ADDENDUM NUMBER 3



CITY OF FOUNTAINS

Project Number89008516Project TitleWornall Road 74th to 79th StreetFederal STP-3301(509)

ISSUE DATE: <u>9/26/2023</u>

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are to be received on <u>October 3, 2023</u>, 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.

Project Manual

- 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

Drawings:

- 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
 - $25 Plan \& Profile 75^{th} St$
 - 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.

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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

KANSAS CITY MISSOURI

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		ev	10.240	ROADWAY PAVEMENT (ASPHALT OPTION)		
4		31	19,240	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 DR	RAINAGE SU	IBTOTAL:								

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	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 SI	UBTOTAL:			

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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 A	ND PAVEN	IENT MARK	(INGS 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 LI	GHTING SU	BTOTAL:			

Item No.	Spec Sec.	Unit	Quantity	Item Description:	Unit Price	Extension
	.	1	n	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		
STREETSO	CAPE SUBT	OTAL:				
				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	1	EA	1	4' DIA. TREE GRATE		
159		CF	12,833	TREE PLANTERS		
160		EA	6	CURBFLOW	1	
161		LF	848	UNDERDRAIN (W/ CLEANOUTS)	1	
162		LF	1.243	UNDERDRAIN & STORMWATER DISTRIBUTION LOOP		
163		EA	28	TREES (2.5" CAL.)		
164		FA	56	SHRUBS - 3 GAL		
165		FA	15			
166		FA	2 080	PERENNIAL (#1 CONT.)		
167		ΕΔ	644			
168		CY	1 020			
160			21			
109			21			
170			20			
171			5			
172			4			
173		EA	0			
174		EA	3			
1/5	1	EA	1	STORM WATER DETENTION (NORTH PARKING LOT)		
			1	STORM WATER DETENTION (SOUTH PARKING LOT)		
GREEN SC	LUTIONS S	UBIUTAL:				
				Water Main Banlassment		
477		10			1	
177		LS	1			
178			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	Γ	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	İ	EA	1	4" WATER SERVICE		
	i					

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 TO)TAL - ALL I	TEMS				\$-		

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

CITY OF FOUNTAINS Heart of the Nation

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

KANSAS CITY MISSOURI

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	ev	E 992	ROADWAY PAVEMENT (ASPHALT OPTION)		
4		51 5,002	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	Y 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 -	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 A	ND PAVEM	IENT MARK	KINGS 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 LI	GHTING SUI	BTOTAL:								
	Streetscape									
60		SY	45	FESCUE TURF SOD						
STREETSC	APE SUBTO	DTAL:								
GRAND TO	RAND 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.

- 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.

 $A = (B \times C) \times (D-E)$

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.



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

Terracon *GeoReport*

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: <u>dlbrown@walterpmoore.com</u>
- 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

Terracon Consultants, Inc. 13910 W. 96th Terrace Lenexa, Kansas 66215 P (913) 492 7777 F (913) 492 7443 terracon.com



REPORT TOPICS

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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** logo will bring you back to this page. For more interactive features, please view your project online at <u>client.terracon.com</u>.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES SITE LOCATION AND EXPLORATION PLANS EXPLORATION RESULTS (Boring Logs and Laboratory Data) SUPPORTING INFORMATION (General Notes and Unified Soil Classification System)

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.

ltem	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:

Wornall Road Improvements Kansas City, Missouri September 19, 2018 Terracon Project No. 02175345



Item	Description					
Project Description	Wornall Road will be fully reconstructed from 74 th to 79 th 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 75 th 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.

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			

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

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

Wornall Road Improvements
Kansas City, Missouri
September 19, 2018
Terracon Project No. 02175345



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

Wornall Road Improvements Kansas City, Missouri September 19, 2018 Terracon Project No. 02175345



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:

ltem		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 Requirer	nents ¹	At least 95 percent of the material's maximum dry density ¹						
LL<45		-2 to +2 percent of optimum moisture content value ¹						
Moisture Content of Clay Soli	LL>45	0 to 4 percent above the optimum moisture content value ¹						
Moisture Content of Granular N	laterial	Sufficient to achieve compaction without pumping when proofrolled						
1. As determined by the standard	Proctor to	est (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

Wornall Road Improvements Kansas City, Missouri September 19, 2018 - Terracon Project No. 02175345



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. Nonuniform 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

Pavement Type **Major Arterial** Minor Arterial

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

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

Wornall Road Improvements Kansas City, Missouri September 19, 2018 Terracon Project No. 02175345



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 3¹/₂ to 4 feet below the ground surface. Existing fill and any impermeable

Wornall Road Improvements Kansas City, Missouri September 19, 2018 Terracon Project No. 02175345



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).

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





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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

EXPLORATION RESULTS

	BORING LOG NO. BMP-1 Page 1 of 1											
PR	PROJECT: Wornall Road Improvements				alte	r P I	Moore & Asso	ciates l	nc			
SIT	TE: Wornall Road Between 74th and 79t Kansas City, MO	n Street		rta	1150	15 0	ity, wo					
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.993112° Longitude: -94.594219°		DEPTH (Ft.)	WATER LEVEL BSERVATIONS	AMPLE TYPE	ECOVERY (In.)	FIELD TEST RESULTS	HAND ENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	
* * * * * * * *	DEPTH <u>6" ASPHALT</u> <u>8" CONCRETE</u> 1.2 5.5 FILL - FAT CLAY, with gravel, dark brown to grav.			-0	0	Ľ.		H				
	FAT CLAY (CH), dark brown to gray, stiff		-			8		2.5	17	109		
	5.5		- 5			13		2.25	29	93		
NRATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02175345 WORNALL KOAD IMPR.GPJ 1 L	Stratification lines are approximate. In-situ, the transition may be gra	dual.				Hai	nmer Type: Automati	с				
Advan Con	Advancement Method: See Exploration Continuous Flight Auger description of fi used and additi		esting Procedures for a I laboratory procedures ata (If any).									
ວ Aband Z Bori ທິ Surl	ing backfilled with Auger Cuttings face capped with asphalt Elevation	ns were not determine	ed.					<u> </u>				
	WATER LEVEL OBSERVATIONS Groundwater not encountered	Brra				Boring Started: 05-18-2018 Boring Completed: 05-18-					05-18-2018	
THIS BC		13910 W 96th Ter Lenexa, KS					Drill Rig: RC Driller: RC Project No.: 02175345					

	BORING LOG NO. BMP-2 Page 1 of 1												
PF	ROJECT:	Wornall Road Improvements	5	CLIENT: Walter P Moore & Associates Inc Kansas City. MO									
Sľ	TE:	Wornall Road Between 74th Kansas City, MO	and 79th Street										
APHIC LOG	LOCATIO	N See Exploration Plan		EPTH (Ft.)	TER LEVEL	SERVATIONS		OVERY (In.)	ELD TEST RESULTS	HAND ETROMETER (tsf)	WATER NTENT (%)	DRY UNIT EIGHT (pdf)	ATTERBERG LIMITS
<u>717</u>	DEPTH	DOT ZONE			AW	OBS	SAN	REC	Ē ^Ē	PEN	S S	3	
	1.0 FAT	<u>- FAI CLAY</u> , with gravel, dark brown CLAY (CH), dark brown to gray, stiff	to gray		_								
3DT 7/17/18					_			13		4.5+	18		
DATATEMPLATE					_			16		1.75	29	96	
5345 WORNALL ROAD IMPR.GPJ TERRAG(Bori	ng Terminated at 5 Feet		5									
REPORT. GEO SMART LOG-NO WELL 0217													
D FROM ORIGINAL F													
PARATE	Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic												
Adva Co Aban Bo Aban	ncement Meti ontinuous Fligi donment Meti ring backfilled	nod: nt Auger nod: I with Auger Cuttings	See Exploration and Te description of field and used and additional dat See Supporting Informa symbols and abbreviati	esting Proce laboratory ta (If any). ation for exp ons.	edures proced	for a lures on of		Notes:					
Su Su	rrace capped			termined.			+	lorin	Startad: 05 40 0040	Deri	0.000	plotad	05 19 2049
DRING	Groundv	vater not encountered	llerr	ac					Started: 05-18-2018	Bori	ig Com	pieted:	uo-18-2018
THIS B(13910 V Lene	13910 W 96th Ter Lenexa, KS					Project No.: 02175345				
		BO	RING LOO	G NO	. Bl	MF	>_ 3			F	^o age	1 of 1	
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	PR	OJECT: Wornall Road Improvements		CLIEN	Γ: Wa	alte	r P I	Moore & Asso	ciates l	nc			
	SI	E: Wornall Road Between 74th and Kansas City, MO	79th Street		T NC	1130		ity, inc					
	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.99155° Longitude: -94.594085°		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	Atterberg Limits	
	<u></u>	6" ROOT ZONE 0.5 FILL - FAT CLAY, with gravel, dark brown to gr	.av										
TE.GDT 7/17/18		<u>FILL - FAT CLAT</u> , with gravel, dark brown to gr	ay		_		11			17	109	50-18-32	
TEMPLAT		3.8 \- limestone boulder or slab below 3.7 feet					8			25	100		
ED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02175345 WORNALL ROAD IMPR.GPJ TERRACON_D													
PARATE		Stratification lines are approximate. In-situ, the transition may b	pe gradual.				Ha	mmer Type: Automati	c				
DG IS NOT VALID IF SE	Advar Cor Abanc Bor	cement Method: Se tinuous Flight Auger de us onment Method: sy ng backfilled with auger cuttings upon completion. El	ee Exploration and Tess escription of field and la sed and additional data ee Supporting Informat mbols and abbreviatio levations were not dete	sting Proced aboratory pro a (If any). tion for expla ons. ermined.	ures for ocedure	of	Note	95:					
NG LC		WATER LEVEL OBSERVATIONS					Borin	g Started: 04-26-2018	Bori	ng Com	pleted:	04-26-2018	
BORI			IIGLL	JC	J	1	Drill F	Rig: RC	Drill	er: RC			
THIS			13910 W Lenex	96th Ter a, KS			Proje	ct No.: 02175345					

		BO	RING LO	G NO	BI	MP	- 4			F	age	1 of 1
	PR	OJECT: Wornall Road Improvements		CLIEN	: Wa	alte	r P I as C	Moore & Asso	ciates I	nc		
	SIT	E: Wornall Road Between 74th and Kansas City, MO	79th Street		T CC			ity, iiiC				
	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.990811° Longitude: -94.594109°		DEPTH (Ft.)	WATER LEVEL DBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
	<u></u>	DEPTH 6" ROOT ZONE 0.5							<u> </u>			
		FAT CLAY, with gravel, dark brown to gray		-								
.GDT 7/17/18				-	_		9			21	103	57-21-36
IPLATE.		3.8					9			13	101	
D FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02175345 WORNALL ROAD IMPR.GPJ TERRACON_DATAT		Auger Refusal at 3.8 Feet										
PARATE		Stratification lines are approximate. In-situ, the transition may l	be gradual.				Ha	mmer Type: Automat	ic			
DG IS NOT VALID IF SE	Advan Cor Aband Bor	Andonment Method: See Exploration and ¹ description of field an used and additional d See Supporting Inforr symbols and abbrevia boring backfilled with auger cuttings upon completion.			nes for cedure	a es of	Note	38:				
ING LC		WATER LEVEL OBSERVATIONS					Borin	g Started: 04-26-2018	Bori	ng Com	pleted:	04-26-2018
S BOR					J		Drill F	Rig: RC	Drill	er: RC		
THIS			13910 W Lenex	96th Fer ka, KS			Proje	ct No.: 02175345				

	BC	DRING LOO	G NO.	B	MP	P-5			F	age	1 of 1
PF	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I	Moore & Asso	ciates l	าต		
Sľ	TE: Wornall Road Between 74th and	d 79th Street		Γλά	ansa	asu	ity, wo				
	Kansas City, MO							~	1	1	ATTERBERG
C LOG	LOCATION See Exploration Plan		(Ft.)	EVEL	ТҮРЕ	(Ju)	EST	AETER	П Т (%)	NIT (pcf)	LIMITS
SAPHIC	Lanude. 50.552200 Longitude54.552007		EPTH	ERVA	APLE	OVEF	ELDT	HAN ETRO	WATE	RY U	LL-PL-PI
Б	DEPTH			WA OBS	SAN	REC		PEN	00 C	۹.	
	0.5 6" ASPHALT										
	<u>5" AGGREGATE BASE</u> <u>FAT CLAY</u> , dark brown to gray, stiff			_							
HIZHIZ			-	-		9		2.25	29	93	
GDT			_								
PLATE											
ATEM			-			13		2.0	30	91	
N_DAT											
RACO	Boring Terminated at 5 Feet		5-								
J TER											
PR.GP											
AD IM											
ILL RO											
/ORNA											
5345 M											
02175											
WELL											
0G-NO											
RT LC											
0 SM ^A											
RT. GE											
REPOF											
INAL											
I ORIG											
FROV											
	Stratification lines are approximate. In-situ, the transition may be gradual.					Ha	 mmer Type: Automat	ic			
SEPAF	ncement Method:	Han Day 1			Not	2ç.					
	Continuous Flight Auger description of field and la used and additional data				a es						
₹ LO Ahan	See Supporting Informati bandonment Method: symbols and abbreviation				of						
	Surface capped with asphalt Surface capped with asphalt										
	WATER LEVEL OBSERVATIONS					Borin	g Started: 05-18-2018	Bori	ng Com	pleted:	05-18-2018
BORIN	Groundwater not encountered	lierra	JCC		1	Drill F	Rig: RC	Drill	er: RC		
THIS		13910 W Lenex	96th Ter a, KS			Proje	ct No.: 02175345				

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	E	BORING LO	OG NO	D. S	S-1				F	age	1 of 1
PF	OJECT: Wornall Road Improvements		CLIENT	: Wa Ka	alte insa	r P M as C	/loore & Asso ity, MO	ciates lı	IC		
SI	TE: Wornall Road Between 74th and Kansas City, MO	d 79th Street									
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.993209° Longitude: -94.593998°		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										
	6" AGGREGATE BASE										
	<u>FILL - FAT CLAY</u> , with gravel, dark brown to g	Iray									
	FAT CLAY (CH), dark brown to gray, medium s	stiff to stiff	-	-	\mathbb{X}	18	2-3-3 N=6		29		
			_	-		15	3-3-5 N=8		29		77-24-53
PR.GPJ TERRACC			5-								
RNALL ROAD IMP			-	-	X	18	2-4-4 N=8		24		
ELL 02175345 WO	10.0		-	_		18	3-3-5 N=8		22		
DM ORIGINAL REPORT. GEU SMARI LUG-NU W	Boring Terminated at 10 Feet										
	Stratification lines are approximate. In-situ, the transition may be gradual.					Har	nmer Type: Automati	ic			
	Incernent Method:	ating Procedu aboratory pro a (If any). tion for explai ns.	res for cedure nation c	a s of	Note	s:					
ທີ Boi ອິງ ອິງ	Boring backfilled with Auger Cuttings Surface capped with asphalt Elevations were not detern										
	WATER LEVEL OBSERVATIONS					Boring	started: 05-18-2018	Bori	ng Com	pleted: (05-18-2018
BOR	Signification not choculitered	IIGLU	JCC	J		Drill R	lig: RC	Drille	er: RC		
SHI	13910 Len					Projec	et No.: 02175345				

	E	BORING LO	G NO) . S	S-2	2			F	Page	1 of 1
PR	OJECT: Wornall Road Improvements	C	CLIENT	: Wa	alte	r P N	Noore & Asso	ciates lı	nc		
SI	TE: Wornall Road Between 74th and Kansas City, MO	d 79th Street		r\a	1150	15 U	ity, 1910				
RAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.992901° Longitude: -94.594007°		DEPTH (Ft.)	ATER LEVEL SERVATIONS	MPLE TYPE	COVERY (In.)	IELD TEST RESULTS	HAND JETROMETER (tsf)	WATER DNTENT (%)	DRY UNIT /EIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
Ū	DEPTH			ЗŐ	SA	RE	LL.	PEN	ŏ	3	
	1.3										
7/17/18	FILL - FAT CLAY, with gravel, dark brown to g	jray	-	_	\bigvee	12	3-2-3 N=5		27		
PLATE. GDT	3.0 FAT CLAY (CH), dark brown to gray, medium s	stiff to stiff		-	\square						
N_DATATEM			-	-		18	2-3-5 N=8		28		
GPJ TERRACO			5-	-							
ALL ROAD IMPR			-	-		18	3-4-5 N=9		27		
12175345 WORN			_	-	\square	18	3-4-5 N=9		23		
-NO WELL C	10.0 Boring Terminated at 10 Feet		- 10-								
SMART LOG											
EPORT. GEC											
KOM ORIGINAL R											
ARATED FF	Stratification lines are approximate. In-situ, the transition may be gradual.					Har	nmer Type: Automati	c			
Advar JI Dir Advar	dvancement Method: See Exploration and Testin Continuous Flight Auger description of field and lab used and additional data (I			res for cedure	a s	Note	es:				
> Abano Abano Sur ຍິ	See Supporting Information symbols and abbreviations Surface capped with Auger Cuttings Surface capped with asphalt Elevations were not determ			nation o	of						
	WATER LEVEL OBSERVATIONS					Boring	g Started: 05-18-2018	Bori	ng Com	pleted: (05-18-2018
BORI	Groundwater not encountered			ונ		Drill R	lig: RC	Drill	er: RC		
THISE	13910 W Lenexa					Projec	et No.: 02175345				

	E	BORING LO	DG NO) . S	S-3	3			F	Page	1 of 1
PF	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P N	Noore & Asso	ciates li	าต		
SI	TE: Wornall Road Between 74th and Kansas City, MO	d 79th Street		Γιά	11130	a5 C	ity, wo				
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.992501° Longitude: -94.594032°		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	Atterberg Limits
	0.4 5" ASPHALT		_								
×××	0.9 6" AGGREGATE BASE	1121/									
7/17/18	THE THE CERT, with graves, dark blown to g	μαy	_	-	$\left \right\rangle$	15	3-4-3 N=7		14		55-23-32
TE.GDT	3.0 FAT CLAY (CH), dark brown to gray, medium s	stiff to stiff			\square						
ON_DATATEMPLA			- 5	-		18	3-4-5 N=9		29		
PR.GPJ TERRAC			-	-							
DRNALL ROAD IM			-	-	X	18	3-4-5 N=9		23		
ELL 02175345 WC	10.0		- 10-	_		18	3-3-5 N=8		25		
ORT. GEO SMART LOG-NO W	10.0 Boring Terminated at 10 Feet										
ED FROM ORIGINAL REP											
ARATE	Stratification lines are approximate. In-situ, the transition may be gradual.					Har	nmer Type: Automati	ic			
I Advar S I Col	dvancement Method: Continuous Flight Auger See Exploration and Testin description of field and lab used and additional data (I See Supporting Information			res for cedure nation o	a s of	Note	es:				
O Abano N Bor ທິງ ປີ Sur	bandonment Method: symbols and abbreviations. Boring backfilled with Auger Cuttings Surface capped with asphalt Elevations were not determine										
	WATER LEVEL OBSERVATIONS					Boring	g Started: 05-18-2018	Bori	ng Com	pleted: (05-18-2018
BORI	Groundwater not encountered	IIELL	JCC	ונ		Drill R	lig: RC	Drill	er: RC		
THIS	13910 W 9 Lenexa,		96th Ter a, KS			Projec	ot No.: 02175345				

