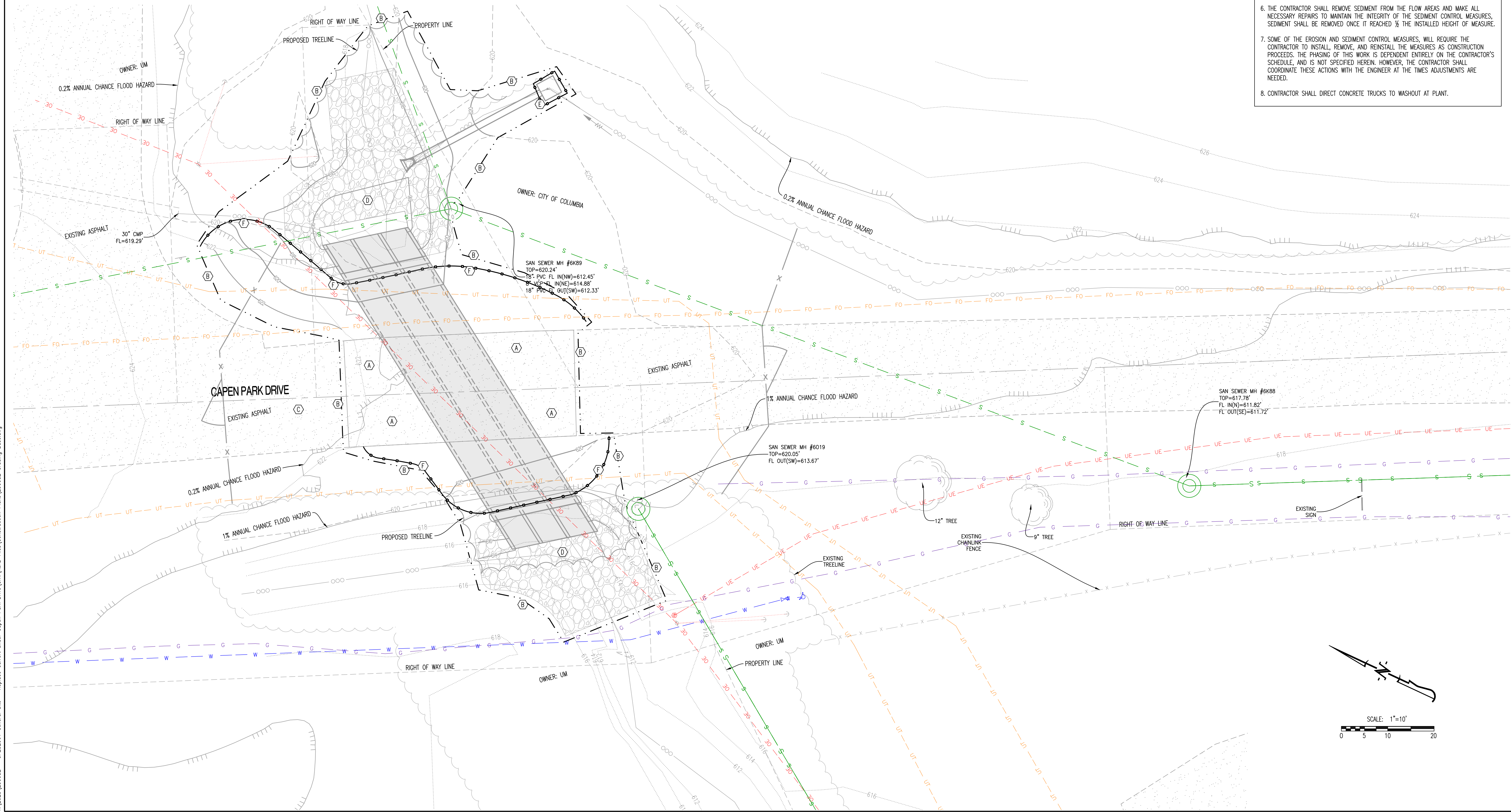
EROSION CONTROL PLAN

DESIGNED: ATG  
 DRAWN: ATG  
 PROJECT NO: 230082  
 SHEET:  
 CE 2

- CITY EROSION CONTROL NARRATIVE:**
- 1) THE PROJECT CONSISTS OF THE REMOVAL AND REPLACEMENT OF STORM SEWER CULVERT(S).
  - 2) SILT FENCE AND/OR OTHER BMPs PER THIS EROSION CONTROL PLAN SHALL BE PROVIDED AT LOW POINTS ON THE PROJECT'S LIMITS TO INSURE THAT SILT DOES NOT LEAVE THE SITE. WHEN SILT ACCUMULATES TO MORE THAN HALF THE FENCE HEIGHT, IT SHALL BE REMOVED. REPLACE ANY TORN OR CLOGGED FABRIC OR BROKEN POSTS AS MAY BE REQUIRED.
  - 3) THE OVERALL SITE IMPERVIOUS AREA WILL NOT CHANGE.
  - 4) THE EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL THE SITE HAS BEEN STABILIZED AND VEGETATION IS ESTABLISHED OVER A MINIMUM OF 70% OF THE DISTURBED AREA.
  - 5) ALL EROSION CONTROL MEASURES ARE TO BE INSTALLED PRIOR TO LAND DISTURBANCE. SHOULD CONSTRUCTION CEASE FOR MORE THAN 30 DAYS, THE SITE SHALL BE TEMPORARILY SEED TO STABILIZE ALL DISTURBED AREAS.
  - 6) EROSION CONTROL FACILITIES SHALL BE INSPECTED AT A MINIMUM OF ONCE PER WEEK OR AFTER EVERY MAJOR STORM EVENT THAT PRODUCES RUN-OFF.

- GENERAL EROSION CONTROL NOTES:**
1. THE CONTRACTOR SHALL PROVIDE FOR CONTROL OF SURFACE EROSION AND SEDIMENT DEPOSITION DURING ALL PHASES OF CONSTRUCTION AND UNTIL THE OWNER ACCEPTS THE WORK AS SUBSTANTIALLY COMPLETE.
  2. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ROADWAYS AND SIDEWALKS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.
  3. CONTRACTOR SHALL KEEP THE ENTIRE PROJECT SITE FREE OF DEBRIS AND TRASH AT ALL TIMES. CONTRACTOR SHALL EXECUTE WORK USING METHODS THAT MINIMIZE EXCESSIVE NOISE OR DUST EMISSIONS. CONTRACTOR SHALL PROVIDE METHODS, MEANS AND FACILITIES TO PREVENT CONTAMINATION OF SOIL OR WATER FROM DISCHARGE OF REGULATED MATERIALS (I.E., DIESEL FUEL) USED DURING CONSTRUCTION.
  4. CONTRACTOR MUST INSTALL AND MAINTAIN THE EROSION CONTROL MEASURES SHOWN ON THIS PLAN. IF THE ENGINEER, OWNER'S REPRESENTATIVE, DETERMINES THAT THE INSTALLATION OF THE MAINTENANCE IS INADEQUATE, THE CONTRACTOR MUST IMMEDIATELY CORRECT AT THEIR EXPENSE. IF IT IS DETERMINED THAT ADDITIONAL EROSION CONTROL MEASURES ARE NEEDED THE CONTRACTOR WILL BE DIRECTED TO INSTALL AND MAINTAIN THOSE MEASURES.
  5. THE CONTRACTOR SHALL INSPECT THE LAND DISTURBANCE SITE AT LEAST ONCE EVERY SEVEN (7) DAYS AND WITHIN TWENTY-FOUR (24) HOURS FOLLOWING EACH RAINFALL EVENT OF 1/2" OR MORE WITHIN ANY TWENTY-FOUR (24) HOUR PERIOD. THE CONTRACTOR SHALL ALSO INSPECT AND ASSURE THAT ALL SEDIMENT CONTROL DEVICES ARE IN WORKING CONDITION PRIOR TO ANY FORECASTED RAINFALL.
  6. THE CONTRACTOR SHALL REMOVE SEDIMENT FROM THE FLOW AREAS AND MAKE ALL NECESSARY REPAIRS TO MAINTAIN THE INTEGRITY OF THE SEDIMENT CONTROL MEASURES. SEDIMENT SHALL BE REMOVED ONCE IT REACHED 3/4 THE INSTALLED HEIGHT OF MEASURE.
  7. SOME OF THE EROSION AND SEDIMENT CONTROL MEASURES, WILL REQUIRE THE CONTRACTOR TO INSTALL, REMOVE, AND REINSTALL THE MEASURES AS CONSTRUCTION PROCEEDS. THE PHASING OF THIS WORK IS DEPENDENT ENTIRELY ON THE CONTRACTOR'S SCHEDULE, AND IS NOT SPECIFIED HEREIN. HOWEVER, THE CONTRACTOR SHALL COORDINATE THESE ACTIONS WITH THE ENGINEER AT THE TIMES ADJUSTMENTS ARE NEEDED.
  8. CONTRACTOR SHALL DIRECT CONCRETE TRUCKS TO WASHOUT AT PLANT.

- LEGEND OF LABELS:**
- (A) IF THE OLD CULVERTS HAVE BEEN REMOVED AND WORK MUST BE SUSPENDED DUE TO RAIN, SNOW OR OTHER SIGNIFICANT DELAYS, THE OPEN EXCAVATION SHALL HAVE ITS SLOPES (UP TO THE ROAD PAVEMENT) PROTECTED WITH RIP-RAP. THIS IS TO ENSURE THE ROAD-BED IS NOT UNDERMINED BY A LARGE DRAINAGE EVENT.
  - (B) LIMITS OF DISTURBANCE.
  - (C) UTILIZE EXISTING PAVEMENT AS CONSTRUCTION ENTRY AND EXIT. NO TRACKING OF MUD/SEDIMENT ONTO OPEN PORTION OF ROAD IS ALLOWED. POWERWASH OR OTHERWISE CLEAN PAVEMENT ONCE PROJECT IS FINISHED.
  - (D) INSTALL RIP-RAP AT THE END OF THE CULVERTS AS SHOWN. REFER TO THE UTILITY PLAN.
  - (E) INSTALL SILT FENCE, STRAW WADDELE, OR STAKED STRAW BALLS AROUND INLET DURING ROUGH GRADING.
  - (F) INSTALL SILT FENCE OR STRAW WADDELES AS PERIMETER CONTROL AFTER NEW BOX CULVERT HAS BEEN INSTALLED.



