CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

ADDENDUM NUMBER 3

Project Number	**89008516**
Project Title	**Wornall Road 74th to 79th Street**
	Federal STP-3301(509)

ISSUE DATE: **9/26/2023**

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are to be received on **October 3, 2023**, are amended as follows:

Information to Bidders The following is provided to Bidders for information only:

Q1. Project no. 89060836 is referenced in the overview; what is the significance of that reference?

A1. Reference to KCMO project #89060836 is for a separate, already constructed project.

Q2. What will NTP date be?

A2. Bidders shall anticipate a construction NTP January of 2024.

Q3. Will the city consider life cycle analysis in selecting asphalt or concrete for street surface?

A3. Life cycle analysis will not be used in making the selection of asphalt vs. concrete for the street surface. The selection will be based primarily on cost and what is in the best interest of the City.

Q4. Consider calendar days for construction for applicable phases rather than dates.

A4. This project will be a calendar date completion. Completion dates have been revised.

Q5. Can we work multiple phases at the same time?

A5. Construction work may occur within the limits of multiple phases provided the following requirements are met:

- **Full access to at least one parking lot is to be maintained at all times.**
- **One lane of traffic is to be maintained in both directions for Wornall Road and 75th Street.**

Q6. What is bonding requirement for street construction, water line construction, and does this satisfy federal requirements?

A6. Performance Bond and 2 years for Water Services Dept. for Maintenance Bond; Performance Bond only for Public Works improvements.

Q7. Do we select a DBE from MO DOT list or City CREO list of approved DBE contractors?

A7. Use the MoDOT DBE list.

Q8. Confirm 1000 hrs required for OJT.

A8. Yes, it is required.

Q9. Do liquidated damages apply for each phase?

A9. Yes, see 00210 Notice to Contractors, Sec. 3.

Q10. Do we assume all excavation costs are to be included in unit rates of constructed pavement?

A10. Yes.

Q11. Will MoDOT or KCMO labs provide material testing services?

A11. MoDOT or KCMO labs may be used.

Q12. Is polypropylene pipe allowed as a substitute for storm water pipe?

A12. Polypropylene pipe is an acceptable substitute.

Q13. Will permits be required for excavation, ROW and pedestrian sidewalks?

A13. City permits will need to be acquired, and fees will be waived.

Q14. Can you make the Geotech report available?

A14. The Geotechnical Engineering Report is attached for reference purposes.

Q15. Should there be a bid item and quantities for brick pavers?

A15. Brick Pavers is shown as bid item #133.

Q16. Can stamped concrete be a substitute for brick pavers?

A16. No.

Q17. Will the untreated base be AB3 or MO DOT type 5?

A17. MoDOT Type 5 may be used as a substitute for Untreated Base.

Q18. What size are the pedestrian signal heads? Note 6 on sheet 117 states they are 16" but the bid item states 12".

A18. Pedestrian signal heads are to be 16". Bid item has been revised.

Q19. What is the intent of the temporary traffic signal – Sheet 122. The temp pole locations appear to be in the exact location of the new permanent poles.

A19. Sheet 122 Temporary Traffic Signal Plan Sheet has been replaced with Sheet 122 Traffic Signal Plan – Wyandotte and 75th. Bid item "Adjust Signal Timing & Head Locations" has been added to the project. Refer to bid item description for details.

Q20. Is the fiber interconnect intercepting any existing fiber on the north or south ends of the fiber limits?

A20. No. The proposed fiber is a standalone system connecting the two traffic signals.

Q21. There is no bid item for 96 CT fiber. There is only a bid item for 6 ct fiber and the quantity seems to be excessive for Qty 2 – 150' gator patches. Should there be a bid item for 96 CT fiber AND 6 CT gator patch?

A21. Bid item #49 (base bid) and bid item #28 (add alternate 1) has been revised to "96-CT Fiber".

Q22. Where is the fiber intended to stop between base bid and add alternate #1? Plans show the limit being south of 77th street but it stops between boxes. Shouldn't this stop at either box 16 or box 15?

A22. Base bid work should include installation of box 16 and all fiber north of this location. Add alternate #1 shall include all fiber and boxes south of box 16.

Q23. Sheet 131 shows a Yellow Flashing Beacon at STA 105+29.38 – There is no bid item for this. Should this be a separate bid item or quantified under a current bid item?

A23. Bid item "Yellow Flashing Beacon" has been added.

Q24. Sheet 131 shows relocating a signal pole (ped pole) at STA 106+62.07 – there is no bid item for this. Should this be a separate bid item or quantified under a current bid item?

A24. Refer to Sheet 122 Traffic Signal Plan – Wyandotte and 75th Street. The work indicated on this sheet has been added to the traffic signal quantities.

Q25. The lighting note on sheet 161 states all luminaire arms shall be 6' or 10' but there are QTY 5, 12' truss arms called for in the plans and on the BOM. Does these need to be reduced to 10' truss arms, or are 12 truss arms allowable?

A25. 12' arms are allowable. The note states that the poles shall have a mounting height of 35 ft with a 6 ft or 10 ft truss arm with a 3 ft setback from the back of curb unless otherwise noted.

Q26. Lighting note on sheet 161 and the plan sheets state all street lights shall have a mounting height of 35' but the detail on sheet 173 shows the 6' single arm poles having a mounting height of 30'. Should would follow the detail? Or follow the plans sheets and the general note?

A26. 30' mounting height with a 6' arm is allowable. The note states that the poles shall have a mounting height of 35 ft with a 6 ft or 10 ft truss arm with a 3 ft setback from the back of curb unless otherwise noted.

Q27. Bid item does not quantity for screw-in foundations for 30' poles. If we follow the detail for 6' single arm poles we will need a bid item for the smaller screw-in foundations.

A27. As noted on the quantities on sheet 161, the quantities are approximate and were prepared solely for the Contractor's convenience. It is not guaranteed that this list of materials constitutes all of the items required for the completion of the work as specified in these plans. There are three different foundation types listed in these quantities: Luminaire Foundation (Large, 35 Foot Mounting Height Poles), Luminaire Foundation (Concrete Base per Storm Water Module), and Luminaire Foundation (Small, 30 Foot Mounting Height Poles). The small foundation should take into consideration the screw-in foundations per the detail on sheet 174.

Q28. The depth and bolt circle of the streetlight concrete foundations will also change depending on the result of the 6' single arm mounting height.

A28. Bolt circles should follow the standard details on sheet 174.

Q29. The conduit quantities on sheet 120 do not match the quantities in the bid items. Please clarify the size of conduit from the signal controller to pull box 2 – is it 2-3" and 1-2" OR 2-4" and 1-2"? Also please clarify the size of the conduit from pull box 2 to pull box 4 – is it 2-3" and 1-2" OR 2-4" and 1-2"?

A29. Controller to pull box 2: 2-4" and 2-3" conduits. Pull box 2 to pull box 4: 2 – 4" and 1-2" conduit.

Q30. Can the greenspace South of 75th street on the East side of Wornall be utilized for a "laydown" area?

A30. The City does not own this space.

Q31. The wiring diagram for the signals on sheet 119 does not show all of the Opticom cable; it only shows cable from PB2 to Pole 2. Opticom is also not accounted for in the BOM; yet it shows Opticom on all 4 mast arms and there is a bid item for it.

A31. No Opticom for this project. Bid item "Opticom System" has been removed from the project.

Q32. There is no quantity or wiring shown for advanced radar, but there is advanced radar shown on Pole 4 and pole 8.

A32. Advanced radar is on all poles. Pole 4 has two – one on mast arm and one on pole. All other poles it is on the pole. Bid item quantity for Thermal Video or Radar Detection System

Q33. What cable is being used for the relocated OGL radios on Pole 2? Wire diagram shows Coax & 3C #16 but also shows Qty 2 Cat6 for radios.

A33. No new OGL systems are included in this project. Existing OGL radios are to be removed and returned to Chris Jenkins at OGL.

Q34. Why is there 2" streetlight conduit going to the signal cabinet? Plans show streetlights being fed from streetlight controller.

A34. This 2" conduit has been removed from the plans.

Q35. There are currently no details for the traffic signals; is there an intent to provide traffic signal details?

A35. Refer to answer for question #19.

Q36. There is no bid item for 2" fiber conduit yet there is 2" conduit crossing the road from box 20 to box 19 and from box 13 to new signal cabinet.

A36. The conduit crossing of Wornall from box 20 to box 19 is a 3". The 2" conduit noted on the plans connects box 20 to the adjacent existing signal on the existing traffic signal box. No separate bid item for this 2" is included in the bid, and work and materials for this shall be subsidiary to other bid items.

Q37. The plans show Qty 1 PTZ/360 camera on signal Pole 8 but the bid item has Qty 4. Are there 3 cameras to be installed elsewhere on the project?

A37. There is one PTZ on the project. Bid quantity has been updated.

Q38. The signal plans show Qty 3 – Type 1 traffic signal pull boxes and Qty 1 – Type 2 traffic signal box. However the bid item has zero quantity for type 2 boxes and Qty 4 – type 1 pull boxes.

A38. The quantities shown on the Traffic Signal Summary of Quantities sheet are correct. Bid item quantity "Type I Pull Box" has been revised. Bid item "Type II Pull Box" has been added.

Q39. Sheet 2, note 10 mentions geotechnical surveying has been done in the project limits, however the data was not given in the bid package. Is the intent to share this data before the bid?

A39. The Geotechnical Engineering Report is attached for reference purposes.

Q40. The pavement section has either 21' or 24" depth with the last 6" being tilled. 6" Cement treated base was not deep enough to pass the proof roll on previous projects. We have found from experience utilities will be in this zone which causes great delays. Would the city consider geogrid instead of the 6" cement treated base? Would additional 6" of baserock be an option in locations that the tiller can't reach?

A40. Bidders shall bid the project per the project requirements and specifications. Areas and locations where subgrade proofroll is not acceptable will be addressed during construction.

Q41. Should the bidder circle either asphalt or concrete on the bid form to indicate which roadway pavement option is being bid?

A41. Yes.

Q42. Is there an or-equal to the GreenBlue products?

A42. There are currently no known equivalent products.

Q43. Nothing is called out and no quantities are in the bid form for Landscape/Restoration for the Alternate?

A43. Bid item quantities have been revised to include sod for Alternate #1.

Q44. Tree Watering Invert is indicated to be detailed on sheet 158, no detail provided.

A44. Elevations for the tree watering piping can be found on the Green Infrastructure Plans.

Q45. Can sand or gravel be used in lieu of the bituminous setting bed for the brick pavers, cannot be installed in cold weather?

A45. No.

Q46. Temporary Traffic Signal is shown to be in conflict with new signals.

A46. Refer to answer for question #19.

<u>Project Manual</u>

1. ***Revise*** Section 00210 Notice to Contractors; Section 3, Period of Performance, and Section 4, Liquidated Damages

PERIOD OF PERFORMANCE: If the bid is accepted, the bidder agrees that work shall be diligently prosecuted at such rate and in such manner as, in the judgment of the engineer, is necessary for the completion of the work within the time specified as follows in accordance with Article 14 of Section 700 ("General Conditions") of this contract: Completion Date:Phases 1a, 1b, 2a, 2b, 3a, and 3b of the Base Bid must be completed by **December 1, 2024. Remaining phases of the Base Bid must be completed by August 1, 2025. If Alternate 1 is awarded, the contract will be extended until October 1, 2025.**

LIQUIDATED DAMAGES: The bidder agrees that, should the bidder fail to complete the work in the time specified in Section 3 of the Notice to Contractors, or such additional time as may be allowed by the engineer under the contract, the amount of liquidated damages to be recovered shall be as follows: If the Work is not completed and ready for final payment in accordance with Paragraph 14.07, by **the dates** stated in Section 3 of the Notice to Contractors, CONTRACTOR shall pay to CITY the amount of FOUR THOUSAND THREE HUNDRED AND 00/100 DOLLARS ($4,300.00) as liquidated damages and not as a penalty for each Calendar Day until the Work is completed and ready for final payment. The amount of liquidated damages shall be deducted from any payments due or to become due CONTRACTOR.

2. ***Add*** to Bid Item Description - Adjust Signal Timing & Head Locations

   This work includes all materials, equipment and labor to adjust the existing signals for each phase of construction in accordance with KCMO requirements and MUTCD standards. Work includes maintenance of the signals and associated systems throughout each phase as may be required.

   Measurement for payment shall be as indicated in the Bid Form of completed and acceptable work. Payment will be made following completion of the individual construction phase and shall be based upon the unit price, as set forth in the Bid Form, and shall constitute all labor, materials, and equipment necessary to complete these items. Additional adjustments which may be required due to alternate or additional construction phases shall be subsidiary to this bid item.

3. ***Add*** JSP D – Asphalt Cement Price Index
4. ***Add*** Geotechnical Report- Terracon Geotechnical Report, Sept. 19, 2018

<u>Drawings:</u>

1. ***Replace*** the following sheets. All changes are noted and clouded.
   - 1 – Cover Sheet
   - 3 – Summary of Quantities
   - 13 – Plan & Profile – Wornall Rd
   - 14 – Plan & Profile – Wornall Rd
   - 15 – Plan & Profile – Wornall Rd
   - 19 – Plan & Profile – Wornall Rd
   - 20 – Plan & Profile – Wornall Rd
   - 21 – Plan & Profile – Wornall Rd
   - 24 – Plan & Profile – 75th St
   - 25 – Plan & Profile – 75th St
   - 27 – Plan & Profile – 74th Ter
   - 29 – Cross Sections - Wornall Rd
   - 36 – Cross Sections - Wornall Rd
   - 37 – Cross Sections - Wornall Rd
   - 54 – Cross Sections – 75th St
   - 55 – Cross Sections – 75th St
   - 62 – Intersection Details – 77th Ter & Wornall Rd
   - 82 – Driveway Grading Enlargements
   - 116 – Traffic Signal Demo Plan – Wornall Rd & 75th St

- 118 – Traffic Signal Plan – Wornall Rd & 75th St
- 119 - Traffic Signal Dimension Plan – Wornall Rd & 75th St
- 120 – Traffic Signal Wiring Diagram, Phasing, & Sequence
- 121 – Traffic Signal Summary of Quantities
- 122 – Traffic Signal Plan – 75th & Wyandotte
- 129 – Pavement Marking and Signing Plan – Wornall Rd
- 131 – Pavement Marking and Signing Plan – 75th St
- 132 – Pavement Marking and Signing Plan – 75th St
- 133 – Overall Construction Sequencing
- 134 – Overall Detour Plan
- 135 – Construction Sequencing – Phase 1A
- 136 – Construction Sequencing – Phase 1B
- 137 – Construction Sequencing – Phase 2A
- 138 – Construction Sequencing – Phase 2B
- 139 – Construction Sequencing – Phase 3A
- 140 – Construction Sequencing – Phase 3B
- 141 – Construction Sequencing – Phase 4A
- 142 – Construction Sequencing – Phase 4A
- 142 – Construction Sequencing – Phase 4B
- 143 – Construction Sequencing – Phase 4B
- 145 – Storm Sewer Plan & Profile
- 146 – Storm Sewer Plan & Profile
- 147 – Storm Sewer Plan & Profile
- 148 – Storm Sewer Plan & Profile
- 149 – Storm Sewer Plan & Profile
- 150 – Storm Sewer Plan & Profile
- 151 – Storm Sewer Plan & Profile
- 152 – Storm Sewer Plan & Profile
- 153 – Storm Sewer Plan & Profile
- 154 – Storm Sewer Plan & Profile

NOTE: Bidders must acknowledge receipt of this Addendum by listing the number and date, where provided, on the Bid Form - Document 00410.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

UNIT PRICES - ENGINEER'S ESTIMATE (BASE BID)

Project Number: City Project No. 89008516; Federal Project No. STP 3301(509)

Project Title: Wornall Road - 74th to 79th Streets

NOTE: IN THE EVENT OF DISCREPANCY, UNIT PRICE SHALL GOVERN.

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	Extension
				Roadway Items		
1		LS	1	MOBILIZATION		
2		LS	1	CONSTRUCTION STAKING		
3		LS	1	REMOVAL OF IMPROVEMENTS		
4		SY	19,240	ROADWAY PAVEMENT (ASPHALT OPTION) ROADWAY PAVEMENT (CONCRETE OPTION)		
5		SY	4,712	CONCRETE PAVEMENT (9", PARKING)		
6		SY	1,911	ASPHALT SURFACE MILL & OVERLAY (2")		
7		SY	22,121	UNTREATED COMPACTED AGGREGATE (ROADWAY, ALL DEPTHS)		
8		SY	5,122	UNTREATED COMPACTED AGGREGATE (6", PARKING)		
9		SF	50,379	UNTREATED COMPACTED AGGREGATE (4", SIDEWALK AND RAMPS)		
10		SY	23,060	COMPACTED SUBGRADE (6", ROADWAY)		
11		SY	5,397	COMPACTED SUBGRADE (6", PARKING)		
12		LF	10,064	CONCRETE CURB & GUTTER (ALL TYPES, ROADWAY)		
13		LF	1,312	CONCRETE CURB & GUTTER (ALL TYPES, PARKING)		
14		SF	12,358	CONCRETE COMMERCIAL DRIVE (8", MCIB WA610)		
15		SF	1,117	ASPHALT COMMERCIAL DRIVE (6"+2") TYPE 1-01 & 5-01		
16		SF	43,326	CONCRETE SIDEWALK (4")		
17		SF	7,053	CONCRETE SIDEWALK RAMP (6")		
18		VSF	2,538	CONCRETE RETAINING WALL		
19		EA	3	RELOCATE EXISTING FIRE HYDRANT ASSEMBLY		
20		EA	1	DRINKING FOUNTAIN		
21		EA	81	UTILITY STRUCTURE TOP ADJUSTMENT		
22		SF	324	ROCK BLANKET		
23		EA	33	CURB INLET PROTECTION		
24		EA	1	JUNCTION BOX PROTECTION		
25		EA	4	STRAW WATTLE		
26		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 1A		
27		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 1B		
28		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 2A		
29		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 2B		
30		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 3A		
31		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 3B		
32		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 4A		
33		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 4B		
ROADWAY SUBTOTAL:						

				Storm Drainage		
34		EA	10	CURB INLET CI-1 (5'X3')		
35		EA	1	CURB INLET CI-1 (5'X6')		
36		EA	1	CURB INLET CI-1 (7'X6')		
37		EA	1	CURB INLET CI-2 (5'X3')		
38		EA	1	CURB INLET CI-1 (11'X3')		
39		EA	2	CURB INLET CI-1 (11'X4')		
40		EA	6	CURB INLET / GRATE LID ADJUSTMENT		
41		EA	4	STORMWATER JUNCTION MANHOLE LID ADJUSTMENT		
42		EA	10	SANITARY / COMBINED SEWER JUNCTION LID ADJUSTMENT		
43		LF	379	15" RCP (CLASS III)		
44		LF	449	18" RCP (CLASS III)		
45		LF	238	24" RCP (CLASS III)		
46		LF	88	CONCRETE ENCASEMENT		
STORM DRAINAGE SUBTOTAL:						

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	Extension
				Traffic Fiber Optic		
47		LF	1,752	3" PVC CONDUIT (FIBER OPTIC)		
48		EA	6	TYPE III PULL BOX (FIBER OPTIC)		
49		LF	2,342	96-CT FIBER		
50		EA	2	1000MPS MANAGED ETHERNET SWITCH		
51		EA	2	INTERFACE PANEL (FIBER OPTIC)		
TRAFFIC - FIBER OPTIC SUBTOTAL:						
				Traffic Signals		
52		LF	82	2" PVC CONDUIT		
53		LF	321	2" PVC CONDUIT (IN EXISTING TRENCH)		
54		LF	392	3" PVC CONDUIT (SIGNAL)		
55		LF	260	3" PVC CONDUIT (SIGNAL) (IN EXISTING TRENCH)		
56		LF	94	4" PVC CONDUIT		
57		LF	94	4" PVC CONDUIT (IN EXISTING TRENCH)		
58		EA	3	TYPE I PULL BOX		
59		EA	2	TYPE II PULL BOX		
60		EA	2	CONCRETE BASE (TYPE B8)		
61		EA	1	CONCRETE BASE (TYPE B10)		
62		EA	1	CONCRETE BASE (TYPE B12)		
63		EA	5	CONCRETE BASE (TYPE C)		
64		EA	1	CONCRETE BASE (TYPE E332)		
65		EA	2	MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)		
66		EA	1	MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)		
67		EA	1	MAST ARM POLE (40' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)		
68		EA	3	PEDESTAL POLE (10')		
69		EA	2	PEDESTAL POLE (15')		
70		LF	1,460	SIGNAL WIRE (5C#14)		
71		LF	2,230	SIGNAL WIRE (7C#14)		
72		LF	1,430	STRANDED WIRE (2C#14)		
73		LF	210	POWER CABLE (2C#10)		
74		LF	530	POWER CABLE (3C#8)		
75		LF	160	CAT6 (PTZ+360) CABLE		
76		LF	820	RADAR CABLE		
77		EA	12	SIGNAL HEAD (3 SECTION, 12", LED)		
78		EA	4	SIGNAL HEAD (4 SECTION, 12", LED)		
79		EA	9	PEDESTRIAN SIGNAL HEAD (16", LED)		
80		EA	9	ACCESSIBLE PEDESTRIAN SIGNAL		
81		EA	5	THERMAL VIDEO OR RADAR DETECTION SYSTEM		
82		EA	1	PTZ CAMERA		
83		EA	1	TRAFFIC SIGNAL CABINET		
84		EA	1	SAFETRAN 1C MODULE W/ ASC/3 SOFTWARE		
85		EA	1	WIRELESS SUBSCRIBER UNIT		
86		EA	1	METER CAN & BREAKER BOX		
87		EA	4	STREET NAME SIGNAGE		
88		EA	4	MAST ARM SIGNAGE		
89		LS	1	EXISTING SIGNAL REMOVAL		
90		EA	1	YELLOW FLASHING BEACON		
91		EA	7	ADJUST SIGNAL TIMING & HEAD LOCATIONS		
92		EA	1	EXISTING PEDESTAL POLE REMOVAL		
93		EA	1	ADJUST PULLBOX (SIGNAL)		
TRAFFIC - SIGNALS SUBTOTAL:						

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	Extension
				Traffic Signage and Pavement Markings		
94		SF	377	MEP SIGNS		
95		LF	653	POST		
96		LF	104	POST ANCHOR (2"X2")		
97		LF	66	ANCHOR SLEEVE (2-1/4"X2-1/4")		
98		EA	36	CONCRETE SURFACE ANCHOR		
99		EA	4	PAVER ANCHOR AND SLEEVE		
100		EA	8	RRFB		
101		LF	2,340	4" WHITE (THERMOPLASTIC)		
102		LF	2,560	4" SOLID WHITE PARKING LINE (PAINT)		
103		LF	90	4" SOLID WHITE PARKING TICK MARKS (THERMOPLASTIC)		
104		LF	9,079	4" SOLID YELLOW (THERMOPLASTIC)		
105		LF	1,201	6" SOLID WHITE CROSSWALK LINE (EPOXY)		
106		LF	70	8" SOLID WHITE DOTTED LINE (THERMOPLASTIC)		
107		LF	50	12" SOLID WHITE CROSSHATCH (PAINT)		
108		LF	60	12" SOLID YELLOW CROSSHATCH (PAINT)		
109		LF	251	24" SOLID WHITE STOP BAR (EPOXY)		
110		EA	34	WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC)		
111		EA	2	WHITE "ONLY" (PRE-FORMED THERMOPLASTIC)		
112		EA	5	ACCESSIBLE PAVEMENT MARKING		
TRAFFIC - SIGNAGE AND PAVEMENT MARKINGS SUBTOTAL:						

				Street Lighting		
113		EA	19	REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE		
114		EA	5	REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE		
115		EA	5	REMOVAL - LUMINAIRE, BRAKET ARM & CABLE		
116		EA	4	INSTALL - LUMINAIRE ON SIGNAL POLE		
117		EA	1	REPLACE - LUMINAIRE EXISTING ON SIGNAL POLE		
118		EA	2	LUMINAIRE TYPE A		
119		EA	2	LUMINAIRE TYPE B		
120		EA	16	LUMINAIRE TYPE C		
121		EA	22	LUMINAIRE TYPE D		
122		EA	32	POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT		
123		EA	12	BRACKET ARM, 6 FOOT, SINGLE MEMBER		
124		EA	17	BRACKET ARM, 10 FOOT, TRUSS TYPE		
125		EA	4	BRACKET ARM, 12 FOOT, TRUSS TYPE		
126		EA	32	ANTI-THEFT DEVICE (8")		
127		EA	35	ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS		
128		EA	64	BREAKAWAY KITS, HEB FUSED W/ 10A FUSES		
129		EA	32	BREAKAWAY KITS, HEB UNFUSED		
130		EA	1	LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT		
131		EA	2	LIGHTING CONTROLLER, 120/240 VOLT 4 CIRCUIT		
132		EA	8	GROUND ROD		
133		LF	5746	CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE		
134		LF	4350	TRENCHING FOR 1" CABLE-IN-DUCT		
135		LF	197	3" CONDUIT PVC SCH 40 TRENCHED		
136		EA	27	LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)		
137		EA	5	LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)		
138		EA	2	TYPE II PULL BOX		
139		LF	4,698	CABLE #10 RHW/USE (POLE AND BRACKET CABLING)		
STREET LIGHTING SUBTOTAL:						

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	Extension
				Streetscape		
140		SF	5,279	BRICK PAVERS		
141		SF	1,317	DECORATIVE CROSSWALK		
142		EA	1	DECORATIVE CENTER LOGO		
143		EA	3	MOBILITY PARKING SYMBOLS		
144		LF	296	PEDESTRIAN GUARDRAIL		
145		EA	4	LITTER RECEPTACLES		
146		EA	3	BENCH		
147		EA	4	BIKE RACK		
148		EA	59	DECORATIVE METAL BOLLARD		
149		EA	5	ACCESS CONTROL BOLLARDS		
150		EA	1	INTERPRETIVE BASE AND FRAME		
151		SF	185	DECORATIVE GRAVEL		
152		EA	1,054	BULB		
153		SY	2,804	FESCUE TURF SOD		
STREETSCAPE SUBTOTAL:						
				Green Infrastructure		
154		CY	16,970	EXCAVATION (PARKING, DETENTION & TREE PLANTERS)		
155		CY	32	EMBANKMENT (PARKING, DETENTION & TREE PLANTERS)		
156		LF	140	TREE GRATE CURB (CONCRETE)		
157		EA	14	4' X 4' TREE GRATE		
158		EA	1	4' DIA. TREE GRATE		
159		CF	12,833	TREE PLANTERS		
160		EA	6	CURBFLOW		
161		LF	848	UNDERDRAIN (W/ CLEANOUTS)		
162		LF	1,243	UNDERDRAIN & STORMWATER DISTRIBUTION LOOP		
163		EA	28	TREES (2.5" CAL.)		
164		EA	56	SHRUBS - 3 GAL.		
165		EA	15	TREE ANCHORING SYSTEM		
166		EA	2,080	PERENNIAL (#1 CONT.)		
167		EA	644	PLUG PLANT MATERIAL		
168		CY	1,020	PLANTING SOIL		
169		EA	21	INFILTRATION TEST		
170		EA	28	TREE HYDRATION BLADDERS		
171		EA	5	MODIFIED TYPE 2 CURB TREE INLET W/ OUTFALL (4'X4')		
172		EA	4	MODIFIED TYPE 2 CURB TREE INLET W/OUT OUTFALL (4'X4')		
173		EA	8	MH-1 (4' DIA)		
174		EA	3	MH-1 (5' DIA)		
175		EA	1	STORM WATER DETENTION (NORTH PARKING LOT)		
176		EA	1	STORM WATER DETENTION (SOUTH PARKING LOT)		
GREEN SOLUTIONS SUBTOTAL:						
				Water Main Replacement		
177		LS	1	MOBILIZATION		
178		LF	2395	12" CL 52 DIP ZINC COATED W/ POLYWRAP		
179		EA	7	12" SOLID SLEEVE		
180		EA	18	12" MJ 45° BEND W/ BACKING BLOCK		
181		EA	1	12" x 12" TEE W/ BACKING BLOCK		
182		EA	7	12" x 6" TEE W/ BACKING BLOCK		
183		EA	8	12" GATE VALVE		
184		EA	12	STRADDLE BLOCK		
185		EA	4	KC-1 SPEC HYDRANT ASSEMBLY		
186		LF	2180	FLOWABLE FILL ABANDONMENT (EXISTING 12"CIP)		
187		LF	60	FLOWABLE FILL ABANDONMENT (EXISTING 10"CIP)		
188		EA	2	10" SOLID SLEEVE		
189		LF	3	10" CL 54 DIP ZINC COATED W/ POLYWRAP		
190		EA	2	6" MJ 45° BEND W/ BACKING BLOCK		
191		EA	2	6" SOLID SLEEVE		
192		EA	7	6"GATE BALVE		
193		EA	7	TEMPORARY BLOW-OFF ASSEMBLY		
194		EA	11	3/4" WATER SERVICE		
195		EA	13	3/4" WATER METER		
196		EA	5	1" WATER SERVICE		
197		EA	4	1" WATER METER		
198		EA	1	1.5" WATER SERVICE		
199		EA	1	1.5" WATER METER		
200		EA	1	2" WATER SERVICE		
201		EA	3	2" WATER METER		
202		EA	1	4" WATER SERVICE		

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	Extension
203		EA	3	6" WATER SERVICE		
204		EA	1	6" WATER METER		
205		EA	1	NEW WATER SERVICE (SIZE UNKNOWN)		
206		EA	17	CURB STOP		
207		SY	921	PAVEMENT REPLACEMENT		
208		EA	1	TRAFFIC CONTROL		
WATER MAIN SUBTOTAL:						
GRAND TOTAL - ALL ITEMS						**$ -**

Note: May be printed, for manual fill-in, or filled in on electronic excel spreadsheet version.

CITY OF FOUNTAINS
HEART OF THE NATION

KANSAS CITY
MISSOURI

UNIT PRICES - ENGINEER'S ESTIMATE (ADD ALTERNATE NO. 1)

Project Number: City Project No. 89008516; Federal Project No. STP 3301(509)

Project Title: Wornall Road - 74th to 79th Streets

NOTE: IN THE EVENT OF DISCREPANCY, UNIT PRICE SHALL GOVERN.

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	
				Roadway Items		
1		LS	1	MOBILIZATION		
2		LS	1	CONSTRUCTION STAKING		
3		LS	1	REMOVAL OF IMPROVEMENTS		
4		SY	5,882	ROADWAY PAVEMENT (ASPHALT OPTION) ROADWAY PAVEMENT (CONCRETE OPTION)		
5		SY	6,789	UNTREATED COMPACTED AGGREGATE (ROADWAY, ALL DEPTHS)		
6		SF	11,902	UNTREATED COMPACTED AGGREGATE (4", SIDEWALK AND RAMPS)		
7		SY	7,094	COMPACTED SUBGRADE (6", ROADWAY)		
8		LF	2,160	CONCRETE CURB & GUTTER (ALL TYPES, ROADWAY)		
9		SF	10,994	CONCRETE COMMERCIAL DRIVE (8", MCIB WA610)		
10		SF	8,834	ASPHALT COMMERCIAL DRIVE (6"+2") TYPE 1-01 & 5-01		
11		SF	11,902	CONCRETE SIDEWALK (4")		
12		SF	1,916	CONCRETE SIDEWALK RAMP (6")		
13		EA	2	RELOCATE EXISTING FIRE HYDRANT ASSEMBLY		
14		EA	31	UTILITY STRUCTURE TOP ADJUSTMENT		
15		EA	9	CURB INLET PROTECTION		
16		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 4A		
17		EA	1	TEMPORARY TRAFFIC CONTROL - PHASE 4A		
ROADWAY SUBTOTAL:						
				Storm Drainage		
18		EA	1	CURB INLET CI-1 (5'X3')		
19		EA	1	CURB INLET CI-2 (5'X4')		
20		EA	2	CURB INLET CI-2 (5'X3')		
21		EA	5	CURB INLET / GRATE LID ADJUSTMENT		
22		EA	4	STORMWATER JUNCTION MANHOLE LID ADJUSTMENT		
23		EA	2	SANITARY / COMBINED SEWER JUNCTION LID ADJUSTMENT		
24		LF	141	15" RCP (CLASS III)		
25		LF	12	18" RCP (CLASS III)		
STORM DRAINAGE SUBTOTAL:						
				Traffic Fiber Optic		
26		LF	1,704	3" PVC CONDUIT (FIBER OPTIC)		
27		EA	5	TYPE III PULL BOX (FIBER OPTIC)		
28		LF	2,214	96-CT FIBER		
TRAFFIC - FIBER OPTIC SUBTOTAL:						

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	
				Traffic Signage and Pavement Markings		
29		SF	73	MEP SIGNS		
30		LF	137	POST		
31		LF	4	POST ANCHOR (2"X2")		
32		LF	3	ANCHOR SLEEVE (2-1/4"X2-1/4")		
33		EA	12	CONCRETE SURFACE ANCHOR		
34		LF	490	4" WHITE (THERMOPLASTIC)		
35		LF	1,091	4" SOLID YELLOW (THERMOPLASTIC)		
36		LF	239	6" SOLID WHITE CROSSWALK LINE (EPOXY)		
37		LF	40	24" SOLID WHITE STOP BAR (EPOXY)		
TRAFFIC - SIGNAGE AND PAVEMENT MARKINGS SUBTOTAL:						
				Street Lighting		
38		EA	11	REMOVAL - LUMINAIRE, BRACKET ARM AND CABLE		
39		EA	3	LUMINAIRE TYPE C		
40		EA	11	LUMINAIRE TYPE D		
41		EA	2	POLE, METAL, FOR 30 FT LUMINAIRE MOUNTING HEIGHT		
42		EA	10	POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT		
43		EA	2	BRACKET ARM, 6 FOOT, SINGLE MEMBER		
44		EA	9	BRACKET ARM, 10 FOOT, TRUSS TYPE		
45		EA	1	BRACKET ARM, 12 FOOT, TRUSS TYPE		
46		EA	2	ANTI-THEFT DEVICE (6")		
47		EA	10	ANTI-THEFT DEVICE (8")		
48		EA	13	ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS		
49		EA	24	BREAKAWAY KITS, HEB FUSED W/ 10A FUSES		
50		EA	12	BREAKAWAY KITS, HEB UNFUSED		
51		EA	1	LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT		
52		EA	1	GROUND ROD		
53		LF	1312	CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE		
54		LF	1250	TRENCHING FOR 1" CABLE-IN-DUCT		
55		LF	95	3" CONDUIT PVC SCH 40 TRENCHED		
56		EA	10	LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)		
57		EA	2	LUMINAIRE FOUNDATION (SMALL, 30 FT MOUNTING HEIGHT POLES)		
58		EA	1	TYPE II PULL BOX		
59		LF	1068	CABLE #10 RHW/USE (POLE AND BRACKET CABLING)		
STREET LIGHTING SUBTOTAL:						
				Streetscape		
60		SY	45	FESCUE TURF SOD		
STREETSCAPE SUBTOTAL:						
GRAND TOTAL - ALL ITEMS						**$ -**

Note: May be printed, for manual fill-in, or filled in on electronic excel spreadsheet version.

JOB SPECIAL PROVISIONS

D. Asphaltic Cement Price Index:

This is the method of price adjustment for asphalt concrete materials (covered in this section) used on the Project. Adjustments will be made to the unit prices used to determine payments due the Contractor for any asphalt concrete base or asphalt concrete surface when the monthly average price for the asphalt cement used for the asphalt base or surface has fluctuated from the price determined on the month the project was bid. Adjustment calculations are based on PG64-22, but will apply equally to all grades of asphaltic cement. The calendar month price for the Kansas City metropolitan area shall be obtained from the following:

The monthly average price for the midpoint of the published prices of PG64-22 will be taken from the "Asphalt Weekly Monitor"® Kansas City, Missouri area and St. Louis, Missouri area, published by Poten & Partners Inc. The monthly base price will be the price from the last published "Asphalt Weekly Monitor"® prior to MoDOT's monthly bid opening. This price will be published at http://www.modot.mo.gov/ business/contractor resources/bidOpenIndex.shtml, and will be the price used for asphalt bidding and/or placement during the month following the published price.

1. The price adjustment will be applied to the percent of asphalt binder used in the mix design(s) of the asphaltic concrete approved for the project. The amount of asphalt shall be based on the percentage total of virgin asphalt binder contained in the design mix. The effective asphalt content obtained from the use of recycled asphaltic concrete pavement (RAP) will not be eligible for adjustment. **Asphalt index adjustment will not be applied to work completed under a time-materials basis**.

2. To determine the adjustment for any material specified in this provision the following formula will be used.

   A = (B x C) x (D-E)

   Where:

   A = Adjustment for mix placed during monthly average index period.

   B = Tons of Mix Placed during the monthly average index period

   C = % total of virgin asphalt binder as listed in the job mix formula in use

   D = Monthly average price at time of mix placement

   E = Monthly average price at time of bid

3. The Engineer will make adjustment payments (or deductions) for the applicable work completed. If the working days or calendar completion date expire, payments (or deductions) will continue to be applied, but the adjustment will be based on the index for the month the project working days or calendar completion date expired or the monthly average price at time of mix placement, whichever is lower.

Terracon GeoReport

Geotechnical Engineering Report

Wornall Road Improvements

Kansas City, Missouri

September 19, 2018

Terracon Project No. 02175345

Prepared for:

Walter P. Moore

Kansas City, Missouri

Prepared by:

Terracon Consultants, Inc.

Lenexa, Kansas

September 19, 2018

Walter P. Moore
1100 Walnut, Suite 1825
Kansas City, Missouri 64106

Attn: Mr. Dan Brown, P.E. – Principal/Managing Director
P: (816) 701-2100
E: dlbrown@walterpmoore.com

Re: Geotechnical Engineering Report
Wornall Road Improvements
74th Street to 79th Street
Kansas City, Missouri
Terracon Project No. 02175345

Dear Mr. Brown:

We have completed a geotechnical exploration for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P02175345 dated February 27, 2018. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork, stormwater basins, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Kevin D. Friedrichs, P.E.
Project Engineer
Missouri: PE 2013010325

Kole C. Berg, P.E.
Senior Engineer
Missouri: PE 2002016417

REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon GeoReport logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Geotechnical Engineering Report

Wornall Road Improvements
74th Street to 79th Street
Kansas City, Missouri

Terracon Project No. 02175345

September 19, 2018

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering evaluation performed for the proposed improvements of Wornall Road from 74th Street to 79th Street in Kansas City, Missouri. Twenty-five (25) exploratory borings were performed at the site to depths ranging from approximately 4 to 10 feet below existing site grades. This report describes the subsurface conditions encountered at the boring locations, presents the test data, and provides geotechnical recommendations for earthwork, pavement subgrade preparation and, considerations for stormwater basins.

Maps showing boring locations are shown in the **Site Location and Exploration Plan** section. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs in the **Exploration Results** section of this report.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Project Location	The project alignment is Wornall Road from 74th Street to 79th Street in Kansas City, Missouri.
Existing Improvements	The road is presently asphalt surfaced with concrete curb, gutter and sidewalks.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed in the project planning stage. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Project Description	Wornall Road will be fully reconstructed from 74th to 79th Street. Green infrastructure elements (including stormwater best management practice (BMP)) will also be incorporated into the reconstruction project adjacent to the roadway alignment.
Grading	A site grading plan was not provided. We have considered less than 2 feet of cut/fill will be required to develop final grades.
Below Grade Structures	Below grade stormwater storage is planned beneath the parking lot at the Northeast corner of Wornall Road and 75th Street.
Pavements	No information regarding anticipated vehicle types, axle loads, or traffic volumes was provided. We assume that pavement design thicknesses will follow the KC Metro APWA standards.

GEOTECHNICAL CHARACTERIZATION

Subsurface Profile

We have developed a general characterization of the subsurface soil and groundwater conditions based upon our review of the data and our understanding of the geologic setting and planned construction. The following table provides our geotechnical characterization.

The geotechnical characterization forms the basis of our geotechnical calculations and evaluation of site preparation, foundation options and pavement options. As noted in **General Comments**, the characterization is based upon widely spaced exploration points across the site, and variations are likely.

Borings drilled along Wornall Road (P-1 to P-17)

Stratum	Approximate Depth to Bottom of Stratum	Material Description	Consistency
1	11 to 19 inches	Pavement section – 3 to 10 inches of asphalt over cobble stone aggregate with asphalt binder or concrete	N/A
2	1½ to 5 feet	Fill – Clayey Gravel with varying amounts of cobbles	N/A
3	Undetermined: Borings terminated within this stratum at the planned depth of approximately 10 feet	Fat Clay (CH), with varying amounts of gravel	Medium stiff to stiff

Conditions encountered at each boring location are indicated on the individual boring logs shown in the **Exploration Results** section and are attached to this report. Stratification boundaries on

the boring logs represent the approximate location of changes in native soil types; in situ, the transition between materials may be gradual.

Groundwater Conditions

The boreholes were observed during drilling for the presence and level of groundwater. Groundwater was not observed within 6 feet of the surface in the boreholes during our subsurface exploration. Long-term observations in piezometers or observation wells, sealed from the influence of surface water, would be needed to develop more detailed groundwater information. Groundwater level fluctuations occur due to variations in rainfall, runoff, and other factors not evident at the time we performed the borings. The potential for groundwater level fluctuations should be considered when developing the design and construction plans for the project.

EARTHWORK

Site Preparation

All preparatory site work should be in compliance with the latest version of Section 2100 – Grading and Site Preparation – Kansas City Metropolitan Chapter of the American Public Works Association (APWA).

Initial Proofrolling

After the street subgrades have been cut to grade, but before fill is placed, the subgrades should be proofrolled with a fully loaded, tandem-axle dump truck or other equipment providing an equivalent loading. The initial proofrolling will aid in delineating soft, yielding, or otherwise unsuitable soil located at or just below the exposed subgrade level. Areas that rut, pump, or deflect during the initial proofrolling should be overexcavated and replaced with engineered fill. Proofrolling is also recommended in areas left near existing grade after rough grading is completed. A minimum gross weight of 25 tons is recommended for the proofrolling equipment. In our opinion, experienced personnel should observe proofrolling operations to help identify unstable subgrade material.

Excavations and Temporary Slopes

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be

liable and subject to substantial penalties. Under no circumstances should the information provided in this report be interpreted to mean that Terracon is responsible for construction site safety or the contractor's activities. Construction site safety is the sole responsibility of the contractor who shall also be solely responsible for the means, methods, and sequencing of the construction operations.

Material Requirements

Materials that will be used as engineered fill to support pavements and other features that are settlement sensitive should consist of approved materials. Approved materials should be free of organic matter and debris. Frozen materials should not be used, and fill should not be placed on a frozen subgrade. Fill materials should be placed and compacted as shown in the table below:

Item		Description
Lift Thickness (maximum)		9 inches in loose thickness when large, self-propelled compaction equipment is used. 4 inches when small, hand-guided equipment (plate or "jumping jack" compactor) is used.
Minimum Compaction Requirements [1]		At least 95 percent of the material's maximum dry density [1]
Moisture Content of Clay Soil	LL<45	-2 to +2 percent of optimum moisture content value [1]
	LL>45	0 to 4 percent above the optimum moisture content value [1]
Moisture Content of Granular Material		Sufficient to achieve compaction without pumping when proofrolled

1. As determined by the standard Proctor test (ASTM D 698)

We recommend that engineered fill be tested for moisture content and compaction during placement. If the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.

To reduce the potential for future subgrade swell, the subgrade moisture should be maintained within the recommended range until the pavements are constructed. Grades should be sloped to provide rapid drainage of surface water away from the pavements.

Pavement Subgrades

Pavement subgrades should be prepared as outlined in the latest version of Section 2201 – Subgrade Preparation of Construction and Material Specifications from the KC Metropolitan Chapter of APWA

Pavement subgrades are expected to consist of existing fill soils and native clay soils. If soft or otherwise unsuitable areas are observed, additional over-excavation and replacement will be needed.

Grading and paving are commonly performed by separate contractors and there is often a time lapse between the end of grading operations and the commencement of paving. Subgrades prepared early in the construction process may become disturbed by construction traffic. Non-uniform subgrades often result in poor pavement performance and local failures relatively soon after pavements are constructed. Depending on the paving equipment used by the contractor, measures may be required to improve subgrade strength to greater depths for support of heavily loaded concrete/asphalt trucks.

We recommend the moisture content and density of the subgrade be evaluated and the pavement subgrades be proofrolled (using a loaded tandem-axle dump truck with a minimum gross weight of 25 tons or similarly loaded rubber-tire equipment) within two days prior to commencement of actual paving operations. Areas not in compliance with the required ranges of moisture or density should be scarified, moisture conditioned, and compacted. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the materials with properly compacted fills. The subgrade should be in its finished form at the time of the final review.

PAVEMENTS

Minimum Pavement Thickness

The following table is a summary of minimum pavement thicknesses from the KC Metro APWA Design Criteria for City Streets.

Pavement Type	Major Arterial	Minor Arterial
PCC (Option 1)	9 inches PCC 6 inches compacted subgrade (at least 95% of maximum density - standard proctor)	8 inches PCC 6 inches compacted subgrade (at least 95% of maximum density - standard proctor)
ACC (Option 2)	2 inches Type 3 ACC surface 10 inches Type 1 ACC base 6 inches compacted subgrade (at least 95% of maximum density - standard proctor)	2 inches Type 3 ACC surface 9 inches Type 1 ACC base 6 inches compacted subgrade (at least 95% of maximum density - standard proctor)

PCC pavements will perform better than ACC in areas where short-radii turning and braking are expected (i.e., entrance/exit aprons) due to better resistance to rutting and shoving.

Paved areas should be sloped to provide rapid drainage of surface water. Pavements should be designed so water does not accumulate on or adjacent to the pavement, since this could saturate and soften the subgrade soils and subsequently accelerate pavement deterioration.

Periodic maintenance of the pavements will be required. Cracks should be sealed, and areas exhibiting distress should be repaired promptly to help prevent further deterioration. Even with periodic maintenance, some movement and related cracking may still occur and repairs may be required.

STORMWATER BMPS

Project plans call for several stormwater BMPs adjacent to the roadway. We performed borings at these locations and collected samples to conduct flexible wall permeability tests to determine the approximate rate at which water will infiltrate into the soil. This test was conducted on an undisturbed sample of soil collected using a thin-walled Shelby tube. The sample was placed in the flexible wall permeameter and subjected to a constant head of water. The following table presents our results:

Sample Location (Depth)	Material Type	Hydraulic Conductivity
BMP-1 (3½ to 5½ feet)	Lean Clay (CL)	0.000156 inches/hour
BMP-3 (1 to 3 feet)	Fat Clay (CH), trace gravel	0.000354 inches/hour

Based on these results the hydraulic conductivity or rate of infiltration is low for the clay soils encountered at the site. Typical hydraulic conductivity rates for clays in the Kansas City area range from 0.05 to 0.15 inches per hour. The results shown in the table above are based on testing a relatively small sample of soil in a controlled laboratory environment. We recommend a field infiltration test (double ring infiltration or similar) be conducted at the proposed bottom elevation of an accessible BMP location to either confirm or refute these laboratory rates in a field setting.