		В)G NO) . I	P_ 1	1			F	Page	1 of 1
	PR	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I	Moore & Asso	ciates Ir	าต	~	
	SIT	E: Wornall Road Between 74th and Kansas City, MO	79th Street		nc		a5 C	ity, wo				
	POG	LOCATION See Exploration Plan		-t.)	VEL	YPE	(In.)	S	ETER	د (%)	П pcf)	ATTERBERG LIMITS
	PHIC	Latitude: 38.994065° Longitude: -94.59418°		PTH (F	ER LE RVAT	PLET	VERY	LD TE ESULT	HAND TROM (tsf)	VATER	RY UN GHT (II-PI-PI
	GR/	NEDTU		B	WAT OBSE	SAM	RECO	FIE RE	DENE.	CON	MEI	
		8" ASPHALT										
	$\frac{1}{\sqrt{2}}$	1.0 4" COBBLE STONE AGGREGATE WITH ASPH	IALT BINDER		_							
		FILL - CLAYEY GRAVEL , with cobbles, light br	own to gray									
7/17/18				-		IV	5	5-3-2		20		
GDT		3.0				\square		N-5				
PLATE		FAT CLAY (CH), dark brown to gray, medium st	tiff to stiff									
TATEM				-		\mathbb{N}	16	2-3-5		29		65-25-40
N_DA				_				N=8				00-20-40
RRACC				5-								
PJ TEI				-								
MPR.G												
SOAD II				-		X	14	2-2-3 N=5		28		
NALL F				_		\square						
5 WOR												
17534				-		IV	18	2-3-3		23		
ELL 02		10.0		10		\square		N-0				
IN ON-		Boring Terminated at 10 Feet										
T LOG												
SMAR.												
. GEO												
EPORT												
NAL RI												
ORIGI												
FROM												
RATED		Stratification lines are approximate. In-situ, the transition may be gradual.					Har	nmer Type: Automati	c			
SEPA	Advan	sement Method:	ing Procedu	res for	а	Note	es:					
ALID IF	Con	Continuous Flight Auger description of field and labor used and additional data (If										
NOT V,	Aband	Abandonment Method: See Supporting Information symbols and abbreviations.										
OG IS	Surface capped with Auger Cuttings Elevations were not determi											
RING L		WATER LEVEL OBSERVATIONS Groundwater not encountered					Borinę	g Started: 05-18-2018	Borir	ng Com	pleted:	05-18-2018
IIS BOF			13910 W 9	Octh Ter			Drill F	Rig: RC	Drille	er: RC		
Ŧ			Lenexa	, KS			Projec	ct No.: 02175345				

			BORING L	OG N	0. I	P-2	2			F	Page ⁻	1 of 1
PR	OJECT	Wornall Road Improvements		CLIEN	r: Wa Ka	alte	r P M as C	Moore & Asso itv. MO	ciates lı	nc		
SIT	E:	Wornall Road Between 74th ar Kansas City, MO	nd 79th Street									
GRAPHIC LOG	LOCATIC	DN See Exploration Plan 8.993519° Longitude: -94.594208°		DEPTH (Ft.)	VATER LEVEL BSERVATIONS	AMPLE TYPE	ECOVERY (In.)	FIELD TEST RESULTS	HAND ENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	LIMITS
	DEPTH 8" A 0.7 1.0 4" C FILL	SPHALT OBBLE STONE AGGREGATE WITH ASI - CLAYEY GRAVEL, with cobbles, light	PHALT BINDER brown to gray		20	S	R		Ë			
E.GDT 7/17/18	2.0 FAT	CLAY (CH) , dark brown to gray, medium	a stiff to stiff		-	X	15	2-3-3 N=6		30		
ON_DATATEMPLAT				5-	_		18	1-2-3 N=5		32		
IPR.GPJ TERRAC					-							
ORNALL ROAD IM					-	X	18	3-4-4 N=8		27		
ELL 02175345 W	10.0			10-	-		18	2-4-4 N=8		23		
OM ORIGINAL REPORT. GEO SMART LOG-NO W	Bor	ing Terminated at 10 Feet										
ARATED FR	Stratifica	tion lines are approximate. In-situ, the transition ma	ay be gradual.				Har	nmer Type: Automat	ic			
Advan Con Advan Con Aband	Ivancement Method: See Exploration and Test description of field and is used and additional date Continuous Flight Auger See Supporting Information and the symbols and abbreviation and additional date Dandonment Method: See Supporting Information and additional date			esting Proceed laboratory pro a (If any). ation for expla ons.	ures for ocedure nation o	a s	Note	es:				
හ ග ර ර ර ර ර ර ර ර ර ර ර ර ර ර ර ර ර ර	Boring backfilled with Auger Cuttings Surface capped with asphalt Elevations were not dete			ermined.					•			
SING L	Ground	ER LEVEL OBSERVATIONS water not encountered					Boring	g Started: 05-18-2018	B Borii	ng Com	pleted: (05-18-2018
THIS BOF			13910 W Lene:	/ 96th Ter xa, KS			Drill R Projec	tig: RC	Drill	er: RC		

	BORING LOG NO. P-3 Page 1 of 1										
PR	OJECT: Wornall Road Improvements		CLIEN	: Wa Ka	alte	r P I as C	Moore & Asso ity, MO	ciates I	nc		
SIT	E: Wornall Road Between 74th an Kansas City, MO	d 79th Street									
RAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.992675° Longitude: -94.594235°		JEPTH (Ft.)	ATER LEVEL SERVATIONS	MPLE TYPE	COVERY (In.)	IELD TEST RESULTS	HAND IETROMETER (tsf)	WATER DNTENT (%)	DRY UNIT EIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
ច				N N N N N N N N N N N N N N N N N N N	SA	REG	ш —	PEN	8 8	_>	
\circ	8" COBBLE STONE AGGREGATE WITH ASF	PHALT BINDER									
	FILL - CLAYEY GRAVEL, with cobbles, light	brown to gray	-								
	FILL - FAT CLAY, with gravel, dark brown		-			14	3-5-5 N=10		18		52-20-32
			-			12	3-10-12 N=22		8		
	5.0 FAT CLAY (CH) , dark brown to gray, stiff		- 5 -	-							
				_		18	3-5-8 N=13		27		
	10.0		-	_		18	2-3-5 N=8		25		
	Boring Terminated at 10 Feet		— 10-								
	Stratification lines are approximate. In-situ, the transition ma	y be gradual.	·	•		Har	nmer Type: Automat	ic		•	
Advan Con Aband Bori Surf	zement Method: iinuous Flight Auger onment Method: ng backfilled with Auger Cuttings ace capped with asphalt	See Exploration and Tes description of field and la used and additional data See Supporting Informat symbols and abbreviatio Elevations were not dete	ting Procedu aboratory pro (If any). tion for expla ns. ermined.	ures for ocedure	a es of	Note	25:				
	WATER LEVEL OBSERVATIONS Groundwater not encountered					Borinę	g Started: 05-18-2018	Bori	ng Com	pleted:	05-18-2018
		13910 W	96th Ter			Drill F	Rig: RC	Drill	er: RC		

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02175345 WORNALL ROAD IMPR.GPJ TERRACON_DATATEMPLATE.GDT 7/17/18

		BOR	ING LO	dg Ng) . I	P-4	1			F	Page	1 of 1
	PR	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I	Noore & Asso	ciates Ir	าต		
	SIT	E: Wornall Road Between 74th and 79th Kansas City, MO	Street		r te	1130	13 U	ity, wo				
	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.992196° Longitude: -94.594387°		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
	$\frac{1}{2}$	7" ASPHALT 0.6 12" COBBLE STONE AGGREGATE WITH ASPHALT B	BINDER									
TE.GDT 7/17/18		1.6 1.8 FILL - CLAYEY GRAVEL, with cobbles, light brown to FAT CLAY (CH), dark brown to gray, medium stiff to st FAT CLAY (CH).	gray tiff		-		14	2-3-3 N=6		33		
CON_DATATEMPLA			- 5 -	-		17	3-3-5 N=8		30			
APR.GPJ TERRA				-	_							
ORNALL ROAD IN				-	-	X	18	2-2-3 N=5		29		
ELL 02175345 W		10.0		- 10-	_		18	2-2-4 N=6		23		
M ORIGINAL REPORT. GEO SMART LOG-NO W		Boring Terminated at 10 Feet										
ARATED FRC	Stratification lines are approximate. In-situ, the transition may be gradual.						Har	nmer Type: Automat	ic			
S NOT VALID IF SEP	Advan Cor Aband Bor	dvancement Method: Continuous Flight Auger bandonment Method: Boring backfilled with Auger Cuttings			res for cedure nation o	a s of	Note	is:				
LOG I	Surface capped with asphalt Elevations were not deterr							.			•	
RING		Groundwater not encountered	- Prr:	ארר			Boring	g Started: 05-17-2018	Borir	ng Com	oleted: (05-17-2018
THIS BO			13910 W 9	96th Ter a. KS			Drill F	tig: RC	Drille	er: RC		

	BORING LOG NO. P-5 Page 1 of 1										
PF	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I	Moore & Asso	ciates lı	າຕ		
Sľ	TE: Wornall Road Between 74th an Kansas City, MO	d 79th Street		Γ\C	1150	as C					
g	LOCATION See Exploration Plan			NS NS	PE	ln.)	F	TER	(%	Ę	ATTERBERG LIMITS
IIC LO	Latitude: 38.991789° Longitude: -94.594351°		H (Ft.	ATIC	ΠŢ	ERY (JLTS'	UN CU UN CU UN CU	NT (9	UNIT pq) T	
RAPH			EPTI	VTER SERV	MPLI	OVE	SESU	ETR(WAT	FIGH	LL-PL-PI
5	рертн			N OBS	SAI	REC	<u>ш</u> –	PEN	l S	3	
	8" ASPHALT										
	0.7										
	FILL - CLAYEY GRAVEL, with cobbles, light	brown to gray									
					7						
			-		IV.	0	3-5-3				
	<u>FAT CLAY (CH)</u> , dark brown to gray, stiff				$ /\rangle$		N=8				
UE:			-		\vdash						
MPLA											
IATE			-		V	18	3-4-4		28		42-21-21
- DA							N=8		20		72-21-21
ACON			5 -		\vdash						
'ERR'											
L L L L L L L L L L L L L L L L L L L			-								
IPR.G											
AD IN			-		V	10	3-3-5		27		
-RO					$ \wedge $	10	N=8		21		
INALI			-		\vdash						
WOF											
5345			_	∇	$\left \right\rangle$		2-3-4				
0217				\square	Ň	18	N=7		23		
AELL VIEL	10.0 Boxing Termineted et 10 Feet		10-		()						
N ON	Boring Terminated at 10 Feet										
LOG-											
ART											
0 SM											
Ū.											
PORT											
L RE											
GINA											
1 ORI											
ROA											
<u>е</u> —	Stratification lines are approximate. In-situ, the transition may be gradual.					Har	nmer Type: Automati	ic		<u> </u>	
PARA	Straulication lines are approximate. In-situ, the transition may be gradual.					. 101					
Advai Advai Advai	dvancement Method: See Exploration and Tes Continuous Flight Auger description of field and la used and additional data			res for cedure	a es	Note	25:				
T VA	See Supporting Informatio				of						
O Aban N Bo	bandonment Method: symbols and abbreviations Boring backfilled with Auger Cuttings Surface canned with asphalt Elevations were not determ										
og su	WATER I EVEL OBSERVATIONS										
	Z 9 feet while drilling					Boring	g Started: 05-17-2018	Bori	ng Com	pleted:	05-17-2018
	9.5 feet after completion					Drill F	Rig: RC	Drill	er: RC		
SHT 1		a, KS			Proje	ct No.: 02175345					

		BORING LOG NO. P-6 Page 1 of 1										
	PR	OJECT: Wornall Road Improvements		CLIEN	[: W	alte	r P N	Noore & Asso	ciates Ir	าต	<u> </u>	
_	SIT	E: Wornall Road Between 74th and Kansas City, MO	79th Street		Ne	ansa	asc	ity, MO				
	00	LOCATION See Exploration Plan		t.)	/EL ONS	ſΡΕ	(In.)	S	ETER	(%)	r cf)	ATTERBERG LIMITS
	HICL	Latitude: 38.991225° Longitude: -94.594375°		TH (F	R LEV	LE T	/ERY	D TES SULTS	AND ROME (tsf)	ATER ENT (LUNI HT (p	
	GRAF			DEP	VATE BSER	AMP	ECO	FIEL		CONT	DRY	LL-PL-PI
		DEPTH 10" ASPHALT			20	0 0	~		BE			
		0.8										
0` 5`		1.2 4" COBBLE STONE AGGREGATE WITH ASPH	IALT BINDER		-							
18		TILL - CLATET GRAVEL, With cobbles, light bi	own to gray									
12112						X	13	3-6-6 N=12		21		
GDT						\square						
PLATE		3.5	tiff to stiff									
ATEM		<u>FAT CLAT (CH)</u> , dark blown to gray, medium s			-	\mathbb{N}	18	2-3-5		36		
							10	N=8		30		
RACON				5-	-	\square						
TERF												
R.GPJ												
DIMPI					_	\mathbb{N}		3-4-5				
ROA						ľŇ	18	N=9		28		
RNALI					-	()						
15 WO												
217534						X	18	2-3-4 N=7		23		
00 11		10.0		10_		$ \rangle$						
IN ON		Boring Terminated at 10 Feet										
-901												
MART												
S O S												
ORT. (
REP												
IGINAI												
M OR												
D FRO												
ARATEI	Stratification lines are approximate. In-situ, the transition may be gradual.			I	_1	1	Har	nmer Type: Automati	c	I	1	
A SEP	dvancement Method: See Exploration and Tes Continuous Flight Auger			sting Proced	ures for	а	Note	es:				
ALID	Continuous Flight Auger description of field and lab used and additional data (aboratory pro a (If any).	ocedure	es						
'∆ LO A	See Supporting Information bandonment Method: symbols and abbreviations				nation	of						
G IS N	Boring backfilled with Auger Cuttings Elevations were not determined Surface capped with asphalt Elevations were not determined											
NG LO		WATER LEVEL OBSERVATIONS					Boring	g Started: 05-17-2018	Borir	ng Com	pleted:	05-17-2018
BORI		Groundwater not encountered	IIGLL	JC		1	Drill R	lig: RC	Drille	er: RC		
THIS		13910 \ Len		/ 96th Ter ka, KS			Projec	ot No.: 02175345				

	BORING LOG NO. P-7 Page 1 of 1										
PR	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I as C	Moore & Asso	ciates I	nc		
SIT	E: Wornall Road Between 74th and Kansas City, MO	1 79th Street					ity, in C				
GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.990605° Longitude: -94.594386°		DEPTH (Ft.)	VATER LEVEL BSERVATIONS	AMPLE TYPE	ECOVERY (In.)	FIELD TEST RESULTS	HAND ENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	Atterberg Limits LL-PL-PI
	DEPTH 8" ASPHALT			>0	S	2		<u> </u>			
€ ^{&} ∆9	0.7 <u>8" CONCRETE</u>										
	FILL - CLAYEY GRAVEL, light brown to gray FAT CLAY (CH), dark brown to gray, medium s	stiff to stiff		-		14	4-5-6 N=11		20		50-20-30
			_	-		18	3-3-4 N=7		29		
			5 -								
			-		X	18	2-3-4 N=7		28		
	10.0		- 10-			18	3-4-7 N=11		24		
	Boring Terminated at 10 Feet										
	Stratification lines are approximate. In-situ, the transition may be gradual.					Har	mmer Type: Automati	ic	•	•	
Advand Con Aband Bori Surf	zement Method: inuous Flight Auger pomment Method: ng backfilled with Auger Cuttings ace capped with asphalt	See Exploration and Test Jescription of field and la used and additional data See Supporting Informatii symbols and abbreviatior Elevations were not deter	ing Procedu boratory pro (If any). on for explar is. mined.	res for cedure	a es of	Note	95:				
∇	WATER LEVEL OBSERVATIONS 6.5 feet while drilling					Boring	g Started: 05-17-2018	Bori	ng Com	pleted:	05-17-2018
V	7.5 feet after completion	13910 W 9	96th Ter			Drill F	Rig: RC	Drill	er: RC		

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02175345 WORNALL ROAD IMPR.GPJ TERRACON_DATATEMPLATE.GDT 7/17/18

	BORING LOG NO. P-8 Page 1 of 1												
PR	OJECT:	Wornall Road Improvements	i	CLI	ENT	: Wa Ka	alte	r P M as C	Moore & Asso	ciates lı	nc		
SIT	E:	Wornall Road Between 74th a Kansas City, MO	and 79th Street						ity, inc				
IC LOG	LOCATIOI	V See Exploration Plan .990044° Longitude: -94.594422°			H (Ft.)	LEVEL	Е ТҮРЕ	:RY (In.)	ILTS JLTS	ND DMETER ()	'ER NT (%)	T (pcf)	ATTERBERG LIMITS
GRAPH	ПЕРТН				DEPTI	WATER OBSERV	SAMPLE	RECOVE	FIELD	PENETRG (ts	WAI CONTE	DRY WEIGH	LL-PL-PI
	<u>7" AS</u>	<u>PHALT</u>											
	0.6 9" C(1.3	DBBLE STONE AGGREGATE WITH A	SPHALT BINDER		_								
	1.7 FILL	- CLAYEY GRAVEL, with cobbles, lig	ht brown to gray										
::GDT 7/17/1		<u>JEAT (CH)</u> , dark brown to gray, medic	in sui to sui		_		X	18	2-3-4 N=7		30		
TEMPLATE					_				2.4.6				
CON_DATA					5 —		\square	17	N=10		28		
.GPJ TERRA					_								
L ROAD IMPR					_			18	2-3-3 N=6		30		
5 WORNAL					_								
L 0217534	10.0				-	V	X	18	2-3-4 N=7		23		
MEI	Borir	ng Terminated at 10 Feet			10-		ſ						
SMART LOG-NC													
REPORT. GEC													
ROM ORIGINAL													
ARATED F	Stratificatio					Har	nmer Type: Automat	ic					
⊟ Advan S HI Con	ancement Method: See Exploration and ² continuous Flight Auger description of field an used and additional d			esting Pr laborato a (If any	rocedui ory proc /).	es for cedure	a s	Note	95:				
Aband ON Bori ON Surf	See Supporting Inform ndonment Method: symbols and abbrevia pring backfilled with Auger Cuttings Elevations were not de urface capped with asphalt Elevations were not de			ation for ons. termined	explan d.	ation o	of						
0 0	WATER LEVEL OBSERVATIONS							Boring	g Started: 05-17-2018	Bori	ng Com	pleted: (05-17-2018
	Z 9 feet while drilling			2				Drill R	Rig: RC	Drille	er: RC		
	9.5 feet after completion			/ 96th T xa, KS	er		-	Projec	ct No.: 02175345		-		

