ADDENDUM #1 – REVISED BID FORM:

NOTICE TO CONTRACTORS

Sealed bids, addressed to Fogel-Anderson Construction Co., 1212 E. 8th Street, Kansas City, MO 64106 for the proposed work will be received by the I-470 Western Gateway Transportation Development District (TDD) until **2:00 PM (CST) June 6 2024., at the office of Fogel-Anderson Construction Company, Owners Representative** for the I-470 Western Gateway TDD, Owner. Bids will be privately opened. Bids should be mailed or hand- delivered to: Fogel-Anderson Construction Co., 1212 E. 8th Street, Kansas City, MO 64106.

The Bid Envelope must contain all required submissions to be included with the Bid. No Bid may be withdrawn for a period of ninety (90) days after the Bid is opened. Bid security shall likewise continue for the same ninety (90) days unless released earlier by the TDD. The successful Bidder shall sign and provide a satisfactory Performance Bond and Payment Bond, in addition to a fully executed Form "W-9". Bids, once opened and read, may not be withdrawn without forfeiture of the Bid security.

All Bids shall be addressed to Fogel-Anderson Construction Co., Owner's Representative, 1212 E. 8th Street, Kansas City, MO 64106, shall state on the outside of the sealed Bid envelope "BID – Interchange Improvements of I-470 and View High Drive" and shall be submitted to receptionist at Fogel-Anderson. All Bids must comply with the Bidding Requirements of I-470 Western Gateway TDD.

(1) PROPOSED WORK: The proposed work, hereinafter called the work, includes:

Sub-Project 1: **VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470**

Grading, paving, storm drainage, lighting, signals, signing, and retaining walls along View High Drive, Meers Road, and Ramps to and from I-470. The interchange of I-470 and View High Drive will be improved to a Diverging Diamond Interchange.

Sub-Project 2: **WATER MAIN RELOCATION AT MEERS ROAD & VIEW HIGH DRIVE**

Water main relocation on the southwest quadrant of the Meers Road and View High Drive Intersection.

Sub-Project 3: **KCMO SANITARY SEWER RELOCATION (PARAGON STAR DEVELOPMENT)**

Manhole relocation for the KCMO Sanitary Sewer system located in the Paragon Star Development.

Sub-Project 4: VIEW HIGH DRIVE TRAIL PROJECT

Grading and paving for 1850' of pedestrian trail improvements along View High Drive from Chipman Road to the beginning of construction of the VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470.

(2) COMPLIANCE WITH CONTRACT PROVISIONS: The bidder, having examined and being familiar with the local conditions affecting the work, and with the contract, contract documents, including the current version of the Missouri Highways and Transportation Commission's "Missouri Standard Specifications for Highway Construction, 2019" and "Missouri Standard Plans for Highway Construction, 2019", their revisions, and the request for bid, including appendices, the special provisions and plans, hereby proposes to furnish all labor, materials, equipment, services, etc., required for the performance and completion of the work. All references are to the Missouri Standard Specifications for Highway Construction, as revised, unless otherwise noted.

The following documents are available on the Missouri Department of Transportation web page at www.modot.mo.gov under "Business with MoDOT" "Standards and Specifications". The effective version shall be determined by the letting date of the project.

Missouri Standard Specifications for Highway Construction
General Provisions & Supplemental Specifications
Currently Effective Standard Plans for Highway Construction
Supplemental Revisions to Missouri Standard Plans

For Highway Construction
Missouri DOT Bridge Standard Drawings

These supplemental bidding documents contain all current revisions to the bound printed versions and have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

Kansas City Metropolitan Chapter of the American
Public Works (APWA), Standard Specifications
And Design Criteria

In the event of conflicts or discrepancies among the specifications, interpretations will be based on the following order:, the Bidding Documents, including appendices, the special provisions and plans, the current version of the Missouri Highways and Transportation Commission's "Missouri Standard Specifications for Highway Construction," and "Missouri Standard Plans for Highway Construction", their revisions, the Kansas City Metropolitan Chapter of the American Public Works Association (APWA), Standard Specifications and Design Criteria.

Please note that within the above-listed documents, the term "Commission" shall be replaced with the term, I-470 Western Gateway TDD and the term "Engineer" is a reference to the Engineer of Record from GBA, Inc.

The contracting authority for this contract is I-470 Western Gateway TDD.

(3) PERIOD OF PERFORMANCE: If the bid is accepted, commencement of the work shall begin upon receipt of Notice to Proceed, issued by the I-470 Western Gateway TDD. 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 Sec 108:

Calendar Days: **169**
Completion Date: **12/13/24**

(4) LIQUIDATED DAMAGES: The bidder agrees that, should the bidder fail to complete the work in the time specified or such additional time as may be allowed by the engineer under the contract, the amount of liquidated damages to be recovered in accordance with Sec 108 shall be as follows:

Liquidated damages per day $1,000 (Sum of Road User Costs and Contract Administrative Rights)

(5) BID GUARANTY: All Bids submitted shall be accompanied by a Bid Bond (on the form provided in the Bidding Documents), cashier's check, or certified check in the amount of five percent (5%) of the total Bid submitted. The Bid Guaranty shall be made payable to the I-470 Western Gateway TDD.

☐ Paper Bid Bond
☐ Cashier's Check

(6) CERTIFICATIONS FOR FEDERAL JOBS: Intentionally omitted.

(7) ANTIDISCRIMINATION: The Contracting Authority hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, businesses owned and controlled by socially and economically disadvantaged individuals will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, religion, creed, sex, age, ancestry, or national origin in consideration for an award.

(8) FEDERAL AND STATE INSPECTION: All applicable Federal laws, and the regulations made pursuant to such laws, shall be observed by the contractor, and the work will be subject to the inspection of the appropriate State or Federal Agency in the same manner as provided in Sec 105.10 of the Missouri Standard Specifications for Highway Construction with all revisions applicable to this bid and contract.

(9) PREVAILING WAGE (FEDERAL AND STATE): This contract requires payment of the prevailing hourly rate of wages for each craft or type of work required to execute the contract as determined by the Missouri Department of Labor and Industrial Relations, and requires adherence to a schedule of minimum wages as determined by the United States Department of Labor. For work performed anywhere on this project, the contractor and the contractor's subcontractors shall pay the higher of these two applicable wage rates. The applicable state wage rates for this contract are detailed in "General

Wage Order No. 67", that is attached to this bidding document. The applicable federal wage rates for this contract are the effective Davis-Bacon federal wage rates posted the tenth day before the bid opening date and are attached herein.

These supplemental bidding documents have important legal consequences. It shall be conclusively presumed that they are in the bidder's possession, and they have been reviewed and used by the bidder in the preparation of any bid submitted on this project.

The local agency is required to request a state wage rate determination from the Industrial Commission, Missouri Department of Labor and Industrial Relations, Box 449, Jefferson City, Missouri 65102 or by calling (573) 751-3403 to determine and get access to the applicable Annual Wage Order rates for each project per EPG Article 136.10.2.>

(10) WORKER ELIGIBILITY REQUIREMENTS: Execution of the construction contract for this project is dependent upon the awarded bidder providing an Affidavit of Compliance AND E-Verify Memorandum-of-Understanding (MOU) between the bidder and Department of Homeland Security to the Contracting Authority as required by section 285.530 RSMo. The cover page and signature page of the E-Verify MOU and the Affidavit must be submitted prior to award of this contract.

A sample Affidavit of Compliance can be found at the Missouri Attorney General's website at the following link:

http://ago.mo.gov/forms/Affidavit_of_Compliance.pdf

All bidders must also be enrolled in the E-Verify Program, and include their MOU prior to contract execution. Bidders who are not enrolled will need to go to the following website link and select "Enroll in the Program" to get started. After completing the program, they will receive their E-Verify MOU with the Department of Homeland Security. This document will need to be printed out and kept on file so that a copy can be attached to the Affidavit of Compliance.

http://www.dhs.gov/files/programs/gc_1185221678150.shtm

This requirement also applies to subcontractors and contract labor, but this contract only requires submittal of the verification documents for the prime contractor. It is the prime contractor's responsibility to verify the worker eligibility of their subcontractors in order to protect their own company from liability as required by section 285.530 RSMo.

(11) OSHA TEN HOUR TRAINING REQUIREMENTS: Missouri Law, 292.675 RSMO, requires any awarded contractor and its subcontractor(s) to provide a ten-hour Occupational Safety and Health Administration (OSHA) Construction Safety Program (or a similar program approved by the Missouri Department of Labor and Industrial Relations as a qualified substitute) for their on-site employees (laborers, workmen, drivers, equipment operators, and craftsmen) who have not previously completed such a program and are directly engaged in actual construction of the improvement (or working at a nearby or adjacent facility used for construction of the improvement). The awarded contractor and its subcontractor(s) shall require all such employees to complete this ten-hour program, pursuant to 292.675 RSMO, unless they hold documentation on their prior completion of said program. Penalties, for Non-Compliance include contractor forfeiture to the Contracting Authority in the amount of $2,500, plus $100 per contractor and subcontractor employee for each calendar day such employee is employed beyond the elapsed time period for required program completion under 292.675 RSMO.

(12) BUY AMERICA REQUIREMENTS: Construction contracts shall assure compliance with Section 165 of the Surface Transportation Assistance Act of 1982, Section 337 of the Surface Transportation and Uniform Relocation Assistance Act of 1987, and 23 CFR 635.410 regarding Buy America provisions on the procurement of foreign products and materials. On all contracts involving Federal-aid, all products of iron, steel, or a coating of steel which are incorporated into the work must have been manufactured in the United States. The Contracting Authority may allow minimal amounts of these materials from foreign sources, provided the cost does not exceed 0.1 percent of the contract sum or $2,500, whichever is greater. The Contractor certifies that these materials are of domestic origin. Additional information regarding the "Buy America" requirements can be found at:

https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

(13) ADDENDUM ACKNOWLEDGEMENT: Should a Bidder find any discrepancies in, or omissions from, any of the documents or be in doubt as to their meaning, the Bidder shall advise the Engineer, who will issue the necessary clarifications to all prospective Bidders by means of Addenda.

The undersigned states that the all addenda (if applicable) have been received, acknowledged below and incorporated into their bid, prior to submittal. Staple addenda to the bid in the appropriate part of the bid.

Addendum No.	Addendum Date
_____	_____
_____	_____
_____	_____

(14) SIGNATURE AND IDENTITY OF BIDDER: The undersigned states that the following provided information is correct and that (if not signing with the intention to bind themselves to become the responsible and sole bidder) they are the agent of, and they are signing and executing this, as the bid of

_____, which is the correct LEGAL NAME as stated on the contractor questionnaire.

a) The organization submitting this bid is a(n) (1) individual bidder, (2) partnership, (3) joint venturer (whether individuals or corporations, and whether doing business under a fictitious name), or (4) corporation. Indicate by marking the appropriate box below.

☐ sole individual ☐ partnership ☐ joint venture

☐ corporation, incorporated under laws of state of _____.

b) If the bidder is doing business under a fictitious name, indicate below by filling in the fictitious name

_____

Executed by bidder this _____ day of _____ 20____.

THE BIDDER CERTIFIES THAT THE BIDDER AND ITS OFFICIALS, AGENTS, AND EMPLOYEES HAVE NEITHER DIRECTLY NOR INDIRECTLY ENTERED INTO ANY AGREEMENT, PARTICIPATED IN ANY COLLUSION, OR OTHERWISE TAKEN ANY ACTION IN RESTRAINT OF FREE COMPETITIVE BIDDING IN CONNECTION WITH THIS BID, AND THAT THE BIDDER INTENDS TO PERFORM THE WORK WITH ITS OWN BONAFIDE EMPLOYEES AND SUBCONTRACTORS, AND DID NOT BID FOR THE BENEFIT OF ANOTHER CONTRACTOR.

THE BIDDER ACKNOWLEDGES THAT THIS IS AN UNSWORN DECLARATION, EXECUTED UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE UNITED STATES AND/OR FALSE DECLARATION UNDER THE LAWS OF MISSOURI, AND ANY OTHER APPLICABLE STATE OR FEDERAL LAWS. THE FAILURE TO PROVIDE THIS CERTIFICATION IN THIS BID MAY MAKE THIS BID NON-RESPONSIVE, AND CAUSE IT TO BE REJECTED.

THE BIDDER CERTIFIES THAT THE BIDDER'S COMPANY KNOWINGLY EMPLOYS ONLY INDIVIDUALS WHO ARE AUTHORIZED TO WORK IN THE UNITED STATES IN ACCORDANCE WITH APPLICABLE FEDERAL AND STATE LAWS AND ALL PROVISIONS OF MISSOURI EXECUTIVE ORDER NO. 07-13 FOR CONTRACTS WITH THE CONTRACTING AUTHORITY.

☐ Check this box ONLY if the bidder REFUSES to make any or all of these certifications. The bidder may provide an explanation for the refusal(s) with this submittal.

