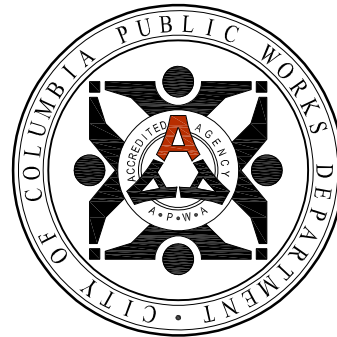


LOCATION MAP

City of Columbia, Missouri

Department of Public Works



LENOIR STREET IMPROVEMENTS

CITY PROJECT NUMBER: C00746

LEGEND OF SYMBOLS

POWER POLE	
TELEPHONE POLE	
GUY ANCHOR	
GUY POLE	
STREET LIGHT POLE	
YARD LIGHT (SOLAR)	
WATER METER	
GAS METER	
GAS VALVE	
WATER VALVE	
FIRE HYDRANT	
PIPE BREAKLINE	
SANITARY MANHOLE	
SANITARY CLEANOUT	
SANITARY LATERAL CLEANOUT	
TRAVERSE POINT	
MoDOT ROW MARKER	
BENCHMARK	
SIGN	
MAIL BOX	
PROPERTY IRON	
BUSH	
STUMP	
TREE REMOVAL	
TREE	
TREE LINE	
SILT FENCE/TREE PROTECT	
EXISTING PUBLIC SANITARY SEWER	
EXISTING SANITARY SEWER LATERAL	
EXISTING SANITARY SEWER TO BE ABANDONED	
PROPOSED SEWER MAIN AND LATERALS	
FENCE	
CABLE TELEVISION	
TELEPHONE	
ELECTRIC	
TELEPHONE OR ELECTRIC MANHOLE	
WATER MAIN	
GAS MAIN	
FIBER OPTIC	
FLOW LINE	
PROPERTY LINE	
LOT LINE	
EXISTING RIGHT OF WAY LINE	
EXISTING EASEMENT	
PERMANANT UTILITY EASEMENT	
PROPOSED SANITARY SEWER EASEMENT	
PROPOSED PERMANENT DRAINAGE EASEMENT	
PROPOSED RIGHT OF WAY	
TEMPORARY ACCESS EASEMENT	
TEMPORARY CONSTRUCTION EASEMENT	
GRADING LIMIT	

GENERAL NOTES

- All construction to be in accordance with "City of Columbia Street, Storm Drain and Sanitary Specifications" (Current edition)
- Known underground utilities are shown in their approximate locations. Other utilities may exist
- All removal of driveway pavements should be verified by field engineer
- 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
- All disturbed earth areas shall be restored as per Section-203 Seeding & mulching and TS-4 Erosion Control
- Remove all pavement surfaces, inlets, pipes and sidewalks within the construction limits as per TS-2, except those noted to remain. The field inspector shall verify removal of all driveway pavement
- Removal of trees and bushes shall be verified by field inspectors. Exercise caution when working near the construction limits to minimize disturbance to adjacent trees and shrubs that are not being removed by construction activities
- No open trenches will be allowed overnight outside of the "road closed" area. Asphaltic "cold mix" shall be used as a temporary patch overnight. Temporary patching shall be considered incidental to the work

CONTROL POINTS

#	NORTHING	EASTING	ELEVATION	DESCRIPTION
TP1	1117305.89	1701384.03	817.36	TP RE 3/8 RED CAP
TP2	1117808.21	1700888.43	795.42	TPPK
TP3	1117037.03	1701749.72	814.98	TPPK
TP4	1117138.76	1702023.78	811.95	TPPK

UTILITY COMPANIES:

TELEPHONE
CenturyLink
625 Cherry Street
Columbia, MO 65205
573-886-3505

NATURAL GAS
Ameren Missouri
2001 Maguire Boulevard
Columbia, MO 65201
573-876-3063

CABLE TELEVISION
Mediacom
901 N. College Avenue
Columbia, MO 65201
573-443-1536 ext 354

TELEPHONE/CABLE/FIBER OPTIC
AT&T
7351 East ABC Lane
Columbia, MO 65202
770-335-8244

LOCATES
Missouri One Call Inc.
1022 B Northeast Drive
Jefferson City, MO 65109
1-800-344-7483

WATER
City of Columbia
P.O. Box 6015
City Utilities
Columbia, MO 65205
573-874-2489

ELECTRIC
City of Columbia
P.O. Box 6015
City Utilities
Columbia, MO 65205
573-874-2489

SANITARY SEWER
City of Columbia
P.O. Box 6015
City Utilities
Columbia, MO 65205
573-874-2489

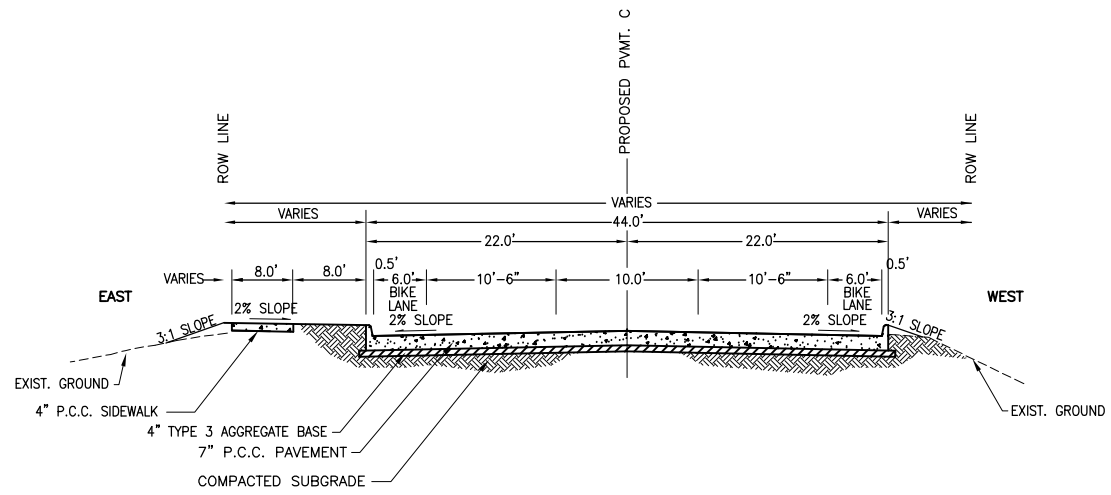
ELECTRIC (county)
Boone Electric Cooperative
1413 Range Line Street
Columbia, MO 65201
573-449-4181 ext 231

ELECTRIC (city)
Consolidated Electric
1500 North 7th Street
Columbia, MO 65201
573-449-0324

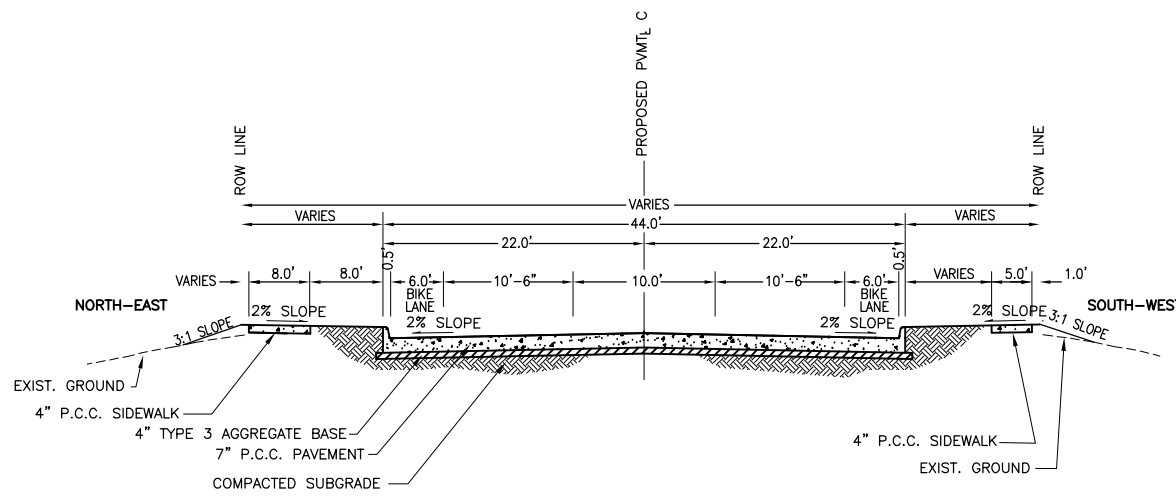
INDEX OF SHEETS

Description	Sheet No.
Cover Sheet	1
Summary of Quantities	2
Typical Sections & Details	3
Plan & Profile Sheets	4-6
Cross Section Sheets	7-11
Storm Drainage Profiles	12-13
Type M Curb Inlet Details	14
Lighting Plan & Details	15-16
Pavement Striping & Signage Plan	17
Erosion Control Plan & Details	18
Traffic Control Plan	19

City of Columbia, Missouri Department of Public Works			
No.	Date	By	Revision
File No. C00746	Des. A.N.H.	Sheet 1 of 19	David Allen Nichols Registered Professional Engineer E-24212
Scale: None	Dwn. T.L.W.		
Date: 6-1-2020	Chk. A.A.A.		
LENOIR STREET IMPROVEMENTS			
Approved By _____			
Director of Public Works		Date _____	

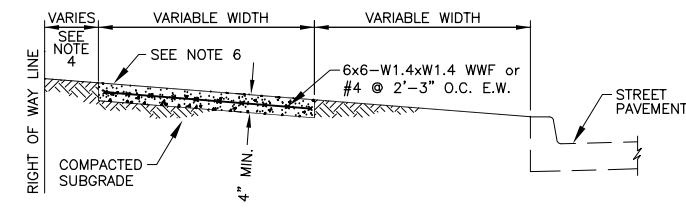


LENOIR STREET TYPICAL SECTION
STA. 0+60 TO STA. 9+80.32
(NOT TO SCALE)



LENOIR STREET TYPICAL SECTION
STA. 9+80.32 TO STA. 12+52.20
(NOT TO SCALE)

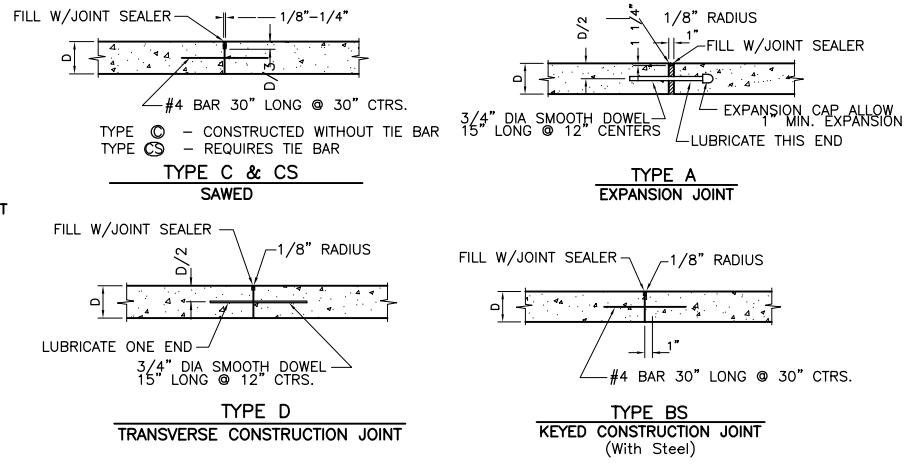
- NOTES:
1. ALL P.C. CONCRETE SHALL BE MODOT PAVEMENT CONCRETE
 2. SEE DETAIL 200.01 FOR JOINT DETAILS.



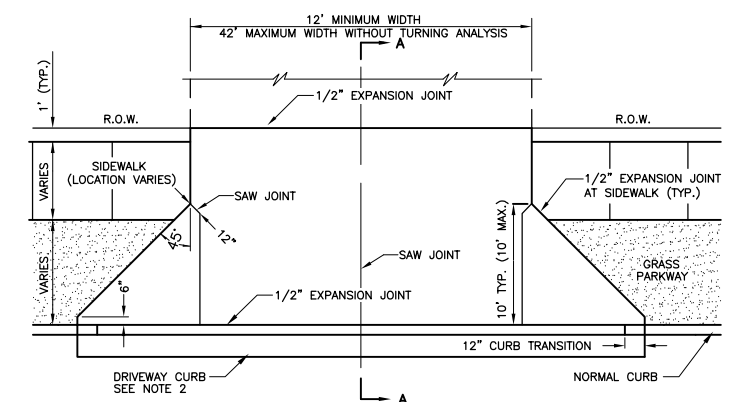
SIDEWALK WITH GRASS PARKWAY

- NOTES:
1. SIDEWALK SHALL BE 4" THICK MODOT PAVEMENT CONCRETE.
 2. INSTALL 1/2" EXPANSION JOINTS AT INTERSECTIONS, RAMPS, STRUCTURES, DRIVEWAY APPROACHES, OR EVERY 150'.
 3. INSTALL TRANSVERSE SAW JOINTS AT SPACING EQUAL TO SIDEWALK WIDTH.
 4. STANDARD SIDEWALK PLACEMENT IS 12" FROM RIGHT OF WAY LINE.
 5. NO STEEL TO BE PLACED THROUGH EXPANSION JOINT.
 6. SIDEWALK CROSS SLOPE SHALL BE 1.0% MIN. TO 2.0% MAX.

DRIVEWAY (COMMERCIAL)
(NOT TO SCALE)



JOINT DETAILS
(NOT TO SCALE)



PLAN

SECTION A-A

- NOTES:
1. DRIVEWAY APPROACH SHALL BE 7" THICK MODOT PAVEMENT CONCRETE.
 2. REPLACE STANDARD CURB & GUTTER SECTION WITH DRIVEWAY CURB SECTION. SEE DETAIL 400.03.
 3. EXPANSION JOINT SHALL BE 1/2" PREFORMED CORK OR BITUMINOUS EXPANSION JOINT MATERIAL.
 4. ALL DRIVEWAY APPROACHES SHALL SLOPE TOWARD THE STREET.
 5. ALL DRIVEWAY APPROACHES SHALL BE CONSTRUCTED TO ACCOMMODATE SIDEWALKS. (EXISTING AND FUTURE) STANDARD SIDEWALK LOCATION IS 1 FOOT OFF OF RIGHT OF WAY LINE.
 6. DRIVEWAY APPROACH SHALL PROVIDE A MINIMUM 5' WIDE ACCESSIBLE SIDEWALK PASSING ZONE.
 7. DRIVEWAY SLOPE ACROSS ACCESSIBLE SIDEWALK PASSING ZONE IS 1/8" PER FT. CROSS SLOPE SHALL NOT EXCEED 2.00%.
 8. MINIMIZE SIDEWALK WARPING ADJACENT TO DRIVEWAY APPROACH.
 9. GREENSPACE SLOPE WITHIN RIGHT OF WAY SHALL NOT EXCEED 3/4" PER FOOT.
 10. DRIVEWAY MAY BE REINFORCED AT OWNER'S OPTION. ON CITY BID PROJECTS DO NOT REINFORCE.
 11. MEASURE FROM TOP OF CURB.

Revision	
By	
Date	
No.	

LENOIR STREET IMPROVEMENTS
Typical Sections & Details

City of Columbia, Missouri
Department of Public Works

David Allen Nichols
Registered Professional Engineer
E-24212

File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. A.A.A.