The hydraulic conductivity of the soils in the base of the BMP can be increased by decompacting the bottom 12 inches of the BMP and incorporating 2 inches of sand into the soil. This may be a viable option to increase the infiltration rate if results of the field double ring infiltration test confirm the low hydraulic conductivity rates from the flexible wall permeability tests conducted in the lab.

Borings BMP-3 and BMP-4 encountered fill and a concrete or limestone obstruction at a depth of approximately 3½ to 4 feet below the ground surface. Existing fill and any impermeable

obstructions should be removed from the bottom elevation of the BMPs and replaced with soil with an appropriate hydraulic conductivity that is acceptable to the BMP design engineer.

Groundwater was not encountered in any of the BMP borings and was not encountered at any location within 6 feet of the ground surface. We do not anticipate groundwater within the depth of excavation for the BMPs and groundwater is not anticipated to impact the performance of the stormwater BMPs.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our scope of services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third party beneficiaries intended. Any third party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

The borings were located in the field by Terracon personnel using a hand-held GPS unit with a horizontal accuracy of ±10 feet. Ground surface elevations at the boring locations were not measured by our field crew.

The borings were drilled with a truck-mounted, rotary drill rig using solid-stem, continuous flight augers to advance the boreholes. Samples of the soil encountered in the borings were obtained using thin-walled tube and split-barrel sampling procedures. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split-barrel sampling procedure, a standard 2-inch outside diameter split-barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. The drill crew backfilled the borings with auger cuttings after completion of drilling/sampling and prior to leaving the site.

The drill crew prepared a field log of each boring to record data including visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. The final boring logs included with this report represent the engineer's interpretation of the subsurface conditions at the borings based on field and laboratory data and observation of the samples.

Laboratory Testing

Representative soil samples were tested in the laboratory to measure their natural water content, dry unit weight, and Atterberg limits. A pocket penetrometer was used to estimate the consistency of selected cohesive samples. Flex-wall permeability tests were conducted on select samples at proposed stormwater BMP locations. The test results are provided on the boring logs included in **Exploration Results**.

The soil samples were classified in the laboratory based on visual observation, texture, plasticity, and the laboratory testing described above. The soil descriptions presented on the boring logs are in accordance with the enclosed General Notes and Unified Soil Classification System (USCS). The estimated USCS group symbols for native soils are shown on the boring logs, and a brief description of the USCS is included in this report.

SITE LOCATION AND EXPLORATION PLANS

SITE LOCATION

Wornall Road Improvements ■ Kansas City, MO
July 17, 2018 ■ Terracon Project No. 02175345

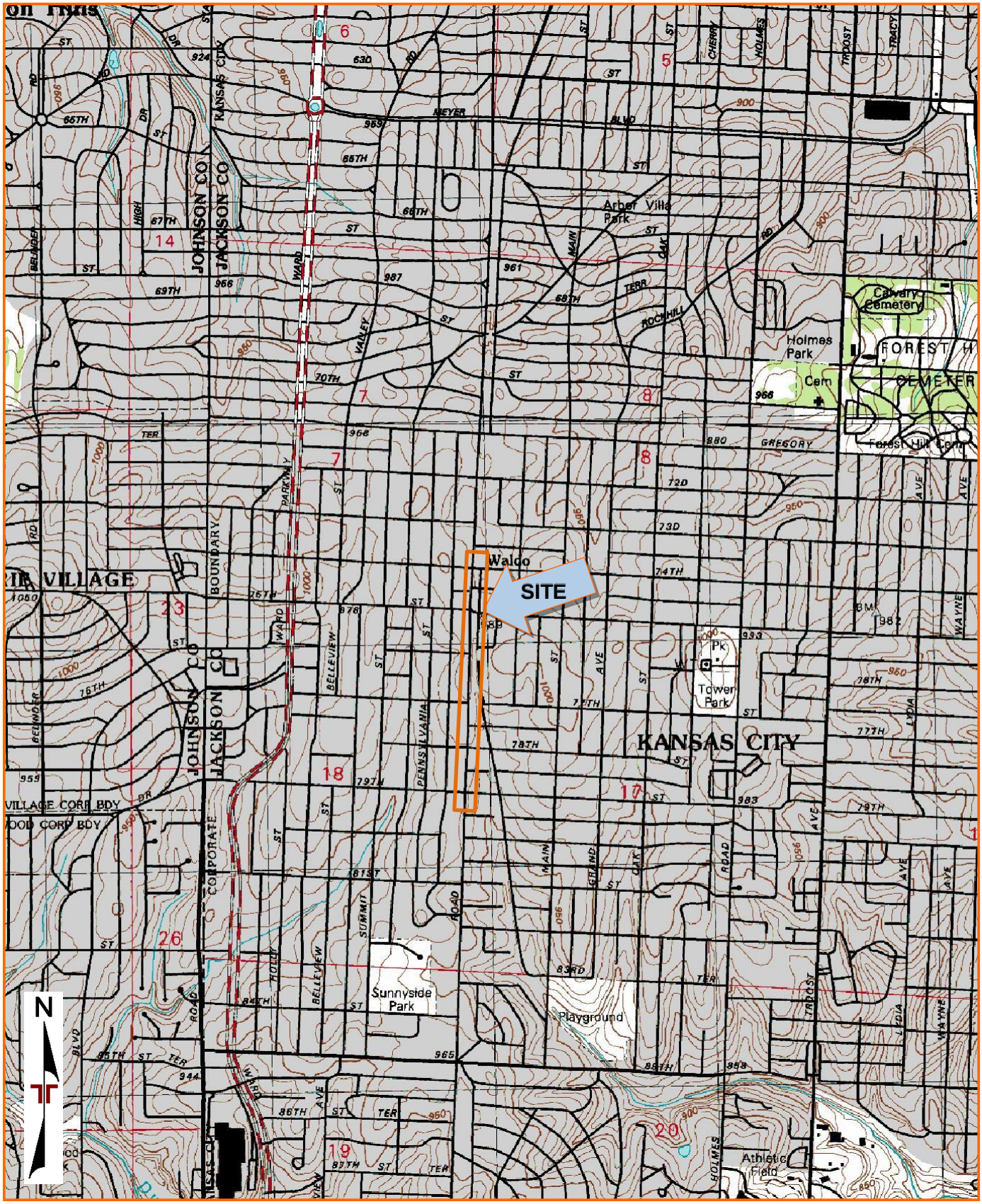


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: KANSAS CITY, MO (1/1/1996) and GRANDVIEW, MO (1/1/1996).

EXPLORATION PLAN

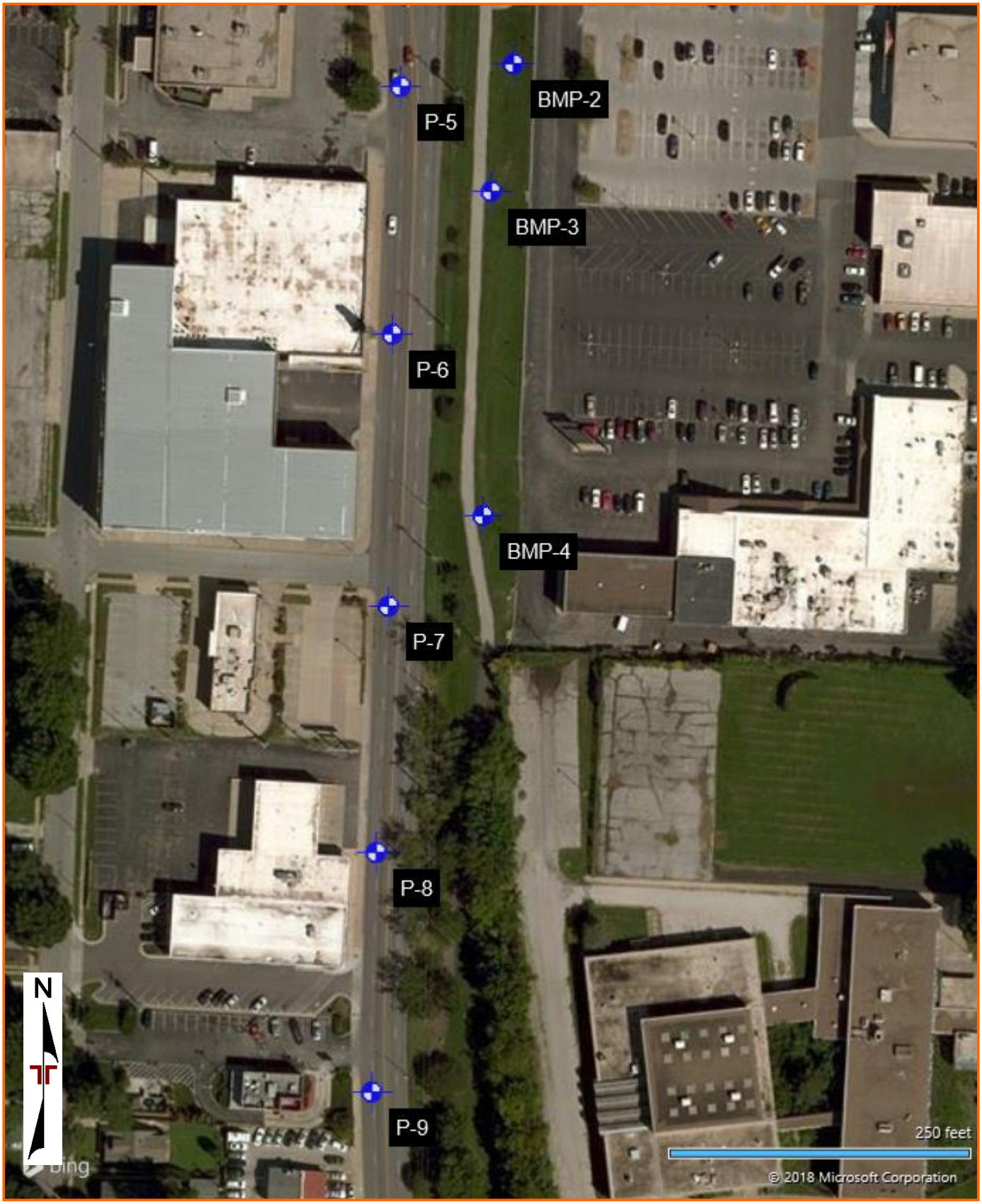
Wornall Road Improvements ■ Kansas City, MO
July 17, 2018 ■ Terracon Project No. 02175345

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Wornall Road Improvements ■ Kansas City, MO
July 17, 2018 ■ Terracon Project No. 02175345



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AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Wornall Road Improvements ■ Kansas City, MO
July 17, 2018 ■ Terracon Project No. 02175345

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Wornall Road Improvements ■ Kansas City, MO
July 17, 2018 ■ Terracon Project No. 02175345

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

BORING LOG NO. BMP-1

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.993112° Longitude: -94.594219°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.5	**6" ASPHALT**									
	1.2	**8" CONCRETE**									
	1.5	**FILL - FAT CLAY**, with gravel, dark brown to gray									
		FAT CLAY (CH), dark brown to gray, stiff				8		2.5	17	109	
						13		2.25	29	93	
	5.5		5								
		Boring Terminated at 5.5 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. BMP-2

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.991841° Longitude: -94.59402°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.4	**5" ROOT ZONE**									
	1.0	**FILL - FAT CLAY**, with gravel, dark brown to gray									
		FAT CLAY (CH), dark brown to gray, stiff				13		4.5+	18		
						16		1.75	29	96	
	5.0		5								
		Boring Terminated at 5 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. BMP-3

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.99155° Longitude: -94.594085°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.5									
					11			17	109	50-18-32
					8			25	100	
	3.8									

6" ROOT ZONE

FILL - FAT CLAY, with gravel, dark brown to gray

- limestone boulder or slab below 3.7 feet

Auger Refusal at 3.8 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 04-26-2018 | Boring Completed: 04-26-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. BMP-4

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.990811° Longitude: -94.594109°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
0.5										
					9			21	103	57-21-36
					9			13	101	
3.8										

6" ROOT ZONE

FAT CLAY, with gravel, dark brown to gray

- limestone boulder or slab below 3.7 feet

Auger Refusal at 3.8 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 04-26-2018 | Boring Completed: 04-26-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. BMP-5

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.992206° Longitude: -94.592067°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.5	**6" ASPHALT**									
	0.9	**5" AGGREGATE BASE**									
		FAT CLAY, dark brown to gray, stiff				9		2.25	29	93	
						13		2.0	30	91	
	5.0		5								
		Boring Terminated at 5 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. S-1

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.993209° Longitude: -94.593998°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
0.5		**6" ASPHALT**									
1.0		**6" AGGREGATE BASE**									
1.5		**FILL - FAT CLAY**, with gravel, dark brown to gray									
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff			X	18	2-3-3 N=6		29		
					X	15	3-3-5 N=8		29		77-24-53
			5								
					X	18	2-4-4 N=8		24		
					X	18	3-3-5 N=8		22		
10.0		***Boring Terminated at 10 Feet***	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. S-2

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.992901° Longitude: -94.594007°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
0.3		**4" ASPHALT**									
		12" AGGREGATE BASE									
1.3		**FILL - FAT CLAY**, with gravel, dark brown to gray			X	12	3-2-3 N=5		27		
3.0		**FAT CLAY (CH)**, dark brown to gray, medium stiff to stiff			X	18	2-3-5 N=8		28		
			5								
					X	18	3-4-5 N=9		27		
					X	18	3-4-5 N=9		23		
10.0		***Boring Terminated at 10 Feet***	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. S-3

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.992501° Longitude: -94.594032°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.4	**5" ASPHALT**									
	0.9	**6" AGGREGATE BASE**									
		FILL - FAT CLAY, with gravel, dark brown to gray			X	15	3-4-3 N=7		14		55-23-32
	3.0	**FAT CLAY (CH)**, dark brown to gray, medium stiff to stiff									
			5		X	18	3-4-5 N=9		29		
					X	18	3-4-5 N=9		23		
					X	18	3-3-5 N=8		25		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-1

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.994065° Longitude: -94.59418°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.7	**8" ASPHALT**									
	1.0	**4" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
		FILL - CLAYEY GRAVEL, with cobbles, light brown to gray			X	5	5-3-2 N=5		20		
	3.0	**FAT CLAY (CH)**, dark brown to gray, medium stiff to stiff			X	16	2-3-5 N=8		29		65-25-40
			5		X	14	2-2-3 N=5		28		
					X	18	2-3-3 N=6		23		
	10.0	***Boring Terminated at 10 Feet***	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-2

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.993519° Longitude: -94.594208°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
		8" ASPHALT									
0.7											
1.0		**4" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
		FILL - CLAYEY GRAVEL, with cobbles, light brown to gray									
2.0											
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff				15	2-3-3 N=6		30		
						18	1-2-3 N=5		32		
			5								
						18	3-4-4 N=8		27		
						18	2-4-4 N=8		23		
10.0			10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-3

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.992675° Longitude: -94.594235°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.3	**3" ASPHALT**									
	0.9	**8" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
	1.5	**FILL - CLAYEY GRAVEL**, with cobbles, light brown to gray									
		FILL - FAT CLAY, with gravel, dark brown			X	14	3-5-5 N=10		18		52-20-32
					X	12	3-10-12 N=22		8		
	5.0		5								
		FAT CLAY (CH), dark brown to gray, stiff			X	18	3-5-8 N=13		27		
					X	18	2-3-5 N=8		25		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-18-2018 | Boring Completed: 05-18-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-4

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.992196° Longitude: -94.594387°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
0.6		**7" ASPHALT**									
1.6		**12" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
1.8		**FILL - CLAYEY GRAVEL** , with cobbles, light brown to gray			X	14	2-3-3 N=6		33		
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff									
					X	17	3-3-5 N=8		30		
			5								
					X	18	2-2-3 N=5		29		
					X	18	2-2-4 N=6		23		
10.0			10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 05-17-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-5

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.991789° Longitude: -94.594351°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.7 **8" ASPHALT**									
	1.0 **4" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
	FILL - CLAYEY GRAVEL, with cobbles, light brown to gray									
	2.5				0	3-5-3 N=8				
	FAT CLAY (CH), dark brown to gray, stiff									
					18	3-4-4 N=8		28		42-21-21
		5								
					18	3-3-5 N=8		27		
			▽							
			▽		18	2-3-4 N=7		23		
	10.0	10								
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

▽ *9 feet while drilling*

▽ *9.5 feet after completion*

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 05-17-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-6

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.991225° Longitude: -94.594375°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	10" ASPHALT 0.8									
	1.2 **4" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
	FILL - CLAYEY GRAVEL, with cobbles, light brown to gray			X	13	3-6-6 N=12		21		
	3.5 **FAT CLAY (CH)**, dark brown to gray, medium stiff to stiff			X	18	2-3-5 N=8		36		
		5		X	18	3-4-5 N=9		28		
				X	18	2-3-4 N=7		23		
	10.0 ***Boring Terminated at 10 Feet***	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 05-17-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-7

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.990605° Longitude: -94.594386°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
		8" ASPHALT									
0.7		**8" CONCRETE**									
1.3											
1.5		**FILL - CLAYEY GRAVEL**, light brown to gray									
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff				14	4-5-6 N=11		20		50-20-30
						18	3-3-4 N=7		29		
			5								
				▽		18	2-3-4 N=7		28		
				▽		18	3-4-7 N=11		24		
10.0			10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6.5 feet while drilling*

▽ *7.5 feet after completion*

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 05-17-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-8

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.990044° Longitude: -94.594422°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
0.6		**7" ASPHALT**									
1.3		**9" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
1.7		**FILL - CLAYEY GRAVEL**, with cobbles, light brown to gray									
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff				18	2-3-4 N=7		30		
						17	2-4-6 N=10		28		
			5								
						18	2-3-3 N=6		30		
				▽							
				▽		18	2-3-4 N=7		23		
10.0			10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

▽ *9 feet while drilling*

▽ *9.5 feet after completion*

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 05-17-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-9

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.989498° Longitude: -94.594435°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.6 **7" ASPHALT**									
	1.0 **5" COBBLE STONE AGGREGATE WITH ASPHALT BINDER**									
	1.8 **FILL - CLAYEY GRAVEL**, with cobbles, light brown to gray									
	FAT CLAY (CH), dark brown to gray, medium stiff to stiff			X	18	3-3-4 N=7		30		70-22-48
				X	18	3-5-5 N=10		28		
		5								
				X	18	3-3-4 N=7		25		
				X	18	2-3-4 N=7		23		
	10.0	10								
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 05-17-2018

Drill Rig: RC | Driller: RC

Project No.: 02175345

BORING LOG NO. P-10

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.988945° Longitude: -94.594421°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	8" ASPHALT 0.7									
	9" COBBLE STONE AGGREGATE WITH ASPHALT BINDER 1.4									
	FAT CLAY (CH), dark brown to gray, medium stiff to stiff			X	6	5-4-4 N=8		24		
				X	18	2-4-5 N=9		28		
		5								
				X	18	2-3-4 N=7		23		
				X	18	2-2-3 N=5		23		
	10.0	10								
	Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 05-17-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-11

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.988436° Longitude: -94.594438°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.4	**4.5" ASPHALT**									
	1.0	**7.5" CONCRETE**									
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff									
					X	18	2-3-6 N=9		28		
			5								
					X	18	2-2-3 N=5		23		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-12

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.987998° Longitude: -94.594456°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.4	**4.5" ASPHALT**									
	1.0	**7" CONCRETE**									
		FAT CLAY (CH), dark brown to gray, medium stiff to stiff									
					X	16	3-4-6 N=10		27		62-24-38
			5								
					X	18	2-2-4 N=6		17		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-13

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.987343° Longitude: -94.594495°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.3	**3.5" ASPHALT**									
	0.9	**7" CONCRETE**									
		FILL - CLAYEY GRAVEL, gray, very loose									
					X	5	1-1-2 N=3		8		
	5.0		5								
		FAT CLAY (CH), dark brown to gray, medium stiff									
		- slight petroleum odor at 8.5 feet			X	18	2-2-4 N=6		26		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-14

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.986807° Longitude: -94.594517°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
0.3		**4" ASPHALT**									
0.8		**6" CONCRETE**									
		FILL - CLAYEY GRAVEL, gray									
2.0		**FAT CLAY (CH)**, dark brown to gray, medium stiff									
			5			8	2-3-4 N=7		28		
						18	2-2-3 N=5		24		
10.0		***Boring Terminated at 10 Feet***	10								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-15

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.986308° Longitude: -94.594536°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.3	**4" ASPHALT**									
		8" CONCRETE									
	1.0	**FAT CLAY (CH)**, dark brown to gray, soft to medium stiff									
					X	3	0-2-2 N=4		19		
			5								
					X	18	2-3-4 N=7		24		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-16

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.985766° Longitude: -94.594569°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.3	**3" ASPHALT**									
	0.8	**6" CONCRETE**									
		FAT CLAY (CH), dark brown to gray, soft to medium stiff									
					X	8	1-1-2 N=3		29		59-23-36
			5								
					X	18	2-2-3 N=5		24		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

Project No.: 02175345

BORING LOG NO. P-17

PROJECT: Wornall Road Improvements

CLIENT: Walter P Moore & Associates Inc
Kansas City, MO

SITE: Wornall Road Between 74th and 79th Street
Kansas City, MO

LOCATION See Exploration Plan

Latitude: 38.985204° Longitude: -94.594603°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
	0.3	**4" ASPHALT**									
	1.0	**7.5" CONCRETE**									
		FAT CLAY (CH), dark brown to gray, very soft to medium stiff									
					X	4	0-0-1 N=1		31		
			5								
					X	18	2-3-4 N=7		25		
	10.0		10								
		Boring Terminated at 10 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with Auger Cuttings
Surface capped with asphalt

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were not determined.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
13910 W 96th Ter
Lenexa, KS

Boring Started: 07-12-2018 | Boring Completed: 07-12-2018

Drill Rig: 746 | Driller: BP

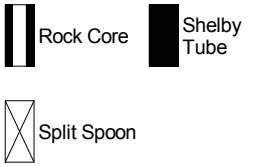
Project No.: 02175345

SUPPORTING INFORMATION

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (psf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 500	0 - 1
Loose	4 - 9	Soft	500 to 1,000	2 - 4
Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8
Dense	30 - 50	Stiff	2,000 to 4,000	8 - 15
Very Dense	> 50	Very Stiff	4,000 to 8,000	15 - 30
		Hard	> 8,000	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

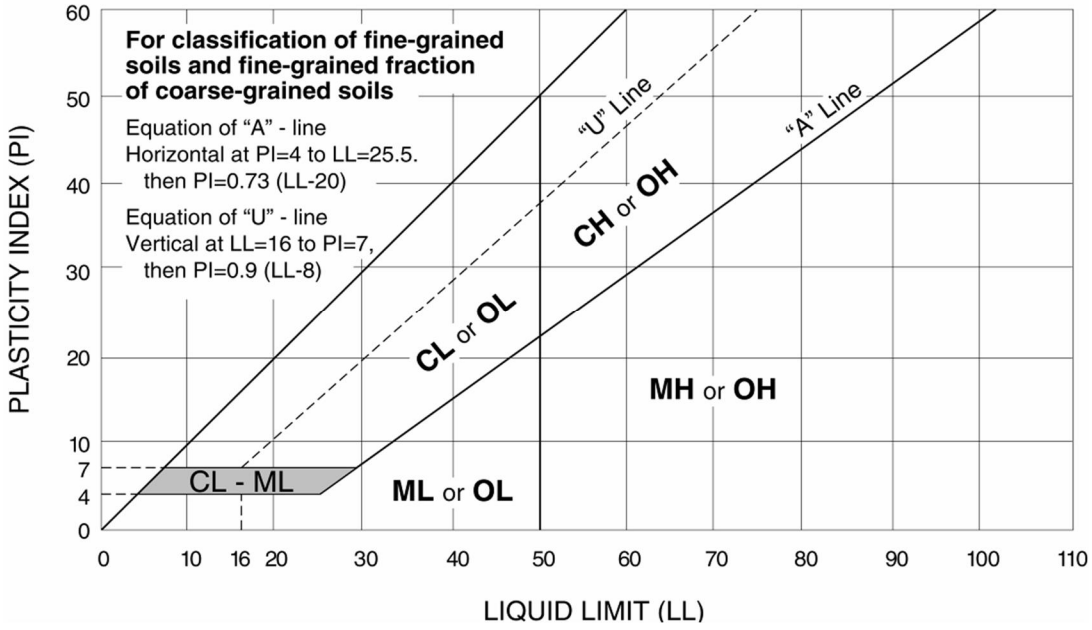
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

JACKSON COUNTY, MISSOURI

KANSAS CITY PROJECT # 89008516

FEDERAL PROJECT # STP - 3301 (509)

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

SECTIONS 8 & 17, TOWNSHIP 48N, RANGE 33W

KANSAS CITY, JACKSON COUNTY, MISSOURI

walter p moore

Walter P Moore and Associates, Inc.
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Kansas City, Missouri 64106

816.701.2100
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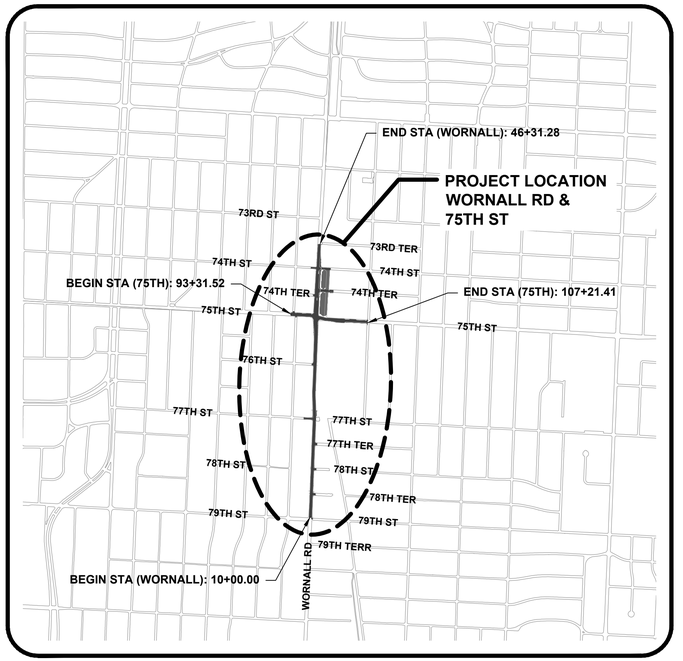
INDEX OF SHEETS



VICINITY MAP

SCALE: 1" = 1000'

DESIGN SPEED:
35 MPH

TRAFFIC COUNT:
WORNALL ROAD ~ 15330 ADT
75TH STREET ~ 13850 ADT
(2015 COUNTS)

FUNCTIONAL ROADWAY CLASSIFICATION:
WORNALL ROAD - MAJOR ARTERIAL
75TH STREET - MAJOR ARTERIAL

MAJOR STREET PLAN TYPOLOGY:
WORNALL ROAD - ESTABLISHED ARTERIAL
75TH STREET - ESTABLISHED ARTERIAL

SUB-CONSULTANTS

TRAFFIC ENGINEER:
R^3C DESIGN GROUP
233 SW GREENWICH DR. #127
LEE'S SUMMIT, MO 64082

LANDSCAPE ARCHITECT:
VIREO
929 WALNUT STREET, SUITE 200
KANSAS CITY, MISSOURI 64106
PHONE: (816) 756-5690

DRAINAGE & LIGHTING ENGINEER:
TREKK DESIGN GROUP
1411 E. 104TH STREET,
KANSAS CITY, MO 64131

DESIGN SURVEYOR:
LOVELACE & ASSOCIATES, INC.
929 SE 3RD STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 347-9997

EMERGENCY UTILITY SERVICE NUMBERS

AT&T	1-800-246-8464
LUMEN	1-800-283-4237
CONSOLIDATED	844-968-7224
COMCAST	800-391-3000
FIDELITY COMMUNICATIONS	800-392-8070
GOOGLE FIBER NOC	1-866-954-1572
KCMO PARKS & RECREATION	816-513-7500
KCMO STREET AND TRAFFIC DIVISION	816-513-0421
KCMO STREET LIGHTING/BLACK & MCDONALD	816-483-0257
KCMO WATER SERVICES DEPT DISPATCHER	816-513-1313
KCMO WATER SERVICES POLLUTION CONTROL	816-513-1313
EVERGY	888-544-4852
LEVEL 3	877-2LEVEL3
MAGELLAN MIDSTREAM PARTNERS LP	800-720-2417
SPIRE	800-582-0000
MISSOURI DEPARTMENT OF TRANSPORTATION	888-275-6636
MISSOURI ONE-CALL	800-344-7483
SOUTHERN STAR CGP	800-324-9696
SINCLAIR TRANSPORTATION	800-321-3994
T-MOBILE	800-521-0579
SUREWEST	913-825-3000
SPECTRUM	833-493-4939
TRI COUNTY WATER	816-796-4100
TW TELECOM	800-829-0420
UNITE PRIVATE NETWORKS	866-963-4237
VERIZON/MCI COMMUNICATIONS INC.	800-624-9675
ZAYO	866-236-2824

12/21/2022
BID PLANS

1 09/26/2023 ADDENDUM #3

PREPARED AND APPROVED BY:
WALTER P. MOORE & ASSOCIATES, INC.
KANSAS CITY, MISSOURI

I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN DESIGNED, AND THESE PLANS PREPARED, TO MEET OR EXCEED THE DESIGN CRITERIA OF KANSAS CITY, MISSOURI IN CURRENT USAGE, EXCEPT AS INDICATED BELOW.

EXCEPTIONS:
1. ROADWAY TYPICAL SECTION FOR WORNALL ROAD AND 75TH STREET DOES NOT MEET THE CITY OF KANSAS CITY, MISSOURI DESIGN CRITERIA FOR A MAJOR ARTERIAL. VARIATIONS INCLUDE:
- NUMBER OF THROUGH LANES ON 75TH STREET IS TW.
- ON-STREET PARKING LANES ARE INCLUDED ON THE NORTH SIDE OF 75TH STREET.
- MINIMUM WIDTH OF TRAFFIC LANES ON 75TH STREET IN 10'-6".
- MINIMUM WIDTH OF TRAFFIC LANES ON WORNALL ROAD 10'-0".
- EXISTING RIGHT-OF-WAY WIDTHS ARE LESS THAN 100'.
- K VALUE OF CREST VERTICAL CURVES ON 75TH STREET ARE LESS THAN 50.
- DISTANCES FROM INTERSECTIONS TO DRIVEWAY CURB CUTS IS LESS THAN 250'.

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007266
REGISTERED PROFESSIONAL ENGINEER
12/21/2022

MICHAEL J. HAAKE, P.E.
REGISTERED PROFESSIONAL ENGINEER - STATE OF MISSOURI
PE-2014007266

12/21/2022
DATE

APPROVED BY:

NICOLAS H. BOSONETTO, P.E.
CITY ENGINEER

DATE

SUMMARY OF QUANTITIES

BASE BID

ITEM NO.	ITEM DESCRIPTION	APPROXIMATE QUANTITY	UNIT
ROADWAY			
1	MOBILIZATION	1	LS
2	CONSTRUCTION STAKING	1	LS
3	REMOVAL OF IMPROVEMENTS	1	LS
4	ROADWAY PAVEMENT (ASPHALT OPTION) ROADWAY PAVEMENT (CONCRETE OPTION)	19,240	SY
5	CONCRETE PAVEMENT (9", PARKING)	4,712	SY
6	ASPHALT SURFACE MILL & OVERLAY (2")	1,911	SY
7	UNTREATED COMPACTED AGGREGATE (ROADWAY, ALL DEPTHS)	22,121	SY
8	UNTREATED COMPACTED AGGREGATE (6", PARKING)	5,122	SY
9	UNTREATED COMPACTED AGGREGATE (4", SIDEWALK AND RAMPS)	50,379	SF
10	COMPACTED SUBGRADE (6", ROADWAY)	23,060	SY
11	COMPACTED SUBGRADE (6", PARKING)	5,397	SY
12	CONCRETE CURB & GUTTER (ALL TYPES, ROADWAY)	10,064	LF
13	CONCRETE CURB & GUTTER (ALL TYPES, PARKING)	1,312	LF
14	CONCRETE COMMERCIAL DRIVE (8", MCIB WA610)	12,358	SF
15	ASPHALT COMMERCIAL DRIVE (6"+2") TYPE 1-01 & 5-01	1,117	SF
16	CONCRETE SIDEWALK (4")	43,326	SF
17	CONCRETE SIDEWALK RAMP (6")	7,053	SF
18	CONCRETE RETAINING WALL	2,538	VSF
19	RELOCATE EXISTING FIRE HYDRANT ASSEMBLY	3	EA
20	DRINKING FOUNTAIN	1	EA
21	UTILITY STRUCTURE TOP ADJUSTMENT	81	EA
22	ROCK BLANKET	324	SF
23	CURB INLET PROTECTION	33	EA
24	JUNCTION BOX PROTECTION	1	EA
25	STRAW WATTLE	4	EA
26	TEMPORARY TRAFFIC CONTROL - PHASE 1A	1	EA
27	TEMPORARY TRAFFIC CONTROL - PHASE 1B	1	EA
28	TEMPORARY TRAFFIC CONTROL - PHASE 2A	1	EA
29	TEMPORARY TRAFFIC CONTROL - PHASE 2B	1	EA
30	TEMPORARY TRAFFIC CONTROL - PHASE 3A	1	EA
31	TEMPORARY TRAFFIC CONTROL - PHASE 3B	1	EA
32	TEMPORARY TRAFFIC CONTROL - PHASE 4A	1	EA
33	TEMPORARY TRAFFIC CONTROL - PHASE 4B	1	EA
STORM DRAINAGE			
34	CURB INLET CI-1 (5'X3')	10	EA
35	CURB INLET CI-1 (5'X6')	1	EA
36	CURB INLET CI-1 (7'X6')	1	EA
37	CURB INLET CI-2 (5'X3')	1	EA
38	CURB INLET CI-1 (11'X3')	1	EA
39	CURB INLET CI-1 (11'X4')	2	EA
40	CURB INLET / GRATE LID ADJUSTMENT	6	EA
41	STORMWATER JUNCTION MANHOLE LID ADJUSTMENT	4	EA
42	SANITARY / COMBINED SEWER JUNCTION LID ADJUSTMENT	10	EA
43	15" RCP (CLASS III)	379	LF
44	18" RCP (CLASS III)	449	LF
45	24" RCP (CLASS III)	238	LF
46	CONCRETE ENCASEMENT	88	LF
TRAFFIC - FIBER OPTIC			
47	3" PVC CONDUIT (FIBER OPTIC)	1,752	LF
48	TYPE II PULL BOX (FIBER OPTIC)	6	EA
49	96-CT FIBER	2,342	LF
50	1000MPS MANAGED ETHERNET SWITCH	2	EA
51	INTERFACE PANEL (FIBER OPTIC)	2	EA
TRAFFIC - SIGNALS			
52	2" PVC CONDUIT	82	LF
53	2" PVC CONDUIT (IN EXISTING TRENCH)	321	LF
54	3" PVC CONDUIT (SIGNAL)	392	LF
55	3" PVC CONDUIT (SIGNAL) (IN EXISTING TRENCH)	260	LF
56	4" PVC CONDUIT	94	LF
57	4" PVC CONDUIT (IN EXISTING TRENCH)	94	LF
58	TYPE I PULL BOX	3	EA
59	TYPE II PULL BOX	2	EA
60	CONCRETE BASE (TYPE B8)	2	EA
61	CONCRETE BASE (TYPE B10)	1	EA
62	CONCRETE BASE (TYPE B12)	1	EA
63	CONCRETE BASE (TYPE C)	5	EA
64	CONCRETE BASE (TYPE E332)	1	EA
65	MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)	2	EA
66	MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)	1	EA
67	MAST ARM POLE (40' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)	1	EA
69	PEDESTAL POLE (10')	3	EA
68	PEDESTAL POLE (15')	2	EA
70	SIGNAL WIRE (5C#14)	1,460	LF
71	SIGNAL WIRE (7C#14)	2,230	LF
72	STRANDED WIRE (2C#14)	1,430	LF
73	POWER CABLE (2C#10)	210	LF
74	POWER CABLE (3C#8)	530	LF
75	CAT6 (PTZ+360) CABLE	160	LF
76	RADAR CABLE	820	LF
77	SIGNAL HEAD (3 SECTION, 12", LED)	12	EA
78	SIGNAL HEAD (4 SECTION, 12", LED)	4	EA
79	PEDESTRIAN SIGNAL HEAD (16", LED)	9	EA
80	ACCESSIBLE PEDESTRIAN SIGNAL	9	EA
81	THERMAL VIDEO OR RADAR DETECTION SYSTEM	5	EA
82	PTZ CAMERA	1	EA
83	TRAFFIC SIGNAL CABINET	1	EA
84	SAFETRAN 1C MODULE W/ ASC/3 SOFTWARE	1	EA
85	WIRELESS SUBSCRIBER UNIT	1	EA
86	METER CAN & BREAKER BOX	1	EA
87	STREET NAME SIGNAGE	4	EA
88	MAST ARM SIGNAGE	4	EA
89	EXISTING SIGNAL REMOVAL	1	LS
90	YELLOW FLASHING BEACON	1	EA
91	ADJUST SIGNAL TIMING & HEAD LOCATIONS	7	EA
92	EXISTING PEDESTAL POLE REMOVAL	1	EA
93	ADJUST PULLBOX (SIGNAL)	1	EA
TRAFFIC - SIGNAGE AND PAVEMENT MARKINGS			
94	MEP SIGNS	377	SF
95	POST	653	LF
96	POST ANCHOR (2"X2")	104	LF
97	ANCHOR SLEEVE (2-1/4"X2-1/4")	66	LF
98	CONCRETE SURFACE ANCHOR	36	EA
99	PAVER ANCHOR AND SLEEVE	4	EA
100	RRFB	8	EA
101	4" WHITE (THERMOPLASTIC)	2,340	LF
102	4" SOLID WHITE PARKING LINE (PAINT)	2,560	LF
103	4" SOLID WHITE PARKING TICK MARKS (THERMOPLASTIC)	90	LF
104	4" SOLID YELLOW (THERMOPLASTIC)	9,079	LF
105	6" SOLID WHITE CROSSWALK LINE (EPOXY)	1,201	LF
106	8" SOLID WHITE DOTTED LINE (THERMOPLASTIC)	70	LF
107	12" SOLID WHITE CROSSHATCH (PAINT)	50	LF
108	12" SOLID YELLOW CROSSHATCH (PAINT)	60	LF
109	24" SOLID WHITE STOP BAR (EPOXY)	251	LF
110	WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC)	34	EA
111	WHITE "ONLY" (PRE-FORMED THERMOPLASTIC)	2	EA
112	ACCESSIBLE PAVEMENT MARKING	5	EA
STREET LIGHTING			
113	REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE	19	EA
114	REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE	5	EA
115	REMOVAL - LUMINAIRE, BRAKET ARM & CABLE	5	EA
116	INSTALL - LUMINAIRE ON SIGNAL POLE	4	EA
117	REPLACE - LUMINAIRE EXISTING ON SIGNAL POLE	1	EA
118	LUMINAIRE TYPE A	2	EA
119	LUMINAIRE TYPE B	2	EA
120	LUMINAIRE TYPE C	16	EA
121	LUMINAIRE TYPE D	22	EA
122	POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT	32	EA
123	BRACKET ARM, 6 FOOT, SINGLE MEMBER	12	EA
124	BRACKET ARM, 10 FOOT, TRUSS TYPE	17	EA
125	BRACKET ARM, 12 FOOT, TRUSS TYPE	4	EA
126	ANTI-THEFT DEVICE (8")	32	EA
127	ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS	35	EA
128	BREAKAWAY KITS, HEB FUSED W/ 10A FUSES	64	EA
129	BREAKAWAY KITS, HEB UNFUSED	32	EA
130	LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT	1	EA
131	LIGHTING CONTROLLER, 120/240 VOLT 4 CIRCUIT	2	EA
132	GROUND ROD	8	EA
133	CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE	5,746	LF
134	TRENCHING FOR 1" CABLE-IN-DUCT	4,350	LF
135	3" CONDUIT PVC SCH 40 TRENCHED	197	LF
136	LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)	27	EA
137	LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)	5	EA
138	TYPE II PULL BOX	2	EA
139	CABLE #10 RHW/USE (POLE AND BRACKET CABLING)	4,698	LF
STREETSCAPE			
140	BRICK PAVERS	5,279	SF
141	DECORATIVE CROSSWALK	1,317	SF
142	DECORATIVE CENTER LOGO	1	EA
143	MOBILITY PARKING SYMBOLS	3	EA
144	PEDESTRIAN GUARDRAIL	296	LF
145	LITTER RECEPTACLES	4	EA
146	BENCH	3	EA
147	BIKE RACK	4	EA
148	DECORATIVE METAL BOLLARD	59	EA
149	ACCESS CONTROL BOLLARDS	5	EA
150	INTERPRETIVE BASE AND FRAME	1	EA
151	DECORATIVE GRAVEL	185	SF
152	BULB	1,054	EA
153	FESCUE TURF SOD	2,804	SY
GREEN INFRASTRUCTURE			
154	EXCAVATION (PARKING, DETENTION & TREE PLANTERS)	16,970	CY
155	EMBANKMENT (PARKING, DETENTION & TREE PLANTERS)	32	CY
156	TREE GRATE CURB (CONCRETE)	140	LF
157	4' X 4' TREE GRATE	14	EA
158	4' DIA. TREE GRATE	1	EA
159	TREE PLANTERS	12,833	CF
160	CURBFLOW	6	EA
161	UNDERDRAIN (W/ CLEANOUTS)	848	LF
162	UNDERDRAIN & STORMWATER DISTRIBUTION LOOP	1,243	LF
163	TREES (2.5" CAL.)	28	EA
164	SHRUBS - 3 GAL.	56	EA
165	TREE ANCHORING SYSTEM	15	EA
166	PERENNIAL (#1 CONT.)	2,080	EA
167	PLUG PLANT MATERIAL	644	EA
168	PLANTING SOIL	1,020	CY
169	INFILTRATION TEST	21	EA
170	TREE HYDRATION BLADDERS	28	EA
171	MODIFIED TYPE 2 CURB TREE INLET W/ OUTFALL (4'X4')	5	EA
172	MODIFIED TYPE 2 CURB TREE INLET W/OUT OUTFALL (4'X4')	4	EA
173	MH-1 (4' DIA)	8	EA
174	MH-1 (5' DIA)	3	EA
175	STORM WATER DETENTION (NORTH PARKING LOT)	1	EA
176	STORM WATER DETENTION (SOUTH PARKING LOT)	1	EA
WATER MAIN REPLACEMENT			
177	MOBILIZATION	1	LS
178	12" CL 52 DIP ZINC COATED W/ POLYWRAP	2395	LF
179	12" SOLID SLEEVE	7	EA
180	12" MJ 45° BEND W/ BACKING BLOCK	18	EA
181	12" x 12" TEE W/ BACKING BLOCK	1	EA
182	12" x 6" TEE W/ BACKING BLOCK	7	EA
183	12" GATE VALVE	8	EA
184	STRADDLE BLOCK	12	EA
185	KC-1 SPEC HYDRANT ASSEMBLY	4	EA
186	FLOWABLE FILL ABANDONMENT (EXISTING 12"CIP)	2180	LF
187	FLOWABLE FILL ABANDONMENT (EXISTING 10"CIP)	60	LF
188	10" SOLID SLEEVE	2	EA
189	10" CL 54 DIP ZINC COATED W/ POLYWRAP	3	LF
190	6" MJ 45° BEND W/ BACKING BLOCK	2	EA
191	6" SOLID SLEEVE	2	EA
192	6"GATE BALVE	7	EA
193	TEMPORARY BLOW-OFF ASSEMBLY	7	EA
194	3/4" WATER SERVICE	11	EA
195	3/4" WATER METER	13	EA
196	1" WATER SERVICE	5	EA
197	1" WATER METER	4	EA
198	1.5" WATER SERVICE	1	EA
199	1.5" WATER METER	1	EA
200	2" WATER SERVICE	1	EA
201	2" WATER METER	3	EA
202	4" WATER SERVICE	1	EA
203	6" WATER SERVICE	3	EA
204	6" WATER METER	1	EA
205	NEW WATER SERVICE (SIZE UNKNOWN)	1	EA
206	CURB STOP	17	EA
207	PAVEMENT REPLACEMENT	921	SY
208	TRAFFIC CONTROL	1	EA

ADD ALTERNATE NO. 1

ITEM NO.	ITEM DESCRIPTION	APPROXIMATE QUANTITY	UNIT
ROADWAY			
1	MOBILIZATION	1	LS
2	CONSTRUCTION STAKING	1	LS
3	REMOVAL OF IMPROVEMENTS	1	LS
4	ROADWAY PAVEMENT (ASPHALT OPTION) ROADWAY PAVEMENT (CONCRETE OPTION)	5,882	SY
5	UNTREATED COMPACTED AGGREGATE (ROADWAY, ALL DEPTHS)	6,789	SY
6	UNTREATED COMPACTED AGGREGATE (4", SIDEWALK AND RAMPS)	11,902	SF
7	COMPACTED SUBGRADE (6", ROADWAY)	7,094	SY
8	CONCRETE CURB & GUTTER (ALL TYPES, ROADWAY)	2,160	LF
9	CONCRETE COMMERCIAL DRIVE (8", MCIB WA610)	10,994	SF
10	ASPHALT COMMERCIAL DRIVE (6"+2") TYPE 1-01 & 5-01	8,834	SF
11	CONCRETE SIDEWALK (4")	11,902	SF
12	CONCRETE SIDEWALK RAMP (6")	1,916	SF
13	RELOCATE EXISTING FIRE HYDRANT ASSEMBLY	2	EA
14	UTILITY STRUCTURE TOP ADJUSTMENT	31	EA
15	CURB INLET PROTECTION	9	EA
16	TEMPORARY TRAFFIC CONTROL - PHASE 4A	1	EA
17	TEMPORARY TRAFFIC CONTROL - PHASE 4B	1	EA
STORM DRAINAGE			
18	CURB INLET CI-1 (5'X3')	1	EA
19	CURB INLET CI-2 (5'X4')	1	EA
20	CURB INLET CI-2 (5'X3')	2	EA
21	CURB INLET / GRATE LID ADJUSTMENT	5	EA
22	STORMWATER JUNCTION MANHOLE LID ADJUSTMENT	4	EA
23	SANITARY / COMBINED SEWER JUNCTION LID ADJUSTMENT	2	EA
24	15" RCP (CLASS III)	141	LF
25	18" RCP (CLASS III)	12	LF
TRAFFIC - FIBER OPTIC			
26	3" PVC CONDUIT (FIBER OPTIC)	1,704	LF
27	TYPE II PULL BOX (FIBER OPTIC)	5	EA
28	96-CT FIBER	2,214	LF
TRAFFIC - SIGNAGE AND PAVEMENT MARKINGS			
29	MEP SIGNS	73	SF
30	POST	137	LF
31	POST ANCHOR (2"X2")	4	LF
32	ANCHOR SLEEVE (2-1/4"X2-1/4")	3	LF
33	CONCRETE SURFACE ANCHOR	12	EA
34	4" WHITE (THERMOPLASTIC)	490	LF
35	4" SOLID YELLOW (THERMOPLASTIC)	1,091	LF
36	6" SOLID WHITE CROSSWALK LINE (EPOXY)	239	LF
37	24" SOLID WHITE STOP BAR (EPOXY)	40	LF
STREET LIGHTING			
38	REMOVAL - LUMINAIRE, BRAKET ARM & CABLE	11	EA
39	LUMINAIRE TYPE C	3	EA
40	LUMINAIRE TYPE D	11	EA
41	POLE, METAL, FOR 30 FT LUMINAIRE MOUNTING HEIGHT	2	EA
42	POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT	10	EA
43	BRACKET ARM, 6 FOOT, SINGLE MEMBER	2	EA
44	BRACKET ARM, 10 FOOT, TRUSS TYPE	9	EA
45	BRACKET ARM, 12 FOOT, TRUSS TYPE	1	EA
46	ANTI-THEFT DEVICE (6")	2	EA
47	ANTI-THEFT DEVICE (8")	10	EA
48	ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS	13	EA
49	BREAKAWAY KITS, HEB FUSED W/ 10A FUSES	24	EA
50	BREAKAWAY KITS, HEB UNFUSED	12	EA
51	LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT	1	EA
52	GROUND ROD	1	EA
53	CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE	1,312	LF
54	TRENCHING FOR 1" CABLE-IN-DUCT	1,250	LF
55	3" CONDUIT PVC SCH 40 TRENCHED	95	LF
56	LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)	10	EA
57	LUMINAIRE FOUNDATION (SMALL, 30 FT MOUNTING HEIGHT POLES)	2	EA
58	TYPE II PULL BOX	1	EA
59	CABLE #10 RHW/USE (POLE AND BRACKET CABLING)	1,068	LF
STREETSCAPE			
60	FESCUE TURF SOD	45	SY

walter p moore

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1100 Walnut, Suite 1825
Kansas City, Missouri 64106