_____
Signature of Bidder's Owner, Officer, Partner or Authorized Agent

_____
Please print or type name and title of person signing here

Attest:

_____
Secretary of Corporation if Bidder is a Corporation

Affix Corporate Seal (If Bidder is a Corporation)

NOTE: If bidder is doing business under a fictitious name, the bid shall be executed in the legal name of the individual, partners, joint ventures, or corporation, and registration of fictitious name filed with the secretary of state, as required by sections 417.200 to 417.230 RSMo. If the bidder is a corporation not organized under the laws of Missouri, it shall procure a certificate of authority to do business in Missouri, as required by section 351.572 et seq RSMo. A certified copy of such

registration of fictitious name or certificate of authority to do business in Missouri shall be filed with the Missouri Highways and Transportation Commission, as required by the standard specifications.

(15) **TRAINEES**: Intentionally omitted.

(16) **SUBCONTRACTOR DISCLOSURE:** Requirements contained within Sec 102.7.8 of the Missouri Standard Specification for Highway Construction shall be waived for this contract.

(17) **PROJECT AWARD:** This project will be awarded to the lowest, responsive, responsible bidder.

(18) **MATERIALS INSPECTIONS**: All technicians who perform, or are required by the FHWA to witness, such sampling and testing shall be deemed as qualified by virtue of successfully completing the requirements of EPG 106.18 Technician Certification Program, for that specific technical area.

(19) **PRIME CONTRACTOR REQUIREMENTS:** The limitation in Sec 108.1.1 of the Missouri Standard Specifications for Highway Construction that "the contractor's organization shall perform work amounting to not less than 40 percent of the total contract cost" is waived for this contract. Instead, the less restrictive terms of the Federal Highway Administration's rule at Title 23 Code of Federal Regulations (CFR) § 635.116(a) shall apply, so that the contractor must perform project work with its own organization equal to and not less than 30 percent of the total original contract price. All other provisions in Sec 108.1.1 et seq. of the Missouri Standard Specifications for Highway Construction shall remain in full force and effect, and shall continue to govern the contractor and its subcontractors, in accordance with the provisions of Title 23 CFR § 635.116.

(20) **DISADVANTAGED BUSINESS ENTERPRISES (DBE) PROGRAM REQUIREMENTS:** Intentionally omitted.

(21) **SCHEDULE OF PARTICIPATING DBE'S:** Intentionally omitted.

(22) **REQUIRED CONTRACT SUBMISSIONS:** The following are the documents Contractors will be required to submit in order to enter into a contract with the City:

a) Documents required at the time of Bid:
   1. Itemized Bid Form
   2. 5% Bid Security
   3. Documentation of Contractor Pre-Qualification or Questionnaire
   4. Anti-Collusion Statement
   5. E-Verify Memorandum of Understanding (MOU)

b) Bidder is required to deliver or fax to the Owner's Representative **by 4:00 p.m. within three (3) business days after the bid** opening the following documents:
   1. A designation of the Work to be performed by the Bidder with its own forces.
   2. A list of names of any material suppliers, vendors and Subcontractors that will be providing any type of service to the Bidder on the Project.
   3. Subcontractor Certification Regarding Affirmative Action (Prime Contractor must execute this Certification and obtain an executed Certification from each proposed subcontractor)
   4. Certification that Contractor is not Excluded from State or Federal Programs (Prime Contractor must execute this Certification and obtain an executed Certification from each proposed sub-contractor)
   5. The Bidder will be required to establish to the satisfaction of the Developer / Owner, Engineer, and Procurement Consultant the reliability and responsibility of the proposed Subcontractors to furnish and perform their Work. Prior to the Contract, if the Developer / Owner, Engineer, and/or Owner's Representative has a reasonable and substantial objection to any person or organization on such list, and refuses in writing to accept such person or organization, the Bidder may, at it's option, withdraw their Bid without forfeiture of Bid Security. If the Bidder submits an acceptable substitute with any increase in the Bid price to cover the difference in cost occasioned by such substitution, the Developer / Owner may, at his discretion, accept the increased Bid price or the Developer / Owner may disqualify the Bidder. Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Developer / Owner, Engineer, and Owner's Representative must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Developer / Owner with the concurrence of Engineer and Owner's Representative.

ITEMIZED BID: The bidder should complete the following section in accordance with Sec 102.7. The bidder proposes to furnish all labor, materials, equipment, services, etc. required for the performance and completion of the work, as follows:

ITEMIZED BID FORM

VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

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

Roadway Items – 1

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
1	Removal of Improvements	1	Lump Sum		
2	Clearing and Grubbing	10	Acres		
3	Mobilization	1	Lump Sum		
4	Contractor Furnished Surveying and Staking	1	Lump Sum		
5	Temporary Erosion Control	1	Lump Sum		
6	Concrete Median	4,572	Sq. Yd.		
7	6" Concrete Median Strip	12	Sq. Yd.		
8	Concrete Curb Ramp	404	Sq. Yd.		
9	Truncated Domes	492	Sq. Ft.		
10	Concrete Sidewalk, 4 in.	1,898	Sq. Yd.		
11	Concrete Sidewalk, 8 in.	176	Sq. Yd.		
12	Curb & Gutter Type B	2,536	Lin. Ft.		
13	Curb & Gutter Type CG-1	7,538	Lin. Ft.		
14	Concrete Gutter Type B	114	Lin. Ft.		
15	Modified Concrete Gutter Type B	202	Lin. Ft.		
16	Chain-Link Fence (60")	517	Lin. Ft.		
17	Ornamental Fence for Retaining Walls	202	Lin. Ft.		
18	Concrete Traffic Barrier (Type B)	210	Lin. Ft.		
19	Concrete Traffic Barrier (Type C)	156	Lin. Ft.		
20	Concrete Traffic Barrier (Type D)	643	Lin. Ft.		
21	Permanent Barrier Height Transition	7	Each		
22	Special Curb Inlet (5' x 3')	177	Ft.		
23	Special Curb Inlet (10' x 3')	5	Ft.		
24	Type B Precast Drop Inlet (4' x 2')	16	Ft.		
25	Type S-1 Precast Drop Inlet (3' x 2')	3	Ft.		
26	Type S-1 Precast Drop Inlet (5' x 2')	4	Ft.		
27	Precast Concrete Manhole - 60 in.	13	Ft.		
28	Grate and Bearing Plate (3' x 2')	1	Each		
29	Grate and Bearing Plate (5' x 2')	1	Each		
30	Curved Vane Grate and Frame (4' x 2')	4	Each		
31	Manhole Frame and Cover, Type 3	31	Each		
32	Manhole Frame and Cover, Type 4	2	Each		
33	12 in. Pipe Group A	164	Lin. Ft.		
34	15 in. Pipe Group A	1,115	Lin. Ft.		
35	18 in. Pipe Group A	264	Lin. Ft.		
36	24 in. Pipe Group A	251	Lin. Ft.		
37	36 in. Pipe Group A	122	Lin. Ft.		
38	42 in. Pipe Group A	88	Lin. Ft.		
39	48 in. Pipe Group A	369	Lin. Ft.		
40	12 in. Pipe Group B	78	Lin. Ft.		
41	15 in. Pipe Group B	462	Lin. Ft.		
42	24 in. Pipe Group B	189	Lin. Ft.		
				Roadway Items – 1 Sub-Total	

Itemized Bid Form: VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470
Roadway Items – 2

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
43	12 in. or Allowed Substitute Group A FES	3	Each		
44	15 in. or Allowed Substitute Group A FES	1	Each		
45	18 in. or Allowed Substitute Group A FES	5	Each		
46	24 in. or Allowed Substitute Group A FES	1	Each		
47	36 in. or Allowed Substitute Group A FES	1	Each		
48	42 in. or Allowed Substitute Group A FES	1	Each		
49	48 in. or Allowed Substitute Group A FES	4	Each		
50	12 in. or Allowed Substitute Group B FES	2	Each		
51	15 in. or Allowed Substitute Group B FES	10	Each		
52	Pipe Collar, Type A	2	Each		
53	Class 3 Excavation	2,976	Cu. Yd.		
54	Rock Lining	80	Cu. Yd.		
55	Pipe-Aggregate Pavement Edge Drain	175	Lin. Ft.		
56	Furnishing Type 1 Rock Ditch Liner	50	Cu. Yd.		
57	Placing Type 1 Rock Ditch Liner	50	Cu. Yd.		
58	Furnishing Type 2 Rock Blanket	484	Cu. Yd.		
59	Placing Type 2 Rock Blanket	484	Cu. Yd.		
60	Furnishing Type 3 Rock Ditch Liner	360	Cu. Yd.		
61	Placing Type 3 Rock Ditch Liner	360	Cu. Yd.		
62	Bedding Material for Rock Ditch Liner	140	Cu. Yd.		
63	Permanent Erosion Control Geotextile	1,526	Sq. Yd.		
64	State Right-of-Way Marker	11	Each		
65	City Right-of-Way Marker	9	Each		
66	Seeding (Cool Season Mixtures)	7.10	Acre		
67	Buffalo Grass Sodding	1,735	Sq. Yd.		
68	Class A Excavation	23,959	Cu. Yd.		
69	Embankment in Place	25,662	Cu. Yd.		
70	Compacting Embankment (Fill)	19,054	Cu. Yd.		
71	Compacting in Cut	55	Sta.		
72	Additional Mobilization for Seeding	1	Each		
73	Impact Attenuator 40 MPH (Sand Barrels)	1	Each		
74	Replacement Sand Barrel	4	Each		
75	Impact Attenuator (Relocation)	1	Each		
76	Construction Signs	2,591	Sq. Ft.		
77	Advanced Warning Rail System	14	Each		
78	Flag Assembly	19	Each		
79	Relocated Signs	1,424	Sq. Ft.		
80	Channelizer (Trim Line)	250	Each		
81	Type III Moveable Barricade with Lights	163	Each		
				Roadway Items – 2 Sub-Total	

Itemized Bid Form: VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

Roadway Items – 3

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
82	Directional Indicator Barricade	7	Each		
83	Flashing Arrow Panel	1	Each		
84	Changeable Message Sign with Comm. Interface, Contractor Furnished/Retained	4	Each		
85	Type II Pedestrian Barricade	9	Each		
86	Temporary Traffic Barrier Contractor Furnished/Retained	843	Lin. Ft.		
87	Temporary Traffic Barrier Height Transition	1	Each		
88	Relocating Temporary Traffic Barrier	523	Lin. Ft.		
89	Relocating Temporary Traffic Barrier Height Transition	3	Each		
				Roadway Items – 3 Sub-Total	

Surfacing Items

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
90	10" Asphaltic Concrete Pavement, SP125C	22,830	Sq.Yd.		
91	6" Bituminous Pavement	3,235	Sq.Yd.		
92	Type A2 Shoulder	1,292	Sq.Yd.		
93	Type 5 Aggregate For Base (4 in. thick)	27,405	Sq.Yd.		
94	Type 5 Aggregate For Base (6 in. thick)	3,235	Sq.Yd.		
95	8.5" Concrete Pavement (Non-Reinf, 15' Joints)	817	Sq.Yd.		
				Surfacing Items Sub-Total	

Lighting Items – 1

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
96	Relocated Pole	17	Each		
97	Lighting Pole, 35 Ft., Aluminum, Valmont 310860806T4A	17	Each		
98	Bracket Arm, 8 Ft. Or 2.4 M, Aluminum, Valmont MA0830B45D	17	Each		
99	Pole Foundation (35 Ft.)	33	Each		
100	Base Mounted Control Station 240 Volt - 4 Circuit, Pacific Utility Products CAT. NO. USP16R-M2100-112C-KCMO	2	Each		
101	Luminaire, LED-A, Type III Lithonia TWH LED ALO 40K T3M MVOLT (including housing)	6	Each		
102	Luminaire, LED-B, Type III Luminaire	2	Each		
103	Luminaire, LED-C, Type II American Electric Autobahn ATB2-60BLEDE70-MVOLT-R2-20-NL-P7-SH	36	Each		

Lighting Items – 1 Sub-Total	

Itemized Bid Form: VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

Lighting Items – 2

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
104	Cable, 10 AWG 1 Conductor, Pole And Bracket	1,470	Lin. Ft.		
105	Pull Box, Preformed Class 1	15	Each		
106	Pull Box, Preformed Class 2	10	Each		
107	Conduit, 2 In. Rigid, In Trench	3,132	Lin. Ft.		
108	Conduit, 3 In. Rigid, In Trench	251	Lin. Ft.		
109	Conduit, 4 In. Rigid, In Trench	320	Lin. Ft.		
110	Conduit, 3 In. Rigid, Pushed	958	Lin. Ft.		
111	Conduit, 1 1/4 In. Rigid, External On Structure	161	Lin. Ft.		
112	Trenching Type I	446	Lin. Ft.		
113	Cable, 2 AWG 1 Conductor	4,330	Lin. Ft.		
114	Cable, 4 AWG 1 Conductor	3,990	Lin. Ft.		
115	Cable, 8 AWG 1 Conductor	9,070	Lin. Ft.		
116	Cable-Conduit, 1 In., 2 Conductors And 1 Bare Neutral, 4 AWG	820	Lin. Ft.		
				Lighting Items – 2 Sub-Total	