	BORING LOG NO. P-9 Page 1 of 1											
PR	OJECT	Wornall Road Improvements		CLIENT	: Wa Ka	alte	r P M as C	Noore & Asso ity, MO	ciates lı	าต		
SIT	E:	Wornall Road Between 74th an Kansas City, MO	nd 79th Street									
LOG	LOCATIC	N See Exploration Plan		Ft.)	IONS	ЪРЕ	Y (In.)	STST	IETER	ج (%)	(pcf)	ATTERBERG LIMITS
GRAPHIC	Latitude: 3	8.989498° Longitude: -94.594435°		DEPTH (WATER LE OBSERVAT	SAMPLE T	RECOVER	FIELD TE RESULI	HAND PENETROM (tsf)	WATE	DRY UN WEIGHT (LL-PL-PI
	<u>7" A</u>	<u>SPHALT</u>										
	1.0 <u>5" C</u>	OBBLE STONE AGGREGATE WITH AS	PHALT BINDER									
	<u>FILL</u>	- CLAYEY GRAVEL, with cobbles, light	brown to gray									
GDT 7/17/18	<u>1.8</u> FAT	CLAY (CH), dark brown to gray, mediun	n stiff to stiff		-	X	18	3-3-4 N=7		30		70-22-48
TEMPLATE.				-				255				
ACON_DATA				5 -		\square	18	N=10		28		
R.GPJ TERRA				-	-							
VALL ROAD IMP				-		\mathbb{X}	18	3-3-4 N=7		25		
(175345 WOR				-	-	\mathbb{V}	18	2-3-4		23		
	10.0			10_		\square		N-7				
INAL REPORT. GEO SMART LOG-NO W	Bori	ng Terminated at 10 Feet										
ED FROM ORIGI	Obstifusi							Terration				
PARAT	Stratifical	ion lines are approximate. In-situ, the transition m	ay de gradual.				Har	nmer Type: Automati	IC			
Advance JI Cont	cement Met tinuous Flig	hod: ht Auger	See Exploration and Te description of field and used and additional dat	sting Procedu laboratory pro a (If any).	res for ocedure	a es of	Note	es:				
O Abando Borir ပ Surfa	adonment Method: bring backfilled with Auger Cuttings urface capped with asphalt Elevations were not de			ermined.								
	Ground	ER LEVEL OBSERVATIONS water not encountered					Boring	g Started: 05-17-2018	B Borii	ng Com	pleted:	05-17-2018
S BOR							Drill R	lig: RC	Drill	er: RC		
Ĩ	139		13910 W Lene	າ ອັດເກີເອັດ xa, KS			Projec	ct No.: 02175345				

	BORING LOG NO. P-10 Page 1 of 1												
PR	OJECT:	Wornall Road Improvements		CL	IENT	: Wa	alte	r P I	Moore & Asso	ciates li	าต		
SIT	E:	Wornall Road Between 74th an Kansas City, MO	nd 79th Street			T\C		45 0	ity, we				
LOG	LOCATIO	N See Exploration Plan			ť.)	VEL ONS	YPE	(In.)	S	ETER	(%)	T ocf)	ATTERBERG LIMITS
GRAPHIC I	Latitude: 38	3.988945° Longitude: -94.594421°			DEPTH (F	WATER LEV OBSERVATI	SAMPLE T	RECOVERY	FIELD TES	PENETROME (tsf)	WATER CONTENT	DRY UNI WEIGHT (p	LL-PL-PI
	<u>BEPTH</u>	SPHALT								-			
	0.7 9" C (1.4	DBBLE STONE AGGREGATE WITH AS	PHALT BINDER		_	-							
7/17/18	<u>FAT</u>	CLAY (CH), dark brown to gray, mediun	n stiff to stiff		_	-	X	6	5-4-4 N=8		24		
ATE.GDT					_	-							
DN_DATATEMPI					-	-		18	2-4-5 N=9		28		
J TERRACC					5-								
KOAD IMPR.GP					_	-	X	18	2-3-4 N=7		23		
NORNALL F					_	-							
02175345					_	-		18	2-2-3 N=5		23		
) WELL	10.0 Bori	ng Terminated at 10 Feet			10-								
REPORT. GEO SMART LOG-NO													
D FROM ORIGINAL F													
ARATE	Stratificati	ay be gradual.				•	Har	mmer Type: Automat	ic		•		
Advand Con	vancement Method: See Exploration and T Continuous Flight Auger description of field and used and additional d		sting F laborat a (If ar	Procedul tory prod ty).	res for cedure	a s	Note	25:					
Aband Sori Surf	Indonment Method: Ioring backfilled with Auger Cuttings Urface capped with asphalt Elevations were not de			ons.	ed.	iation (ור						
	WATE Groundv	ER LEVEL OBSERVATIONS						Borin	g Started: 05-17-2018	B Bori	ng Com	pleted: (07-12-2018
IS BOF				८ / 96th	L Ter	J		Drill F	Rig: 746	Drill	er: BP		
Ē			Lene	xa, KS	101			Projec	ct No.: 02175345				

	BORING LOG NO. P-11 Page 1 of 1												
PR	OJECT	: Wornall Road Improvements		CLIE	NT:	Wa	alte	r P I as C	Moore & Asso	ciates l	nc		
SIT	E:	Wornall Road Between 74th a Kansas City, MO	nd 79th Street	_								-	
POG	LOCATIO	ON See Exploration Plan		í	() -	IONS	ΥΡΕ	(In.)	ST	ETER	(%)	⊓ pcf)	ATTERBERG LIMITS
GRAPHIC	Latitude: 3	38.988436° Longitude: -94.594438°				WALER LE OBSERVAT	SAMPLE T	RECOVERY	FIELD TE RESULT	PENETROM (tsf)	WATER CONTENT	DRY UN WEIGHT (LL-PL-PI
	DEPTH 0.4 4.5'	ASPHALT				-							
€ [∆] ∆9	<u>7.5'</u>	CONCRETE											
TE.GDT 7/17/18	FAI	<mark>⁻ СLAY (СН)</mark> , dark brown to gray, mediui	n stiff to stiff		_								
DATATEMPLA					_	N	\bigvee	18	2-3-6 N=9		28		
ACON					5 –	ľ	/						
ROAD IMPR.GPJ TERR					_								
WORNALL					_								
L 02175345	10.0				_		X	18	2-2-3 N=5		23		
0 WEI	10.0 Boi	ing Terminated at 10 Feet		1	0		<u> </u>						
DM ORIGINAL REPORT. GEO SMART LOG-NC													
RATED FR(Stratification lines are approximate. In-situ, the transition may be gradual.							Har	nmer Type: Automat	ic			
Advand Con	cement Me tinuous Fli	thod: ght Auger	See Exploration and Te description of field and used and additional dat	esting Proc laboratory a (If any).	proce	s for a dures	a S	Note	95:				
> LO Aband Sori ອິ	See Supporting Inform symbols and abbreviat boring backfilled with Auger Cuttings surface capped with asphalt Elevations were not de		ition for ex ons. ermined.	kplanat	ion of	f							
	Groups	ER LEVEL OBSERVATIONS						Boring	g Started: 07-12-2018	Bori	ng Com	pleted:	07-12-2018
BOR	Ground				U			Drill F	Rig: 746	Drill	er: BP		
THIS	135		13910 W Lene	/ 96th Ter xa, KS				Proje	ct No.: 02175345				

	BORING LOG NO. P-12 Page 1 of 1										
PR	OJECT: Wornall Road Improvements		CLIEN	T: W K	/alte	er P I as C	Moore & Asso ity, MO	ciates I	nc		
SIT	E: Wornall Road Between 74th an Kansas City, MO	d 79th Street					•				
OG	LOCATION See Exploration Plan			/EL	PE	(In.)	ст	TER	(%	۲ در)	ATTERBERG LIMITS
HICL	Latitude: 38.987998° Longitude: -94.594456°		H (Ft			ERY	ULTS	sf)	ENT (IN d LN L	
RAP			DEPT	ATER	WPL		RES	AE TR (t)	MAN	DRY	LL-PL-PI
G	DEPTH			≥ď	S S	L H		PE	Ő	>	
	0.4 <u>4.5" ASPHALT</u> 7" CONCRETE										
\$ B	<u>1.0</u>										
	FAT CLAY (CH), dark brown to gray, medium	Stiff to Stiff		_							
				-							
			E	_		16	3-4-6 N=10		27		62-24-38
			5								
				_							
				_							
	10.0			_		18	2-2-4 N=6		17		
	Boring Terminated at 10 Feet		10								
	Stratification lines are approximate. In-situ, the transition ma	y be gradual.				Ha	I mmer Type: Automati	c	1		l
Advano Con	ement Method: inuous Flight Auger	See Exploration and Tes description of field and la	sting Procee aboratory p	<mark>dures</mark> fo rocedui	or a res	Note	es:				
Abando Bori Surf	onment Method: ng backfilled with Auger Cuttings ace capped with asphalt	See Supporting Informat symbols and abbreviatio Elevations were not dete	ion for expl ns. ermined.	anation	ı of						
	WATER LEVEL OBSERVATIONS					Borin	a Started: 07-12-2018	Rori	ng Com	pleted ·	07-12-2018
	Groundwater not encountered	llerr				Drill	Rig: 746	Drill	er RD	piotou.	. 12 2010
			96th Ter			Proie	ct No.: 02175345		ום .וס		

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 02175345 WORNALL ROAD IMPR.GPJ TERRACON_DATATEMPLATE.GDT 7/17/18

	BORING LOG NO. P-13 Page 1 of 1												
PR	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I as C	Moore & Asso	ciates lı	າດ				
SIT	E: Wornall Road Between 74th and Kansas City, MO	d 79th Street											
APHIC LOG	LOCATION See Exploration Plan Latitude: 38.987343° Longitude: -94.594495°		EPTH (Ft.)	TER LEVEL		OVERY (In.)	ELD TEST RESULTS	HAND ETROMETER (tsf)	WATER NTENT (%)	JRY UNIT EIGHT (pcf)	Atterberg Limits LL-PL-PI		
ل ص م	DEPTH 0.3 <u>3.5" ASPHALT</u> 2.2 <u>7" CONCRETE</u>			WA	SAN	REC		PEN	<u> </u>	- S			
	0.9 FILL - CLAYEY GRAVEL , gray, very loose			-									
	5.0 FAT CLAY (CH), dark brown to gray, medium stiff		-	-		5	1-1-2 N=3		8				
DRNALL ROAD IMPR.GPJ TERRAC	FAT CLAY (CH), dark brown to gray, medium s	stiff	-	-									
LL 02175345 W0	- slight petroleum odor at 8.5 feet		-			18	2-2-4 N=6		26				
FROM ORIGINAL REPORT. GEO SMART LOG-NO WE	Boring Terminated at 10 Feet		10-										
	Stratification lines are approximate. In-situ, the transition may	be gradual.				Har	nmer Type: Automati	c					
Advan Advan LON VII Con Aband Bori Surf	ancement Method: ontinuous Flight Auger See Exploration and T description of field ann used and additional da See Supporting Inform symbols and abbrevia oring backfilled with Auger Cuttings urface capped with asphalt Elevations were not do			res for cedure	a es of	Note	95:						
	WATER LEVEL OBSERVATIONS					Boring	g Started: 07-12-2018	Borii	ng Com	pleted: (07-12-2018		
BORIN	Groundwater not encountered	lierra	900	זכ		Drill F	Rig: 746	Drille	er: BP				
THISE		13910 W Lenex	96th Ter ka, KS			Proje	ct No.: 02175345						

	BORING LOG NO. P-14 Page 1 of 1												
PR	OJECT: Wornall Road Improvements		CLIENT	: Wa	alte	r P I	Moore & Asso	ciates li	าต				
SIT	E: Wornall Road Between 74th an Kansas City, MO	d 79th Street							-				
DOG	LOCATION See Exploration Plan		ft.)	VEL	ΥΡΕ	(In.)	sT	ETER	(%)	pcf)	ATTERBERG LIMITS		
GRAPHIC	Latitude: 38.986807° Longitude: -94.594517°		DEPTH (F	WATER LE	SAMPLE T	RECOVERY	FIELD TE	HAND ENETROME (tsf)	WATER CONTENT	DRY UNI WEIGHT (F	LL-PL-PI		
	DEPTH 0.3 <u>4" ASPHALT</u>							а.					
₽ [©] ∆₽	0.8 6" CONCRETE												
	FILL - CLAYEY GRAVEL, gray		-	1									
ATE.GDT 7/17/18	2.0 FAT CLAY (CH), dark brown to gray, medium	stiff											
DN_DATATEMPL			-	-		8	2-3-4 N=7		28				
MPR.GPJ TERRACC			5 -										
WORNALL ROAD I			-	-									
ELL 02175345	10.0		- 10-	_	X	18	2-2-3 N=5		24				
AL REPORT. GEO SMART LOG-NO WI	Boring Terminated at 10 Feet												
ED FROM ORIGINA													
ARATI	Stratification lines are approximate. In-situ, the transition ma	y be gradual.				Har	mmer Type: Automati	c					
d∃ Ø Advand Con L	cement Method: tinuous Flight Auger	See Exploration and Tes description of field and la used and additional data See Supporting Informat	sting Procedu aboratory pro a (If any). tion for explat	res for cedure	a s	Note	95:						
O Abando N Bori ပ Surf	onment Method: ng backfilled with Auger Cuttings ace capped with asphalt	symbols and abbreviatio Elevations were not dete	ermined.										
	WATER LEVEL OBSERVATIONS					Borin	g Started: 07-12-2018	Bori	ng Com	pleted: (07-12-2018		
BORII	Grounawater not encounterea	IICL	DCC	זנ		Drill F	Rig: 746	Drill	er: BP				
IHIS	13:		96th Ter a, KS			Proje	ct No.: 02175345						

	BORING LOG NO. P-15 Page 1 of 1											
PR	OJECT	Wornall Road Improvements		CLIEN	T: W	/alte ans	er P I as C	Moore & Asso itv. MO	ciates li	nc		
SIT	E:	Wornall Road Between 74th an Kansas City, MO	nd 79th Street							1		
APHIC LOG	LOCATIC	DN See Exploration Plan 8.986308° Longitude: -94.594536°		EPTH (Ft.)	TER LEVEL	IPLE TYPE	OVERY (In.)	ELD TEST ESULTS	HAND ETROMETER (tsf)	WATER NTENT (%)	RY UNIT IGHT (pcf)	LIMITS
GR	DEPTH 0.3 <u>4" A</u>	SPHALT ONCRETE			WA OBSI	SAN	REC	E.c.	DE NE	CO		
	<u>1.0</u> FAT	CLAY (CH) , dark brown to gray, soft to r	medium stiff		_							
					_							
				5			3	0-2-2 N=4		19		
					_							
5345 WORNALL R					_			2-3-4				
	10.0 Bor	ing Terminated at 10 Feet		10)		18	N=7		24		
ZEPORI. GEO SMARI LUG-INL												
D FROM ORIGINAL												
	Stratifica	tion lines are approximate. In-situ, the transition m	ay be gradual.	I			Hai	mmer Type: Automat	ic	1	1	
Advand L Cont Al Cont	cement Me tinuous Flig	hod: ht Auger	See Exploration and Te description of field and used and additional dat See Supporting Informa	esting Proce laboratory p ta (If any). ation for expl	<mark>dures</mark> fo rocedur lanation	or a res	Note	es:				
Abando Borii Surfa	onment Me ng backfille ace capped	thod: d with Auger Cuttings l with asphalt	symbols and abbreviati Elevations were not def	ons. termined.								
	Ground	ER LEVEL OBSERVATIONS water not encountered	76.00				Borin	g Started: 07-12-2018	Bori	ng Com	pleted:	07-12-2018
HIS BOR	C. Gund		13910 V Lene	UC V 96th Ter xa, KS	Jľ		Drill F Proje	Rig: 746	Drill	er: BP		

	BORING LOG NO. P-16 Page 1 of 1												
PR	OJECT	: Wornall Road Improvements	5	CL	IENT	: Wa	alte	r P I	Moore & Asso	ciates li	าต		
SIT	E:	Wornall Road Between 74th Kansas City, MO	and 79th Street						ity, inc				
901:	LOCATI	ON See Exploration Plan			Ft.)	EVEL	LYPE	Υ (In.)	IST IST	IETER	ج ۲ (%)	lIT (pcf)	ATTERBERG LIMITS
GRAPHIC	Latitude:	38.985766° Longitude: -94.594569°			DEPTH (WATER LE OBSERVAT	SAMPLE 1	RECOVER	FIELD TE RESULT	PENETROM (tsf)	WATE	DRY UN WEIGHT (LL-PL-PI
A 8 6	0.3 <u>3" /</u>	ASPHALT											
3DT 7/17/18	0.8 6 FA	<u>CINCRETE</u> <u>CLAY (CH)</u> , dark brown to gray, soft to	o medium stiff		_	-							
					-	-			1-1-2				
ACON_DATA					5 –		\square	8	N=3		29		59-23-36
0 IMPR.GPJ TERR					-	-							
WORNALL ROAL					-	-							
.L 02175345	10.0				-	_		18	2-2-3 N=5		24		
O WEI	Bo	ing Terminated at 10 Feet			10–		\int						
RIGINAL REPORT. GEO SMART LOG-N													
PARA1	Stratification lines are approximate. In-situ, the transition may be gradual.							Hai	mmer Type: Automat	IC			
Advand L Con	cement Me tinuous Fli	ethod: ght Auger	See Exploration and Te description of field and used and additional dat See Supporting Informa	esting P laborat ta (If an ation for	Procedu tory pro ty). r explar	res for cedure nation d	a es of	Note	es:				
O Aband Z Bori ງ Surf	onment Me ng backfill ace cappe	ethod: ed with Auger Cuttings d with asphalt	symbols and abbreviati Elevations were not def	ions. termine	ed.								
	Ground	ER LEVEL OBSERVATIONS						Borin	g Started: 07-12-2018	B Bori	ng Com	pleted:	07-12-2018
S BOR					LL Ter			Drill F	Rig: 746	Drill	er: BP		
Ĭ	139		Lene	xa, KS				Proje	ct No.: 02175345				

	BORING LOG NO. P-17 Page 1 of 1												
PR	OJECT	: Wornall Road Improvements		CLIE	NT: Y	Wal Kan	lter 1sa	PN sC	Moore & Asso itv. MO	ciates li	າຕ		
SIT	E:	Wornall Road Between 74th a Kansas City, MO	nd 79th Street										
SAPHIC LOG	LOCATIC	DN See Exploration Plan 8.985204° Longitude: -94.594603°		JEPTH (Et)	ATER LEVEL	SERVATIONS	MPLE TYPE	COVERY (In.)	IELD TEST RESULTS	HAND IETROMETER (tsf)	WATER DNTENT (%)	DRY UNIT EIGHT (pcf)	LIMITS
ی مردد ه	DEPTH 0.3 <u>4" A</u> 7.5"	<u>SPHALT</u> CONCRETE			· >	ÖÖ	SA	RĒ	ш	БЕР	ŏ	3	
ATE.GDT 7/17/18	<u>FAT</u>	CLAY (CH), dark brown to gray, very so	oft to medium stiff		_								
				F	_			4	0-0-1 N=1		31		
RNALL ROAD IMPR. GPJ TERRAC					-								
LL 02175345 WC	10.0				_			18	2-3-4 N=7		25		
OM ORIGINAL REPORT. GEO SMART LOG-NU WE	Bor	ing Terminated at 10 Feet											
ARATED FR	Stratifica	ion lines are approximate. In-situ, the transition n	nay be gradual.					Han	nmer Type: Automat	ic			
Advance Advance Cont	cement Me tinuous Flig	thod: ht Auger thod: d with Auger Cuttings I with asphalt	See Exploration and Te description of field and used and additional dat See Supporting Informa symbols and abbreviati	esting Proce laboratory ta (If any). ation for exp ions. termined	edures proced	for a lures on of		Note	IS:				
	WAT	ER LEVEL OBSERVATIONS					-	Borin	1 Started: 07 10 2010	B Domin		nlotad	17-12 2010
DRING	Ground	water not encountered	ller	ar					Jianeu. 07-12-2018	, Boul		pietea:	JI-12-2010
THIS B(13910 V Lene	V 96th Ter xa, KS				Projec	t No.: 02175345	Unili	ы. ВР		

SUPPORTING INFORMATION

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS



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.