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REVISIONS:

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THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

ANDREW T. GREENE  
REGISTERED PROFESSIONAL ENGINEER  
MISSOURI LICENSE #202000043  
01/18/2024

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Crockett Engineering Consultants, LLC  
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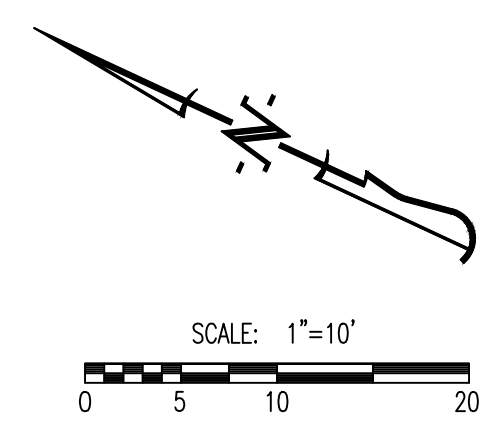
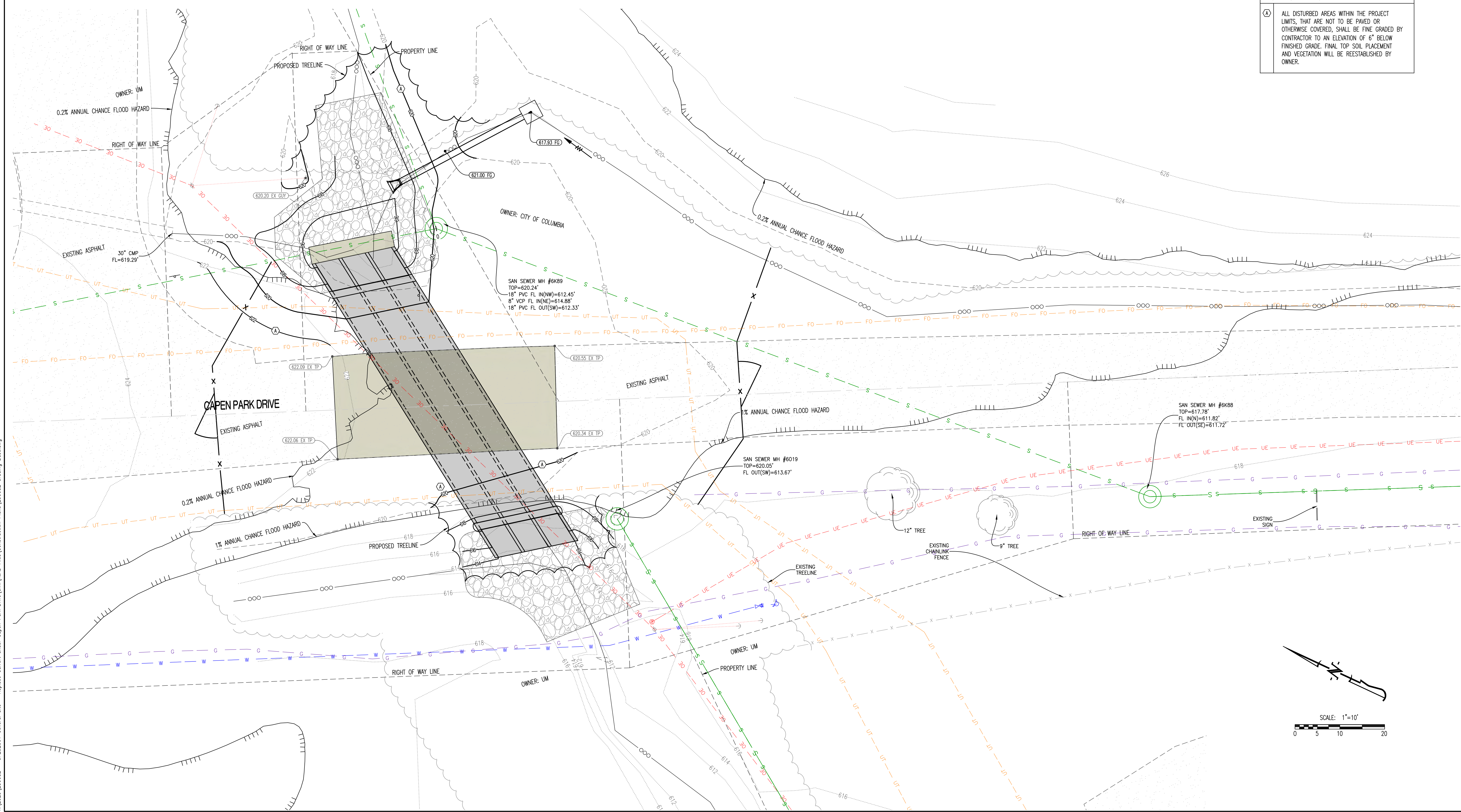
DRAWING INCLUDES:  
GRADING PLAN

DESIGNED: ATG  
DRAWN: ATG  
PROJECT NO: 230082  
SHEET: CE 3

- LEGEND OF SYMBOLS:**
- XXX----- EXISTING MINOR CONTOUR
  - - - - -XXX- - - - - EXISTING MAJOR CONTOUR
  - XXX----- PROPOSED MINOR CONTOUR
  - XXX----- PROPOSED MAJOR CONTOUR
  - (XXXX.XX TP) PROPOSED TOP OF PAVEMENT ELEVATION
  - (XXXX.XX FG) PROPOSED FINISHED GRADE ELEVATION
  - (XXXX.XX EX) EXISTING SURFACE GRADE MODIFIER

**LEGEND OF LABELS**

(A) ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS, THAT ARE NOT TO BE PAVED OR OTHERWISE COVERED, SHALL BE FINE GRADED BY CONTRACTOR TO AN ELEVATION OF 6" BELOW FINISHED GRADE. FINAL TOP SOIL PLACEMENT AND VEGETATION WILL BE REESTABLISHED BY OWNER.



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01/18/2024  
ANDREW T. GREENE  
MO LICENSE 2020000043

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Missouri Certificate of Authority  
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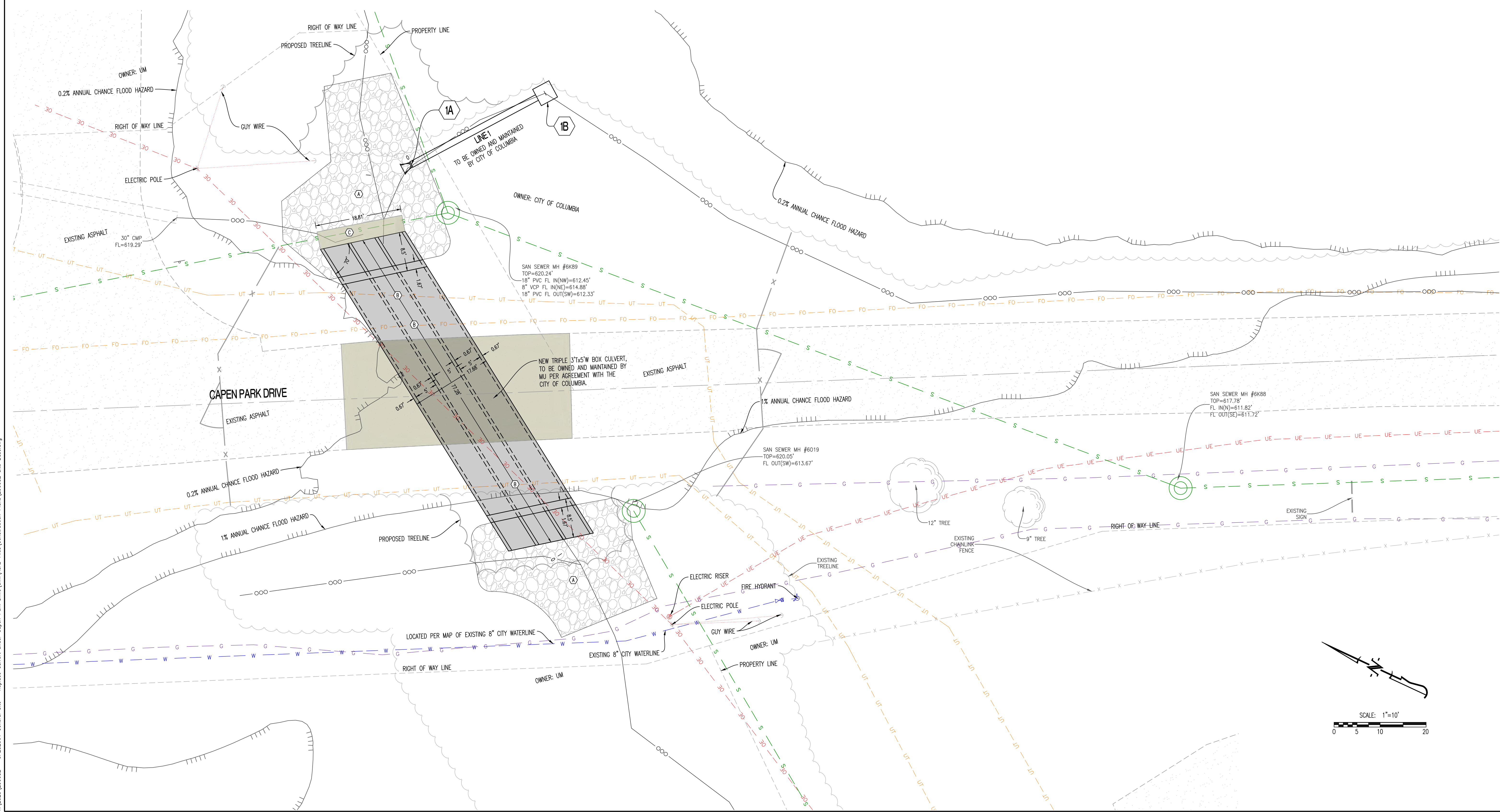
DRAWING INCLUDES:  
UTILITY PLAN

DESIGNED: ATG  
DRAWN: ATG  
PROJECT NO: 230082  
SHEET:  
CE 4

- LEGEND OF LABELS**
- (A) INSTALL RIP-RAP WITH FILTER FABRIC AS SHOWN. REFER TO CITY DETAIL 530.03.
  - (B) EXISTING PROTECTED UTILITIES TO BE INSTALLED ABOVE NEW CULVERT.
  - (C) EXISTING 18" PVC SEWER MAIN TO BE ENCASED IN CONCRETE ON THE TOP AND SIDES PER CITY DETAIL 10. TOP OF CONCRETE ENCASUREMENT SHALL MATCH NEW CULVERT FLOWLINE. POUR CONCRETE ENCASUREMENT UP TO TOE WALL OF CULVERT. REFER TO PROFILE.

- DESIGN DATA FOR BOX CULVERT:**
1. DRAINAGE AREA = 98 ACRES
  2. MODELED ON THE NRCS UNIT HYDROGRAPH METHOD
  - 2.1. INCLUDES IMPACT OF UPSTREAM PIPE UNDERNEATH STADIUM BLVD.
  3. DESIGN STORM IS THE 25 YEAR EVENT AT 393 CFS.
  4. BOX CULVERT ANALYZED IN THE HYDRAFLOW EXPRESS EXTENSION OF AUTODESK CIVIL 3D, FOLLOWING ANALYSIS PROCEDURES OUTLINED IN HDS-5 (HYDRAULIC DESIGN OF HIGHWAY CULVERTS).
  5. INCLUDES TAILWATER FROM 25 YEAR FLOOD EVENT AT AN ELEVATION OF 616.6, AS PUBLISHED BY FEMA FOR HINKSON CREEK.
  6. CULVERT FUNCTIONS UNDER INLET CONTROL AND CONVEYS THE DESIGN STORM WITH AN UPSTREAM HGL ELEVATION OF 620.0

- GENERAL NOTES:**
- 1) REFER TO STORM PROFILES FOR PUBLIC OR PRIVATE DESIGNATION.
  - 2) ALL WORK INSIDE THE R.O.W. REQUIRES A R.O.W. PERMIT FROM THE CITY OF COLUMBIA BEFORE ANY WORK IS TO BEGIN.
  - 3) EXISTING UTILITIES SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL COORDINATE LOCATES PRIOR TO START OF WORK.