816.701.2100
walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

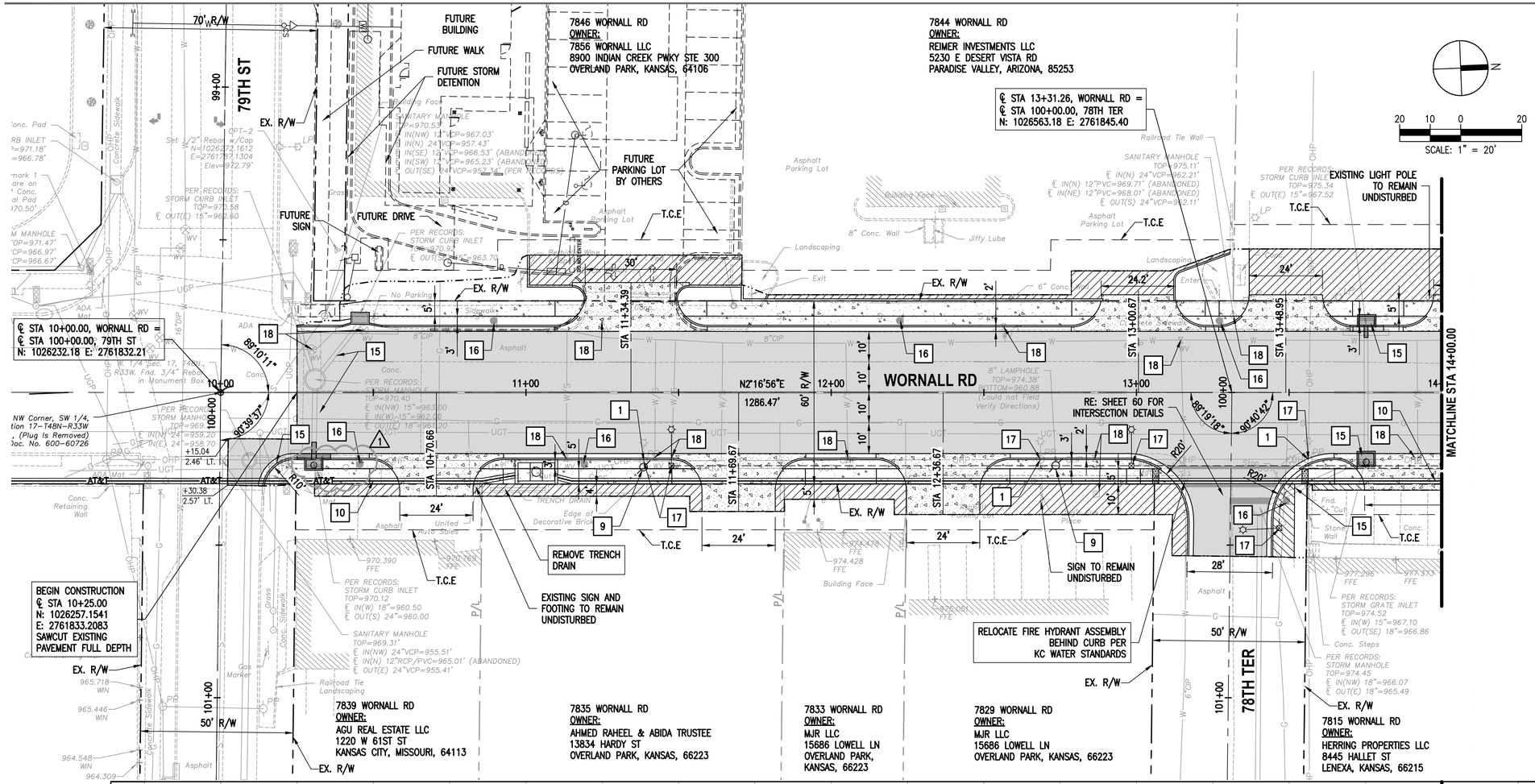
PROJECT NAME

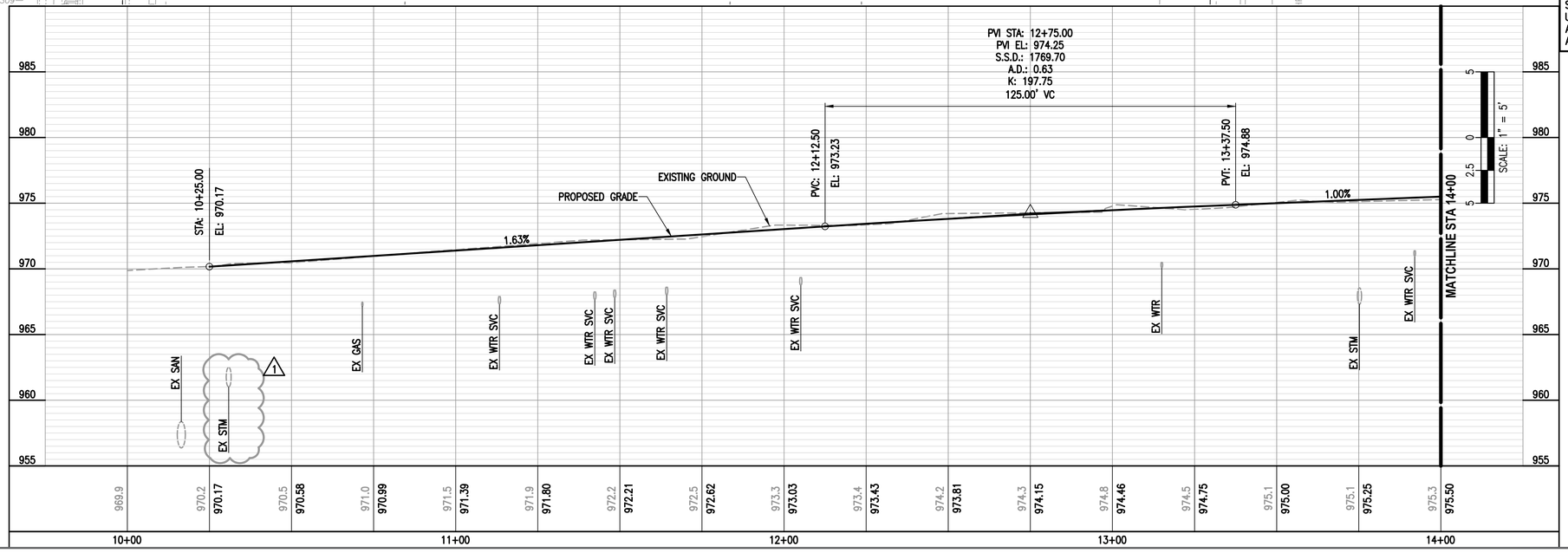
WORNALL ROAD IMPROVEMENTS
74TH STREET TO 79TH STREET
KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.
REVIEWED BY D.L.B
DRAWN BY D.M.B.
PROJECT NUMBER M08-18002-00
DATE 21 DECEMBER 2022
SHEET TITLE SUMMARY OF QUANTITIES
SHEET NUMBER 3 OF 216

Sep 25, 2023 - 12:28pm X:\M08\2018\18002-00 wornall road improvements - 74th to\Civil\Cad\Sheets\003-18002-QNTY.dwg





KEYNOTES:

1. EVERGY TO REMOVE AND/OR RELOCATE POWER POLE.
2. EVERGY TO REMOVE AND/OR RELOCATE UNDERGROUND UTILITIES.
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walter p moore

Walter P Moore and Associates, Inc.
1100 Walnut, Suite 1825
Kansas City, Missouri 64106

816.701.2100
walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2010037716
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.

REVIEWED BY: D.L.B

DRAWN BY: D.M.B.

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

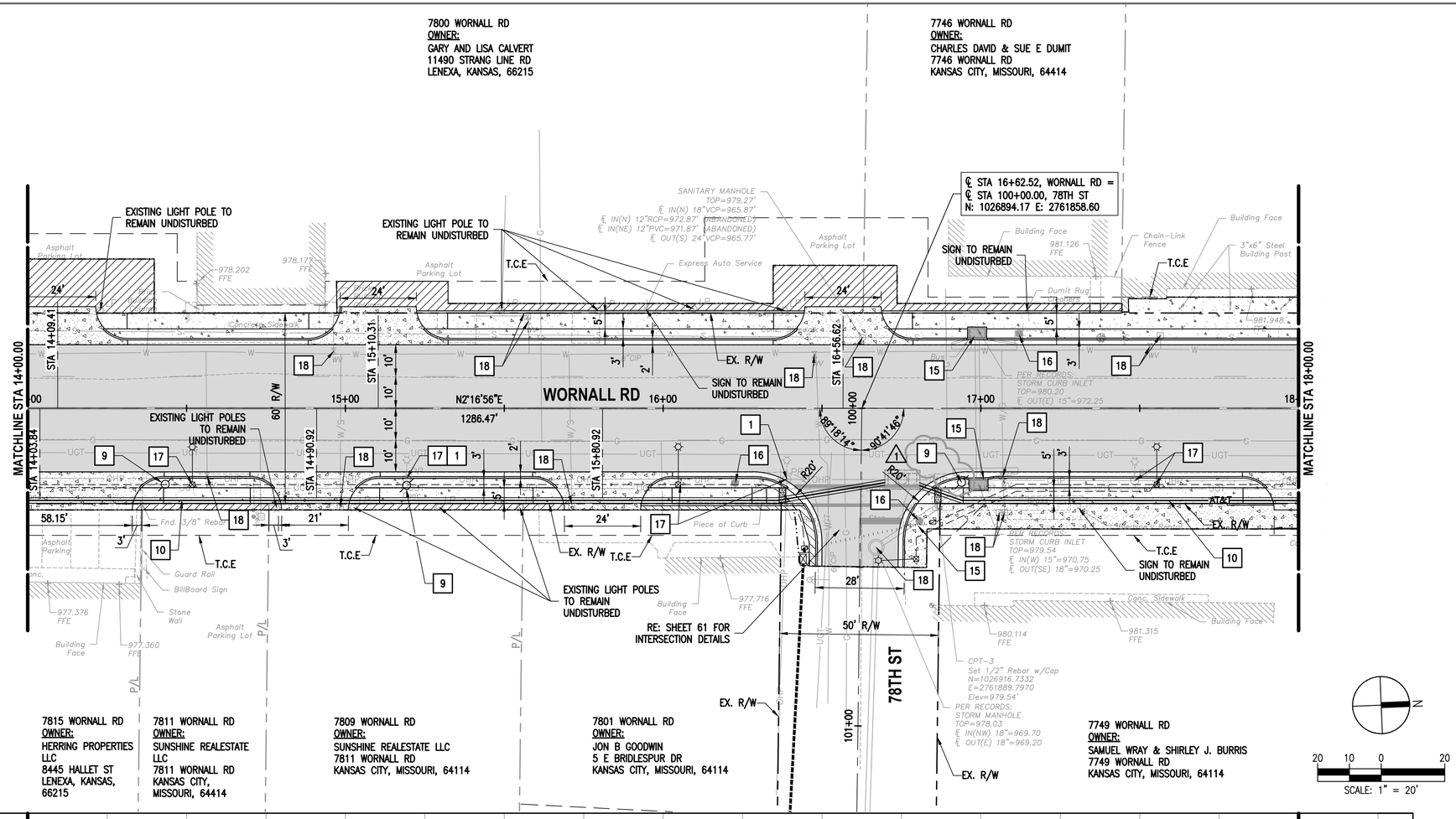
SHEET TITLE

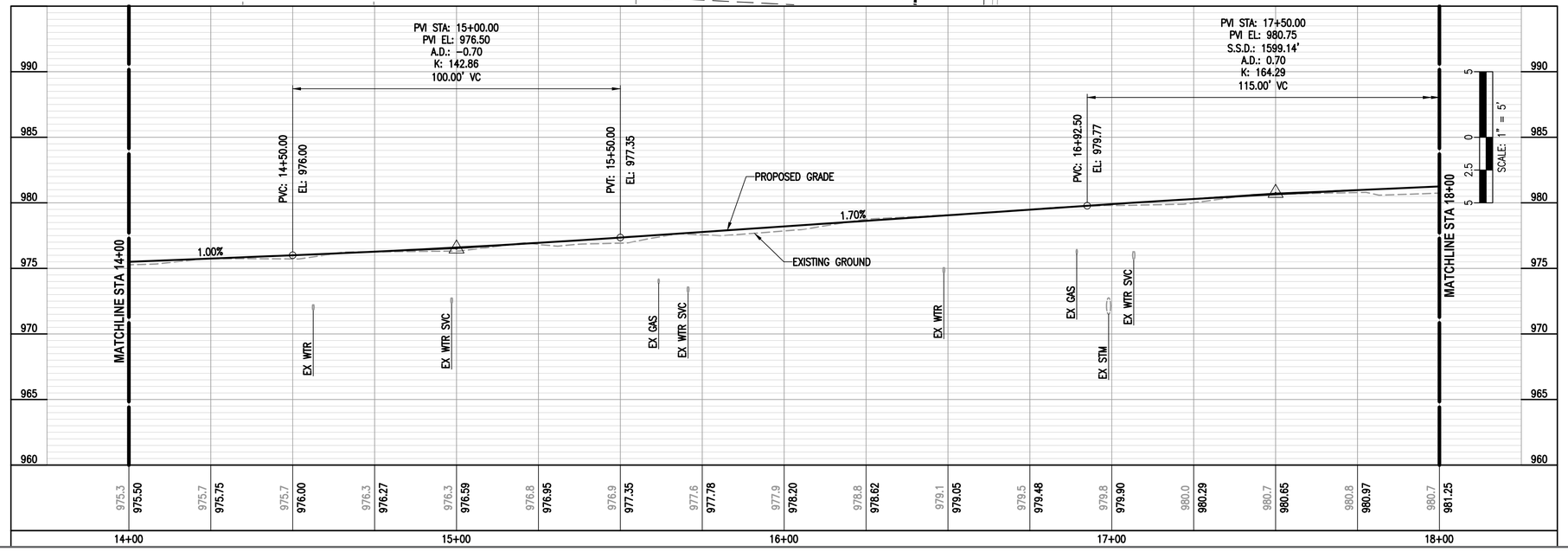
PLAN & PROFILE - WORNALL RD

SHEET NUMBER

13 OF 216

Sep 25, 2023 - 11:43am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\013-021-18002-P&P-WRNL.dwg





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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2010027716
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

PLAN & PROFILE - WORNALL RD

SHEET NUMBER

14 OF 216

Sep 25, 2023 - 11:43am
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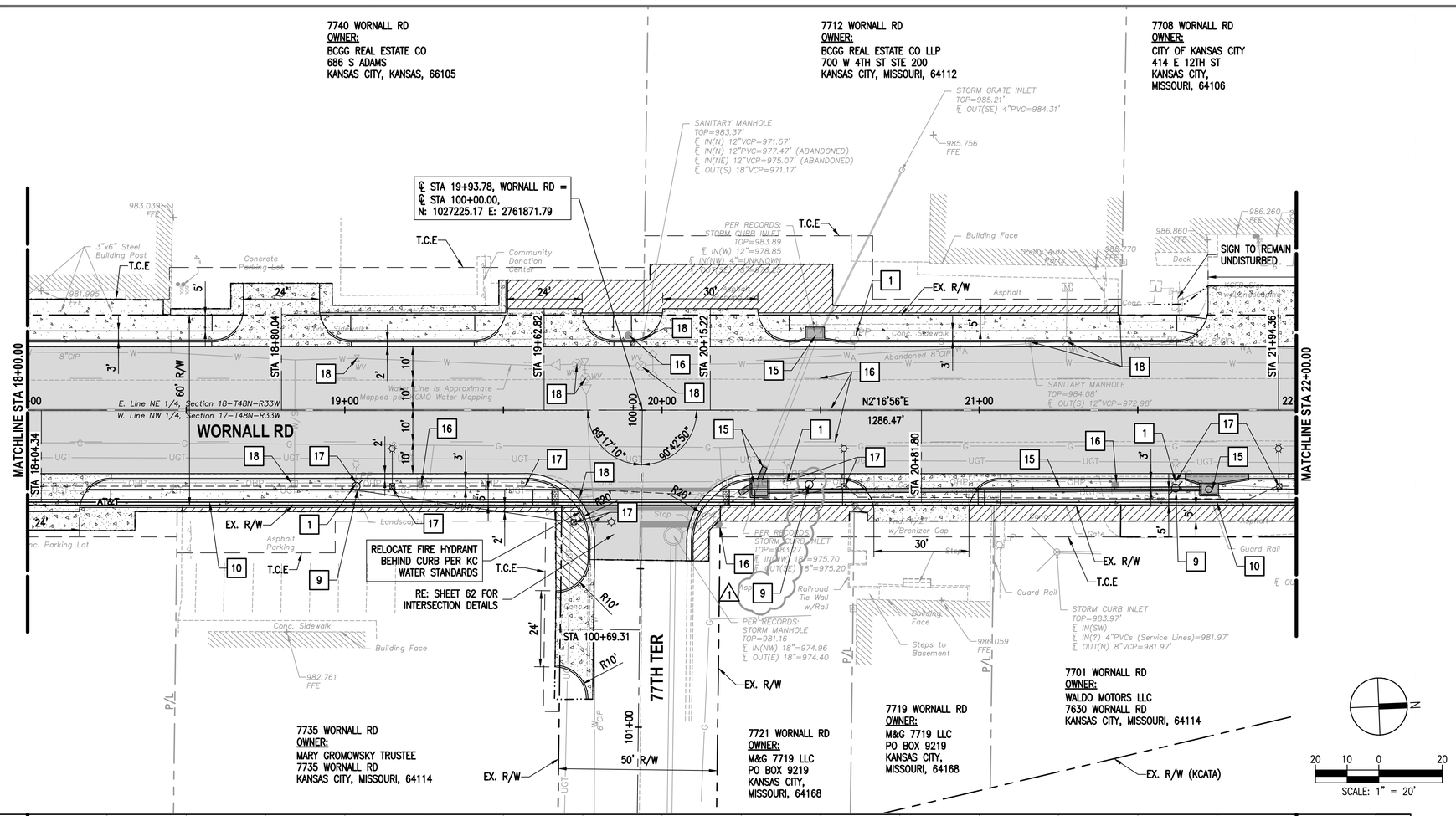

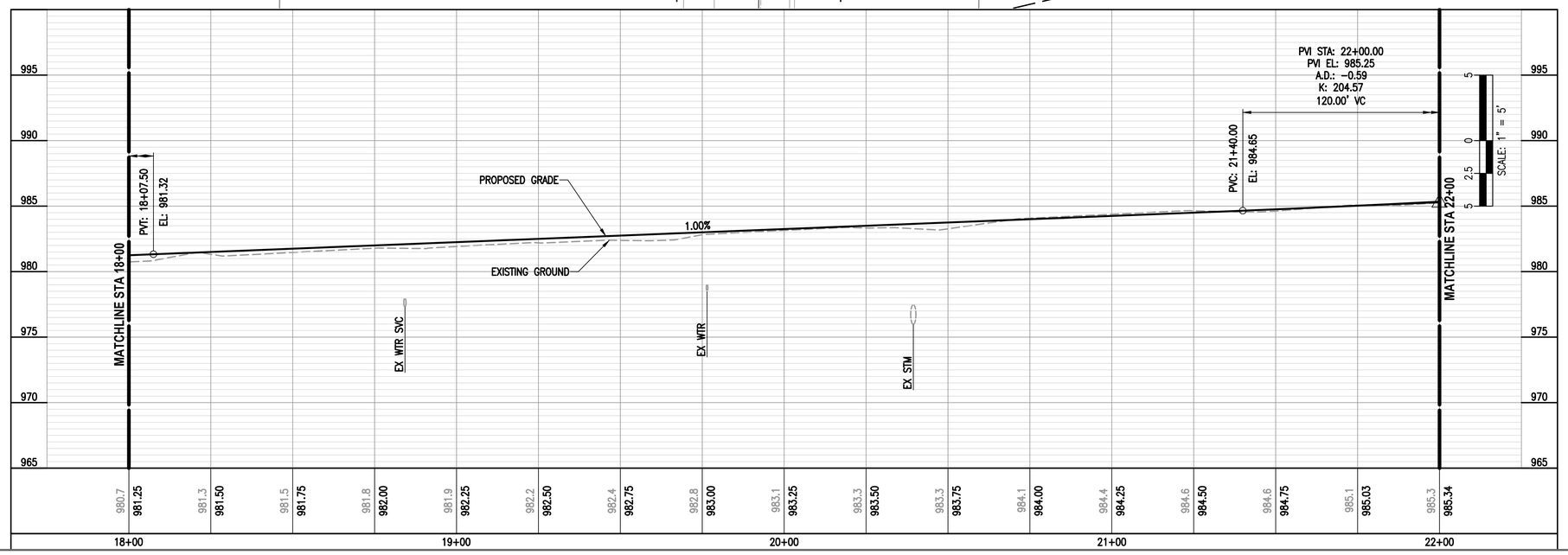

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

PLAN & PROFILE - WORNALL RD

SHEET NUMBER

15 OF 216

Sep 25, 2023 – 11:44am
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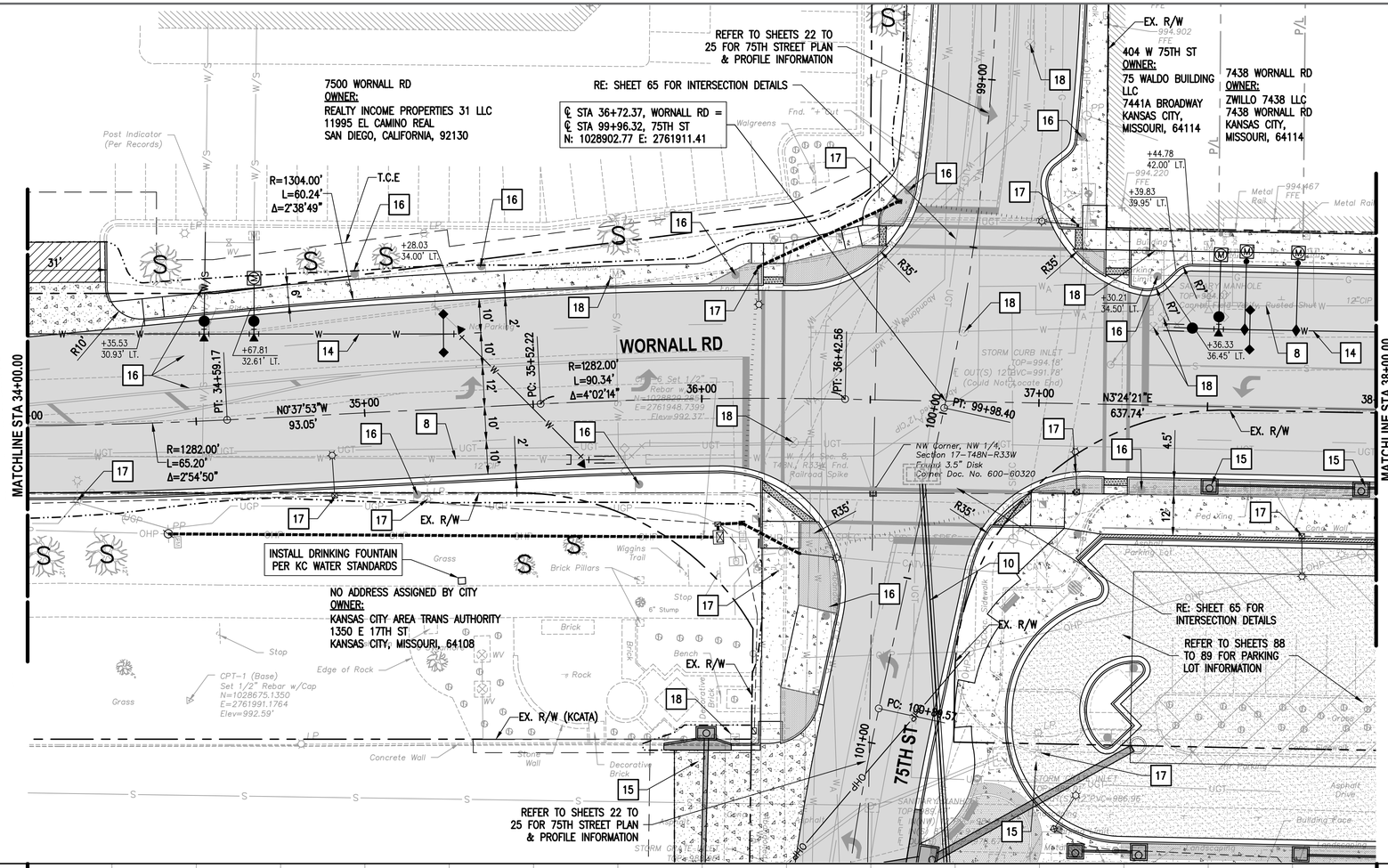

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

MICHAEL JOSEPH HAAKE
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY
M.J.H. / M.P.H.

REVIEWED BY
D.L.B

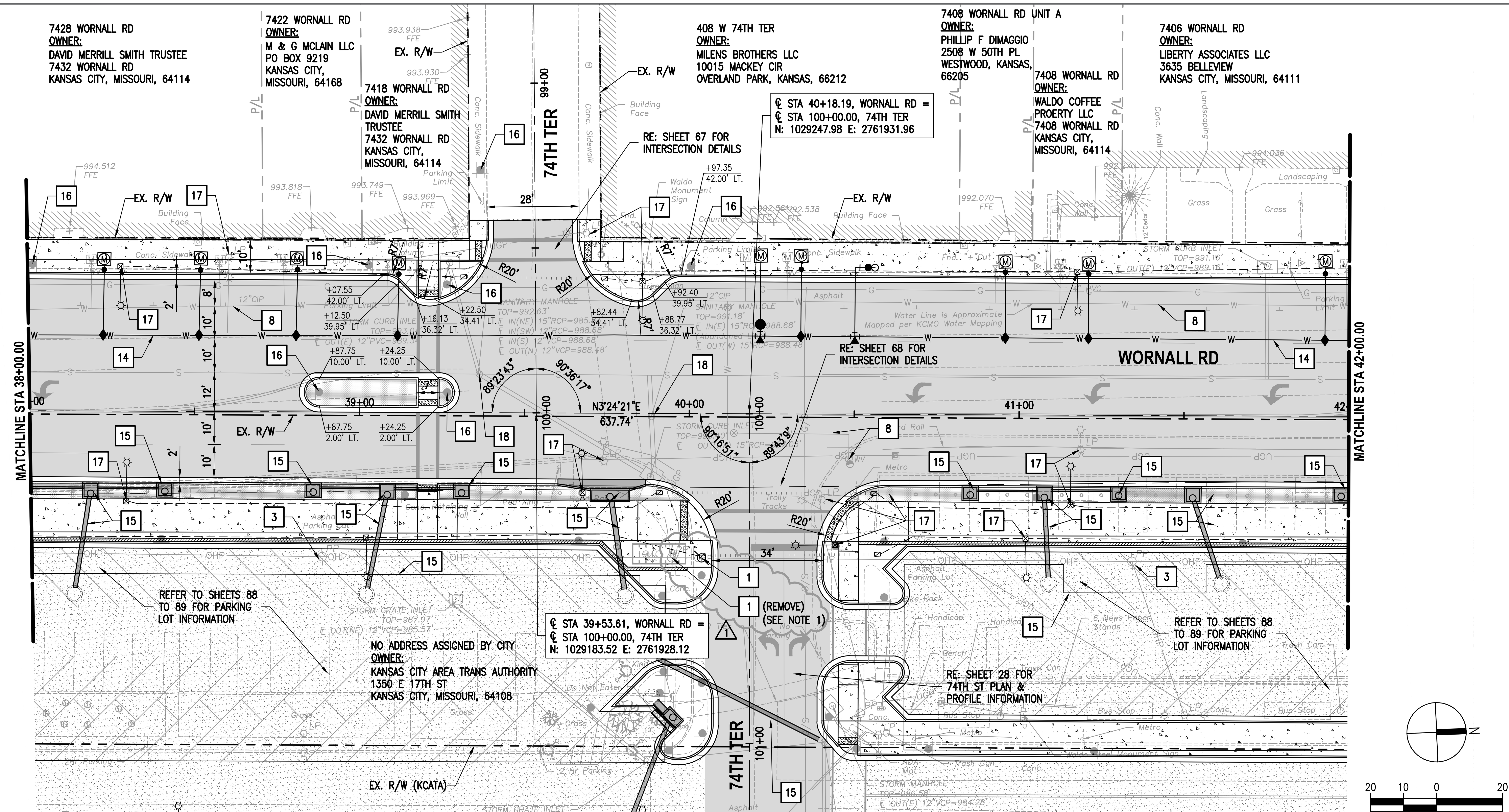
DRAWN BY
D.M.B.

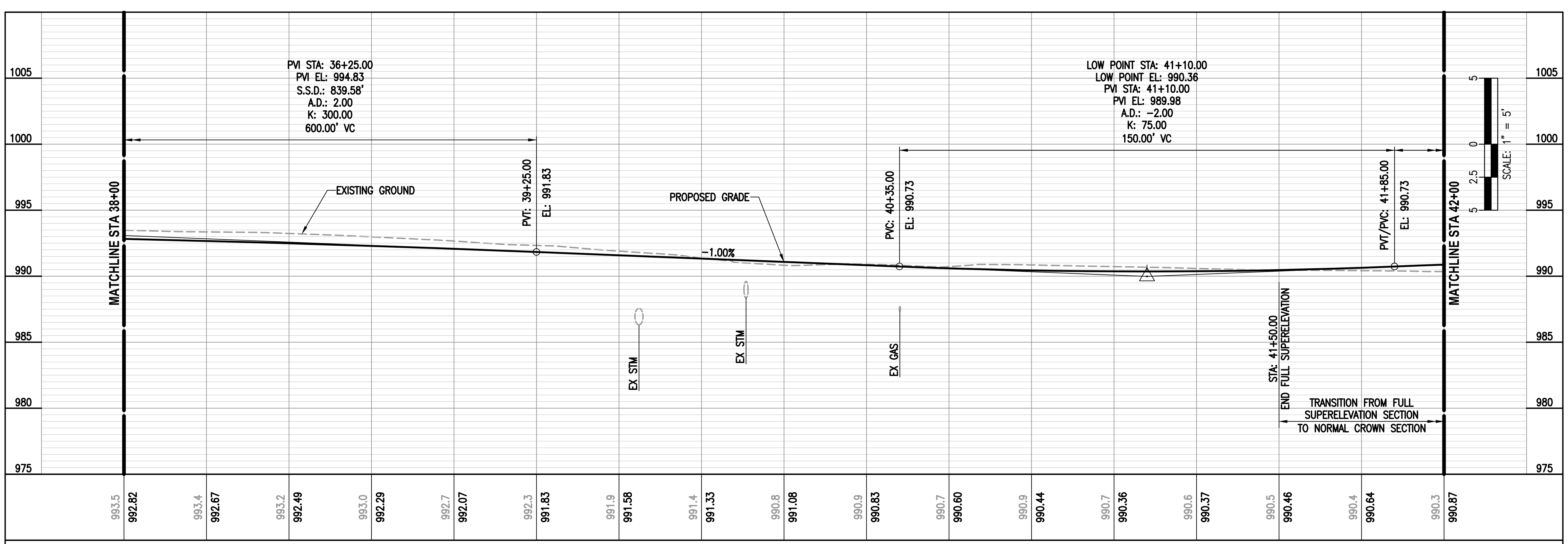
PROJECT NUMBER
M08-18002-00

DATE
21 DECEMBER 2022

SHEET TITLE
PLAN & PROFILE - WORNALL RD

SHEET NUMBER
19 OF 216





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NOTES:

1. EXISTING EVERGY POWER POLE TO BE REMOVED AND ADJACENT NEW POLE INSTALLED FOLLOWING CLOSURE OF 74TH TERRACE. CONTACT JASON McKINNEY (816-414-1103) AT LEAST TWO WEEKS PRIOR TO STREET CLOSURE.

walter p moore

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1100 Walnut, Suite 1825
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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS
74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI — MICHAEL JOSEPH HAAKE — PROFESSIONAL ENGINEER — 12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.
REVIEWED BY: D.L.B
DRAWN BY: D.M.B.
PROJECT NUMBER: M08-18002-00
DATE: 21 DECEMBER 2022
SHEET TITLE: PLAN & PROFILE - WORNALL RD
SHEET NUMBER: 20 OF 216

Sep 25, 2023 - 11:44am
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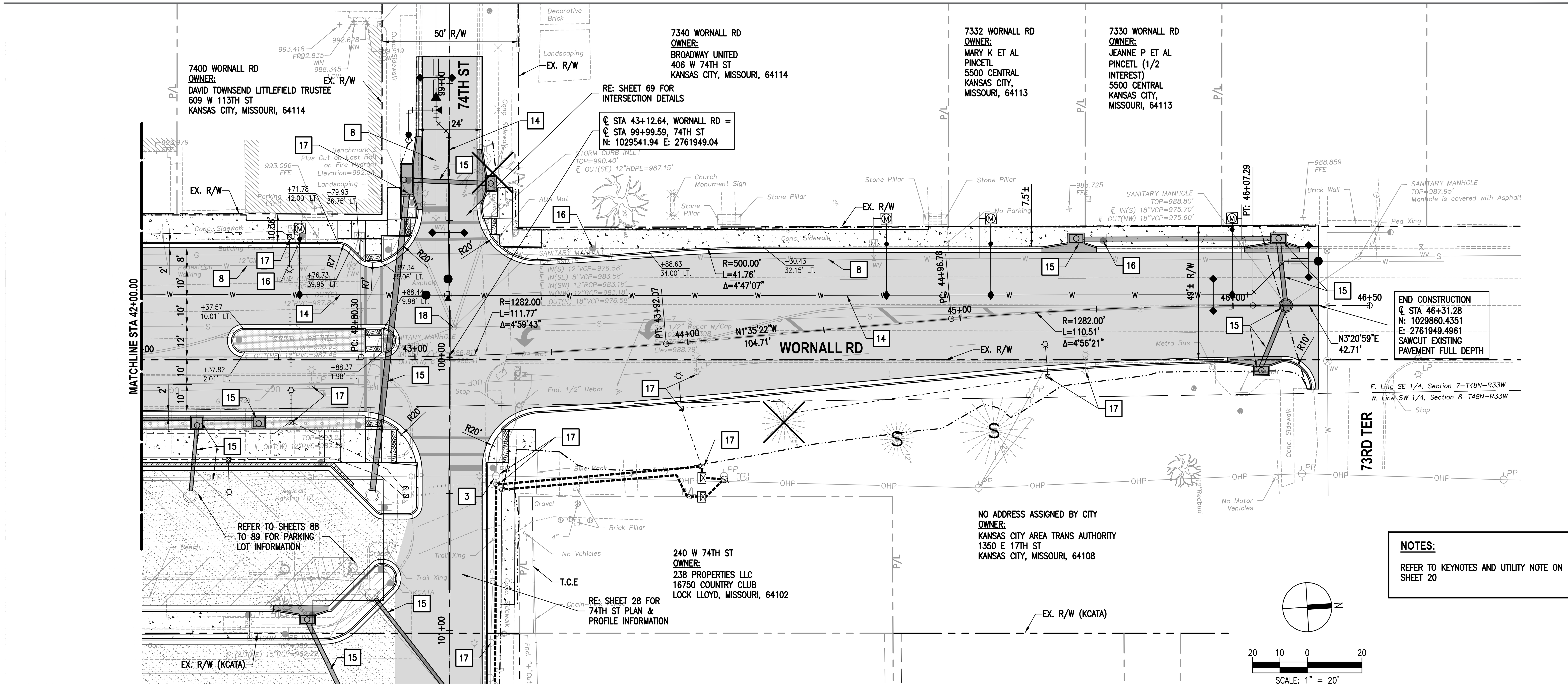
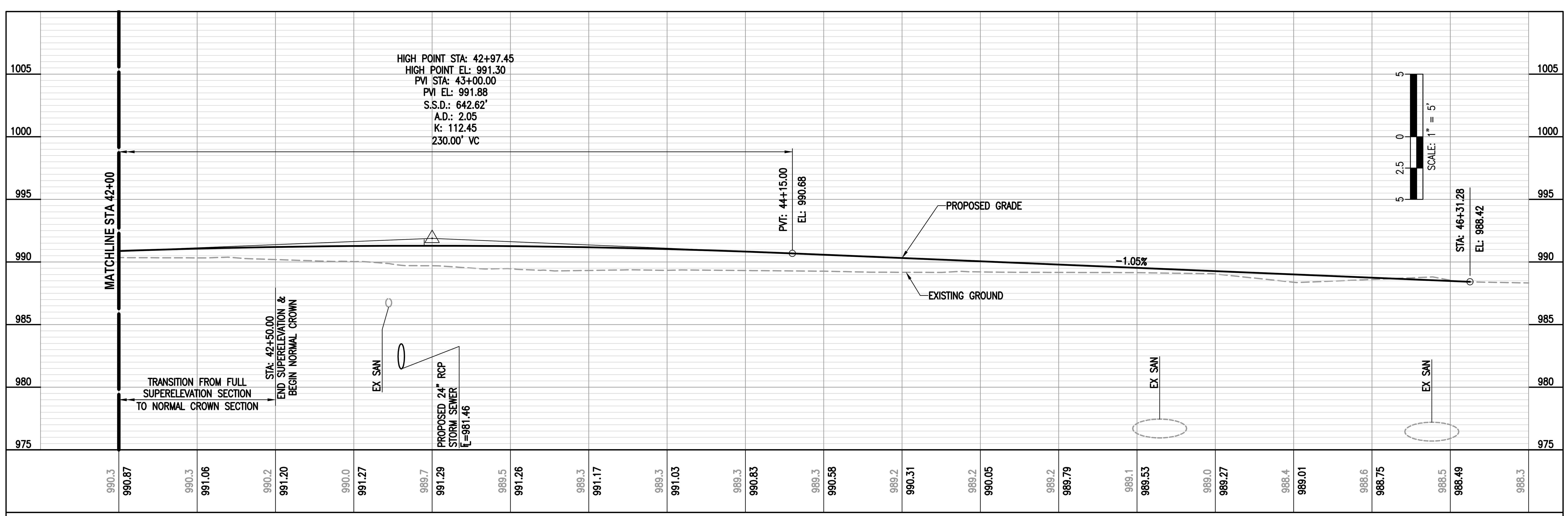


NOTES:

REFER TO KEYNOTES AND UTILITY NOTE ON SHEET 20



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KANSAS CITY, MISSOURI
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STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.