	RELATIVE DENSITY (More than 50% Density determined by	OF COARSE-GRAINED SOILS retained on No. 200 sieve.) V Standard Penetration Resistance	Consis [;] visua	CONSISTENCY OF FINE-GRAINED (50% or more passing the No. 200 s tency determined by laboratory shear stre al-manual procedures or standard penetra	SOILS ieve.) ngth testing, field tion resistance
RMS	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.
Ш Н	Very Loose	0 - 3	Very Soft	less than 500	0 - 1
NGT	Loose	4 - 9	Soft	500 to 1,000	2 - 4
L REI	Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8
S	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

<u>Descriptive Term(s)</u>					
of other constituents					
_					
Trace					
With					
Modifier					

I

(

<u>Dry Weight</u> < 15 15 - 29 > 30

Percent of

RELATIVE PROPORTIONS OF FINES

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

GRAIN SIZE TERMINOLOGY

Major Component of Sample Boulders Cobbles

Gravel

Sand Silt or Clay Particle Size

Over 12 in. (300 mm) 12 in. to 3 in. (300mm to 75mm) 3 in. to #4 sieve (75mm to 4.75 mm) #4 to #200 sieve (4.75mm to 0.075mm Passing #200 sieve (0.075mm)

PLASTICITY DESCRIPTION

<u>Term</u> Non-plastic Low Medium High

0 1 - 10 11 - 30 > 30

Plasticity Index



UNIFIED SOIL CLASSIFICATION SYSTEM

						Soil Classification		
Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Group Symbol	Group Name ^B		
	Gravels:	Clean Gravels:	$Cu \geq 4$ and $1 \leq Cc \leq 3^{E}$		GW	Well-graded gravel F		
	More than 50% of	Less than 5% fines ^c	Cu < 4 and/or 1 > Cc > 3	E	GP	Poorly graded gravel F		
	coarse fraction retained	Gravels with Fines:	Fines classify as ML or N	1H	GM	Silty gravel F,G,H		
Coarse Grained Soils: More than 50% retained	on No. 4 sieve	More than 12% fines ^c	Fines classify as CL or C	Н	GC	Clayey gravel F,G,H		
on No. 200 sieve	Sands:	Clean Sands:	$Cu \ge 6$ and $1 \le Cc \le 3^{E}$		SW	Well-graded sand ¹		
	50% or more of coarse fraction passes No. 4 sieve Silts and Clays: Liquid limit less than 50	Less than 5% fines D	Cu < 6 and/or $1 > Cc > 3$	E	SP	Poorly graded sand ¹		
		Sands with Fines:	Fines classify as ML or N	1H	SM	Silty sand G,H,I		
		sieve	sieve More	More than 12% fines ^D	Fines classify as CL or CH		SC	Clayey sand G, H, I
		Inergenie	PI > 7 and plots on or abo	ove "A" line ^J	CL	Lean clay ^{K,L,M}		
		morganic.	PI < 4 or plots below "A" line ^J		ML	Silt ^{K,L,M}		
F i o i i o ii		Organic:	Liquid limit - oven dried	< 0.75	0	Organic clay K,L,M,N		
Fine-Grained Soils:			Liquid limit - not dried	< 0.75	UL	Organic silt K,L,M,O		
No. 200 sieve		Inorganic	PI plots on or above "A" li	ine	СН	Fat clay ^{K,L,M}		
	Silts and Clays:	morganic.	PI plots below "A" line		MH	Elastic Silt K,L,M		
	Liquid limit 50 or more	Organic: Liquid limit - oven dried Liquid limit - not dried	Liquid limit - oven dried	0.75	ОЦ	Organic clay K,L,M,P		
			< 0.75		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 = D₆₀/D₁₀ Cc =
$$\frac{(D_{30})^2}{D_{10} \times D_{60}}$$

 $^{\sf F}$ If soil contains \geq 15% sand, add "with sand" to group name. $^{\sf G}$ 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.
- $^+$ If soil contains \geq 15% gravel, add "with gravel" to group name.
- $^{\rm J}\,$ 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 \ge 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 $PI \ge 4$ 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.



llerracon

JACKSON COUNTY, MISSOURI



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BELOW.

EXCEPTIONS:

MICHAEI

JOSEPH HAAKE

NUMBER

12/21/2022

- K VALUE OF CREST VERTICAL CURVES ON 75TH STREET ARE LESS THAN 50.
- DISTANCES FROM INTERSECTIONS TO DRIVEWAY CURB CUTS IS LESS THAN 250'.

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

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

EXCEED THE DESIGN CRITERIA OF KANSAS CITY, MISSOURI IN CURRENT USAGE, EXCEPT AS INDICATED

- 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'.

12/21/2022 DATE

NICOLAS H. BOSONETTO, P.E. CITY ENGINEER

APPROVED BY:

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



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

816.701.2100 walterpmoore.com

SUB-CONSULTANTS

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

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



TREKK DESIGN GROUP 1411 E. 104TH STREET, KANSAS CITY, MO 64131

DRAINAGE & LIGHTING ENGINEER:



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

	ITEM NO.	ITEM DESCRIPTION	APPROXIMATE QUANTITY	UNIT
	ROADV	I /AY		
	1	MOBILIZATION	1	LS
	2	CONSTRUCTION STAKING	1	LS
	3		1	LS
	4	ROADWAY PAVEMENT (ASPHALT OPTION)	- 19,240	SY
	5	CONCRETE PAVEMENT (CONCRETE OF HON)	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	
	14		12,358	SF SF
	15	ASPHALT COMMERCIAL DRIVE (6"+2") TYPE 1-01 & 5-01	1,117	5F
	17	CONCRETE SIDEWALK (4)	45,520	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		1	EA
	30		1	ΓA FΔ
	31	TEMPORARY TRAFFIC CONTROL - PHASE 3B	1	FA
	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		<u></u> И	
	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
	TRAFFI	C - FIBER OPTIC		
	47	3" PVC CONDUIT (FIBER OPTIC)	1,752	LF
	48	TYPE II PULL BOX (FIBER OPTIC)	6	EA
	49	196-CT FIBER	2,342	LF
	50		2	EA
			2	ΕA
	52	2" PVC CONDUIT	87	
	53	2" PVC CONDUIT (IN EXISTING TRENCH)	321	LF
	54	3" PVC CONDUIT (SIGNAL)	392	
>	55	3" PVC CONDUIT (SIGNAL) (IN EXISTING TRENCH)	260	LF
			94	LF
	56	4" PVC CONDUIT		
	56 57	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH)	94	LF
	56 57 58	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX	94 3	LF EA
	56 57 58 59	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX	94 94 3 2	LF EA EA
	56 57 58 59 60	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8)	94 94 3 2 2	LF EA EA EA
	56 57 58 59 60 61	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10)	94 94 3 2 2 1	LF EA EA EA EA
	56 57 58 59 60 61 62	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE B12)	94 94 3 2 2 1 1 1	LF EA EA EA EA
	56 57 58 59 60 61 62 63	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE C)	94 94 3 2 2 1 1 1 5	LF EA EA EA EA EA
	56 57 58 59 60 61 62 63 64 64	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE E332) MAST ARM POLE (28' W/ 10' LUMINALIZE ADMA & 250W (250) (1105 LUMINALIZE)	94 94 3 2 2 1 1 5 1 2 1 2 1 2 1 2 2 1 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 2 1 2 2 2 2 1 2	LF EA EA EA EA EA EA
	56 57 58 59 60 61 62 63 64 65 65	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE E332) MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)	94 94 3 2 2 1 1 5 1 2 1 2 1 2 1 2 1	LF EA EA EA EA EA EA EA EA
	56 57 58 59 60 61 62 63 64 65 66 67	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE E332) MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (40' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE)	94 94 3 2 2 1 1 5 1 2 1 2 1 2 1 2 1 1	LF EA EA EA EA EA EA EA EA EA
	56 57 58 59 60 61 62 63 63 64 65 66 67 69	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE E332) MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (40' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) PEDESTAL POLE (10')	94 94 3 2 2 1 1 5 1 2 1 2 1 2 1 1 2 1 1 3	LF EA EA EA EA EA EA EA EA EA EA
	56 57 58 59 60 61 62 63 64 65 66 67 69 68	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE E332) MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (40' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) PEDESTAL POLE (10') PEDESTAL POLE (15')	94 94 3 2 2 1 1 1 5 1 2 1 2 1 1 2 1 1 3 2	LF EA EA EA EA EA EA EA EA EA
	56 57 58 59 60 61 62 63 64 65 66 67 69 68 70	4" PVC CONDUIT 4" PVC CONDUIT (IN EXISTING TRENCH) TYPE I PULL BOX TYPE II PULL BOX CONCRETE BASE (TYPE B8) CONCRETE BASE (TYPE B10) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE B12) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE C) CONCRETE BASE (TYPE E332) MAST ARM POLE (28' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (34' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) MAST ARM POLE (40' W/ 10' LUMINAIRE ARM & 250W, 250V HPS LUMINAIRE) PEDESTAL POLE (10') PEDESTAL POLE (15') SIGNAL WIRE (5C#14)	94 94 3 2 2 1 1 5 1 2 1 2 1 2 1 1 3 2 1,460	LF EA EA EA EA EA EA EA EA EA EA EA