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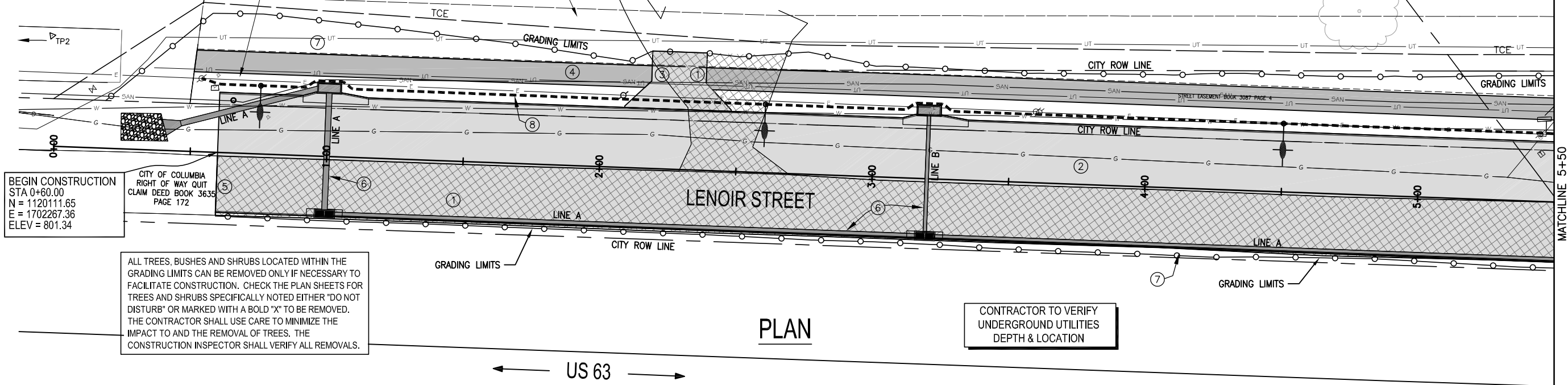
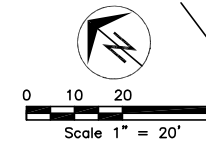
WHIRLWIND PROPERTIES INC
BK 2757 PG 11
17-704-00-00-012.00 01

CPWD# 1 20' WIDE
EASEMENT
BOOK 754 PAGE
530

CITY OF COLUMBIA 20' WIDE
DRAINAGE AND UTILITY EASEMENT
BOOK 3087 PAGE 3

CURATORS OF THE UNIVERSITY OF MISSOURI
DEED IN BOOK 272 PAGE 9
SURVEY IN BOOK 270 PAGE 564
17-704-00-00-003.00 01

CURATORS OF THE UNIVE
DEED IN BOOK 222 PAG
17-803-00-00-001.00



BEGIN CONSTRUCTION
STA 0+60.00
N = 1120111.65
E = 1702267.36
ELEV = 801.34

ALL TREES, BUSHES AND SHRUBS LOCATED WITHIN THE GRADING LIMITS CAN BE REMOVED ONLY IF NECESSARY TO FACILITATE CONSTRUCTION. CHECK THE PLAN SHEETS FOR TREES AND SHRUBS SPECIFICALLY NOTED EITHER "DO NOT DISTURB" OR MARKED WITH A BOLD "X" TO BE REMOVED. THE CONTRACTOR SHALL USE CARE TO MINIMIZE THE IMPACT TO AND THE REMOVAL OF TREES. THE CONSTRUCTION INSPECTOR SHALL VERIFY ALL REMOVALS.

CONTRACTOR TO VERIFY
UNDERGROUND UTILITIES
DEPTH & LOCATION

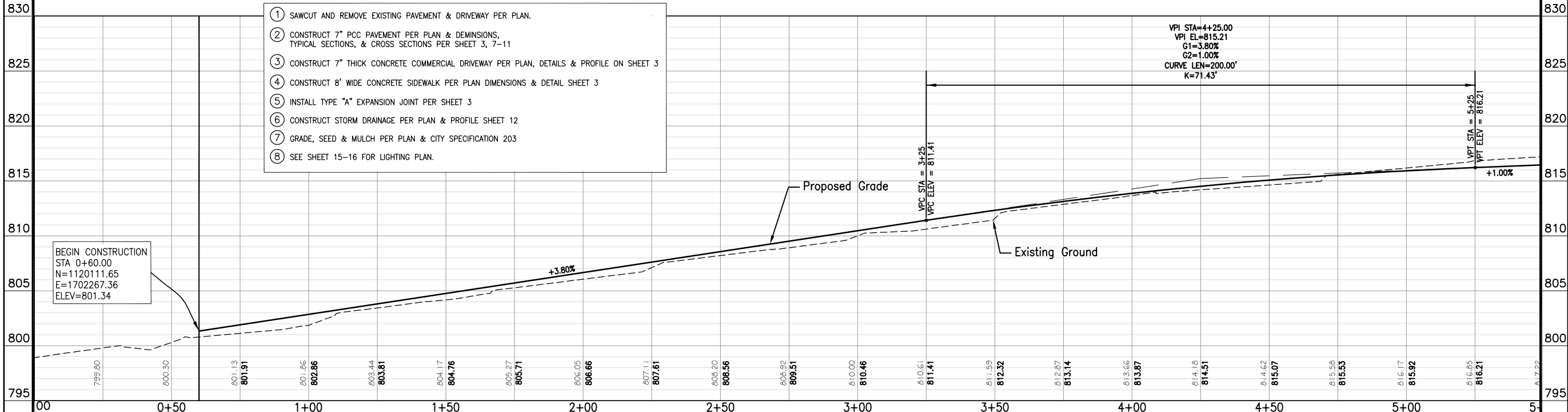
PLAN

- ① SAWCUT AND REMOVE EXISTING PAVEMENT & DRIVEWAY PER PLAN.
- ② CONSTRUCT 7" PCC PAVEMENT PER PLAN & DEMINIONS, TYPICAL SECTIONS, & CROSS SECTIONS PER SHEET 3, 7-11
- ③ CONSTRUCT 7" THICK CONCRETE COMMERCIAL DRIVEWAY PER PLAN, DETAILS & PROFILE ON SHEET 3
- ④ CONSTRUCT 8' WIDE CONCRETE SIDEWALK PER PLAN DIMENSIONS & DETAIL SHEET 3
- ⑤ INSTALL TYPE "A" EXPANSION JOINT PER SHEET 3
- ⑥ CONSTRUCT STORM DRAINAGE PER PLAN & PROFILE SHEET 12
- ⑦ GRADE, SEED & MULCH PER PLAN & CITY SPECIFICATION 203
- ⑧ SEE SHEET 15-16 FOR LIGHTING PLAN.

VPI STA=4+25.00
VPI ELEV=815.21
G1=3.80%
G2=1.00%
CURVE LEN=200.00'
K=71.43'

VPC STA = 3+25
VPC ELEV = 811.41

VPT STA = 5+25
VPT ELEV = 816.21



BEGIN CONSTRUCTION
STA 0+60.00
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E=1702267.36
ELEV=801.34

PROFILE

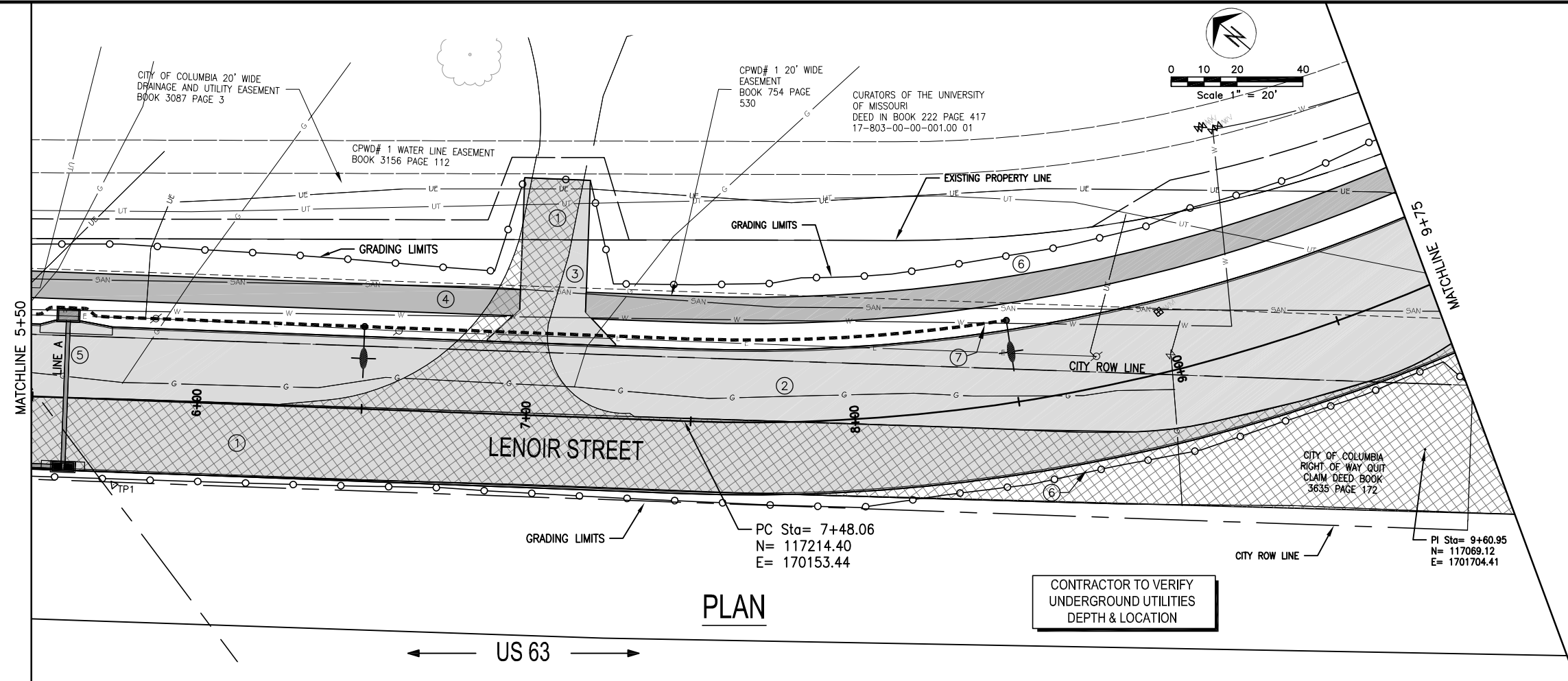
SCALE
HORIZONTAL 1" = 20'
VERTICAL 1" = 5'

LENOIR STREET IMPROVEMENTS
Plan & Profile - Sta. 0+60 to Sta. 5+50

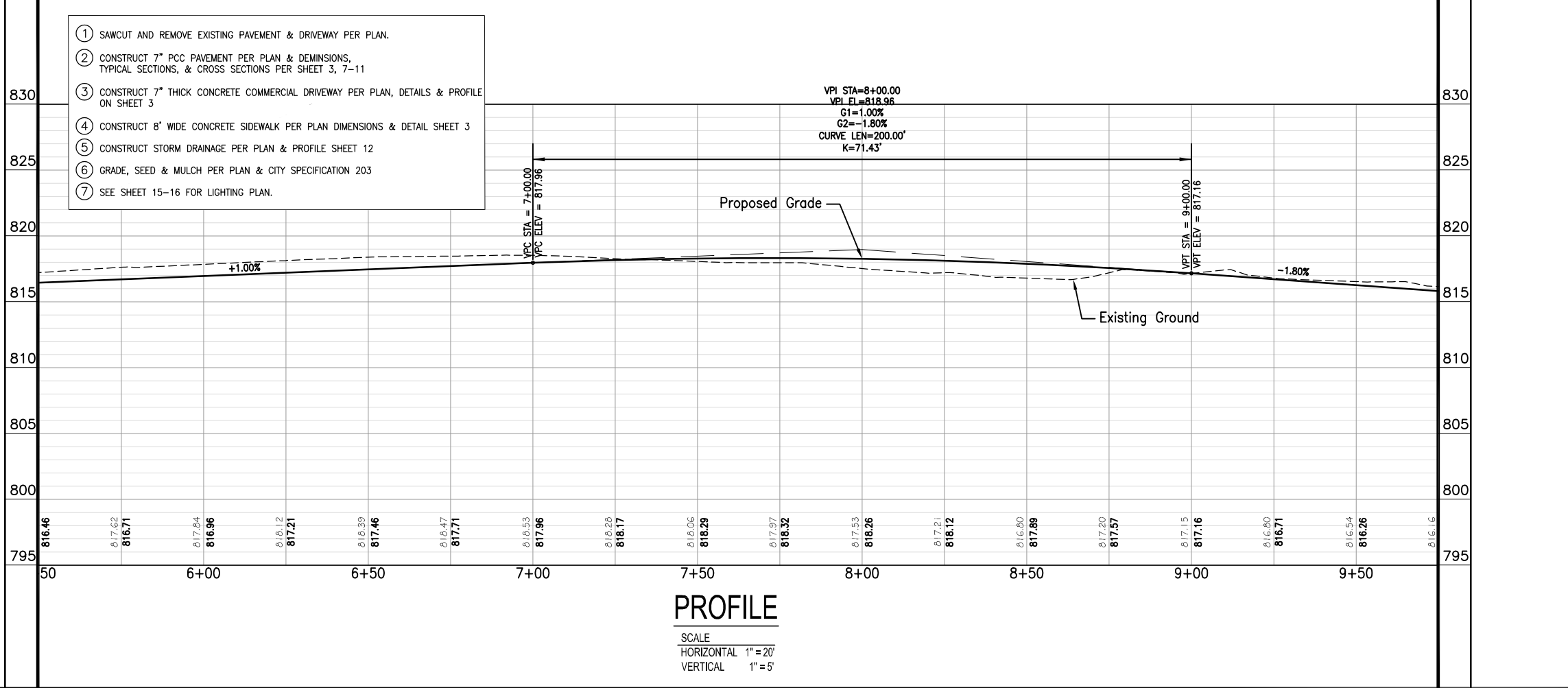
City of Columbia, Missouri
Department of Public Works

David Allen Nichols
Registered Professional
Engineer
E-34212

File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. AAA



PLAN



PROFILE

SCALE
HORIZONTAL 1" = 20'
VERTICAL 1" = 5'

- ① SAWCUT AND REMOVE EXISTING PAVEMENT & DRIVEWAY PER PLAN.
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Revision	
By	
Date	
No.	