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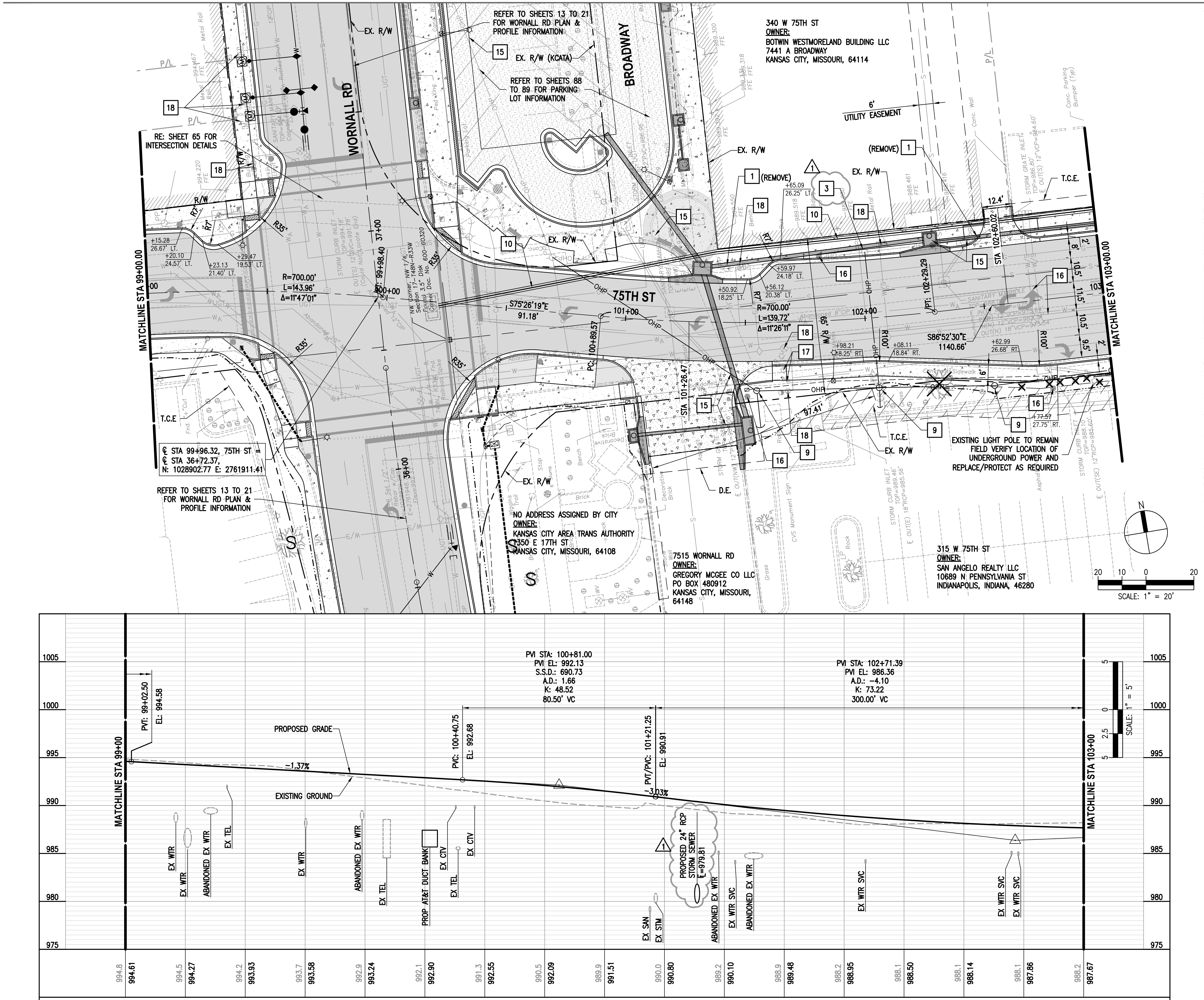
DATE: 21 DECEMBER 2022

SHEET TITLE: PLAN & PROFILE - WORNALL RD

SHEET NUMBER: 21 OF 216



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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI — MICHAEL JOSEPH HAAKE — NUMBER — PROFESSIONAL ENGINEER — 12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.
REVIEWED BY: D.L.B
DRAWN BY: D.M.B.
PROJECT NUMBER: M08-18002-00
DATE: 21 DECEMBER 2022
SHEET TITLE: PLAN & PROFILE - 75TH ST
SHEET NUMBER: 24 OF 216

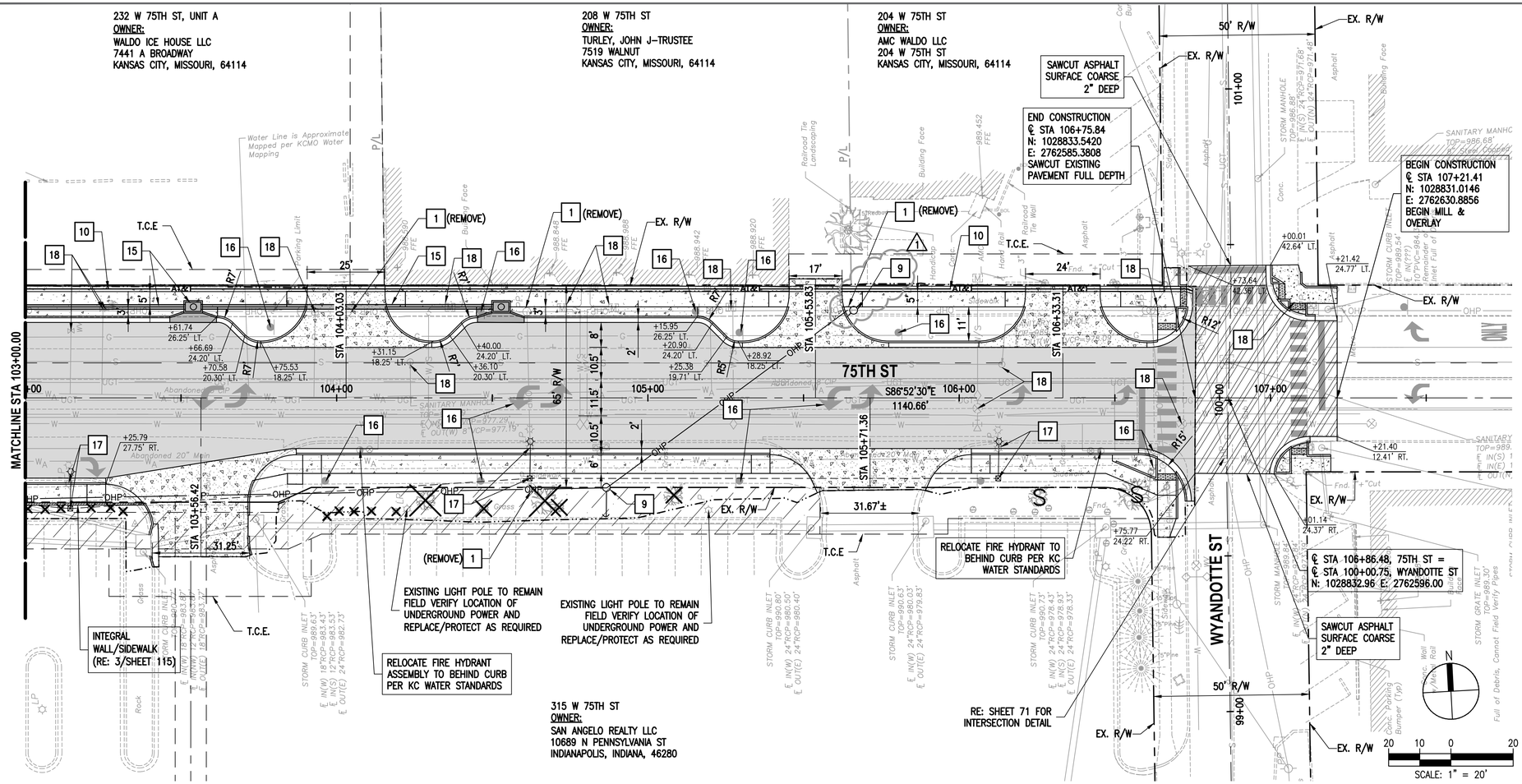
Sep 25, 2023 - 11:46am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\022-025-18002-P&P-75TH.dwg

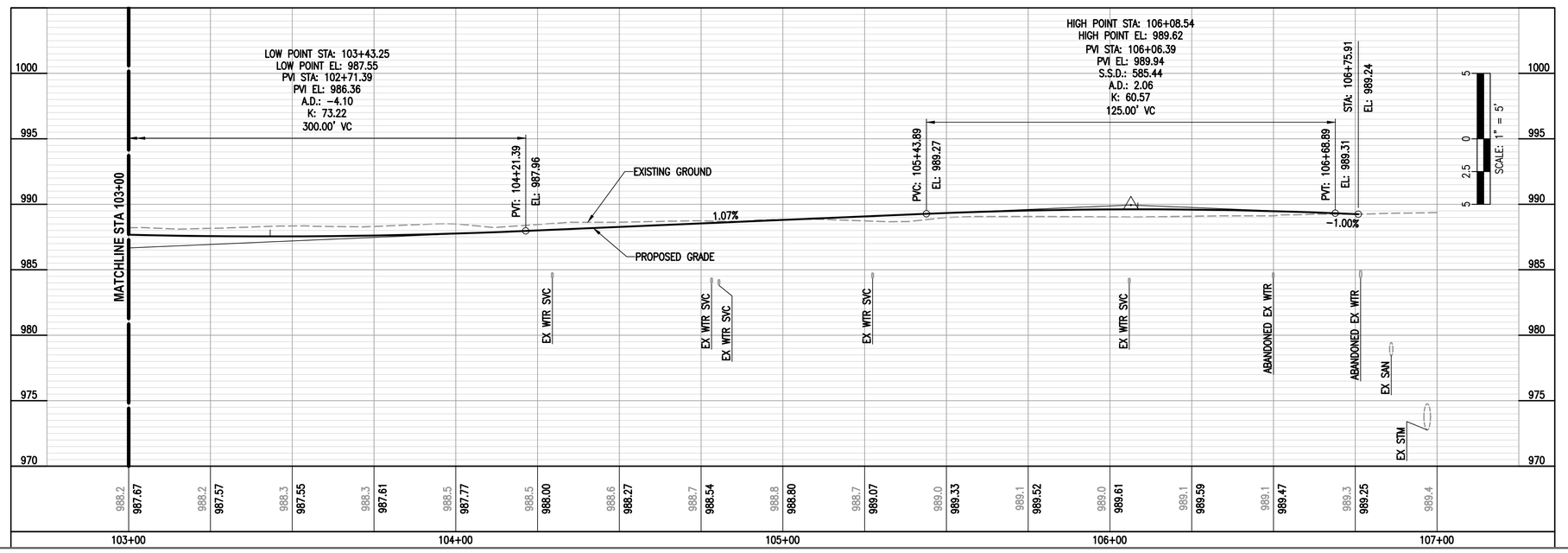
232 W 75TH ST, UNIT A
OWNER:
WALDO ICE HOUSE LLC
7441 A BROADWAY
KANSAS CITY, MISSOURI, 64114

208 W 75TH ST
OWNER:
TURLEY, JOHN J–TRUSTEE
7519 WALNUT
KANSAS CITY, MISSOURI, 64114

204 W 75TH ST
OWNER:
AMC WALDO LLC
204 W 75TH ST
KANSAS CITY, MISSOURI, 64114

315 W 75TH ST
OWNER:
SAN ANGELO REALTY LLC
10689 N PENNSYLVANIA ST
INDIANAPOLIS, INDIANA, 64280





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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2011027776
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

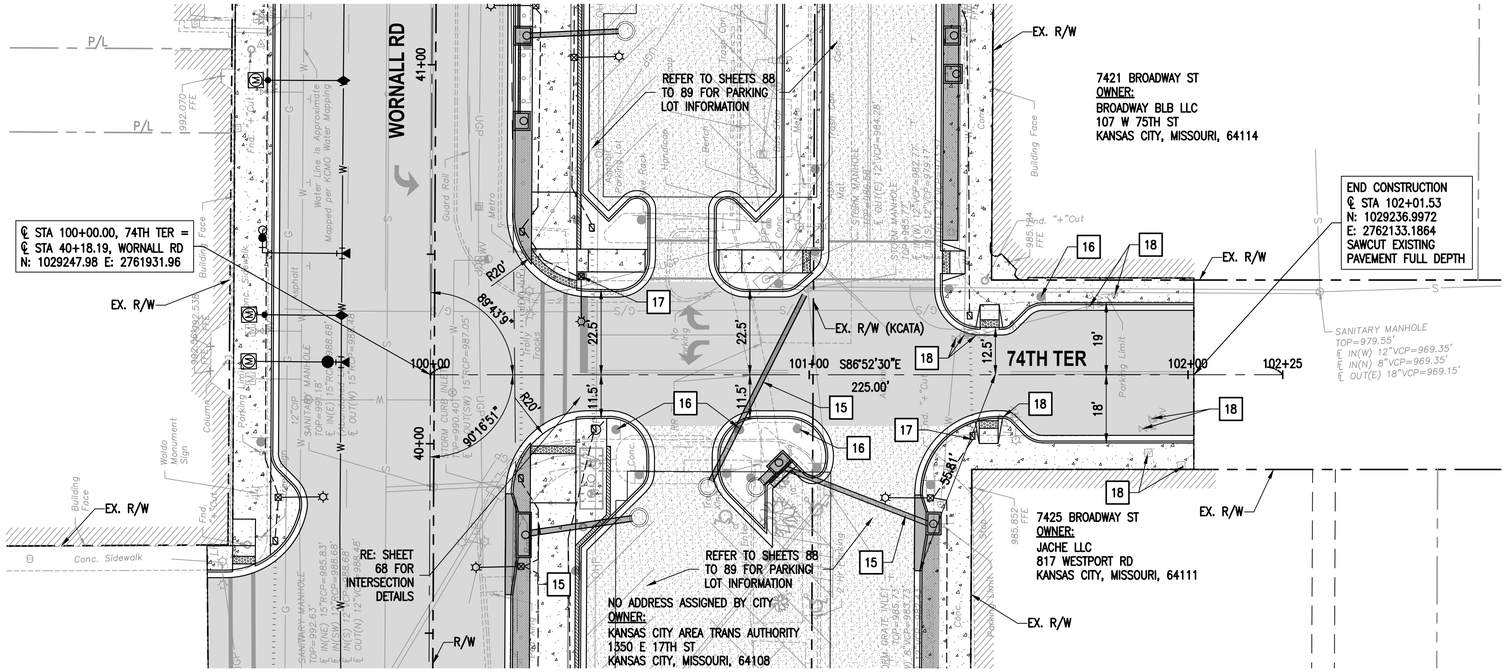
DESIGNED BY: M.J.H. / M.P.H.
REVIEWED BY: D.L.B
DRAWN BY: D.M.B.
PROJECT NUMBER: M08-18002-00
DATE: 21 DECEMBER 2022
SHEET TITLE

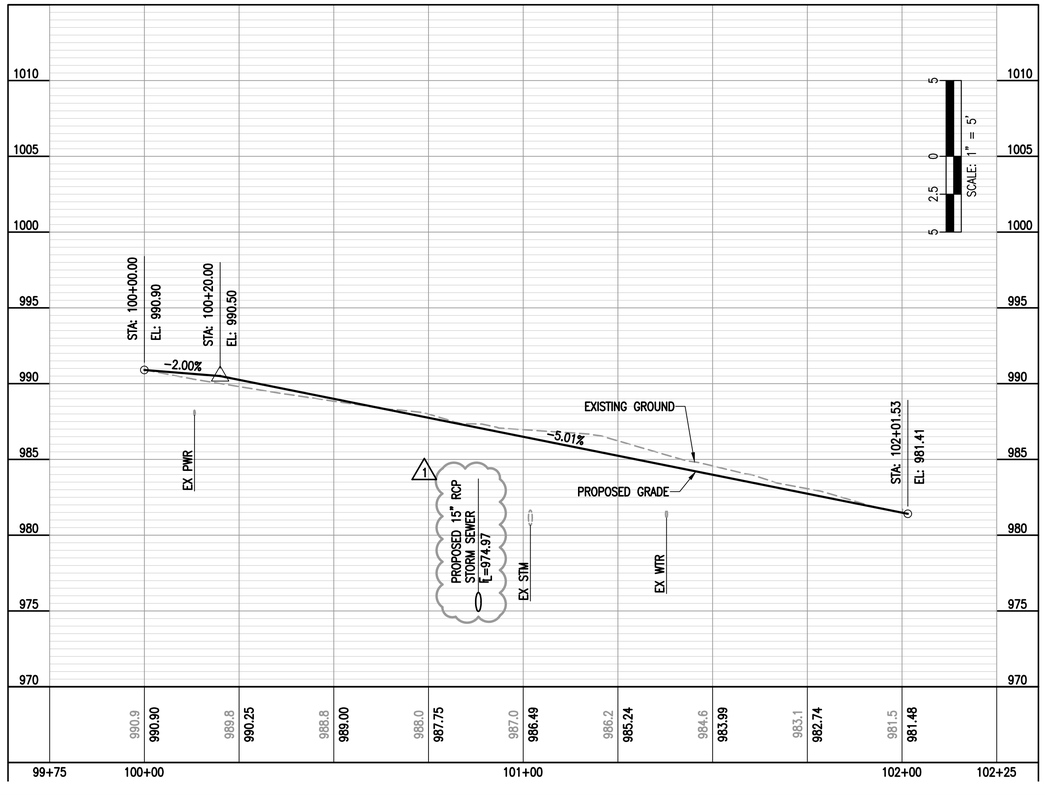
PLAN & PROFILE - 75TH ST

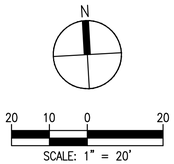
SHEET NUMBER

25 OF 216

Sep 25, 2023 - 11:46am
X:\WO8\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\022-025-18002-P&P-75th.dwg







KEYNOTES:

1. EVERGY TO REMOVE AND/OR RELOCATE POWER POLE.
2. EVERGY TO REMOVE AND/OR RELOCATE UNDERGROUND UTILITIES.
3. EVERGY TO BRACE POWER POLE AND/OR REMOVE, REPLACE, OR RELOCATE GUY WIRES AS NECESSARY.
4. AT&T TO REMOVE AND/OR RELOCATE UNDERGROUND UTILITIES.
5. SPIRE TO REMOVE AND/OR RELOCATE GAS LINE.
6. CENTURY LINK TO REMOVE AND/OR RELOCATE UNDERGROUND UTILITIES.
7. GOOGLE FIBER TO REMOVE AND/OR RELOCATE UTILITIES.
8. EXISTING WATER MAIN SYSTEM (INCLUDING WATER LINE, VALVES, FIRE HYDRANTS, ETC.) TO BE REMOVED OR ABANDONED IN PLACE. (REFER TO SEPARATE WATER MAIN REPLACEMENT PLAN SET).
9. APPROXIMATE LOCATION OF PROPOSED EVERGY POWER POLE.
10. APPROXIMATE LOCATION OF PROPOSED AT&T UNDERGROUND UTILITY SYSTEM.
11. APPROXIMATE LOCATION OF PROPOSED SPIRE UNDERGROUND UTILITY SYSTEM.
12. APPROXIMATE LOCATION OF PROPOSED CENTURY LINK UNDERGROUND UTILITY SYSTEM.
13. APPROXIMATE LOCATION OF PROPOSED GOOGLE UNDERGROUND UTILITY SYSTEM.
14. APPROXIMATE LOCATION OF NEW WATER MAIN (REFER TO SEPARATE WATER MAIN REPLACEMENT PLAN SET).
15. REFER TO STORM SEWER PLAN & PROFILES FOR STORM SEWER INFORMATION.
16. REFER TO PERMANENT TRAFFIC CONTROL PLANS.
17. REFER TO STREET LIGHTING PLANS.
18. CONTRACTOR TO ADJUST TOP OF EXISTING STRUCTURE TO PROPOSE GRADE.

UTILITY NOTE:

THE LOCATION, DEPTH AND SIZE OF EXISTING AND PROPOSED UTILITY SYSTEMS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION AND MAY NOT BE ACCURATE. THE CONTRACTOR SHALL FIELD VERIFY EXISTING AND PROPOSED UTILITY SYSTEMS AND NOTIFY THE ENGINEER AND UTILITY COMPANY IN THE EVENT THERE IS A CONFLICT.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2010027736
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.
REVIEWED BY: D.L.B
DRAWN BY: D.M.B.
PROJECT NUMBER: M08-18002-00
DATE: 21 DECEMBER 2022
SHEET TITLE: PLAN & PROFILE - 74TH TER
SHEET NUMBER: 27 OF 216

Sep 25, 2023 - 11:47am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\027-028-18002-P&P-74TH.dwg

NOTES:

1) DAYLIGHT OFFSET AND ELEVATION CALL-OUTS ARE APPROXIMATE AND FOR INFORMATION ONLY. PLAN DIMENSIONS, SECTION GRADES AND SITE CONDITIONS SHALL GOVERN THE FINAL CONSTRUCTION LIMITS.
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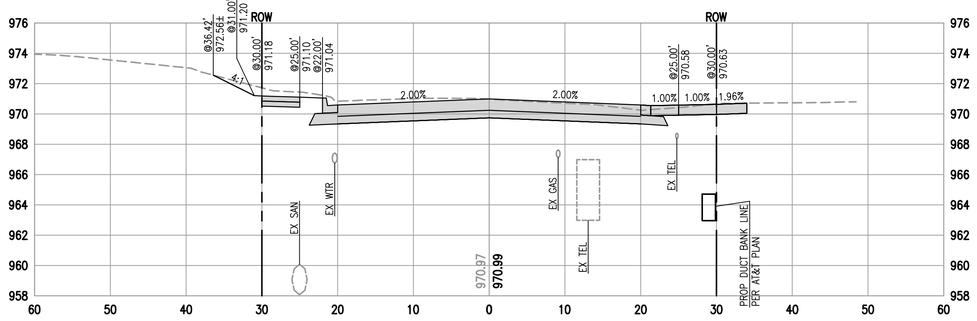
SCALE: 1" = 10' HORIZ.
1" = 5' VERT.

10+75.00



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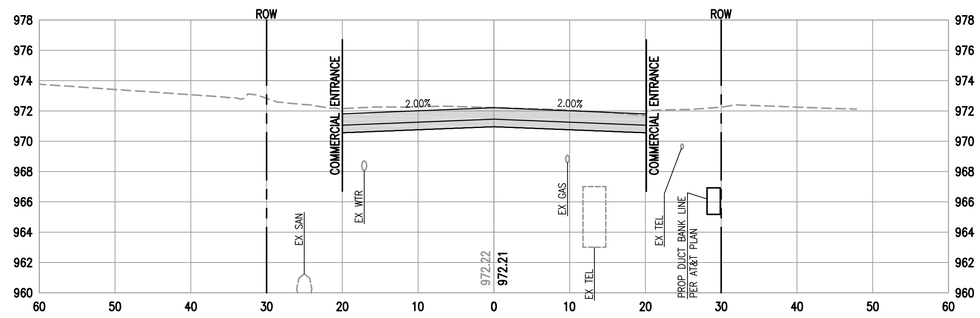

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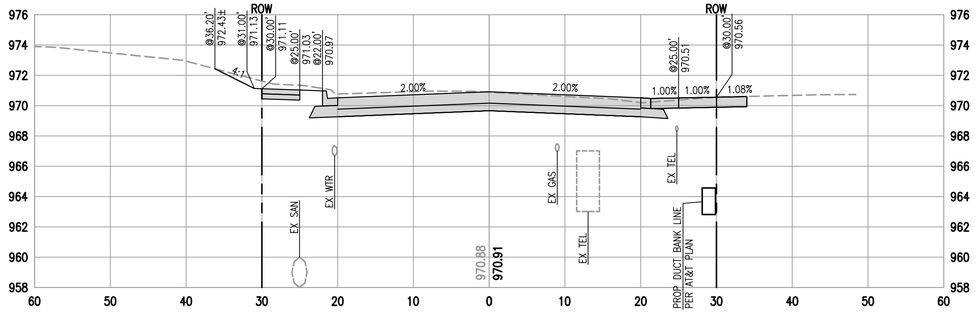

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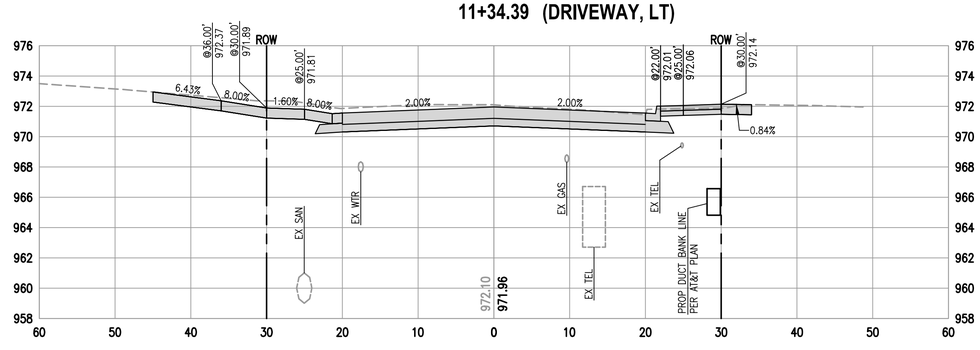

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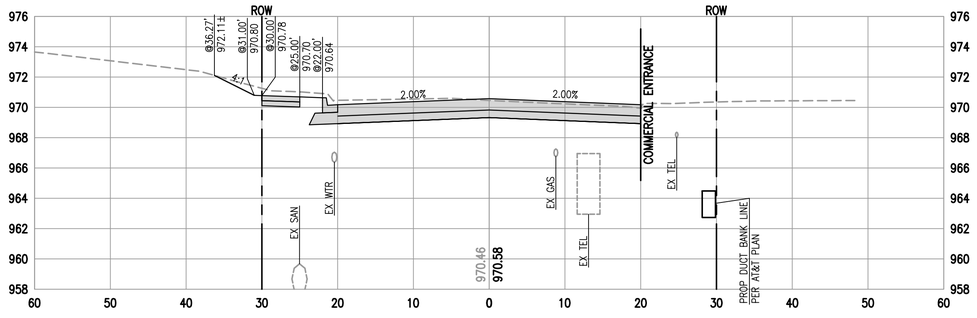

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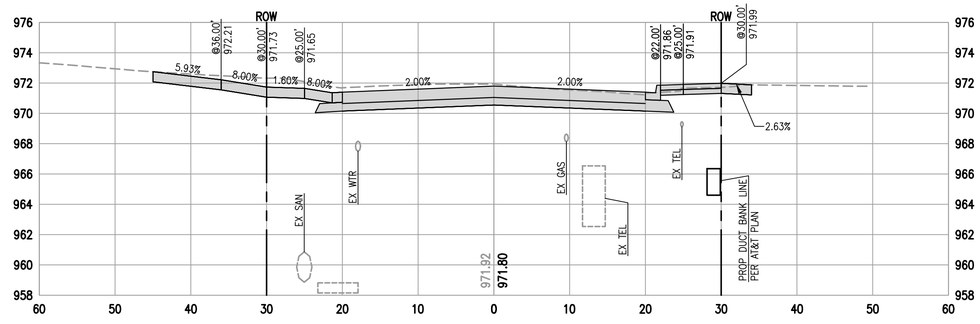

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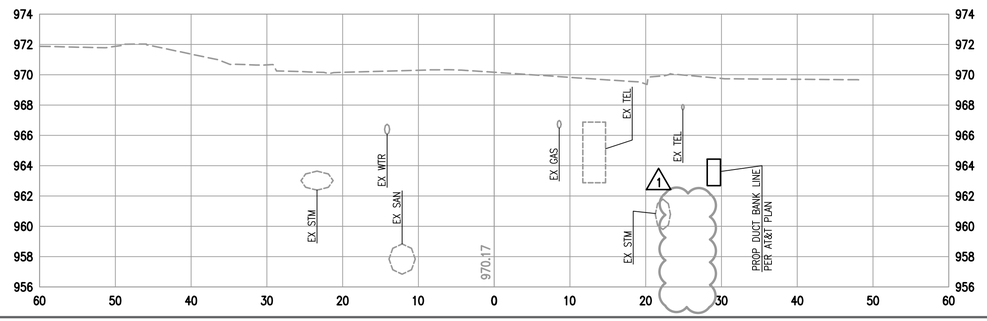

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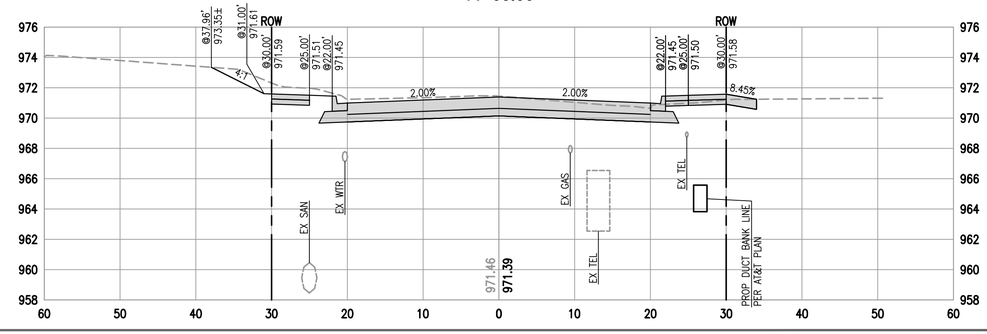

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER 2014007766
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

CROSS SECTIONS - WORNALL RD

SHEET NUMBER

29 OF 216

Sep 25, 2023 - 12:24pm
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\029-051-18002-XSEC-WRNL.dwg

NOTES:

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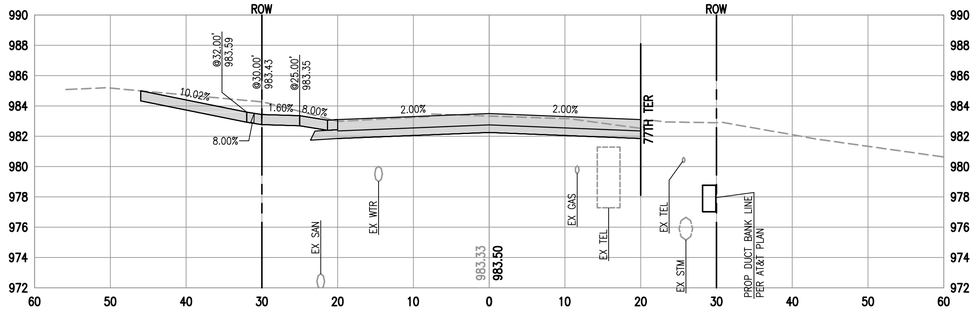
1" = 5' VERT.

20+25.00



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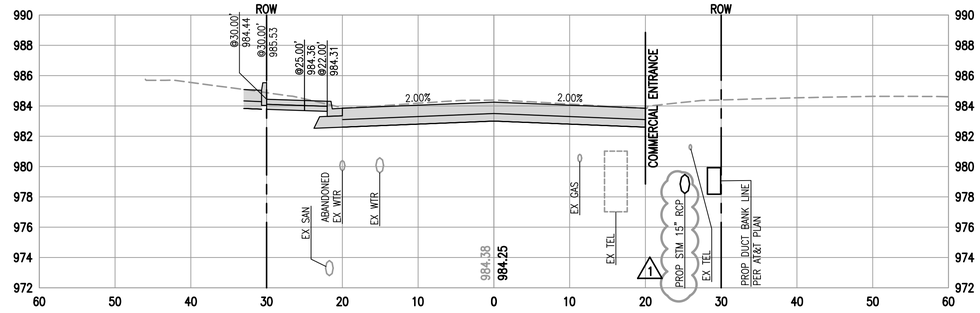

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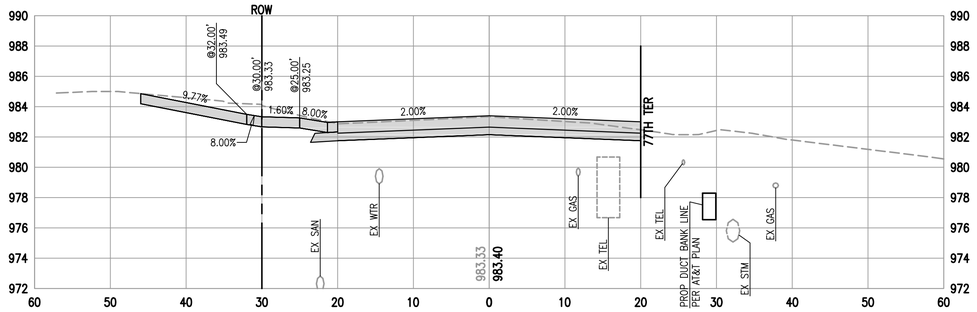

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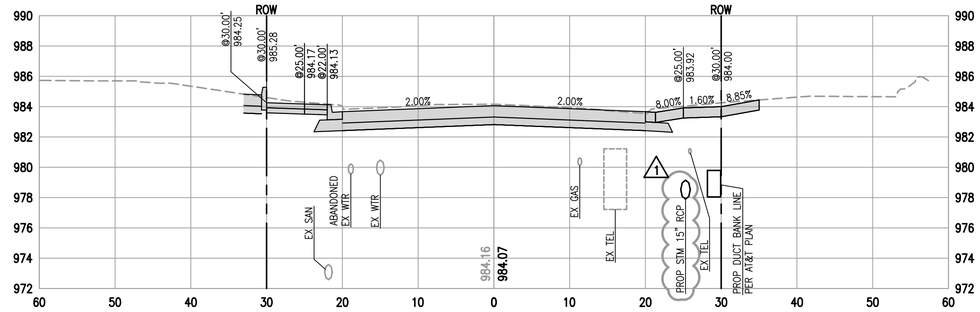

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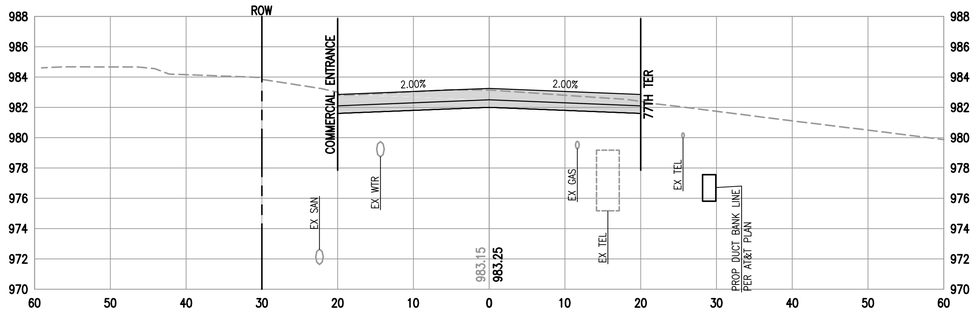

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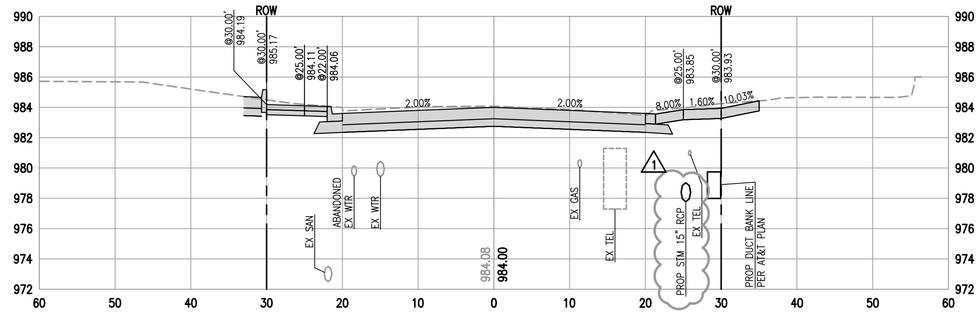

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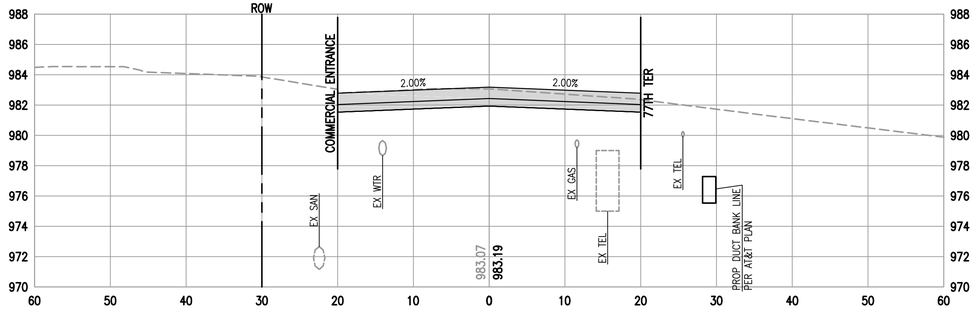

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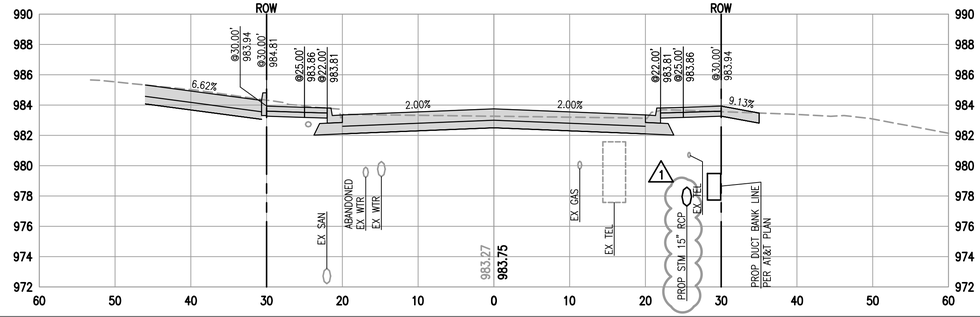

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER 2014007766
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

CROSS SECTIONS - WORNALL RD

SHEET NUMBER

36 OF 216

Sep 25, 2023 - 12:24pm
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\029-051-18002-XSEC-WRNL.dwg

NOTES:

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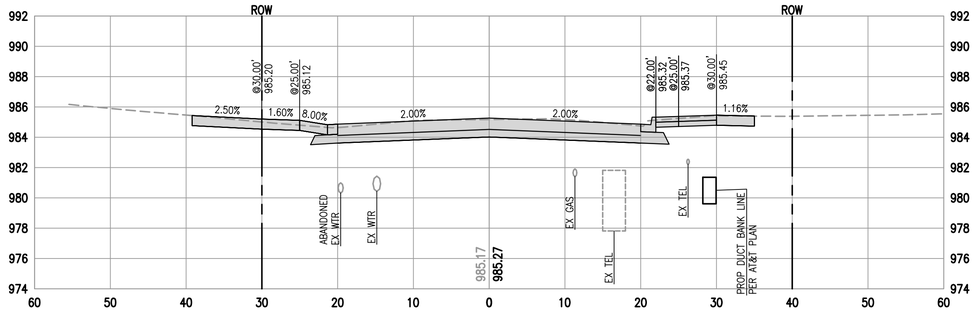
21+94.36 (DRIVEWAY, LT)



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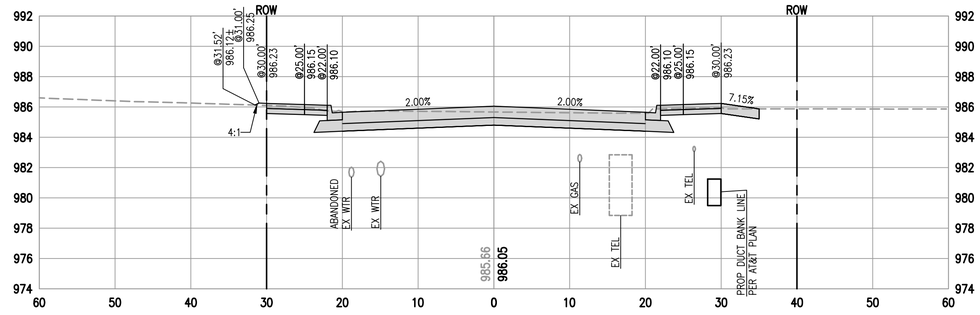

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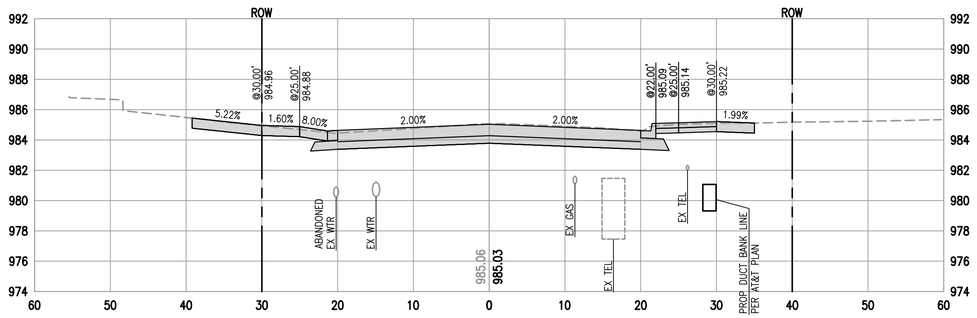

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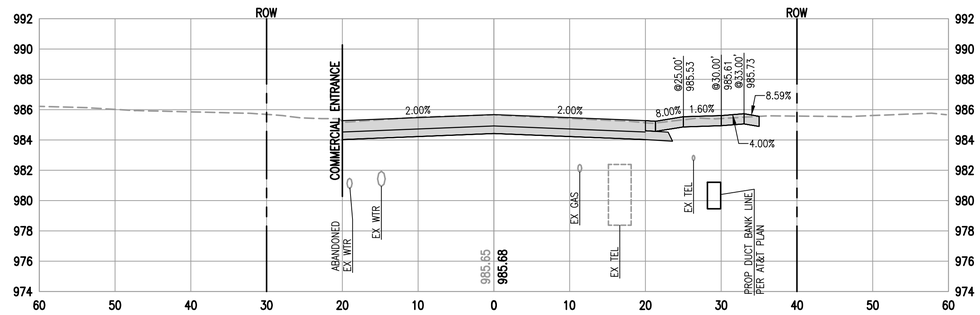

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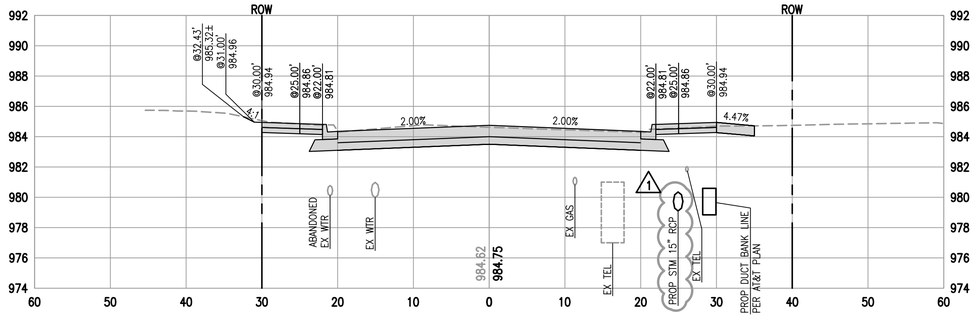

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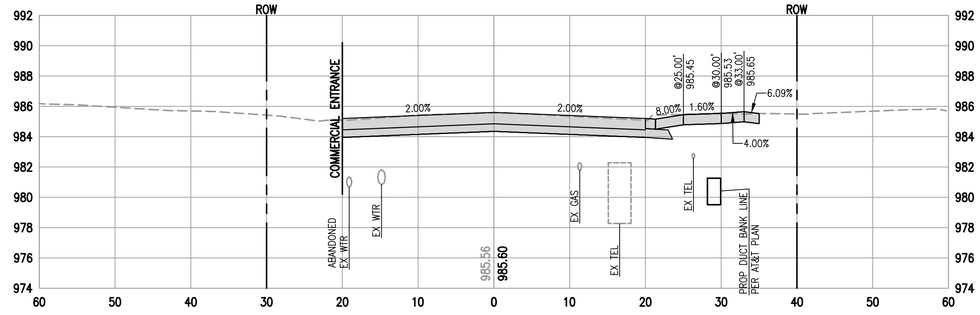

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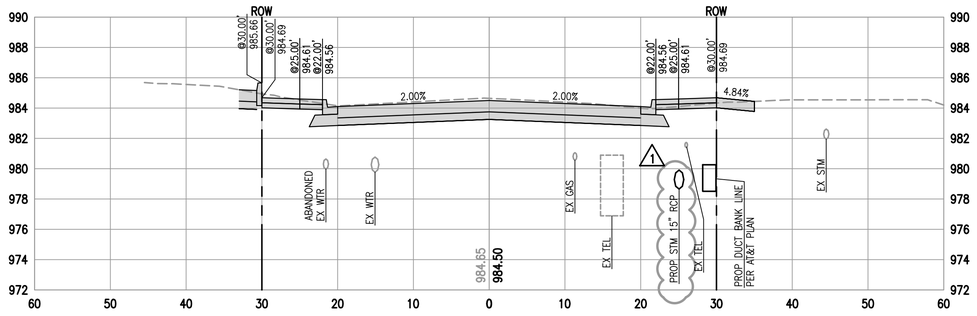

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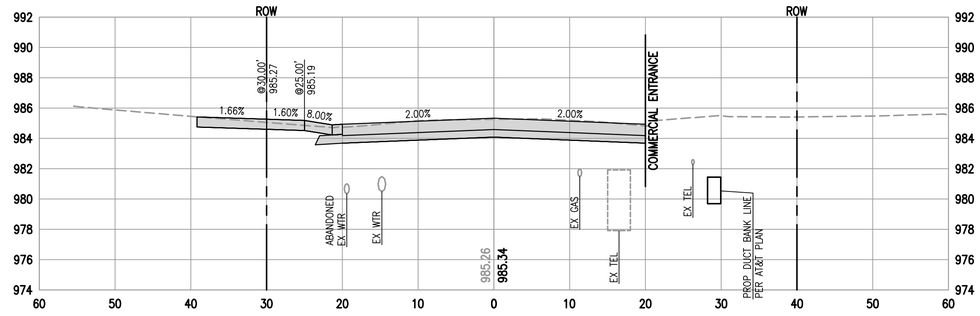

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

CROSS SECTIONS - WORNALL RD

SHEET NUMBER

37 OF 216

Sep 25, 2023 - 12:25pm
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\029-051-18002-XSEC-WRNL.dwg

NOTES:

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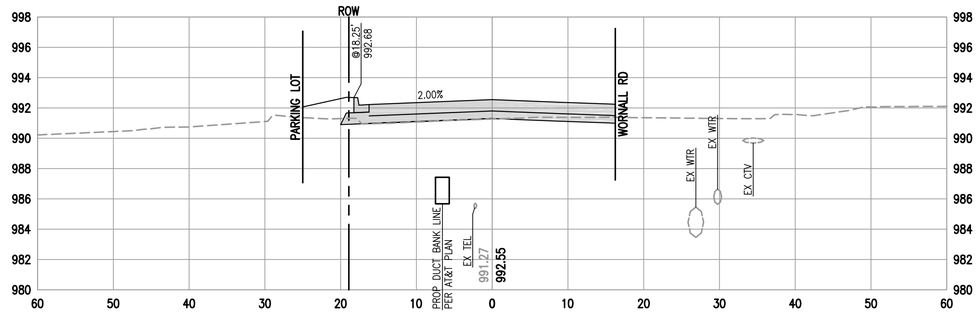
100+50.00



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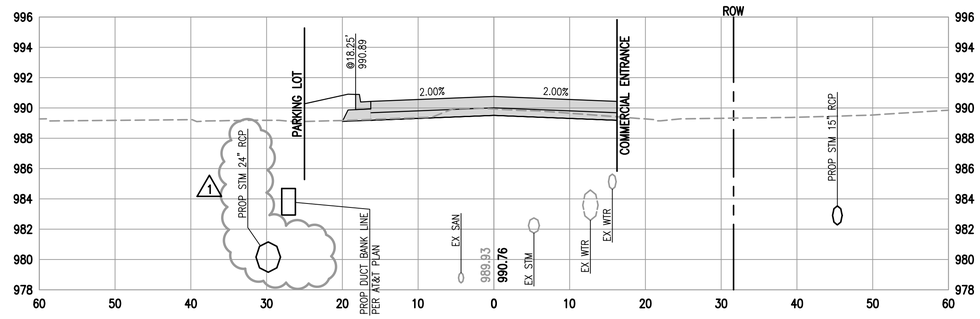

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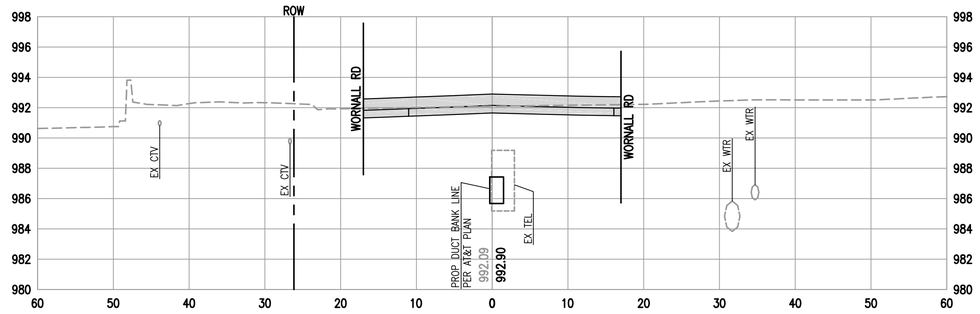

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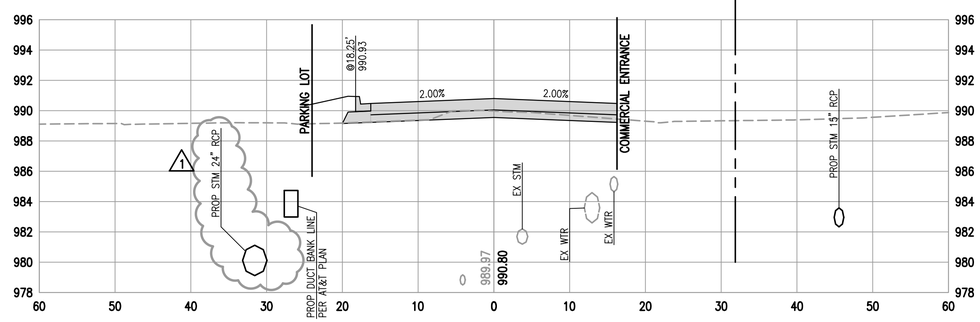

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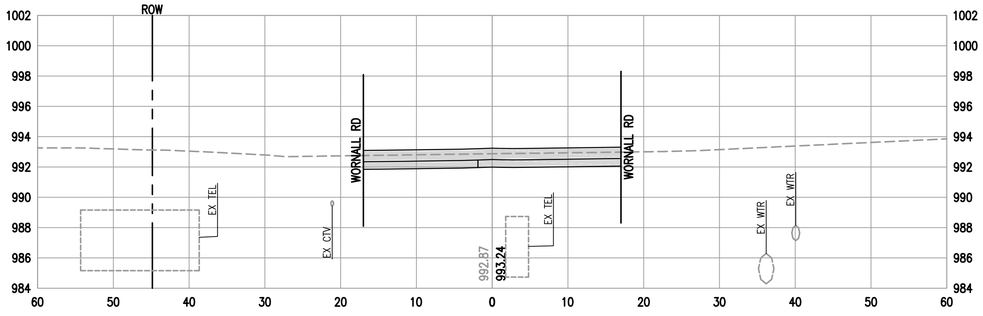

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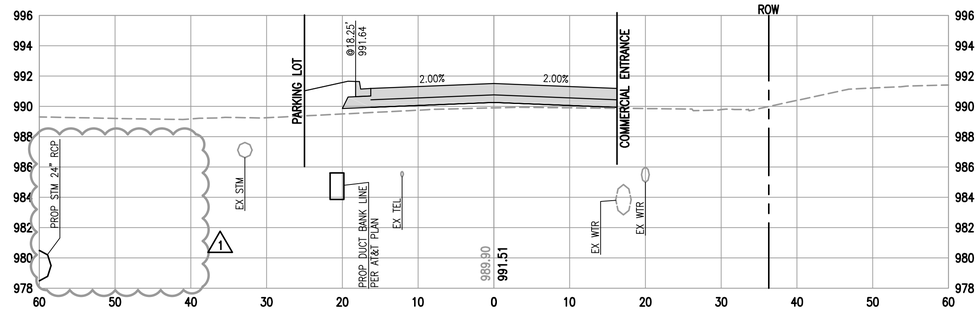

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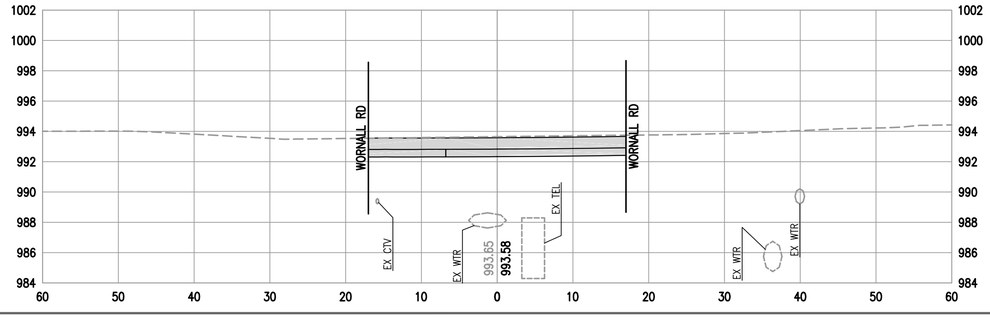
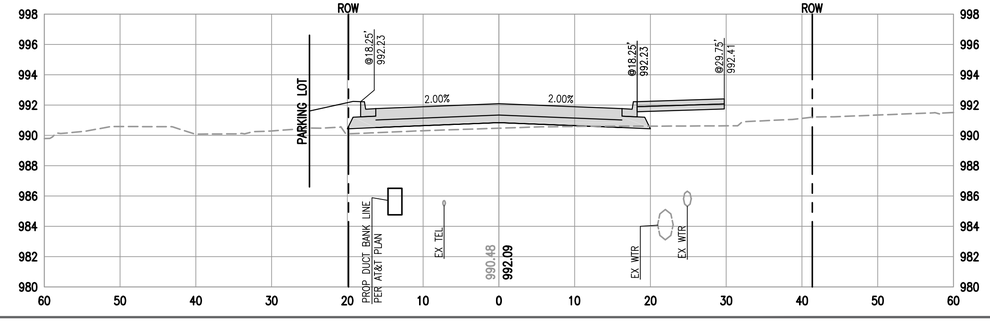


100+75.00



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74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2011007776
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.
REVIEWED BY: D.L.B
DRAWN BY: D.M.B.
PROJECT NUMBER: M08-18002-00
DATE: 21 DECEMBER 2022
SHEET TITLE

CROSS SECTIONS - 75TH ST

SHEET NUMBER

54 OF 216

Sep 25, 2023 - 12:26pm
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\052-058-18002-XSEC-75TH.dwg

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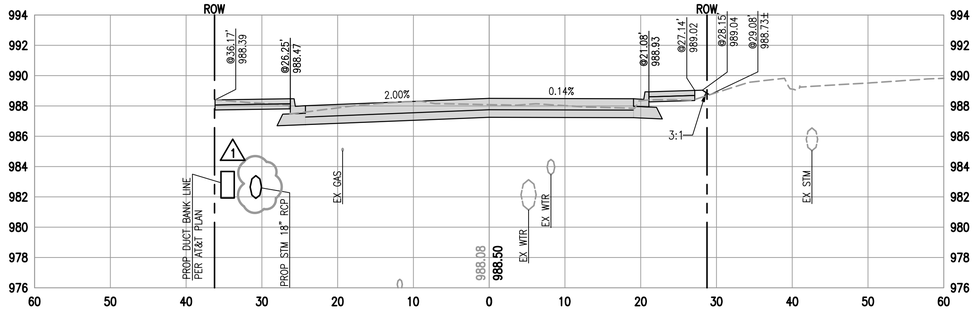
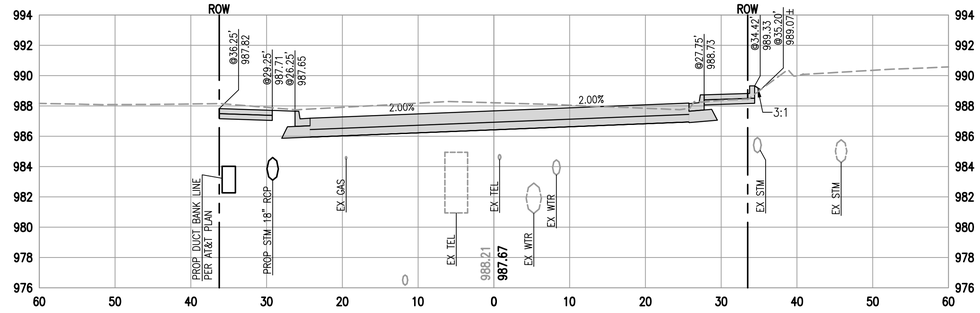
2) THE CONTRACTOR, PRIOR TO CONSTRUCTION SHALL VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES. ALL EXISTING UTILITY LOCATIONS AND DEPTHS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE ACCURATE.