21 POWER CABLE (2016) 216 24 POWER CABLE (2016) 300 24 POWER CABLE (2016) 300 25 POWER CABLE (2016) 300 27 SIGNAL HEAD (3 SCITION, 17, LED) 42 29 POSTRIAL NEAD (3 SCITION, 17, LED) 4 29 POSTRIAL NEAD (3 SCITION, 17, LED) 4 29 POSTRIAL NEAD (3 SCITION, 17, LED) 4 20 ACCESSIBLE PROCENTIAL NEAD (37, STEPM) 5 21 RTZ CAMCRA 1 28 PRESCHARL (2016) (2017) (2017) 1 29 RETECTANAL SIGNAL CAMINET 1 20 STETELTRANK SIGNAL (2017) 1 21 RESTRIM SIGNAL (2017) 1 21 RESTRIM SIGNAL (2017) 1 22 RESTRIM SIGNAL (2017) 1 23 RESTRIM SIGNAL (2017) 1 24 RESTRIM SIGNAL (2017) 1 25 RESTRIM SIGNAL (2017) 1 26 RESTRIM SIGNAL (2017) 1 27		\sim	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
PA POWER CABLE (2028) 530 PA CABLE (2028) 530 PA CABLE (2028) 520 PA CABLE (2028) 520 PA SIGNAL HEAD (3 SECTION, 127, 120) 12 PA SIGNAL HEAD (3 SECTION, 127, 120) 12 PA SIGNAL HEAD (3 SECTION, 127, 120) 9 PA CAECESSIBLE PEDESTMAN SIGNAL 9 PA PERSONAL CODE OF ADADA EDTECTION SYSTEM 5 PA PERSONAL CODE OF ADADA EDTECTION SYSTEM 1 PA ADATESTMAN SIGNAL CODE OF ADADA EDTECTION SYSTEM 1 PA PERSONAL CODE PERSONAL CODE DTECTION SYSTEM </td <td>\$</td> <td>73</td> <td>POWER CABLE (2C#10)</td> <td>210</td>	\$	73	POWER CABLE (2C#10)	210
	(74	POWER CABLE (3C#8)	530
19 DOTO: DOD 20 RAAM CABLE EAD 21 SIGNAL READ 13 SCTION, 12', LED; 12 22 SIGNAL READ 13'SCTION, 12', LED; 12 23 SIGNAL READ 13'SCTION, 12', LED; 14 24 POSTRIA N GRAL READ 10', LED; 9 24 ACCESSIGN PERDETIAN SCIENTIAL 9 24 ACCESSIGN SCIENTIAL READ 10', LED; 1 28 NETCONEX 1 28 STERTIN SCIENTIAL ROLL W/ ACCESSITION ALL 1 28 NETTING SCIENTIAL ROLL W/ ACCESSITION ALL 1 28 NETTING SCIENTIAL ROLL W/ ACCESSITION ALL 1 29 ROLL Y/ ACCESSITION PORTUNAL ROLL W/ ACCESSITION ALL 1 20 RUSTING SCIENTIAL ROLL RUNDVAL 1 1 21 RADUST TOLL RUNDVAL 1 1 1 22 RUSTING SCIENTIAL ROLL RUNDVAL 1 1 1 24 RUSTING SCIENTIAL ROLL RUNDVAL 1 1 1 24 MUSTING SCIENTIAL ROLL RUNDVAL 1 1	(75		160
Paint Data Data 17 SignA, HEAD (\$SECTION, 17", LED) 12 18 SIGNA, HEAD (\$SECTION, 17", LED) 9 18 ACCESSINE FEDER INFLAM SIGNAL 9 18 TELESTIMUS SIGNAL-HEAD (SECTION SISTIM 5 19 TELESTIMUS SIGNAL CADA DETECTION SISTIM 5 18 TELESTIMUS SIGNAL CADA DETECTION SISTIM 1 18 TELESTIMUS SIGNAL CADA DETECTION SISTIM 1 18 MEETER CAN & SETIMUS CACCES DETWINE 1 18 MEETER CAN & SETIMUS CACCES DETWINE 1 19 SISTIEFT TRAVE SIGNACE 4 20 VESTIMUS CANALEREMOVAL 1 20 VESTIMUS CANALEREMOVAL 1 21 DESTIMUS CANALEREMOVAL 1 22 DESTIMUS CANALEREMOVAL 1 23 DESTIMUS CANALEREMOVAL 1 24 DESTIMUS CANALEREMOVAL 1 25 POSTIMUS CANALEREMOVAL 1 26 DESTIMUS CANALEREMOVAL 1 27 DESTIMUS CANALEREMOVAL 1	$\left.\right>$	75		100
7/ SUMAL HAULSSELING, 17, 100 12 7/ SUMAL HAULSSELING, 120, 120 4 7/ SUMAL HAULSSELING, 120, 120 9 8/ ACCESSION CARNER, 120, 120, 120, 120, 120, 120, 120, 120	\mathbf{b}	76	RADAR CABLE	820
28 SIGNAL READ (55 SCHOR), 127, LED) 4 29 PROSTRAMS SCAL READ (57, LED) 9 28 ACCSSIME PROSTRAM SIGNAL 9 28 TREAMAL VEGO DI RADAR DETECTOR SYSTEM 5 24 TREAMAL VEGO DI RADAR DETECTOR SYSTEM 1 28 TREAMEL VEGO DI RADAR DETECTOR SYSTEM 1 28 TREAMEL VEGO DI RADAR DETECTOR SYSTEM 1 28 STREET INAME SIGNAGE 1 28 STREET INAME SIGNAGE 4 20 STREET INAME SIGNAGE 4 20 STREET INAME SIGNAGE 4 20 STREET INAME SIGNAGE 7 20 STREET INAME SIGNAGE 5 21 STREET SIGNAGE SIGNAGE RAMOVAL 1 23 STREET INAME SIGNAGE 5 24 MCP SIGNAGE 77 25 STREET SIGNAGE SIGNAGE RAMOVALINITICE 10	(//	SIGNAL HEAD (3 SECTION, 12", LED)	12
29 FEESTIRAN SIGNAL HEAD LIG. (LED) 9 28 ACCESSING FEEDSTRAN BIOSANAL HEAD LIG. (LED) 1 28 AVETTICK SIGNAL CABINIT 1 29 AVETTICK SIGNAL AND LIG. (LED) 1 29 AVETTICK SIGNAL AND LIG. (LED) 1 29 AVETTICK SIGNAL AND LIG. (LED) 1 20 AVETTICK SIGNAL AND LIG. (LED) 1 21 AVETTICK SIGNAL AND LIG. (LED) 1 22 AVETTICK AND AVETTICK AND LIG. (LED) 1 23 AVETTICK AND AVETTICK AND LIG. (LED) 1 24 AVETTICK AND AVETTICK AND LIG. (LED) 1 25 POST 4 10 24 AVETTICK AND AVETTICK AND LIG. (LED) <td< td=""><td>(</td><td>78</td><td>SIGNAL HEAD (4 SECTION, 12", LED)</td><td>4</td></td<>	(78	SIGNAL HEAD (4 SECTION, 12", LED)	4
80 ACCESSIBLE PEDESTINAL SOLVAL 9 81 THERMAL VISEO OF RADAR DETECTION SYSTEM 5 82 PTZ CAVERA 1 83 THERMAL VISEO OF RADAR DETECTION SYSTEM 1 84 MATTERINA TE VODULE V/X AS/25 SOFTWARE 1 85 MINTERION TE VODULE V/X AS/25 SOFTWARE 1 86 MINTERION TE VODULE V/X AS/25 SOFTWARE 1 87 STIELT FAMPE STORMAGE 4 88 MINTERION TE VODULE V/X AS/25 SOFTWARE 1 97 RESTING SCAULE REMOVAL 1 98 RESTING SCAULE REMOVAL 1 90 RESTING SCAULE REMOVAL 1 91 RESTING SCAULE REMOVAL 1 92 RESTING SCAULE REMOVAL 1 93 RESTING SCAULE REMOVAL 1 94 RESTING SCAULE REMOVAL 1 95 RESTING SCAULE REMOVAL 1 96 RESTING SCAULE 2 96 RESTING SCAULE 2 97 RESTING SCAULE 2	7	79	PEDESTRIAN SIGNAL HEAD (16", LED)	9
8) THERMAL WIPCO DRADAR DETECTION SYSTEM 5 8) PPC CAMERA 1 8) PREFIGURAL CABINET 1 8) WIRESCONSUBSCREER UND IT 1 8) MARTSCONSUBSCREER UND IT 1 8) MARTSCONSUBSCREER UND IT 1 9) MUST TRAINING BRACON 1 1 9) MUST TRAINING BRACON 1 1 10) MARTSCONSUBSCREER UND INTERNOVAL 1 1 11 TRAITSCONSUBSCREER UND INTERNOVAL 1 1 11 MUST SCONSUBSCREER UND INTERNOVAL 1 1 11 TRAITSCONSUBSCREER UND INTERNOVAL 1 1 11 TRAITSCONSUBSCREER UND INTERNOVAL 1 1 11 MUSTSCONSUBSCREER UND INTERNOVAL	$\left.\right>$	80	ACCESSIBLE PEDESTRIAN SIGNAL	9
88 PTZ CANERA 1 89 TRAFFIC SIGNAL CARNET 1 80 MERLES SUBSCIERTURIT 1 80 WIRLES SUBSCIERTURIT 1 80 MERLES SUBSCIERTURIT 1 80 WIRLES SUBSCIERTURIT 1 80 MERLES SUBSCIERTURIT 1 80 SERTER NAME SCHAGE 4 80 VERSTING SCHALERXOVAL 1 90 ADUET SCHAL TROBE RACON 1 91 ADUET SCHAL TROBE RACON 1 92 ADUET SCHAL TROBE RACON 1 93 ADUET SCHAL TROBE RACON 1 94 MEP SCHAL 10 95 ADUET AND ANCHINE VARIANCIA 1 96 ADUET ANCHAR AND ANCHAR AND ANCHARING 1 97 ANCHAR SCHAL TROP NARIANCIA 1 98 ADUET ANCHAR ANCHARING ANCHARING 1 97 ANCHAR SCHAL ANCHAR 3 98 ANCHAR ANCHARING ANCHARING 2 99 ANCHAR ANCHARANCHARANCHAR	C	81	THERMAL VIDEO OR RADAR DETECTION SYSTEM	5
B TAYTIC SIGNAL CASHET 1 B4 SAFTRAN IC MODULE W/ ASC/3 SOFTWARE 1 B5 MARTER CAN & BIERAKH BOX 1 B5 MATTER CAN & BIERAKH BOX 1 B7 STITT MART SIGNAGE 4 B8 MAST ARM SIGNAGE 4 B8 MAST ARM SIGNAGE 4 B8 MAST ARM SIGNAGE 1 B9 YELIOW MARK SIGNAGE 1 B1 JOUST SIGNAL IRMOVAL 1 B1 ADUST SIGNAL IRMOVAL 1 B2 SIGNAL IRMOVAL 1 B3 SIGNAL IRMOVAL 10 B4 SIGNAL IRMOVAL ILLINE 10 B4 SIGNAL IRMOVAL ILLINE IRMOVAL 2	(82	PTZ CAMERA	1
84 SH FERRAN LE MORDLE WY ASC/3 SOF TWARE 1 85 WIRELESS SUBSCRIBER UNIT 1 86 METERN LE MORDLE WY ASC/3 SOF TWARE 1 87 STREET MARE SUBSCRIBER UNIT 1 87 STREET MARE SUBSCRIBER UNIT 1 88 MIST ARM SUBAGE 4 88 MIST ARM SUBAGE 4 80 MIST ARM SUBAGE 4 80 MIST ARM SUBAGE 4 80 MIST ARM SUBAGE 1 91 ADLIST FOLLADY RUMARINES 7 92 DISTING PEDESTAL POLE REMOVAL 1 93 ADLIST FOLLADY RUMARINES 7 94 MARP SUBASE 663 95 POST 663 96 POST RUMARINES UNE (PARTIN 2.560 101 4' WHITE (THERMOPLASTIC) 70 102 4' SOLD WHITE CONSTRUCT (PARTIN) 2.560 103 4' SOLD WHITE CONSTRUCT (PARTIN) 1.00 104 4' SOLD WHITE CONSTRUCT (PARTIN) 1.00 104	7	83	TRAFFIC SIGNAL CABINET	1
85 WIRLESS SUBSCRIBEN UNIT 1 86 WIRLESS SUBSCRIBEN UNIT 1 87 STREET ANA & BERAKER BOX 1 88 MAST ARM SIGKAGE 4 88 MAST ARM SIGKAGE 1 97 DEVELOW TRAINING & HEAD LOCATIONS 7 92 SUSTING PEDESTAL POLE REMOVIAL 1 11 TRAFFIC SIGRAGE AND PAYMEMENT MARKINGS 5777 95 DIST 6653 96 POST ANCHOR 12 X27 101 97 ANCHORALISTICY (21/472-147) 665 98 CONCRETE SUBRACE ANCHOR 38 99 PAYER ANCHORALD SIEVET 4 90 MAST ARANCHORALD SIEVET 4 910 RESOLD WHITE CRASSING IN REMOPIASTIC) 2,240 912 SOLD WHITE CRASSING IN REMOPIASTIC) 2,240 913 REMOV	$\left.\right>$	84	SAFETRAN 1C MODULE W/ ASC/3 SOFTWARE	1
B METERCAN & BREAKEB BOX 1 B* STREET NAME SIGNAGE 4 B* MAST AND SIGNAGE 4 B* DISTING SIGNAL REMOVAL 1 B* VELOW FLASHING REACON 1 B* DISTING PODESTAL POLE REMOVAL 1 B* ADULST PULLBOX SIGNAL! 1 B* ADULST PULLBOX SIGNAL! 1 B* OCTA ARCHOR (2*27*) 104 B* ONT ARCHOR (2*27*) 104 B* CONCRETS BRACE ANCHOR 36 B* ONT ARCHOR (2*27*) 104 B* CONCRETS BRACE ANCHOR 36 B* PAVITI ANCHOR AND SILEVE 4 B MICHON HER ANDRING (CAMARS (1HEMOPLASTIC) 2500 B* SOLD WHITE CONDUCTOR (CAMARS (1HEMOPLASTIC) 2079 DIS SOLD WHITE CONDUCASTICH (PAINT) 50	Ç	85		1
D Instructure 1 B STREET NAME SIGNAGE 4 B MAST ARM SIGNAGE 4 B DESTING SIGNAL REMOVAL 1 9 ADJUST SIGNAL REMOVAL 1 9 ADJUST SIGNAL REMOVAL 1 9 MER SIGNAL SEMOVAL 1 9 ADJUST SIGNAL REMOVAL 1 9 MER SIGNAL SEMOVAL 1 10 ALSIONAL MARCHARK MERING THERMORING MERING SEMOVAL 2 10 MER SIGNAL SEMOVAL 2 10 MER SIGNAL SEMOVAL 2 10 MER SIGNAL	(86		1
ab MARCH TANKES GAAGE 4 bit MARCH TANKES GAAGE 4 bit MARCH TANKES GAAGE 4 bit ADUST SIGMAL REMOVAL 1 bit ADUST SIGMAL TIMMES & HEAD LOCATIONS 7 bit ADUST PULDBOX (SIGMAL) 1 bit ADUST PULDBOX (SIGMAL) 1 TAFFIC - SIGMAGE AND PAVEMENT MARKINGS 77 bit ADUST PULDBOX (SIGMAL) 1 TAFFIC - SIGMAGE AND PAVEMENT MARKINGS 777 bit CONCINTER UNA CEL ACCION 36 bit CONCINTER UNA CHARCINET 30 bit C	7	07		1
BB MAST RAW SIGNAGE 4 BD DISTING FEMENTAL 1 BD AULUST SIGNAL REMOVAL 1 BD MER SIGNAL REMOVAL 10 BD AULUST SIGNAL REMOVAL 10 BD AULUST SIGNAL REMOVAL 2.30 BD AULUST SIGNAL REMOVE SIGNAL SIGNAL SIGNAL SIGNAL SIGNAL SIGNAL SIGNAL SIGNAL SIGNAL SIGNA	$\left.\right>$	8/		4
89 EXSTING SIGNAL REMOVAL 1 90 YELLOW TASHING BARGADING 1 91 ADJUST SIGNAL TIMING & HEAD LOCATIONS 7 92 EXISTING PEDESTAP DUE REMOVAL 1 94 AUDET DUE REMOVAL 1 94 MORT PEDESTAP DUE REMOVAL 1 95 POST 653 96 POST ANCHOR (7X27) 104 97 POST ANCHOR (7X27) 104 98 POST SUBJECT (2 1/4") 66 90 POST SUBJECT (2 1/4") 106 91 BOST ANCHOR (7X27) 2,640 103 4" SOLD WHITE CHORNING THE MARKING THE MORPLASTIC) 2,640 104 4" SOLD WHITE CHORNING (FAMRIST (FMARKIST) 2,660 105 4" SOLD WHITE CHORNING (FAMRIST (FMARKIST) 2,660 106 #SOLD WHITE CHORNING (FAMRIST (FMARKIST) 2,073 107 12" SOLD WHITE CHORNING (FAMRIST (FMARKIST) 2,011 108 #SOLD WHITE CHORNING (FAMRIST (FMARKIST) 2,011 109 12" SOLD WHITE CHORSHALCHORASTIC) 34	ς	88	MAST ARM SIGNAGE	4
9 YELOW FLASHING BLACON 1 91 ADUST PULLBOX ISIGNAL 1 92 EXISTING PEDESTAL POLE REMOVAL 1 93 ADUST PULLBOX ISIGNAL 1 94 MEP SIGNAL TIMONS & HAD EVACINONS 377 95 POST 653 94 MEP SIGNS 377 95 POST ACCHOR (2 X2') 104 97 ANCHOR SLEEVE [2-1/4"X2-1/4") 666 98 CONCRETTS JURFACE ANCHOR 36 97 PAVER ANCHOR AND SLEEVE 4 100 RRF3 8 101 d" WHITE PARKING UNE (PAINT) 2,560 102 d" SOLD WHITE PARKING UNE (PAINT) 2,500 103 d" SOLD WHITE PARKING UNE (PAINT) 20 105 d" SOLD WHITE PARKING UNE (PAINT) 20 106 d" SOLD WHITE PARKING UNE (PAINT) 20 107 DEVELOW UNE PARKING UNE (PAINT) 20 108 LPSOLD WHITE PARKING THC (PAINT) 50 109 14 SOLD WHITE PARKING THC (PAINT) <t< td=""><td>(</td><td>89</td><td>EXISTING SIGNAL REMOVAL</td><td>1</td></t<>	(89	EXISTING SIGNAL REMOVAL	1
91 ADJUST SIGNAL TIMING & HEAD LOCATIONS 7 92 EXISTING PEDESTAL POLICE BENOVAL 1 93 ADJUST PULLBOX [SIGNAL] 1 14 MEP SIGNS 377 95 POST 653 96 POST ANCHOR (2X2) 104 97 MICHOR SIEVE (2:) 4/2X2-1/4/9 666 98 POST ANCHOR (2X2) 104 100 REFE 8 11 AWHIE [THERWOPLASTIC] 2,340 102 A* SOLD WHITE PARKING TICK MARKS (THERMOPLASTIC) 900 103 FOLD WHITE PARKING TICK MARKS (THERMOPLASTIC) 900 104 A*UHIE PARKING TICK MARKS (THERMOPLASTIC) 900 105 SOLD WHITE COSSWALK LINE (EPOXY) 1,201 106 SOLD WHITE COSSWALK LINE (EPOXY) 2,211 107 L* SOLD WHITE CORSENANCE (FAINT) 60 108 SOLD WHITE CORSENANCE (FAINT) 60 109 L* SOLD WHITE CORSENANCE (FAINT) 60 109 L* SOLD WHITE SOTP BAA (EPOXY) 221 100 M	(90	YELLOW FLASHING BEACON	1
92 EXISTING FEDESTAL POLE REMOVAL 1 13 ADJUST PULBOX (SIGNAL) 1 14 TRAFFC - SIGNAGE AND PACEMENT MARKINGS 377 15 POST 653 16 MEP SIGNAS 377 16 MAP SIGNAS 377 17 95 POST 16 MACHOR SLEEVE (2-1/47X-21/47) 104 17 ANCHOR SLEEVE (2-1/47X-21/47) 66 18 PONTE ANCHOR AND SLEEVE 4 100 REPS 8 101 PARTE ANCHOR AND SLEEVE 4 102 A*SOLID WHITE PARKING ILNE (PAINT) 2,340 103 4*SOLID WHITE CROSSWALK LINE (EPONY) 1.201 105 A*SOLID WHITE CROSSWALK LINE (EPONY) 1.201 106 PSOLID WHITE CROSSWALK LINE (EPONY) 2.50 107 2*SOLID WHITE CROSSWALK LINE (EPONY) 2.51 108 LE*SOLID WHITE CROSSWALK LINE (EPONY) 2.51 109 HITE TRICK MARKOW (PRE FORMED THERMOPLASTIC) 2 1010 WHITE CROSSWALK LINE (ENDING MA	$\left.\right>$	91	ADJUST SIGNAL TIMING & HEAD LOCATIONS	7
93 ADJUST PULIBOX (SICMAL) 1 ITRAFIC - SIGNAGE AND PAVEMENT MARKINGS 377 94 MEP SIGNAS 377 95 POST 653 97 ANCHOR SLEEVE (12-47/X2-1/47) 66 98 CONCRETE SURFACE ANCHOR 36 97 ANCHOR SLEEVE (12-47/X2-1/47) 66 98 CONCRETE SURFACE ANCHOR 36 99 PAVER ANCHOR AND SLEEVE 4 100 RIFE 8 101 41 SOLID VIELTE PARINE GUNE (FAINT) 2,340 103 4' SOLID WHITE ECROSHAUK UNE (FEOXY) 1,201 104 4' SOLID VIELTE OPEN (INCK MARKS CHIRRIDPLASTIC) 9,079 105 5' SOLID WHITE ECROSHAUK UNE (FEOXY) 1,201 106 3' SOLID WHITE ECROSHAUK UNE (FEOXY) 2,211 107 12' SOLID WHITE ECROSHAUK UNE (FRANDPLASTIC) 2 108 12' SOLID WHITE ECROSHAUK UNE (FRANDPLASTIC) 2 112 ACCESSING ON SIGNAL POLE 1 113 INTERT UNITINA RE (FOXY) 2 114 REMO	ς	92	EXISTING PEDESTAL POLE REMOVAL	1
ITRAFF.C. SIGNAGE AND PAVEMENT MARKINGS 377 94 MCP SIGNS 377 95 POST 6633 96 OST ANCHOR (2*/27) 104 97 ANCHOR SLEEVE (2-)47X2-1/47) 66 98 CONCRETS WARKE ANCHOR 36 99 AVER ANCHOR AND SLEEVE 4 100 RR5 8 101 4* WHITE (THERMOPLASTIC) 2.340 102 4* SOLID WHITE PARKING ILKE (PAINT) 2.560 103 4* SOLID WHITE PARKING ILKE (PAINT) 2.560 104 4* SOLID WHITE CROSSMATCH (PAINT) 2.560 105 4* SOLID WHITE CROSSMATCH (PAINT) 30 105 5* SOLID WHITE CROSSMATCH (PAINT) 30 107 12* SOUD WHITE STOP BAR (EPOXY) 251 110 WHTE TURN ARROW (PRE-FORMED TERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 113 REMOVAL - LUMINARE, BRAKET ARM, CABLE & WOOD POLE 5 114 REMOVAL - LUMINARE, BRAKET ARM, CABLE & WOOD POLE 5 115 B	(93	ADJUST PULLBOX (SIGNAL)	1
94 MEP SIGNS 377 95 POST 663 97 ANCHOR SLEEVE (2:1/4"X2") 104 97 ANCHOR SLEEVE (2:1/4"X2.1/4") 66 98 CONCRETE SUBRACE ANCHOR 36 99 PAVER ANCHOR AND SLEEVE 4 100 RRE 8 101 d" WHITE (THERMOPLASTIC) 2.340 102 d" SOLID WHITE PARKING LINE (PONT) 2.560 103 d" SOLID WHITE RARKING CINC (MARKS (THERMOPLASTIC) 90 106 d" SOLID WHITE COSSWALK LINE (EPONT) 1.201 107 12' SOLID WHITE COSSWALK LINE (EPONT) 1.201 108 12' SOLID WHITE COSSWALK LINE (EPONT) 60 109 12' SOLID WHITE COSSWALK LINE (EPONT) 60 109 12' SOLID WHITE STORE PARKOPLASTIC) 24 110 WHITE TURN ARBOW (PRE-FORMED THERMOPLASTIC) 24 120 COSSMALL LUNINAIRE, RESORET THERMOPLASTIC) 24 121 ACCESSIBLE PAVEMENT MARRING 5 5TREET UGHTING 5 5 113 <td>(</td> <td>TRAFFIC</td> <td>C - SIGNAGE AND PAVEMENT MARKINGS</td> <td></td>	(TRAFFIC	C - SIGNAGE AND PAVEMENT MARKINGS	
95 POST 653 96 POST ANCHOR (2*X2*) 164 97 NACHOR SLEVE (2-1/4*X2-1/4*) 66 98 CONCRTE SUMACE ANCHOR 36 99 PAVER ANCHOR AND SLEVE 4 100 RP3 8 101 4* WHITE (THERMOPLASTIC) 2.300 102 4* SOLID WHITE PARKING TICK MARKS (THERMOPLASTIC) 90 103 4* SOLID WHITE CROSSWALK LINE (EPOXY) 1.201 106 8* SOLID WHITE CROSSWALK LINE (EPOXY) 1.201 107 15* SOLID WHITE CROSSWALK LINE (EPOXY) 2.51 108 12* SOLID WHITE CROSSWALK LINE (EPOXY) 2.51 109 12* SOLID WHITE CROSSWALK (INC (FANTY) 50 100 WHITE UNA SROW (PRE-FORMED THERMOPLASTIC) 2 110 WHITE CONLY* (PRE-FORMED THERMOPLASTIC) 2 111 WHITE CONLY* (PRE-FORMED THERMOPLASTIC) 2 112 ILMANARE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAK	>	94	MEP SIGNS	377
9 POST ANCHOR (2*X2*) 104 97 ANCHOR SLEEVE (2-1/4*X2-1/4*) 66 98 CONCRETE SURFACE ANCHOR 36 97 PAVER ANCHOR AND SLEEVE 4 100 RFB 8 101 4* "WHTE (THERMOPLASTIC) 2,340 102 4* SOLID WHTE PARKING UNE (PAINT) 2,550 103 4* SOLID WHTE PARKING UNE (PAINT) 2,550 104 4* SOLID WHTE CROSSWALK UNE (EPOXY) 1,201 105 6* SOLID WHTE CROSSWALK UNE (EPOXY) 1,201 106 8* SOLID WHTE CROSSWALK UNE (EPOXY) 2,211 107 12* SOLID WHTE CROSSWALK UNE (EPOXY) 2,251 108 12* SOLID WHTE STOR PAR (EPOXY) 2,51 109 VHTE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 REMOVAL - UNINAIRE, BRAKET ARM, CABLE & METALPOLE 19 112 ACCESSBLE PAVEMENT MARKING 5 5 5 5 5 112 LUMINAIRE, BRAKET ARM, CABLE & METALPOLE 19 113 REMOVAL - UNINAIRE, BRAKET ARM, CABLE & METALPOLE	\mathbf{b}	95	POST	653
International (International International Internation Internation International Internatinterecon International International International Intern		96	POST ANCHOR (2"X2")	10/
PARTICIPAL CLEAR ACT # 1 B0 98 CONCERT SURFACE ANCHOR 38 99 PAVER ANCHOR AND SLEVE 4 100 RRFB 8 101 4" WHITE (THEERMOPLASTIC) 2,340 102 4" SOLD WHITE PARKING LINE (PAINT) 2,560 103 4" SOLD WHITE PARKING TIKE MARKIS (THERMOPLASTIC) 9,079 104 4" SOLD WHITE CONSWALK UNE (FOOXY) 1,201 105 6" SOLD WHITE CONSWALK UNE (FOOXY) 1,201 106 8" SOLD WHITE CONSWALK UNE (FOOXY) 1,201 107 12" SOLD WHITE CONSWALK UNE (FOOXY) 251 108 12" SOLD WHITE CONSWALK UNE (FOOXY) 251 109 24" SOLD WHITE CONSWALK UNE (FOOXY) 251 110 WHITE CUNN ARKOW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE CUNN ARKOW (PRE-FORMED THERMOPLASTIC) 24 120 ACCESSIBLE PAVEMENT MARKING 5 5 5 5 16 111 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 1131 REMOVAL - LUMINAIRE, BRAKET ARM,	(50	ANCHOR SLEEVE (2.1/4"X2.1/4")	104 CC
Instruction 36 199 PARKER ANCHOR AND SLEEVE 4 100 IRREB 8 101 4" WHITE (THERMOPLASTIC) 2,340 102 4" SOLID WHITE PARKING TICK MARKE (THERMOPLASTIC) 90 103 4" SOLID WHITE PARKING TICK MARKE (THERMOPLASTIC) 90 104 F SOLID WHITE PARKING TICK MARKE (THERMOPLASTIC) 90 105 F" SOLID WHITE PARKING TICK MARKE (THERMOPLASTIC) 90 107 12" SOLID WHITE DORSWALK LINE (EPOXY) 1,211 108 12" SOLID WHITE ORDER LINE (THERMOPLASTIC) 34 109 HITE TOWN BARCE (PEOKN) 251 100 WHITE WITE TOW BAR (EPOXY) 251 101 WHITE WITE AND ARGUE (PENCOMED THERMOPLASTIC) 34 111 WHITE WITE TOW BARCE ARM, CABLE & METAL POLE 19 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOV	2	3/		20