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REVISIONS:

NO.	DATE
BID SET	01/18/2024

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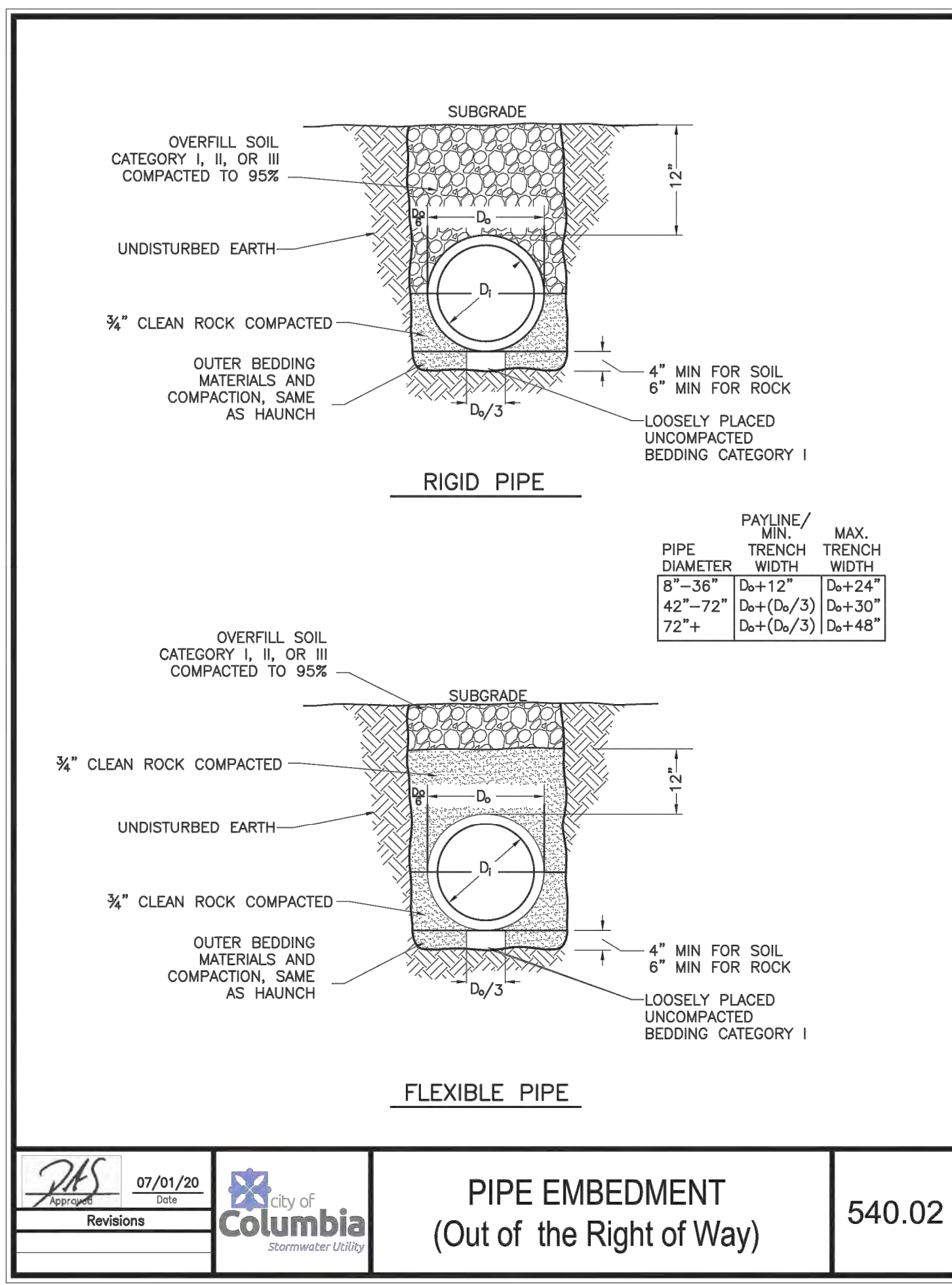
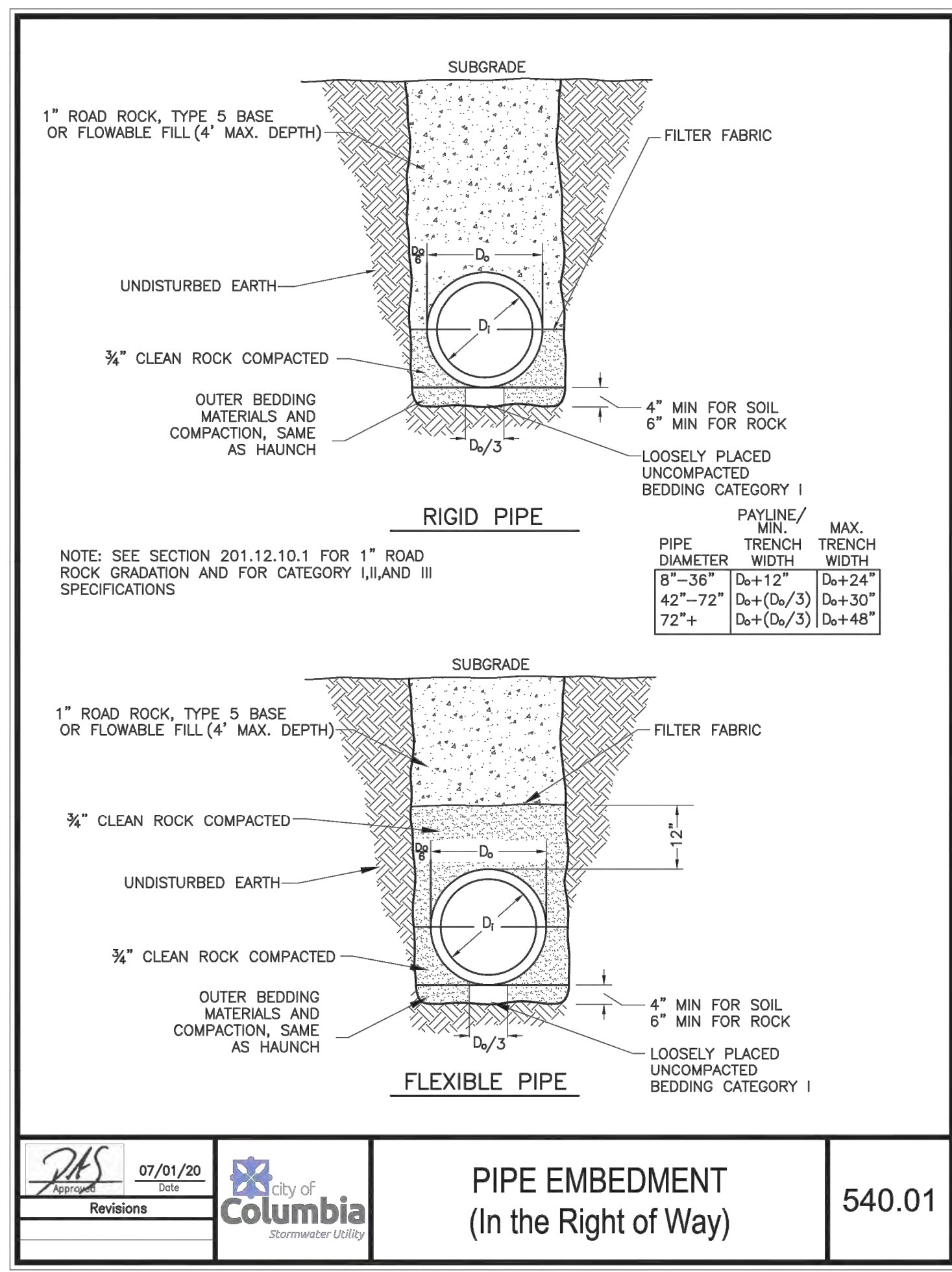
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 (314) 487-0299  
 www.crockettengineering.com  
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OWNER:  
 CURATORS OF THE UNIVERSITY OF MISSOURI  
 225 UNIVERSITY HALL  
 C/O BUSINESS SERVICES  
 COLUMBIA, MO 65211

**CP232061 - GENERAL SITE - CULVERT UNDER CAPEN PARK DRIVE REPLACEMENT**  
 COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:  
 STORM SEWER PROFILES

DESIGNED: ATG  
 DRAWN: ATG  
 PROJECT NO: 230082  
 SHEET: CE 5



**PRECAST BOX CULVERT NOTES:**

DESIGN SPECIFICATIONS: 2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND 2010 INTERIM REVISIONS

DESIGN LOADING: VEHICULAR = HL-93 MINUS LANE LOAD.  
 EARTH = 120 LB/CF.  
 EQUIVALENT FLUID PRESSURE = 30 LB/CF(MIN.), 60 LB/CF(MAX.)

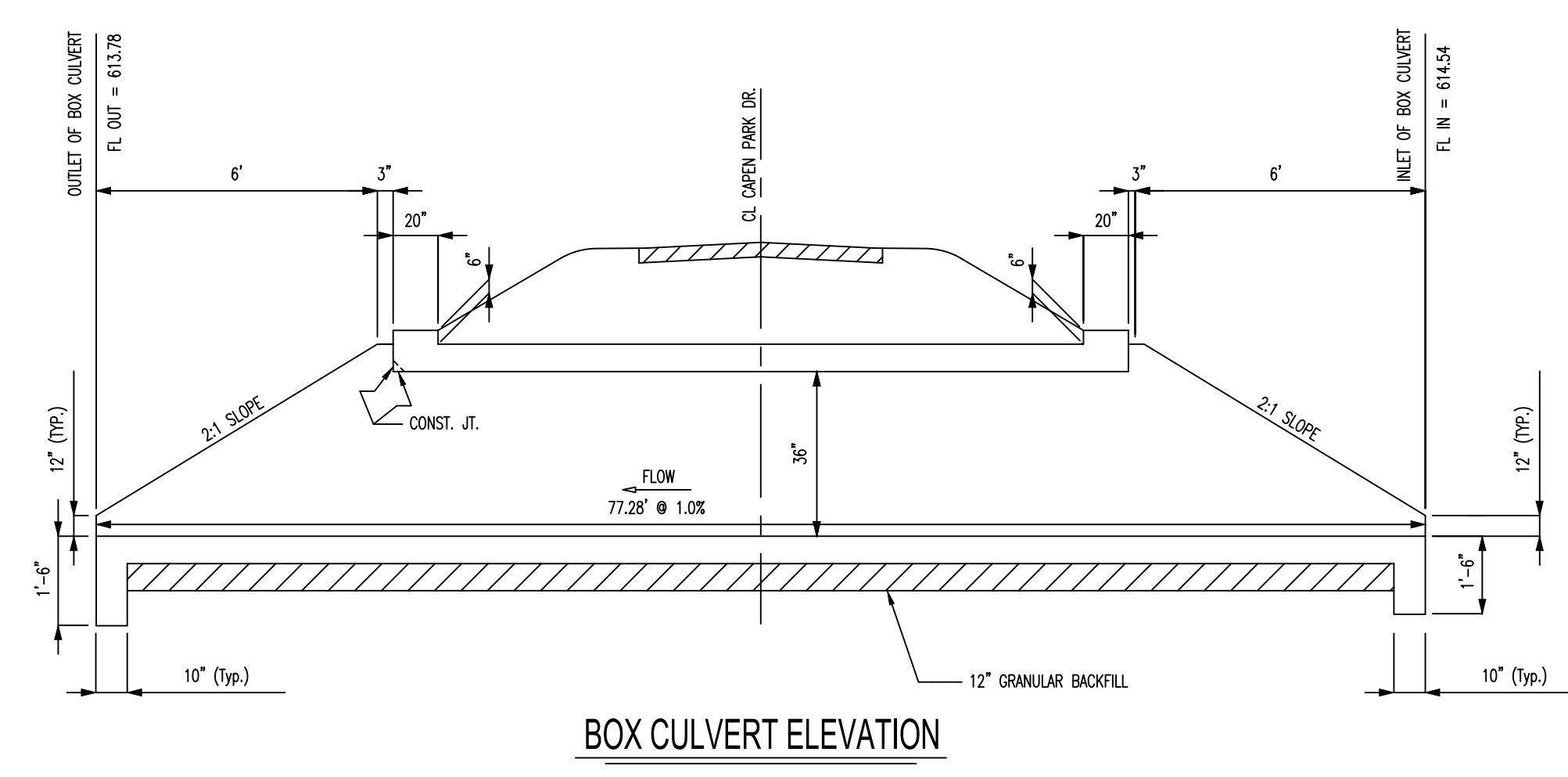
DESIGN UNIT STRESSES: CLASS B-1 CONCRETE F'<sub>c</sub> = 4,000 PSI  
 REINFORCING STEEL (GRADE 60), F<sub>y</sub> = 60,000 PSI

THIS DRAWING IS NOT TO SCALE. FOLLOW PLAN DIMENSIONS.

CONTRACTOR TO SUBMIT ENGINEERED SHOP DRAWINGS FOR REVIEW PRIOR TO CASTING OF BOX CULVERT.

MODOT BOX CULVERT STANDARD PLANS AND DETAILS CAN BE USED (SEE MODOT DETAILS 703.XX FOR TRIPLE BOX CULVERT).