SCALE: 1" = 10' HORIZ.
1" = 5' VERT.

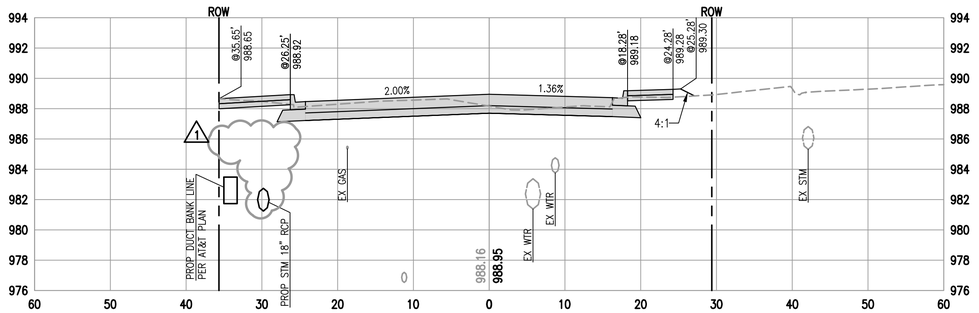
102+25.00



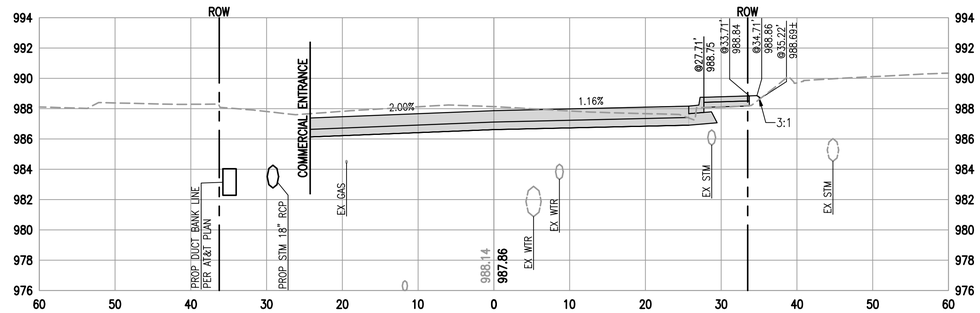
103+00.00



102+00.00



102+75.00



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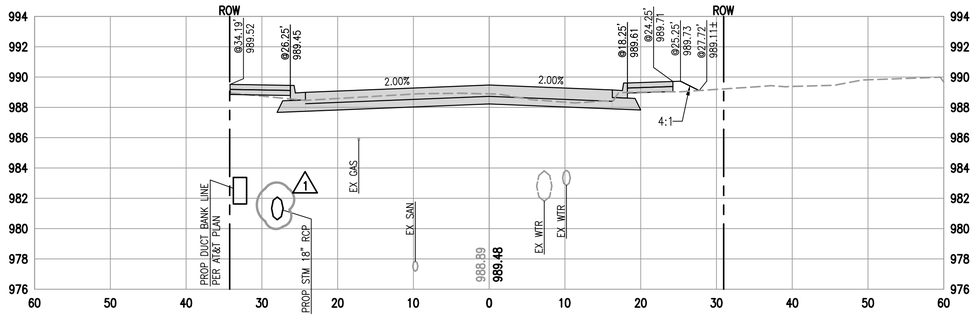
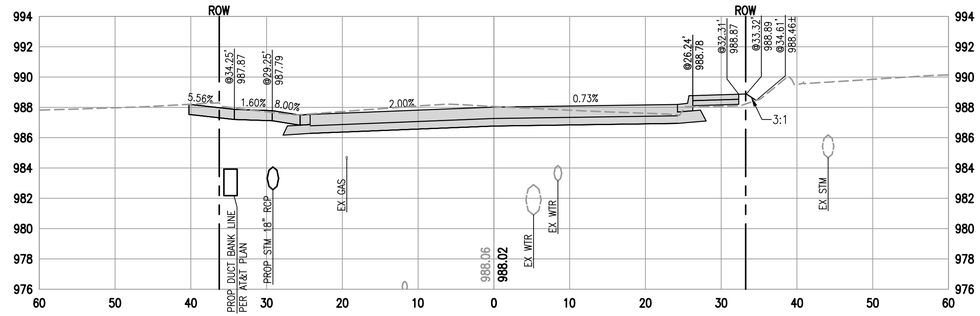
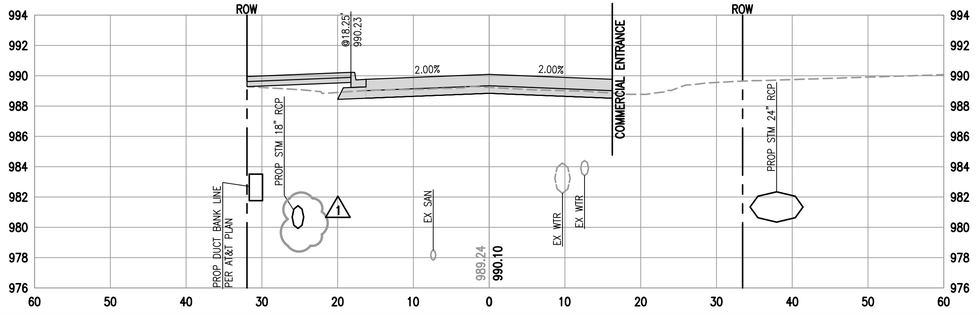


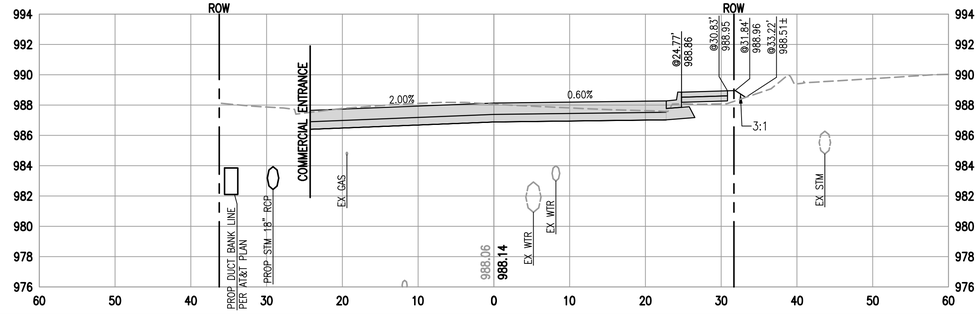
102+60.02 (DRIVEWAY, LT)



101+50.00



102+50.00



walter p moore

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER 2014007766
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

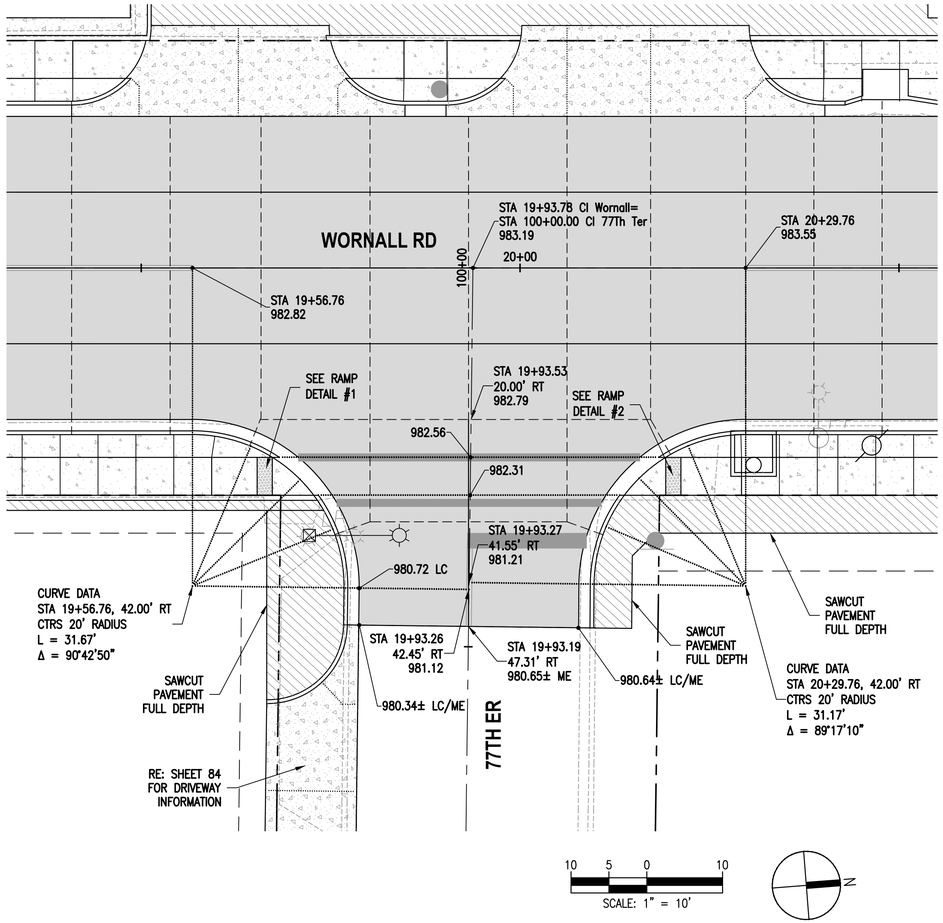
SHEET TITLE

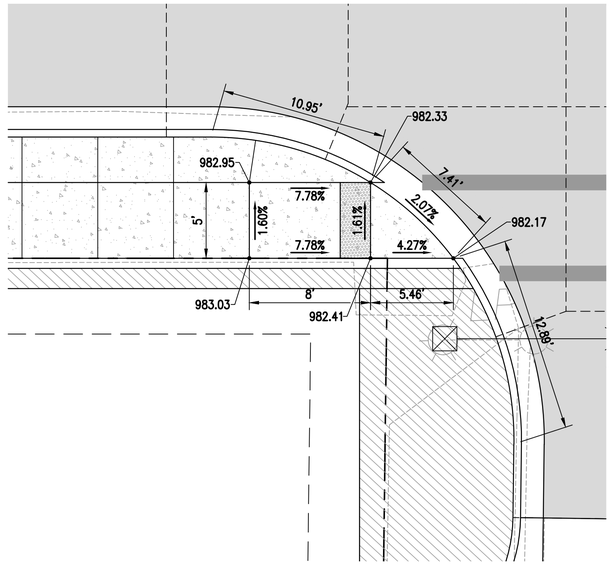
CROSS SECTIONS - 75TH ST

SHEET NUMBER

55 OF 216

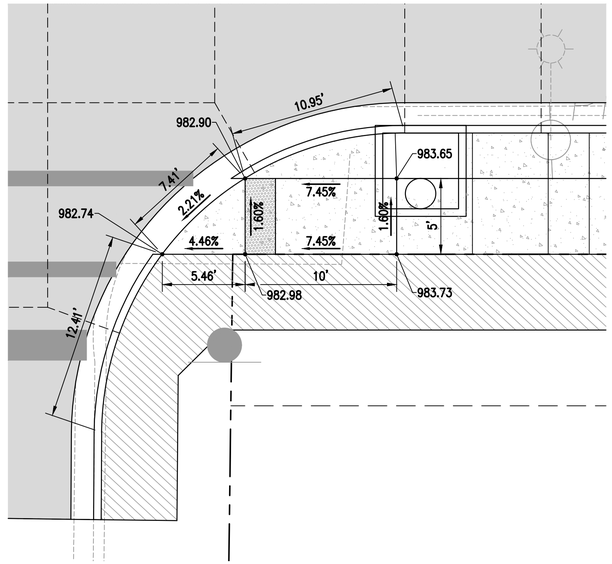
Sep 25, 2023 - 12:26pm
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\052-058-18002-XSEC-75TH.dwg





RAMP DETAIL #1

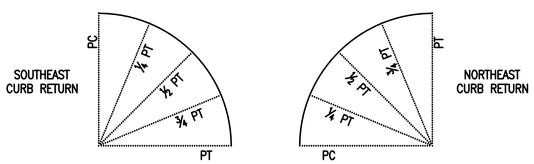
SCALE: 1" = 5'



RAMP DETAIL #2

SCALE: 1" = 5'

POINT LEGEND



GRADING LEGEND

- XXX.XX TC – TOP OF CURB ELEVATION
- XXX.XX – SPOT ELEVATION
- XXX.XX LC – LIP OF CURB ELEVATION
- XXX.XX ME – MATCH EXISTING ELEVATION
- XXX.XX HP – HIGH POINT
- XXX.XX LP – LOW POINT

NOTE:
1. ALL CURB & GUTTER SHALL BE TYPE "CG-1" CURB & GUTTER UNLESS OTHERWISE STATED ON PLANS. CURB ELEVATIONS SHOWN ARE THE THEORETICAL TOP OF CURB.
2. CONTRACTOR IS RESPONSIBLE FOR POSITIVE DRAINAGE AT ALL INTERSECTIONS.
3. REFER KCMO STD DWG NO. SW-1 FOR STREET CURB DETAIL AT RAMP.

SOUTHEAST CURB RETURN

PC	STATION (WORNALL RD)	OFFSET @ BOC	TC ELEVATION	EOP ELEVATION
PC	19+56.76	22.00' RT	982.88	982.42
¼ PT	19+64.47	23.55' RT	982.81	982.35
½ PT	19+70.99	27.95' RT	982.65	982.19
¾ PT	19+75.31	34.52' RT	982.07	981.61
PT	19+76.76	42.25' RT	981.18	980.72

NORTHEAST CURB RETURN

PC	STATION (WORNALL RD)	OFFSET @ BOC	TC ELEVATION	EOP ELEVATION
PC	20+09.77	41.75' RT	981.62	981.16
¼ PT	20+11.36	34.17' RT	982.55	982.09
½ PT	20+15.71	27.77' RT	983.13	982.67
¾ PT	20+22.17	23.50' RT	983.39	982.93
PT	20+29.76	22.00' RT	983.61	983.15

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2011007745
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

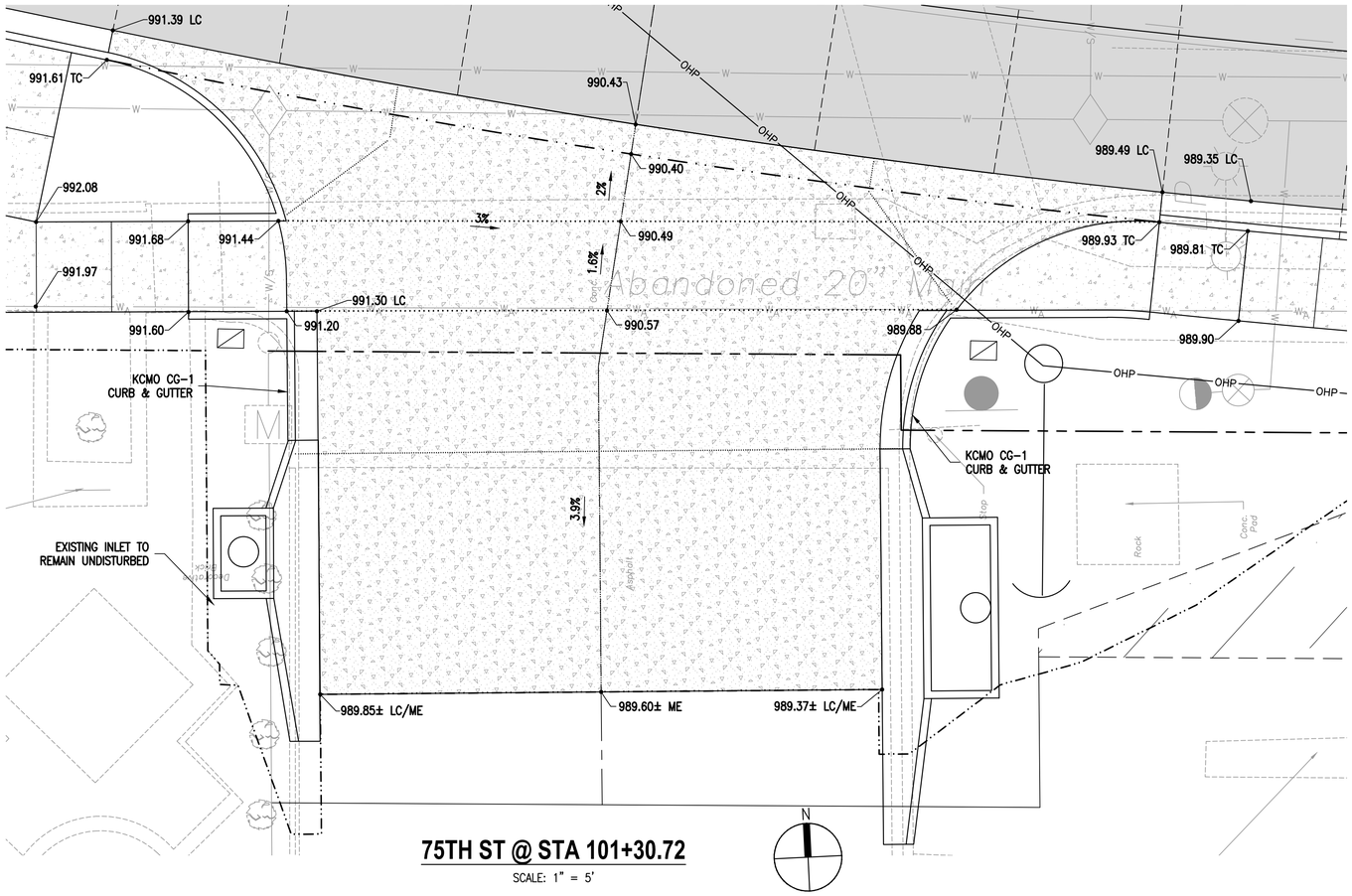
SHEET TITLE

INTERSECTION DETAILS - 77TH TER & WORNALL RD

SHEET NUMBER

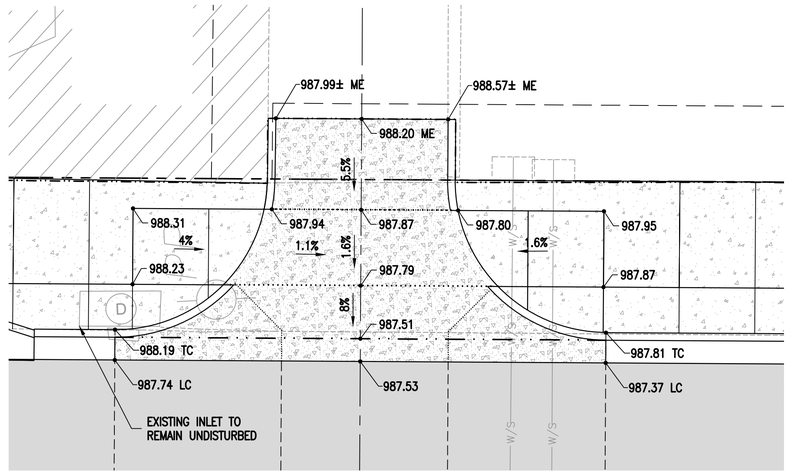
62 OF 216

Sep 25, 2023 - 12:47pm
X:\M08\2018\18002-00 wornall road improvements - 74th to\Civil\Cad\Sheets\060-073-18002-INT.dwg



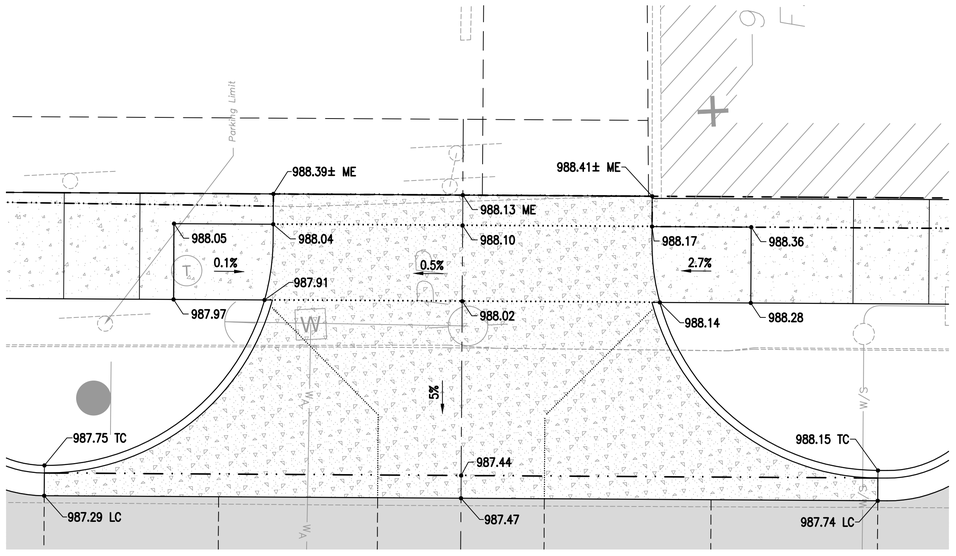
75TH ST @ STA 101+30.72

SCALE: 1" = 5'



75TH ST @ STA 102+63.70

SCALE: 1" = 5'



75TH ST @ STA 104+13.21

SCALE: 1" = 5'

GRADING LEGEND

XXX.XX TC	– TOP OF CURB ELEVATION
XXX.XX	– SPOT ELEVATION
XXX.XX LC	– LIP OF CURB ELEVATION
XXX.XX ME	– MATCH EXISTING ELEVATION
XXX.XX HP	– HIGH POINT
XXX.XX LP	– LOW POINT

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014027276
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.

REVIEWED BY: D.L.B

DRAWN BY: D.M.B.

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

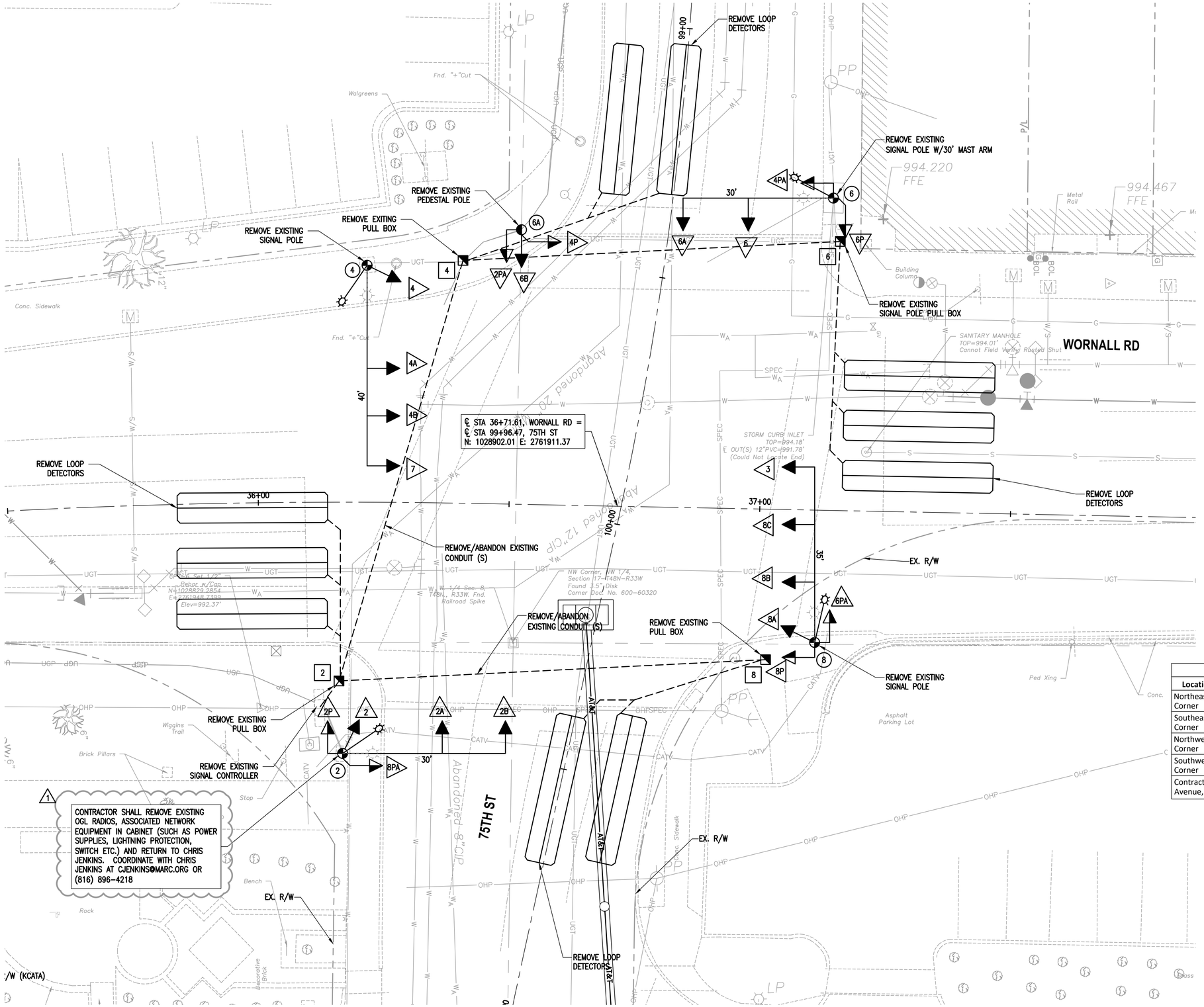
SHEET TITLE

DRIVEWAY GRADING ENLARGEMENTS

SHEET NUMBER

82 OF 216

Sep 25, 2023 - 12:47pm
X:\M08\2018\18002-00 wornall road improvements - 74th to\Civil\Cad\Sheets\075-084-18002-DR-RAMP-DT.dwg



NOTES:

1. ALL SIGNS REMOVED, DAMAGED, OR DISTURBED, DUE TO THIS PROJECT SHOULD BE PROPERLY RE-INSTALLED IN CONSULTATION WITH THE CITY INSPECTOR/PROJECT MANAGER.
2. POLE REMOVAL INCLUDES REMOVING THE BASE AND MAKING THE SURFACE GOOD.
3. ALL STREET LIGHT CABLE SPLICES MUST BE MADE IN A POLE BASE OR JUNCTION BOX/PULL BOX PER SPECIFICATIONS. DIRECT BURIED SPLICES ARE NOT PERMITTED.
4. ALL TRAFFIC SIGNAL AND STREET LIGHT EQUIPMENT REMOVED MUST BE DELIVERED IN GOOD CONDITION TO 5310 MUNICIPAL AVENUE. COORDINATE WITH MR. MAURECE GREEN, SR AT 816-787-9515.
5. CONTRACTOR SHALL COORDINATE THE "STREET LIGHT" REMOVALS WITH THE PUBLIC WORKS, STREET LIGHT SERVICES AT 816-513-9505.
6. ANY TRAFFIC REGULATION SIGN REMOVED OR AFFECTED DUE TO MODIFICATION MUST BE REPLACED IN CONSULTATION WITH THE CITY INSPECTOR/PROJECT MANAGER.
7. REMOVALS INCLUDE MAKING GOOD THE DISTURBED SURFACES, PER SPECIFICATIONS.
8. UNLESS OTHERWISE CALL ED FOR, ALL EXISTING CABLES ARE TO BE TO REMOVED AND ALL EXISTING CONDUITS ARE TO BE LEFT IN PLACE AND ABANDONED.

Removals Chart

Location	Poles	Heads	Pull Boxes	Controller	Other
Northeast Corner	1	6	1		
Southeast Corner	1	5	1	1	
Northwest Corner	1	4	1		
Southwest Corner	2	7	1		
Contractor shall salvage all equipment to 5310 Municipal Avenue, City of Kansas City, Missouri					

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: SG

REVIEWED BY: PRB

DRAWN BY: DPC

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

SHEET TITLE

TRAFFIC SIGNAL DEMO PLAN - WORNALL RD AND 75TH ST

SHEET NUMBER

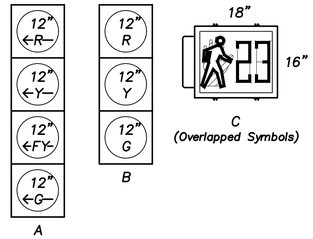
116 OF 216

Sep 25, 2023 - 10:42am
X:\MO8\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\116-18002-WRNL-SGNL-DEMO.dwg

NOTES:

1. LANE MARKING SHOWN FOR INFORMATION ONLY. REFER TO PAVEMENT MARKING SHEETS.
2. COORDINATE ANY SIGNAL SHUTDOWNS WITH THE CITY OF KANSAS CITY, MISSOURI.
3. ALL STREET LIGHT CHANGES SHALL BE COORDINATED WITH THE PUBLIC WORKS STREET LIGHT SERVICES, CITY OF KANSAS CITY, MISSOURI.
4. STREET LIGHT ORIENTATION ON SIGNAL POLES SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL ORIENT STREET LIGHTS PER THE STREET LIGHTING PLAN SHEETS.
5. ALL UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR MAKING HIS/HER OWN DETERMINATION AS TO TYPE AND LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND PIPELINES, CONDUITS, STRUCTURES AND OVERHEAD LINES BY CONTACTING THE OWNERS OF THE UTILITIES.
6. INSTALL ADVANCED RADAR DETECTOR ON SIGNAL POLES.

Signal Faces



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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: SG

REVIEWED BY: PRB

DRAWN BY: DPC

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

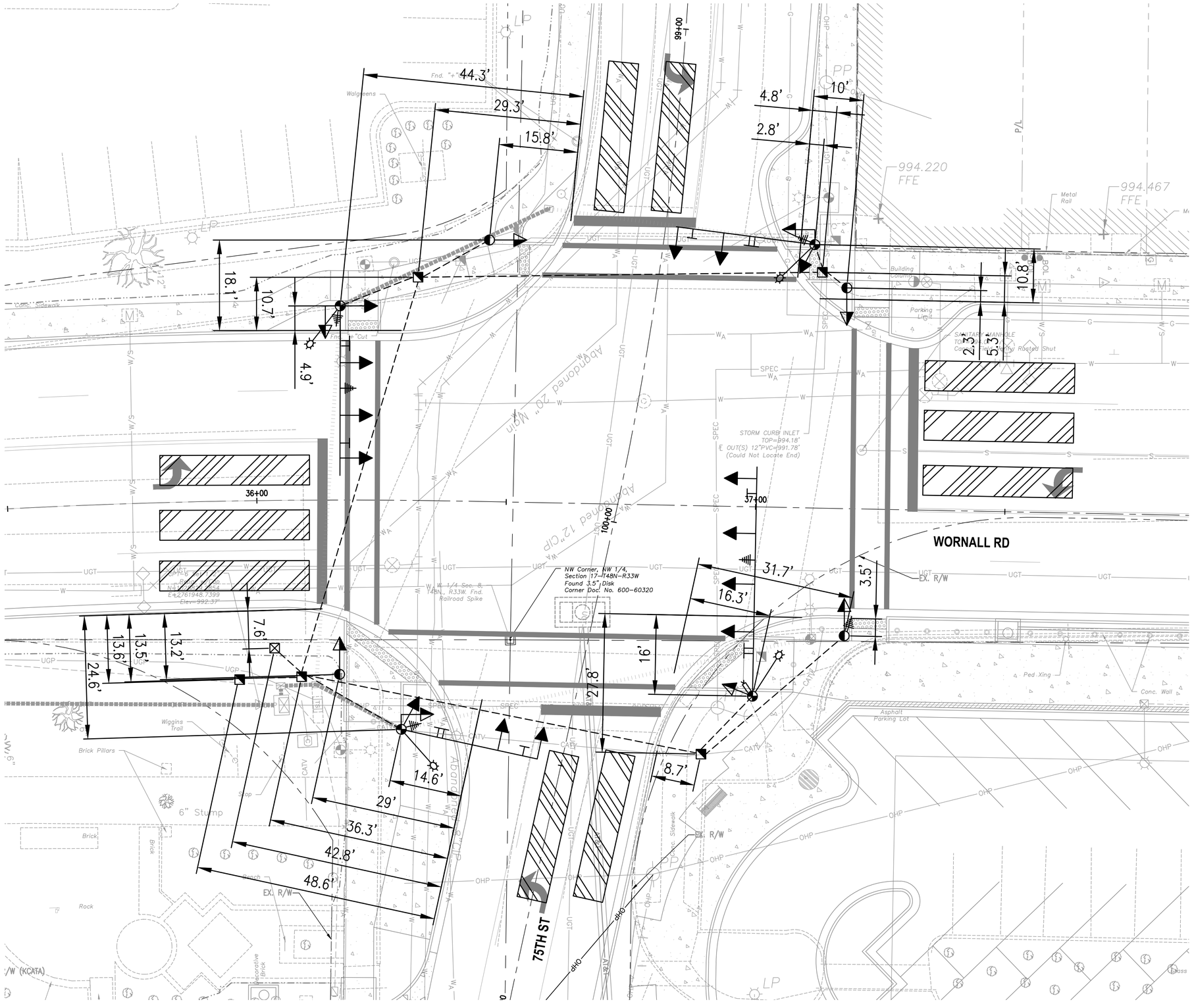
SHEET TITLE

TRAFFIC SIGNAL PLAN - WORNALL RD AND 75TH ST

SHEET NUMBER

118 OF 216

Sep 25, 2023 - 10:43am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\118-18002-WRNL-SGNL-1.dwg



Sep 25, 2023 - 10:43am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\119-18002-WRNL-SGNL-2.dwg

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: SG

REVIEWED BY: PRB

DRAWN BY: DPC

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

SHEET TITLE

TRAFFIC SIGNAL DIMENSION PLAN - WORNALL RD AND 75TH ST

SHEET NUMBER

119 OF 216

CONTROLLER AND EQUIPMENT		TOTALS
CABINET:	TYPE 303 POST OR BASE MOUNT	
	TYPE 332 L W/DRAWER	1
	TYPE 336S W/ DRAWER AND TYPE M BASE ADPATER	1
CONTROLLER:	TYPE 2070C COMPLETE PER PLANS	1
STREET LIGHT CONTROLLER:		
OTHER THAN SPECIFIED:		
DESCRIPTION:		
10 PORT MANAGED ETHERNET SWITCH WITH FIBER OPTIC UPLINK PORTS		1
ASC/3-1C MODULE		1
CONFLICT MONITOR WITH ETHERNET PORT		1
CLICK 656		1
AUXILIARY OUTPUT FILE		1
206L POWER SUPPLY		1

REMARKS:

1. FURNISH AND INSTALL.
   ALL EXISITNG EQUIPME IS TO BE REMOVED & DELIVERED IN
2. GOOD CONDITION TO 5300 MUNICPAL AVE.
   CONDUCTED BETWEEN TUESDAY AND THURSDAY FROM 9AM
3. AND 4PM.

INPUT FILE ASSIGNMENTS

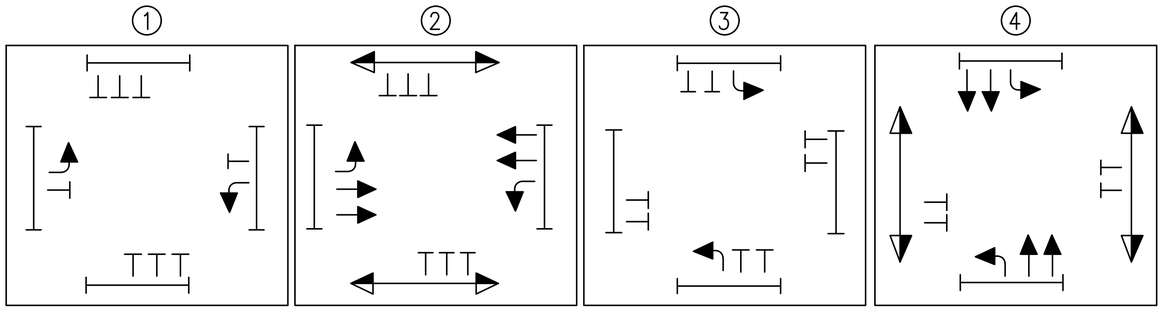
TYPE 332 CABINET

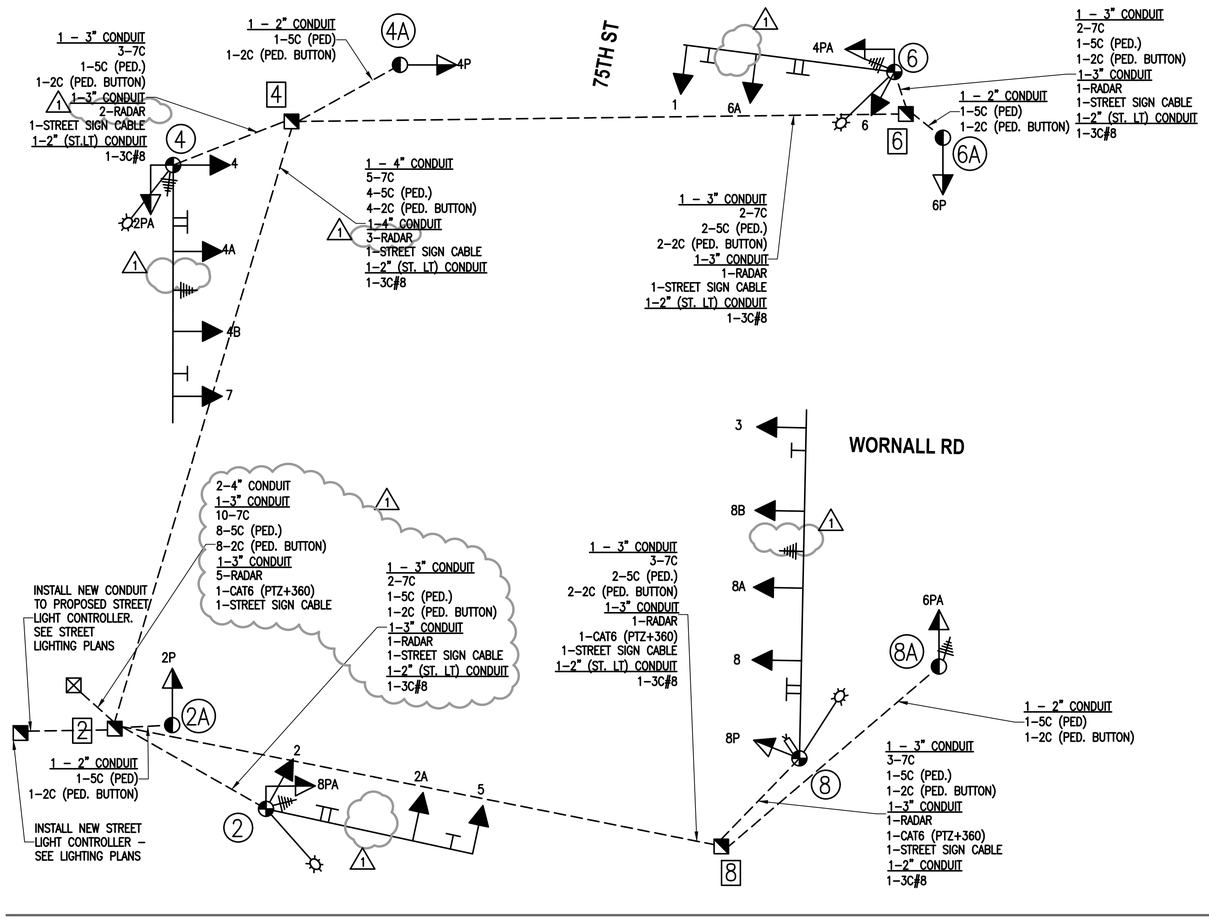
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U												PED Ø2	PED Ø2	FLH
L					RADAR DETECTION							PED Ø2	PED Ø2	STOP TIME
U														
L														

OUTPUTS FILE ASSIGNMENTS

FR1	Ø1	Ø2	Ø2 PED	Ø3	Ø4	Ø9 PED	MONITOR
FR2							
FR3	Ø5	Ø6	Ø6 PED	Ø7	Ø8	Ø8 PED	
FR4							
FR5	Ø9			Ø11			
FR6		Ø11					

POWER SUPPLY							
LOCATION	POWER SUPPLY ASMB.	CIRCUIT BREAKER TRIP RATINGS (ALL TWO-POLE)					
		INSIDE CABINET		OUTSIDE CABINET			
				SIGNALS		STREET SIGN	
SEC	1	50	AMP	50	AMP	30	AMP
TOTAL							





INTERVAL SEQUENCE																
APPROACH	FACE No.	SEQUENCE 1				SEQUENCE 2				SEQUENCE 3				SEQUENCE 4			
		Interval No.				Interval No.				Interval No.				Interval No.			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Westbound 75th Street	1	G <--	FY <--	Y <--	R <--	FY <--	FY <--	Y <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--
	6	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R
	6A	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R
	6P	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
	6PA	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
Eastbound 75th Street	5	G <--	FY <--	Y <--	R <--	FY <--	FY <--	Y <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--
	2	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R
	2A	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R
	2P	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
	2PA	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
Northbound Wornall Road	3	R <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--	G <--	FY <--	Y <--	R <--	FY <--	FY <--	Y <--	R <--
	8	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	8A	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	8B	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	8P	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW
	8PA	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW
Southbound Wornall Road	7	R <--	R <--	R <--	R <--	R <--	R <--	R <--	R <--	G <--	FY <--	Y <--	R <--	FY <--	FY <--	Y <--	R <--
	4	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	4A	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	4B	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	4P	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW
	4PA	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW

N

10 5 0 10

SCALE: 1" = 10'

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74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY SG

REVIEWED BY PRB

DRAWN BY DPC

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

TRAFFIC SIGNAL WIRING DIARGRAM, PHASING & SEQUENCE

SHEET NUMBER

1 120 OF 216

Sep 25, 2023 – 10:44am
X:\M08\2018\18002-00 Wornall Road Improvements – 74th to\Civil\Cad\Sheets\120-18002-WRNL-SGNL-WIRING.dwg

POST NO.	PEDESTAL POLE				MAST ARM TYP I II III									REMARKS
								SIGNAL HEAD SPACING				LUMINAIRES		
	POLE LENGTH				MAST ARM LENGTH			OUT BOAR	1ST IN	2ND IN	3RD IN	ARM LENGTH	LED TYPE D 240V	
	5	10	15	30	30	36	48							
														NOTE: 1. MOUNTING HEIGHT FOR LUMINAIRES IS 35 FT.
2					1			28	20			10'	1	
2A		1												
4						1		30	22	11		10'	1	
4A		1												
6					1			28	18			10'	1	
6A		1												
8							1	38	29	18	8	10'	1	
8A			1											
TOTALS		3	1		2	1	1						4	

*NOTE: SIGNAL HEAD SPACING TO BE ADJUSTED TO SITE CONDITIONS AND APPROVED BY THE PROJECT INSPECTOR.