99 PAVER AND CHAND SLEVE 4 100 RFB 8 101 4"WHTE [THERMOPLASTIC] 2,340 102 4" SOLID WHITE PARKING LINE (PAINT) 2,550 103 4" SOLID WHITE PARKING LINE (PAINT) 2,550 104 4" SOLID WHITE CROSSWALK LINE (EPOXY) 1,201 105 6" SOLID WHITE CROSSWALK LINE (EPOXY) 1,201 106 8" SOLID WHITE CROSSWALK LINE (EPOXY) 70 107 12" SOLID WHITE CROSSWALK LINE (EPOXY) 251 110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 5 5 5 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 INSTALL - LUMINAIRE, BRAKET ARM & CABLE & WOOD POLE 1 114 REMOVAL - LUMINAIRE, BRAKET ARM & CABLE & WOOD POLE 1 115 INSTALL - LUMINAIRE, BRAKET ARM & CABLE & WOOD POLE 1 <	>	98		3b -
100 RRF B 8 101 4" WHITE ITHERMOPLASTIC) 2,340 102 4" SOLID WHITE PARKING LINE (PAINT) 2,560 103 4" SOLID WHITE PARKING TICK MARKS (THERMOPLASTIC) 90 104 4" SOLID WHITE PARKING LINE (PONY) 1,211 105 6" SOLID WHITE DOTTED LINE (THERMOPLASTIC) 70 106 8" SOLID WHITE DOTTED LINE (THERMOPLASTIC) 70 107 12" SOLID WHITE TOR BAR (PONY) 2,51 108 12" SOLID WHITE TOR BAR (PONY) 251 110 WHITE TORN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TORN ARR (PONY) 2,51 112 WHITE TORN ARR (PONY) 2,51 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MODO POLE 5 115 INSTALL - LUMINAIRE, BRAKET ARM, CABLE & WODO POLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM, CABLE & WODO POLE 1 113 ILMINIAIRE TYPE B 2 2 114 REMOVAL - LUMINAIRE, MAR CABLE & WODO POLE	J	99	PAVER ANCHOR AND SLEEVE	4
101 4" WHITE (THERMOPLASTIC) 2,340 102 4" SOLID WHITE CARKING LINE (PAINT) 2,560 103 4" SOLID WHITE CARKING CIN (ERMOPLASTIC) 90 104 4" SOLID WHITE CARSING ICK MARKS (THERMOPLASTIC) 90 105 6" SOLID WHITE CASSWALK LINE (FPAMOPLASTIC) 70 107 12" SOLID WHITE CASSWALK LINE (FPAMOPLASTIC) 70 107 12" SOLID WHITE CASSWALK LINE (FPAMOPLASTIC) 34 110 WHITE TORSONALK LINE (FPAMOPLASTIC) 251 110 WHITE TORNO (PRE-FORMED THERMOPLASTIC) 2 111 WHITE TONIC (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MODO POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MODO POLE 4 112 MUMINAIRE, BRAKET ARM, CABLE & MODO POLE 1 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MODO POLE 1 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MODO POLE 1	(100	RRFB	8
102 4" SOUD WHITE PARKING UNE (PAINT) 2,560 103 4" SOUD WHITE CARKING TICK MARKS (THERMOPLASTIC) 90 104 4" SOUD VELLOW (THERMOPLASTIC) 90 105 6" SOUD WHITE CROSSWALK LINE (EPOXY) 1,201 106 6" SOUD WHITE CROSSWALK LINE (EPOXY) 1,201 107 12" SOLD WHITE CROSSWALK LINE (EPOXY) 251 108 12" SOLD WHITE CROSSWALT (PAINT) 60 109 24" SOLD WHITE CROSSWALT (PAINT) 60 109 24" SOLD WHITE CROSSWALT (PAINT) 60 110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET UGHTING 5 5 113 REMOVAL - LUMINARE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINARE, BRAKET ARM, CABLE & METAL POLE 1 115 REMOVAL - LUMINARE, BRAKET ARM, CABLE & METAL POLE 1 116 IUMINARE, BRAKET ARM, CABLE & METAL POLE 1 117 RELACE - LUMINARE BRAKET ARM, CABLE & MET	2	101	4" WHITE (THERMOPLASTIC)	2,340
103 4" SOUD WHITE PARKING TICK MARKS (THERMOPLASTIC) 90 104 4" SOUD WHITE CORSWALK LINE (EPOXY) 1.201 105 6" SOUD WHITE CORSWALK LINE (EPOXY) 70 107 12" SOUD WHITE CORSSHATCH (PAINT) 50 108 2" SOUD WHITE CORSSHATCH (PAINT) 60 109 24" SOUD WHITE CORSSHATCH (PAINT) 60 109 24" SOUD WHITE CORSSHATCH (PAINT) 60 109 24" SOUD WHITE CORSSHATCH (PAINT) 60 100 WHITE TORN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TORN ARROW (PRE-FORMED THERMOPLASTIC) 34 112 RAMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MOOD POLE 5 115 INSTALL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MOOD POLE 1 115 INSTALL - LUMINAIRE, BRAKET ARM, CABLE & MOOD POLE 1 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MOOD POLE 1 115 INSTALL - LUMINAIRE, BRAKET ARM, & CABLE 2	\mathbf{b}	102	4" SOLID WHITE PARKING LINE (PAINT)	2,560
104 4"SOLID VELLOW (THERMOPLASTIC) 9,079 105 6"SOLID WHITE CROSSWALK UNE (EPOXY) 1,201 106 8"SOLID WHITE CROSSMATCH (PAINT) 50 107 12"SOLID WHITE CROSSHATCH (PAINT) 60 108 12"SOLID WHITE CROSSHATCH (PAINT) 60 109 24"SOLID WHITE CROSSHATCH (PAINT) 60 100 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING	C	103	4" SOLID WHITE PARKING TICK MARKS (THERMOPLASTIC)	90
105 B* SOLID WHITE CROSSWALK LINE (EPOXY) 1,201 106 B* SOLID WHITE CROSSWALK LINE (EPOXY) 70 107 12* SOLID WHITE CROSSHATCH (PAINT) 50 108 12* SOLID WHITE CROSSHATCH (PAINT) 60 109 24* SOLID WHITE STOP BAR (EPOXY) 251 110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING 1 1 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE B 2 2 121 LUMINAIRE TYPE B 2 2 122 IUMINAIRE TYPE D 12 2 123 BRACKET ARM, 6TOOT, TRUSS TYPE 17 2 124 BRACKET ARM, 6TOOT, TRUSS TYPE 17	(104	4" SOLID YELLOW (THERMOPLASTIC)	9,079
106 B* SOLID WHITE DOTTED LINE (THERMOPLASTIC) 70 107 12* SOLID WHITE CROSSHATCH (PAINT) 50 108 12* SOLID VELIDW CROSSHATCH (PAINT) 60 109 24* SOLID WHITE STOP BAR (EPOXY) 251 110 WHITE TORN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TORN ARROW (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 5TREET LIGHTING 5 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 117 REPLACE - LUMINAIRE REVER TARM, CABLE & WOOD POLE 1 118 LUMINAIRE TYPE 0 2 2 120 LUMINAIRE TYPE 0 22 2 121 LUMINAIRE TYPE 0 32 2 122 POLE, METAL, FOR 3S FT LUMINAIRE MOUNTING HEIGHT 32 2 124 BRACKET ARM	2	105	6" SOLID WHITE CROSSWALK LINE (EPOXY)	1,201
100 100 <td>$\left.\right>$</td> <td>106</td> <td>8" SOLID WHITE DOTTED LINE (THERMOPLASTIC)</td> <td>70</td>	$\left.\right>$	106	8" SOLID WHITE DOTTED LINE (THERMOPLASTIC)	70
10 12 SOLD VELUX CROSSHATCH (PAINT) 60 108 12" SOLD VELUX CROSSHATCH (PAINT) 60 109 24" SOLD WHITE STOP BAR (EPOXY) 251 110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE 'ONLY' (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING 11 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 READUAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 116 INSTAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE A 2 121 LUMINAIRE TYPE B 2 122 POLE, METAL, FOR 3S FT LUMINAIRE MOUNTING HEIGHT 32 122 IDIA MARKET ARM, G FOOT, SINGLE MEMBER 12 122 BRAKET ARM, G FOOT, SINGLE MEMBER 12 123 BRACKET ARM, 12 FOOT, TRUSS TYPE 4 124 BRACKET ARM, 12 FOOT, TRUSS TYPE	Ç	107		50
105 12" SOLD TELLOW CROSSNATCH (PAINT) 60 105 12" SOLD WHITE STOP BAR (EPOXY) 251 110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING 5 STREET LIGHTING 5 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 116 INSTALL - LUMINAIRE, DISGNAL POLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE B 2 121 LUMINAIRE TYPE B 12 122 POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 10 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 12 FOOT, TRUSS TYPE 17 126 BRACKET ARM, 12 FOOT, TRUSS TYPE 32 127 ID LABELS KCMO: FOR LUMINAIRE MOUNTING HEIGHT 3	(107		50
109 24* SOLD WHITE STOP BAR (EPOXY) 251 110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE "ONL" (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING 5 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 4 117 REPLACE - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 118 LUMINAIRE TYPE A 2 10 120 LUMINAIRE TYPE B 2 12 121 UMINAIRE TYPE B 2 12 122 POLE, METAL, FOR 3S FT LUMINAIRE MOUNTING HEIGHT 32 12 123 BRACKET ARM, 10 FOOT, SINUSE TYPE 17 12 124 BRACKET ARM, 10 FOOT, TRUSS TYPE 4 126 125 BRACKET ARM, 10 FOOT, TRUSS TYPE 32 12	7	108		60
110 WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC) 34 111 WHITE "ONLP" (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING 1 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 1 117 REPLACE - LUMINAIRE DISIGNAL POLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE B 2 121 LUMINAIRE TYPE C 16 122 POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 0 FOOT, TRUSS TYPE 17 124 BRACKET ARM, 12 FOOT, TRUSS TYPE 4 126 ANT-THEFT DEVICE (8') 32 127 ID LABELS KCMC: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 35 128 REAKAWAY KITS, HEB UNEDED 32 127 ID LABE	$\left.\right>$	109	24" SOLID WHITE STOP BAR (EPOXY)	251
111 WHITE "ONLY" (PRE-FORMED THERMOPLASTIC) 2 112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING 5 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM & CABLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM & CABLE 2 117 REPLACE - LUMINAIRE, DISAKET ARM & CABLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE B 2 121 DUMINAIRE TYPE B 12 122 POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 10 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 10 FOOT, TRUSS TYPE 4 126 ANTI-THEFT DEVICE (8") 32 127 ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 35 128 BRACKET ARM, 12 POOT, TRUSS TYPE 4 126 ANTI-THEFT DEVICE (8") 32 127 ID LABELS KCMO: FOR LUMINAIRE POLES	ς	110	WHITE TURN ARROW (PRE-FORMED THERMOPLASTIC)	34
112 ACCESSIBLE PAVEMENT MARKING 5 STREET LIGHTING	(111	WHITE "ONLY" (PRE-FORMED THERMOPLASTIC)	2
STREET LIGHTING 113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MOOD POLE 19 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM & CABLE 5 116 INSTALI - LUMINAIRE, BRAKET ARM & CABLE 1 117 REPLACE - LUMINAIRE EN SIGNAL POLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE B 2 121 LUMINAIRE TYPE D 22 122 DEL, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 0 FOOT, SINGLE MEMBER 12 124 BRACKET ARM, 12 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 12 FOOT, TRUSS TYPE 4 126 ANTI-THEFT DEVICE (8") 32 127 DI LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 32 128 BRACKWAY KITS, HEB FUSED W/ 10A FUSES 64 129 BRACKWAY KITS, HEB UNFUSED 32 130 LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT 1 131 LIGHTING CONTROLLER, 120/240 VOLT 4 CIRC	(112	ACCESSIBLE PAVEMENT MARKING	5
113 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & MOOD POLE 5 114 REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM, & CABLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM, & CABLE 4 117 REPLACE - LUMINAIRE ENISTING ON SIGNAL POLE 1 118 LUMINAIRE TYPE A 2 120 LUMINAIRE TYPE B 2 121 LUMINAIRE TYPE D 22 122 POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 0 FOOT, SINGLE MEMBER 12 124 BRACKET ARM, 10 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 10 FOOT, TRUSS TYPE 32 126 ANTI-THEFT DEVICE (8") 32 127 ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 35 128 BRACKAT ARM, 12 FOOT, TRUSS TYPE 32 129 BREAKAWAY KITS, HEB FUSED W/ 10A FUSES 64 129 BREAKAWAY KITS, HEB FUSED W/ 10A FUSES 64 129 BRORDATING CONTROLLER, 120/240 VOLT 2 CIRCUIT 1 <td>$\left.\right>$</td> <td>STREET</td> <td>LIGHTING</td> <td></td>	$\left.\right>$	STREET	LIGHTING	
114 REMOVAL - LUMINAIRE, BRAKET ARM, & CABLE & WOOD POLE 5 115 REMOVAL - LUMINAIRE, BRAKET ARM & CABLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM & CABLE 4 117 REPLACE - LUMINAIRE ON SIGNAL POLE 1 118 LUMINAIRE TYPE A 2 119 LUMINAIRE TYPE B 2 120 LUMINAIRE TYPE C 16 121 LUMINAIRE TYPE C 16 122 DELE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 0 FOOT, SINGLE MEMBER 12 124 BRACKET ARM, 10 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 12 FOOT, TRUSS TYPE 32 127 ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 35 128 BREAKAWAY KITS, HEB FUSED W/ 10A FUSES 64 129 BREAKAWAY KITS, HEB UNFUSED 32 130 LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT 1 131 LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT 2 132 GROUND ROD 8 133 CABLE-IN-DUCT	\mathbf{b}	113	REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & METAL POLE	19
115 REMOVAL - LUMINAIRE, BRAKET ARM & CABLE 5 116 INSTALL - LUMINAIRE, BRAKET ARM & CABLE 4 117 REPLACE - LUMINAIRE EXISTING ON SIGNAL POLE 1 118 LUMINAIRE TYPE A 2 119 LUMINAIRE TYPE B 2 120 LUMINAIRE TYPE D 122 121 LUMINAIRE TYPE D 22 122 POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 0 FOOT, SINGLE MEMBER 12 124 BRACKET ARM, 10 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 12 FOOT, TRUSS TYPE 4 126 ANTI-THEFT DEVICE (8") 32 127 ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 35 128 BRAKAWAY KITS, HEB UNEVGED 32 130 LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT 1 131 LIGHTING CONTROLLER, 120/240 VOLT 4 CIRCUIT 2 132 GROUND ROD 8 33 133 CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE 5,746 134 T	(114	REMOVAL - LUMINAIRE, BRAKET ARM, CABLE & WOOD POLE	5
116 INSTALL - LUMINAIRE ON SIGNAL POLE 4 117 REPLACE - LUMINAIRE EXISTING ON SIGNAL POLE 1 118 LUMINAIRE TYPE A 2 119 LUMINAIRE TYPE B 2 120 LUMINAIRE TYPE C 16 121 LUMINAIRE TYPE D 22 122 POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT 32 123 BRACKET ARM, 6 FOOT, SINGLE MEMBER 12 124 BRACKET ARM, 10 FOOT, TRUSS TYPE 17 125 BRACKET ARM, 12 FOOT, TRUSS TYPE 4 126 ANTI-THEFT DEVICE (8") 32 127 ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS 35 128 BRACKAT ARM, 12 FOOT, TRUSS TYPE 32 129 BRAKAWAY KITS, HEB FUSED W/ 10A FUSES 64 129 BREAKAWAY KITS, HEB UNFUSED 32 130 LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT 1 131 LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT 2 132 GROUND ROD 8 1 133 CONTON ROD <td< td=""><td>(</td><td>115</td><td>REMOVAL - LUMINAIRE, BRAKET ARM & CABLE</td><td>5</td></td<>	(115	REMOVAL - LUMINAIRE, BRAKET ARM & CABLE	5
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128BREAKAWAY KITS, HEB FUSED W/ 10A FUSES64129BREAKAWAY KITS, HEB UNFUSED32130LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT1131LIGHTING CONTROLLER, 120/240 VOLT 4 CIRCUIT2132GROUND ROD8133CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE5,746134TRENCHING FOR 1" CABLE-IN-DUCT4,3501353" CONDUIT PVC SCH 40 TRENCHED197136LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)27137LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)5138TYPE II PULL BOX2139CABLE #10 RHW/USE (POLE AND BRACKET CABLING)4,698STREETSCAPE140BRICK PAVERS5,279141DECORATIVE CROSSWALK1,317142142DECORATIVE CENTER LOGO11143MOBILITY PARKING SYMBOLS33144PEDESTRIAN GUARDRAIL296145145BENCH3144146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5	7	127	ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS	35
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12.5DICENERVELENTING, ILD ONFOSD32130LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT1131LIGHTING CONTROLLER, 120/240 VOLT 4 CIRCUIT2132GROUND ROD8133CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE5,746134TRENCHING FOR 1" CABLE-IN-DUCT4,3501353" CONDUIT PVC SCH 40 TRENCHED197136LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)27137LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)5138TYPE II PULL BOX2139CABLE #10 RHW/USE (POLE AND BRACKET CABLING)4,698STREETSCAPE14DECORATIVE CROSSWALK1,317142DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5	5	120		27
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136LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)27137LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)5138TYPE II PULL BOX2139CABLE #10 RHW/USE (POLE AND BRACKET CABLING)4,698STREETSCAPE140140BRICK PAVERS5,279141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		135	3" CONDUIT PVC SCH 40 TRENCHED	197
137LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)5138TYPE II PULL BOX2139CABLE #10 RHW/USE (POLE AND BRACKET CABLING)4,698STREETSCAPE1140BRICK PAVERS5,279141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		136	LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)	27
138TYPE II PULL BOX2139CABLE #10 RHW/USE (POLE AND BRACKET CABLING)4,698STREETSCAPE140140BRICK PAVERS5,279141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		137	LUMINAIRE FOUNDATION (CONCRETE BASE PER STORM WATER MODULE)	5
139CABLE #10 RHW/USE (POLE AND BRACKET CABLING)4,698STREETSCAPE140140BRICK PAVERS141DECORATIVE CROSSWALK142DECORATIVE CENTER LOGO143MOBILITY PARKING SYMBOLS144PEDESTRIAN GUARDRAIL145LITTER RECEPTACLES146BENCH147BIKE RACK148DECORATIVE METAL BOLLARD149ACCESS CONTROL BOLLARDS		138	TYPE II PULL BOX	2
STREETSCAPE1,000140BRICK PAVERS5,279141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		139	CABLE #10 RHW/USE (POLE AND BRACKET CABLING)	4,698
140BRICK PAVERS5,279141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		STRFFT	SCAPE	, -
140DIRECTAVENS5,279141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		1/0		5 220
141DECORATIVE CROSSWALK1,317142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		140		5,2/9
142DECORATIVE CENTER LOGO1143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		141		1,317
143MOBILITY PARKING SYMBOLS3144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		142	DECORATIVE CENTER LOGO	1
144PEDESTRIAN GUARDRAIL296145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		143	MOBILITY PARKING SYMBOLS	3
145LITTER RECEPTACLES4146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		144	PEDESTRIAN GUARDRAIL	296
146BENCH3147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		145	LITTER RECEPTACLES	4
147BIKE RACK4148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		146	BENCH	3
148DECORATIVE METAL BOLLARD59149ACCESS CONTROL BOLLARDS5		147	BIKE RACK	4
149ACCESS CONTROL BOLLARDS5		148	DECORATIVE METAL BOLLARD	59
		149	ACCESS CONTROL BOLLARDS	5
		175		