Traffic Signal & ITS Items – 1

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
117	Base, Concrete	20	Cu. Yd.		
118	Pull Box, Preformed Class 1	2	Each		
119	Pull Box, Preformed Class 2	10	Each		
120	Pull Box, Preformed Class 3	7	Each		
121	Pull Box, Concrete, Double, Type A	1	Each		
122	Post, Signal 8 Ft.	3	Each		
123	Post Signal 15 ft	2	Each		
124	Post, Type C, 20 ft	1	Each		
125	Post, Type C, 35 ft	1	Each		
126	Post, Type C, 40 ft	1	Each		
127	Post, Type C, 45 ft	1	Each		

128	Post, Type C, 50 ft	1	Each		
129	Signal Head, Type 1S	6	Each		
			Traffic Signal & ITS Items – 1 Sub-Total		

Itemized Bid Form: VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

Traffic Signal & ITS Items – 2

Item No.	***Description***	***Quantity***	***Unit***	***Unit Cost***	***Extension***
130	Signal Head, Type 3T	4	Each		
131	Signal Head, Type 3S	6	Each		
132	Signal Head, Type 3B	10	Each		
133	Conduit, 2 In, Trench with Tracer Wire	9	Lin. Ft.		
134	Conduit, 3 In, Trench with Tracer Wire	386	Lin. Ft.		
135	Conduit, 4 In, Trench with Tracer Wire	1,054	Lin. Ft.		
136	Conduit, 3 in, Pushed with Tracer Wire	574	Lin. Ft.		
137	Conduit, 4 in, Pushed with Tracer Wire	366	Lin. Ft.		
138	Cable, 2 AWG 1 Conductor, Power	55	Lin. Ft.		
139	Cable, 6 AWG 1 Conductor, Power	25	Lin. Ft.		
140	Cable, 16 AWG 2 Conductor	5,370	Lin. Ft.		
141	Cable, 16 AWG 5 Conductor	5,375	Lin. Ft.		
142	Cable, 16 AWG 7 Conductor	8,700	Lin. Ft.		
143	Video Detection System	1	Each		
144	Emergency Preemption	1	Each		
145	Power Supply Assembly, Type 2	1	Each		
146	Controller Assembly Housing, NEMA TS2 Controller	1	Each		
147	Accessible Pedestrian Pushbutton Detector	6	Each		
148	SH-Flat Sheet-Signal Sign	91	Sq. Ft.		
149	Signal Sign, Mounting Hardware	18	Each		
150	Fiber Optic Cable, 12 - Strand, Single Mode	300	Lin. Ft.		
151	Conduit, 2 In, Trench with Tracer Wire	1,637	Lin. Ft.		
152	CCTV PTZ Camera System	1	Each		
153	Custom Fiber Vault	1	Each		
154	Cisco IE3000 Switch + Power Supply	1	Each		
155	Cisco SFP Module	2	Each		
156	Termination Panel	1	Each		
157	Terminations	24	Each		
158	Fiber Splice	1	LS		
			Traffic Signal & ITS Items – 2 Sub-Total		

Signing & Truss Items – 1

Item No.	***Description***	***Quantity***	***Unit***	***Unit Cost***	***Extension***
159	Structural Steel Posts	1618	Lbs		
160	U Channel Post, 3 LB	45	Lin. Ft.		
161	2 In. PSST Post - 12 Ga.	644	Lin. Ft.		

162	Driven Post Anchor for 2 In. – 12ga.	6	Each		
163	2.5 In. PSST Post - 12 Ga.	448	Lin. Ft.		
164	2.25 In. PSST Post Insert (6 Ft.)- 12 Ga.	12	Each		
165	Driven Post Anchor for 2.5 In. PSST Post - 7 Ga.	10	Each		
				Signing & Truss Items – 1 Sub-Total	

Itemized Bid Form: VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

Signing & Truss Items – 2

Item No.	***Description***	***Quantity***	***Unit***	***Unit Cost***	***Extension***
166	Breakaway Assembly (Perforated Square Steel Tube)	24	Each		
167	SH-Flat Sheet	555	Sq. Ft.		
168	ST-Structural	658	Sq. Ft.		
169	SHF-Flat Sheet Fluorescent	268	Sq. Ft.		
170	Highway Sign Truss (71 Ft S-Tube)	1	Each		
171	Highway Sign Truss (68 Ft S-Tube)	1	Each		
172	Highway Sign Truss (60 Ft S-Tube)	1	Each		
				Signing & Truss Items – 2 Sub-Total	

Pavement Marking Items

Item No.	***Description***	***Quantity***	***Unit***	***Unit Cost***	***Extension***
172a	Concrete Post Anchor for 2 In. PSST – 7 GA.	40	Each		
172b	Concrete Post Anchor for 2.5 In. PSST – 7 GA.	18	Each		
173	4 In. Yellow High Build Waterborne Pavement Marking Paint, Type L Beads	680	Lin. Ft.		
174	6 In. White High Build Waterborne Pavement Marking Paint, Type L Beads	9,830	Lin. Ft.		
175	6 In. Yellow High Build Waterborne Pavement Marking Paint,Type L Beads	4,319	Lin. Ft.		
176	Preformed Thermoplastic Pavement Marking, 24 In. White	318	Lin. Ft.		
177	Preformed Thermoplastic Pavement Marking, 30 In. White Midblock	32	Each		
178	Preformed Thermoplastic Pavement Marking, 12 In. White Yield Line Triangles	20	Each		
179	Preformed Thermoplastic Pavement Marking, Left/Right Arrow	33	Each		
180	Preformed Thermoplastic Pavement Marking, Straight Arrow	12	Each		
181	Preformed Thermoplastic Pavement Marking, Combination Str/Lt/Rt	4	Each		
182	Temporary Removable Marking Tape 4 In., White	18,490	Lin. Ft.		
183	Temporary Removable Marking Tape 4 In., Yellow	31,059	Lin. Ft.		
184	Temporary Removable Marking Tape 24 In., White	122	Lin. Ft.		

185	Temporary Non-Removable Marking Tape Left/Right Arrow	3	Each		
186	Pavement Marking Removal	49,261	Lin. Ft.		
				Pavement Marking Items Sub-Total	

Itemized Bid Form: VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

Bridge Items

Item No.	***Description***	***Quantity***	***Unit***	***Unit Cost***	***Extension***
187	Cast-In-Place Retaining Wall	1,097	Sq. Ft.		
188	Form Liners	122	Sq. Yd.		
189	Concrete & Masonry Protection System	1	Lump Sum		
190	Sacrificial Graffiti Protection System	1	Lump Sum		
191	Temporary Shoring	1	Lump Sum		
				Bridge Items Sub-Total	

Roadway Items – 1 Sub-Total: _____

Roadway Items – 2 Sub-Total: _____

Roadway Items – 3 Sub-Total: _____

Surfacing Items Sub-Total : _____

Lighting Items – 1 Sub-Total: _____

Lighting Items – 2 Sub-Total: _____

Traffic Signal & ITS Items – 1 Sub-Total: _____

Traffic Signal & ITS Items – 2 Sub-Total: _____

Signing & Truss Items – 1 Sub-Total: _____

Signing & Truss Items - 2 Sub-Total: _____

Bridge Items Sub-Total : _____

View High Drive Interchange Improvements at I-470 Project Sub-Total Costs:
_____

ITEMIZED BID FORM

WATER MAIN RELOCATION AT MEERS ROAD & VIEW HIGH DRIVE

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

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
1	8” Class 52 DIP	753	Lin. Ft.		
2	Fire Hydrant Assembly	4	Each		
3	Straddle Block	7	Each		
4	8”x6” Reducer	4	Each		
5	Connections to Existing Waterlines	2	Each		
6	Horizontal Bends	9	Each		
7	Vertical Bends	2	Each		
8	Tees	1	Each		
9	8” Gate Valve	6	Each		
10	Contractor Furnished Surveying and Staking	1	Lump Sum		
Water Main Relocation at Meers Road & View High Drive Project Sub-Total					

ITEMIZED BID FORM

KCMO SANITARY SEWER RELOCATION (PARAGON STAR DEVELOPMENT)

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

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
1	4’ Dia Std Manhole 0-8' Deep	1	Each		
2	4’ Dia MH Extra Depth	5	VF		
3	Manhole Adjustment	1	Lump Sum		
4	Remove Existing 8” Pipe	59	Lin. Ft.		
5	Remove Existing 4’ Dia Manhole	1	Each		
6	Contractor Furnished Surveying and Staking	1	Lump Sum		
KCMO Sanitary Sewer Relocation Project Sub-Total					

ITEMIZED BID FORM

VIEW HIGH DRIVE TRAIL PROJECT

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

Item No.	*Description*	*Quantity*	*Unit*	*Unit Cost*	*Extension*
1	Earthwork – Cut	518	Cu. Yd.		
2	Earthwork – Fill	93	Cu. Yd.		
3	Concrete Pavement	2,195	Sq. Yd.		
4	Concrete Curb and Gutter	100	Lin. Ft.		
5	Gravel Inlet Protection	3	Each		
6	Straw Wattle	1,773	Lin. Ft.		
7	Seeding	1,606	Sq. Yd.		
8	ADA Compliant Type II Barricade	4	Each		
9	R9-9 24”x12”	4	Each		
10	M4-9 30”x24”	4	Each		
11	ADA Ramp	3	Each		
12	Contractor Furnished Surveying and Staking	1	Lump Sum		
View High Drive Trail Project Sub-Total					

ITEMIZED BID FORM

Project Grand Total

VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470

Project Sub-Total: _____

WATER MAIN RELOCATION AT MEERS ROAD & VIEW HIGH DRIVE

Project Sub-Total: _____

KCMO SANITARY SEWER RELOCATION (PARAGON STAR DEVELOPMENT)

Project Sub-Total: _____

VIEW HIGH DRIVE TRAIL PROJECT

Project Sub-Total: _____

GRAND TOTAL (ALL FOUR PROJECTS):

Grand Total: _____

Schedule: State the numbers of calendar days your company will take to complete the project from Notice to Proceed to final completion. Bid Package schedule is 169 calendar days.

The TDD reserves the right to reject any or all bids or to waive any formalities or irregularities in any bid, and to accept the bid or bids which seem most advantageous to the TDD.

In the event a Contract is awarded to the successful Bidder, it shall be executed within ten (10) days. The Bidder shall return with his executed Contract all Performance Payment Bonds, Warranty Bonds and Insurance Provisions as required by the Supplementary Condition and the Contractor's Work.

If the successful Bidder fails or refuses to enter into a Contract as required by the I-470 Western Gateway TDD or fails to provide the required bonds and insurance to the TDD, within the time limited, said Bidder shall forfeit to the TDD the difference between the low bid of said defaulting bidder and the amount of the bid of the Bidder to whom the Contract is subsequently awarded and the cost, if any, of republication of notice to bidders and all actual expense incurred by reason Bidder's default. The amount of said forfeiture shall not exceed the total amount deposited as security and shall be forfeited to the TDD as liquidated damages and not as a penalty. Negligence on the part of Bidder in preparing or submitting the bid confers no right for the withdrawal of the bid after it has been opened and shall not constitute a defense to or excuse from the requirements of this Provision.

The undersigned Bidder hereby proposes and agrees, if this bid is accepted, to enter into an Agreement with the I-470 Western Gateway TDD in the form included in the Bidding Documents to perform all Work as specified or indicated in this Bid submitted as indicated and in accordance with the other terms and conditions of the Bidding Documents. Furthermore, Bidder agrees to commence work under this Contract on a date to be specified in a written "Notice to Proceed" by I-470 Western Gateway Transportation Development District.

Bidder:_____ **Contact:**_____

Address:_____ **Title:**_____

_____ **Email:**_____

Phone:_____ **Fax:**_____

Signature_____ **Date Submitted:**_____

I-470 Western Gateway Transportation District
I-470 and View High Drive Diverging Diamond Interchange
Addendum #1
May 30, 2024

Add-Item #1: Attached are Pre-Bid Minutes and sign-in sheet.

Add-Item #2: Attached for bidders review;
Geotechnical Engineering Report
Interchange Improvements
I-470 and View High Drive
Lee's Summit, MO.
` July 10, 2019

Add-Item #3: Attached and to be included in contract documents, bidder shall include all cost associated with compliance.
Construction Stormwater Pollution Prevention Plan
Paragon Star Development
Diverging Diamond Interchange, Water Main,
Manhole Relocation, View High Drive Trail Improvements
March 8, 2024

Add-Item #4: Replace Sheets D-29 (2 sheets, dated 1-25-24) with revised D-29 (3 sheets, dated 5-29-24).

Add-Item #5: Replace Bid Form with Addendum #1 – Revised Bid Form (18 pages).
Changes to Bid Form; View High Interchange Improvements / Signage & Truss Items -1;
Bid Items Modified / Included: #162, #164, #165, #172a, #172b.

Add-Item #6: Concrete jersey barriers installed north of I-470 on View High Drive have been temporarily placed until completion of the DDI. Contractor to remove barriers upon completion of the work and store onsite at existing laydown area located NE corner of I-470 and View High Road.

End of Addendum #1.

Contractor to acknowledge on Bid Form.