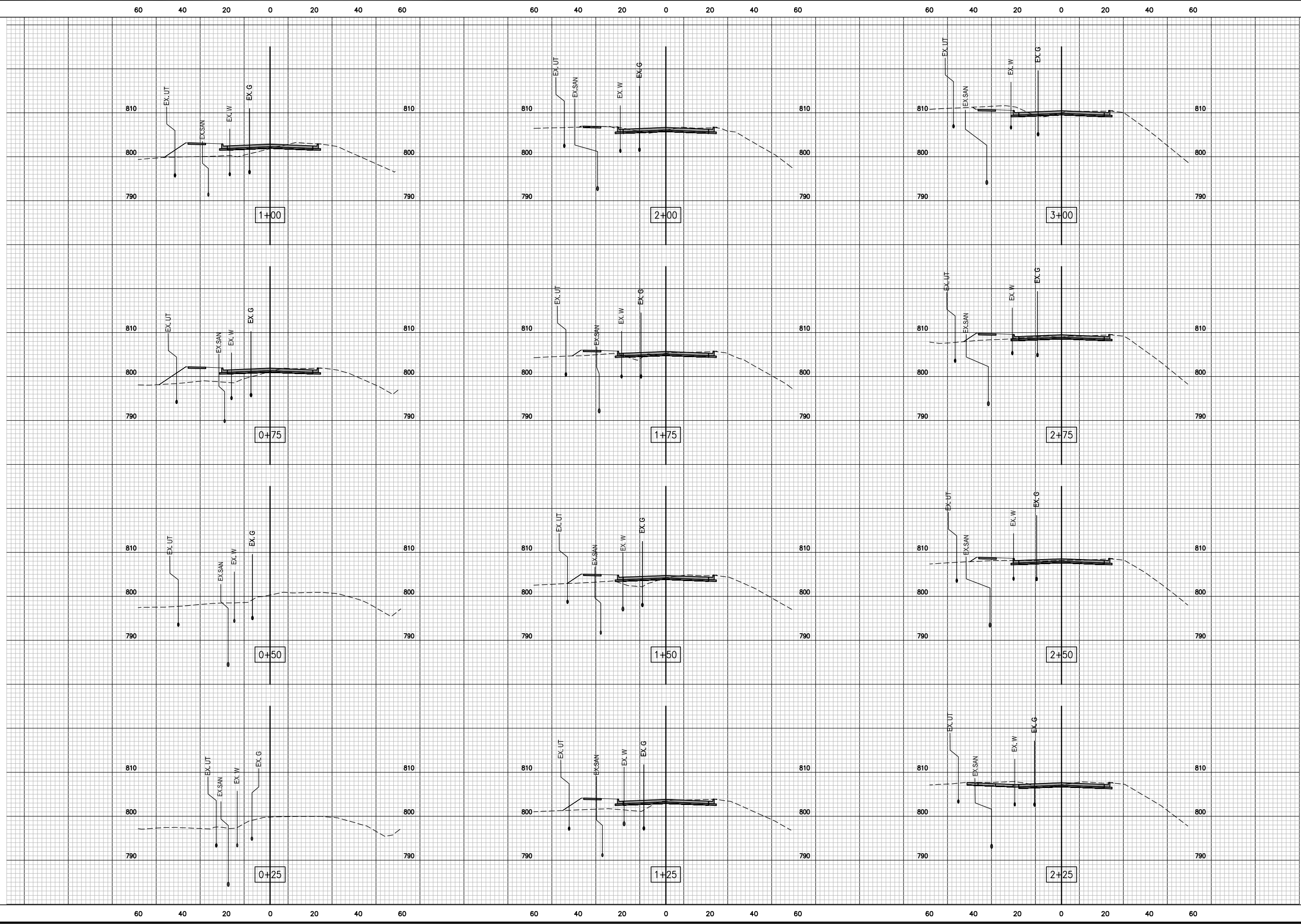
LENOIR STREET IMPROVEMENTS
Plan & Profile - Sta. 5+50 to Sta. 9+75

City of Columbia, Missouri
Department of Public Works

David Allen Nichols Registered Professional Engineer E-24212
File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. A.A.A.
Sheet 5 of 19

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No.	Date	By	Revision

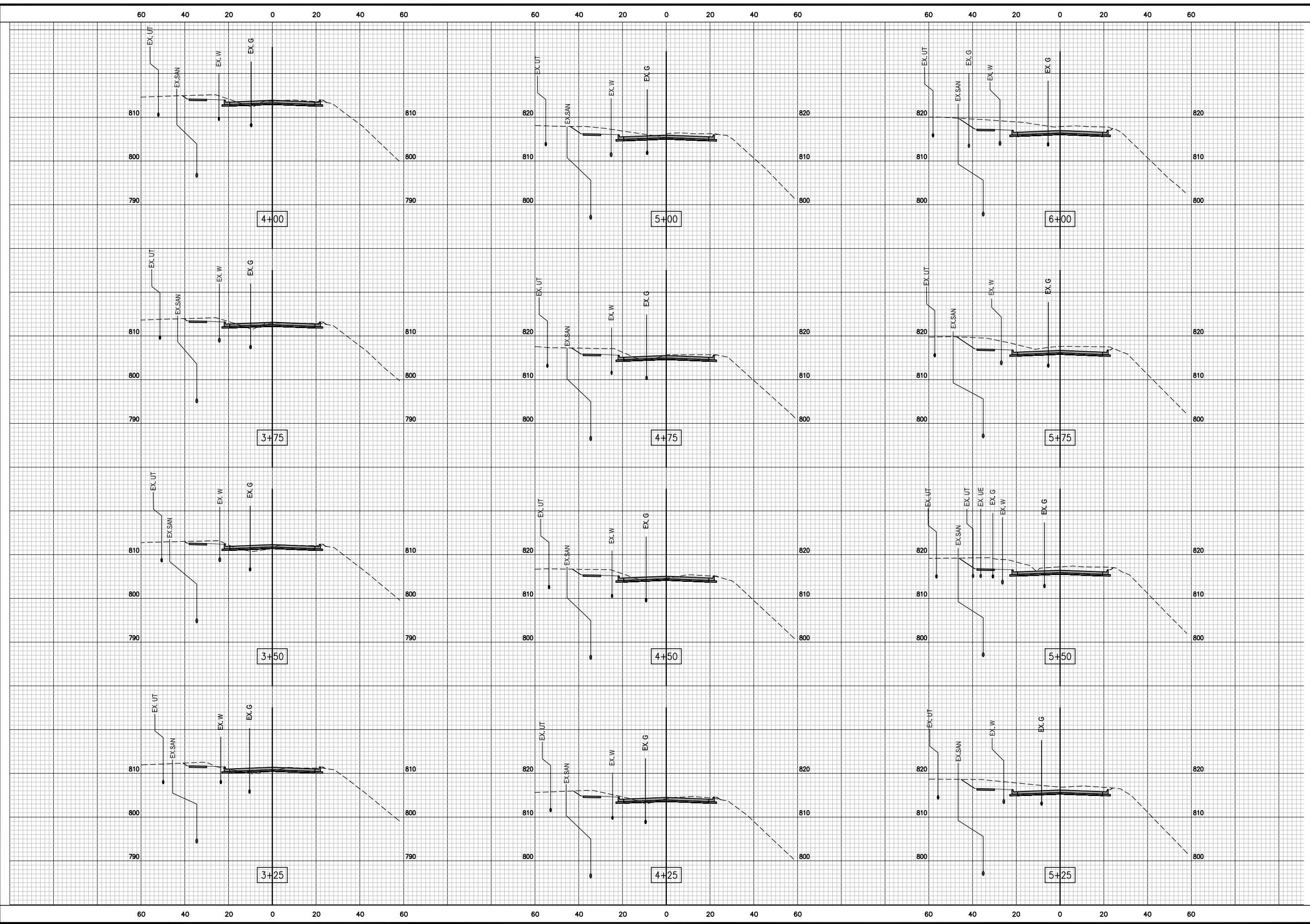
LENOIR STREET IMPROVEMENTS

Cross Sections - Sta 0+25 to Sta 3+00

City of Columbia, Missouri
Department of Public Works

David Allen Nichols Registered Professional Engineer E-24212
File No. C00746
Scale: 1" = 20'
Date: 6/1/2020
Des. A.N.H.
Dwn. T.L.W.
Chk. A.A.A.
Sheet 7 of 19

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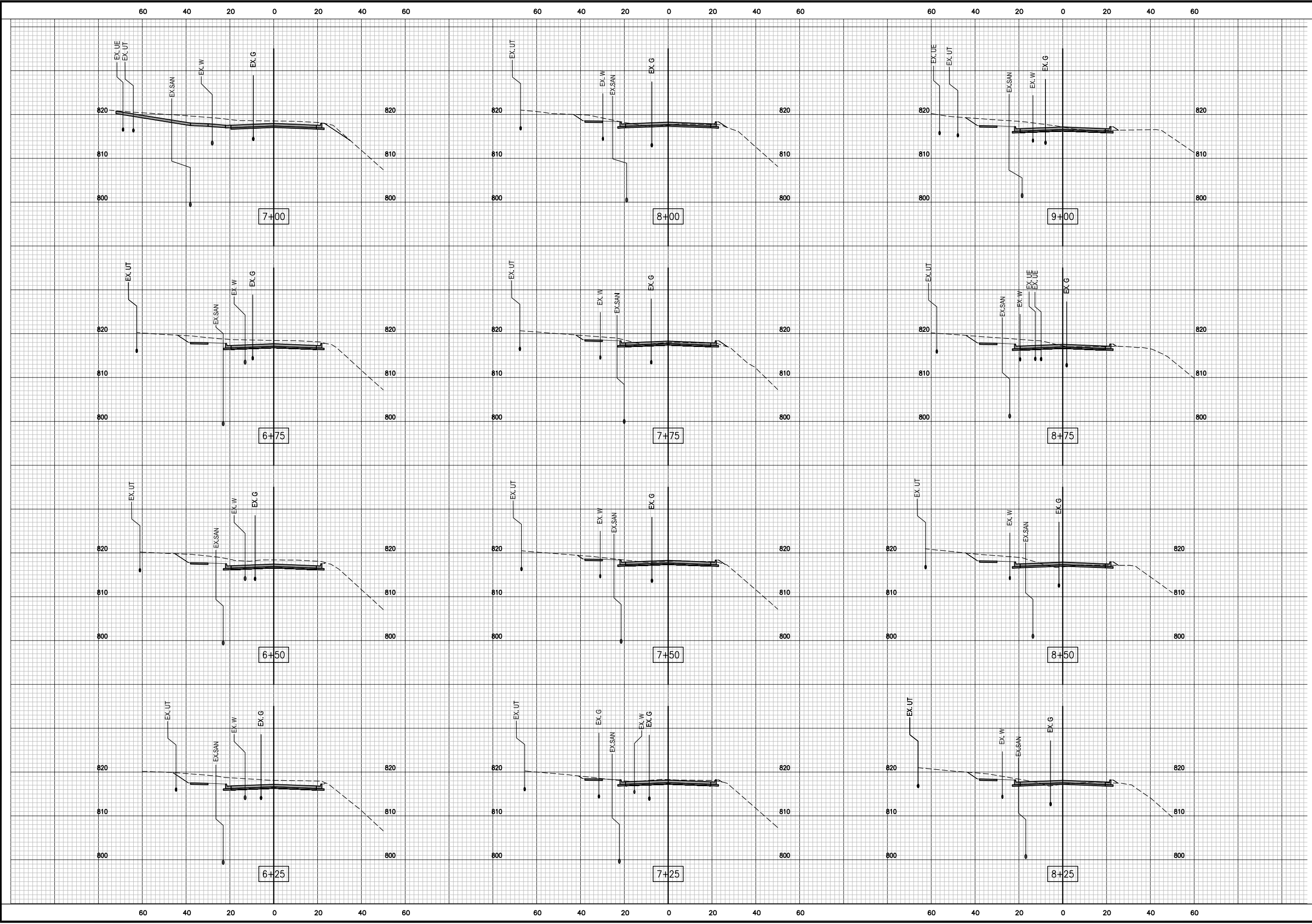
No.	Date	By	Revision

LENOIR STREET IMPROVEMENTS
 Cross Sections - Sta 3+25 to Sta 6+00

City of Columbia, Missouri
 Department of Public Works

David Allen Nichols Registered Professional Engineer E-24212
File No. C00746
Scale: 1" = 20'
Date: 6/1/2020
Des. A.N.H.
Dwn. T.L.W.
Chk. A.A.A.
Sheet 8 of 19

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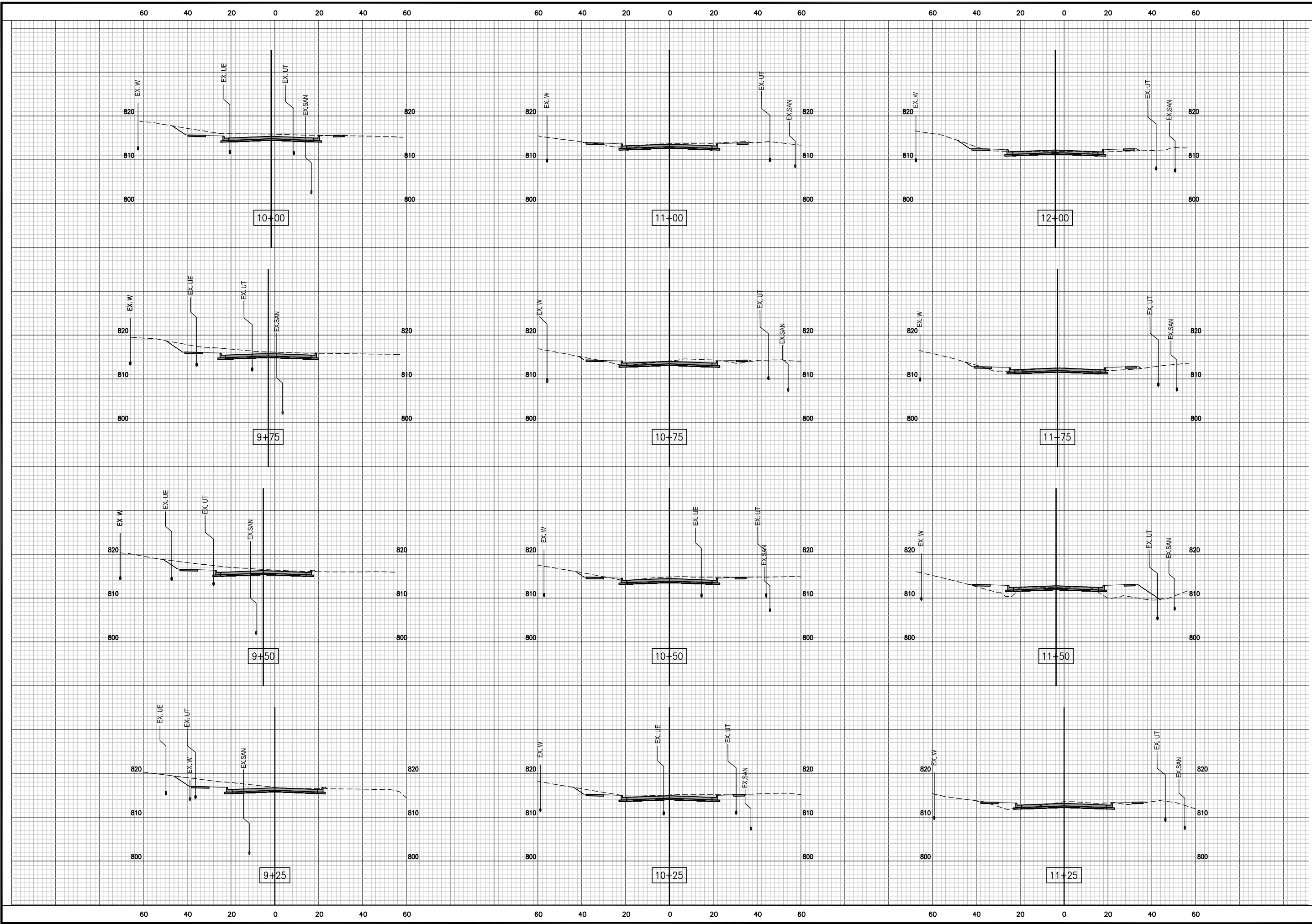
No.	Date	By	Revision

LENOIR STREET IMPROVEMENTS
 Cross Sections - Sta 6+25 to Sta 9+00

City of Columbia, Missouri
 Department of Public Works

David Allen Nichols Registered Professional Engineer E-24212
File No. C00746
Scale: 1" = 20'
Date: 6/1/2020
Des. A.N.H.
Dwn. T.L.W.
Chk. A.A.A.
Sheet 9 of 19