BASES AND PULL BOXES													
	NO.		BASES							PULL BOXES			
LOCATIONS	POST	PULL BOX	B8	B10	B12	A	C	E336	E332	TYPE I	TYPE II	TYPE III	REMARKS
SE CORNER	2		1										
SE CORNER	2A						1						
SE CORNER		2									1		
SE CORNER									1				CONTROLLER
SW CORNER	4			1									
SW CORNER	4A						1						
SW CORNER		4								1			
NW CORNER	6		1										
NW CORNER	6A						1						
NW CORNER		6								1			
NE CORNER	8				1								
NE CORNER	8A						1						
NE CORNER		8								1			
TOTALS			2	1	1		4		1	3	1		

NOTE: TYPE 2 FIBER BOX IN SE CORNER INCLUDED IN FIBER PLANS

CABLE										
FROM	TO	DIST	POWER			SIGNAL CABLE		DET LEAD-IN	CAT 6	
			3C-6	3C-8	2C-10	5C-14	7C-14	2C-14	PTZ+360	RADAR
POLE 8	CONT.	107		128	50	138	563	133	151	164
POLE 8A	CONT.	130				155		152		
POLE 6	CONT.	306		203	50	362	504	357		228
POLE 6A	CONT.	179				210		207		
POLE 4	CONT.	109		127	50	134	524	131		320
POLE 4A	CONT.	108				133		130		
POLE 2	CONT.	32		44	50	51	186	48		64
POLE 2A	CONT.	16				35		32		
SUB-TOTALS				502	200	1218	1777	1190	151	776
5% EXTRA FOR CUTTING				26	10	61	89	60	8	39
TOTAL				530	210	1280	1870	1250	160	820

△1

CONDUIT

FROM	TO	DIST	TRENCH			EXIST. TRENCH		
			2"	3"	4"	2"	3"	4"
POLE 6A	PB 6	6	7					
POLE 6	PB 6	6		7		7	7	
PB6	PB4	81		82		82	82	
POLE 4A	PB4	16	17					
POLE 4	PB4	17		18		18	18	
PB4	PB2	84			85	85		85
POLE2A	PB2	8	9					
POLE 2	PB2	24		25		25	25	
PB8	PB2	83		84		84	84	
POLE8A	PB8	38	39					
POLE8	PB8	15		16		20	20	
PB2	CONTROL	8			9		18	9
PB2	ST. LT	SEE STREET LIGHTING PLANS						
POWER	CONTROL	100		100				
TOTALS			72	332	94	321	254	94

SIGNAL HEADS																																					
NO.		Opt. limited	Louvers	INDICATIONS												PED	VISORS			BRKT.			See note below				ONE-FACE										
Post	Face			12" LED'S												The Hand and The Walker	Type			Type			Sections				Sections										
																	Tun.	Cut Away		Std.	Spec.		1	3	4	5	2		3			4			5		
				R	Y	G	R <--	Y <--	G <--	R ^	Y ^	G ^	R -->	Y -->	G -->					I	II	III	Span Wire				T	S	T	S	M	T	S	M	T	S	M
2	2			1	1	1												3		1										1							
2	2A			1	1	1												3			1										1						
2	5						1	2	1									4			1													1			
4	4			1	1	1												3		1										1							
4	4A			1	1	1												3			1										1						
4	4B			1	1	1												3			1										1						
4	7						1	2	1									4			1													1			
6	6			1	1	1												3		1										1							
6	6A			1	1	1												3			1										1						
6	1						1	2	1									4			1													1			
8	8			1	1	1												3			1										1						
8	8A			1	1	1												3			1										1						
8	8B			1	1	1												3			1										1						
8	3						1	2	1									4			1													1			
2	8PA															1				1																	
2A	2P															1				1																	
4	2PA															1				1																	
4A	4P															1				1																	
6	4PA															1				1																	
6A	6P															1				1																	
8	8P															1				1																	
8A	6PA															1				1																	
TOTALS				10	10	10	4	8	4							8		46		11	11									3	7			4			

DETECTORS					
DET. NO.	PHASE	APS UNIT	INDUCTION LOOP		THERNAL/RADAR DETECTION CAMERAS
			SENS. UNIT	LOOP SIZE	
2	2				1
4	4				1
6	6				1
8	8				1
2P	2	1			
2PA	2	1			
4P	2	1			
4PA	2	1			
6P	6	1			
6PA	6	1			
8P	8	1			
8PA	8	1			
TOTAL		8			4

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1100 Walnut, Suite 1825
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walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS
74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

SHASHI K. GANNAVARAM
NUMBER E-2001018734

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY SG
REVIEWED BY PRB
DRAWN BY DPC
PROJECT NUMBER M08-18002-00
DATE 21 DECEMBER 2022

SHEET TITLE

TRAFFIC SIGNAL SUMMARY OF QUANTITIES

SHEET NUMBER
△1 121 OF 216

Sep 25, 2023 - 10:44am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\121-18002-WRNL-SGNL-SSQ.dwg

POST NO.	PEDESTAL POLE	BASES AND PULL BOXES				
	POLE LENGTH	LOCATION	NO.		BASES	PULL BOX
	15		POST	PULL BOX	C	TYPE II
4	1	SW CORNER	4	4	1	1
TOTALS	1				1	1

CABLE					
FROM	TO	DIST	SIGNAL CALBE		DET LEAD IN
			5C-14	7C-14	2C-14
POLE 4	CONT.	180	180	360	180

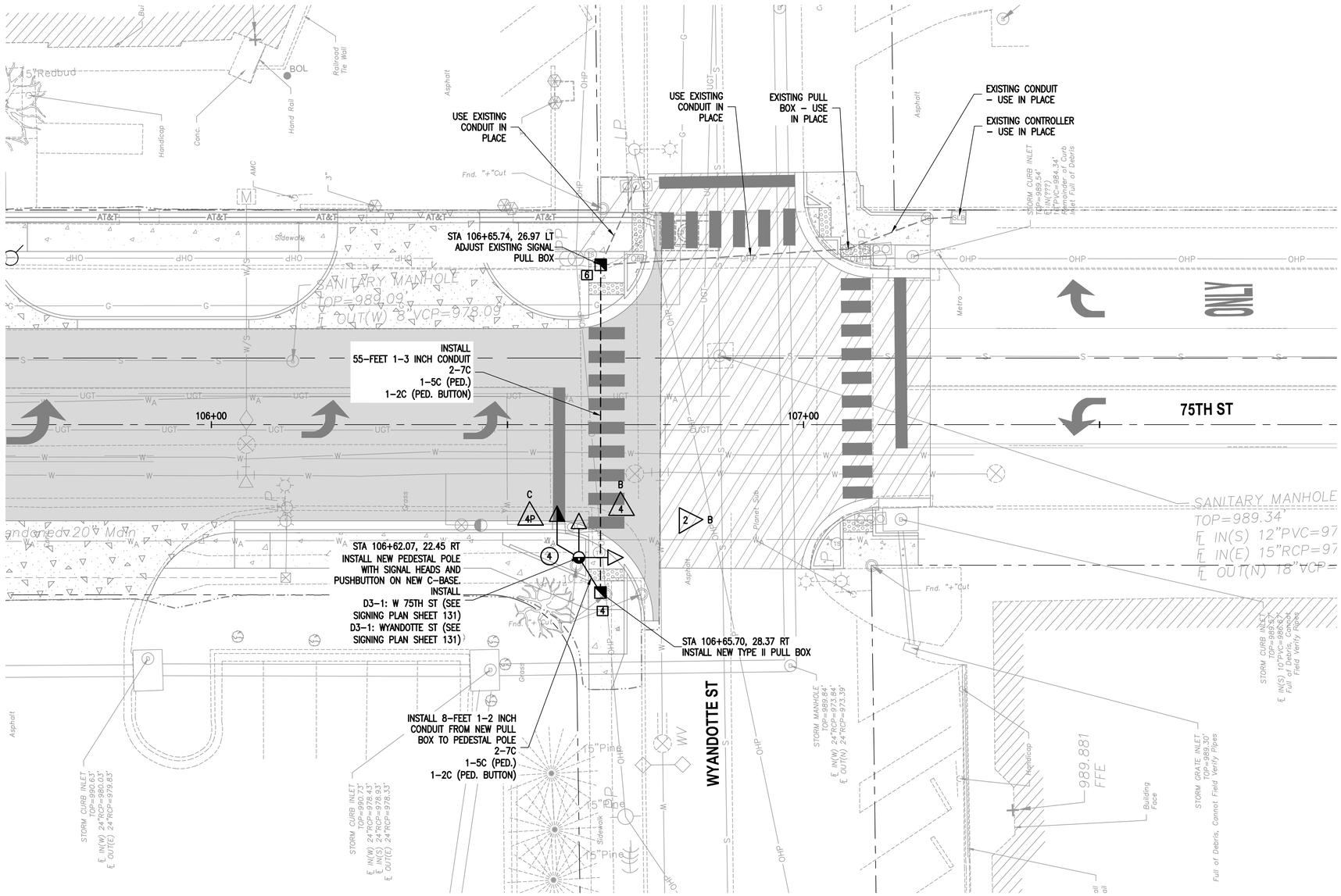
CONDUIT				
FROM	TO	DIST	TRENCH	
			2"	3"
POLE 4	PB 4	7	8	
PB 4	Exist. PB 6	54		55
SUB-TOTAL			8	55
5% EXTRA FOR CUTTING			1	3
TOTAL			10	60

DETECTORS		
DET. NO.	PHASE	APS UNIT
4P	2	1
TOTAL		1

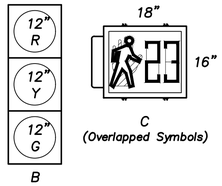
SIGNAL HEADS								
NO.		INDICATIONS			PED	VISORS	BRKT.	ONE-FACE
Post	Face	12" LED'S			The Hand and The Walker	Type Cut Away	Type Std.	Sections 3
		R	Y	G			I	S
4	4	1	1	1		3	1	1
4	2	1	1	1		3	1	1
4	4P				1		1	
TOTALS		2	2	2	1	6	3	2

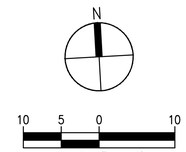
NOTES:

1. LANE MARKING SHOWN FOR INFORMATION ONLY. REFER TO PAVEMENT MARKING SHEETS.
2. COORDINATE ANY SIGNAL SHUTDOWNS WITH THE CITY OF KANSAS CITY, MISSOURI.
3. ALL STREET LIGHT CHANGES SHALL BE COORDINATED WITH THE PUBLIC WORKS STREET LIGHT SERVICES, CITY OF KANSAS CITY, MISSOURI.
4. STREET LIGHT ORIENTATION ON SIGNAL POLES SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL ORIENT STREET LIGHTS PER THE STREET LIGHTING PLAN SHEETS.
5. ALL UTILITIES ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR MAKING HIS/HER OWN DETERMINATION AS TO TYPE AND LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE. THE CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND PIPELINES, CONDUITS, STRUCTURES AND OVERHEAD LINES BY CONTACTING THE OWNERS OF THE UTILITIES.



Signal Faces





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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY SG

REVIEWED BY PRB

DRAWN BY DPC

PROJECT NUMBER M08-18002-00

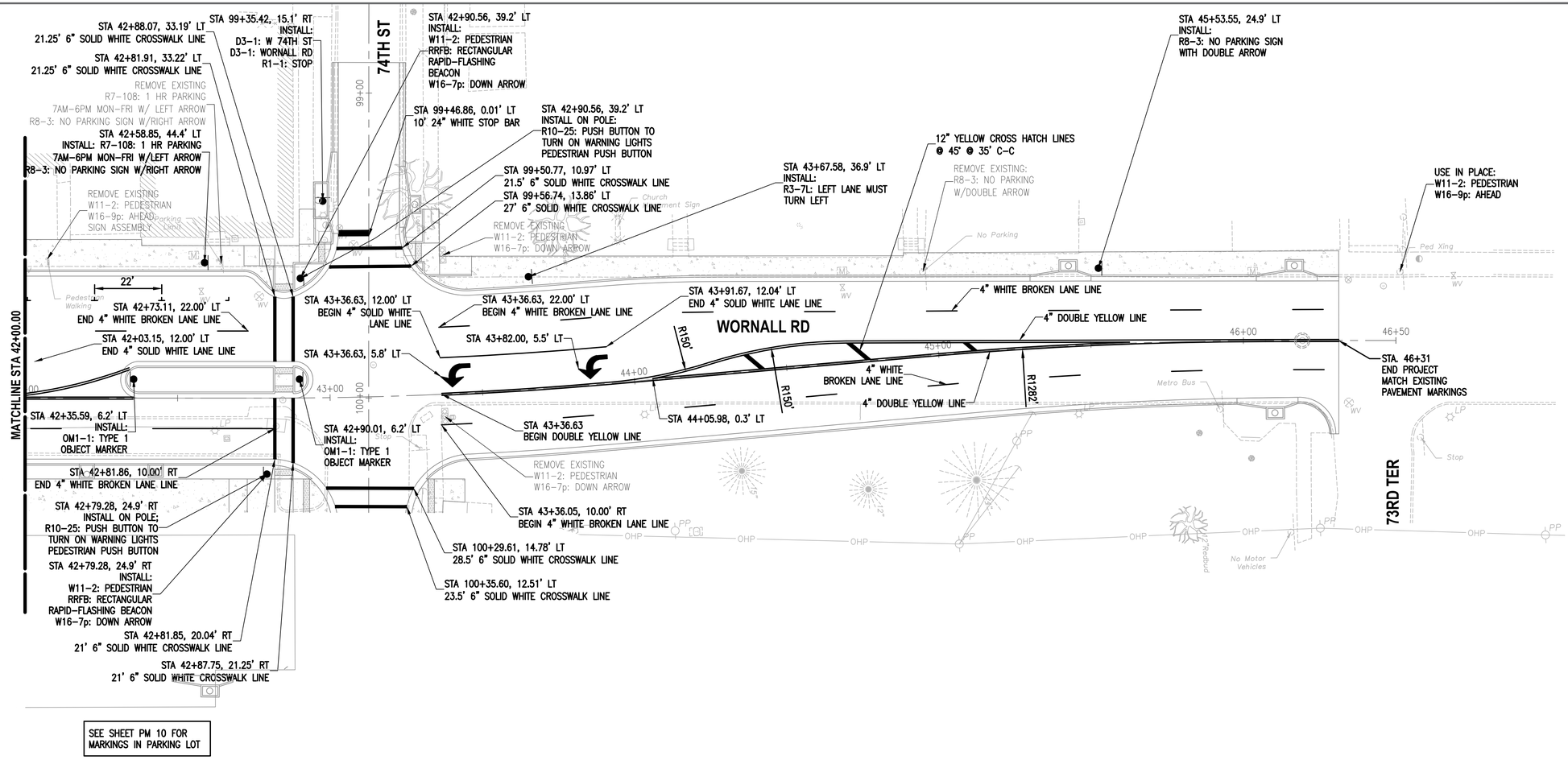
DATE 21 DECEMBER 2022

SHEET TITLE

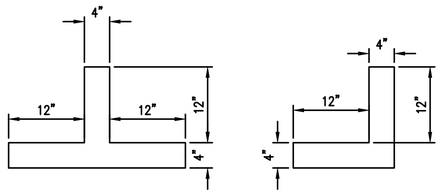
TRAFFIC SIGNAL PLAN - 75TH ST AND WYANDOTTE

SHEET NUMBER 1

Sep 25, 2023 - 10:45am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\122-18002-WRNL-SGNL-3.dwg



SEE SHEET PM 10 FOR MARKINGS IN PARKING LOT



PARKING SPACE MARKING
N.T.S.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: SG

REVIEWED BY: PRB

DRAWN BY: DPC

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

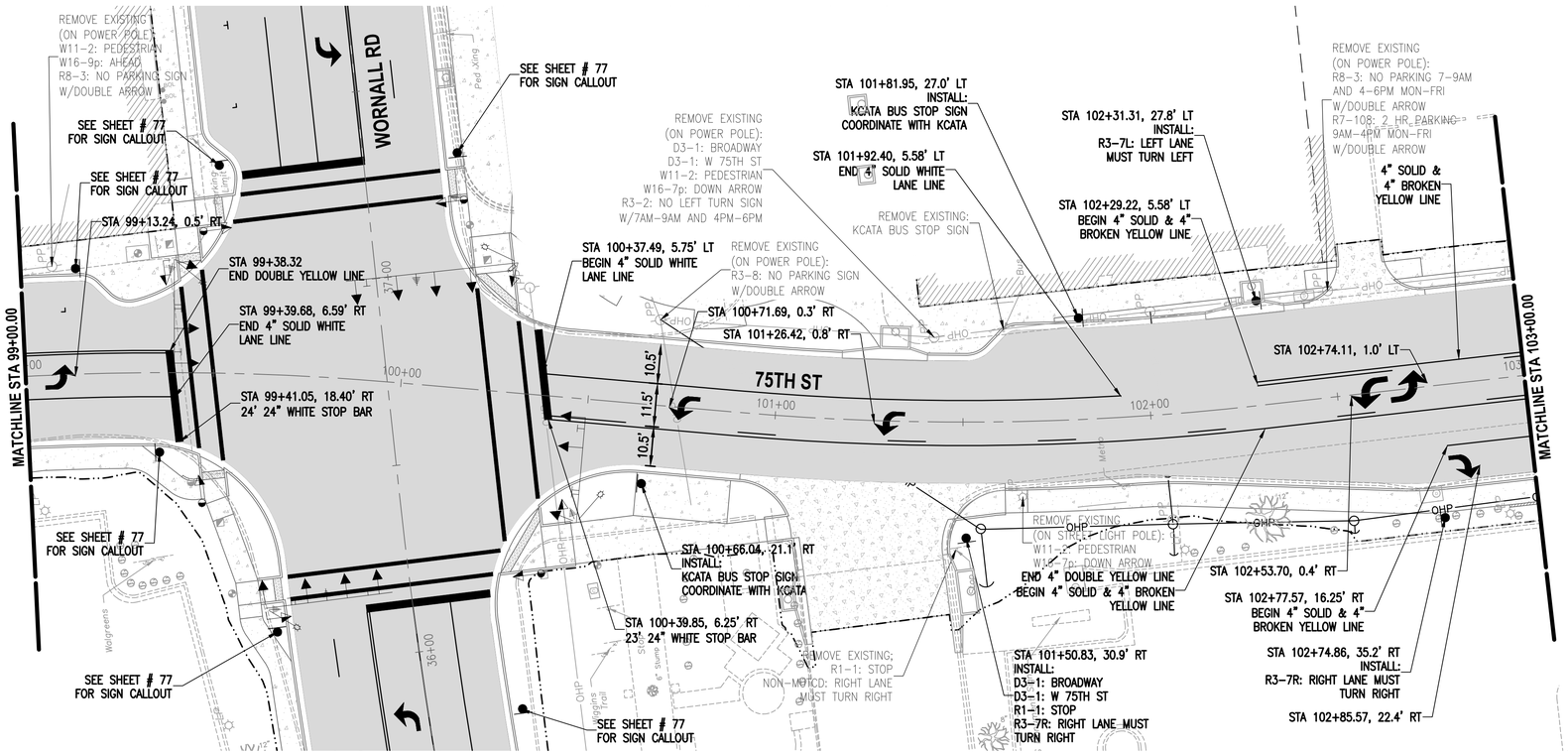
SHEET TITLE

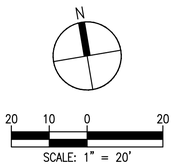
PAVEMENT MARKING AND SIGNING PLAN - WORNALL RD

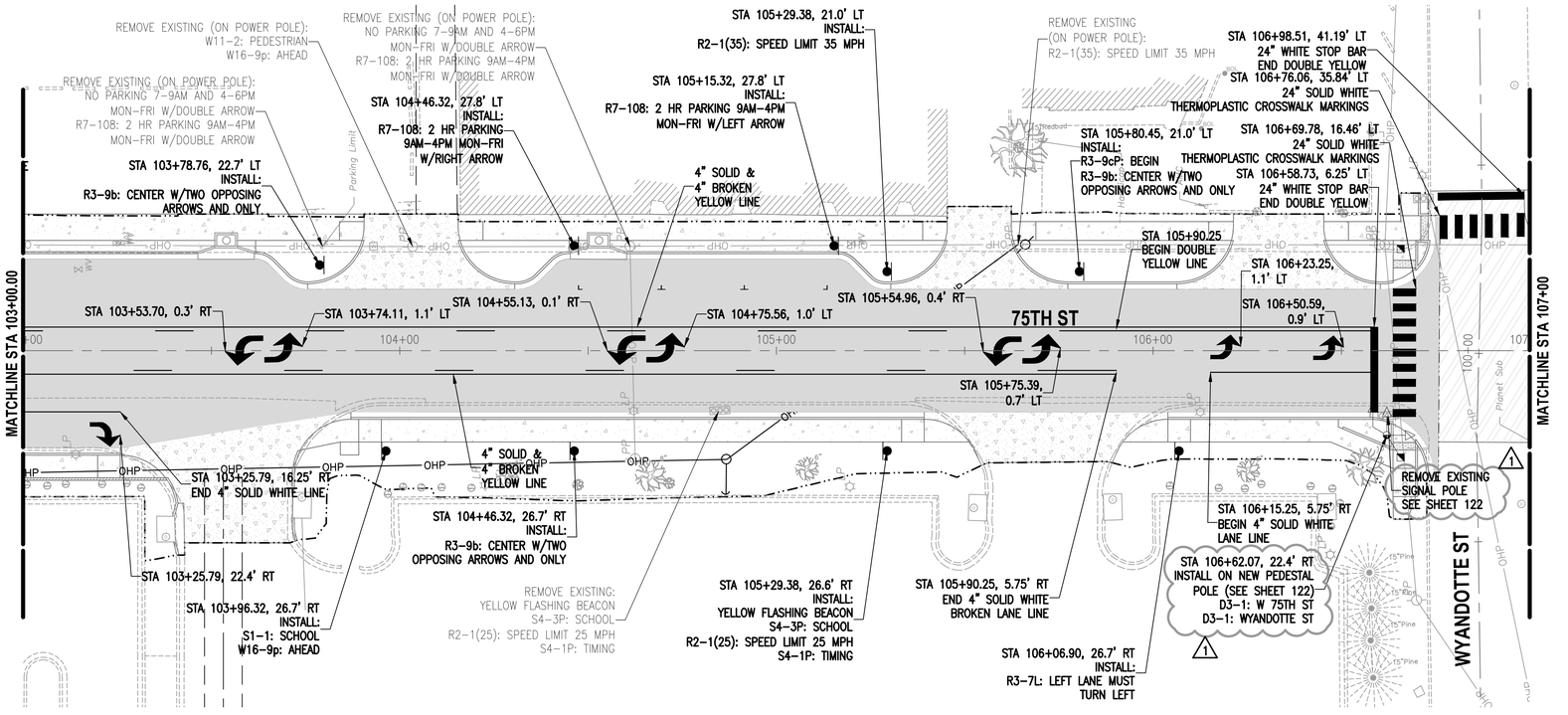
SHEET NUMBER

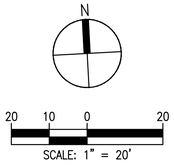
1 129 OF 216

Sep 25, 2023 - 10:46am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\125-129-18002-PMSN-WRNL.dwg









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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER
09/26/23

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY SG

REVIEWED BY PRB

DRAWN BY DPC

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

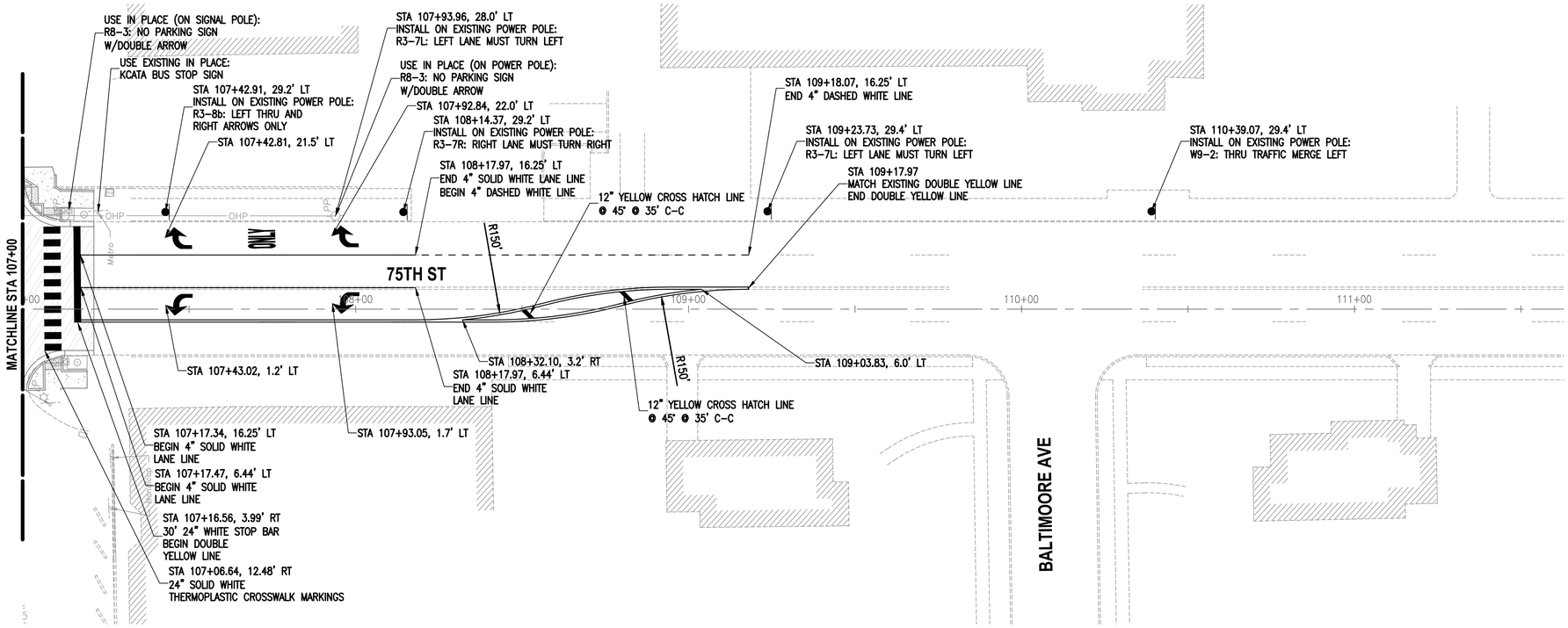
SHEET TITLE

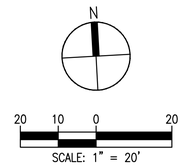
PAVEMENT MARKING AND SIGNING PLAN - 75TH ST

SHEET NUMBER

131 OF 216

Sep 25, 2023 - 10:46am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\130-132-18002-PMSN-75TH.dwg





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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
SHASHI K. GANNAVARAM
NUMBER E-2001018734
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: SG

REVIEWED BY: PRB

DRAWN BY: DPC

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

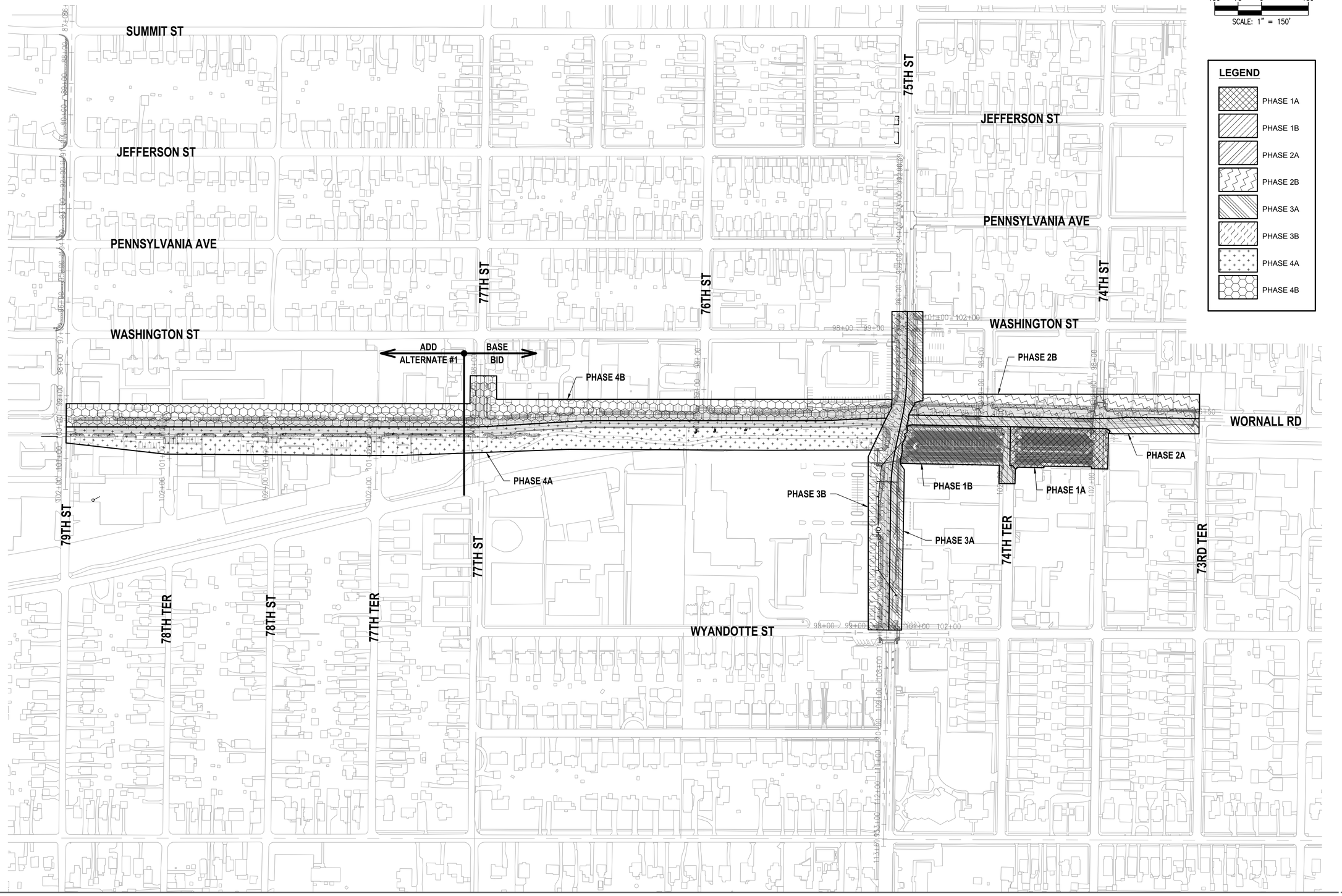
SHEET TITLE

PAVEMENT MARKING AND SIGNING PLAN - 75TH ST

SHEET NUMBER

1 132 OF 216

Sep 25, 2023 - 10:46am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\130-132-18002-PMSM-75TH.dwg



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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2011007745
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

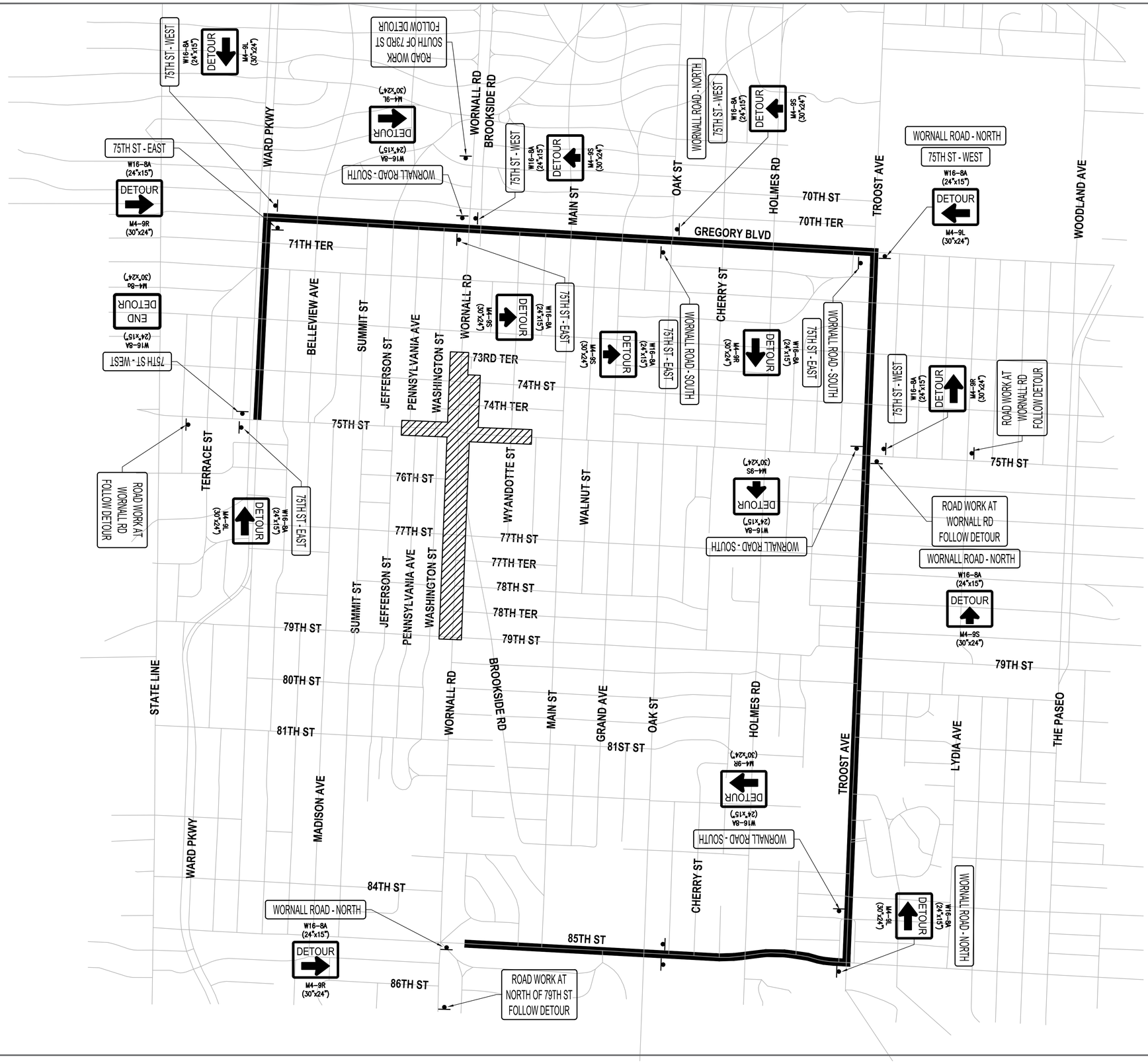
SHEET TITLE

OVERALL CONSTRUCTION SEQUENCING

SHEET NUMBER

133 OF 216

Sep 25, 2023 – 10:47am
X:\M08\2018\18002-00 Wornall Road Improvements – 74th to\Civil\Cad\Sheets\133-18002-CSEQ-OL.dwg



N

650 325 0 650

SCALE: 1" = 650'

walter p moore

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Kansas City, Missouri 64106

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walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2011007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY
M.J.H. / M.P.H.

REVIEWED BY
D.L.B

DRAWN BY
D.M.B.

PROJECT NUMBER
M08-18002-00

DATE
21 DECEMBER 2022

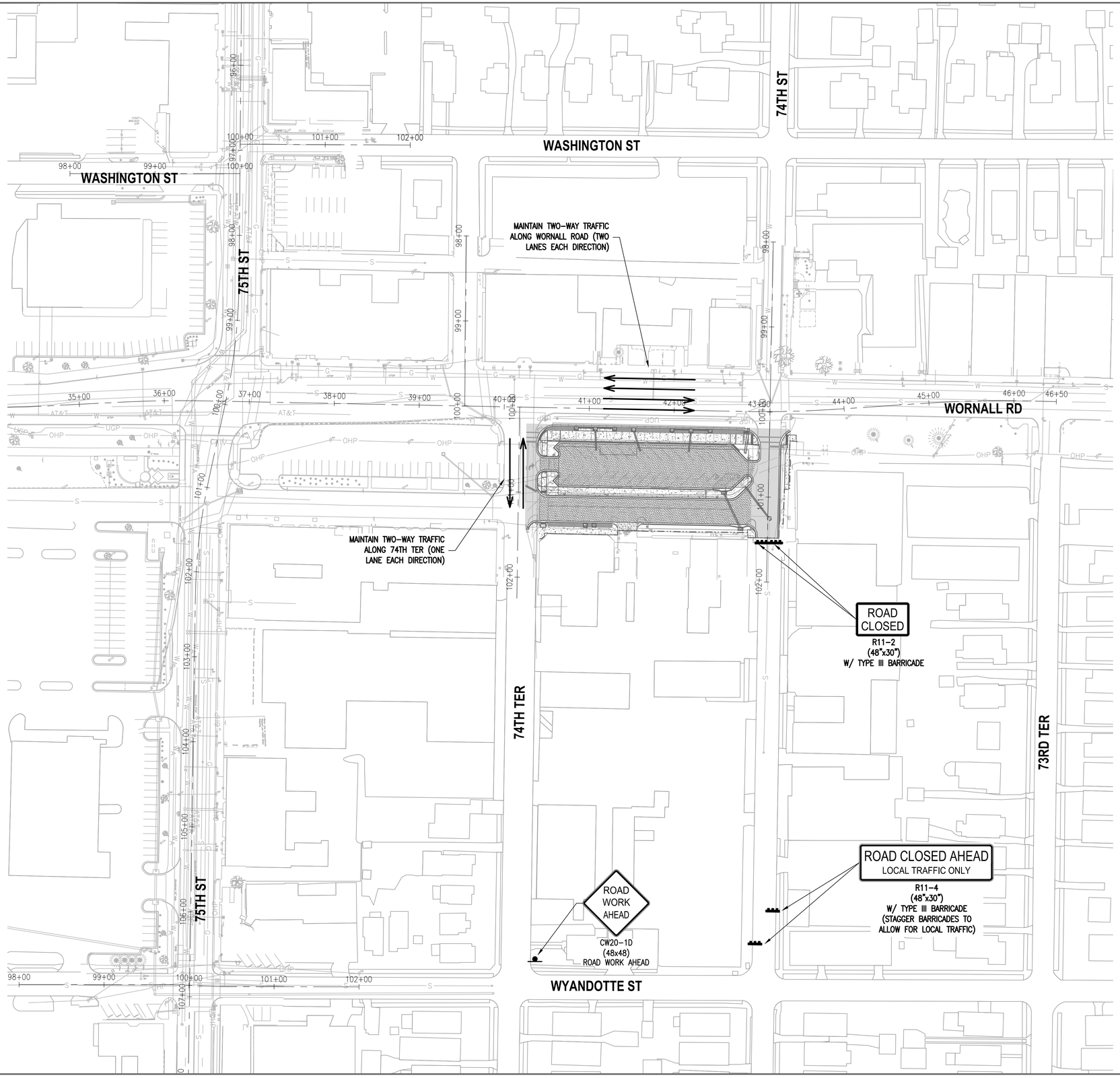
SHEET TITLE

OVERALL DETOUR PLAN

SHEET NUMBER

134 OF 216

Sep 25, 2023 - 10:47am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\134-18002-DETR.dwg



60 30 0 60

SCALE: 1" = 60'

PHASE 1A CONSTRUCTION:

- INSTALL NORTH UNDERGROUND DETENTION
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION
- INSTALL RETAINING WALL, PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

walter p moore

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Kansas City, Missouri 64106

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walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2011027745
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

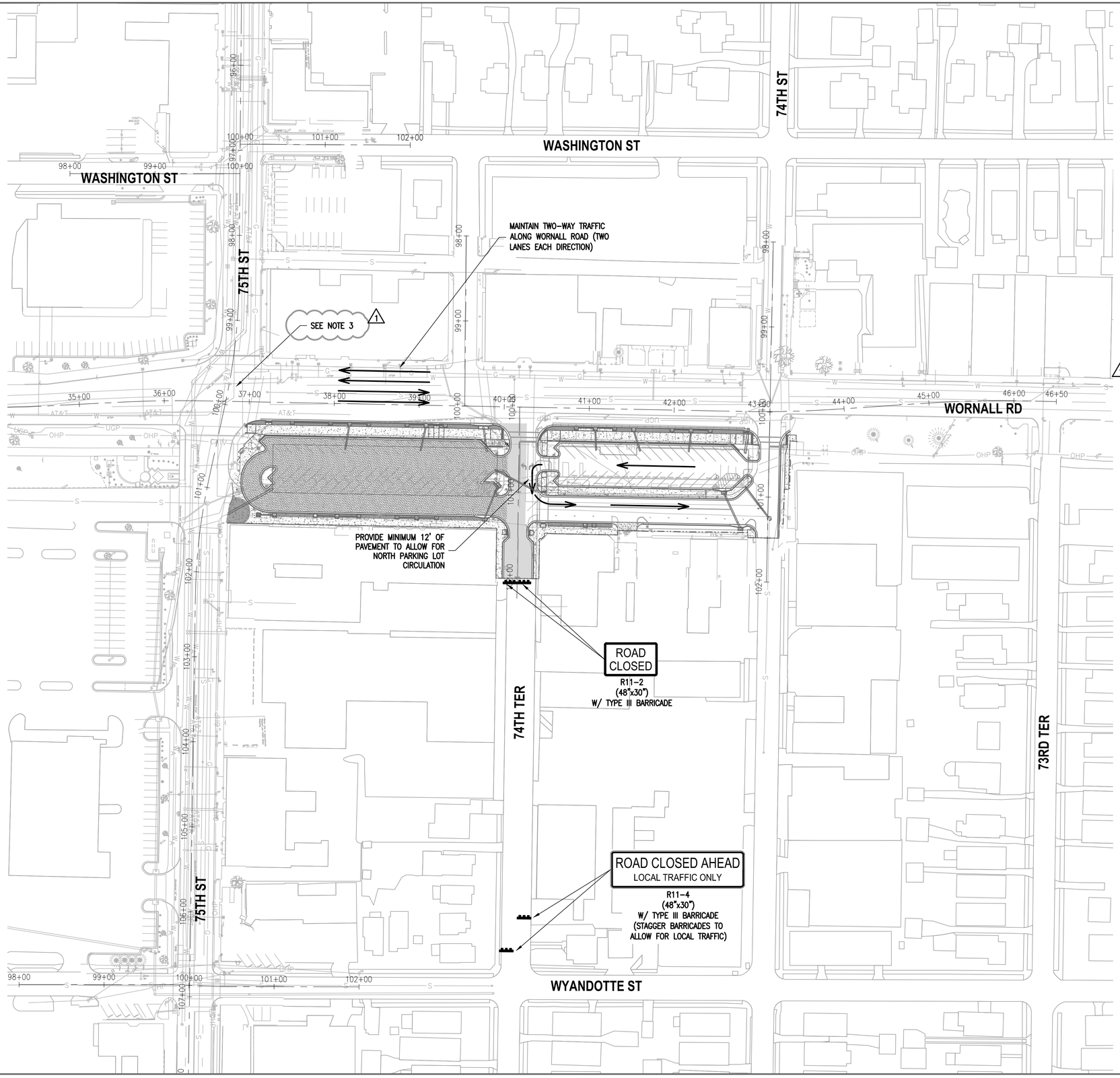
SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 1A

SHEET NUMBER

135 OF 216

Sep 25, 2023 - 10:48am
X:\MO8\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\135-18002-CSEQ-PHS1A.dwg



N

60 30 0 60

SCALE: 1" = 60'

PHASE 1B CONSTRUCTION:

- INSTALL SOUTH UNDERGROUND DETENTION
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION
- INSTALL RETAINING WALL, PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

walter p moore

Walter P Moore and Associates, Inc.
1100 Walnut, Suite 1825
Kansas City, Missouri 64106

816.701.2100
walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007266
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

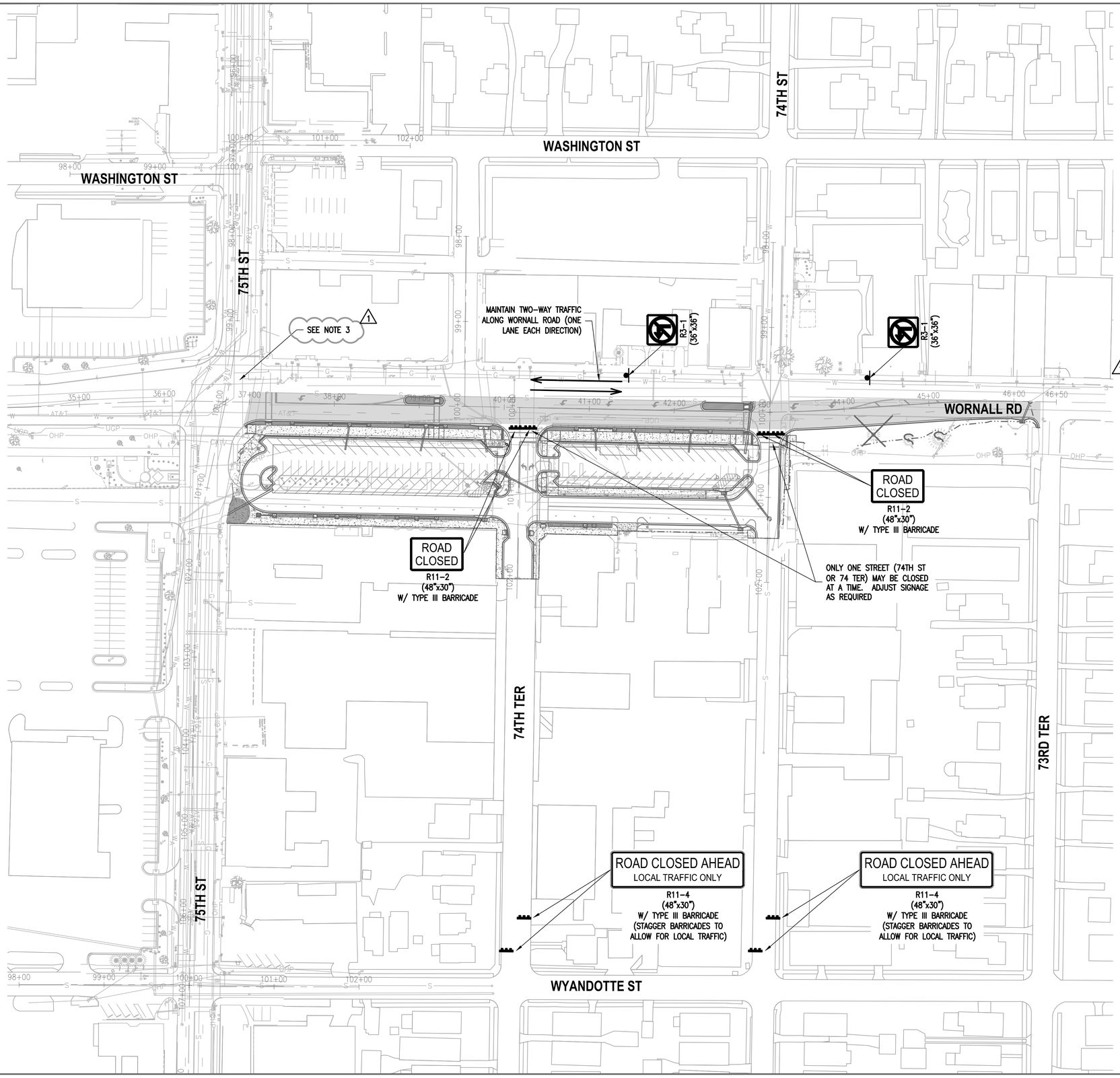
SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 1B

SHEET NUMBER

136 OF 216

Sep 25, 2023 - 10:48am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\136-18002-CSEQ-PHS1B.dwg



60 30 0 60

SCALE: 1" = 60'

PHASE 2A CONSTRUCTION:

- CONSTRUCT EAST SIDE OF WORNALL INCLUDING MEDIAN ISLANDS.
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION.
- INSTALL, PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2010007567
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

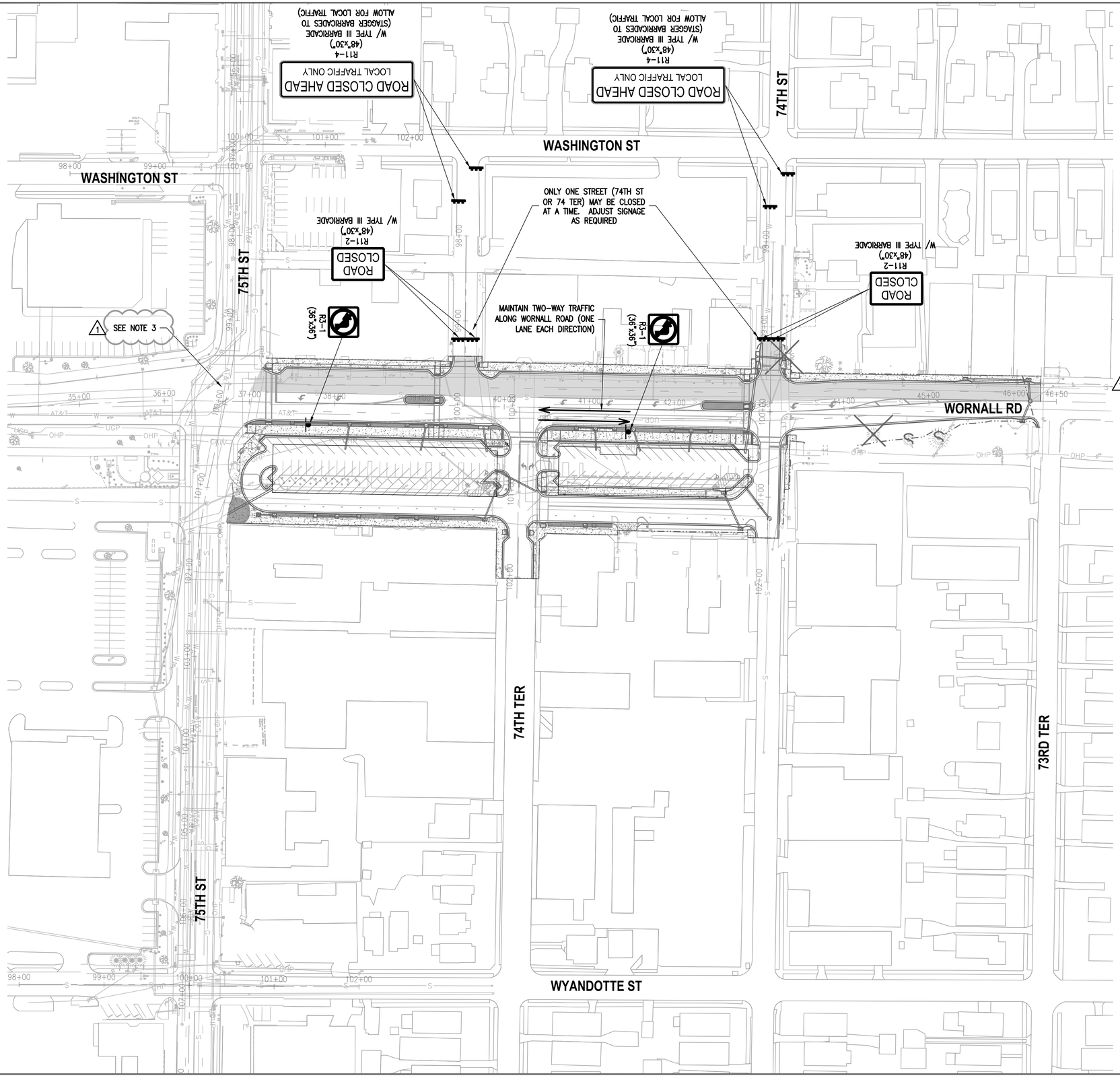
SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 2A

SHEET NUMBER

137 OF 216

Sep 25, 2023 - 10:49am
X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\137-18002-CSEQ-PHS2A.dwg



60 30 0 60

SCALE: 1" = 60'

PHASE 2B CONSTRUCTION:

- CONSTRUCT WEST SIDE OF WORNALL.
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION.
- INSTALL WATER MAIN
- INSTALL PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.

