

Addendum #8

Walnut Plaza and Ed Johnson Memorial

CONTRACT NO. R-19-007

Bid schedule per Addendum #6

Pre-Bid Meeting September 17th at 10:00 am

Bid Opening October 22nd at 2:00 pm

Attachments

1. Ed Johnson Memorial Sheet L0.1-
 - a. Revised note indicating that the existing EPB pull box shall be relocated by and coordinated with EPB forces.
2. Ed Johnson Memorial Sheet E1.1-
 - a. Added note to clarify that all costs associated with the relocation work of the EPB pull box shall be the responsibility of EPB. Also EPB has chosen a new location for the pull box along the western side of the work limits as indicated.
3. Section 321400- Unit Paving
 - a. Added note in Section 2.3(A) specifying "Stone to be Natural Tennessee Sandstone in the grey, beige, and blue color range. Stones with oxidized iron color (bright orange) may not comprise more than 5% of the total square footage of stone.
4. Section 044313- Anchored Stone Masonry Veneer
 - a. Added note in Section 2.2(B)1 specifying "Stone to be Natural Tennessee Sandstone in the grey, beige, and blue color range. Stones with oxidized iron color (bright orange) may not comprise more than 5% of the total square footage of stone.

Questions Received via email:

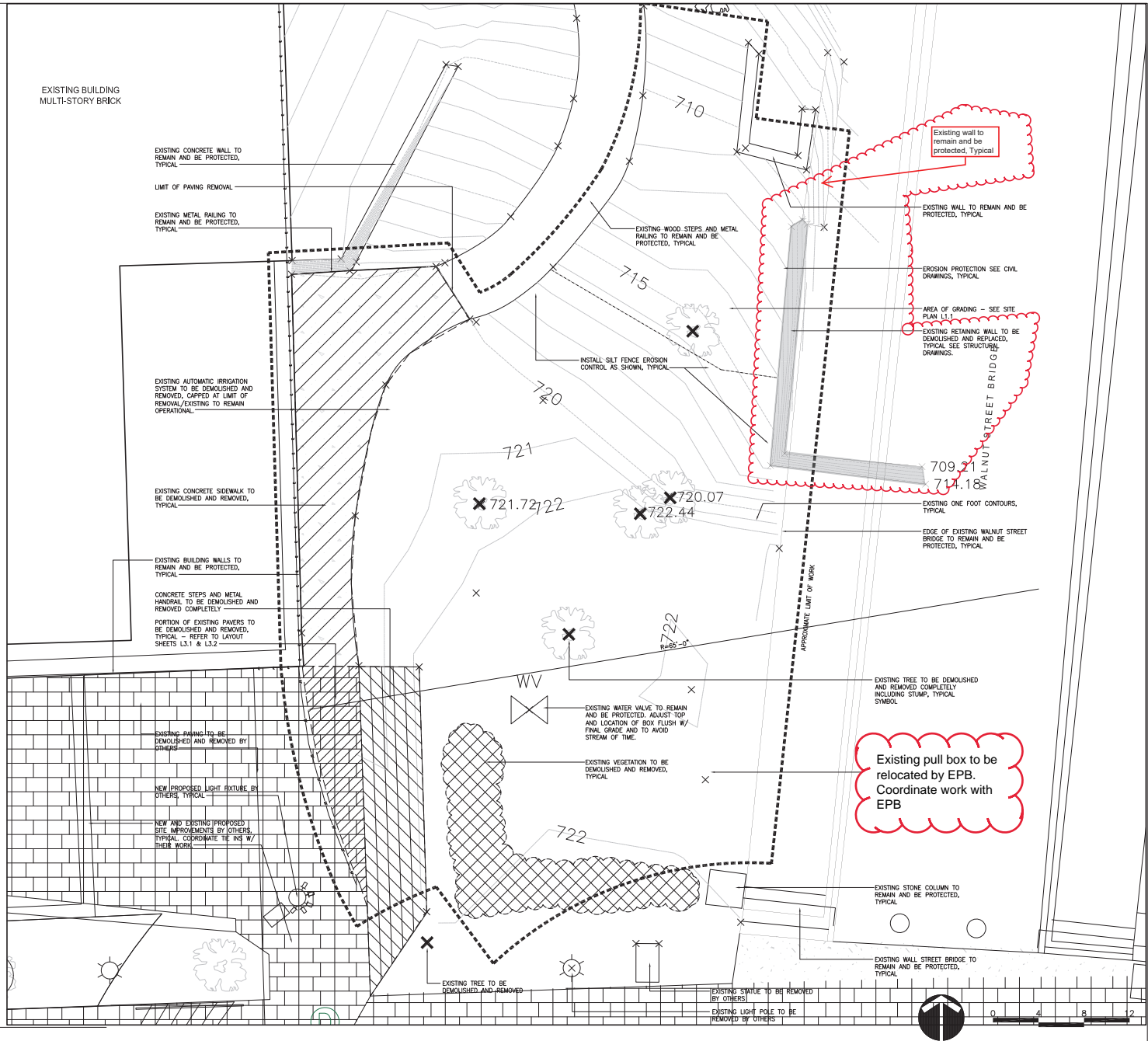
1. On drawing L0.1 we are being ask to relocate an existing electrical box to under the bridge foot print. Can we get clarification on what is in the box, where it's fed from, where it goes to, and how many conduits are there. Based on what is there, are we to assume all existing conductors can be re-used or will we have to splice and re-pull?
 - a. As noted on the attached sheets, and E1.0, all costs and work associated with moving the pull box will be the responsibility of EPB. Contractors are asked to include only the cost of coordination in their bids.
2. I have been contacted by an installer for a quote on this project. I did however have some questions on the natural stone specified (sandstone within 100 miles). Is there further direction available on this specification?
 - a. See attached revised specifications regarding natural stone products for the Walnut Plaza.