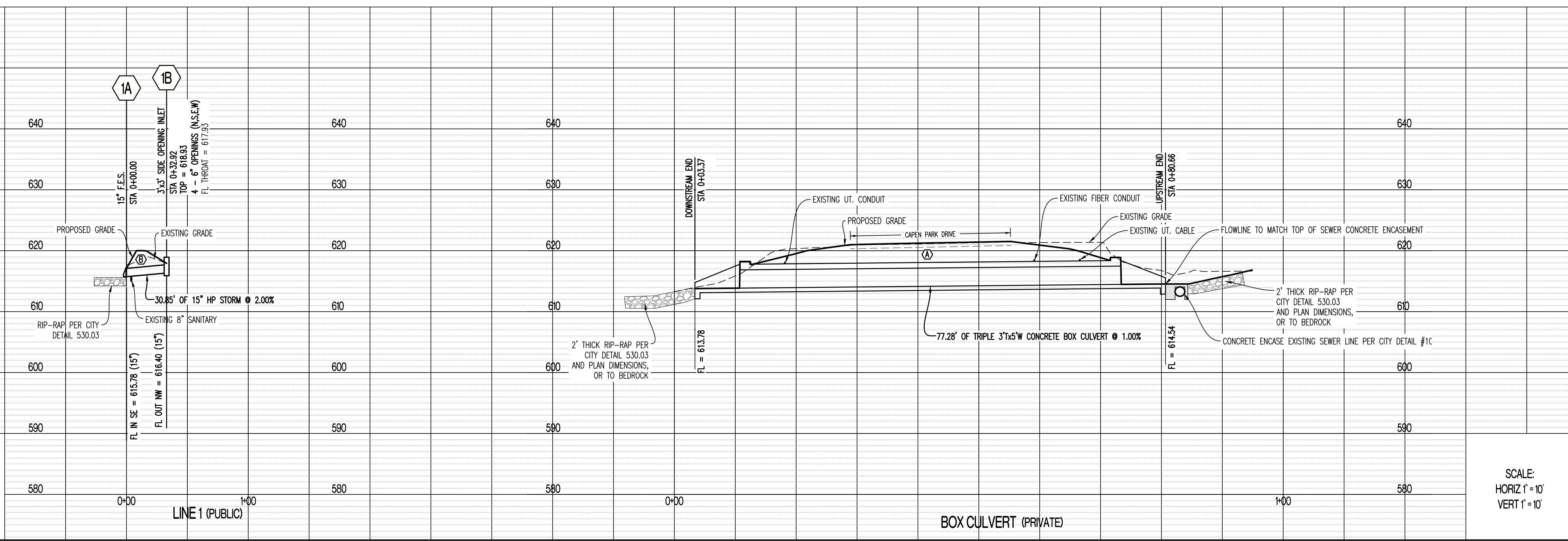
BOX CULVERT DETAILS:  
 - TRIPLE BARREL  
 - RIGHT ADVANCE SKEW  
 - STRAIGHT WINGS



**LEGEND OF LABELS:**

(A) REFER TO PIPE EMBEDMENT DETAIL (IN RIGHT-OF-WAY). SEE CITY DETAIL 540.01.

(B) REFER TO PIPE EMBEDMENT DETAIL (OUT OF THE RIGHT-OF-WAY). SEE CITY DETAIL 540.02.



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ANDREW T. GREENE  
PROFESSIONAL ENGINEER  
MO LICENSE: 202000043

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COLUMBIA, MO 65211

**CP232061 - GENERAL SITE - CULVERT UNDER  
CAPEN PARK DRIVE REPLACEMENT**  
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:  
SITE PLAN

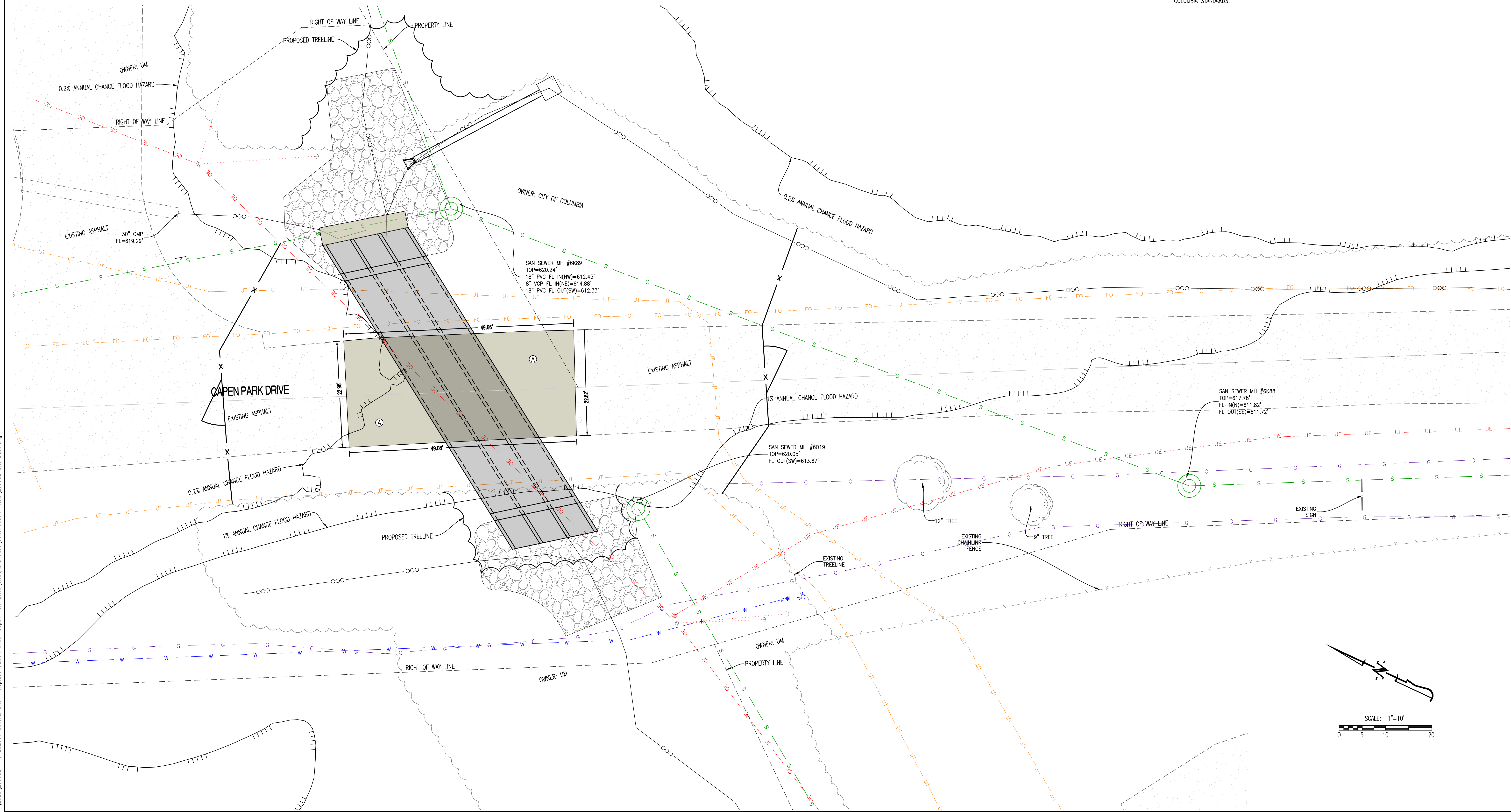
DESIGNED: ATG  
DRAWN: ATG  
PROJECT NO: 230082  
SHEET:  
CE 6

**LEGEND OF LABELS**

Ⓐ RECONSTRUCT ROADWAY PAVEMENT AS SHOWN. THE CONCRETE OR ASPHALT OPTIONS ON CITY DETAIL 120.01 SHALL BE USED. PAVEMENT CUTS AND PATCHES SHALL BE PERFORMED PER CITY STANDARDS. SEE CITY DETAILS 120.01, 120.02, & 120.03A/B. MATCH EXISTING ELEVATIONS, GRADES AND SLOPES.

**GENERAL NOTES:**

- CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE BSD RIGHT OF WAY TECHNICIAN (874-7474), IMMEDIATELY PRIOR TO CLOSURE OF STREET, DURING CONSTRUCTION FOR INSPECTIONS AND AGAIN WHEN WORK IS COMPLETE AND STREET IS REOPENED.
- CONTRACTOR SHALL REFER TO THE CITY OF COLUMBIA STANDARD DETAILS FOR DETAILS REFERENCED IN THE NOTES ABOVE. REFER TO LINK ON COVER SHEET TO CITY OF COLUMBIA STANDARDS.



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ANDREW T. GREENE  
REGISTERED PROFESSIONAL ENGINEER  
MO LICENSE: 2020000043

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OWNER:

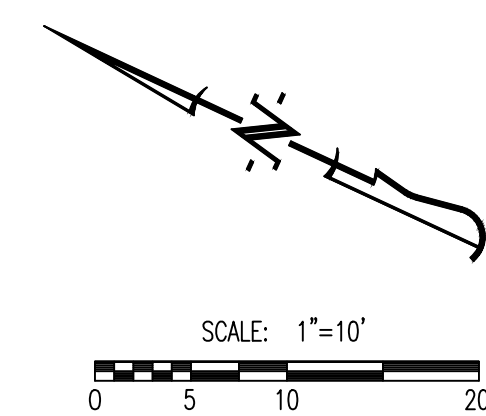
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**CP232061 - GENERAL SITE - CULVERT UNDER  
CAPEN PARK DRIVE REPLACEMENT**  
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:

TRAFFIC CONTROL PLAN

DESIGNED: ATG  
DRAWN: ATG  
PROJECT NO: 230082  
SHEET: CE 7



TRAFFIC CONTROL DEVICE LEGEND	
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # R11-2 SHOULD READ "ROAD CLOSED"). SIGN SHALL BE 24" X 12" MIN.
	PLACE STANDARD HIGHWAY SIGN (MUTCD SIGN # R11-4 SHOULD READ "ROAD CLOSED TO THRU TRAFFIC"). SIGN SHALL BE 24" X 18" MIN.

**GENERAL NOTES**

TRAFFIC CONTROL DEVICES SHALL COMPLY WITH THE MUTCD.

CONTRACTOR SHALL MAINTAIN A MINIMUM LANE WIDTH OF 11' AT ALL TIMES FOR ANY OPEN LANE OF TRAFFIC.

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.

CONTRACTOR SHALL KEEP ALL ADJACENT DRIVEWAYS OPEN AT ALL TIMES.

CONTRACTOR SHALL NOTIFY CITY OF COLUMBIA COMMUNITY DEVELOPMENT THREE WEEKS PRIOR TO ANY CLOSURE MADE ACCORDING TO THIS PLAN. ALL TIMES FOR CLOSURE SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO IMPLEMENTATION OF THIS PLAN.

CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE BSD RIGHT OF WAY TECHNICIAN (874-7474), IMMEDIATELY PRIOR TO CLOSURE OF STREET, DURING CONSTRUCTION FOR INSPECTIONS AND AGAIN WHEN WORK IS COMPLETE AND STREET IS REOPENED.