REVIEWED BY: D.L.B

DRAWN BY: D.M.B.

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 2B

SHEET NUMBER

138 OF 216

Sep 25, 2023 - 10:49am
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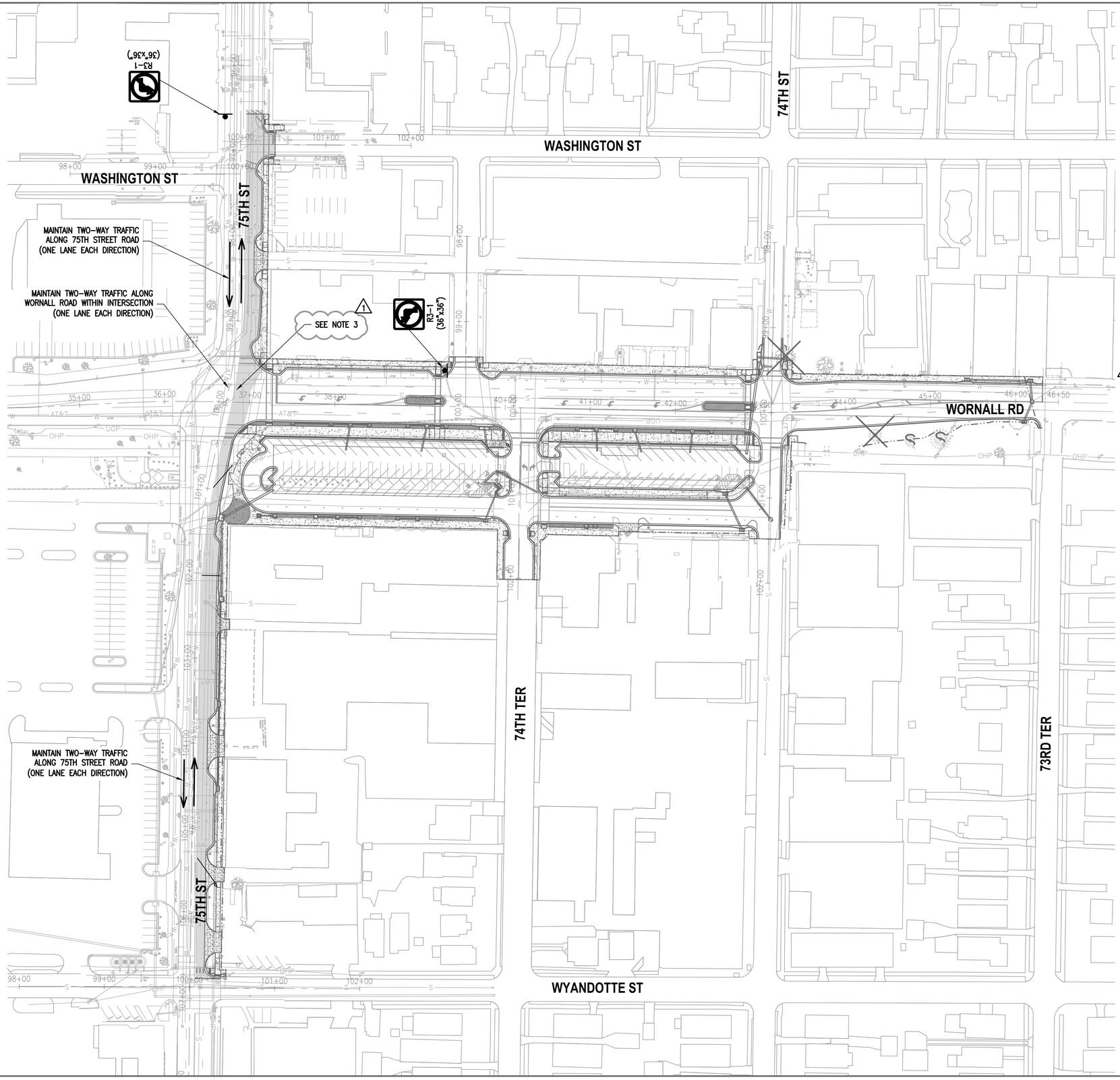

60 30 0 60

SCALE: 1" = 60'

PHASE 3A CONSTRUCTION:

- CONSTRUCT NORTH SIDE OF 75TH STREET.
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION.
- INSTALL PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

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IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 3A

SHEET NUMBER

139 OF 216

Sep 25, 2023 - 10:50am
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N

60 30 0 60

SCALE: 1" = 60'

PHASE 3B CONSTRUCTION:

- CONSTRUCT SOUTH SIDE OF 75TH STREET.
- INSTALL PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
1. 3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.

REVIEWED BY: D.L.B

DRAWN BY: D.M.B.

PROJECT NUMBER: M08-18002-00

DATE: 21 DECEMBER 2022

SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 3B

SHEET NUMBER

140 OF 216

Sep 25, 2023 - 10:51am
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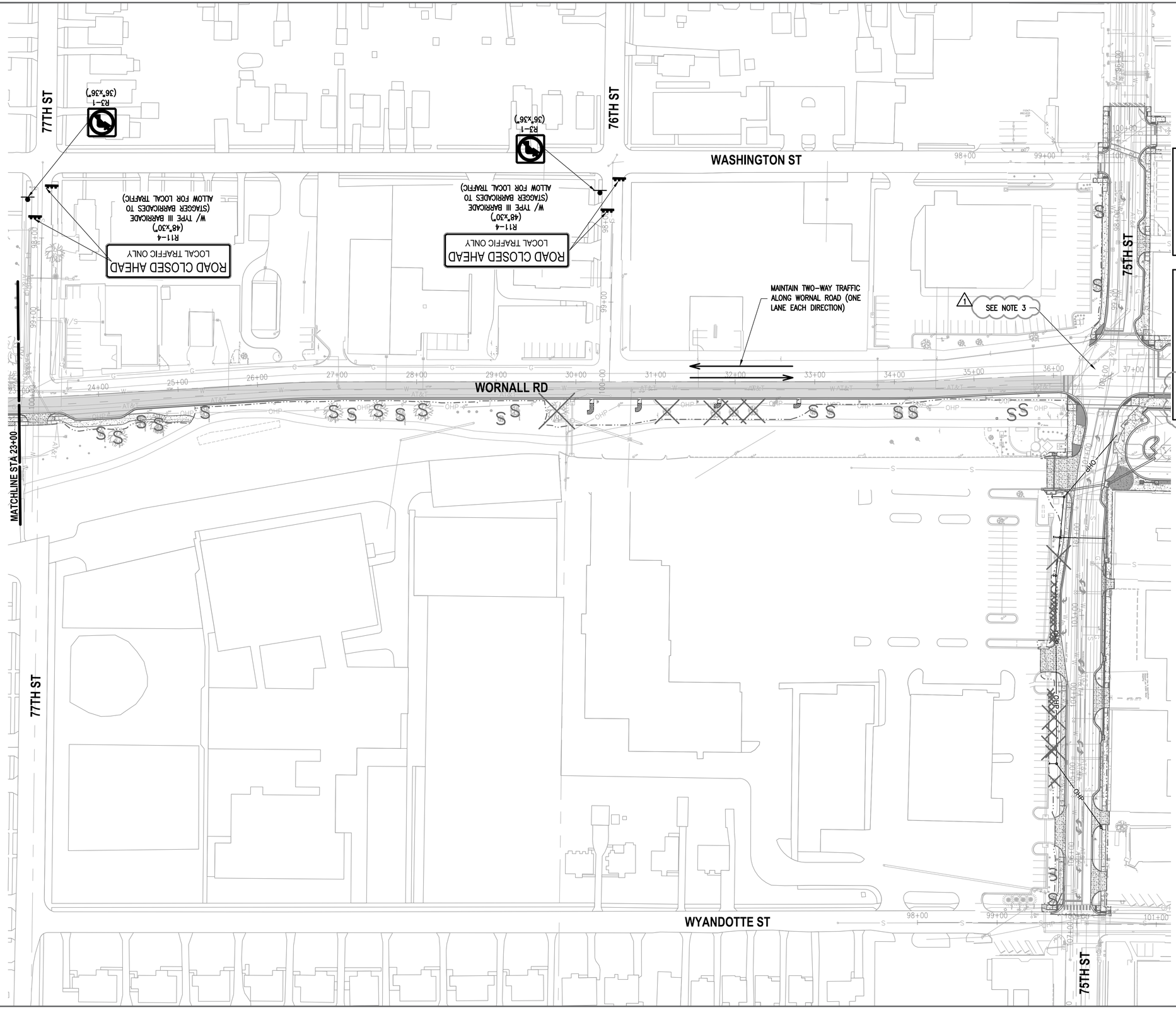

N

60 30 0 60

SCALE: 1" = 60'

PHASE 4A CONSTRUCTION:

- CONSTRUCT EAST SIDE OF WORNALL ROAD.
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION.
- INSTALL PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 4A

SHEET NUMBER

141 OF 216

Sep 25, 2023 – 10:51am
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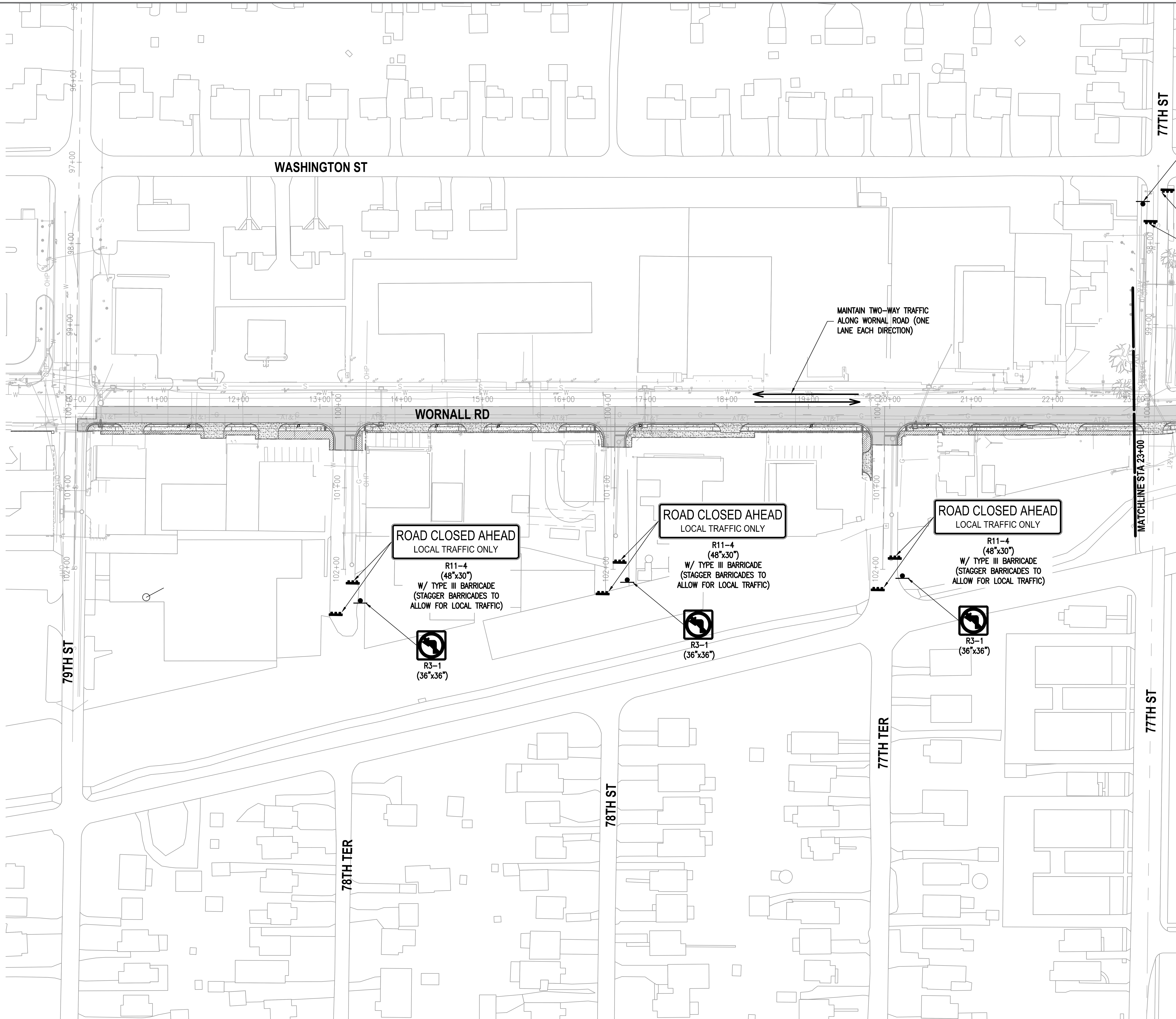

PHASE 4A CONSTRUCTION:

- CONSTRUCT EAST SIDE OF WORNALL ROAD.
- INSTALL STORM SEWER PIPING AND STRUCTURES WITHIN PHASE LIMITS. STUB STORM SEWER PIPES FOR FUTURE EXTENSION.
- INSTALL PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI MICHAEL JOSEPH HAAKE PROFESSIONAL ENGINEER 12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.
REVIEWED BY D.L.B
DRAWN BY D.M.B.
PROJECT NUMBER M08-18002-00
DATE 21 DECEMBER 2022
SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 4A

SHEET NUMBER

Sep 25, 2023 - 10:52am X:\M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\141-142-18002-CSEQ-PHS4A.dwg

77TH ST

76TH ST

WASHINGTON ST

75TH ST

WORNALL RD

WYANDOTTE ST

MATCHLINE STA 23+00

ROAD CLOSED AHEAD
LOCAL TRAFFIC ONLY
R11-4
(48"x30")
W/ TYPE III BARRICADE
(STAGGER BARRICADES TO ALLOW FOR LOCAL TRAFFIC)

ROAD CLOSED
R11-2
(48"x30")
W/ TYPE III BARRICADE

1 SEE NOTE 3

MAINTAIN TWO-WAY TRAFFIC ALONG WORNALL ROAD (ONE LANE EACH DIRECTION)

N

60 30 0 60

SCALE: 1" = 60'

PHASE 4B CONSTRUCTION:

- CONSTRUCT WEST SIDE OF WORNALL ROAD.
- INSTALL STORM SEWER PIPING & STRUCTURES, PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.
3. ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.

1

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
NUMBER PE-2014007766
PROFESSIONAL ENGINEER
10/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY M.J.H. / M.P.H.

REVIEWED BY D.L.B

DRAWN BY D.M.B.

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

CONSTRUCTION SEQUENCING - PHASE 4B

SHEET NUMBER

143 OF 216

Sep 25, 2023 - 10:52am
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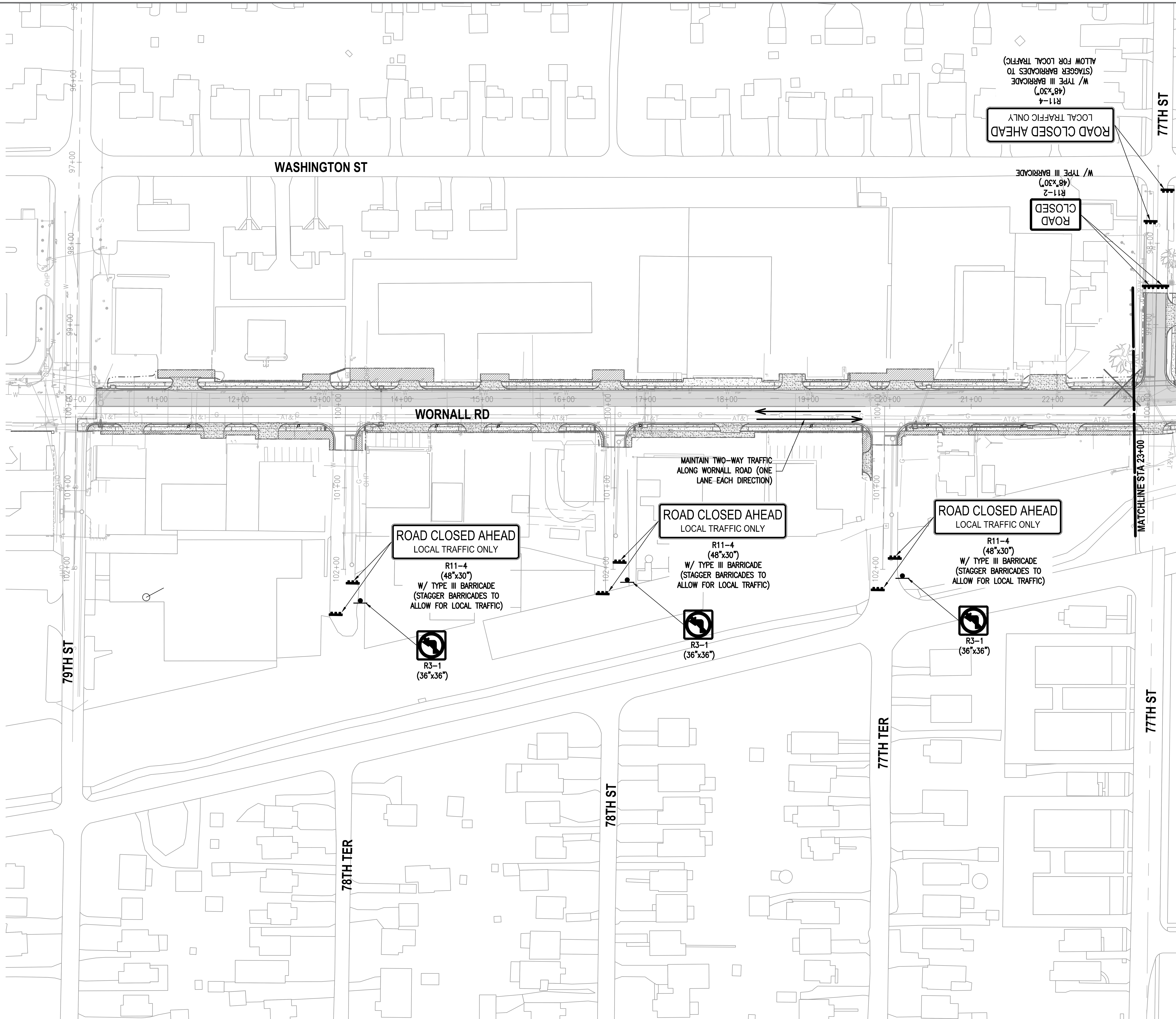

PHASE 4B CONSTRUCTION:

- CONSTRUCT WEST SIDE OF WORNALL ROAD.
- INSTALL STORM SEWER PIPING & STRUCTURES, PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

NOTES:

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.
2. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH

PROJECT NAME

WORNALL ROAD IMPROVEMENTS
74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI
CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
MICHAEL JOSEPH HAAKE
PROFESSIONAL ENGINEER
12/21/2022

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY: M.J.H. / M.P.H.
REVIEWED BY: D.L.B
DRAWN BY: D.M.B.
PROJECT NUMBER: M08-18002-00
DATE: 21 DECEMBER 2022
SHEET TITLE: CONSTRUCTION SEQUENCING - PHASE 4B
SHEET NUMBER: 144 OF 216

Sep 25, 2023 – 10:52am
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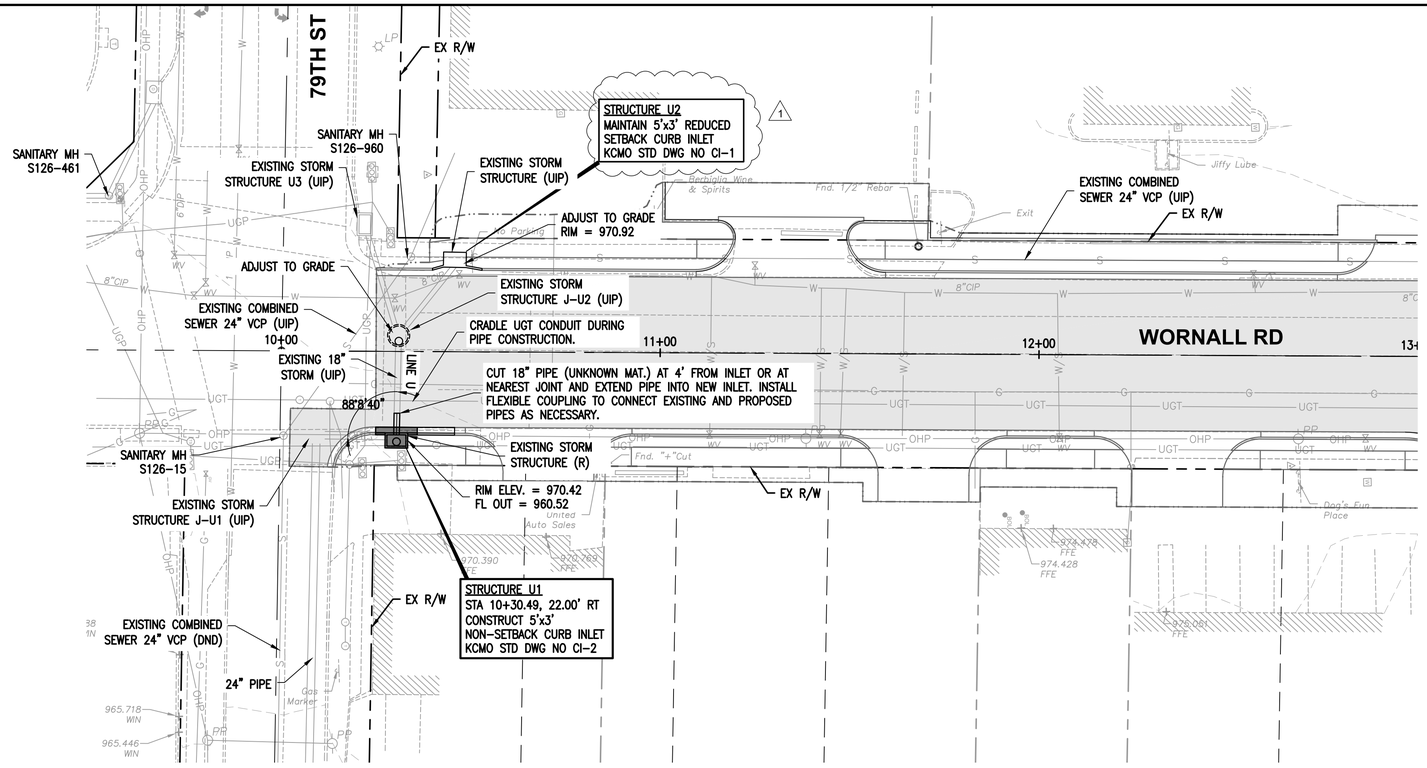

NOTE:

1. 100-YR FLOOD PLAIN IS OUTSIDE OF PROJECT LIMITS PER FEMA MAP PANELS:

   29095C0377G EFF. 1/20/2017
   20095C0376G EFF. 1/20/2017
   CITY ID. KANSAS CITY 2900173

SEE UTILITY PLANS FOR ALL SERVICE LINE AND METER RELOCATIONS.

LEGEND:

R = REMOVE
MH = MANHOLE
UIP = USE IN PLACE
DND = DO NOT DISTURB
ABD = ABANDON IN PLACE
R/W = RIGHT-OF-WAY
UGT = UNDERGROUND COMMUNICATION LINE
VCP = VITRIFIED CLAY PIPE

THE CONTRACTOR, PRIOR TO CONSTRUCTION SHALL VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES. ALL EXISTING UTILITY LOCATIONS AND DEPTHS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE ACCURATE.

ALL PIPES AND STRUCTURES THAT ARE ABANDONED IN PLACE SHALL BE DISCONNECTED FROM THE MAIN SYSTEM AND HAVE THE FLOWLINES CAPPED ON ALL SIDES WITH GROUT OR CONCRETE. THE PIPE OR STRUCTURE SHALL BE FILLED USING FLOWABLE FILL.

A UTILITY CROSS BORE HAS BEEN LOCATED THROUGH THE EXISTING INLET. COORDINATE WITH UTILITY OWNER TO HAVE CROSS BORE REMOVED PRIOR TO COMMENCING CONSTRUCTION ON INLET U1.

CONTRACTOR TO FIELD VERIFY ALL FLOWLINES PRIOR TO CONSTRUCTION. NOTIFY ENGINEER IMMEDIATELY IF STORM PIPE FLOW OR CONNECTIVITY IS DIFFERENT FROM WHAT IS SHOWN.

N

20 10 0 20

SCALE: 1" = 20'

ADD ALTERNATIVE #1

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walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH
TREKK DESIGN GROUP, LLC

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
JUSTIN W. LIKES
NUMBER PE-2010025271
PROFESSIONAL ENGINEER
12-22-22

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY **ANB**

REVIEWED BY **JCT**

DRAWN BY **DDR**

PROJECT NUMBER M08-18002-00

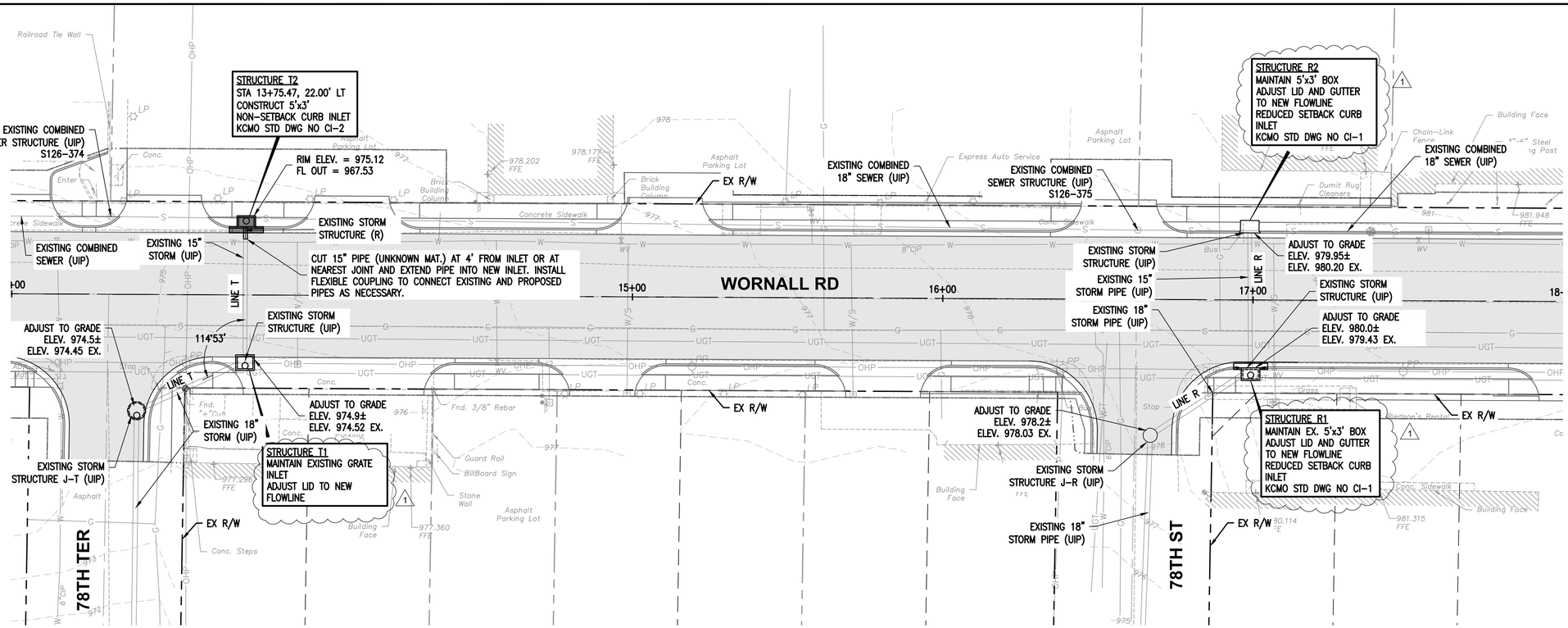
DATE 21 DECEMBER 2022

SHEET TITLE

STORM SEWER PLAN & PROFILE

SHEET NUMBER

Dec 30, 2022 - 2:05pm
c:\16-030 Walter P Moore - Wornall 74th to 79th\Sheets\001_STRM_20_18002.dwg
hjordes



NOTE:

1. 100-YR FLOOD PLAIN IS OUTSIDE OF PROJECT LIMITS PER FEMA MAP PANELS:

   29095C0377G EFF. 1/20/2017
   20095C0376G EFF. 1/20/2017
   CITY ID. KANSAS CITY 2900173

SEE UTILITY PLANS FOR ALL SERVICE LINE AND METER RELOCATIONS.

LEGEND:

R = REMOVE
MH = MANHOLE
UIP = USE IN PLACE
DND = DO NOT DISTURB
ABD = ABANDON IN PLACE
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UGT = UNDERGROUND COMMUNICATION LINE
VCP = VITRIFIED CLAY PIPE

THE CONTRACTOR, PRIOR TO CONSTRUCTION SHALL VERIFY THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES. ALL EXISTING UTILITY LOCATIONS AND DEPTHS SHOWN ARE APPROXIMATE AND NOT GUARANTEED TO BE ACCURATE.

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walter p moore

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MO PE Corporation No. 1999141112

IN ASSOCIATION WITH
TREKK DESIGN GROUP, LLC

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516
FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
JUSTIN W. LIKES
NUMBER PE-2010025271
PROFESSIONAL ENGINEER
12-22-23

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

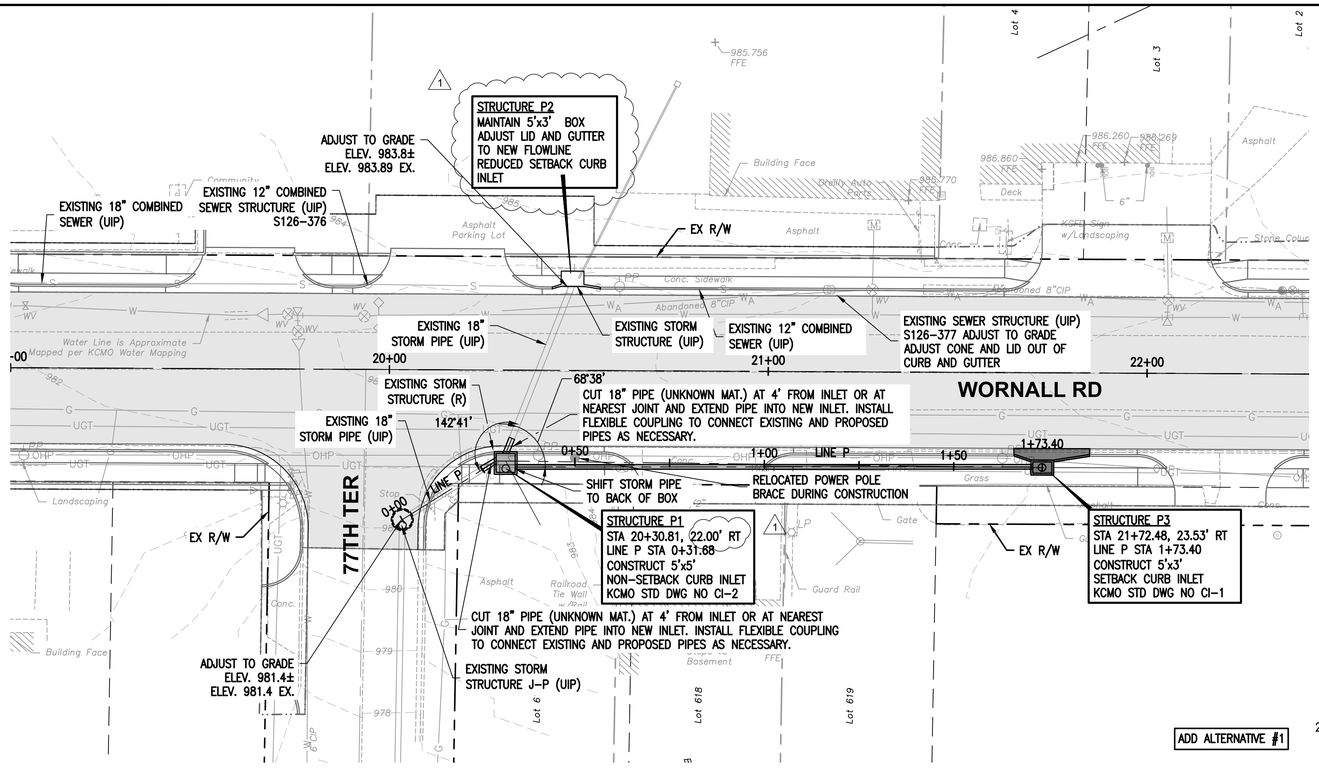
DESIGNED BY ANB
REVIEWED BY JCT
DRAWN BY DDR
PROJECT NUMBER M08-18002-00
DATE 21 DECEMBER 2022
SHEET TITLE

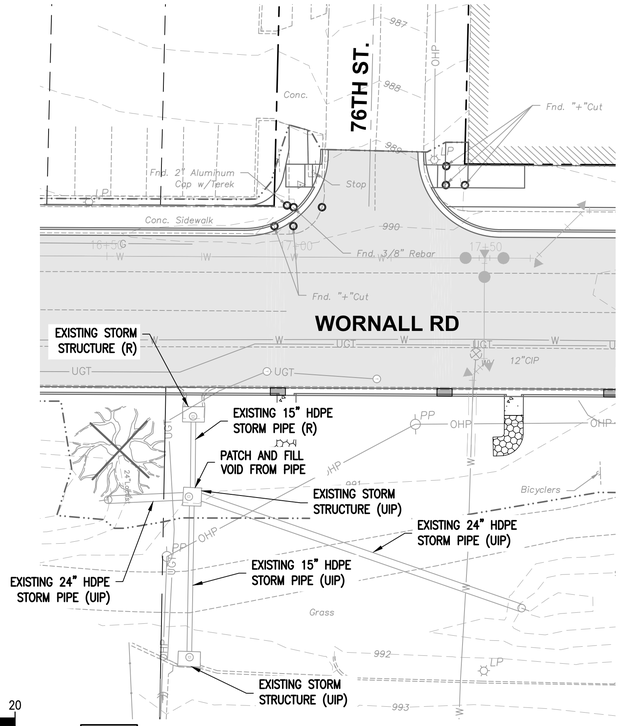
STORM SEWER PLAN & PROFILE

SHEET NUMBER

146 OF 215

Dec. 30, 2022 - 2:05pm
c:\18-030 Walter P Moore - Wornall 74th to 79th\Sheets\001_STRM_20_18002.dwg
hjardee

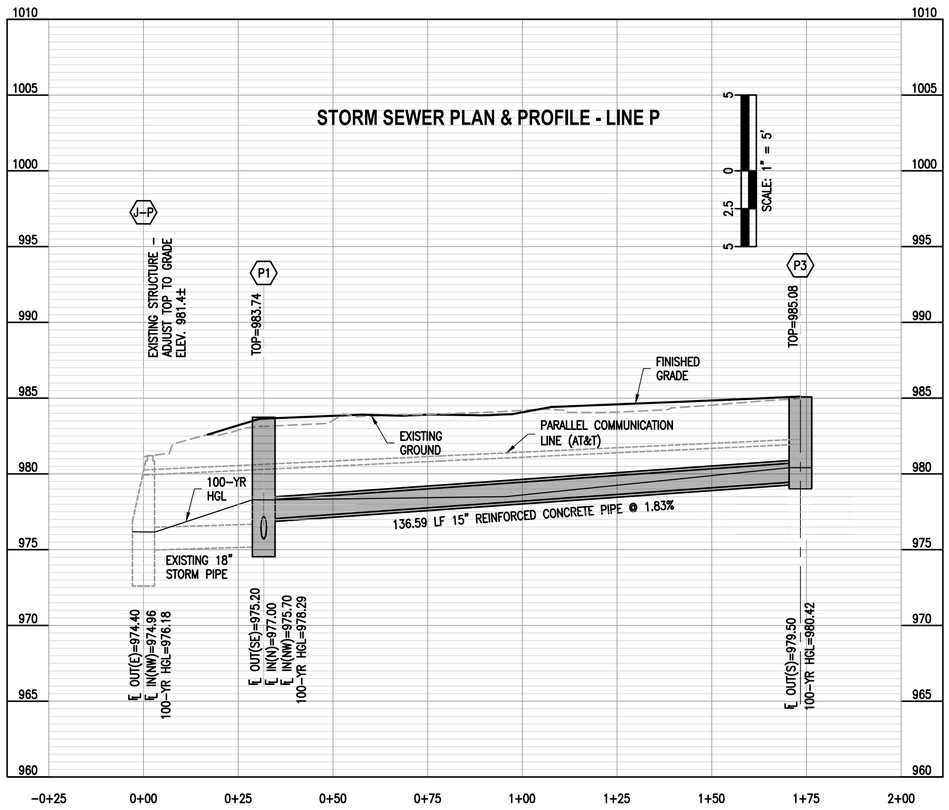




ADD ALTERNATIVE #1

SCALE: 1" = 20'

BASE BID



SEE UTILITY PLANS FOR ALL SERVICE LINE AND METER RELOCATIONS.