DEMOLITION NOTES:

1. THE LOCATION OF ALL SURFACE AND UNDERGROUND UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL UTILITIES FROM DAMAGE AS REQUIRED DURING CONSTRUCTION AND TO REPAIR ANY DAMAGE WHICH SHOULD OCCUR TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL EXISTING BUILDINGS AND STRUCTURES TO REMAIN, BOTH ABOVE AND BELOW GRADE FROM DAMAGE WHICH OCCURS DIRECTLY OR INDIRECTLY AS A RESULT OF CONSTRUCTION OPERATIONS AND TO REPAIR ANY DAMAGE WHICH SHOULD OCCUR TO THE SATISFACTION OF THE OWNER OR INSURED PARTY.
3. ALL EXISTING TREES TO REMAIN ARE INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF TOPS, TRUNKS, AND ROOTS OF EXISTING TREES ON THE PROJECT SITE THAT ARE TO REMAIN. EXISTING TREES SHALL BE PROTECTED OR OTHERWISE PROTECTED BEFORE ANY WORK IS STARTED. DO NOT PERMIT HEAVY EQUIPMENT OR STOCKPILES WITHIN BRANCH SPREAD. REMOVE INTERFERING BRANCHES ONLY UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT AND WITHOUT INJURY TO TREES. COVER SCARS WITH TREE PAINT.
4. THE LIMIT OF WORK LINE SHOWN ON THE DRAWINGS IS APPROXIMATE. THE LIMIT OF WORK SHALL BE AS DEFINED IN THE SPECIFICATIONS AND AS REQUIRED TO COMPLETE THE WORK SHOWN ON THE DRAWINGS.
5. THE LIMIT OF DEMOLITION WORK IN PAVEMENTS OR STRUCTURES SHALL ALWAYS BE A SAVED LINE AS SPECIFIED OR TO THE NEAREST EXISTING JOINT.
6. DEMOLISH ALL EXISTING IMPROVEMENTS IN THE LIMIT OF WORK, UNLESS NOTED TO REMAIN, AND AS REQUIRED TO COMPLETE THE WORK AS SPECIFIED AND AS SHOWN ON THE DRAWINGS.
7. INSTALL EROSION CONTROL, SEDIMENT BARRIERS, SILT FENCES, AND TREE PROTECTION DEVICES PRIOR TO STARTING CLEARING AND GRUBBING OPERATIONS. INSTALL STRAW BALES AROUND ALL STORM SEWER STRUCTURES AS SHOWN ON THE DRAWINGS AND AS DIRECTED. MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION AS REQUIRED IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, ETC. OF AUTHORITIES HAVING JURISDICTION.
8. PROVIDE STRAW BALE CHECK DAMS IN ALL SWALES AT 100 FT. MAX. INTERVALS FOR ENTIRE LENGTH OF EACH SWALE.
9. REMOVE GRAVEL FROM ALL AREAS SHOWN TO BE GRASSSED. GRAVEL SHALL BE REMOVED TO CLEAN EARTH SUBGRADE. BACKFILL SUCH AREAS WITH APPROVED SOIL MATERIALS.
10. ALL UNDAMAGED CAST IRON UTILITY FRAMES AND COVERS/GRATES MAY BE RE-USED OR SHALL BE RETURNED TO THE RESPECTIVE UTILITY. CONTRACTOR SHALL TRANSPORT ANY RETURNED ITEMS TO LOCATION AS DIRECTED BY EACH RESPECTIVE UTILITY.
11. REMOVE ALL PAVEMENTS AND CRUSHED STONE WITHIN DEMOLITION LIMITS TO CLEAN EARTH SUBGRADE UNLESS NOTED OTHERWISE.
12. CAREFULLY REMOVE EXISTING TRAFFIC SIGNS, ETC. WITHIN LIMIT OF WORK AND GIVE TO THEIR RESPECTIVE OWNERS IN GOOD CONDITION FOR POSSIBLE RE-USE.
13. REMOVE EXISTING LIGHT POLES AND STORE FOR RE-USE UNLESS NOTED TO REMAIN. LIGHT POLES SHALL BE RETURNED TO THE UTILITY FOR RE-USE.
14. MAINTAIN ELECTRICAL, SEWER, TELEPHONE, FIBER OPTICS, AND ALL OTHER EXISTING SERVICE WITHIN THE LIMITS OF WORK IN GOOD WORKING CONDITION FOR THE USE OF THE PROJECT.
15. CONTRACTOR TO REFER TO CIVIL ENGINEERING PLANS FOR DEMOLITION AND PROTECTION OF STORM DRAINAGE SYSTEMS AS APPLICABLE.