EFFECTIVE 10-01-2016

SIGNS						PIPE POST ✳					STRUCTURAL STEEL										U CHANNEL POST	PERFORATED SQUARE STEEL TUBE POST														FOOTINGS		REMARKS AND OTHER REQUIRED ITEMS.
											POSTS ✳						BACKING BARS 2" X 3/8" BARS @ 2.55 LBS PER LIN FT				TOTAL		2 IN						2.5 IN						BREAK-AWAY ASSEMBLY	EMBD	BOLT DOWN	
																								ANCHORS					ANCHORS							
SIGN NO.	SIGN SIZE	STATION	HORZ CLEAR IF NOT STD	LOCATION	SIGN DTL. SHT. NO.	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL	NO. EACH	LGTH	TOTAL	TOTAL	ITEM NO. 9031210	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12-GA. ITEM NO. 9031271A	DRIVEN 7-GA. ITEM NO. 9031273A	CONCRETE 7-GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7-GA. ITEM NO. 9031281A	CONCRETE 7-GA. ITEM NO. 9031285	ITEM NO. 9031241	ITEM NO. 9031010	ITEM NO. 9031020	
						IN.	LF	LF		LBS		LF	LF	LF		LBS	EACH	IN.	LF	LBS	LBS	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	EACH	CU YDS	CU YDS	
01	36x48	88+92		VIEW HIGH DR																																	MOUNT SIGN ON LIGHT POLE
01a	36x48	88+97		VIEW HIGH DR																																	MOUNT SIGN ON LIGHT POLE
02	18x18	90+65		VIEW HIGH DR																			12.50		12.50	1											
03	18x18	91+37		VIEW HIGH DR																			12.50		12.50			1									
04	36x12	10+67		MEERS RD	154																								17.00	17.00	34.00	2	2		2			
	48x12				154																																	
	36x36																																					
05	ASSEMBLY	92+28		VIEW HIGH DR													8	50.00	33.33	85.00	85.00								16.75	16.75	33.50	2	2		2			
06	36x12	9+26		MEERS RD	154																								17.00	17.00	34.00	2	2		2			
	48x12				154																																	
	36x36																																					
07	36x36	8+57		MEERS RD																			14.75		14.75	1											
07a	18x18	6+97		NURSERY EAST																		9.00															
	18x18																					9.00															
	18x18																					9.00															
	18x18																					9.00															
	18x18																					9.00															
08	24x24	91+88		VIEW HIGH DR																																	MOUNT SIGN ON LIGHT POLE
	18x24																																					
12	36x36	95+15		VIEW HIGH DR																									14.75		14.75		1					
	30x18																																					
13	36x36	95+80		VIEW HIGH DR																			14.75		14.75			1									
14	ASSEMBLY	95+93		VIEW HIGH DR													6	50.00	25.00	63.75	63.75								15.50	15.50	31.00	2		2	2			
15	54x18	95+95		VIEW HIGH DR																			14.50	14.50	29.00			2									
	24x30																																					
16	54x18	96+44		VIEW HIGH DR																			15.00	15.00	30.00			2									
	54x18																																					
	36x36																																					
17	36x36	96+54		VIEW HIGH DR																																	MOUNT SIGNS ON LIGHT POLE
	36x36																																					
18	36x36	96+55		VIEW HIGH DR																			13.50		13.50			1									
	36x36																																					
19	36x36	96+78		VIEW HIGH DR																			13.50		13.50			1									
20	24x30	97+01		VIEW HIGH DR																			13.00		13.00			1									
21	54+18	97+84		VIEW HIGH DR																									16.00	16.00	32.00			2	2			
	48x48x48																																					
	30x30																																					
22	36x36	98+01		VIEW HIGH DR																									14.75		14.75			1				
	30x18																																					
23	54x18	98+07		VIEW HIGH DR																									16.00	16.00	32.00			2	2			
	48x48x48																																					
	30x30																																					
24	54x18	98+17		VIEW HIGH DR																			15.00	15.00	30.00			2									
	36x36																																					
25	36x36	98+33		VIEW HIGH DR																																	MOUNT SIGNS ON LIGHT POLE
	30x18																																					
26	84x24	99+38		VIEW HIGH DR	153																																MOUNT SIGNS ON BRIDGE
27	84x24	100+61		VIEW HIGH DR	153																																MOUNT SIGNS ON BRIDGE
28	54x18	101+71		VIEW HIGH DR																			12.00	12.00	24.00			2									
SUBTOTAL				0			0					0						148.8	149	45			207.5		2		13		226.0	8	7	7	12	0	0	
TOTAL				0															1618	45			644		6		40		448	12	10	18	24	0	0	

✳ BREAKAWAY ASSEMBLY IS INCIDENTAL FOR PIPE AND STRUCTURAL STEEL POSTS

1 REVISED

1 REVISED

1 REVISED

1 REVISED

1.9 | 21.7

ROUND PIPE POST AND FOOTING DATA TABLE

NOM. SIZE (IN.)	WEIGHT LBS/FT	WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	FOOTING DEPTH	CONCRETE C.Y.
2½	5.79	0.48	4'-3½"	12"	4'-6"	0.13
3	7.58	0.63	4'-3½"	12"	4'-6"	0.13
4	10.79	0.90	5'-3½"	18"	5'-6"	0.36

POST AND FOOTING DATA TABLE

POST DES. NO.	POST NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	POST STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE C.Y.
1	W6	9.0	0.75	3'-0"	15"	3'-0"	0.14	3'-2"	0.15	3'-3"	0.16	3'-6"	0.17
2	W6	15.0	1.25	4'-0"	24"	4'-0"	0.47	4'-2"	0.50	4'-3"	0.51	4'-6"	0.54
3	W8	18.0	1.50	4'-6"	28"	4'-6"	0.71	4'-8"	0.73	4'-9"	0.74	5'-0"	0.78
4	W10	22.0	1.83	5'-0"	36"	5'-0"	1.31	5'-2"	1.36	5'-3"	1.39	5'-6"	1.45
5	W10	26.0	2.17	5'-0"	36"	5'-0"	1.31	5'-3"	1.37	5'-5"	1.43	5'-9"	1.52
6	W12	35.0	2.92	5'-6"	36"	5'-6"	1.44	5'-9"	1.52	5'-11"	1.56	6'-3"	1.65

DATE PREPARED 5/29/2024

ROUTE I-470 | STATE MO

DISTRICT KC | SHEET NO. 149

COUNTY JACKSON

JOB NO. J4I3470

CONTRACT ID.

STP-3400(444)

BRIDGE NO. A2150

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

GBA
9801 Renner Blvd. Ste. 300
Lenexa, KS 66219
913.492.0400
gbateam.com

GEORGE BUTLER ASSOCIATES, INC.
PRO. ENGINEER 000133
ARCHITECT 000212
PRO. LAND SURVEYOR 000059

CHRISTOPHER NOVOSEL
PROFESSIONAL ENGINEER
PE-2018024421

D-29

FINAL PLANS

REV. 5/29/2024 5:07:45 PM

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EFFECTIVE 10-01-2016

SIGNS						PIPE POST ✳					STRUCTURAL STEEL										U CHANNEL POST	PERFORATED SQUARE STEEL TUBE POST														FOOTINGS		REMARKS AND OTHER REQUIRED ITEMS.
											POSTS ✳						BACKING BARS 2" X 3/8" BARS @ 2.55 LBS PER LIN FT				TOTAL		2 IN						2.5 IN						BREAK-AWAY ASSEMBLY	EMBD	BOLT DOWN	
																								ANCHORS					ANCHORS								
SIGN NO.	SIGN SIZE	STATION	HORZ CLEAR IF NOT STD	LOCATION	SIGN DTL. SHT. NO.	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL	NO. EACH	LGTH	TOTAL	TOTAL	ITEM NO. 9031210	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12-GA. ITEM NO. 9031271A	DRIVEN 7-GA. ITEM NO. 9031273A	CONCRETE 7-GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7-GA. ITEM NO. 9031281A	CONCRETE 7-GA. ITEM NO. 9031285	ITEM NO. 9031241	ITEM NO. 9031010	ITEM NO. 9031020	
						IN.	LF	LF		LBS		LF	LF	LF		LBS	EACH	IN.	LF	LBS	LBS	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	EACH	CU YDS	CU YDS	
29	54x18	101+83		VIEW HIGH DR																									16.00	16.00	32.00			2	2			
	48x48x48																																					
	30x30																																					
30	54x18	102+05		VIEW HIGH DR																									16.00	16.00	32.00			2	2			
	48x48x48																																					
	30x30																																					
31	120x120	102+12		VIEW HIGH DR	153						2	22.00	22.00		15.00	660.00					660.00																0.94		
32	24x30	102+57		VIEW HIGH DR																			13.00		13.00			1									
33	36x36	102+91		VIEW HIGH DR																			13.50		13.50			1									
34	36x36	103+17		VIEW HIGH DR																			13.50		13.50			1									
	36x36																																					
35	36x36	103+18		VIEW HIGH DR																			13.50		13.50			1									
	36x36																																					
36	54x18	103+22		VIEW HIGH DR																									16.00	16.00	32.00			2	2			
	54x18																																					
	48x48x48																																					
	30x30																																					
37	ASSEMBLY	103+36		VIEW HIGH DR													6	50.00	25.00	63.75	63.75								15.50	15.50	31.00	2		2	2			
38	48x48x48	103+39		VIEW HIGH DR																			14.50	14.50	29.00			2									
	30x30																																					
39	54x18	103+85		VIEW HIGH DR																			14.50	14.50	29.00			2									
	24x30																																					
40	36x36	103+99		VIEW HIGH DR																			13.50		13.50			1									
42	54x18	105+82		VIEW HIGH DR																			15.00	15.00	30.00	2											
	36x36																																					
43	54x18	105+56		VIEW HIGH DR																			14.00	14.00	28.00			2									
	24x24																																					
44	48x36	20+75		RAMP 1																			13.50	13.50	27.00			2									
45	48x48	21+89		RAMP 1																			14.50	14.50	29.00			2									
46	48x48	21+89		RAMP 1																			14.50	14.50	29.00			2									
47	36x36	31+17		RAMP 2																			14.75		14.75			1									
48	36x36	32+14		RAMP 3																			14.75		14.75			1									
49	42x30	33+57		RAMP 3																			13.50	13.50	27.00			2									
	48x36				154																																	
50	132x120	40+84		RAMP 4	153						2	22.00	22.00		15.00	660.00					660.00																0.94		
51	48x48	41+76		RAMP 4																			14.50	14.50	29.00			2									
52	48x48	41+76		RAMP 4																			14.50	14.50	29.00			2									
53	48x36	42+88		RAMP 4																			13.50	13.50	27.00			2									
54	72x60	26+74		RAMP 2	154																								15.50	15.50	31.00			2	2			
56	36x36	9+50		RAMP 4A																									14.75		14.75		1					
	30x18																																					
57	36x36	9+66		RAMP 4A																									14.75		14.75			1				
	30x18																																					
58	30x24	67+07		VIEW HIGH DR																																		MOUNT ON LIGHT
59	24X8	67+07		VIEW HIGH DR																																		MOUNT ON LIGHT
60	24X8	67+07		VIEW HIGH DR																																		MOUNT ON LIGHT
61	30X30	68+40		VIEW HIGH DR																			12.50		12.50	1											
62	ASSEMBLY	108+60		VIEW HIGH DR													8	50.00	33.33	85.00	85.00								16.75	16.75	33.50	2	2		2			
63	36x36	82+73		VIEW HIGH DR																			13.50		13.50	1											
11	TRUSS	94+26		VIEW HIGH DR																																9.81		
41	TRUSS	104+71		VIEW HIGH DR																																8.18		1 ADDED
55	TRUSS	29+85		RAMP 2																																3.63		
SUBTOTAL							0					1320				148.8					1469	0			436	4		27			221	4	3	11	12	0	0	
TOTAL							0														1618	45			644	6		40			448	12	10	18	24	0	0	

1 ADDED

1 REVISED

1 REVISED

1 REVISED

1.9	21.7
1.9	21.7

1 REVISED

✳ BREAKAWAY ASSEMBLY IS INCIDENTAL FOR PIPE AND STRUCTURAL STEEL POSTS

ROUND PIPE POST AND FOOTING DATA TABLE

NOM. SIZE (IN.)	WEIGHT LBS/FT	WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	FOOTING DEPTH	CONCRETE C.Y.
2½	5.79	0.48	4′ – 3½″	12″	4′-6″	0.13
3	7.58	0.63	4′ – 3½″	12″	4′-6″	0.13
4	10.79	0.90	5′ – 3½″	18″	5′-6″	0.36

POST AND FOOTING DATA TABLE

POST DES. NO.	POST NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	POST STUB LENGTH	FOOTING DIA.	FOOTING LEVEL GROUND DEPTH	FOOTING LEVEL GROUND C.Y.	FOOTING 6:1 GRADE DEPTH	FOOTING 6:1 GRADE C.Y.	FOOTING 4:1 GRADE DEPTH	FOOTING 4:1 GRADE C.Y.	FOOTING 3:1 OR 2:1 GRADE DEPTH	FOOTING 3:1 OR 2:1 GRADE C.Y.
1	W6	9.0	0.75	3′-0″	15″	3′-0″	0.14	3′-2″	0.15	3′-3″	0.16	3′-6″	0.17
2	W6	15.0	1.25	4′-0″	24″	4′-0″	0.47	4′-2″	0.50	4′-3″	0.51	4′-6″	0.54
3	W8	18.0	1.50	4′-6″	28″	4′-6″	0.71	4′-8″	0.73	4′-9″	0.74	5′-0″	0.78
4	W10	22.0	1.83	5′-0″	36″	5′-0″	1.31	5′-2″	1.36	5′-3″	1.39	5′-6″	1.45
5	W10	26.0	2.17	5′-0″	36″	5′-0″	1.31	5′-3″	1.37	5′-5″	1.43	5′-9″	1.52
6	W12	35.0	2.92	5′-6″	36″	5′-6″	1.44	5′-9″	1.52	5′-11″	1.56	6′-3″	1.65