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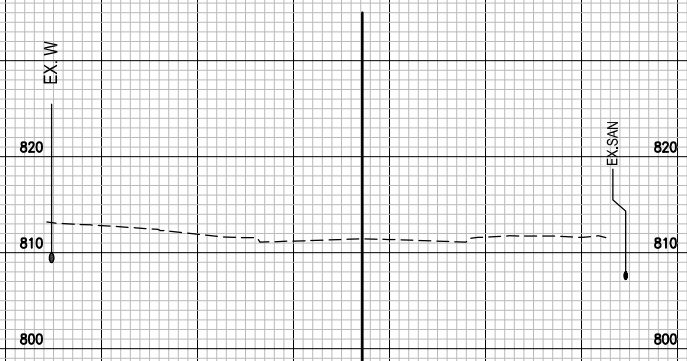
LENOIR STREET IMPROVEMENTS

Cross Sections - Sta 9+25 to Sta 12+00

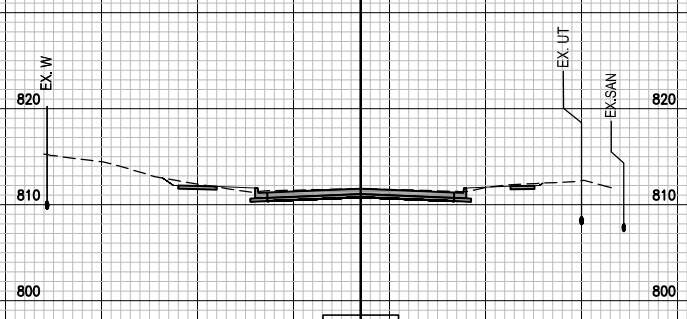
City of Columbia, Missouri
Department of Public Works

David Allen Nichols Registered Professional Engineer E-24212	
File No.	C00746
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Date:	6/1/2020
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Sheet 10 of 19	

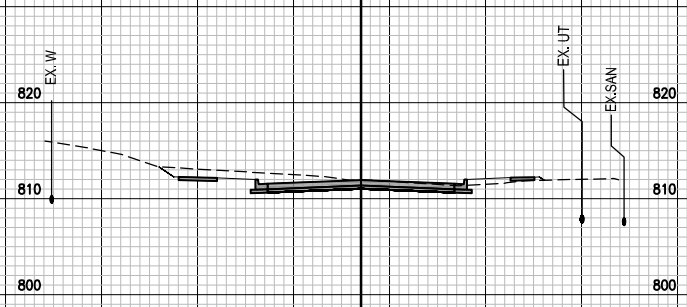
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12+75



12+50



12+25

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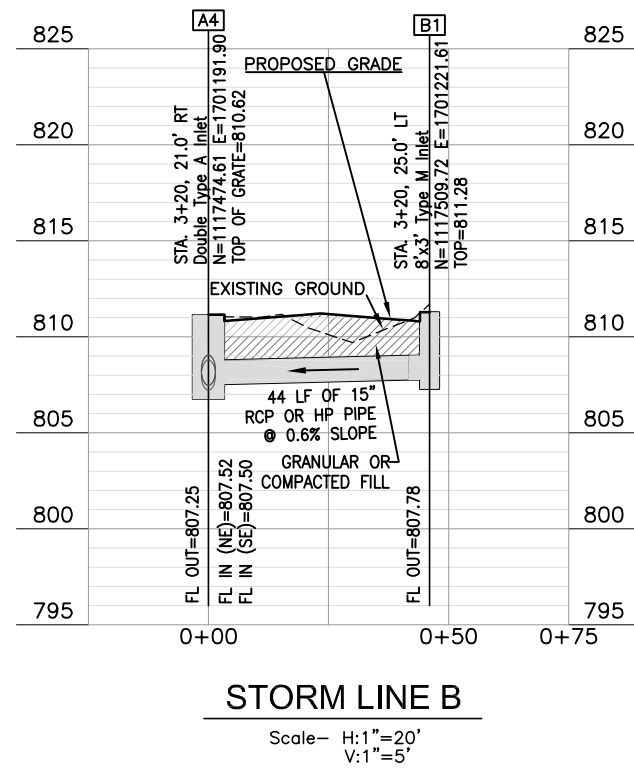
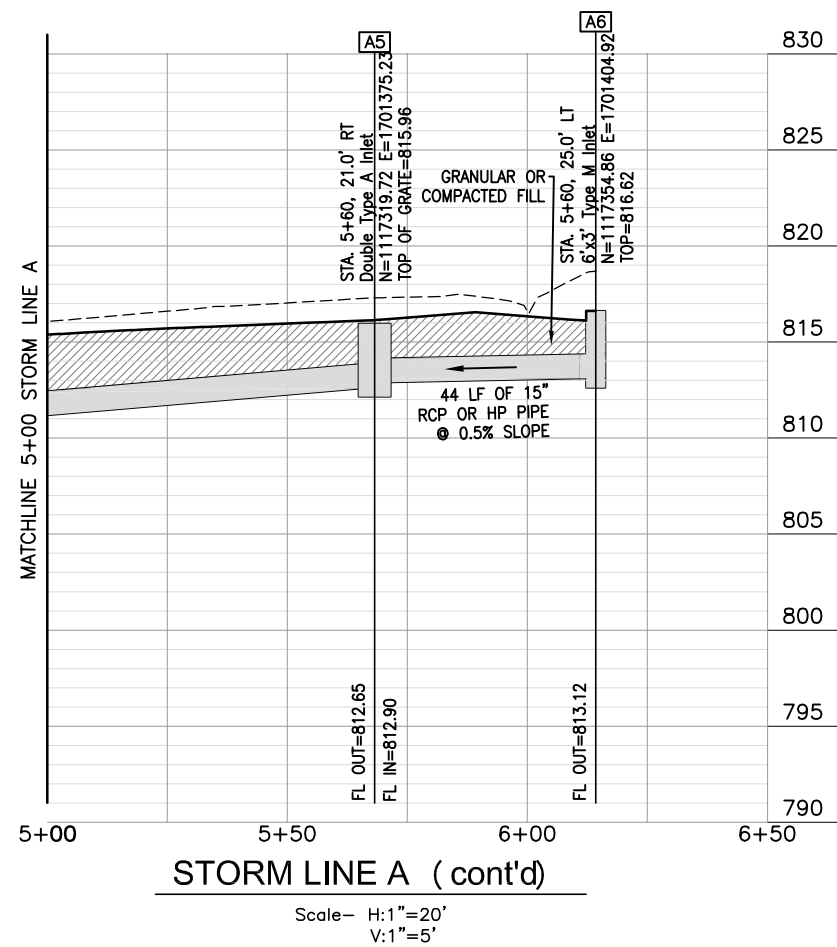
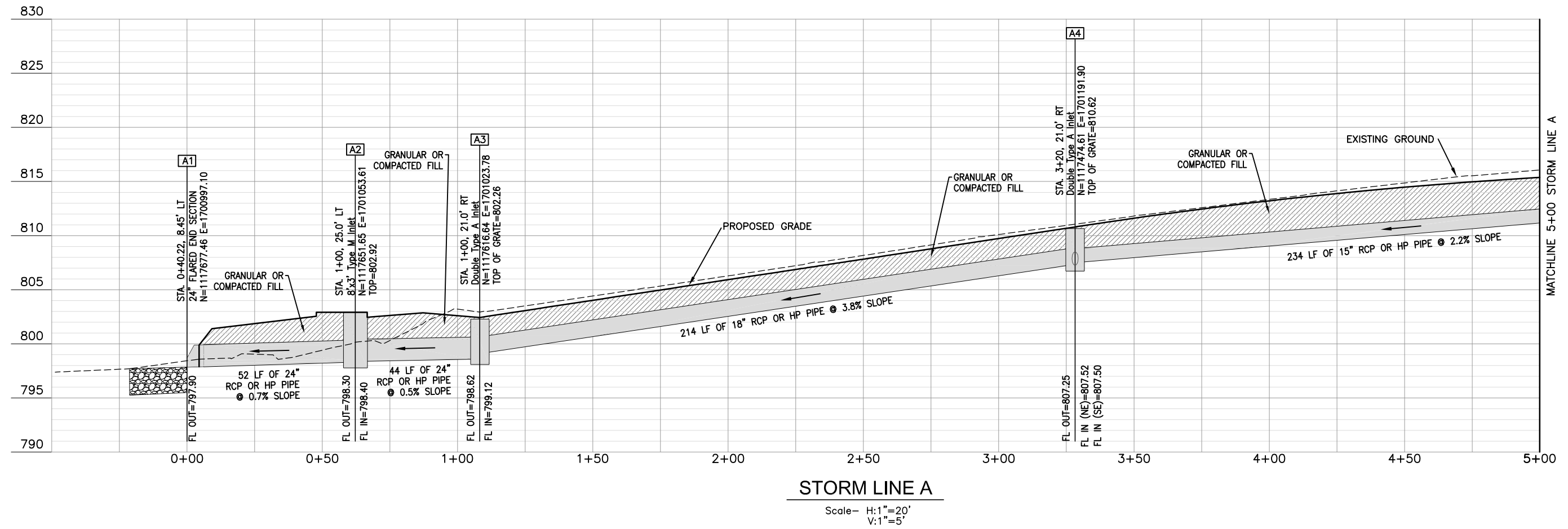
LENOIR STREET IMPROVEMENTS

Cross Sections - Sta 12+25 to Sta 12+75

City of Columbia, Missouri
 Department of Public Works

David Allen Nichols
 Registered Professional Engineer
 E-24212

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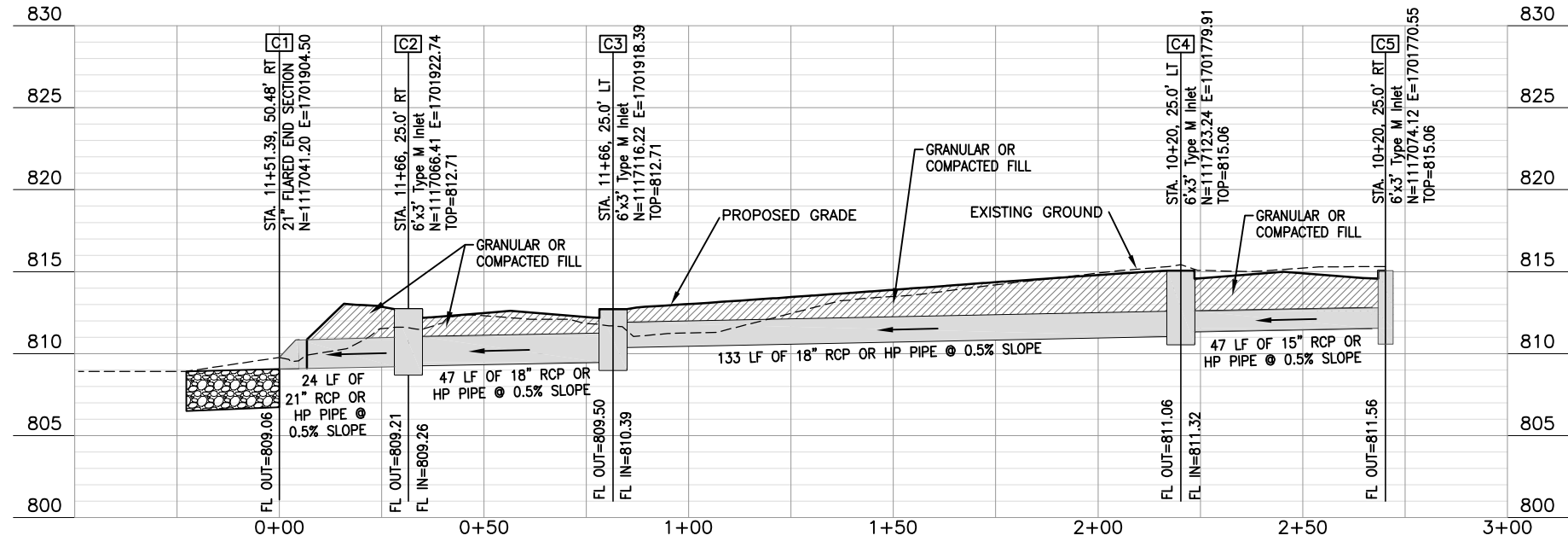
No.	Date	By	Revision

LENOIR STREET IMPROVEMENTS
Storm Drainage Profiles - Line A & Line B

City of Columbia, Missouri
Department of Public Works

David Allen Nichols
Registered Professional Engineer
E-24212

File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. AAA



STORM LINE C

Scale- H:1"=20'
V:1"=5'

No.	Date	By	Revision

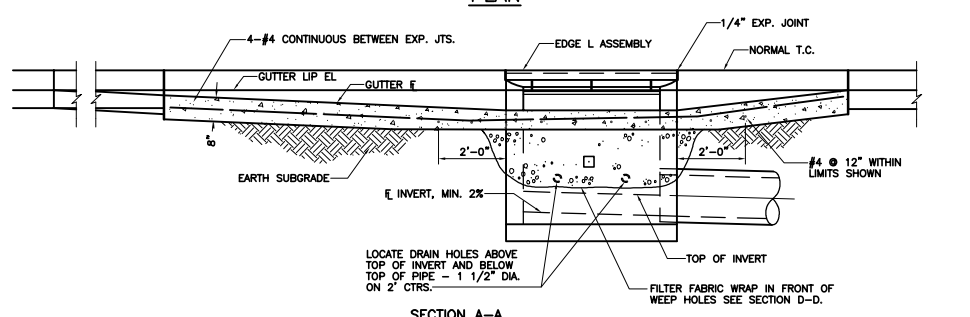
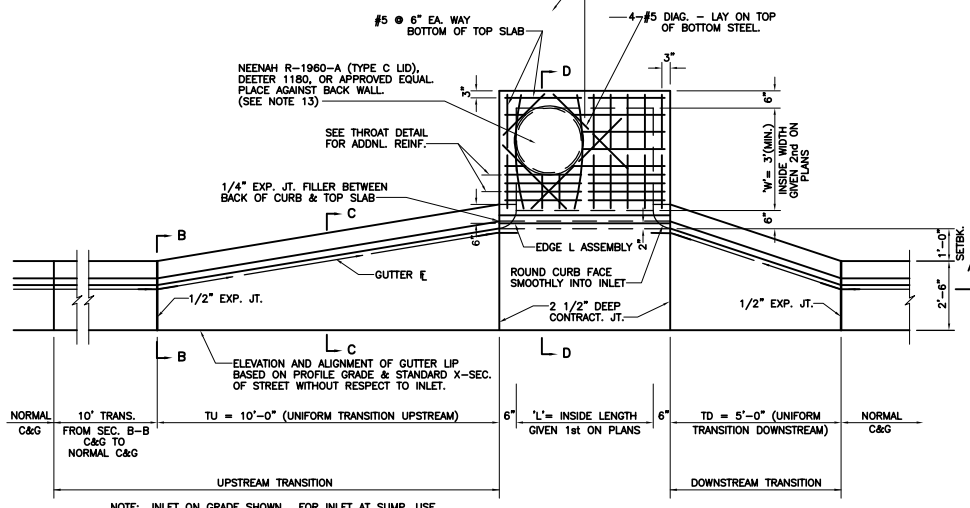
LENOIR STREET IMPROVEMENTS
Storm Drainage Profiles - Line C