✕ EXISTING TREE TO BE DEMOLISHED AND REMOVED

EXISTING BUILDING
MULTI-STORY BRICK



1 DEMOLITION PLAN
1.0.1 SCALE: 1/4" = 1'-0"

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ED JOHNSON MEMORIAL
CHATTANOOGA, TENNESSEE



REVISED

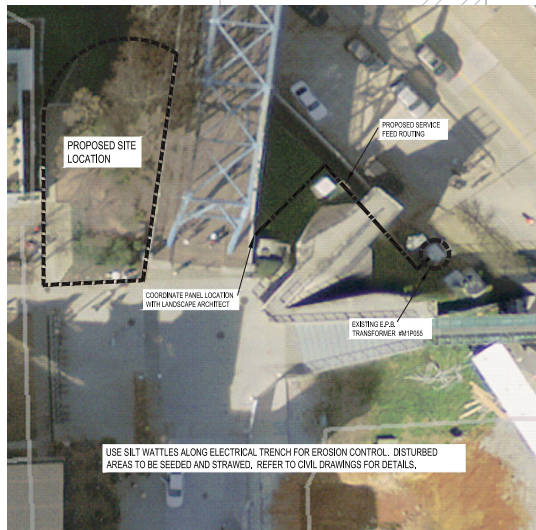
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PROJECT NUMBER: 17010
ISSUE DATE: 8.24.2019