DATE PREPARED 5/29/2024
ROUTE I-470 | STATE MO
DISTRICT KC | SHEET NO. 150
COUNTY JACKSON
JOB NO. J4I3470
CONTRACT ID.
STP-3400(444)
BRIDGE NO. A2150

DESCRIPTION | DATE | REV.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

GBA
9801 Renner Blvd. Ste. 300
Lenexa, KS 66219
913.492.0400
gbateam.com

GEORGE BUTLER ASSOCIATES, INC.
PRO. ENGINEER 000133
ARCHITECT 000212
PRO. LAND SURVEYOR 000059

CHRISTOPHER NOVOSEL
PROFESSIONAL ENGINEER
PE-2018024421

D-29

FINAL PLANS

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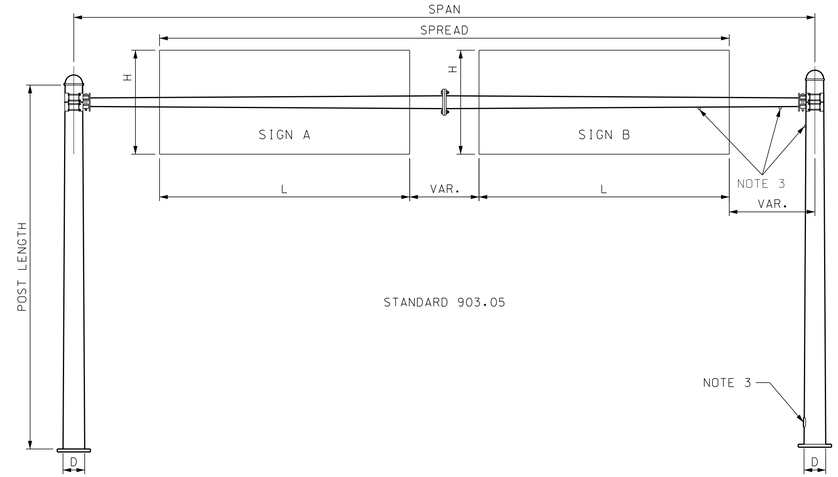
EFFECTIVE 04-01-2005



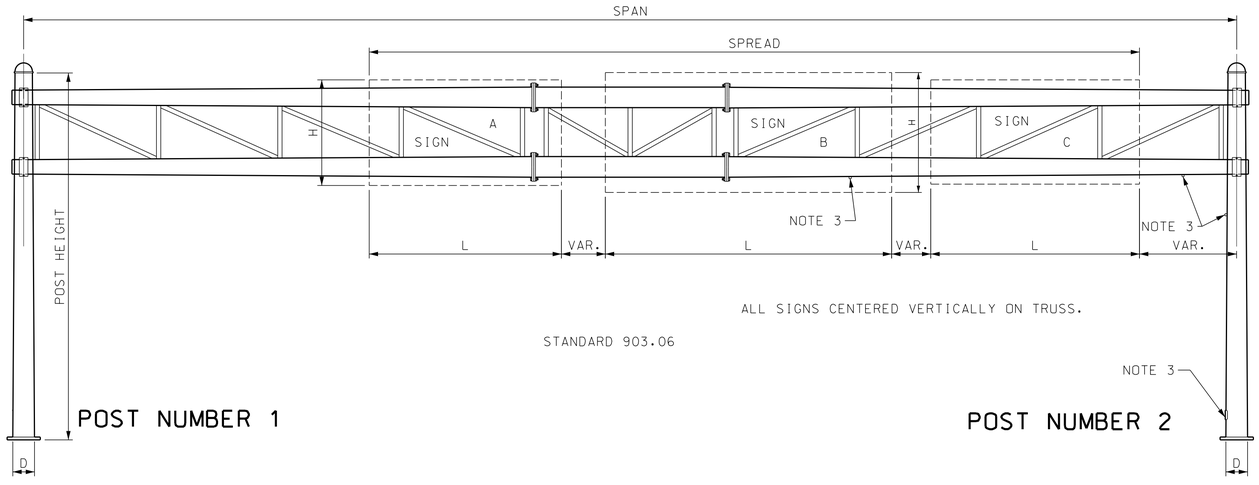
STANDARD 903.05

POST NUMBER 1

ONE TUBE - TYPE S

POST NUMBER 2

QUANTITIES AND MODOT BID ITEM NUMBERS SHOWN ARE FOR INFORMATION. ALL PERMANENT SIGNING SHALL BE BID AS "PERMANENT SIGNING & TRUSSES (LUMP SUM)"



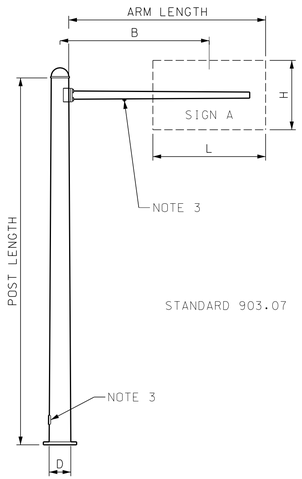
ALL SIGNS CENTERED VERTICALLY ON TRUSS.

STANDARD 903.06

POST NUMBER 1

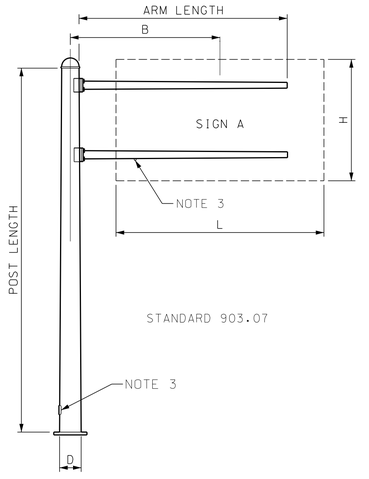
POST NUMBER 2

TWO TUBE - TYPE S



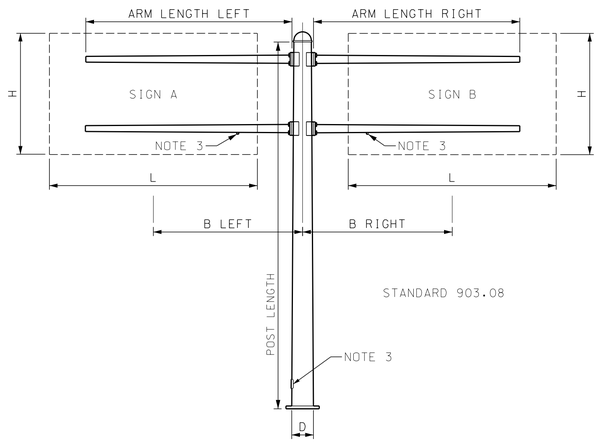
STANDARD 903.07

ONE TUBE - TYPE C



STANDARD 903.07

TWO TUBE - TYPE C



STANDARD 903.08

TWO TUBE - TYPE B

TUBULAR STEEL SUPPORT NUMBERING SYSTEM

THE FIRST SYMBOL (LETTER) INDICATES TYPE AS, C FOR CANTILEVER, B FOR BUTTERFLY, S FOR SPAN TYPE.

THE SECOND SYMBOL (NUMBER) INDICATES SINGLE (1) OR DOUBLE (2) MAST ARMS OR TRUSS.

THE THIRD SYMBOL (NUMBER) INDICATES GAGE - POST
7 = 7 GAUGE (.1793") 77 = 7 + 7 GAUGE (.3586")
3 = 3 GAUGE (.2500") 33 = 3 + 3 GAUGE (.5000")
0 = 0 GAUGE (.3125") 00 = 0 + 0 GAUGE (.6250")

THE FOURTH SYMBOL (NUMBER) INDICATES DIAMETER IN INCHES OF THE POST BASE.

THE FIFTH SYMBOL (NUMBER) INDICATES LENGTH IN FEET OF ARM OR SPAN.

EXAMPLE: DESIGN NUMBER B-20018-24 INDICATES BUTTERFLY TYPE, TWO ARMS, 2-PLY, 0-GAUGE, 18" DIAMETER AT BASE OF POST & 24' MAST ARMS.

NOTES

1. ALL POSTS, BEAMS, MAST ARMS, ANGLES, BRACKETS & ETC. SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. SHOP DRAWINGS ARE NOT REQUIRED.
3. HANDHOLES AND 1 ½" BLIND HALF COUPLINGS REQUIRED ON DESIGNATED POSTS. HANDHOLES SHALL BE PLACED ON RIGHT HAND SHOULDER SIDE OF TRUSSES.
4. STRUCTURES DESIGNED FOR TOTAL SIGN AREA COMMENSURATE WITH HEIGHT OF SIGN AND REQUIRED VERTICAL CEARANCE.
5. DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS - 1985.

TUBULAR STEEL SUPPORT DESIGN DATA

STANDARDS 903.05 THRU 903.08

SIGN NUMBER	STATION	LOCATION	STANDARD NUMBER	TYPE	SPAN OR ARM	B LENGTH	POST LENGTH NO. 1	POST LENGTH NO. 2	CONCRETE FOOTINGS	SIGN DATA SPREAD	SIGN A L	SIGN A H	SPACE	SIGN B L	SIGN B H	SPACE	SIGN C L	SIGN C H	SPACE	SIGN D L	SIGN D H	SPACE	SIGN E L	SIGN E H	SPACE	TOTAL
					FT-IN.	FT-IN.	FT	FT	CU YDS	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	SQ FT
11	94+26	VIEW HIGH DR	903.06	S2	70.9		21	22	S2	36.7	11	7	1.9	11	5	1.8	11	7								209
51	104+71	VIEW HIGH DR	903.06	S2	60.2		20	24	S2	39.4	11	7	3.2	11	5	3.2	11	7								209
55	29+85	RAMP 2	903.06	S1	68.0		20	20	S2	26.5	2.5	3	9.5	2.5	3	9.5	2.5	3								42.5

REVISED 1 — 41

REVISED 1 — 903.05

9.81
8.18
3.63

1 REVISED

1 REVISED

D-34

FINAL PLANS

DATE PREPARED 5/29/2024
ROUTE I-470 | STATE MO
DISTRICT KC | SHEET NO. 155
COUNTY JACKSON
JOB NO. J4I3470
CONTRACT ID.
STP-3400(444)
BRIDGE NO. A2150

DESCRIPTION | DATE | REV.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

GBA
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GEORGE BUTLER ASSOCIATES, INC.
PRO. ENGINEER 000133
ARCHITECT 000212
PRO. LAND SURVEYOR 000059

CHRISTOPHER NOVOSEL
PROFESSIONAL ENGINEER
PE-2018024421

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Geotechnical Engineering Report

Interchange Improvements
I-470 and View High Drive
Lee's Summit, Missouri

July 10, 2019

Terracon Project No. 02195106

Prepared for:

GBA

Lenexa, Kansas

Prepared by:

Terracon Consultants, Inc.
Lenexa, Kansas

July 10, 2019

GBA
9801 Renner Boulevard
Lenexa, Kansas 66219

Attn: Mr. Brad Burton, P.E.

Re: Geotechnical Engineering Report
Interchange Improvements
I-470 and View High Drive
Lee's Summit, Missouri
Terracon Project No. 02195106

Dear Mr. Burton:

We have completed a subsurface exploration and geotechnical engineering evaluation for the referenced project. This study was performed in general accordance with Terracon Proposal No. P02195106, dated April 18, 2019. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations and pavements for the project.

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

Sincerely,
Terracon Consultants, Inc.

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

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

REPORT TOPICS

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

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Interchange Improvements
I-470 and View High Drive
Lee's Summit, Missouri

Terracon Project No. 02195106
July 10, 2019

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering evaluation performed for the proposed interchange improvements located at I-470 and View High Drive in Lee's Summit, Missouri. Eleven exploratory borings were performed at the site to depths ranging from approximately 5 to 25 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 the following items:

- earthwork
- foundations
- pavements
- lateral earth pressures
- seismic site class

Maps showing the site and 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.

SITE CONDITIONS

Item	Description
Project Location	The project is located at the intersection of I-470 and View High Drive in Lee's Summit, Missouri.
Existing Improvements	The interchange is currently a standard diamond with View High Drive crossing under I-470. View High Drive has four lanes of street traffic through the interchange and south and two lanes of traffic north of the interchange. I-470 has six lanes of highway traffic at the interchange.