City of Columbia, Missouri
Department of Public Works

David Allen Nichols
Registered Professional Engineer
E-24212

File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. AAA

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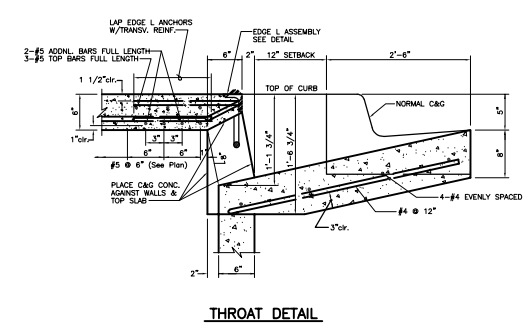
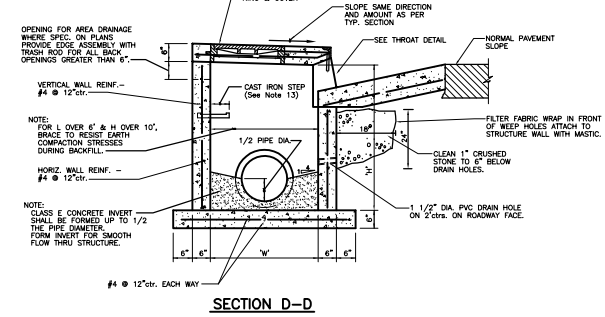


**TYPE "M" INLET
(PLAN & SECTIONS)
(NOT TO SCALE)**

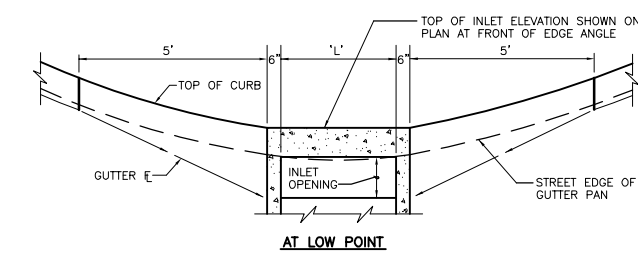
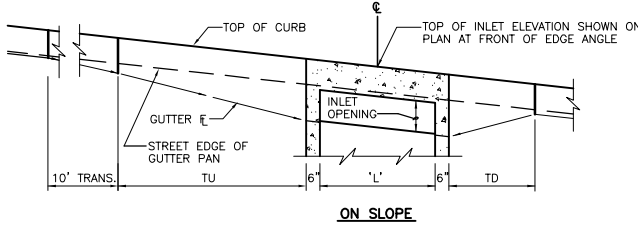
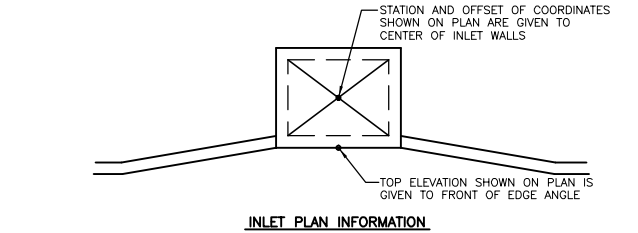
TYPE "M" INLET NOTES

- CONCRETE SHALL BE: CLASS E FOR BASE, CLASS D FOR WALLS AND TOP.
- REINFORCING STEEL SHALL BE GRADE 60
- THIS DESIGN IS FOR L = 4'-0", 6'-0", 8'-0", OR 10'-0".
- INLET WILL BE CALLED OUT ON PLANS AS 'L'x'W' STD. CURB INLET, OR 'L'x'W' DEFLECTOR CURB INLET. DIMENSIONS 'L' & 'W' GIVEN ON PLANS AS 'L'x'W'.
- STA AND OFFSET OR COORDINATES SHOWN ON PLAN ARE GIVEN TO CENTER OF INLET WALLS.
- THE ELEVATION OF THE TOP OF INLET GIVEN ON THE PLAN SHEET IS AT THE CENTER OF THE FRONT EDGE OF THE EDGE ANGLE ASSEMBLY. SLOPE THE TOP TO MATCH STREET GRADE, AND CROSS SLOPE OF RIGHT OF WAY.
- DIMENSIONS TU AND TD AS SHOWN EXCEPT WHERE NOTED OTHERWISE IN PLANS.
- TRANSITIONS ALONG LENGTH TU & TD MUST BE UNIFORM BETWEEN STANDARD CURB & GUTTER CROSS SECTION & THAT SHOWN AT INLET. FORM CURB FACE WITH FLEXIBLE FORM.
- REINFORCEMENT:
(A) BEND AROUND MH RING WHEREVER FEASIBLE. (SEE PLAN)
(B) MINIMUM 2" COVER REQUIRED UNLESS NOTED OTHERWISE.
- BROOM FINISH TOP SLAB.
- HORIZONTAL PROJECTION OF PIPE CENTERLINE SHALL INTERSECT AT THE CENTER OF INLET, UNLESS OTHERWISE SHOWN.
- TRIM PIPE FLUSH WITH INSIDE WALLS.
- CAST IRON STEPS, FRAME, AND LID:
STEPS NOT REQUIRED WHERE H IS LESS THAN 4'.
CAST IRON STEPS SHALL BE NEENAH R-1980-J OR EQUAL STEPS SHALL BE PLACED ON VACANT WALL WHEN POSSIBLE
MANHOLE RING SHALL BE OFFSET TOWARD WALL WITH STEPS.
MANHOLE RING SHALL BE CENTERED ON CENTERLINE OF STEPS
STAGGER STEPS 2" EACH WAY FROM CENTERLINE OF MANHOLE RING.
TOP STEP 24" BELOW TOP OF SLAB
STEP SPACING TO BE 16", BOTTOM STEP TO BE NO HIGHER THAN 16" FROM INVERT.
- CLASS E CONCRETE INVERT SHALL BE FORMED UP TO 1/2 THE PIPE DIAMETER.
- WEEP HOLE FILTER FABRIC SHALL CONSIST OF A NON-WOVEN, POLYPROPYLENE TYPE FABRIC SUCH AS AMOCO 4553 NON-WOVEN GEOTEXTILE FABRIC OR APPROVED EQUAL.
- DRIVEWAYS ARE TO BE AT LEAST 5' FROM END OF CURB TRANSITION (TU AND TD).

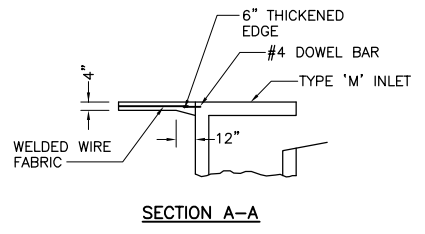
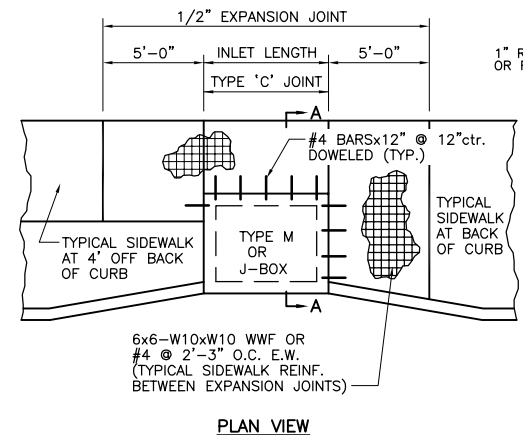
TYPE "M" INLET NOTES



**TYPE "M" INLET
SECTION & DETAILS
(NOT TO SCALE)**

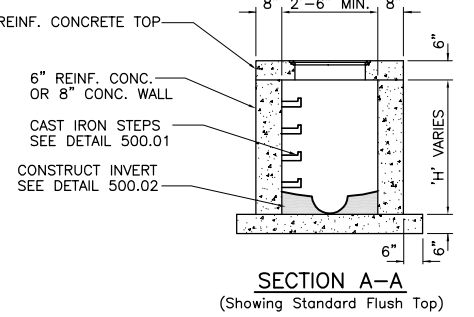
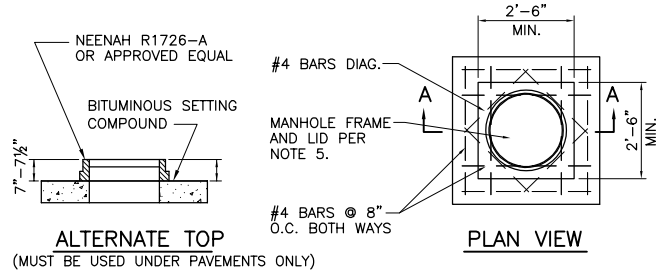


**TYPE "M" INLET
SETTING DIAGRAMS
(NOT TO SCALE)**



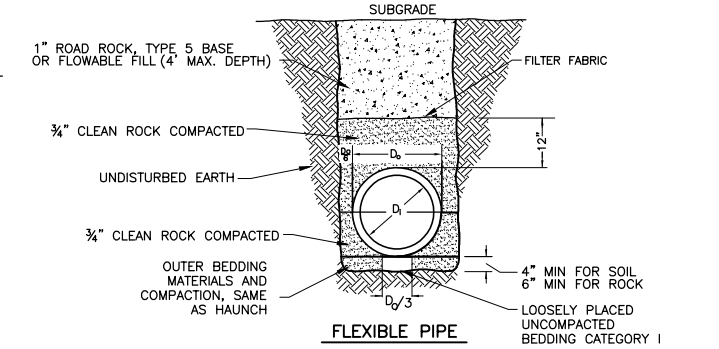
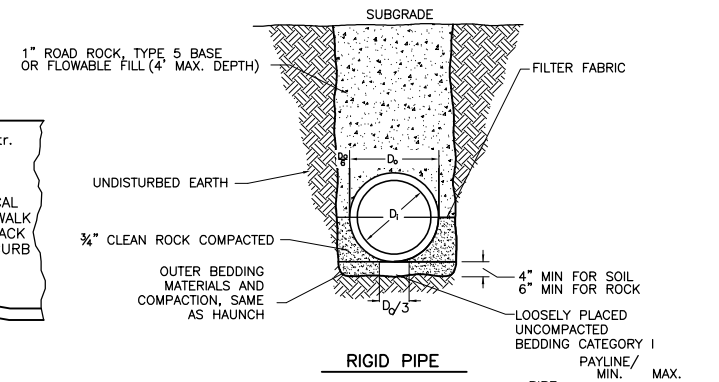
**SIDEWALK REINFORCEMENT
AT DRAINAGE STRUCTURE
(NOT TO SCALE)**

- NOTES:**
- SIDEWALK SHALL BE 4" THICK CLASS A CONCRETE
 - REINFORCING STEEL SHALL BE GRADE 60



**JUNCTION BOX
(NOT TO SCALE)**

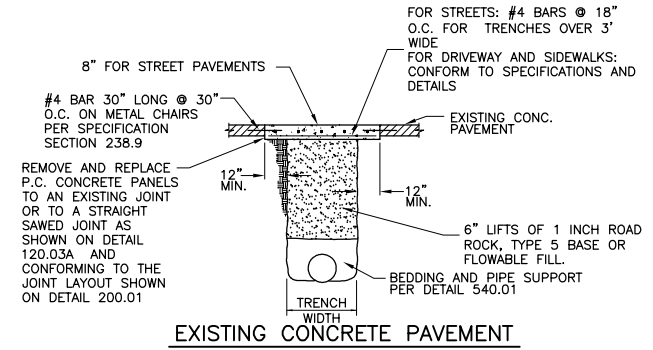
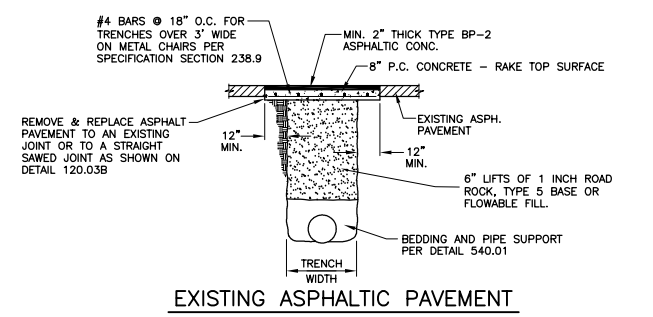
- NOTES:**
- CONCRETE SHALL BE CLASS E FOR BASES AND D FOR WALLS AND TOP.
 - REINFORCING STEEL SHALL BE GRADE 60
 - INSTALL WEEP HOLES AS PER DETAIL 500.04
 - STRUCTURES WHERE H>8' SHALL BE REINFORCED CONCRETE (#4 BARS AT 12" CTRS, BOTH WAYS AND #4 BARS DIAGONAL AT PIPE OPENINGS)
 - FRAME AND LID SHALL BE NEENAH R-1960-A (TYPE C LID) OR APPROVED EQUAL. SEE DETAIL 500.01 FOR PLACEMENT.



**PIPE EMBEDMENT
(IN THE RIGHT OF WAY)
(NOT TO SCALE)**

NOTE: SEE SECTION 201.12.10.1 FOR 1" ROAD ROCK GRADATION AND FOR CATEGORY I, II, AND III SPECIFICATIONS

PIPE DIAMETER	TRENCH WIDTH	TRENCH WIDTH
MIN.	MAX.	MAX.
8"-36"	D ₀ +12"	D ₀ +24"
42"-72"	D ₀ +(D ₀ /3)	D ₀ +30"
72"+	D ₀ +(D ₀ /3)	D ₀ +48"



**PATCHING
PAVED STREETS
(NOT TO SCALE)**

- NOTES:**
- CONCRETE SHALL BE CLASS AA REINFORCING STEEL SHALL BE GRADE 60

Revision	
By	
Date	
No.	

LENOIR STREET IMPROVEMENTS
Type M Curb Inlet Details

City of Columbia, Missouri
Department of Public Works

David Allen Nichols
Registered Professional Engineer
E-24212

File No.	C00746
Scale:	As Shown
Date:	6-1-2020
Des.	A.N.H.
Dwn.	T.L.W.
Chk.	AAA

Legend

- ⬇ 36' Mounting Height - 113 Watt LED Fixture
- UGSL — 2" Conduit, 24" Cover

Coordinate with City W&L for Relocating Street Light Poles and for Connecting Street Light Circuits.
Contact Person: Kevin Thornton (573-874-6208)

STREET LIGHT POLE SCHEDULE					
POLE#	NORTHING	EASTING	POLE & BRACKET ARM	LUMINAIRE	FOUNDATION
P1	1117667.86	1701034.43	30' POLE, 6' ARM	113 W LED	L6/L8 SCREW IN BASE
P2	1117548.47	1701175.75	30' POLE, 6' ARM	113 W LED	L6/L8 SCREW IN BASE
P3	1117425.85	1701320.89	30' POLE, 6' ARM	113 W LED	L6/L8 SCREW IN BASE
P4	1117296.78	1701473.67	30' POLE, 6' ARM	113 W LED	L6/L8 SCREW IN BASE
P5	1117178.31	1701628.32	30' POLE, 6' ARM	113 W LED	L6/L8 SCREW IN BASE
P6	1117069.07	1701801.55	30' POLE, 6' ARM	113 W LED	L6/L8 SCREW IN BASE

* NOTE: L8 POURED CONCRETE BASE IS ACCEPTABLE FOUNDATION ALTERNATE.