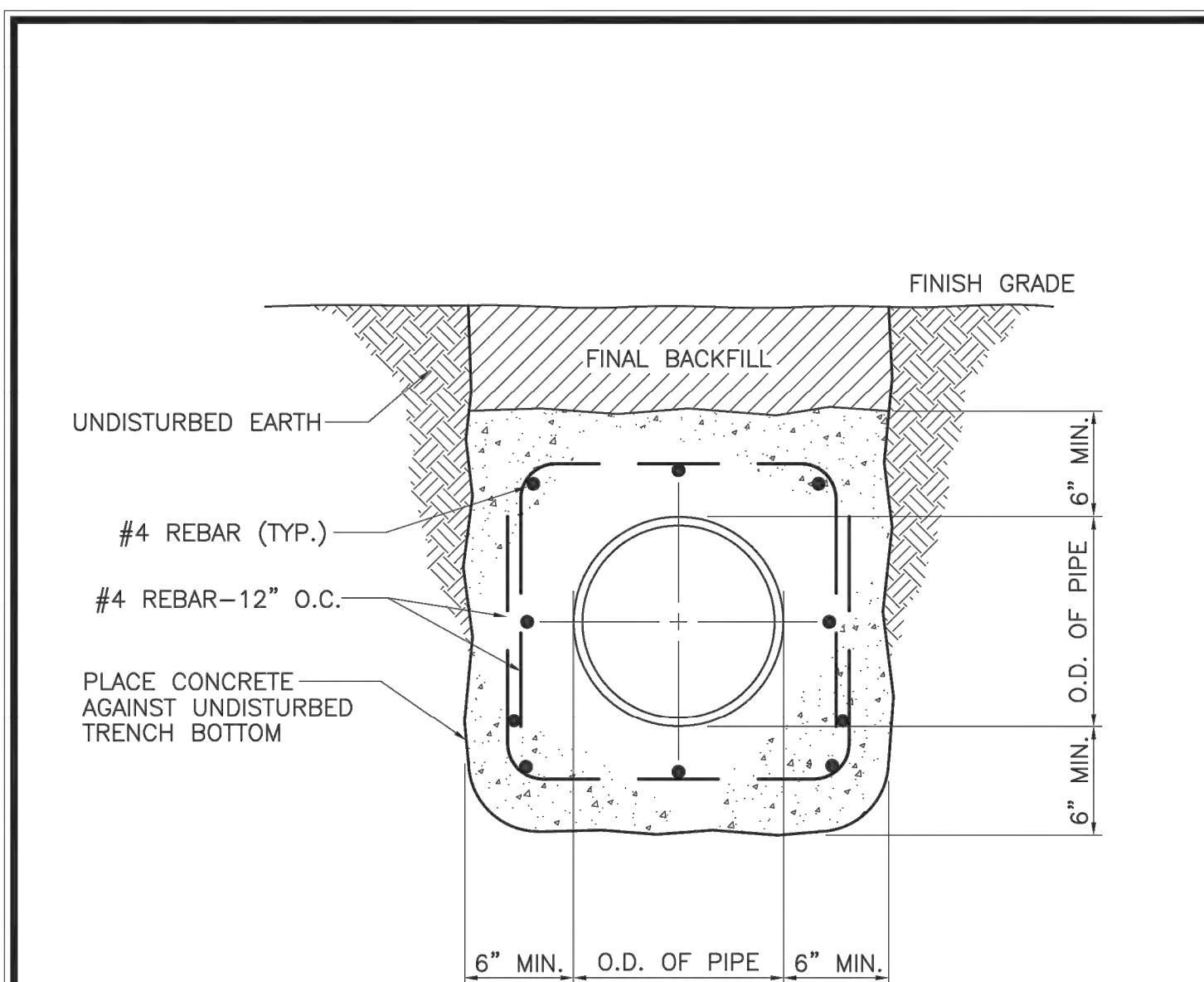
**ROAD CLOSURE TIMING NOTES:**

CLOSURE OF THE ROAD TO PERFORM THIS WORK SHALL OCCUR FOR 3 WEEKS, BEGINNING ON APRIL 29 AND ENDING ON MAY 20. THIS INFORMATION IS ALSO PROVIDED IN THE SPECIAL CONDITIONS OF THE PROJECT MANUAL.

COORDINATE CLOSURE WITH WITH OWNER AND THE CITY OF COLUMBIA.

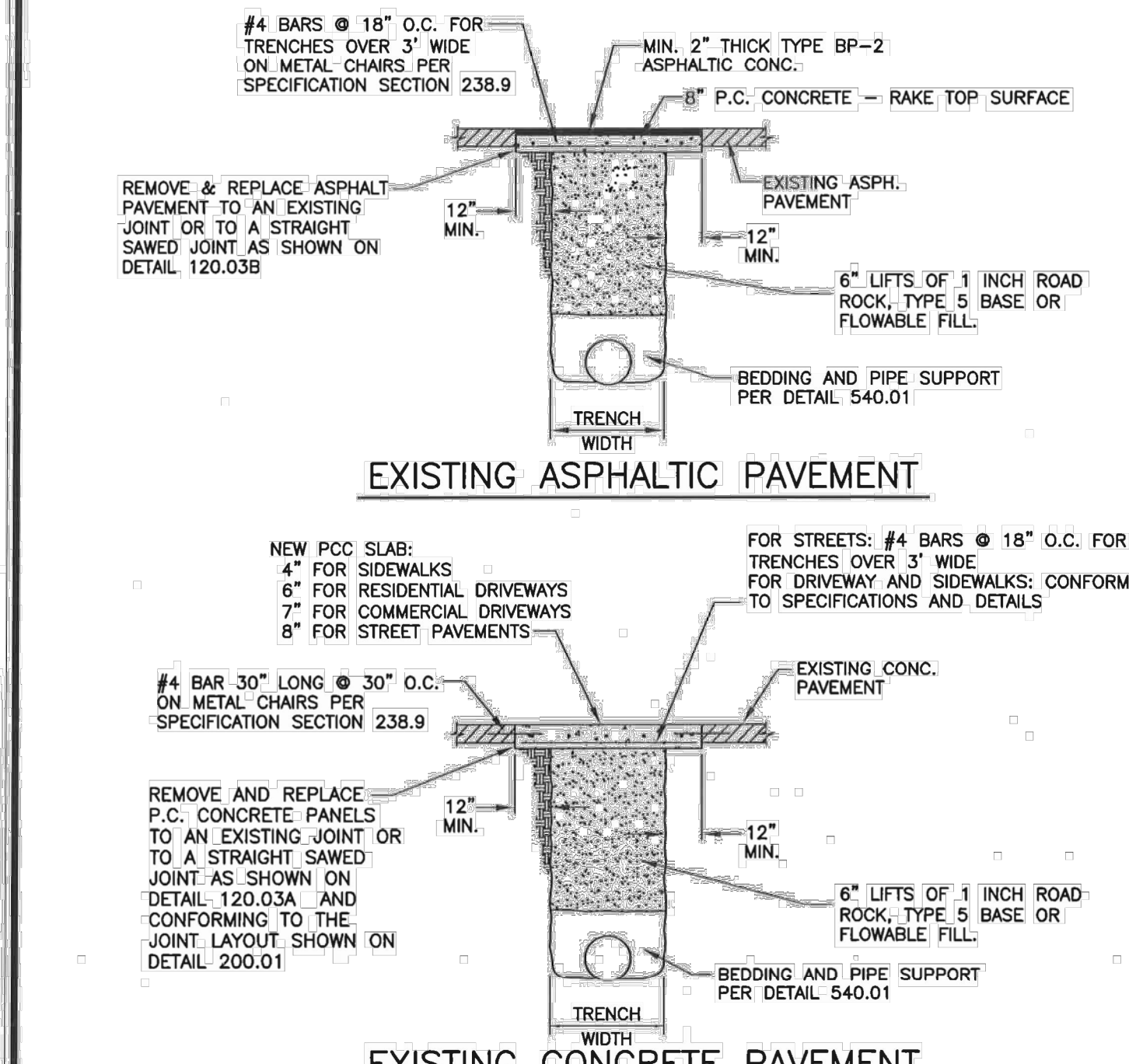






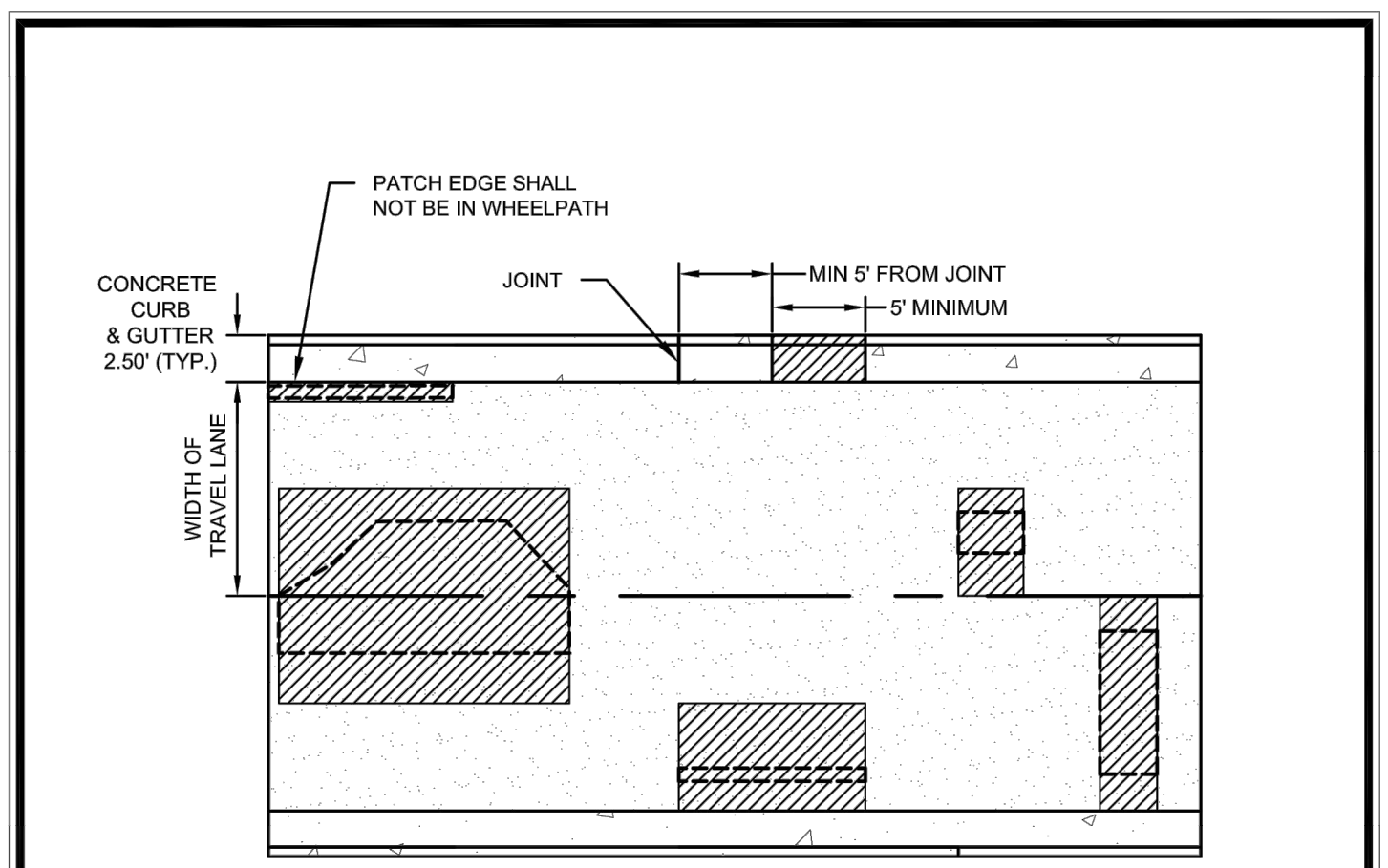
- NOTES:
1. FOR PIPE LARGER THAN 12" DIAMETER THE MINIMUM CONCRETE COVER SHALL BE 8" WITH # 5 REBAR @ 12" O.C. EACH WAY.
  2. BRACE OR TIE THE PIPE TO PREVENT FLotation OR DEFLECTION, DURING CONCRETE PLACEMENT.
  3. VERTICAL CLEARANCE BETWEEN SEWER AND WATER MAINS SHALL BE A MINIMUM OF 2 FEET.