PROJECT DESCRIPTION

Item	Description
Project Description	The interchange will be improved in association with the new Paragon Star development in the northeast quadrant of the crossroads. The interchange will become a diverging diamond. View High Drive will be improved to a four-lane street through the interchange and the ramps to and from I-470 will be widened and realigned.
Proposed Structures	A multi-use path will be incorporated in the improved interchange and will require a cast-in-place retaining wall be constructed beneath the east end of the overpass. The wall will have a maximum exposed height of 6½ feet. Two truss guide signs will be constructed south and north of the interchange that will cross over the roadway from the median to the side of the road. We understand that the guide signs will be designed according to MoDOT specifications.
Grading/Slopes	The project is anticipated to require cuts and fills of approximately 10 feet to accommodate the new ramps and multi-use path. Final slope angles of 2H:1V (Horizontal: Vertical) or flatter are currently planned. Slopes will be constructed according to MoDOT standards and specifications.

EARTHWORK

Earthwork will include clearing and grubbing, excavations and fill placement.

Site Preparation

Once all cuts have been performed to accommodate the planned construction, the subgrade soils should be evaluated prior to placement of the new fill. Unsuitable materials, including vegetation, topsoil, and any existing uncontrolled fill, should be removed.

If practical, the subgrade should be proofrolled with an adequately loaded vehicle such as a fully-loaded, tandem-axle dump truck. The proofrolling should be observed by the Geotechnical Engineer. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Where fill will be placed on a slope steeper than about 6:1 (Horizontal:Vertical), the slope should be benched prior to fill placement. The benches should have a vertical face height of about 2 to 3 feet and should be cut wide enough to accommodate the compaction equipment. Benching of the slope provides interlocking between the new fill and existing soils and facilitates compaction of the fill.

Slopes

We understand that most permanent slopes will be 3:1 (Horizontal:Vertical) or flatter. However, we understand that steeper slopes will be considered in some areas. Based on the subsurface materials encountered at our boring locations and based on the specifications outlined in the MoDOT EPG Table 321.1, spill slopes of 2:1 or flatter would be acceptable provided the slope has a height of less than 20 feet. According to MoDOT EPG Table 321.1, side slopes of 2½:1 or flatter would be acceptable for the soils encountered at our boring locations.

Fill Material Types

A sample of each fill material type should be tested prior to being used on the site. Our professional opinions concerning suitability of fill materials are presented in the following table.

Fill Type [1]	USCS Classification	Acceptable Location for Placement
On-site soils	CL or CH (native clay and existing fill soils)	Pavement and landscaped areas. Existing fill should be observed, tested and approved by Terracon.
Well-graded granular	GW [2]	Where free-draining material is required.

1. Engineered fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.
2. Granular materials with less than 5 percent fines (material passing the #200 sieve), such as ASTM C33 Size No. 57 aggregate or an approved alternate gradation.

Fill Compaction Requirements

Compacted structural fill should meet the following compaction requirements.

Item	Description
Fill Lift Thickness[1]	9 inches or less in loose thickness
Compaction Requirements[2]	At least 95 percent of the material's maximum standard Proctor dry density[3]
Water Content Range	■ Low plasticity cohesive (LL<50): -2 percent to +2 percent of optimum[3] ■ High plasticity cohesive (LL≥50): 0 to +4 percent of optimum[3] ■ Granular: Workable moisture levels[4]

1. Reduced lift thicknesses of 4 to 6 inches are recommended in confined areas (e.g., utility trenches) and when hand-operated compaction equipment is used.
2. 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. As stated within ASTM D 698, this procedure is intended for soils with 30 percent or less material larger than ¾ inch. Accordingly, we recommend full time proofroll observation be performed instead of moisture density testing for materials containing more than 30 percent aggregate retained on the ¾-inch sieve.
3. As determined by the standard Proctor test (ASTM D 698).
4. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the cohesionless fill material pumping when proofrolled.

Earthwork Construction Considerations

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proofrolling, placement and compaction of engineered fill, backfilling of excavations into completed subgrades, and just prior to construction of foundations and pavements.

Care should be taken to avoid disturbance of prepared subgrades. Unstable subgrade conditions can develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. If unstable subgrade conditions develop, stabilization measures will need to be employed. Construction traffic over the completed subgrade should be avoided to the extent practical. If the subgrade becomes frozen, desiccated, saturated, or disturbed, the affected materials should be removed or these materials should be scarified, moisture conditioned, and compacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, state,

and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties. Under no circumstances should the information provided in this report be interpreted to mean that Terracon is responsible for construction site safety or the contractor's activities. Construction site safety is the sole responsibility of the contractor who shall also be solely responsible for the means, methods, and sequencing of the construction operations.

CAST-IN-PLACE RETAINING WALL

We understand that a cast-in-place concrete retaining wall is planned along View High Drive near the east abutment of the existing I-470 overpass bridge. The wall will have a maximum exposed height of 6½ feet. The follow sections provide specific design recommendations for this retaining wall.

Foundation Design Parameters

Based on the conditions encountered at the nearby borings, the footings for the retaining walls are expected to bear on native soil.

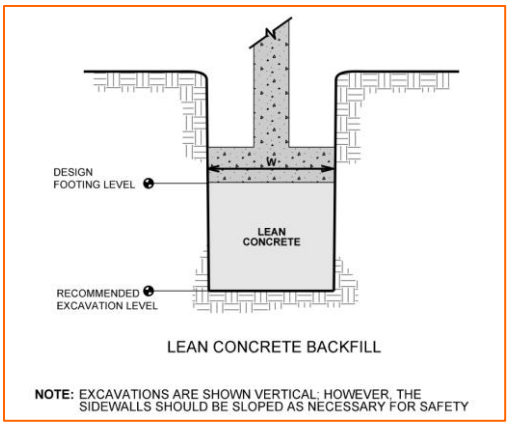
Description	Value
Maximum net allowable bearing pressure [1]	2,000 psf
Minimum embedment below finished grade for frost protection	3 feet
Minimum footing widths	16 inches

1. The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. This pressure assumes that any soft soils or other unsuitable materials, if encountered, will be undercut and replaced with engineered fill.

Foundation Construction Considerations

The base of all foundation excavations should be free of water and loose materials prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. If the soils at the bearing level become excessively dry, disturbed, saturated, or frozen, the affected soil should be removed prior to placing concrete. If the excavations must remain open overnight or for an extended period of time, a lean concrete mud-mat should be placed over the bearing soils.

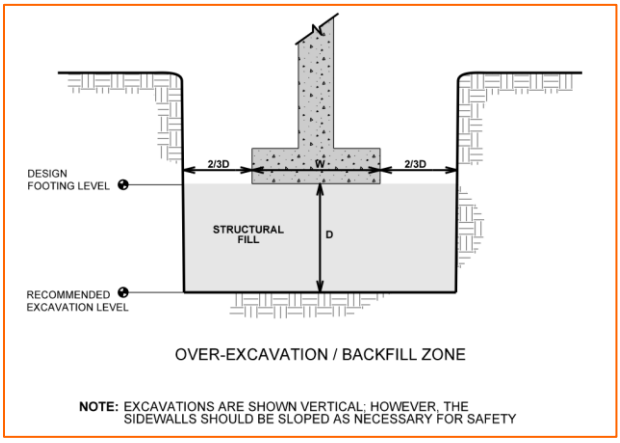
All footing bearing surfaces should be observed and tested by Terracon. If unsuitable conditions are encountered, footing excavations should be extended deeper to suitable bearing materials. Footings can bear directly on suitable soils at the lower level or on lean concrete backfill as shown in the following figure.



LEAN CONCRETE BACKFILL

NOTE: EXCAVATIONS ARE SHOWN VERTICAL; HOWEVER, THE SIDEWALLS SHOULD BE SLOPED AS NECESSARY FOR SAFETY

The footings could also bear on properly compacted backfill extending down to suitable soils as shown in the following figure. Overexcavation for compacted engineered fill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing elevation. The overexcavation should then be backfilled up to the footing base elevation with well graded granular material (e.g., MoDOT Type 5 aggregate or an approved alternate gradation) placed and compacted as recommended in Terracon Project Number 02165149, report dated July 27, 2016.



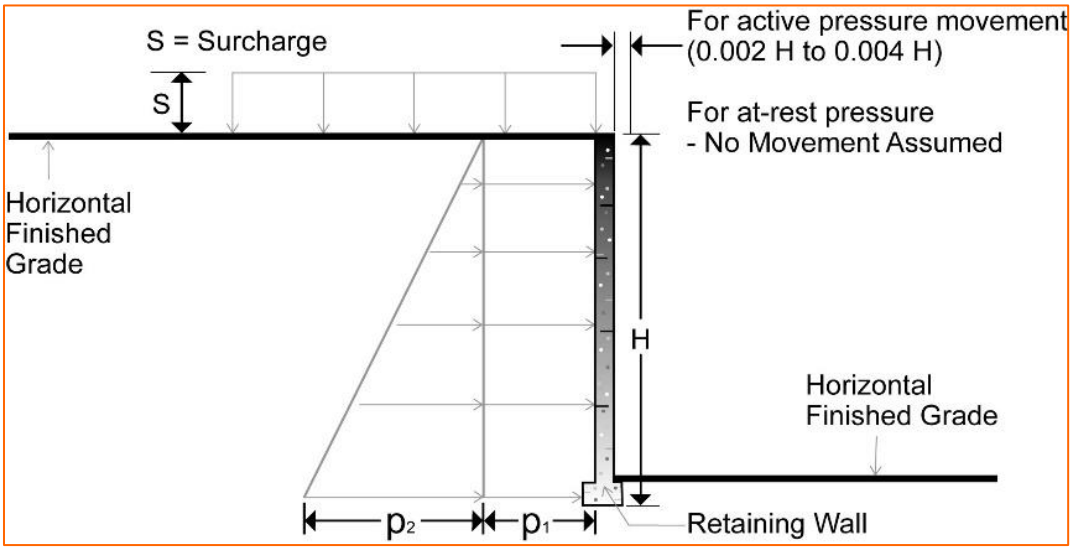
OVER-EXCAVATION / BACKFILL ZONE

NOTE: EXCAVATIONS ARE SHOWN VERTICAL; HOWEVER, THE SIDEWALLS SHOULD BE SLOPED AS NECESSARY FOR SAFETY

Lateral Earth Pressure Design Parameters

Cast-in-place concrete retaining walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to those indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of

construction, and/or compaction and the strength of materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls where wall movement is permitted. The at-rest condition considers no wall movement is permitted. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls.



Lateral Earth Pressure Parameters

Earth Pressure Conditions	Coefficient for Backfill Type	Equivalent Fluid Unit Weight (pcf)	Surcharge Pressure, p_1 (psf)	Earth Pressure, p_2 (psf)
Active (K_a)	Granular - 0.3 Clay - 0.42	40 50	(0.3)S (0.42)S	(40)H (50)H
At-Rest (K_o)	Granular - 0.47 Clay - 0.60	60 70	(0.47)S (0.60)S	(60)H (70)H
Passive (K_p)	Granular - 3.3 Clay - 2.4	420 290	--- ---	--- ---

Applicable conditions to the above include:

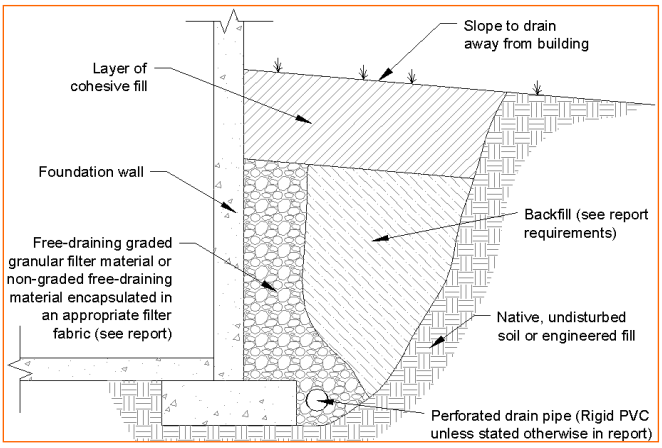
- For active earth pressure, wall must rotate about base, with top lateral movements of about 0.002 H to 0.004 H, where H is wall height
- For passive earth pressure to develop, wall must move horizontally to mobilize resistance
- Uniform surcharge, where S is surcharge pressure
- Clay soil backfill: unit weight = 120 pcf (maximum), and ϕ = 24 degrees (minimum)
- Granular material backfill: unit weight = 130 pcf (maximum), and ϕ = 32 degrees (minimum)
- Horizontal backfill, compacted as recommended in the report

- Loading from heavy compaction equipment not included
- No hydrostatic pressures acting on wall
- No loading from nearby footing or slabs
- No dynamic loading
- No safety factor included in soil parameters
- Ignore passive pressure in frost zone

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 degrees from vertical for the active and at-rest cases, and at an angle of 60 degrees from vertical for the passive case. To calculate the resistance to sliding, a value of 0.3 should be used as the ultimate coefficient of friction where the footing bears on native clay soils or engineered fill

Subsurface Drainage for Retaining Walls

To prevent hydrostatic pressure on retaining walls, we recommend drains be installed at the foundation level. Each drain line should be sloped to provide positive gravity drainage to a suitable outlet and should be surrounded by free-draining granular material graded to prevent the intrusion of fines, or an alternative free-draining granular material encapsulated with suitable filter fabric. At least a 2-foot wide section of free-draining granular fill should be used for backfill above the drain line and adjacent to the wall. The free-draining granular fill should extend to within 2 feet of final grade and should be capped with compacted cohesive fill to minimize infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion, and is fastened to the wall prior to placing backfill.