CW&L INSPECTIONS:
THE CONTRACTOR SHALL NOTIFY THE CITY'S ENGINEER OR HIS AIDES FOR THE AVAILABILITY OF AN INSPECTOR A MINIMUM OF TWO WORKING DAYS BEFORE COMMENCING WORK. MONDAY THROUGH FRIDAY BETWEEN THE HOURS OF 8:00 A.M. AND 4:30 P.M. SHALL CONSTITUTE A TYPICAL WORK WEEK. ANY WORK OUTSIDE THESE HOURS REQUIRES THE APPROVAL OF THE CITY'S ENGINEER OR INSPECTOR. A MINIMUM OF TWO DAYS NOTICE WILL BE REQUIRED WHEN REQUESTING INSPECTION SERVICES OUTSIDE OF NORMAL WORKING HOURS.
CONTACT PERSON: KENNY EADS (573-864-4720)

General Notes:

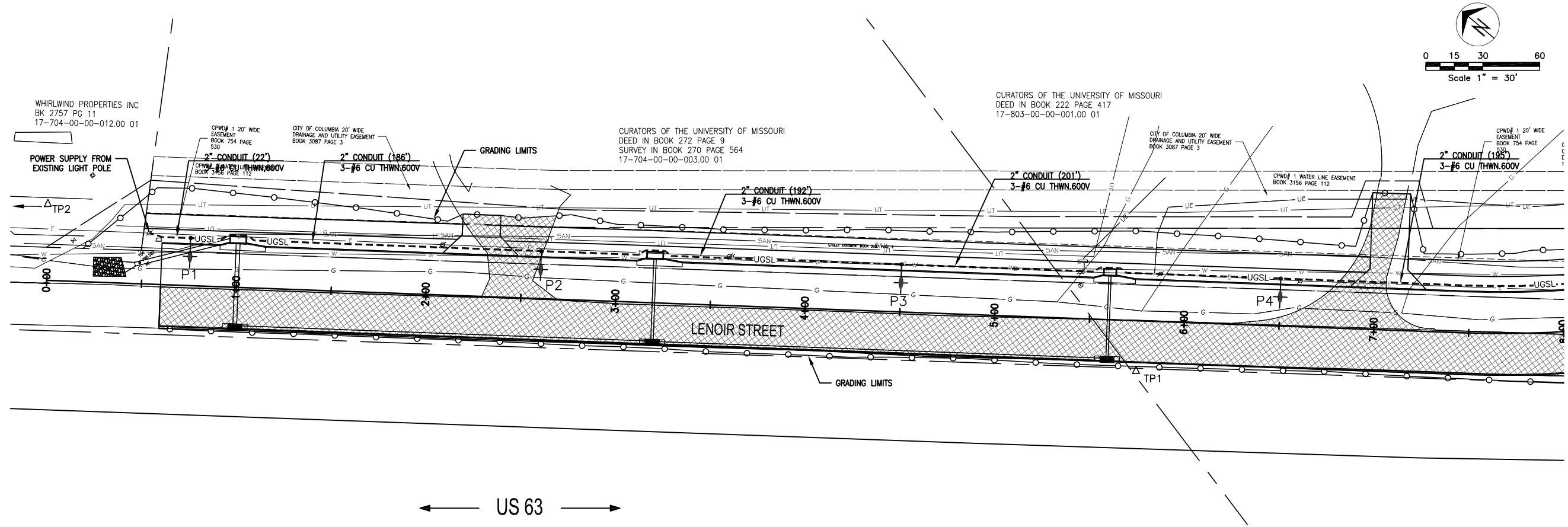
1. Install 30 ft galvanized steel light standard w/6 ft truss arm (5' rise) on new screw in street light foundation with break-away base, as staked. Install NAVION '4-square' 113 watt, LED luminaire and wire for 208 volt operation with photocell. Fuse w/ two limitron KTK-3 fuses. Run two #10 AWG solid Cu 600V conductors from fuse blocks up to luminaire. Note: 30' poles, 5' rise in truss arm & break-away base will be result in (nominal) 36' luminaire mounting height.
2. Intercept and redirect existing underground secondary/street light circuit (s) into new secondary handhole. Verify and match as 3#6, AI, 600 volt & 1# 6 bare ground in 2" conduit.
3. Remove existing cable (if direct bury, cut off exposed ends). Remove all exposed conduit. Remove or abandon-in place all conduit as appropriate.

Lighting Notes:

1. Contractor is Responsible for Coordinating with the Local Utility to Energize the Street Lighting System and for Ensuring that Installation at meter pedestal with Utility Requirements. Any Additional Materials and Labor needed to Conform to Utility Installation Requirements are considered Included Subsidiary to the Roundabout Lighting System.
2. All Lighting Work and Materials shall be in Conformance with MoDOT Specifications and Standard Details for Highway Lighting.
3. Pull Boxes (Hand Holes) shall be installed level with curb, sidewalk or surrounding grade.
4. Cables shall be continuous and un-spliced between Light Poles unless indicated otherwise. Splicing of Power Cables in the Transformer Base shall be done in accordance with CW&L Standards.
5. All Conduit Raceways are 2" PVC, Schedule 40 electrical grade unless otherwise noted on the Plans. Conduits shall have a minimum 24" cover. Contractor shall run street light conduits in the same ditch with other electrical, telephone, CATV, etc. utility conduits insofar as practical. Contractor shall coordinate his work with the adjacent site contractor and other utilities. Call (573) 874-6202 for inspection before backfilling trench.
6. Distribution System shall be grounded as required by MoDOT Specifications and Standard Details.
7. Luminaires shall be 113 Watt LED (NEMA twist lock photocell, nominal TYPE II distribution, 10 kA Surge Protection: COOPER NAVION NVN # AF-02-E-U-SL2-10K-7030-4-AP or approved equal). See Specification for LED Roadway Lighting Fixtures.
8. All Poles shall 30 feet steel. Poles shall be mounted on L6 Screw-in base (or contractor's choice to use L8 poured concrete base). Installation shall incorporate a MoDOT break-away based with (2) LIMITRON KTK 3-amp, 600 volt fuses, in BUCHANNON #82S-ADB1 (or equal) loop feed fuse holders. Arms shall be 6' up sweep steel truss arms. ALL PARTS OF POLE, BRACKET, LIGHT FIXTURE, ETC. TO HAVE AT LEAST 7'6" CLEARANCE TO ANY PRIMARY CONDUCTORS.

LED Roadway Lighting Fixtures:

1. Design Fixture & Manufacturer: COOPER NAVION NVN # AF-02-E-U-SL2-10K-7030-4-AP; or approved equal.
2. Light Output: Light source to have correlated color temperature 3000K with 70 CRI minimum. Fixture to have Type II Roadway distribution (with "HOUSE-SIDE-SHIELD" function designed into the distribution pattern); including 0% UPLIGHT, and minimal backlight. Provide fixture having BUG rating of B1-UO-G3 or better. Photometric and lumen maintenance data to be determined per LM-79, LM-80 & TM-21. Lumen maintenance at 60,000 hours to be at least 70% (based on a 45 deg C ambient).
3. Electrical: Provide IEEE/ANSI C62.41 Category C (10kV/5kA) minimum level of surge protection. Provide a NEMA photo-control receptacle. The fixture shall not produce objectionable EMI interference. Electrical design life of the LED light engines shall be at least 100,000 hours at minimum 40 deg C operation. Electronic driver rated design life shall be at least 100,000 hours at minimum 25 deg C ambient. Provide screw terminals for supply leads compatible with aluminum and copper conductors through at least # 10 AWG.
4. Operating Voltage: All fixtures provided shall be suitable for multi-volt (100-120, 208, 240 & 277) operation.
5. Mounting and Housing: The fixture shall be suitable for use with 1 -1/4" & 2" pipe sizes (1 5/8" & 2-3/8" OD). Allow for +5 deg to -5 deg leveling adjustment (in steps no larger than 2.5 deg, if not continuously adjustable throughout the + / - 5 deg range). Fixture to have diecast aluminum housing with minimum 2 G vibration rating per relevant parts of ASNI C136. Total weight not to exceed 30 pounds. Provide fixture with gray corrosion resistant finish.
6. Warranty: Provide minimum 5 years warranty including the LED arrays, the LED optics, the LED drivers, integral control devices and fixture finish for use in all weather conditions and exposure.
7. Codes and Standards: All equipment provided shall conform to the latest applicable standards of ANSI, IEEE, NEC, NEMA, NESC and Compliance with relevant sections of ANSI C 136 is required.
8. Bidders shall submit with their bids, complete information to clearly indicate and describe the light fixture they propose and their characteristics. Information submitted shall contain complete mechanical data including dimensions, weight, and light output (distribution & lumen maintenance) including electronic copy of the relevant "IES" files.

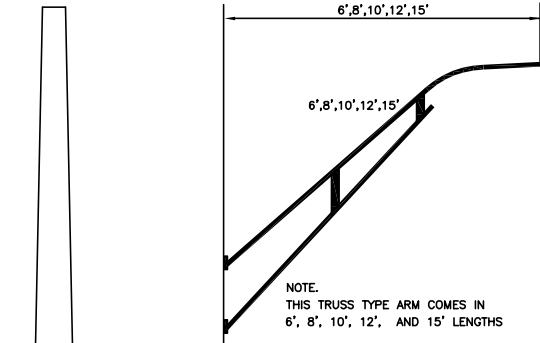


Revision					
By					
Date					
No.					
LENOIR STREET IMPROVEMENTS					
Lighting Plan & Details					
City of Columbia, Missouri			Department of Public Works		
David Allen Nichols Registered Professional Engineer E-24212					
File No. C00746 Scale: As Shown Date: 6-1-2020 Des. A.N.H. Dwn. T.L.W. Chk. A.A.A.					
Sheet 15 of 19					

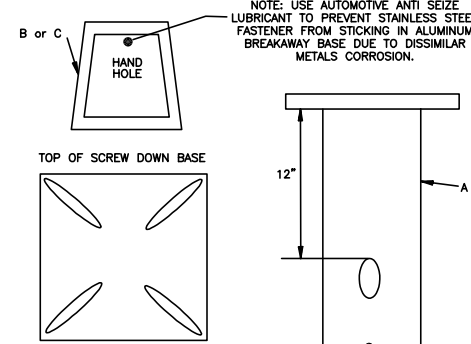
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- NOTE:
1. THIS POLE COMES IN 35' MOUNTING HEIGHTS FOR SINGLE AND DOUBLE TRUSS ARMS. 36' MOUNTING HEIGHT TO BE USED DOWNTOWN WITH SINGLE SCROLL ARM.
 2. METAL STREET LIGHT STANDARDS ALWAYS REQUIRE AT LEAST THREE CONDUCTORS. AN EQUIPMENT GROUNDING CONDUCTOR MUST BE RUN FROM GROUND ROD IN THE TRANSFORMER TO THE GROUNDING LUG INSIDE THE HANDHOLE IN THE LIGHT STANDARD. FOR 120V HOOKUP, THE CURRENT RETURN PATH NEUTRAL IS NOT TO BE CONNECTED TO THE GROUNDING LUG INSIDE THE HANDHOLE. FOR 208V OR 240V HOOKUP, AN EQUIPMENT GROUNDING CONDUCTOR IS REQUIRED, BUT A NEUTRAL CONDUCTOR IS NOT REQUIRED, SO THREE CONDUCTORS ARE STILL SUFFICIENT.

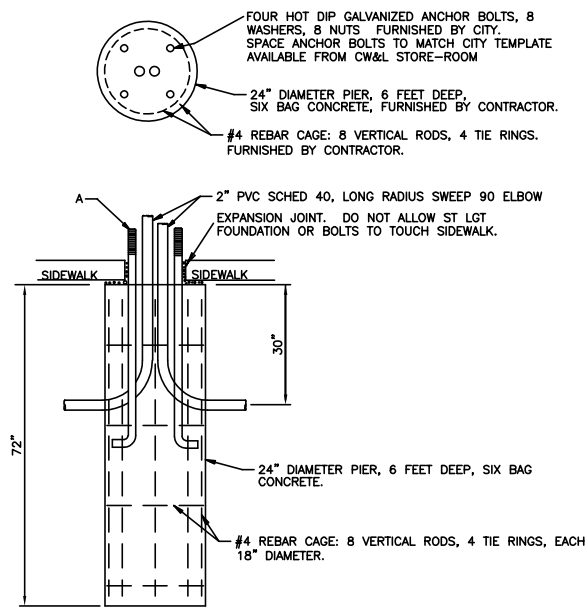
Metal Street Light Poles



Truss Type Arm for Steel Pole (Street Light Arm)

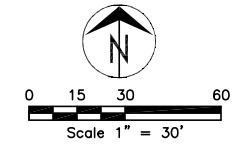
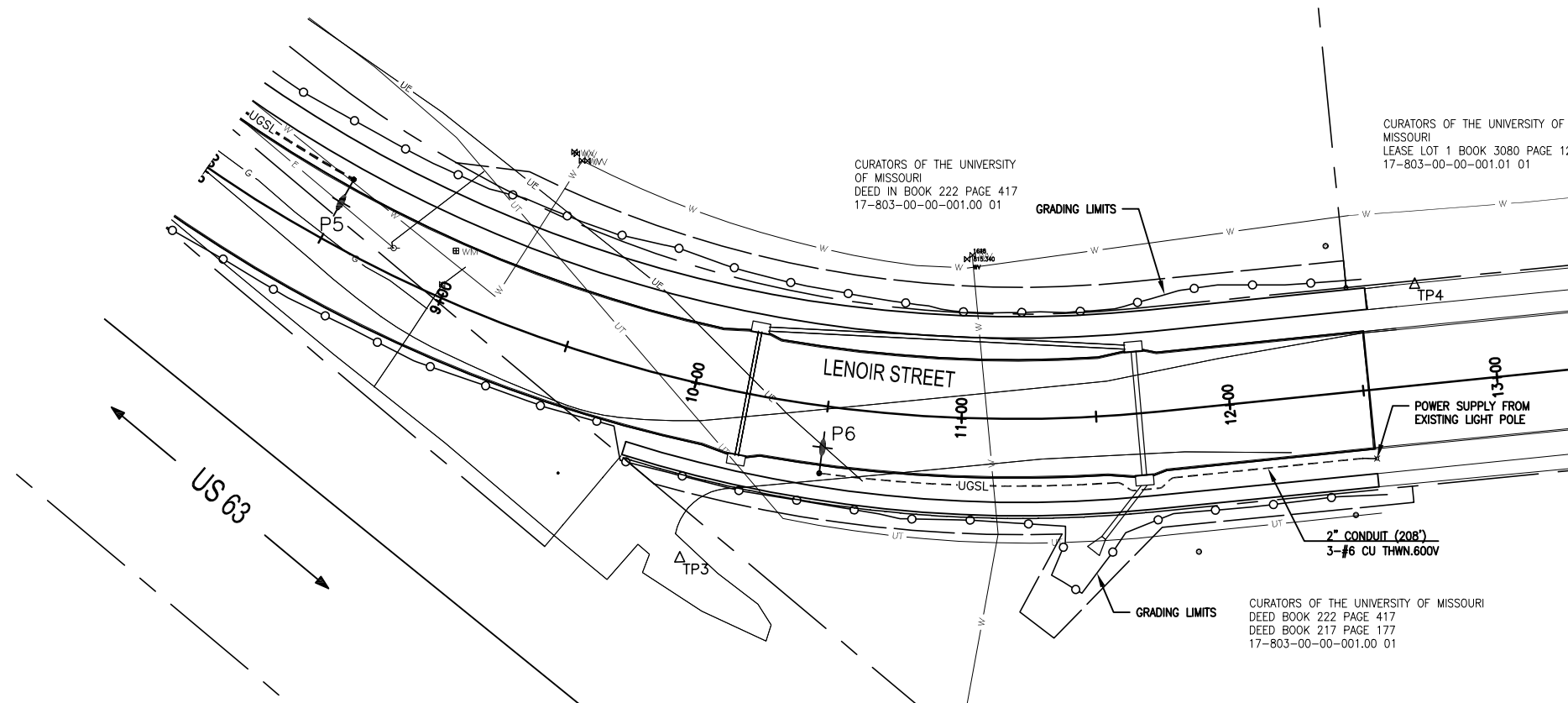


Screw In Base (L6)



Screw In Base (L8)

EXISTING STREET LIGHT POLE REMOVAL-
SPECIAL NOTE:
CW&L TO DISCONNECT POWER, WHEN REQUESTED BY CONTRACTOR.
CONTRACTOR TO REMOVE POLE, LIGHT, ARM BRACKET, BASE, ETC. FOR
CW&L TO RETURN TO STOCK.