DEMOLITION PLAN

L0.1

PANEL SCHEDULE										
NAME: A			VOLTAGE: 208/120, 1PH, 3W,							
FRAME: NEMA			FEEDS FROM: UTILITY							
MARK: 60A MCB			PROVIDE NEUTRAL BUS							
TRM: SURFACE, NEMA 3R			PROVIDE GROUND BAR							
AIC RATING: SERIES RATED AT 22,000			SERVICE ENTRANCE RATED							
CODE	CKT	LOAD	TRF	PLS	A	B	PLS	TRF	LOAD	CKT CODE
L	1	LIGHTING	20	1			1	20	SPARE	2
L	3	LIGHTING	20	1			1	20	SPARE	4
L	5	LIGHTING	20	1			1	20	SPARE	6
7		IRRIGATION CONTROLLER	20	1			1	20	SPARE	8
G	9	RECEPTACLE - AT PANEL	20	1			1	20	SPARE	10
G	11	RECEPTACLE - ON SITE	20	1			1	20	SPARE	12
13		SPACE ONLY	20	1			1	20	SPARE	14
15		SPACE ONLY	20	1			1	20	SPARE	16
17		SPACE ONLY	20	1			1	20	SPARE	18
L - RUN CIRCUIT THRU CONTACTOR			PHASE LOAD TOTAL PROVIDE TYPEWRITTEN SCHEDULES WITH PLASTIC COVER, CIRCUIT NAMES TO BE EXACTLY AS LISTED HERE. PROVIDE ENGRAVED NAMEPLATE ON FACE OF PANEL							
G - PROVIDE GFCI RATED CIRCUIT BREAKER										
TOTAL CONNECTED LOAD -			KVA		OR		-		AMPS	

- ### ELECTRICAL KEYED NOTES
1. LOW VOLTAGE WIRING 24"X 14" HUNG IN A 3" CONDUIT TO ELECTRICAL SERVICE, CONNECT TO LIGHTING CONTROLLER.
 2. LINE VOLTAGE WIRING 24"X 14" HUNG IN A 3" CONDUIT TO ELECTRICAL SERVICE, PROVIDE THREE (3) SETS OF CONTROL WIRES 24"X 14" HUNG TO LIGHTING CONTROLLER (ONE FOR EACH FIXTURE).
 3. LINE VOLTAGE WIRING 24"X 14" HUNG IN A 3" CONDUIT TO ELECTRICAL SERVICE, PROVIDE ONE (1) SETS OF CONTROL WIRES 24"X 14" HUNG TO LIGHTING CONTROLLER.