SEISMIC CONSIDERATIONS

The seismic design requirements for bridges are based on Site Class. The Site Class is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with the 2017 AASHTO LRFD Bridge Design Specifications.

Code Reference	Site Class
2017 *AASHTO LRFD Bridge Design Specifications* **(8th Edition)**	D [1]

1. Site class determination is based on average properties of the subsurface profile within 100 feet of the ground surface. The exploratory borings extended maximum depths of about 80 feet at the structure location. Terracon's opinion of site class is based on data from the borings and our knowledge of geotechnical and geologic conditions at this locale.

TRUSS GUIDE SIGN FOUNDATIONS

We understand that two truss guide signs are planned along view high drive near borings B-3 and B-4. It is our understanding that the truss guide signs will be Tubular Steel Type S with two tubes (MoDOT Standard Specification 903.06J). Based on the table on page 2 of the standard drawing specification and depending on the size and dimensions of the planned signs, the foundation is to have a maximum embedment of 12 feet below grade. Borings B-3 and B-4 encountered soil to depths greater than 12 feet, therefore footings should be designed using "in earth" parameters presented in the table in the standard drawing.

PAVEMENTS

Pavement Subgrade Preparation

Pavement subgrades are expected to consist of on-site native clay soils, approved existing fill soils, and newly placed engineered fill. The pavement subgrades should be proofrolled as recommended in **Earthwork**. If soft or otherwise unsuitable areas are observed, additional over-excavation and replacement will be needed.

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

We recommend the moisture content and density of the subgrade be evaluated and the pavement subgrades be proofrolled (using a loaded tandem-axle dump truck with a minimum gross weight of 20 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.

Opinions of Minimum Pavement Thickness (Temporary Pavements)

Pavement thickness depends upon many factors including but not limited to:

- applied wheel/axle loads and number of repetitions
- subgrade and pavement material characteristics
- climate conditions
- site and pavement drainage

Specific information regarding anticipated vehicle types, axle loads and traffic volumes was not provided at the time of this report. The following asphaltic cement concrete (ACC) pavement section is recommended for temporary traffic on a major collector.

Pavement Type	Temporary Pavement Section
ACC	2 inches ACC surface 8 inches ACC base 6 inches aggregate base (MoDOT Type 5 or similar)

Construction traffic on the pavements was not considered in developing our opinions of minimum pavement thickness. If the pavements will be subject to construction equipment/vehicles, the pavement sections should be revised to consider the additional loading.

Pavements and subgrades will be subject to freeze-thaw cycles and seasonal fluctuations in moisture content. Pavement thickness design methods are intended to provide adequate thickness of structural materials over a particular subgrade such that wheel loads are reduced to a level that the subgrade can support. The subgrade support parameters for pavement thickness design do not account for shrink/swell movements of a subgrade constructed of expansive clay soils. Therefore, the pavement may be adequate from a structural standpoint, yet still experience cracking and deformation due to shrink/swell related movement of the subgrade.

The pavement sections provided above consider that the subgrade soils will not experience significant increases in moisture content. Paved areas should be sloped to provide rapid drainage of surface water and to drain water away from the pavement edges. 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.

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 boring 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, cost estimating, 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 ±20 feet. Ground surface elevations indicated on the boring logs were estimated by interpolation from available online topographic maps and are presented to the nearest 2 feet.

The borings were drilled with a track-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, unconfined compressive strength, and Atterberg limits. A pocket penetrometer was used to estimate the consistency of selected cohesive samples. 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

Contents:

Note: All attachments are one page unless noted above.

SITE LOCATION

I-470 and View High Drive ■ Lee's Summit, MO
July 9, 2019 ■ Terracon Project No. 02195106

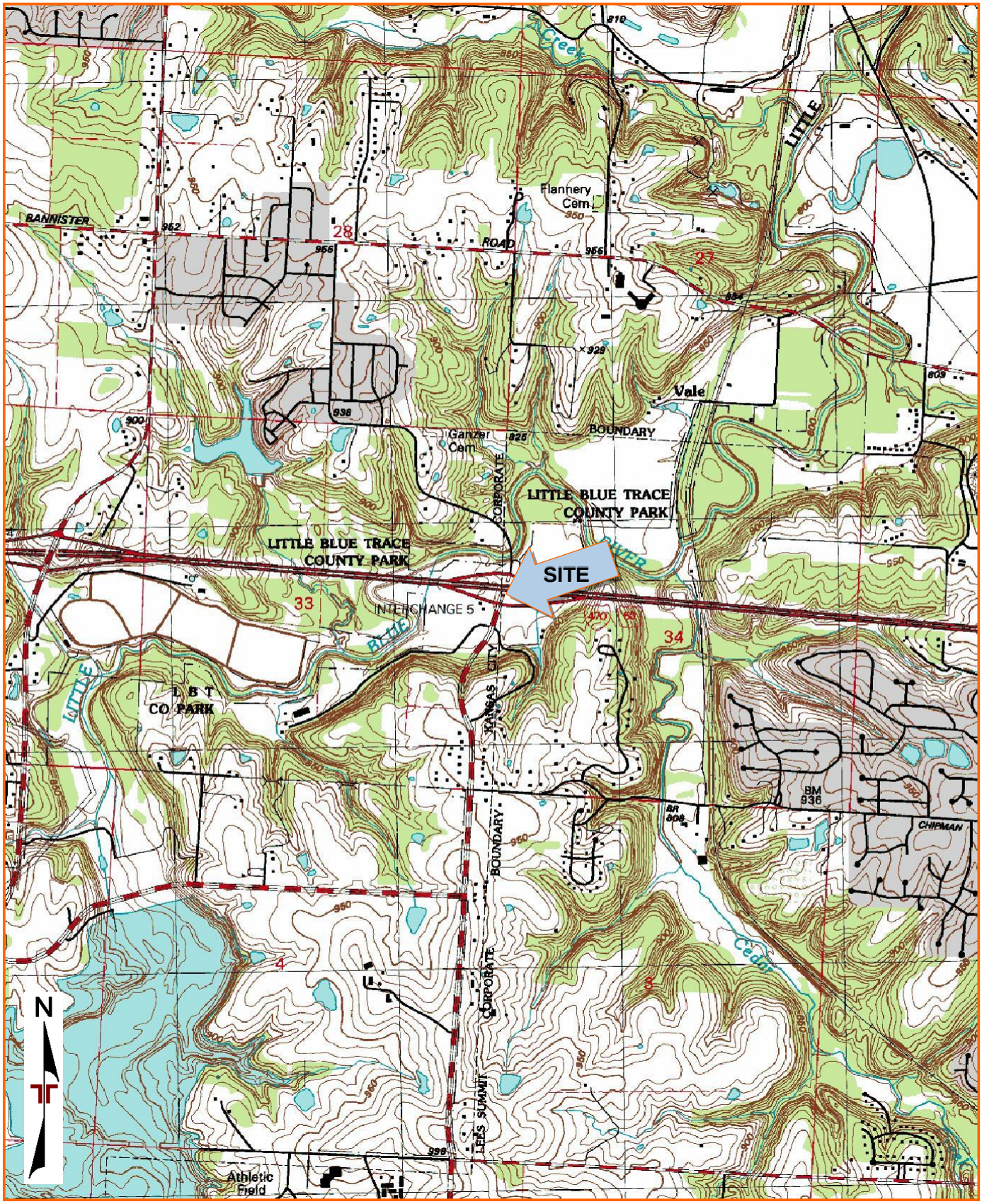


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: LEES SUMMIT, MO (1/1/1996).

EXPLORATION PLAN

I-470 and View High Drive ■ Lee's Summit, MO
July 9, 2019 ■ Terracon Project No. 02195106

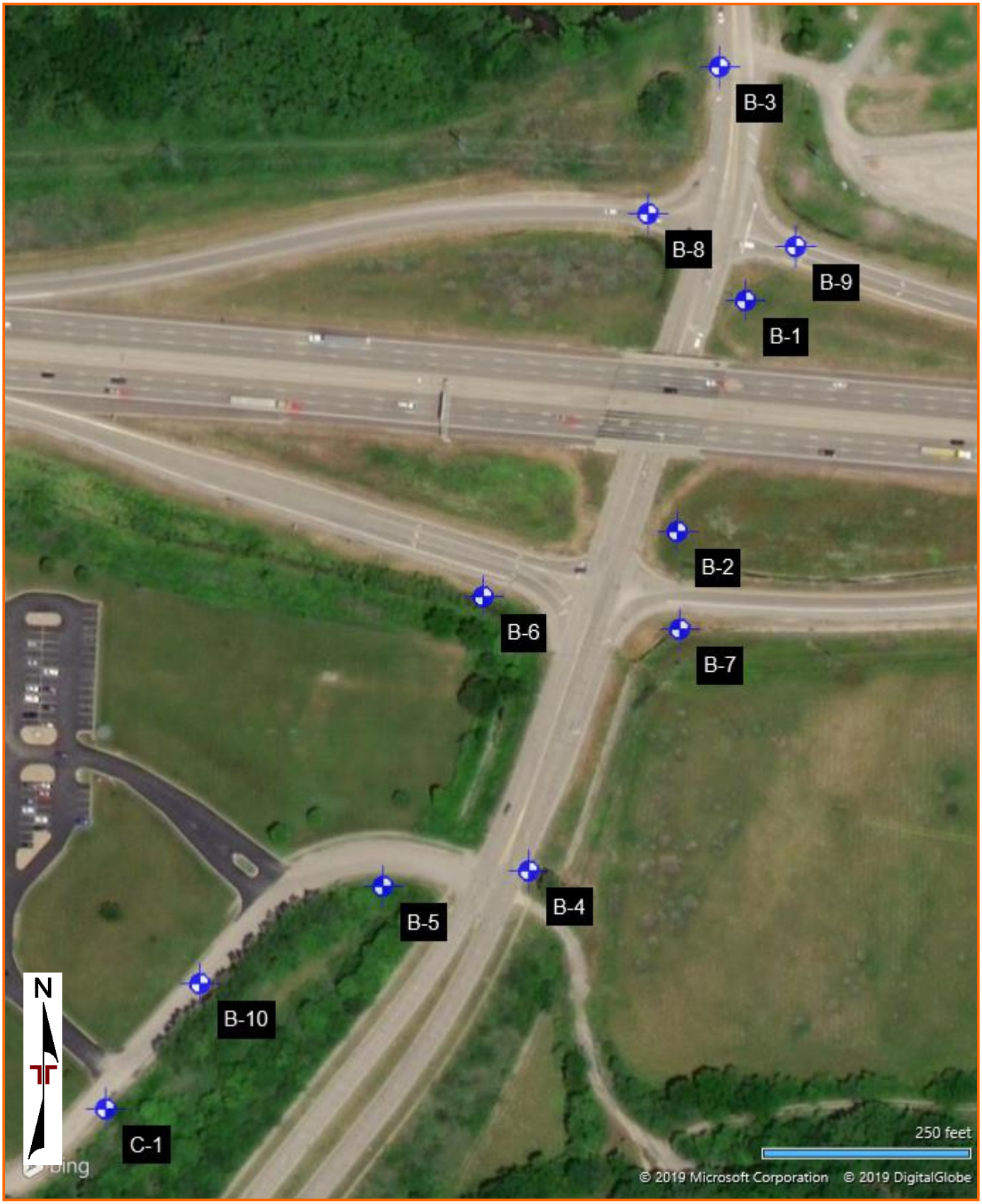


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Boring Logs (B-1 through B-10 and C-1)

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9367° Longitude: -94.4476°

Approximate Surface Elev.: 814 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DESCRIPTION
0.5	813.5+/-	**6" ROOT ZONE**
		FAT CLAY (CH), brown, stiff
6.5	807.5+/-	**LEAN CLAY (CL)**, gray to brown, very soft
		- medium stiff at 8 feet
25.0	789+/-	***Boring Terminated at 25 Feet***

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			18	3-5-5 N=10			25		51-18-33	
5	▽		19			4960	24	104		
	▽									
			18	0-0-0 N=0			28			
			24			2100	26	99	43-18-25	
10										
			18	0-0-5 N=5			33			
15										
			18	0-2-2 N=4			39			99
20										
			18	1-2-3 N=5			31			
25										

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 feet while drilling*

▽ *5 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-27-2019 | Boring Completed: 06-27-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-2

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9359° Longitude: -94.4479°

Approximate Surface Elev.: 814 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.5	813.5+/-											
6" ROOT ZONE												
LEAN CLAY (CL), gray to brown, medium stiff to stiff				X	18	3-3-4 N=7			23			
				■	14		1.5	3270	25	99	49-18-31	
		5	▽									
			▽	X	18	0-2-2 N=4			34			
- very soft to soft below 8 feet				■	24		0.5	510	30	94		
		10										
				X	18	0-0-0 N=0			34			97
		15										
				X	18	0-0-0 N=0						
		20										
				X	18	0-0-0 N=0						
25.0	789+/-	25										
Boring Terminated at 25 Feet												

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 feet while drilling*

▽ *5 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-27-2019 | Boring Completed: 06-27-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-3

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9374° Longitude: -94.4477°

Approximate Surface Elev.: 810 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
0.7	809.5+/-
15.0	795+/-