LEGEND:
R = REMOVE
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   29095C0377G EFF. 1/20/2017
   20095C0376G EFF. 1/20/2017
   CITY ID. KANSAS CITY 2900173

walter p moore

Walter P Moore and Associates, Inc.
1100 Walnut, Suite 1825
Kansas City, Missouri 64106

816.701.2100
walterpmoore.com
MO PE Corporation No. 1999141112

IN ASSOCIATION WITH
TREKK DESIGN GROUP, LLC

PROJECT NAME

WORNALL ROAD IMPROVEMENTS

74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
JUSTIN W. LIKES
NUMBER PE-2010025271
PROFESSIONAL ENGINEER
12-22-22

NO.	DATE	SUBMITTALS
1	09/26/2023	ADDENDUM #3

DESIGNED BY ANB

REVIEWED BY JCT

DRAWN BY DDR

PROJECT NUMBER M08-18002-00

DATE 21 DECEMBER 2022

SHEET TITLE

STORM SEWER PLAN & PROFILE

SHEET NUMBER

147 OF 215

Dec. 30, 2022 - 2:05pm
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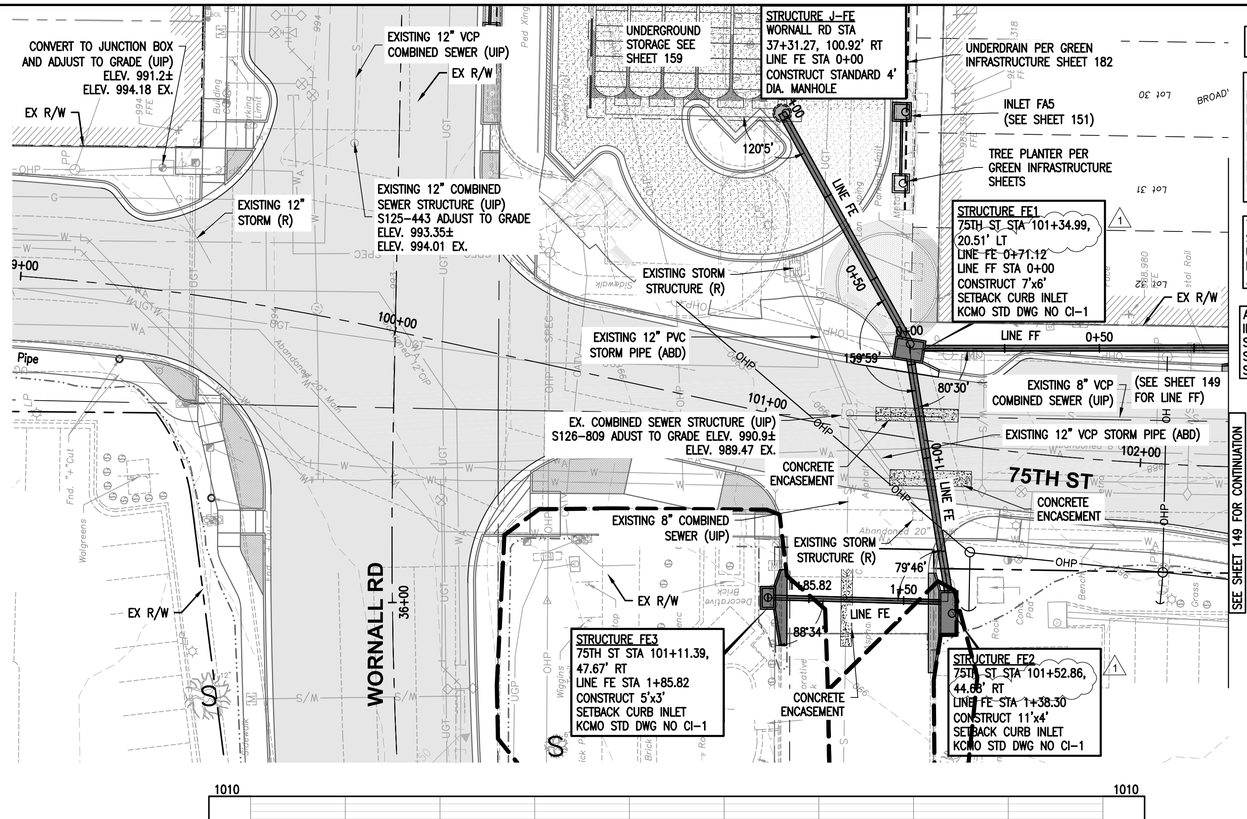

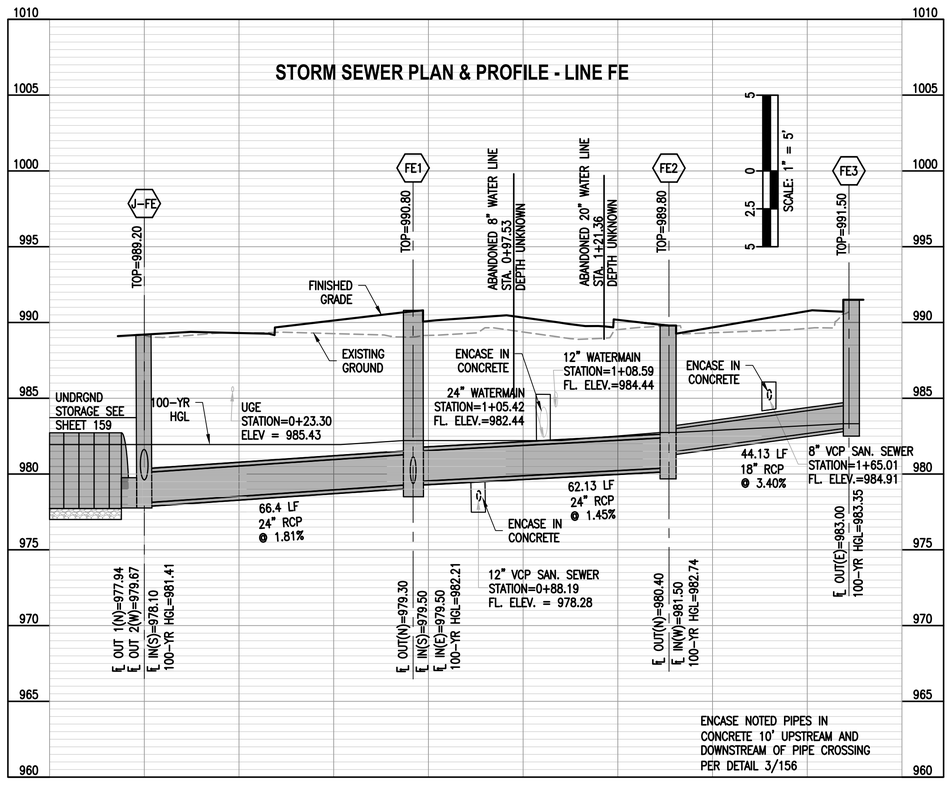

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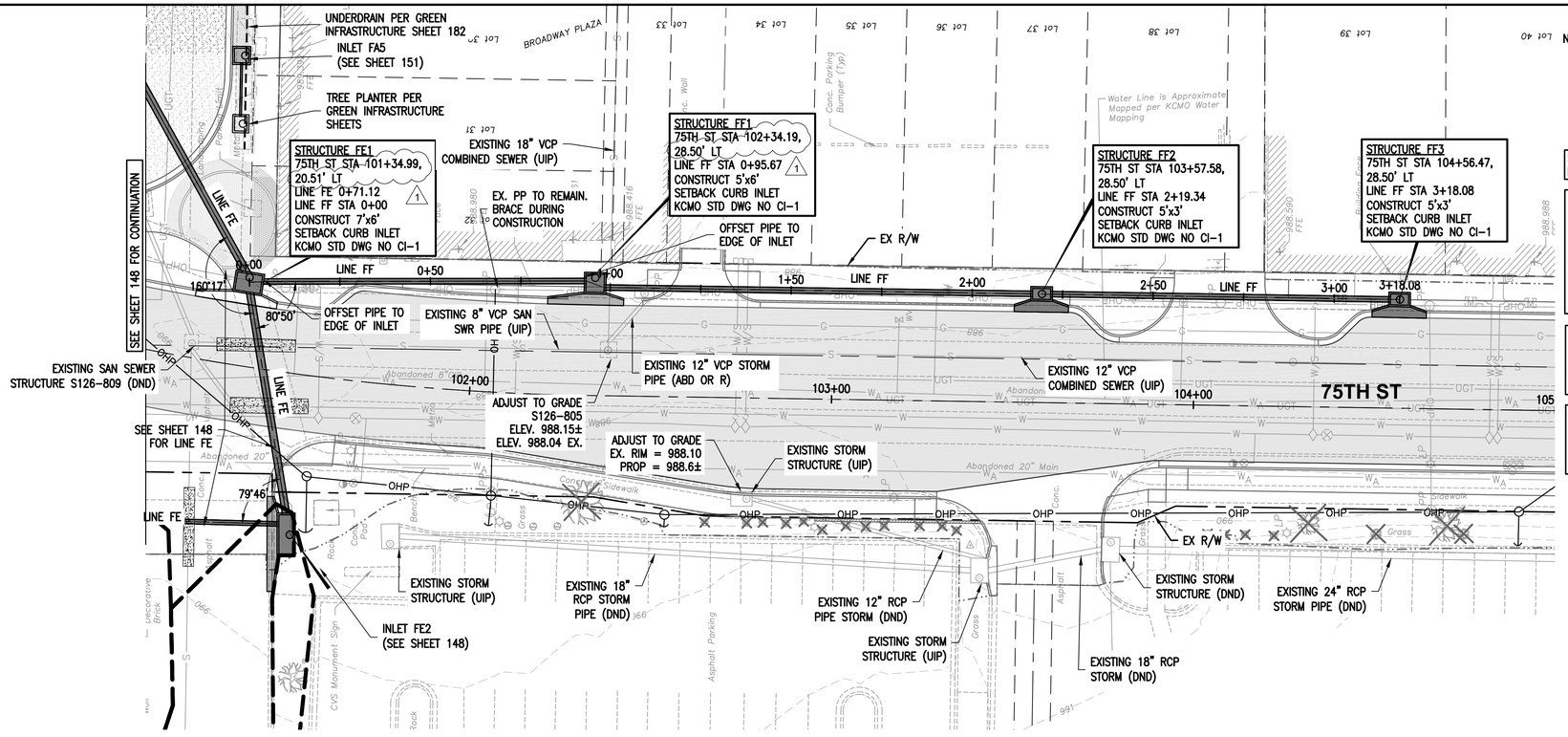

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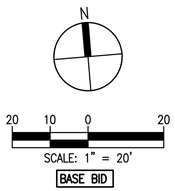

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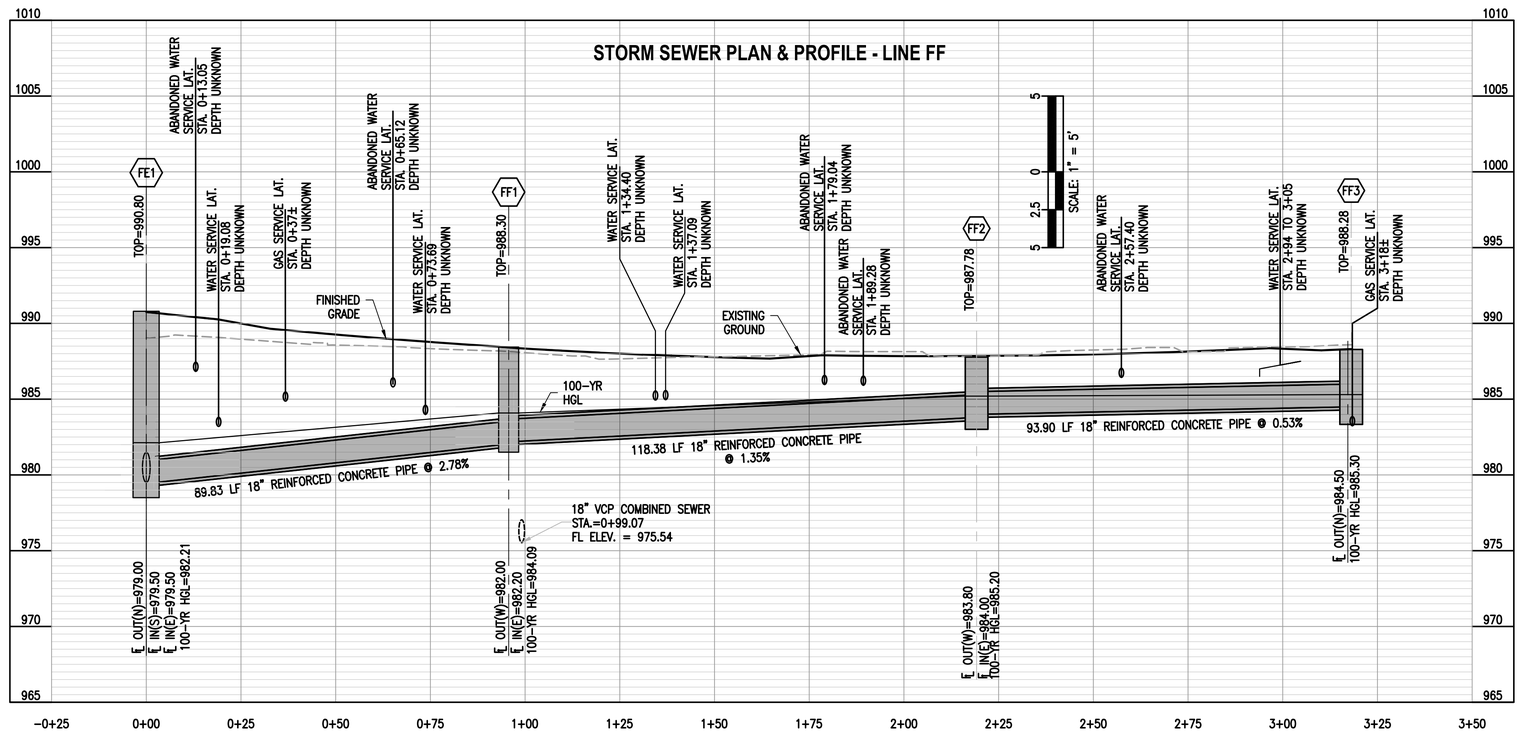

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FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
JUSTIN W. LIKES
NUMBER PE-2010025271
12-22-22
PROFESSIONAL ENGINEER

NO.	DATE	SUBMITTALS
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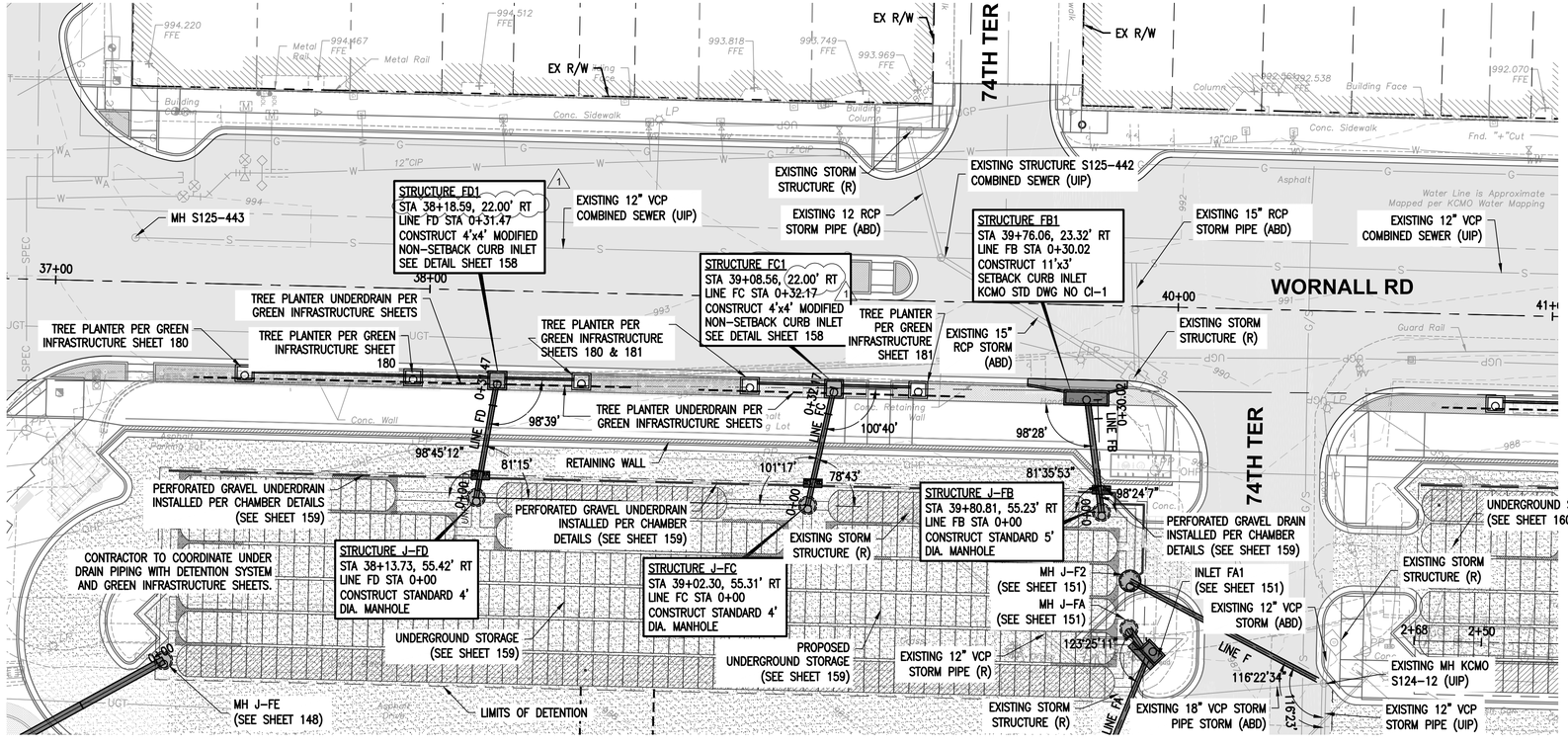

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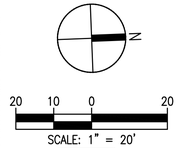

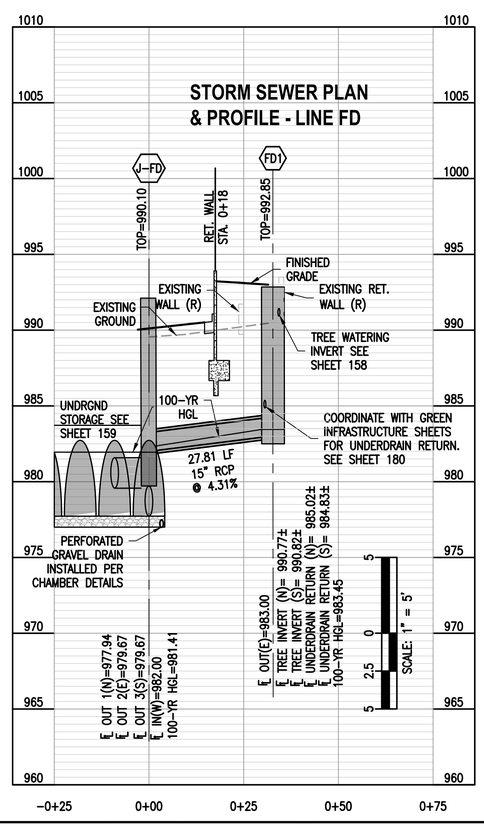

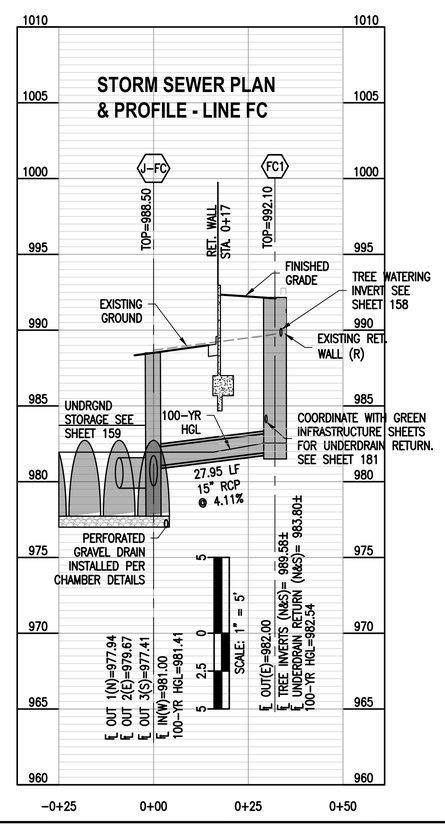

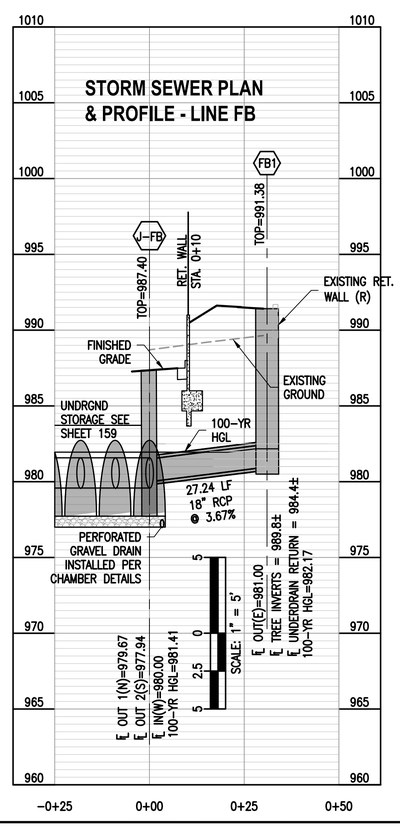

STATE OF MISSOURI
JUSTIN W. LIKES
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PROFESSIONAL ENGINEER
12-22-23

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SHEET TITLE

STORM SEWER PLAN & PROFILE

SHEET NUMBER 150 OF 215

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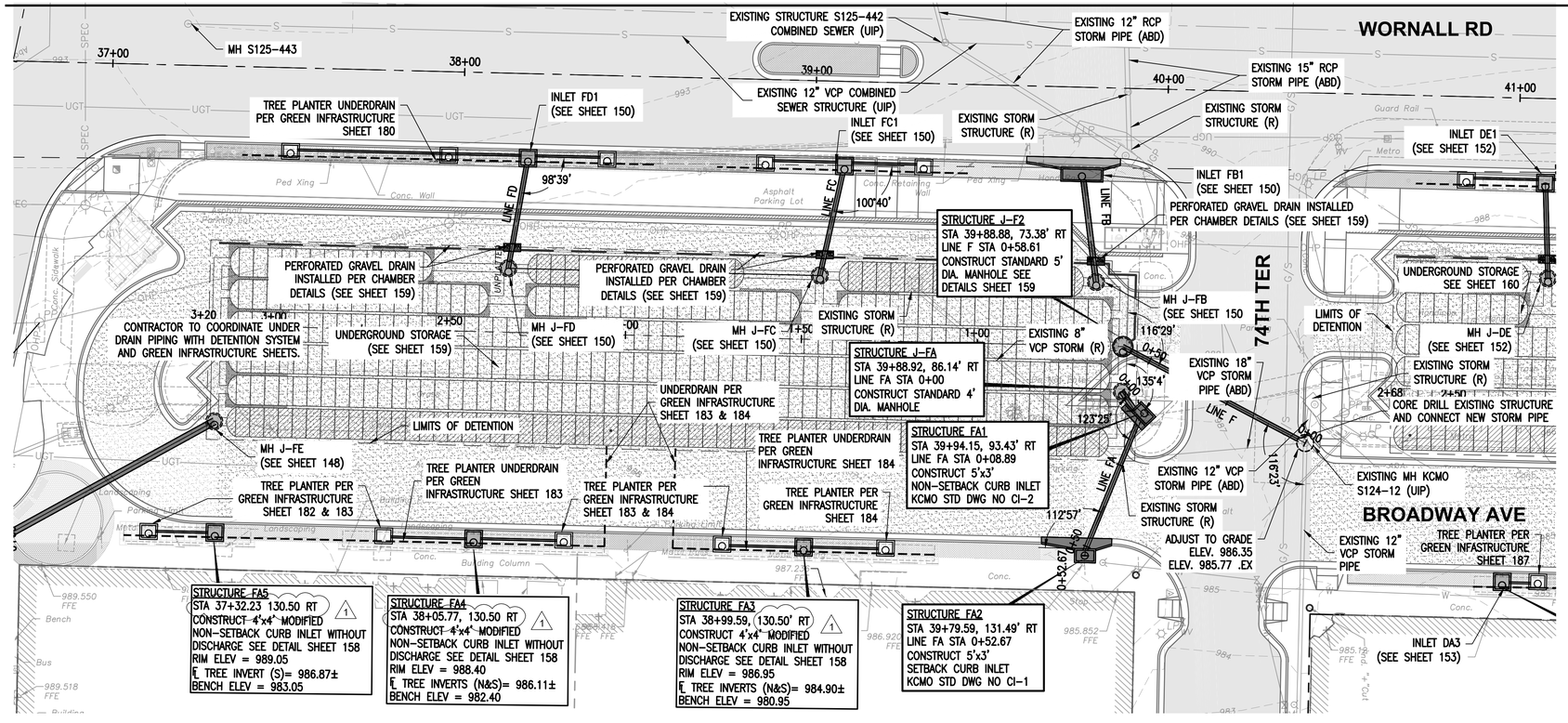

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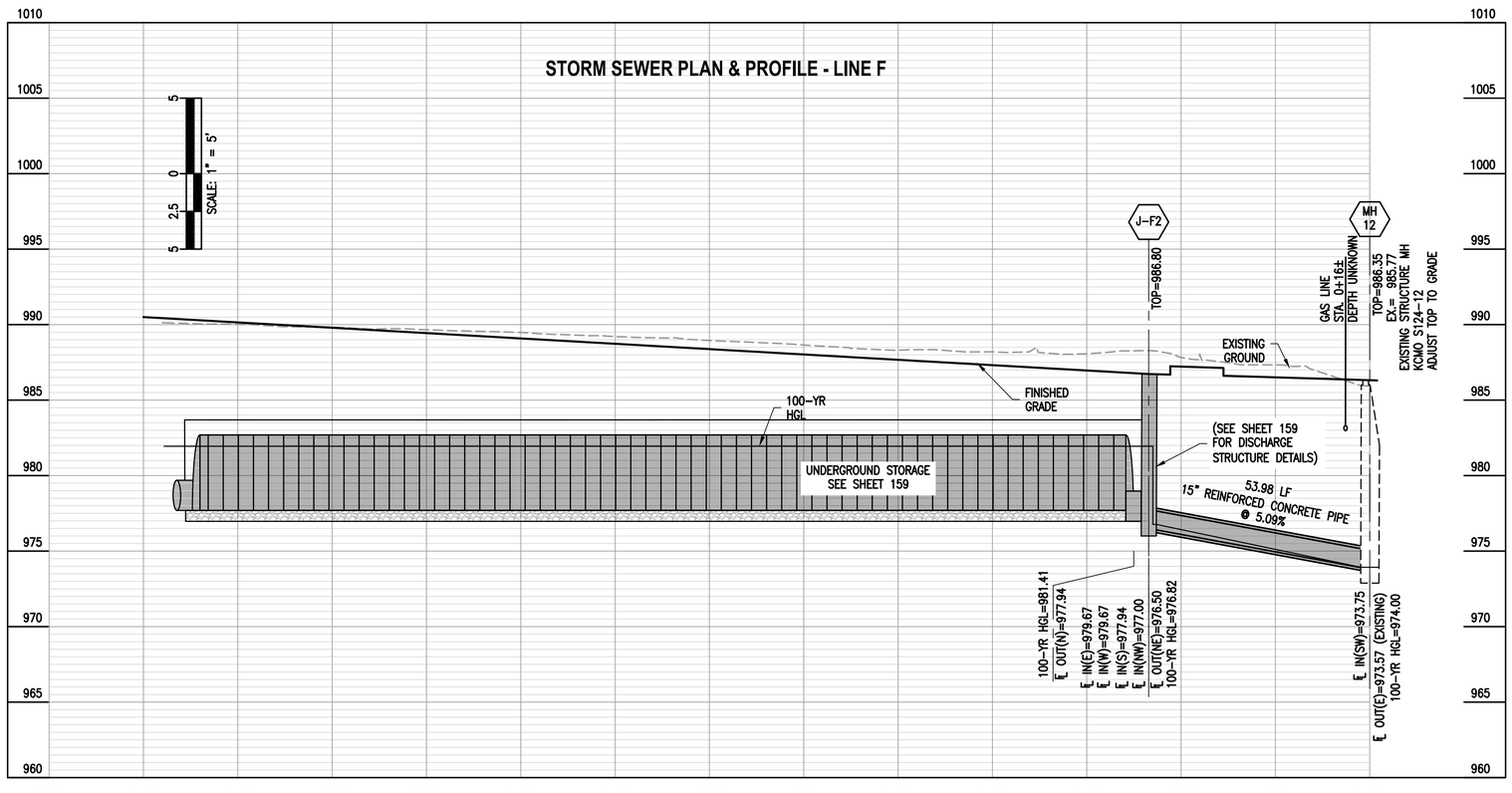
N

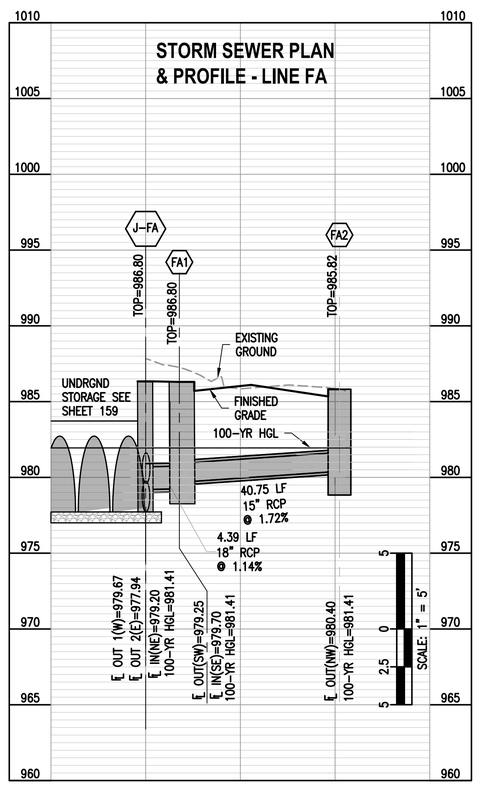
20 10 0 20
SCALE: 1" = 20'

BASE BID

STORM SEWER PLAN & PROFILE - LINE F



STORM SEWER PLAN & PROFILE - LINE FA



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74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

FEDERAL PROJECT NO. STP-3301(509)

STATE OF MISSOURI
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NUMBER PE-2010025211
PROFESSIONAL ENGINEER
12-22-22

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STORM SEWER PLAN & PROFILE

SHEET NUMBER

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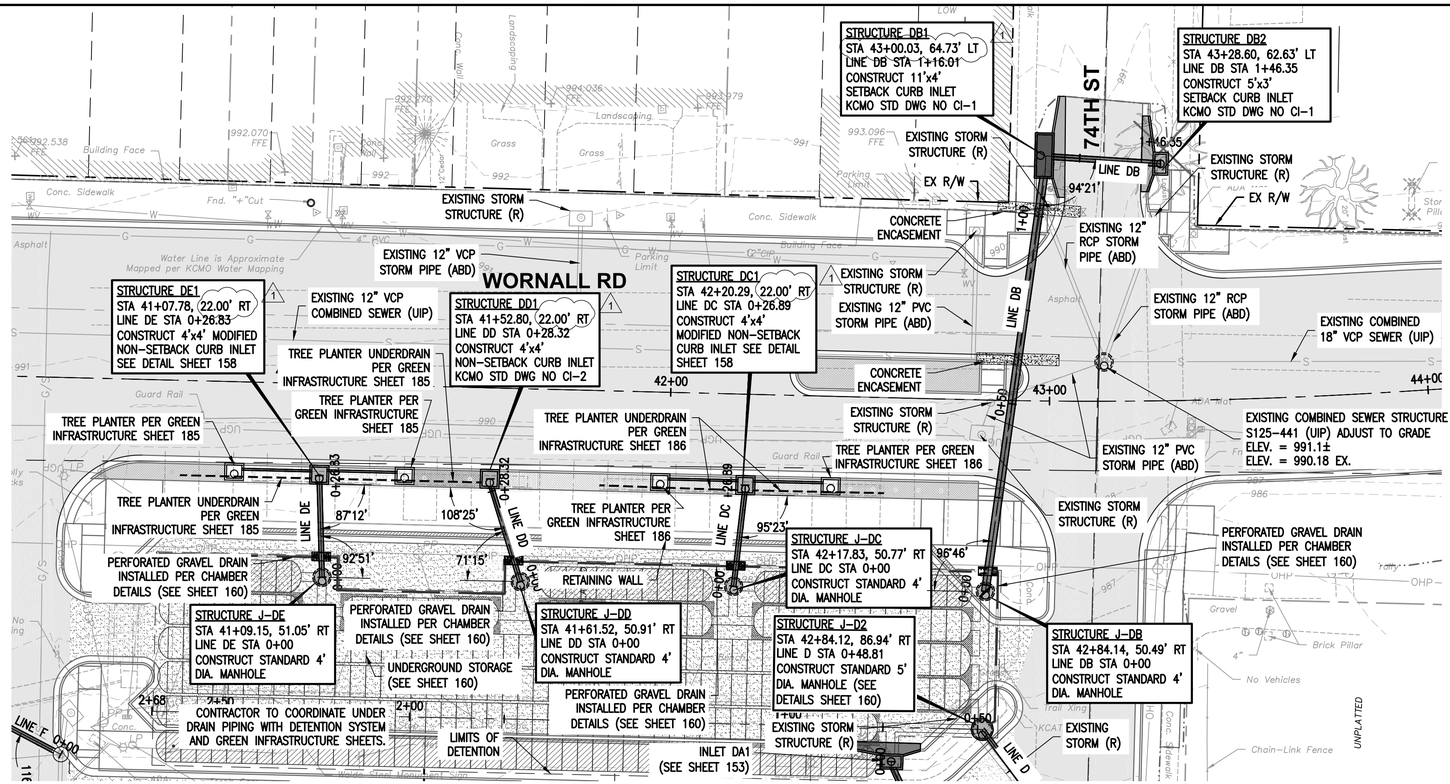

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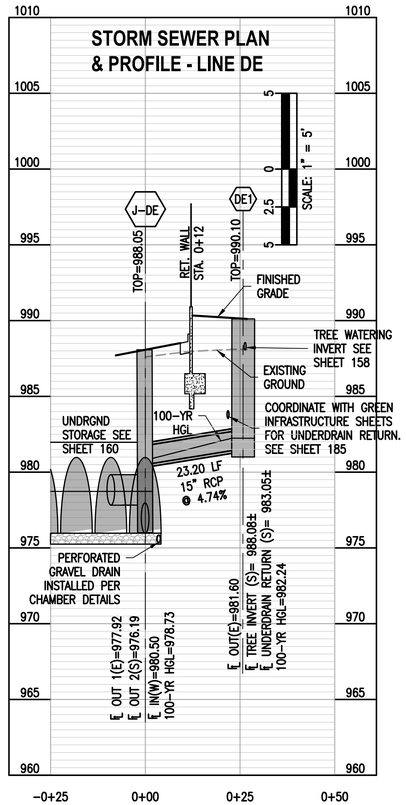

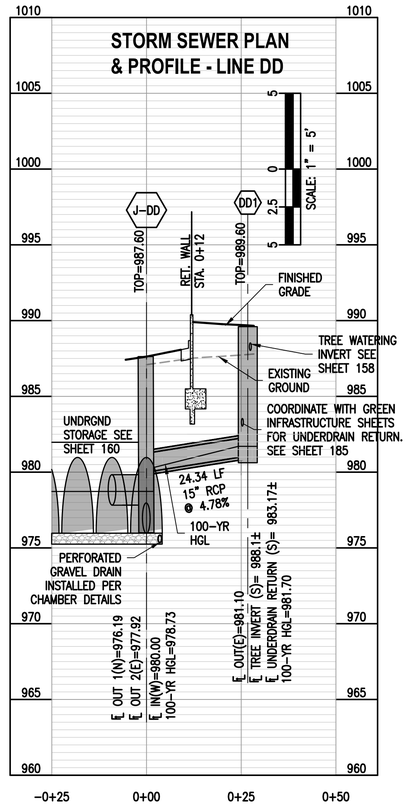

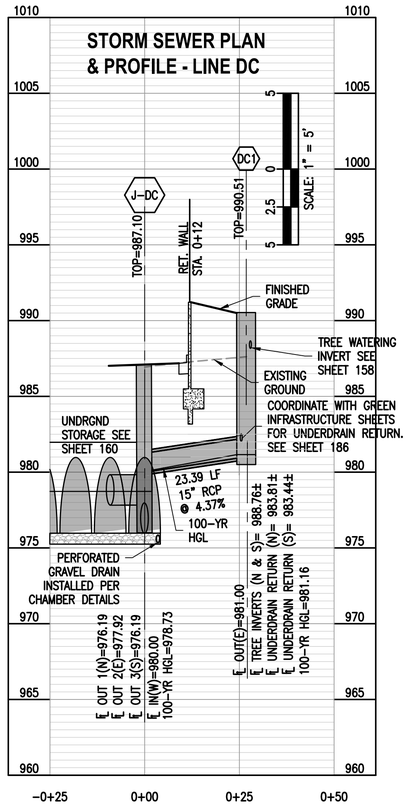

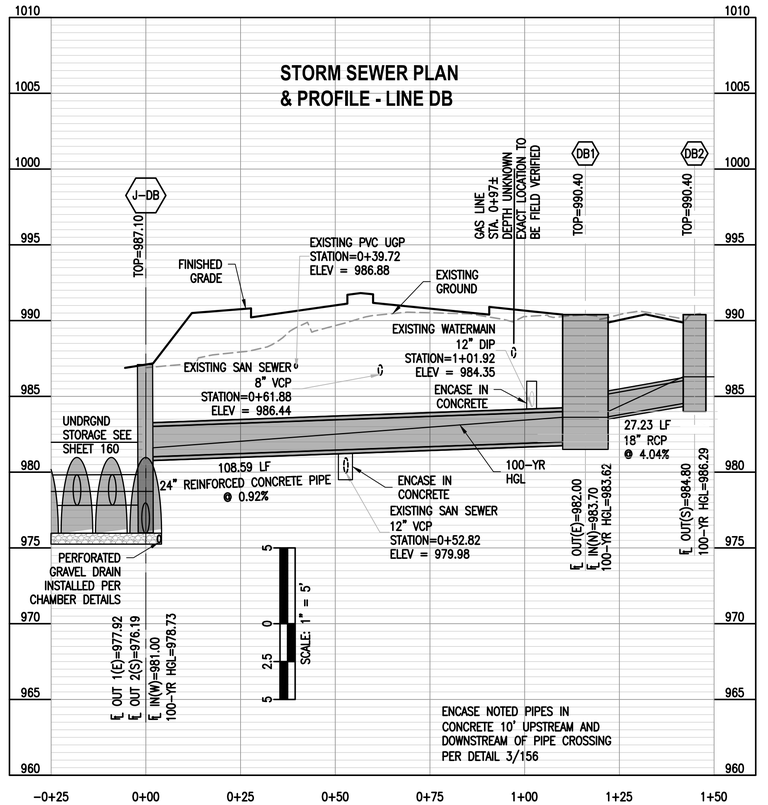

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74TH STREET TO 79TH STREET

KANSAS CITY, MISSOURI

CITY PROJECT NO. 89008516

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STATE OF MISSOURI
JUSTIN W. LIKES
NUMBER PE-2010025271
12-22-22
PROFESSIONAL ENGINEER

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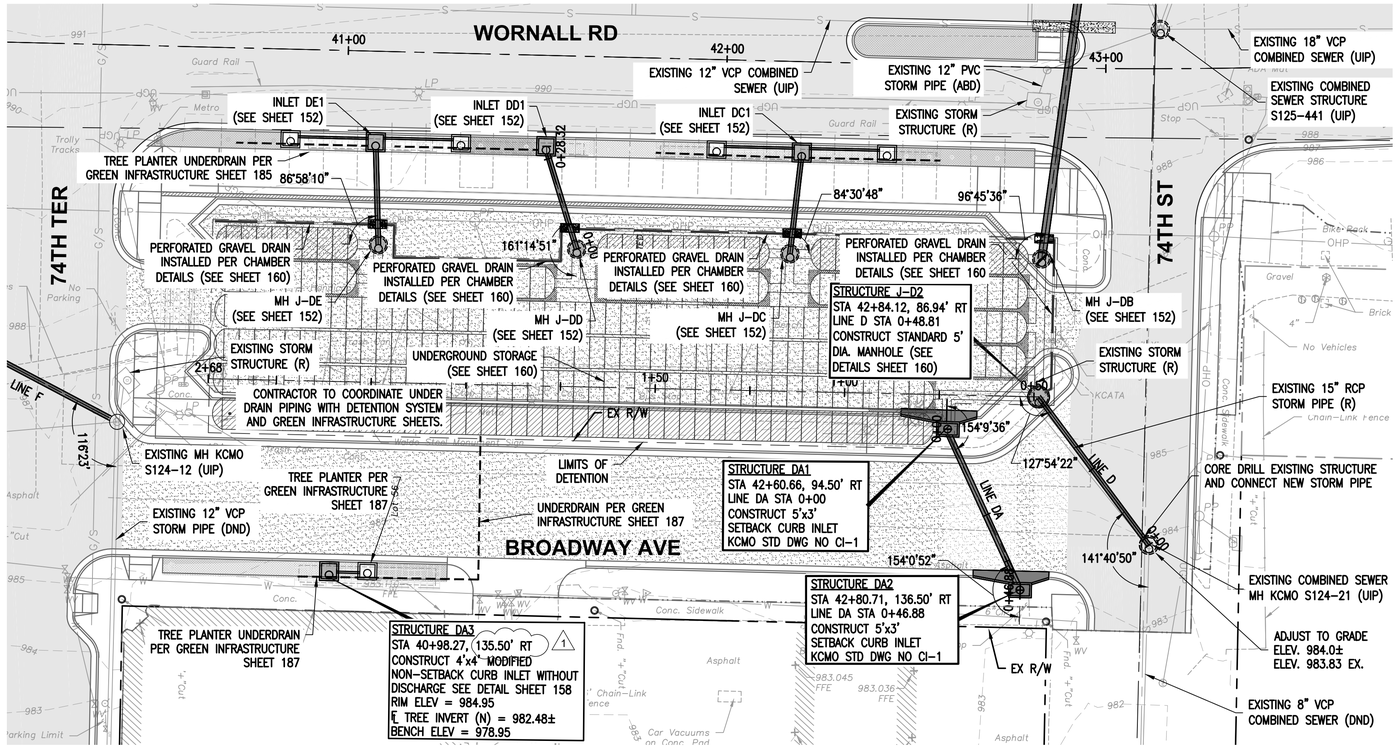

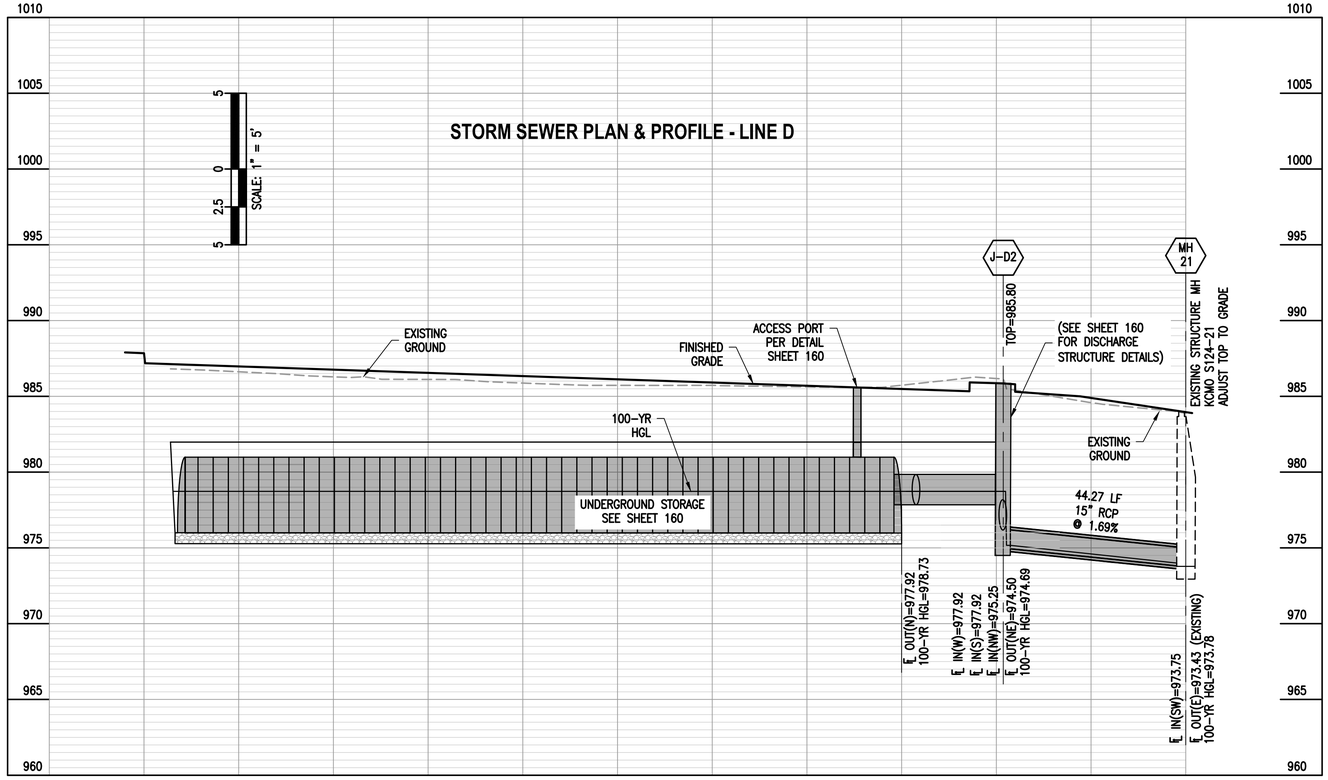

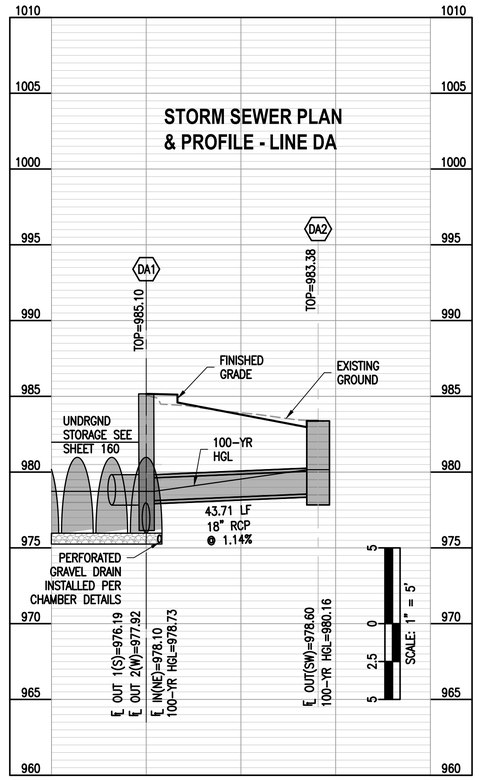

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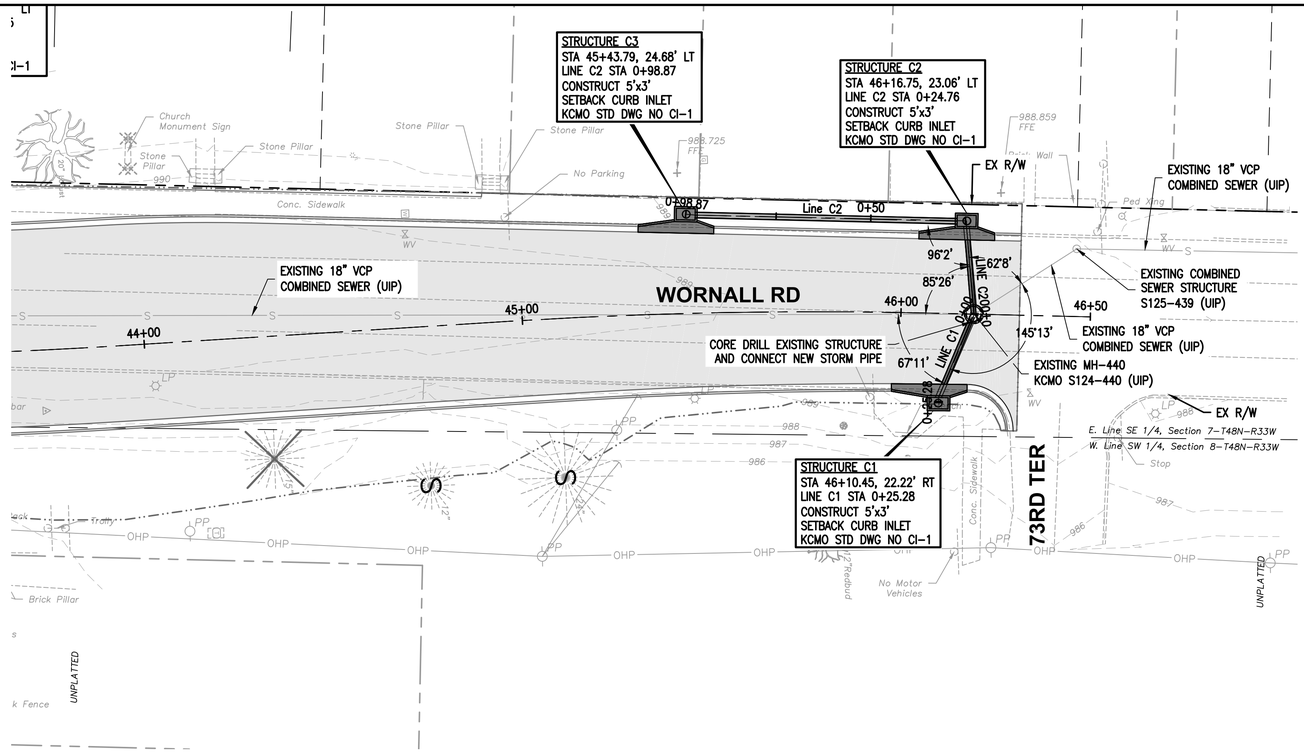

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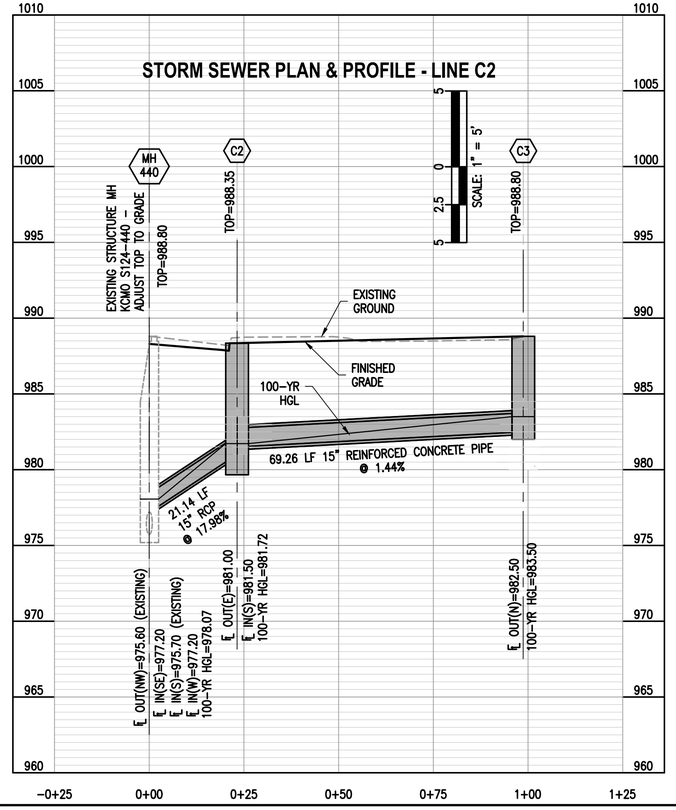

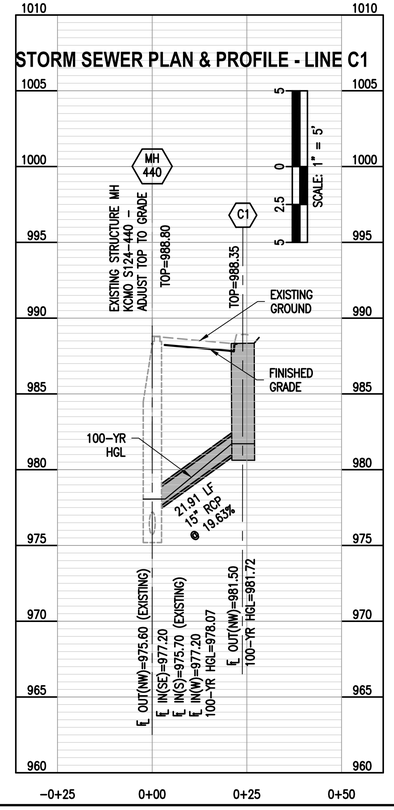

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REVIEWED BY JCT
DRAWN BY DDR
PROJECT NUMBER M08-18002-00
DATE 21 DECEMBER 2022
SHEET TITLE

STORM SEWER PLAN & PROFILE

SHEET NUMBER

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