	<b>PIPE ENCASEMENT (Concrete)</b>	<b>10</b>
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- NOTES:
1. CONCRETE SHALL BE M&DOT PAVEMENT CONCRETE. REINFORCING STEEL SHALL BE GRADE 60.
  2. FOR BRICK STREETS W/ASHPALTIC OVERLAY THE TOP OF 8" P.C.C. SLAB SHALL MATCH THE TOP OF BRICKS AND THE NEW ASPHALT THICKNESS SHALL MATCH EXSTING ASPHALT THICKNESS.
  3. FOR BRICK STREETS THE TOP OF 8" P.C.C. SLAB SHALL MATCH TOP OF SUBGRADE.
  4. SEE SECTION 201.12.10.1 FOR 1" ROAD ROCK GRADATION

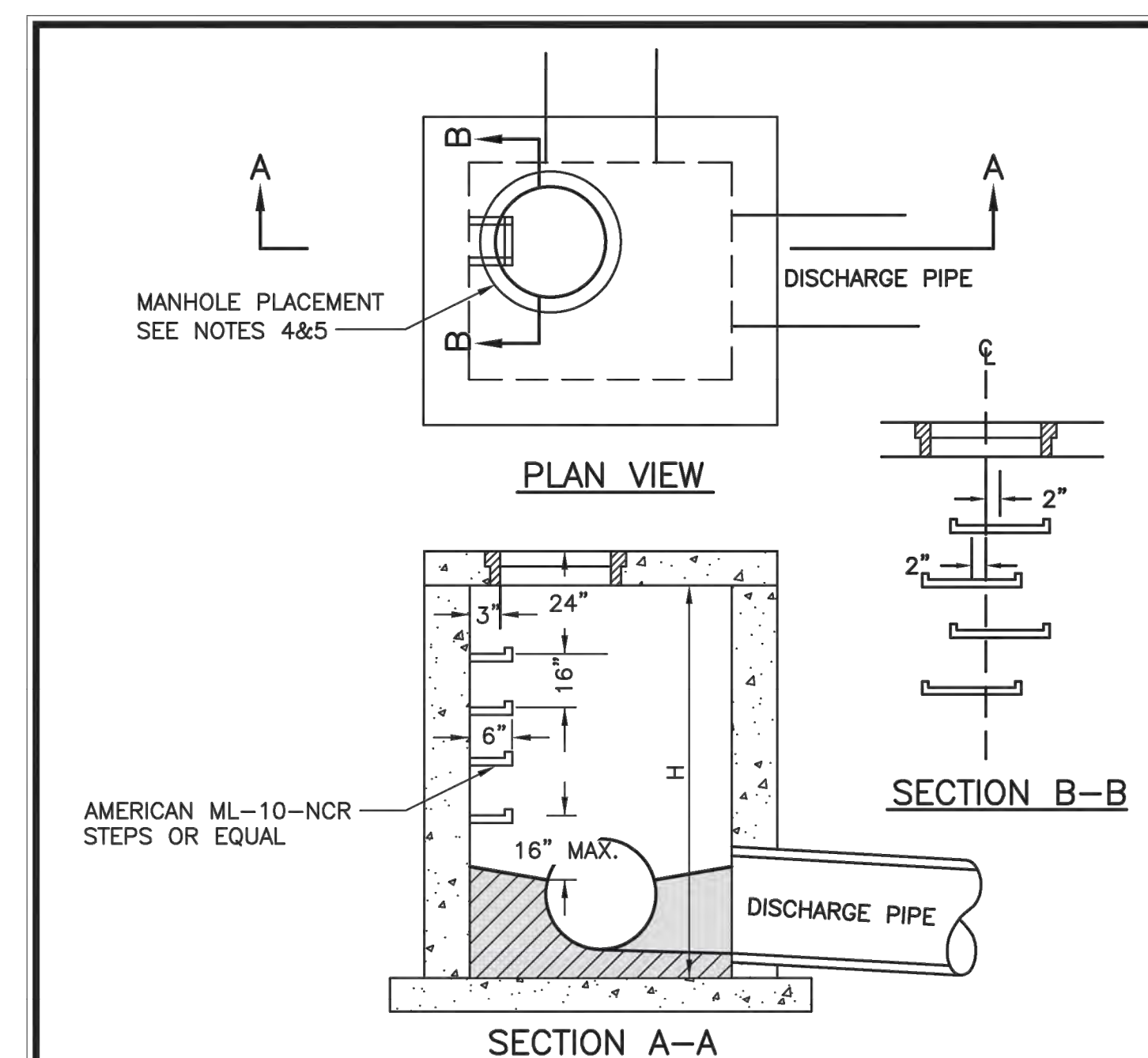
	<b>PAVEMENT PATCHING</b>	<b>120.01</b>
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- REQUIRED PAVEMENT PATCH OR PANEL/CURB REPLACEMENT
- EXAMPLES OF WORK LIMITS/PAVEMENT TO BE REPAIRED

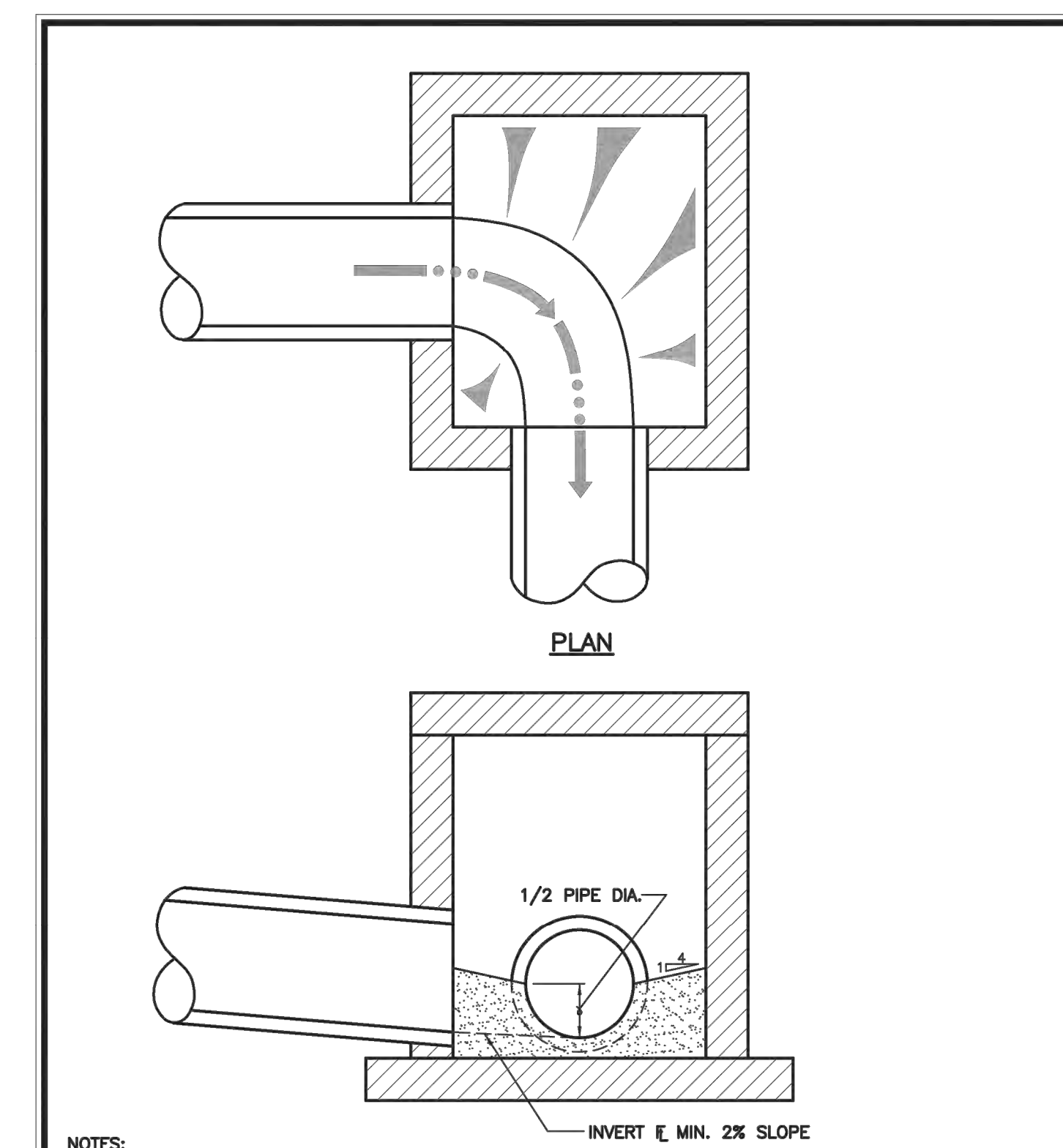
- ASPHALT PAVEMENT PATCH NOTES:
1. EXISTING PAVEMENTS SHALL BE REMOVED TO CLEAN, STRAIGHT LINES. MAKE CUTS PARALLEL OR PERPENDICULAR TO TRAFFIC FLOW. PATCH EDGES PARALLEL TO TRAFFIC FLOW SHALL NOT BE LOCATED IN WHEEL PATHS.
  2. AVOID BREAKING AWAY THE EDGES OF EXISTING PAVEMENT OR DAMAGING THE REMAINING PAVEMENT WITH CONSTRUCTION EQUIPMENT.
  3. AVOID PATCHES WITHIN EXISTING PATCHES. IF THIS CANNOT BE AVOIDED, MAKE THE BOUNDARIES OF THE PATCHES COINCIDE.
  4. PATCHES SHOULD HAVE A SMOOTH LONGITUDINAL GRADE CONSISTENT WITH THE EXISTING ROADWAY. PATCHES SHOULD ALSO HAVE A CROSS SLOPE OR CROSS SECTION CONSISTENT WITH THE DESIGN OF THE EXISTING ROADWAY.
  5. A MINIMUM OF 5' OF CURB AND GUTTER SHALL BE REPLACED, WHERE THE REPAIR WILL BE WITHIN 5' OF A JOINT, REPLACE CURB AND GUTTER TO THE JOINT. NO SECTION OR CURB AND GUTTER SHALL BE LESS THAN 5' LONG.