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		18	3-5-5 N=10	23	48-19-29
		5	50/5"	7	
5					
		3	50/3"	14	
		18	2-4-6 N=10	26	
10					
		4	3-3-5 N=8	27	
15					

8" ASPHALT

FILL - LEAN CLAY, with shale and limestone fragments, gray and brown

Boring Terminated at 15 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *13 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-27-2019 | Boring Completed: 06-27-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-4

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9348° Longitude: -94.4485°

Approximate Surface Elev.: 824 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3	824+/-											
3" ASPHALT												
0.8	823.5+/-											
6" CONCRETE												
1.2	823+/-											
5" AGGREGATE												
FILL - FAT CLAY, with shale and limestone fragments, gray and brown				X	18	14-14-7 N=21			7			
				X	18	2-4-5 N=9			27		54-22-32	
		5										
			▽	X	18	2-6-14 N=20			26			
			▽	X	9	14-7-4 N=11			32			
		10										
				X	18	1-2-3 N=5			22			
15.0	809+/-	15										
Boring Terminated at 15 Feet												

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8.5 feet while drilling*

▽ *8 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-28-2019 | Boring Completed: 06-28-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-5

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9347° Longitude: -94.4491°

Approximate Surface Elev.: 820 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
1.0	819+/-						
12" ASPHALT							
			15	3-4-7 N=11		21	
			16		4.5+	16	110
		5					
			0	1-3-3 N=6			
8.0	812+/-						
FAT CLAY (CH), dark brown, medium stiff to stiff			18	3-4-4 N=8		24	
		10					
			18	3-3-4 N=7		27	
15.0	805+/-						
Boring Terminated at 15 Feet		15					

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-03-2019 | Boring Completed: 07-03-2019

Drill Rig: 988 | Driller: SF

Project No.: 02195106

BORING LOG NO. B-6

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9357° Longitude: -94.4487°

Approximate Surface Elev.: 814 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
0.1	814+/-
0.6	813.5+/-
15.0	799+/-

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			18	3-4-5 N=9			20		45-24-21	
			20		3.0		16	105		
5										
			18	2-2-2 N=4			26			
	▽									
	▽		18	2-2-4 N=6			39			
10										
			18	0-0-0 N=0						
15										

1" ASPHALT

6" AGGREGATE

LEAN CLAY (CL), gray to brown, stiff to very stiff

- medium stiff below 6.5 feet

- very soft below 13.5 feet

Boring Terminated at 15 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 feet while drilling*

▽ *8 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-28-2019 | Boring Completed: 06-28-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-7

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9356° Longitude: -94.4479°

Approximate Surface Elev.: 814 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.2	814+/-											
2" ASPHALT												
0.7	813.5+/-											
6" AGGREGATE												
LEAN CLAY (CL), gray to brown, medium stiff to stiff				X	18	2-3-4 N=7			25			
				■	11			4580	23	103		
		5	▽									
				X	18	2-3-3 N=6			30			
- very soft below 8.5 feet				X	18	0-0-0 N=0			28			
		10										
				X	18	0-0-0 N=0						
15.0	799+/-	15										
Boring Terminated at 15 Feet												

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 feet while drilling*

▽ *6 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-28-2019 | Boring Completed: 06-28-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-8

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9369° Longitude: -94.448°

Approximate Surface Elev.: 808 (Ft.) +/-

DEPTH	ELEVATION (Ft.)
0.3	808+/-
0.8	807.5+/-
15.0	793+/-

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
			18	2-3-4 N=7			23		40-18-22	
			24			1330	25	101		
5	▽									
			18	0-0-0 N=0			31			
	▽		18	0-0-0 N=0			42			99
10										
			18	0-0-0 N=0						
15										

3" ASPHALT

6" AGGREGATE

LEAN CLAY (CL), gray to brown, medium stiff

- soft below 3 feet

- very soft below 6.5 feet

Boring Terminated at 15 Feet

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 feet while drilling*

▽ *9 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-27-2019 | Boring Completed: 06-27-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-9

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9368° Longitude: -94.4474°

Approximate Surface Elev.: 812 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
0.3 **3" ASPHALT**	812+/-											
0.6 **4" AGGREGATE**	811.5+/-											
FAT CLAY (CH), gray to brown, stiff					18	3-4-5 N=9			20			
					24		1.0	4270	26	99		
		5	▽									
- very soft below 6.5 feet			▽		18	0-0-1 N=1			28			
					18	0-0-1 N=1			31			
		10										
					18	0-0-0 N=0						
15.0	797+/-	15										
Boring Terminated at 15 Feet												

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 feet while drilling*

▽ *5 feet after completion*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 06-27-2019 | Boring Completed: 06-27-2019

Drill Rig: 754 | Driller: JW

Project No.: 02195106

BORING LOG NO. B-10

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.9344° Longitude: -94.4499°

Approximate Surface Elev.: 820 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)
1.0	819+/-						
12" ASPHALT							
			12	2-3-33 N=36		26	
			13	3-7-7 N=14		19	
5.0	815+/-	5					
LEAN CLAY (CL), with sand, gray and brown, medium stiff to stiff			13		2.0	23	103
			18	2-3-5 N=8		25	
		10					
			18	2-2-3 N=5		30	
15.0	805+/-	15					
Boring Terminated at 15 Feet							

ATTERBERG LIMITS: LL-PL-PI

PERCENT FINES

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *12 feet while drilling*

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-03-2019 | Boring Completed: 07-03-2019

Drill Rig: 988 | Driller: SF

Project No.: 02195106

BORING LOG NO. C-1

PROJECT: I-470 and View High Drive

CLIENT: GBA
Lenexa, KS

SITE: I-470 and View High Drive
Lee's Summit, MO

LOCATION See Exploration Plan

Latitude: 38.934° Longitude: -94.4503°

Approximate Surface Elev.: 820 (Ft.) +/-

GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
	12" ASPHALT												
	1.0	819+/-											
	FILL - LEAN CLAY, with gravel, dark brown with brown					14	2-3-5 N=8			21		41-19-22	
						16	3-4-6 N=10			22			
	5.0	815+/-	5										
	Boring Terminated at 5 Feet												

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

Hammer Type: Automatic

Advancement Method:
Continuous Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

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

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
15620 W 113th St
Lenexa, KS

Boring Started: 07-03-2019 | Boring Completed: 07-03-2019

Drill Rig: 988 | Driller: SF

Project No.: 02195106

SUPPORTING INFORMATION

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

I-470 and View High Drive ■ Lee's Summit, MO

July 10, 2019 ■ Terracon Project No. 02195106

Terracon GeoReport

SAMPLING

Shelby Tube

Split Spoon

WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

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

FIELD TESTS

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

DESCRIPTIVE SOIL CLASSIFICATION

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

LOCATION AND ELEVATION NOTES

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

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS

(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.
Very Loose	0 - 3
Loose	4 - 9
Medium Dense	10 - 29
Dense	30 - 50
Very Dense	> 50

CONSISTENCY OF FINE-GRAINED SOILS

(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

Descriptive Term (Consistency)	Unconfined Compressive Strength Qu, (psf)	Standard Penetration or N-Value Blows/Ft.
Very Soft	less than 500	0 - 1
Soft	500 to 1,000	2 - 4
Medium Stiff	1,000 to 2,000	4 - 8
Stiff	2,000 to 4,000	8 - 15
Very Stiff	4,000 to 8,000	15 - 30
Hard	> 8,000	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

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

RELATIVE PROPORTIONS OF FINES

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

GRAIN SIZE TERMINOLOGY

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

PLASTICITY DESCRIPTION

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

UNIFIED SOIL CLASSIFICATION SYSTEM

Terracon GeoReport

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

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

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

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

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

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

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

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

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

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

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

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

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

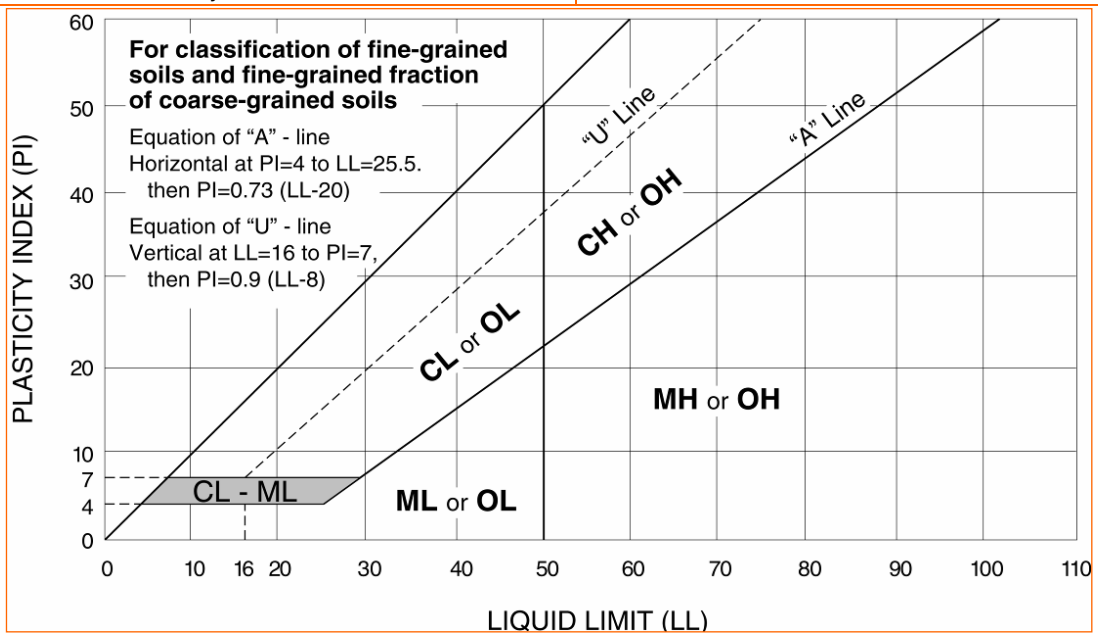
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

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

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

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

[Q] PI plots below "A" line.



I-470 Western Gateway Transportation District
I-470 and View High Drive Diverging Diamond Interchange

Pre-Bid Agenda:
Minutes in Red Text
May 22, 2024

Introductions:

- **Dennis O'Grady / Casey Williams – Fogel Anderson Construction**
- **Brett Wood / Ben Ware / Brad Burton – GBA**
- **Attendance: Dennis O'Grady / Casey Williams / Ben Ware**
  - **Refer to sign-sheet for attending contractors.**

1) **Bids: June 6, 2024. 2:00 PM**
   a. Electronic submission: estimating@fogel-anderson.com
   b. Hand delivery or mail.
   c. Bids opened in private.
2) **Submission of bids:**
   a. Refer to "Bidder Checklist"
      i. Itemized Bid Form
      ii. Bid Bond
      iii. Documentation of Contractor Pre Qual or Questionnaire
      iv. Anti Collusion Statement
      v. E-Verify MOU
3) **Contract Items of Note:**
   a. Award to single contractor, stipulated sum.
   b. 169 calendar duration, completion mid-December 2024.
   c. Liquidated damages $1,000 / per calendar day.
   d. Prevailing wage.
   e. 30% of work performed by contractor own forces.
   f. DBE's waived.
   g. Sales tax to be included. **To be confirmed in Addendum #1.**

4) **PROPOSED WORK:** The proposed work, hereinafter called the work, includes:

Sub-Project 1: **VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470**

Grading, paving, storm drainage, lighting, signals, signing, and retaining walls along View High Drive, Meers Road, and Ramps to and from I-470. The interchange of I-470 and View High Drive will be improved to a Diverging Diamond Interchange.

Sub-Project 2: **WATER MAIN RELOCATION AT MEERS ROAD & VIEW HIGH DRIVE**

Water main relocation on the southwest quadrant of the Meers Road and View High Drive Intersection.

Sub-Project 3: **KCMO SANITARY SEWER RELOCATION (PARAGON STAR DEVELOPMENT)**

Manhole relocation for the KCMO Sanitary Sewer system located in the Paragon Star Development.

Sub-Project 4: VIEW HIGH DRIVE TRAIL PROJECT

Grading and paving for 1850' of pedestrian trail improvements along View High Drive from Chipman Road to the beginning of construction of the VIEW HIGH DRIVE INTERCHANGE IMPROVEMENTS AT I-470.

5) **List of Drawings**:
   a. Individual sets of drawings
      i. DDI
      ii. Cross Sections
      iii. Water Main Relocation
      iv. Sanitary Sewer Relocation
      v. Public Improvement Plans For View High Road

6) Addendum:
   a. Missouri SWPPP View High – DDI
   b. Existing concrete jersey barriers (south of I-470 on View High Drive), contractor to; relocate to trailer lay down area.
   c. Watermain, Sanitary, Public Improvements: to be permitted by KCMO. The contractor shall schedule all required inspections with KCMO.
   d.

7) Questions:
   a. Is a maintenance bond required with KCMO portions of the work.

I-470 Western Gateway Transportation District

I-470 and View High Drive Diverging Diamond Interchange

	Name	Company	Email	Phone #
	Dennis D'Grady	Fogel-Anderson	dogrady@fogel-anderson.com	(9) 544-3998
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