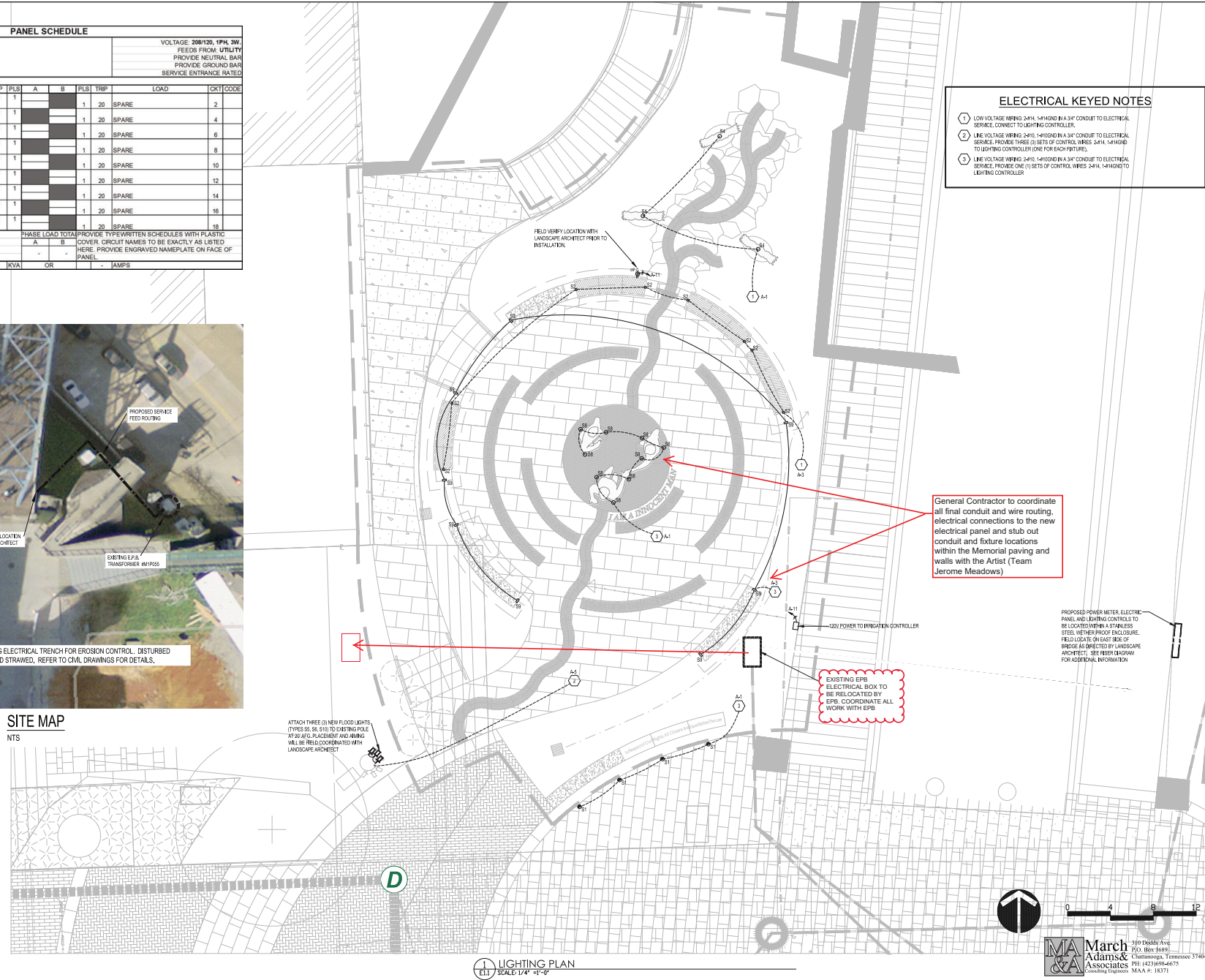
SITE MAP
NTS

ATTACH THREE (3) NEW FLOODLIGHTS (TYPES SS, SB, S10) TO EXISTING POLE AT 20' AIC PLACEMENT AND WIRING WILL BE FIELD COORDINATED WITH LANDSCAPE ARCHITECT

General Contractor to coordinate all final conduit and wire routing, electrical connections to the new electrical panel and stub out conduit and fixture locations within the Memorial paving and walls with the Artist (Team Jerome Meadows)

EXISTING EPB ELECTRICAL BOX TO BE RELOCATED BY EPB, COORDINATE ALL WORK WITH EPB

PROPOSED POWER METER, ELECTRIC PANEL AND LIGHTING CONTROLS TO BE LOCATED WITHIN A STAINLESS STEEL WEATHER-PROOF ENCLOSURE. FIELD LOCATE ON EAST SIDE OF BRIDGE AS DIRECTED BY LANDSCAPE ARCHITECT. SEE BRIDGE DIAGRAM FOR ADDITIONAL INFORMATION



LIGHTING PLAN
SCALE: 1/4" = 1'-0"

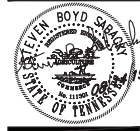
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LIGHTING PLAN

E1.1

SECTION 044313 - ANCHORED STONE MASONRY VENEER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Stone coping anchored to concrete wall below.
 - 2. Stone stair treads.
- B. Samples for Initial Selection: For the following:
 - 1. Joint materials involving color selection.

1.3 ACTION SUBMITTALS

- A. Product Data: For each variety of stone, stone accessory, and manufactured product.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters.
- B. Fabricator Qualifications: A qualified fabricator/stone supplier with equipment required to make cuts and create finishes As Indicated.
- C. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Build mockup of typical wall area as shown on Drawings.
 - 2. Build mockup approximately 72 inches long by full thickness, including accessories.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Landscape Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- C. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 FIELD CONDITIONS

- A. Protection of Stone Masonry: During construction, cover tops of walls, and projections with waterproof sheeting at end of each day's work. Cover partially completed stone masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining stone masonry face.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter using coverings spread on the ground and over the wall surface.
 - 2. Protect ledges and projections from mortar droppings.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.7 COORDINATION

- A. Advise installers of adjacent Work about specific requirements for placement of items to be built into stone masonry.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone: Obtain stone from single quarry with resources to provide materials of consistent quality in appearance and physical properties.