	<b>ASPHALT PAVEMENT PATCHING</b>	<b>120.03B</b>
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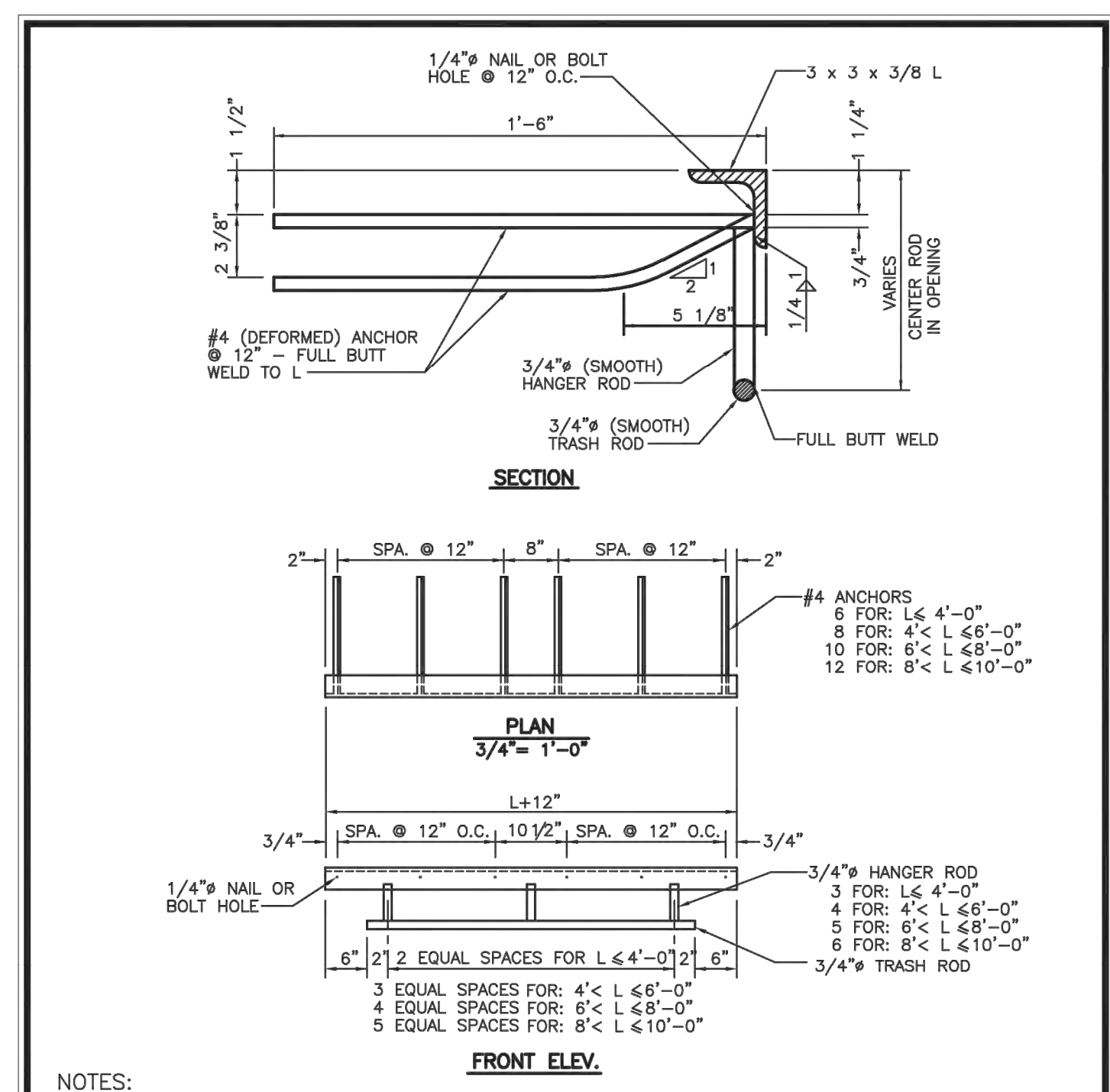
- NOTES:
1. STEPS NOT REQUIRED WHERE H IS LESS THAN 4'.
  2. STEPS SHALL BE ML-10-NCR OR EQUAL
  3. STEPS SHALL BE PLACED ON VACANT WALL WHEN POSSIBLE
  4. MANHOLE RING SHALL BE OFFSET TOWARD WALL WITH STEPS.
  5. MANHOLE RING SHALL BE CENTERED ON CENTERLINE OF STEPS
  6. STAGGER STEPS 2" EACH WAY FROM CENTERLINE OF MANHOLE RING.
  7. TOP STEP 24" BELOW TOP OF SLAB
  8. STEP SPACING TO BE 16", BOTTOM STEP TO BE NO HIGHER THAN 16" FROM INVERT.

	<b>DRAINAGE STRUCTURE STEPS</b>	<b>500.01</b>
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- NOTES:
1. FORM ALL INVERTS FOR SMOOTH FLOW THRU STRUCTURE.
  2. INVERT SHALL BE FORMED UP TO 1/2 THE PIPE DIAMETER.
  3. INVERT SHALL CONFORM TO SECTION 250 CONCRETE.

	<b>DRAINAGE STRUCTURE INVERT</b>	<b>500.02</b>
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- NOTES:
1. STRUCTURAL STEEL SHALL BE GRADE A-36
  2. EXPOSED STEEL SURFACES TO BE FINISHED SMOOTH.
  3. HOT DIP GALVANIZE ASSEMBLY. CHIPPING NOT REQUIRED ON ANCHOR WELDS.
  4. NAILS OR BOLTS USED TO ANCHOR ANGLE ASSEMBLY TO FORM SHALL BE REMOVED OR CUT OFF FLUSH WITH SURFACE OF ANGLE. DO NOT MAR GALVANIZING.
  5. DIMENSION "L" REPRESENTS THE INSIDE INLET DIMENSION.

	<b>INLET OPENING TRASH RACK</b>	<b>500.03</b>
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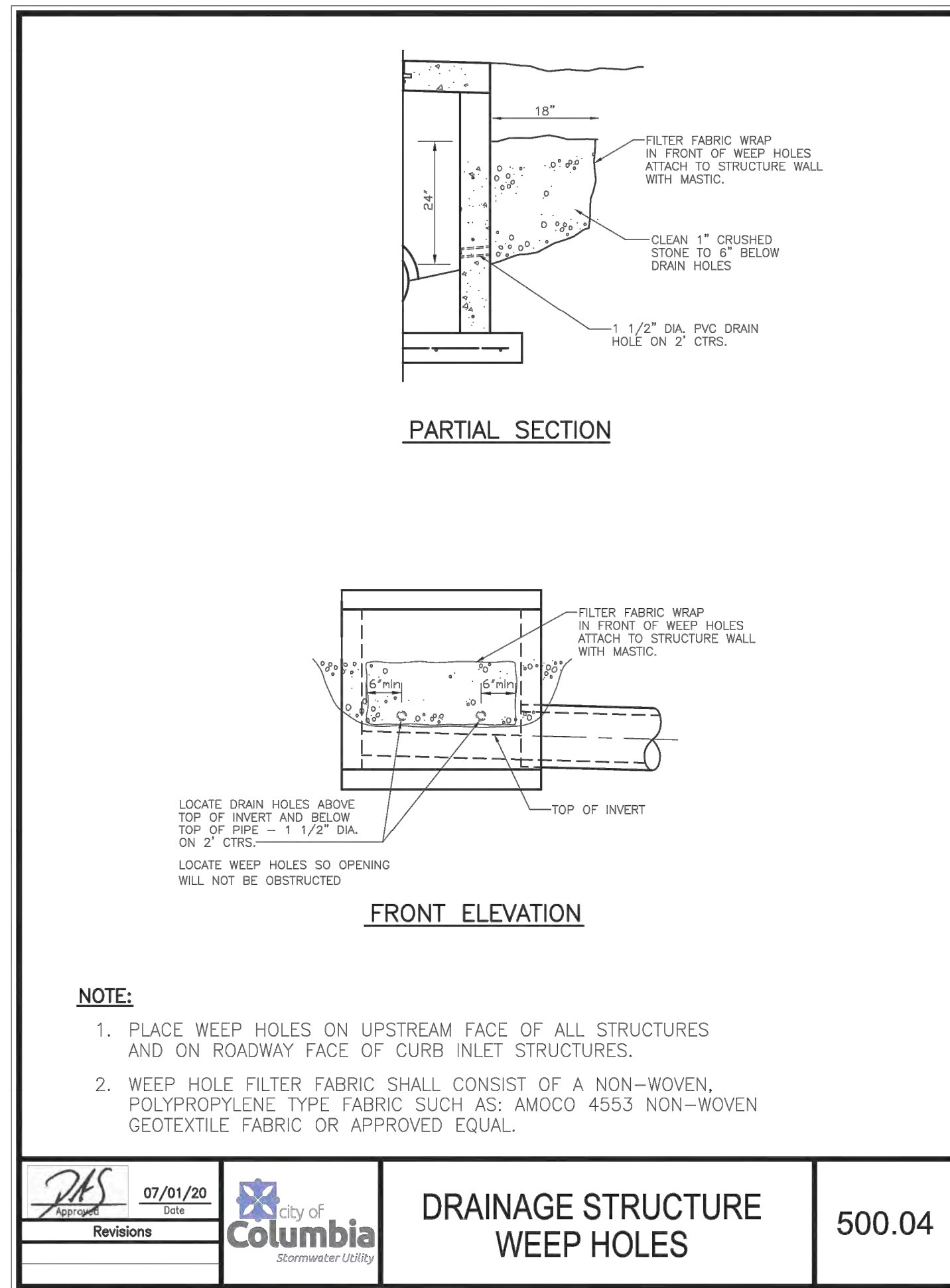
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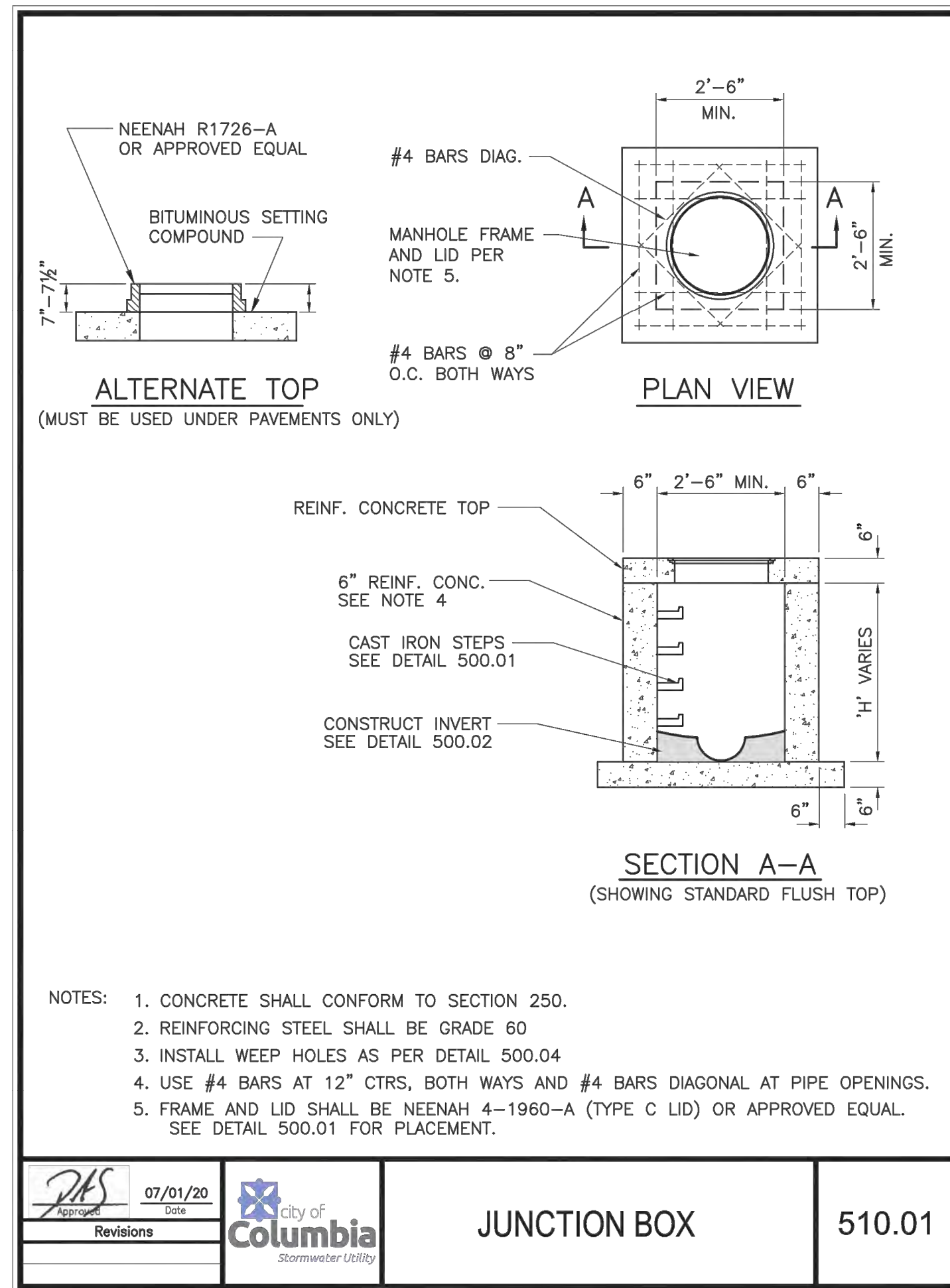
**CP232061 - GENERAL SITE - CULVERT UNDER CAPEN PARK DRIVE REPLACEMENT**  
 COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES: **DETAILS**