No.	Date	By	Revision

LENOIR STREET IMPROVEMENTS

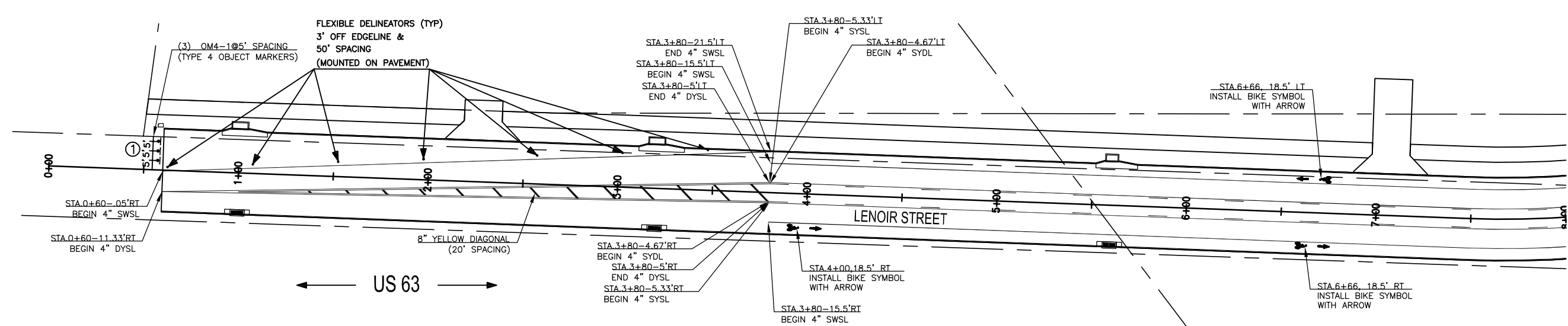
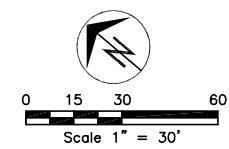
Lighting Plan & Details

City of Columbia, Missouri
Department of Public Works

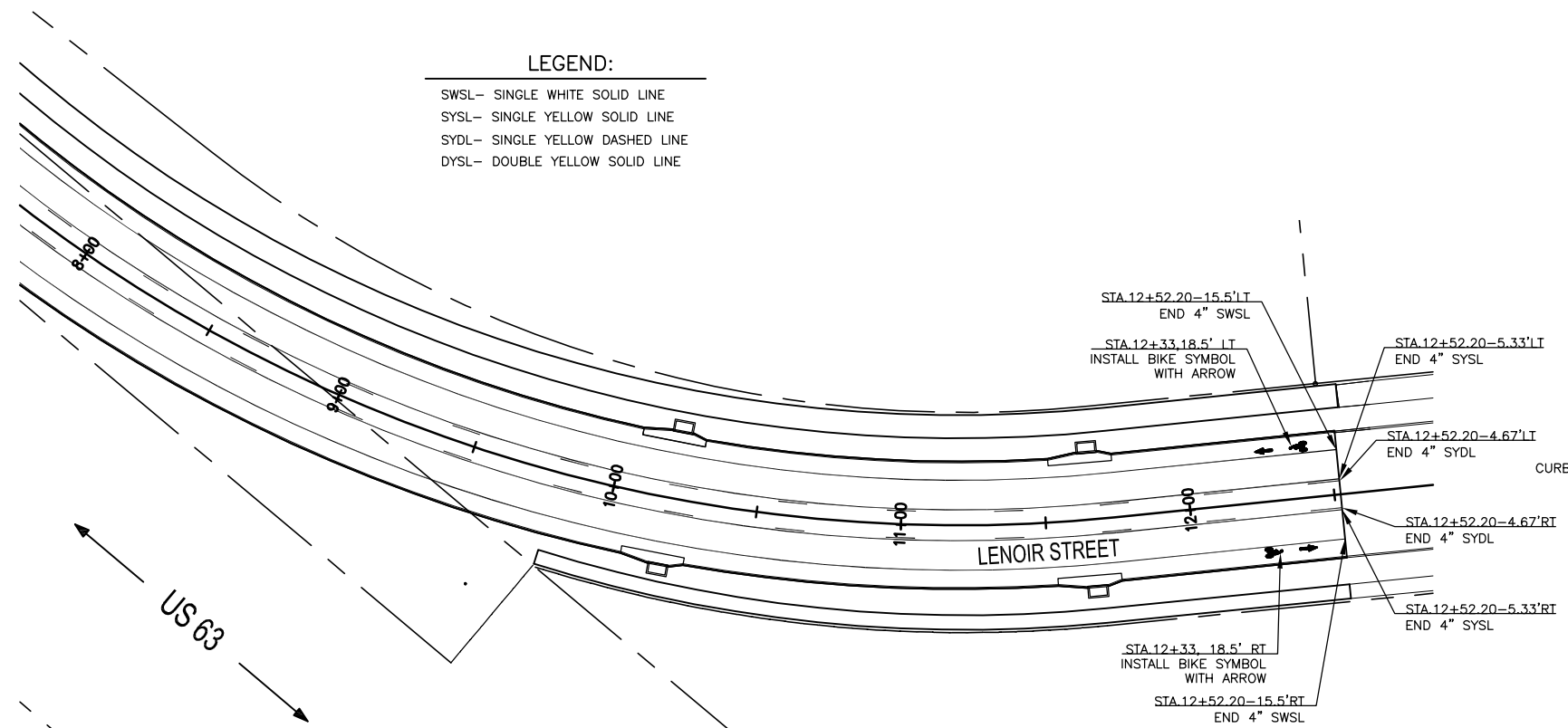
David Allen Nichols
Registered Professional Engineer
E-24212

File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. A.A.A.

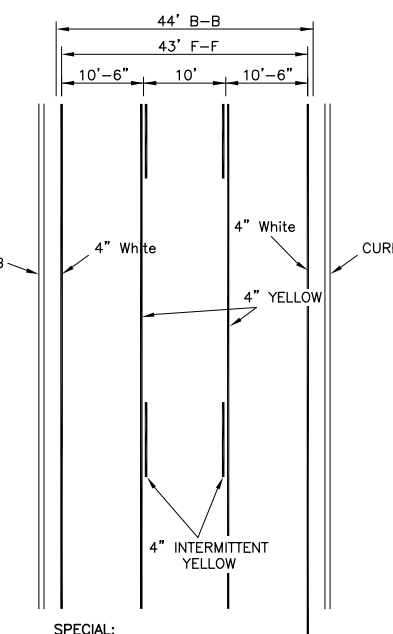
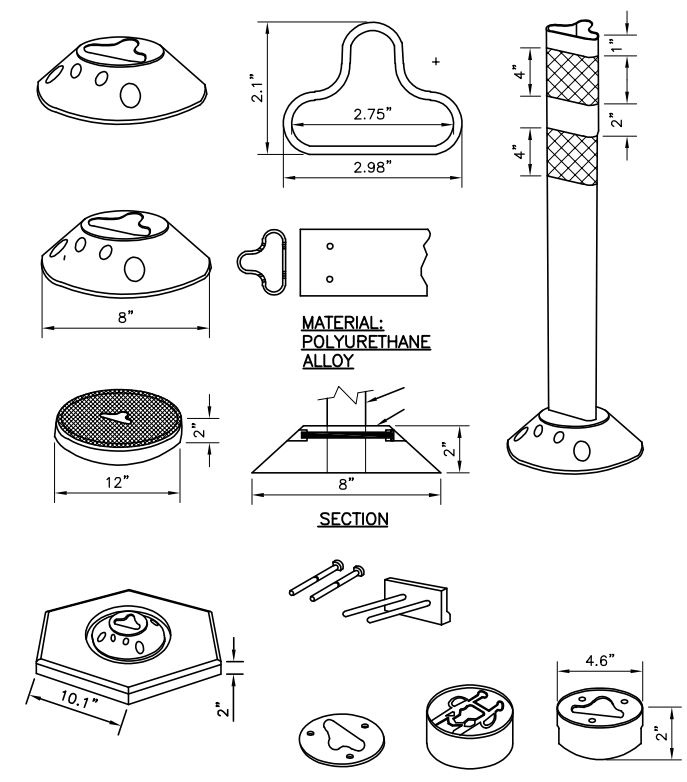
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LEGEND:
 SWSL- SINGLE WHITE SOLID LINE
 SYSL- SINGLE YELLOW SOLID LINE
 SYDL- SINGLE YELLOW DASHED LINE
 DYSL- DOUBLE YELLOW SOLID LINE



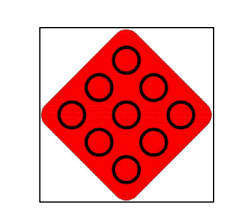
BASE OPTIONS:



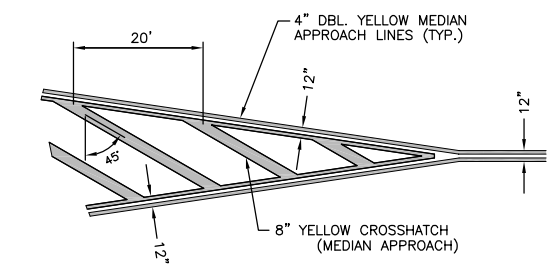
SPECIAL:
 1. FINISHED TOTAL PAVEMENT WIDTH IS MINIMUM xxFT INCLUDING 6FT SHOULDERS ON BOTH SIDES.
 2. MAINTAIN MINIMUM DRIVING LANE WIDTH PER "TYPICAL STRIPING PATTERN".

TYPICAL STRIPING PATTERN
 (NOT TO SCALE)

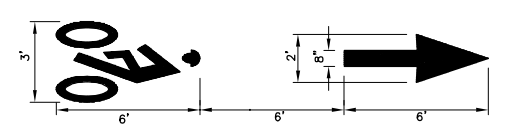
FLEXIBLE DELINEATOR POST DETAIL
 High-Performance Surface Mount Post
 NOT TO SCALE



① OM4-1
 END OF ROADWAY WARNING SIGN
 18" X 18"



PAINTED MEDIAN DETAIL
 (NOT TO SCALE)



BIKE LANE SYMBOL WITH ARROW
 (NOT TO SCALE)

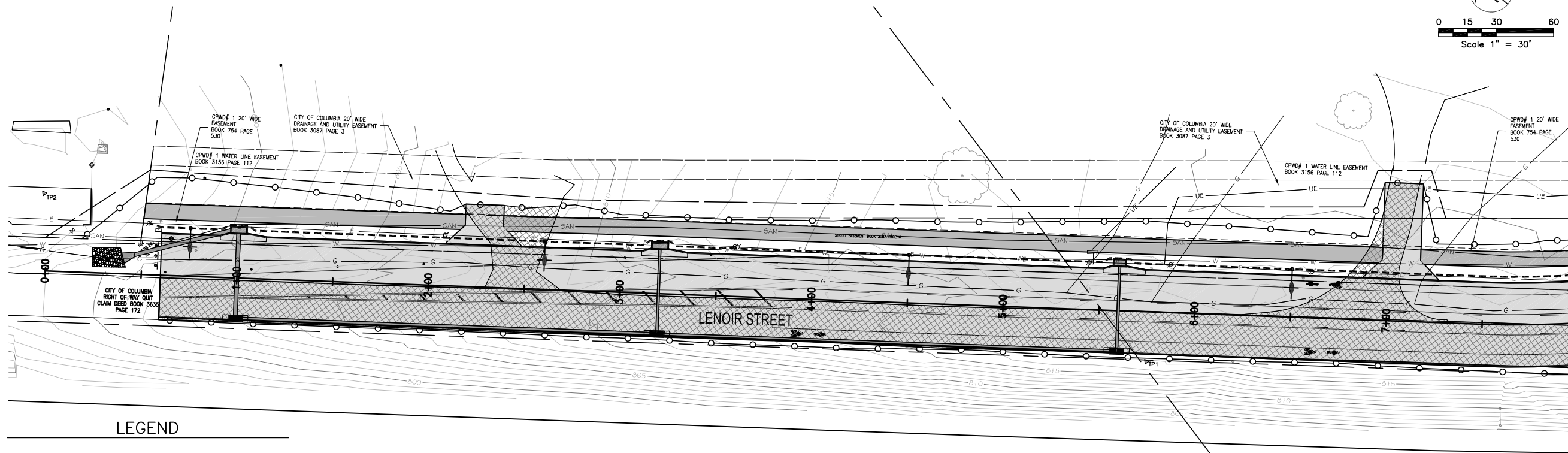
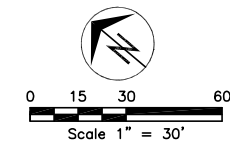
Revision	
By	
Date	
No.	