2.2 SANDSTONE

- A. Material Standard: Comply with ASTM C 616/C 616M, Classification I Sandstone.
- B. Varieties and Sources: Subject to compliance with requirements, available stone varieties that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Stone to be Natural Tennessee Sandstone in the grey, beige, and blue color range. Stones with oxidized iron color (bright orange) may not comprise more than 5% of the total square footage of stone.
 - 2. Sandstone coming from a regional quarry within 100 miles of the project site with samples approved by the Landscape Architect.
- C. Stone Sizes: As indicated in the Drawings.
- D. Wall Coping Finish:
 - 1. Top: Natural Cleft
 - 2. Sides: Sawn and Sandblasted
 - 3. Joints: Sawn
- E. Stair Tread Finish:
 - 1. Top: Natural Cleft
 - 2. Front and Exposed Sides: Sawn and Sandblasted
 - 3. Joints: Sawn

2.3 MORTAR MATERIALS

- A. Mortar Cement: ASTM C 1329/C 1329M.
 - 1. Use Type S below grade and against earth. Type N can be used above grade.
- B. Portland Cement-Lime Mix: Packaged blend of portland cement, hydrated lime, and mortar.
- C. Water: Potable.

2.4 FABRICATION

- A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated.
- B. Cut, Split, or Select stone to produce pieces of thickness, size, and shape indicated, including details and pattern on Drawings.
- C. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.
- D. Cut and drill sinkages and holes in stone for anchors and supports.
- E. Carefully inspect stone at quarry or fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units before shipment.

2.5 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
 - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in the form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Stone Masonry: Comply with ASTM C 270, Property Specification.
 - 1. Mortar for Setting Stone: Type N.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive stone masonry, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry.
- B. Examine substrate to verify that anchors, and other items installed in substrates and required for or extending into stone masonry are correctly installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 SETTING STONE MASONRY

- A. Perform necessary field cutting and trimming as stone is set.
 - 1. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snipping.
- B. Sort stone before it is placed on wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
- C. Arrange stones as indicated on Drawings.
- D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.
- E. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place.
- F. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.
- G. Maintain uniform joint widths. Lay walls with hand tight joints more than 1/16 inch.

3.4 CONSTRUCTION TOLERANCES

- A. Measure variation from level, plumb, and position shown in plan as a variation of the average plane of each stone face from level, plumb, or dimensioned plane.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace stone masonry of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Landscape Architect.
 - 2. Defective joints.
 - 3. Stone masonry not matching approved samples and mockups.
 - 4. Stone masonry not complying with other requirements indicated.

Walnut Street Plaza

- B. Replace in a manner that results in stone masonry matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean stone masonry as work progresses.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Landscape Architect's approval of sample cleaning before cleaning stone masonry.
 - 3. Clean stone masonry by bucket and brush hand-cleaning method described in BIA Technical Note No. 20, Revised II, using job-mixed detergent solution.

3.6 EXCESS MATERIALS AND WASTE

- A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.
- B. Excess Masonry Waste: Remove excess masonry waste, and other waste, and legally dispose of off Owner's property.

END OF SECTION 044313.13

SECTION 321400 - UNIT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Brick pavers set in aggregate setting beds.
- 2. Stone pavers set in mortar setting beds.

- B. Related Requirements:

- 1. Section 321313 "Concrete Paving" for concrete base under stone pavers.
- 2. Section 044313 "Anchored Stone Masonry" for stone step treads.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For materials other than water and aggregates.

- B. Product Data: For the following:

- 1. Pavers.
- 2. Mortar and grout materials.

- C. Sieve Analyses: For aggregate setting-bed materials, according to ASTM C 136.