SUMMARY OF QUANTITIES

LF

EA

EA

EA

LF

SF

SF

EA

EA

LF

EA

EA

EA

EA

EA

	210	LF	150	INTERPRETIVE BASE AND FRAME	1	EA	
	530	LF	151	DECORATIVE GRAVEL	185	SF	
	160	LF	152	BULB	1,054	EA	
	820	LF	153	FESCUE TURF SOD	2,804	SY	1
	12	FA	GRFFN	INFRASTRUCTURF	,		
	1	E/ C	154	EXCAVATION (PARKING DETENTION & TREE PLANTERS)	16 970	CV	1
	4		154	ENDANKMENT (DADKING DETENTION & THEET LANTERS)	20		-
	9		155		140		
	9	EA	150		140		
	5	EA	157	4' X 4' TREE GRATE	14	EA	ľ
	1	EA	158	4' DIA. TREE GRATE	1	EA	
	1	EA	159	TREE PLANTERS	12,833	CF	
	1	EA	160	CURBFLOW	6	EA	
	1	EA	161	UNDERDRAIN (W/ CLEANOUTS)	848	LF	
	1	EA	162	UNDERDRAIN & STORMWATER DISTRIBUTION LOOP	1,243	LF	(
	4	EA	163	TREES (2.5" CAL.)	28	EA	(
	4	EA	164	SHRUBS - 3 GAL.	56	EA	
	1	LS	165	TREE ANCHORING SYSTEM	15	EA	
	1	EA	166	PERENNIAL (#1 CONT.)	2,080	EA	ľ
	7	EA	167	PLUG PLANT MATERIAL	644	EA	1
	1	EA	168	PLANTING SOIL	1,020	СҮ	
_	1	FA	169		21	FA	
	-	273	170		28	FA	
	277	SE SE	170		5	EA	
	577		171		3		
	653		1/2		4		-
	104		1/3		8	EA	-
	66	LF	174	MH-1 (5' DIA)	3	EA	-
	36	EA	175	STORM WATER DETENTION (NORTH PARKING LOT)	1	EA	•
	4	EA	176	STORM WATER DETENTION (SOUTH PARKING LOT)	1	EA	
	8	EA	WATER				
	2,340	LF	177	MOBILIZATION	1	LS	
	2,560	LF	178	12" CL 52 DIP ZINC COATED W/ POLYWRAP	2395	LF	
	90	LF	179	12" SOLID SLEEVE	7	EA	(
	9,079	LF	180	12" MJ 45° BEND W/ BACKING BLOCK	18	EA	
	1,201	LF	181	12" x 12" TEE W/ BACKING BLOCK	1	EA	
	70	LF	182	12" x 6" TEE W/ BACKING BLOCK	7	EA	
	50	LF	183	12" GATE VALVE	8	EA	
	60	LF	184	STRADDLE BLOCK	12	EA	1
	251	LF	185	KC-1 SPEC HYDRANT ASSEMBLY	4	EA	
	34	EA	186	FLOWABLE FILL ABANDONMENT (EXISTING 12"CIP)	2180	LF	
	2	EA	187	FLOWABLE FILL ABANDONMENT (EXISTING 10"CIP)	60	LF	1
	5	FA	188	10" SOLID SLEEVE	2	EA	1
		2, (189		2	IF	
	10	FA	190	6" MI 45° BEND W/ BACKING BLOCK	3	FΔ	
_	13 E		101		2	EA	-
_	5		191		2		{
	5		192		7	EA	
	4	EA	193		7	ΕΑ 	-
	1	EA	194		11	ΕA	-
	2	EA	195		13	EA	-
	2	EA	196	1" WATER SERVICE	5	EA	
	16	EA	197	1" WATER METER	4	EA	
	22	EA	198	1.5" WATER SERVICE	1	EA	
	32	EA	199	1.5" WATER METER	1	EA	
	12	EA	200	2" WATER SERVICE	1	EA	
	17	EA	201	2" WATER METER	3	EA	
	4	EA	202	4" WATER SERVICE	1	EA	
	32	EA	203	6" WATER SERVICE	3	EA	
	35	EA	204	6" WATER METER	1	EA	1
	64	EA	205	NEW WATER SERVICE (SIZE UNKNOWN)	1	EA	1
	32	EA	206	CURB STOP	17	EA	1
	1	EA	207	PAVEMENT REPLACEMENT	921	SY	1
	2	EA	208	TRAFFIC CONTROL	1	EA	1
	2	FΔ					l I
	5 7/6		\sim		\sim		
	J,740		T				
	4,550	ᆝᆙᆘ					

ITEM NO.	ITEM DESCRIPTION	APPROXIMATE QUANTITY	U
ROADW	/AY		
1	MOBILIZATION	1	
2	CONSTRUCTION STAKING	1	
3	REMOVAL OF IMPROVEMENTS	1	
4	ROADWAY PAVEMENT (ASPHALT OPTION)	5,882	
	ROADWAY PAVEMENT (CONCRETE OPTION)	,	
5	UNTREATED COMPACTED AGGREGATE (ROADWAY, ALL DEPTHS)	6,789	
6	UNTREATED COMPACTED AGGREGATE (4", SIDEWALK AND RAMPS)	11,902	
7	COMPACTED SUBGRADE (6", ROADWAY)	7,094	
8	CONCRETE CURB & GUTTER (ALL TYPES, ROADWAY)	2,160	
9	CONCRETE COMMERCIAL DRIVE (8", MCIB WA610)	10,994	
10	ASPHALT COMMERCIAL DRIVE (6"+2") TYPE 1-01 & 5-01	8,834	
11		11,902	
12		1,916	
13			~
14		31	
15		9	
17 17			
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18		1	
19	CURB INI FT CI-2 (5'X4')	1	
20	CURB INLET CI-2 (5'X3')	2	
20	CLIRB INLET / GRATE LID ADJUSTMENT	5	
21		<u>J</u>	
22	SANITARY / COMBINED SEWER JUNCTION JID ADJUSTMENT	2	
23	15" RCP (CLASS III)	141	
24	18" RCP (CLASS III)	17	
26		1 704	
27	TYPE II PULL BOX (FIBER OPTIC)	5	
28	96-CT FIBER	2.214	
TRAFFI	L C - SIGNAGE AND PAVEMENT MARKINGS		
29	MEP SIGNS	73	
30	POST	137	
31	POST ANCHOR (2"X2")	4	
32	ANCHOR SLEEVE (2-1/4"X2-1/4")	3	
33	CONCRETE SURFACE ANCHOR	12	
34	4" WHITE (THERMOPLASTIC)	490	
35	4" SOLID YELLOW (THERMOPLASTIC)	1,091	
36	6" SOLID WHITE CROSSWALK LINE (EPOXY)	239	
37	24" SOLID WHITE STOP BAR (EPOXY)	40	
STREET	LIGHTING		
38	REMOVAL - LUMINAIRE, BRAKET ARM & CABLE	11	
39	LUMINAIRE TYPE C	3	
40	LUMINAIRE TYPE D	11	
41	POLE, METAL, FOR 30 FT LUMINAIRE MOUNTING HEIGHT	2	
42	POLE, METAL, FOR 35 FT LUMINAIRE MOUNTING HEIGHT	10	
43	BRACKET ARM, 6 FOOT, SINGLE MEMBER	2	
44	BRACKET ARM, 10 FOOT, TRUSS TYPE	9	
45	BRACKET ARM, 12 FOOT, TRUSS TYPE	1	
46	ANTI-THEFT DEVICE (6")	2	
47	ANTI-THEFT DEVICE (8")	10	
48	ID LABELS KCMO: FOR LUMINAIRE POLES & LUMINAIRE CONTROLLERS	13	
49	BREAKAWAY KITS, HEB FUSED W/ 10A FUSES	24	
50	BREAKAWAY KITS, HEB UNFUSED	12	
51	LIGHTING CONTROLLER, 120/240 VOLT 2 CIRCUIT	1	
52	GROUND ROD	1	
53	CABLE-IN-DUCT, 1" WITH 2 #8, 1 #8 G, RHH/RHW/USE	1,312	
54	TRENCHING FOR 1" CABLE-IN-DUCT	1,250	
55	3" CONDUIT PVC SCH 40 TRENCHED	95	
56	LUMINAIRE FOUNDATION (LARGE, 35 FT MOUNTING HEIGHT POLES)	10	
57	LUMINAIRE FOUNDATION (SMALL, 30 FT MOUNTING HEIGHT POLES)	2	
58	TYPE II PULL BOX	1	
	CABLE #10 RHW/LISE (POLE AND BRACKET CABLING)	1 068	
59			



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)



NO.	DATE	SUBMITTA	LS
1 0	9/26/2023	ADDENDUM	#3
DES	GNED BY		
			M.J.H. / M.P.H.
RE\	IEWED BY		
			D.L.B
DR/	WN BY		
			D.M.B.
PRC	JECT NUMB	ER	
			M08-18002-00
DAT	Ē		
		21	DECEMBER 2022
SHE	ET TITLE		

SUMMARY OF QUANTITIES

SHEET NUMBER



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



0 25, 2023 - 11:43am M08\2018\18002-00 №

		•
	KEYNOTES: EVERGY TO REMOVE AND/OR RELOCATE POWER POLE.	walter p moore
	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.	Walter P Moore and Associates, Inc. 1100 Walnut, Suite 1825 Kansas City, Missouri 64106
	4 AT&T TO REMOVE AND/OR RELOCATE UNDERGROUND UTILITIES.	816.701.2100 walterpmoore.com MO PE Corporation No. 1999141112
	5 SPIRE TO REMOVE AND/OR RELOCATE GAS LINE.	IN ASSOCIATION WITH
	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).	PROJECT NAME
	9 APPROXIMATE LOCATION OF PROPOSED 9 EVERGY POWER POLE.	
	10 APPROXIMATE LOCATION OF PROPOSED AT&T UNDERGROUND UTILITY SYSTEM.	
	11 APPROXIMATE LOCATION OF PROPOSED SPIRE UNDERGROUND UTILITY SYSTEM.	WORNALL ROAD
	12 APPROXIMATE LOCATION OF PROPOSED CENTURY LINK UNDERGROUND UTILITY SYSTEM.	IMPROVEMENTS 74TH STREET TO
	13 APPROXIMATE LOCATION OF PROPOSED GOOGLE UNDERGROUND UTILITY SYSTEM.	79TH STREET
	14 APPROXIMATE LOCATION OF NEW WATER MAIN (REFER TO SEPARATE WATER MAIN REPLACEMENT PLAN SET).	CITY PROJECT NO. 89008516 FEDERAL PROJECT NO. STP-3301(509)
	15 REFER TO STORM SEWER PLAN & PROFILES FOR STORM SEWER INFORMATION.	
	16 REFER TO PERMANENT TRAFFIC CONTROL PLANS.	STE OF MUSSO
7	17 REFER TO STREET LIGHTING PLANS.	MICHAEL *
_	18 CONTRACTOR TO ADJUST TOP OF EXISTING STRUCTURE TO PROPOSE GRADE.	HAAKE NUMBER BE-2014007265
20	UTILITY NOTE: THE LOCATION, DEPTH AND SIZE OF EXISTING	NAL 12/21/2022
,	AND PROPOSED UTILITY SYSTEMS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION	
	SHALL FIELD VERIFY EXISTING AND PROPOSED UTILITY SYSTEMS AND NOTIFY THE ENGINEER	NO. DATE SUBMITTALS 1 09/26/2023 ADDENDUM #3
	AND UTILITY COMPANY IN THE EVENT THERE IS A CONFLICT.	
		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

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, 2023 - 11:44am \2018\18002-00 V 25, 108\

		1
	KEYNOTES: EVERGY TO REMOVE AND/OR RELOCATE POWER POLE.	
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	12 APPROXIMATE LOCATION OF PROPOSED CENTURY LINK UNDERGROUND UTILITY SYSTEM.	IMPROVEMENTS
	13 APPROXIMATE LOCATION OF PROPOSED GOOGLE UNDERGROUND UTILITY SYSTEM.	79TH STREET
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	16 REFER TO PERMANENT TRAFFIC CONTROL PLANS.	OF MUSSOE
2	17 REFER TO STREET LIGHTING PLANS.	MICHAEL JOSEPH HAAKE
	STRUCTURE TO PROPOSE GRADE.	NUMBER BE-2014007266
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		DESIGNED BY M.J.H. / M.P.H.
		REVIEWED BY
		DRAWN BY D.M.B.
		PROJECT NUMBER M08-18002-00
		21 DECEMBER 2022 SHEET TITLE
		PLAN & PROFILE - WORNALL RD
		SHEET NUMBER



Sep 25, 2023 — 11:44am X:\M08\2018\18002—00 Wornall Road Improvements — 74th to\Civil\Cad\Sheets\013—021—18002—P&P—WRNL.dwg

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

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10 0 20 SCALE: 1" = 20'





Sep 25, 2023 — 11:44am X:\M08\2018\18002—00 Wornall Road Improvements — 74th to\Civil\Cad\Sheets\013—021—18002—P&P—WRNL.dwg 0 10 0 SCALE: 1"

		KEYNOTES: EVERGY TO REMOVE AND/OR RELOCATE POWER POLE.]	walter
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1005	\triangle	NOTES:	Ŕ	
<u>1000</u>		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.		
995			2	
				DESIGNED BY M.J.H. / M.P.H.
990				REVIEWED BY D.L.B
				D.M.B. PROJECT NUMBER
985				M08-18002-00
			I	21 DECEMBER 2022 SHEET TITLE
980				PLAN & PROFILE -
<u>975</u>			ſ	WORNALL RD
				20 OF 216

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Sep 25, 2023 — 11:45am X:\M08\2018\18002-00 Wornall Road Improvements — 74th to\Civil\Cad\Sheets\013-021-18002-P&P-WRNL.dwg



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

816.701.2100 walterpmoore.com MO PE Corporation No. 1999141112

WORNALL ROAD

IMPROVEMENTS

KANSAS CITY, MISSOURI

74TH STREET TO

CITY PROJECT NO. 89008516

79TH STREET

IN ASSOCIATION WITH

PROJECT NAME



PLAN & PROFILE -WORNALL RD

SHEET NUMBER



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		1
	KEYNOTES: EVERGY TO REMOVE AND/OR RELOCATE POWER POLE.	walter p moore
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	4 AT&T TO REMOVE AND/OR RELOCATE UNDERGROUND UTILITIES.	816.701.2100 walterpmoore.com MO PE Corporation No. 1999141112
	5 SPIRE TO REMOVE AND/OR RELOCATE GAS LINE.	IN ASSOCIATION WITH
	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).	PROJECT NAME
	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.	WORNALL ROAD
	12 APPROXIMATE LOCATION OF PROPOSED CENTURY LINK UNDERGROUND UTILITY SYSTEM.	IMPROVEMENTS 74TH STREET TO
	13 APPROXIMATE LOCATION OF PROPOSED GOOGLE UNDERGROUND UTILITY SYSTEM.	79TH STREET
	14 APPROXIMATE LOCATION OF NEW WATER MAIN (REFER TO SEPARATE WATER MAIN REPLACEMENT PLAN SET).	CITY PROJECT NO. 89008516 FEDERAL PROJECT NO. STP-3301(509)
	15 REFER TO STORM SEWER PLAN & PROFILES FOR STORM SEWER INFORMATION.	
	16 REFER TO PERMANENT TRAFFIC CONTROL PLANS.	STE OF MUSSO
	17 REFER TO STREET LIGHTING PLANS.	MICHAEL JOSEPH HAAKE
	STRUCTURE TO PROPOSE GRADE.	NUMBER BE-2014007265
20	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.	NO. DATE SUBMITTALS 1 09/26/2023 ADDENDUM #3
		DESIGNED BY M.J.H. / M.P.H.
		DEAMAN BY
		D.M.B. PROJECT NUMBER
		M08-18002-00
		21 DECEMBER 2022 SHEET TITLE
		PLAN & PROFILE - 75TH ST
		SHEET NUMBER

0	
4 33	00'



- 11: 18002-




25, 08[\]

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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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	

PLAN & PROFILE -74TH TER



1 00 00 12: 002-25, 108\

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. 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.