LENOIR STREET IMPROVEMENTS
 Pavement Striping & Signage Plan

City of Columbia, Missouri
 Department of Public Works

David Allen Nichols
 Registered Professional Engineer
 E-24212

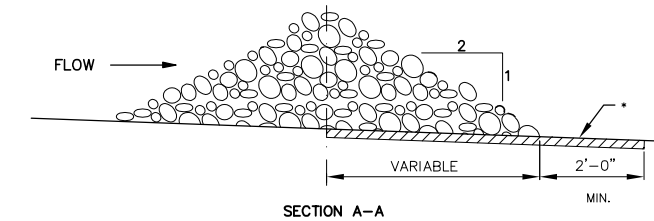
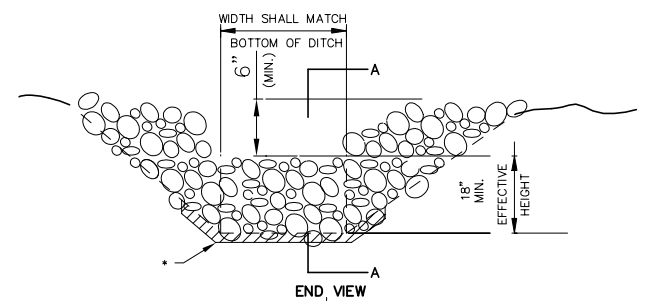
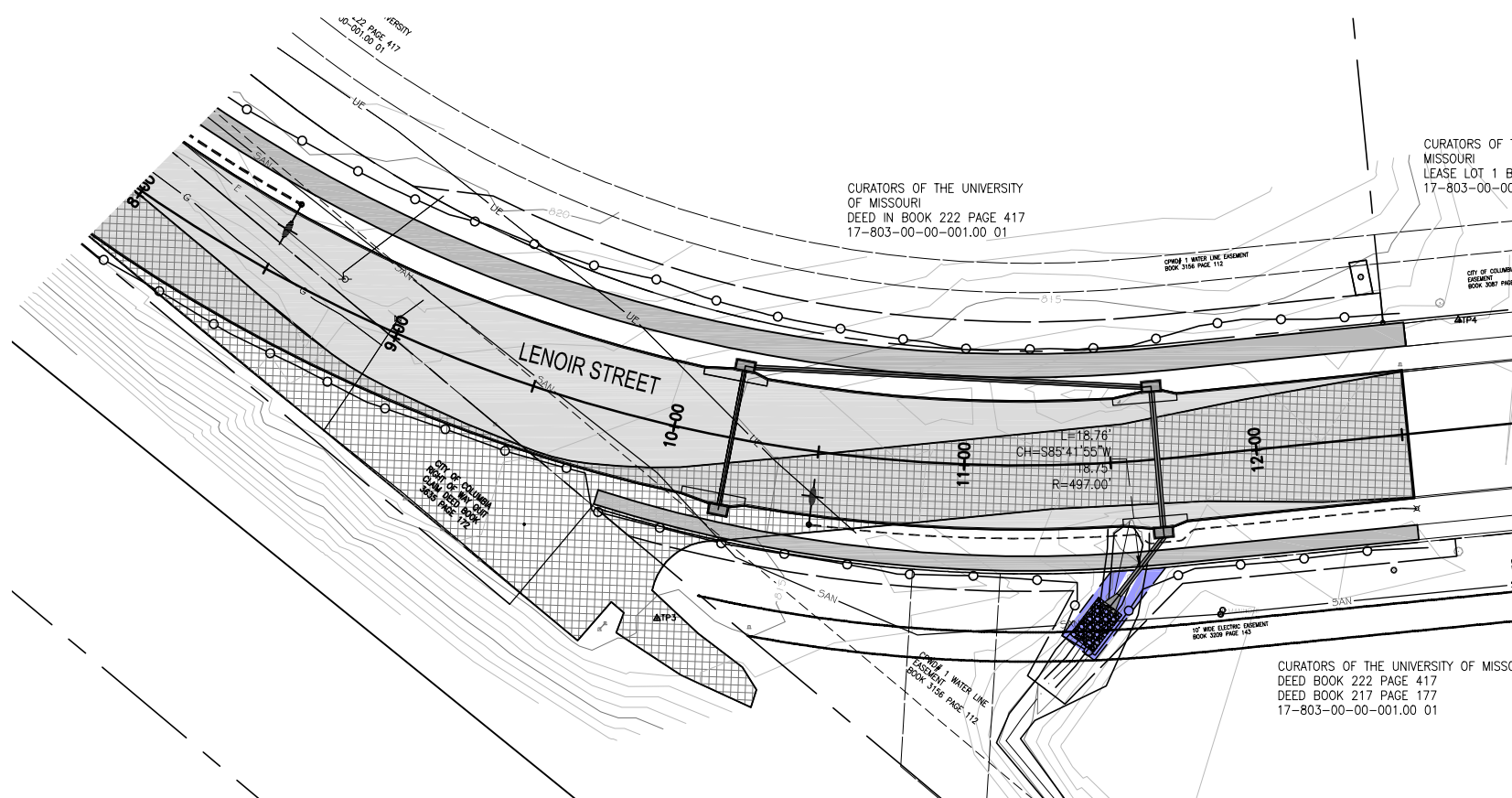
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Date:	6-1-2020
Des.	A.N.H.
Dwn.	T.L.W.
Chk.	AAA



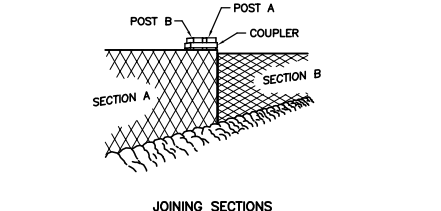
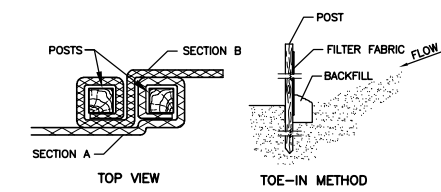
LEGEND

- ① —○—○— GRADING LIMITS
- ② —- - - - SILT FENCE
- ③ —▨—▨— INSTALL GUTTER BUDDIES ONCE PAVEMENT IS DOWN AND WAITING FOR GRASS TO ESTABLISH.

← US 63 →



* GEOTEXTILE LINING MAY BE INSTALLED AS REQUIRED BY THE ENGINEER.
ROCK DITCH CHECK
 Not to Scale



SILT FENCE INSTALLATION
 Not to Scale

No.	Date	By	Revision

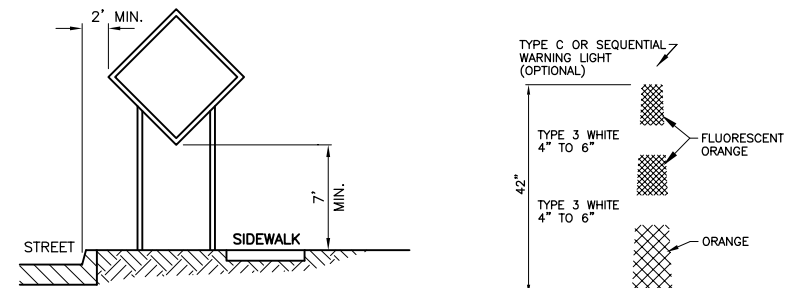
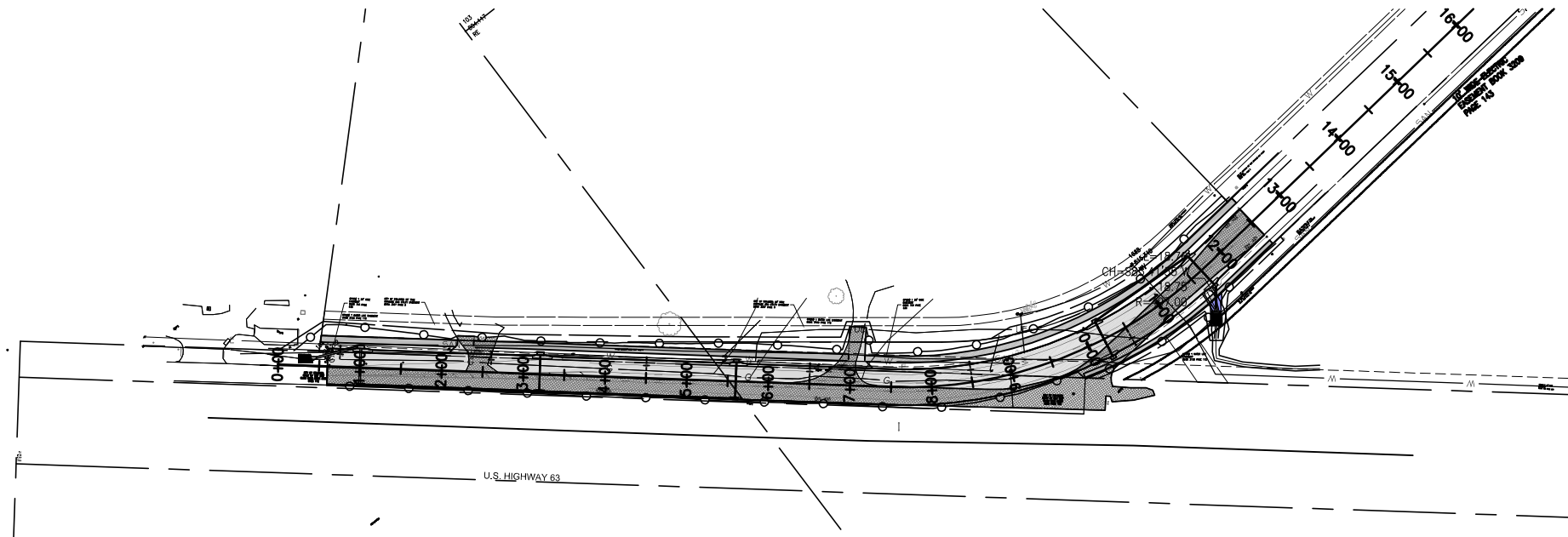
LENOIR STREET IMPROVEMENTS
 Erosion Control Plan & Details

City of Columbia, Missouri
 Department of Public Works

David Allen Nichols
 Registered Professional Engineer
 E-24212

File No. C00746
 Scale: As Shown
 Date: 6-1-2020
 Des. A.N.H.
 Dwn. T.L.W.
 Chk. A.A.A.

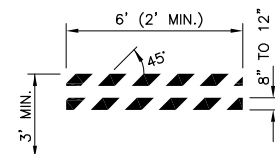
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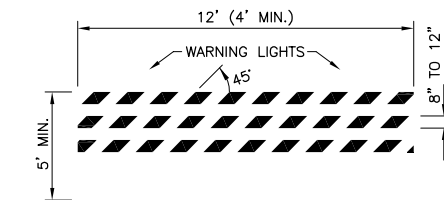
CURB & GUTTER MOUNTING

NOTE: SUPPORT POSTS SHALL NOT EXTEND ABOVE SIGN UNLESS DISTANCE PLAQUE OR WARNING LIGHTS ARE SPECIFIED.

SIGN MOUNTING
(NOT TO SCALE)



TRIM LINE CHANNELIZER
(NOT TO SCALE)



NOTES:

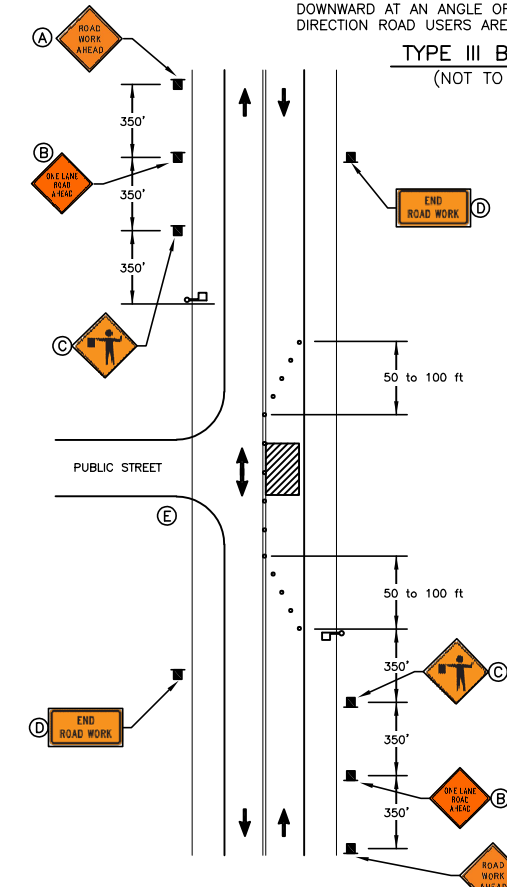
1. NOMINAL LUMBER DIMENSIONS ARE SATISFACTORY FOR BARRICADE RAIL WIDTH DIMENSIONS.
2. RAIL STRIPE WIDTHS SHALL BE 6", EXCEPT THAT 4" WIDE STRIPES MAY BE USED IF RAIL LENGTHS ARE LESS THAN 36". THE SIDES OF BARRICADES FACING TRAFFIC SHALL HAVE RETROREFLECTIVE RAIL FACES.
3. STRIPES ON BARRICADE RAILS SHALL BE ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION ROAD USERS ARE TO PASS.

NOTES:

1. NOMINAL LUMBER DIMENSIONS ARE SATISFACTORY FOR BARRICADE RAIL WIDTH DIMENSIONS.
2. RAIL STRIPE WIDTHS SHALL BE 6". THE SIDES OF BARRICADES FACING TRAFFIC SHALL HAVE RETROREFLECTIVE RAIL FACES.
3. ALL TYPE III BARRICADES SHALL HAVE TWO TYPE B WARNING LIGHTS.
4. STRIPES ON BARRICADE RAILS SHALL BE ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION ROAD USERS ARE TO PASS.

TYPE II BARRICADE
(NOT TO SCALE)

TYPE III BARRICADE
(NOT TO SCALE)



TYPICAL LANE CLOSURE USING FLAGGERS
(NOT TO SCALE)

MUTCD	DESCRIPTION	SIZE	QUANTITY
(A) W20-1	"ROAD WORK AHEAD"	36"x36"	2
(B) W20-4	"ONE LANE ROAD AHEAD"	36"x36"	2
(C) W20-7	FLAGGER SIGN	36"x36"	2
(D) G20-2	"END ROAD WORK"	36"x18"	2
(E) -	WAIT HERE FOR PILOT CAR	-	1

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHOWN ON PLAN SHOULD BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTIES IN THE CONSTRUCTION ZONE TO THE MAXIMUM EXTENT PRACTICABLE.
3. ALL BARRICADES, SIGNS, OTHER TRAFFIC CONTROL DEVICES AND PLACEMENT THEREOF SHALL CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL OPEN TRENCHES SHALL BE BARRICADED WITH CONSTRUCTION FENCING TO PROTECT MOTORISTS AND PEDESTRIANS.
5. TRIM-LINE CHANNELIZERS SHALL BE USED AS CHANNELIZATION DEVICES WHEN WORKING ADJACENT TO THROUGH TRAFFIC TO PROTECT MOTORISTS.
6. SIGNING SHOWN AS MINIMUM REQUIREMENTS FOR ADJACENT ROADWAYS PRIOR TO IMPROVEMENTS. CONTRACTOR IS RESPONSIBLE FOR ADDITIONAL SIGNING, MARKING OR DELINEATORS FOR SITE SPECIFIC CONSTRUCTION PHASING TO COMPLY WITH MUTCD GUIDELINES.
7. TRUCK BARRICADE WITH FLASHING LIGHTS AND/OR ARROW BOARD MAY BE REQUIRED AS DIRECTED BY MoDOT AND/OR THE CITY OF COLUMBIA.
8. ALL CONFLICTING PAVEMENT MARKINGS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.
9. ALL CONFLICTING SIGNS SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.
10. CONTRACTOR SHALL COORDINATE WITH THE CITY LIGHT DEPARTMENT FOR EXISTING LIGHT POLES REMOVALS.
11. FULL ROAD CLOSURES SHALL BE COMPLETED AT NIGHT WITH APPROVAL OF THE ENGINEER. THE CONTRACTOR SHALL PROVIDE THE APPROPRIATE WORK ZONE LIGHTING AND WILL BE REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN FOR THE CLOSURE.

MUTCD CODE	DESCRIPTION	SIZE	QUANTITY
① W20-1	"ROAD WORK AHEAD"	48"x48"	3
② G20-2	"END ROAD WORK"	36"x18"	3
③ -	"PROJECT SIGN PROVIDED BY CITY"	48"x96"	1
④ R9-9	"SIDEWALK CLOSED"	24" x 12"	6
⑤ R9-10	"SIDEWALK CLOSED AHEAD"	36" x 24"	2
⑥ -	TYPE II BARRICADE	3 FT.	6
⑦ -	TYPE III BARRICADE	8 FT.	4
⑧ -	CHANNELIZERS	-	50

TRAFFIC CONTROL FOR STORM PIPE INSTALLATION

1. FOR PIPE INSTALLATION ACROSS FORUM BLVD - CLOSE FORUM BLVD OVERNIGHT 7PM TO 6AM GIVE 3 WORKING DAYS NOTICE TO CITY BEFORE CLOSURE
2. PATCH PER PLANS AND SPECS BEFORE OPENING TO TRAFFIC



① W20-1



② G20-2



④ R9-9



⑤ R9-10

LENOIR STREET IMPROVEMENTS
Traffic Control Plan

City of Columbia, Missouri
Department of Public Works

David Allen Nichols
Registered Professional Engineer
E-24212

File No. C00746
Scale: As Shown
Date: 6-1-2020
Des. A.N.H.
Dwn. T.L.W.
Chk. AAA