- D. Samples for Verification: For full-size units of each type of unit paver indicated.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

1.6 QUALITY ASSURANCE

- A. Mockups: Build mockups to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.8 FIELD CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
- B. Weather Limitations for Bituminous Setting Bed:
 - 1. Install bituminous setting bed only when ambient temperature is above 40 deg F and when base is dry.
 - 2. Apply asphalt adhesive only when ambient temperature is above 50 deg F and when temperature has not been below 35 deg F for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.
- C. Weather Limitations for Mortar and Grout:
 - 1. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 2. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6. Provide artificial shade and windbreaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 95 deg F and higher.
 - a. When ambient temperature exceeds 90 deg F, or when wind velocity exceeds 8 mph and ambient temperature exceeds 85 deg F, set pavers within 1 minute of spreading setting-bed mortar.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 BRICK PAVERS

- A. Brick Pavers: Heavy vehicular paving brick; ASTM C 1272, Type F, Application PX. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.

- 1. Manufacturer: Whitacre Greer
- 2. Product: 3 x 9 Boardwalk Paver with Lugs
- 3. Thickness: 3 inches
- 4. Face Size: 3 by 9 inches
- 5. Colors: Red Blend and Tan Blend
- 6. Red Blend Mix:
 - a. 25% Antique-32
 - b. 25% Dark Antique-33
 - c. 25% Mulberry-34
 - d. 25% Red Sunset-36
- 7. Tan Blend Mix:
 - a. 33% Chocolate-54
 - b. 33% Majestic-52
 - c. 34% Desert Grey-56

- B. Efflorescence: Brick shall be rated "not effloresced" when tested according to ASTM C 67.

2.3 STONE PAVERS

- A. Quartz-Based Stone Pavers: Rectangular paving slabs made from quartz-based stone complying with ASTM C 616/C 616M, Classification I Sandstone. Stone to be Natural Tennessee Sandstone in the grey, beige, and blue color range. Stones with oxidized iron color (bright orange) may not comprise more than 5% of the total square footage of stone. Stone shall be sources from a quarry within 100 miles of Chattanooga, Tennessee.
 - 1. Finish: Natural cleft.
 - 2. Thickness: Not less than 3-inches unless otherwise indicated.
 - 3. Face Size: As indicated

2.4 CURBS AND EDGE RESTRAINTS

- A. Job-Built Concrete Edge Restraints: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mixed concrete with minimum 28-day compressive strength of 3000 psi.

2.5 ACCESSORIES

- A. Cork Joint Filler: Preformed strips complying with ASTM D 1752, Type II.

2.6 AGGREGATE SETTING-BED MATERIALS

- A. Graded Aggregate for Base: Sound, crushed stone or gravel complying with ASTM D 2940/D 2940M, base material.
- B. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33/C 33M for fine aggregate.
- C. Sand for Brick Paver Joints: Polymeric Sand.
 - 1. Provide sand of color needed to produce required joint color.
- D. Sand for Stone Paver Joints: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33/C 33M for fine aggregate.
- E. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications; made from polyolefins or polyesters, with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2, AASHTO M 288.
 - 2. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
 - 3. Permittivity: 0.02 per second, minimum; ASTM D 4491.
 - 4. UV Stability: 50 percent after 500 hours' exposure, ASTM D 4355.

2.7 MORTAR SETTING-BED MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or Type II.
- B. Sand: ASTM C 144.
- C. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed, and not containing a retarder.
- D. Thin-Set Mortar for Bond Coat: Latex-portland cement mortar complying with ANSI A118.4.
 - 1. Provide product that is approved by manufacturer for application thickness of 1 inch.
- E. Water: Potable.

2.8 MORTAR MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing times, and other procedures needed to produce setting-bed and joint materials of uniform quality and with optimal performance characteristics. Discard mortars and grout if they have reached their initial set before being used.
- B. Mortar-Bed Bond Coat: Mix neat cement and latex additive to a creamy consistency.
- C. Latex-Modified, Portland Cement Setting-Bed Mortar: Proportion and mix portland cement, sand, and latex additive for setting bed to comply with written instructions of latex-additive manufacturer and as necessary to produce stiff mixture with a moist surface when bed is ready to receive pavers.
- D. Latex-Modified, Portland Cement Bond Coat: Proportion and mix portland cement, aggregate, and liquid latex for bond coat to comply with written instructions of liquid-latex manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Where unit paving is to be installed over waterproofing, examine waterproofing installation, with waterproofing Installer present, for protection from paving operations, including areas where waterproofing system is turned up or flashed against vertical surfaces.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.
- B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.
- C. Proof-roll prepared subgrade according to requirements in Section 312000 "Earth Moving" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive base course for unit pavers.