11+34.39 (DRIVEWAY, LT)



11+25.00



11+00.00



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



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



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REVIEWED BY	
	D.L.B
DRAWN BY	
	D.M.B.
PROJECT NUMBE	ER
	M08-18002-00
DATE	
	21 DECEMBER 2022
SHEET TITLE	

CROSS SECTIONS -WORNALL RD

SHEET NUMBER





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20+81.80 (DRIVEWAY, RT)



20+75.00



20+50.00



DUC AT&T

PERP

40

30

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

990

988

986

984

982

980

978

976

974

972

60

50



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



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1 09/26/2023	ADDENDUM #3
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	M.J.H. / M.P.H.
REVIEWED BY	
	D.L.B
DRAWN BY	
	DMD
	D.M.B.
PROJECT NUMB	EK
	M08-18002-00
DATE	
	21 DECEMBER 2022
SHEET TITLE	

CROSS SECTIONS -WORNALL RD

SHEET NUMBER

21+94.36 (DRIVEWAY, LT)



12: 25, 108\

NOTES:

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22+00.00



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



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

CROSS SECTIONS -WORNALL RD

SHEET NUMBER

37 OF 216



12: 02 25, 108[\]

- 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. 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.

101+26.47 (DRIVEWAY, RT)



101+25.00









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



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IN ASSOCIATION WITH

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WORNALL ROAD **IMPROVEMENTS** 74TH STREET TO **79TH STREET**

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



NO. DATE	SUBMITTALS
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PROJECT NUMBE	R
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DATE	
	21 DECEMBER 2022
SHEET TITLE	

CROSS SECTIONS -75TH ST

SHEET NUMBER





00 2023 - 12:2 \2018\18002-25, 108\

- NOTES:
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103+00.00



102+75.00



102+60.02 (DRIVEWAY, LT)









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PROJECT NUMB	-R
	M08-18002-00
DATE	
	21 DECEMBER 2022
SHEET TITLE	

CROSS SECTIONS -75TH ST





PC

PC

PT

19+76.76

981.18

42.25' RT

980.72

PT

20+29.76

OFFSET @ BOC	TC ELEVATION	EOP ELEVATION
41.75' RT	981.62	981.16
34.17'RT	982.55	982.09
27.77'RT	983.13	982.67
23.50' RT	983.39	982.93
22.00' RT	983.61	983.15







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



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		M08-18002-00
DATE		
		21 DECEMBER 2022
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INTERSECTION DETAILS - 77TH TER & WORNALL RD









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

816.701.2100 walterpmoore.com MO PE Corporation No. 1999141112

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PROJECT NAME

WORNALL ROAD **IMPROVEMENTS** 74TH STREET TO **79TH STREET**

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



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REVIEWED BY		
		D.L.B
DRAWN BY		
		D.M.B.
PROJECT NUMB	ER	
		M08-18002-00
DATE		
	21 DE	ECEMBER 2022
SHEET TITLE		

DRIVEWAY GRADING ENLARGEMENTS

- 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



00 10: 02

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.



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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		
		SG
REVIEWED BY		
		PRB
DRAWN BY		
		DPC
PROJECT NUM	BER	
		M08-18002-00
DATE		
	21 DE	CEMBER 2022
SHEET TITLE		

TRAFFIC SIGNAL DEMO PLAN -WORNALL RD AND 75TH ST

SHEET NUMBER

116 OF 216

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





v 25, 2023 − 10:43am M08\2018\18002-00 Wornall Road Improvements - 74th to\Civil\Cad\Sheets\118-18002-WRNI

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.

<u>Signal Faces</u>

6. INSTALL ADVANCED RADAR DETECTOR ON SIGNAL POLES.



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IN ASSOCIATION WITH

PROJECT NAME



Α

Dual Indication (LED Arrow Kit)





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
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	SG
REVIEWED BY	
	PRB
DRAWN BY	
	DPC
PROJECT NUMB	ER
	M08-18002-00
DATE	
	21 DECEMBER 2022

SHEET TITLE

TRAFFIC SIGNAL PLAN - WORNALL RD AND 75TH ST

SHEET NUMBER

 $10 \quad 5 \quad 0 \quad 1$ SCALE: 1" = 10'



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



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

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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	
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PROJECT NUMBE	ικ
	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 S	PECIFIED:	
DESCRIPTION:		
10 PORT MANA	AGED ETHERNET SWITCH WITH FIBER	
OPTIC UPLINK	PORTS	1
ASC/3-1C MOD	DULE	1
CONFLICT MOI	NITOR WITH ETHERNET PORT	1
CLICK 656		1
AUXILIARY OU	TPUT FILE	1
206L POWER S	UPPLY	1
REMARKS:		
1. FURNISH	AND INSTALL.	
ALL EXISIT 2. GOOD CO	ING EQUIPME IS TO BE REMOVED & DELIVERED IN NITION TO 5300 MUNICPAL AVE.	

CONDUCTED BETWEEN TUESDAY AND THURSDAY FROM 9AM

3. AND 4PM.



OUTPUTS FILE ASSIGNMENTS

FR1 FR2	Ø 1	Ø2	Ø2 PED	Ø3	Ø 4	Ø 9 PED	TOR
FR3	Ø 5	Ø 6	Ø 6	Ø7	Ø8	Ø 8	MON
FR4			PED			PED	
FR5	Ø9			Ø 11			
FR6		Ø 11					



		Р	OWER SU	PPLY							
LOCATION	POWER		CIRCUIT BR	EAKER TRIP F	RATINGS (ALL	TWO-POLE)					
	SUPPLY		CADINET		OUTSIDE	CABINET					
SEC	ASMB.	SIGNALS STREET SIGN									
JEC	1	50	AMP	50	AMP	30	AMP				
TOTAL											



						IN	TERVA	L SEQI	JENCE					1			
	FACE		SEQUE	ENCE 1			SEQUE	ENCE 2	-		SEQUE	ENCE 3			SEQUE	ENCE 4	
APPROACH	No		Interv	al No.			Interv	al No.			Interv	al No.			Interv	al No.	
	NO.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	1	G <	FY <	Y <	R <	FY <	FY <	Y <	R <	R <	R <	R <	R <	R <	R <	R <	R <
Wasthound	6	R	R	R	R	G	G	Υ	R	R	R	R	R	R	R	R	R
75th Streat	6A	R	R	R	R	G	G	Υ	R	R	R	R	R	R	R	R	R
<u>/50150000</u>	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
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Factbound	2	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R
ZEth Streat	2A	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R
<u>/sth street</u>	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
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	8	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
<u>Northbound</u>	8A	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
Wornall Road	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
	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
<u>Southbound</u>	4A	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
Wornall Road	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



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

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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)



NO.	DATE	SUBMITTAL	S
1 ()9/26/2023	ADDENDUM	#3
DES	SIGNED BY		
			SG
RE\	/IEWED BY		
			PRB
DRA	AWN BY		
			DPC
PRO	DJECT NUMBE	R	
			M08-18002-00
DAT	TE		
		21	DECEMBER 2022

SHEET TITLE

TRAFFIC SIGNAL WIRING DIARGRAM, PHASING & SEQUENCE

SHEET NUMBER



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	PE	DESTA	AL POLE	E			M	1AST AR	M TYP I				_					BASES	AND PULL	BOXES										CABL	E				
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*NOTE: SIGNAL HEAD SPACING TO BE ADJUSTED TO SITE CONDITIONS AND APPROVED BY THE PROJECT INSPECTOR.

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4	4A			1	1	1												3		1	
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POLE 6A	PB 6	6	7					
POLE 6	PB 6	6		7		7	7	
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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
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6P	6	1			
6PA	6	1			
8P	8	1			
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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)



NO. DATE	SUBMITTALS
1 09/26/2023	ADDENDUM #3
DESIGNED BY	
	SG
REVIEWED BY	
	PRB
DRAWN BY	
	DPC
PROJECT NUMB	ER
	M08-18002-00
DATE	
	21 DECEMBER 2022
SHEET TITLE	

TRAFFIC SIGNAL SUMMARY OF QUANTITIES

SHEET NUMBER





							_	
⊢ .	PEDESTAL POLE	BASES A	ND PULL B	OXES				
SO' NO	POLE LENGTH		NO.		BASES	PULL BOX		
<u> </u>	15	LOCATION	POST	PULL BOX	С	TYPE II		
4	1	SW CORNER	4	4	1	1		POLE 4
TOTALS	1				1	1		

			S	SIGNAL HE	۹DS			
N	NO.		NDICATION	IS	PED	VISORS	BRKT.	ONE-FAC
				The Hand	Туре	Туре	Sections	
Post	Face		IZ LED S		and The		Std.	3
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4	4	1	1	1		3	1	1
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4	4P				1		1	
TOTALS		2	2	2	1	6	3	2



00 10: 02 2023 -2018\180 25, 108\

CABLE					
то	DIST	SIGNAL CALBE		DET LEAD IN	
		5C-14	7C-14	2C-14	
CONT.	180	180	360	180	

CONDUIT				
FROM		DICT	TRENCH	
FROIVI	ТО	וכוס	2"	3"
POLE 4	PB 4	7	8	
PB 4	Exist. PB 6	54		55
SUB-TOTAL	-	8	55	
5% EXTRA I	OR CUTTING	1	3	
TOTAL		10	60	

5 UNIT
1
1

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.

<u>Signal Faces</u>

12"

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12"

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〔12"

G



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

16"

(Overlapped Symbols)

WORNALL ROAD **IMPROVEMENTS** 74TH STREET TO **79TH STREET**

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



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	PRB
DRAWN BY	
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	M08-18002-00
DATE	
	21 DECEMBER 2022
SHEET TITLE	
IRAF	FIC SIGNAL PLAN
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	WYANDOTTE
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7	100
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PARKING SPACE MARKING N.T.S.



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

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



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SHEET TITLE

PAVEMENT MARKING AND SIGNING PLAN -WORNALL RD









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

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



NO. DATE	SUBMITTALS
1 09/26/2023	ADDENDUM #3
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DATE	
	21 DECEMBER 2022

SHEET TITLE

PAVEMENT MARKING AND SIGNING PLAN -75TH ST

SHEET NUMBER



$$20 10 0 20$$

SCALE: 1" = 20'





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



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

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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)



NO. DATE	<u>:</u>	SUBMITTALS	3
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		21 E	DECEMBER 2022

SHEET TITLE

PAVEMENT MARKING AND SIGNING PLAN -75TH ST

SHEET NUMBER



132 OF 216



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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

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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 NUMB	ER	
		M08-18002-00
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OVERALL CONSTRUCTION SEQUENCING

SHEET NUMBER



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





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)



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RE	VIEWED BY		
			D.L.B
DR	AWN BY		
			D.M.B.
PR	OJECT NUMB	ER	
			M08-18002-00
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		2	1 DECEMBER 2022
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OVERALL DETOUR PLAN



ep 25, 2023 — 10:48am \M08\2018\18002—00 Wornall Road Improvements — 74th to\Civil\Cad\Sheets\135—18002—CSEQ—PHS1A.dwg



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

REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.

MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.



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

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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)



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		D.L.B
DRAWN BY		
		D.M.B.
PROJECT NUMBE	ER	
		M08-18002-00
DATE		
	21 DE	CEMBER 2022
SHEET TITLE		

CONSTRUCTION SEQUENCING - PHASE 1A





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.

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.

MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

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)



NO. DAT	E	SUBMITTAL	S
1 09/26	/2023	ADDENDUM	#3
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			D.M.B.
PROJEC	T NUMBEF	R	
			M08-18002-00
DATE			
		21	DECEMBER 2022
SHEET T	ITLE		

CONSTRUCTION **SEQUENCING - PHASE** 1B





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.

REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.

MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.



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WORNALL ROAD **IMPROVEMENTS** 74TH STREET TO **79TH STREET**

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



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			M08-18002-00
DATE			
		2	1 DECEMBER 2022
SHEE	ET TITLE		

CONSTRUCTION **SEQUENCING - PHASE** 2A





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.

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.

MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.



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WORNALL ROAD **IMPROVEMENTS** 74TH STREET TO **79TH STREET**

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



N	D. DATE	SUBMITTALS	
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			D.M.B.
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			M08-18002-00
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		21 D	ECEMBER 2022
SI	HEET TITLE		

CONSTRUCTION SEQUENCING -PHASE 2B





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.

1. REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.

MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.



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NO. DAT	E	SUBMITTAL	S
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			D.M.B.
PROJEC	T NUMBEF	R	
			M08-18002-00
DATE			
		21	DECEMBER 2022
SHEET T	ITLE		

CONSTRUCTION SEQUENCING -PHASE 3A





PHASE 3B CONSTRUCTION:

• CONSTRUCT SOUTH SIDE OF 75TH STREET.

INSTALL PAVING, CURBS, AND SIDEWALKS WITHIN PHASE LIMITS.

REFER TO OVERALL DETOUR PLAN FOR TRAFFIC CONTROL REQUIREMENTS BEYOND LIMITS OF THIS PHASE.

MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS TO ADJACENT PROPERTY OWNERS AT ALL TIMES. COORDINATE WORK WITH CITY AND PROPERTY OWNERS THROUGHOUT CONSTRUCTION.

ADJUST SIGNAL TIMING AND TRAFFIC SIGNAL HEADS AS REQUIRED FOR NEW TRAFFIC PATTERNS. COORDINATE WITH CITY OF KANSAS CITY, MISSOURI.



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DRAWN BY		
		D.M.B.
PROJECT NUM	BER	
		M08-18002-00
DATE		
	21 DE	CEMBER 2022
SHEET TITLE		

CONSTRUCTION SEQUENCING -PHASE 3B





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:

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- 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 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)



NO. DATE	SUBMITTALS	
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		M.J.H. / M.P.H.
REVIEWED BY		
		D.L.B
DRAWN BY		
		D.M.B.
PROJECT NUMB	ER	
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	21 DE	CEMBER 2022
SHEET TITLE		

CONSTRUCTION SEQUENCING -PHASE 4A

SHEET NUMBER

141 OF 216





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.

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CONSTRUCTION SEQUENCING -PHASE 4B

SHEET NUMBER





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.

<u>LEGEND:</u> DND = DO NOT DISTURB ABD = ABANDON IN PLACER/W = RIGHT-OF-WAYUGT = UNDERGROUND COMMUNICATION LINEVCP = 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



SCALE: 1" = 20' ADD ALTERNATIVE #1



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816.701.2100 walterpmoore.com MO PE Corporation No. 1999141112



PROJECT NAME

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STORM SEWER PLAN & PROFILE





NOTE:

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

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STORM SEWER PLAN & PROFILE

SHEET NUMBER

SCALE: 1'' = 20'

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.

> <u>LEGEND:</u> HOLE IN PLACE NOT DISTURB ANDON IN PLACE GHT-OF-WAY DERGROUND COMMUNICATION LINE RIFIED CLAY PIPE

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.





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STORM SEWER PLAN & PROFILE





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

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STORM SEWER PLAN & PROFILE

. NOT FALL BELOW THE WATER
AN OPEN SYSTEM, THEREFORE THE HGL
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100-YR FLOOD PLAIN IS OUTSIDE OF PROJECT LIMITS PER FEMA MAP PANELS:

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CITY ID. KANS	SAS 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 L	NE
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STORM SEWER PLAN & PROFILE



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





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STORM SEWER PLAN & PROFILE


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

THE HGL WILL NOT FALL BELOW THE WATER SURFACE IN AN OPEN SYSTEM, THEREFORE THE HGL LINE HAS BEEN ADJUSTED TO TAKE INTO ACCOUNT THE PEAK SURFACE ELEVATION OF THE DETENTION.

LEGEND: R = REMOVEMH = MANHOLE|U|P = USE IN PLACEDND = DO NOT DISTURB ABD = ABANDON IN PLACER/W = RIGHT - OF - WAYUGT = UNDERGROUND COMMUNICATION LINE VCP = VITRIFIED CLAY PIPE

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PROJECT NAME

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WORNALL ROAD **IMPROVEMENTS** 74TH STREET TO **79TH STREET**

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



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STORM SEWER PLAN & PROFILE

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UGP	GAS LIN STA. 0+ DEPTH L	BE FIEL TOP=99			TOP=9(995
8	EXISTING GROUND					990
EXISTIN Stati Ele	G WATERMAIN 12" DIP ON=1+01.92 V = 984.35 ENCASE IN OONODETE					985
				27.23 LF 18" RCP		
				@ 4.04%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
ENCAS CONCR EXISTING 12" VCF STATION	E IN HGL ETE S SAN SEWER =0+52.82	л(E)=982.00	(N)=983.70 YR HGL=983.62	9 4.04%	0UT(S)=984.80)0-YR HGL=986.29	<u>980</u> 975
ENCAS CONCR EXISTING 12" VCF STATION ELEV =	100 E IN HGL ETE S SAN SEWER =0+52.82 979.98		F_ IN(N)=983.70 100-YR HGL=983.62		f OUT(S)=984.80 100-YR HGL=986.25	<u>980</u> <u>975</u>
ENCAS CONCR EXISTING 12" VCF STATION ELEV =	100 E IN HGL ETE SAN SEWER =0+52.82 979.98	- - - - - - - - - - - - - - - - - - -	F_IN(N)=983.70 100-YR HGL=983.62		FE OUT(S)=984.80 100-YR HGL=986.25	<u>980</u> <u>975</u> <u>970</u>
ENCAS CONCR EXISTING 12" VCF STATION ELEV =	E IN HGL ETE SAN SEWER =0+52.82 979.98 ENCASE NOTED CONCRETE 10' I DOWNSTREAM OF PER DETAIL 3/1	-YR 00.286= (1) 100 J PIPES IN UPSTREAM A PIPE CROS 56	F_IN(N)=983.70 500-YR HGL=983.62		FE OUT(S)=984.80 100-YR HGL=986.25	980 975 970 965

1+25

1+50





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

SURFACE IN AN OPEN SYSTEM, THEREFORE THE HGL



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STORM SEWER PLAN & PROFILE

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NOTE:

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

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