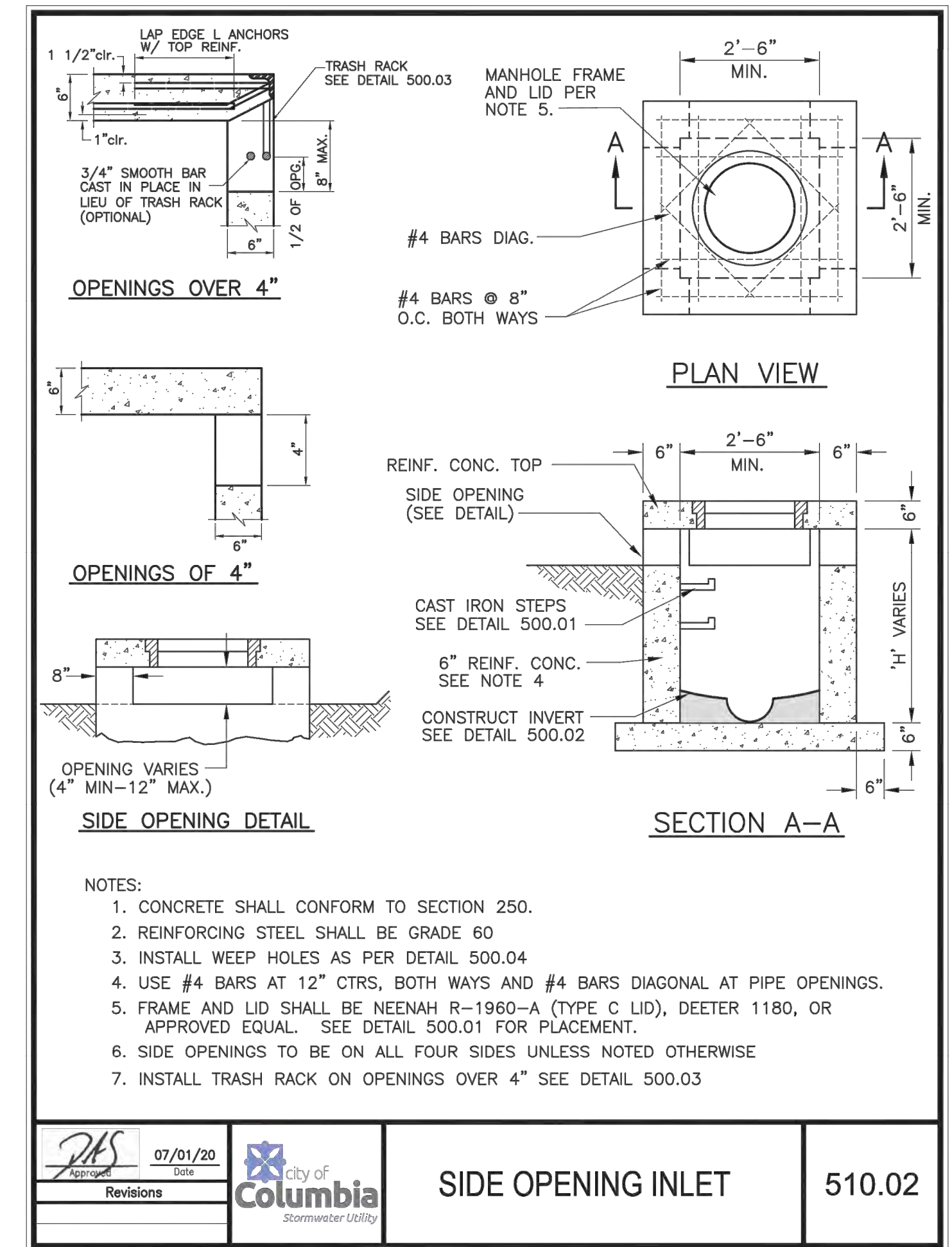
DESIGNED: **ATG**  
 DRAWN: **ATG**  
 PROJECT NO: **230082**  
 SHEET: **CE 8**



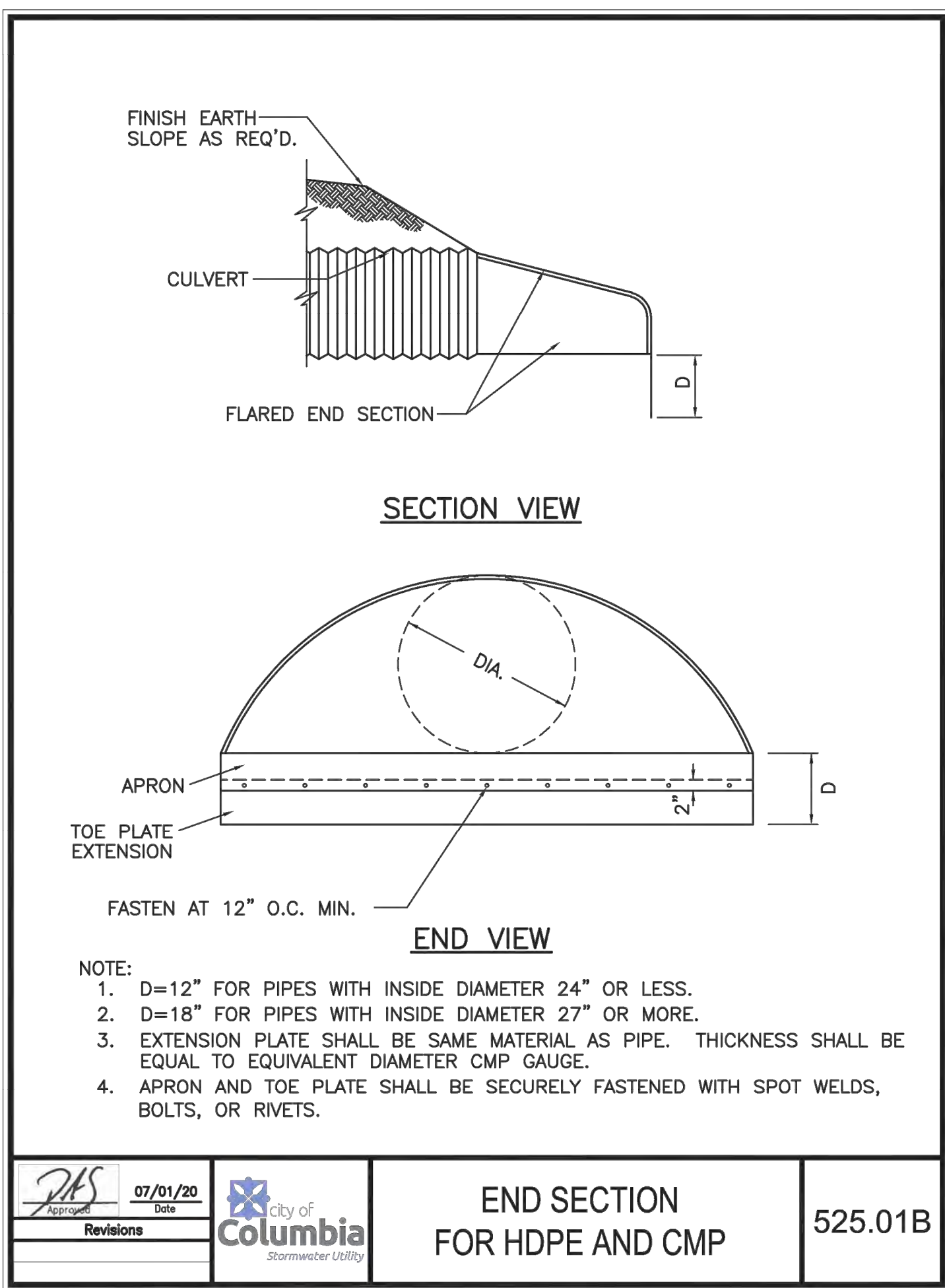
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	Revisions			



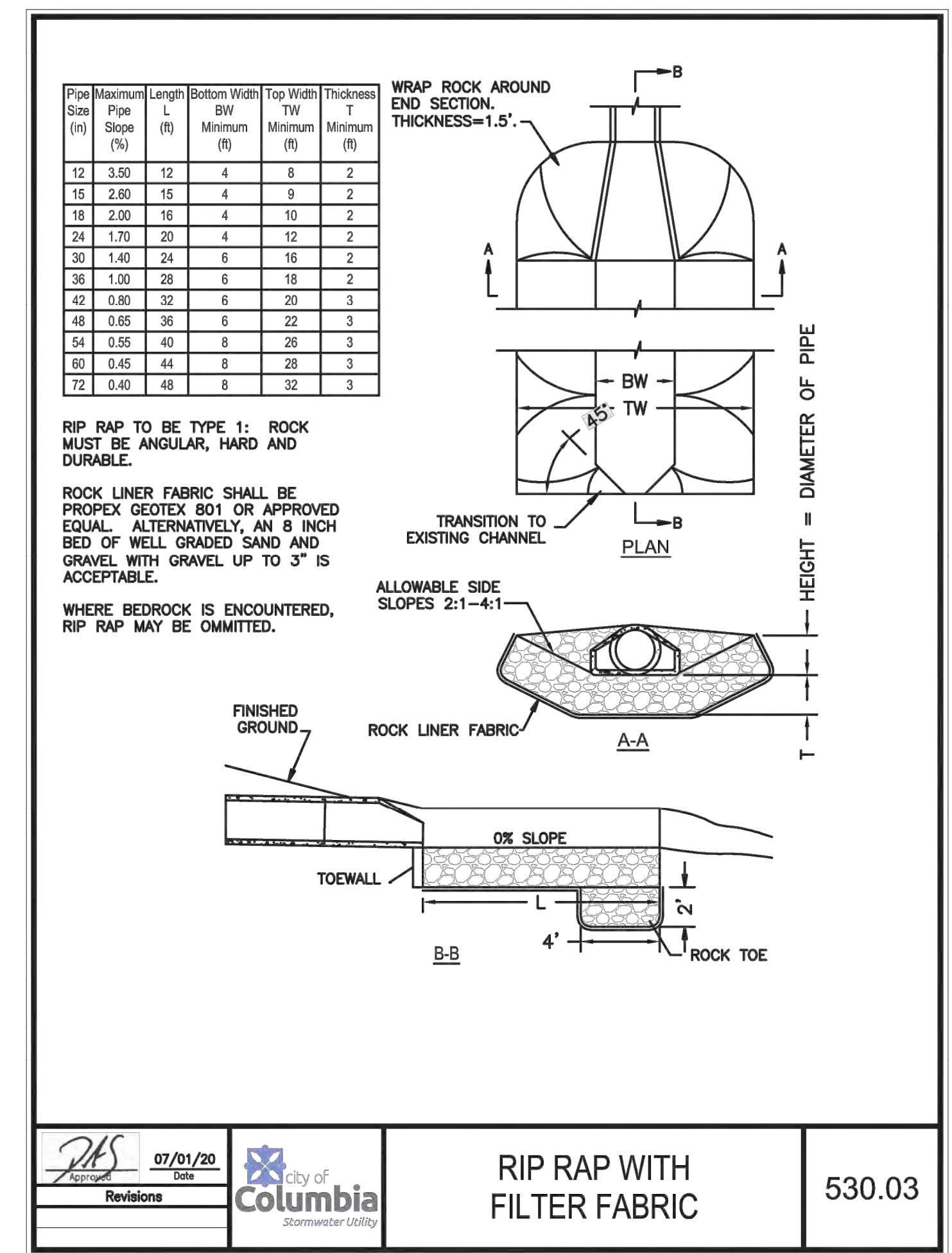
	07/01/20		<b>JUNCTION BOX</b>	<b>510.01</b>
	Revisions			



	07/01/20		<b>SIDE OPENING INLET</b>	<b>510.02</b>
	Revisions			



	07/01/20		<b>END SECTION FOR HDPE AND CMP</b>	<b>525.01B</b>
	Revisions			



	07/01/20		<b>RIP RAP WITH FILTER FABRIC</b>	<b>530.03</b>
	Revisions			

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**CP232061 - GENERAL SITE - CULVERT UNDER CAPEN PARK DRIVE REPLACEMENT**  
COLUMBIA, BOONE COUNTY, MISSOURI

DRAWING INCLUDES:  
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DRAWN: ATG  
PROJECT NO: 230082  
SHEET: CE 9

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