3.3 INSTALLATION, GENERAL

- A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.
- B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- C. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
 - 1. For concrete pavers, a block splitter may be used.
- D. Handle protective-coated brick pavers to prevent coated surfaces from contacting backs or edges of other units. If, despite these precautions, coating does contact bonding surfaces of brick, remove coating from bonding surfaces before setting brick.
- E. Joint Pattern: As indicated.
- F. Tolerances: Do not exceed 1/32-inch unit-to-unit offset from flush (lippage) or 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.
- G. Expansion and Control Joints: Provide cork joint filler at locations and of widths indicated. Install joint filler before setting pavers. Make top of joint filler flush with top of pavers.
- H. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.
 - 1. Install job-built concrete edge restraints to comply with requirements in Section 033000 "Cast-in-Place Concrete."
 - 2. Where pavers set in mortar bed are indicated as edge restraints for pavers set in aggregate setting bed, install pavers set in mortar and allow mortar to cure before placing aggregate setting bed and remainder of pavers. Cut off mortar bed at a steep angle so it will not interfere with aggregate setting bed.

3.4 AGGREGATE SETTING-BED APPLICATIONS

- A. Compact soil subgrade uniformly to at least 95 percent of ASTM D 698 laboratory density.
- B. Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- C. Place separation geotextile over prepared subgrade, overlapping ends and edges at least 24 inches.
- D. Place aggregate base, compact to 100 percent of ASTM D 1557 maximum laboratory density, and screed to depth indicated.

- E. Place leveling course and screed to a thickness of 1 to 1-1/2 inches, taking care that moisture content remains constant and density is loose and uniform until pavers are set and compacted.
- F. Set pavers with a minimum hand tight being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines. Fill gaps between units that exceed 3/8 inch with pieces cut to fit from full-size unit pavers.
 - 1. Compact pavers when there is sufficient surface to accommodate operation of vibrator, leaving at least 36 inches of uncompacted pavers adjacent to temporary edges.
 - 2. Before ending each day's work, compact installed concrete pavers except for 36-inch width of uncompacted pavers adjacent to temporary edges (laying faces).
 - 3. As work progresses to perimeter of installation, compact installed pavers that are adjacent to permanent edges unless they are within 36 inches of laying face.
 - 4. Before ending each day's work and when rain interrupts work, cover pavers that have not been compacted and cover leveling course on which pavers have not been placed with nonstaining plastic sheets to protect them from rain.
- G. Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.
- H. Do not allow traffic on installed pavers until sand has been vibrated into joints.
- I. Repeat joint-filling process 30 days later.

3.5 MORTAR SETTING-BED APPLICATIONS

- A. Saturate concrete subbase with clean water several hours before placing setting bed. Remove surface water about one hour before placing setting bed.
- B. Apply mortar-bed bond coat over surface of concrete subbase about 15 minutes before placing mortar bed. Do not exceed 1/16-inch thickness for bond coat. Limit area of bond coat to avoid its drying out before placing setting bed.
- C. Apply mortar bed over bond coat; spread and screed mortar bed to uniform thickness at subgrade elevations required for accurate setting of pavers to finished grades indicated.
- D. Mix and place only that amount of mortar bed that can be covered with pavers before initial set. Before placing pavers, cut back, bevel edge, and remove and discard setting-bed material that has reached initial set.
- E. Wet brick pavers before laying if the initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

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- F. Place pavers before initial set of cement occurs. Immediately before placing pavers on mortar bed, apply uniform 1/16-inch-thick bond coat to mortar bed or to back of each paver with a flat trowel.
- G. Tamp or beat pavers with a wooden block or rubber mallet to obtain full contact with setting bed and to bring finished surfaces within indicated tolerances. Set each paver in a single operation before initial set of mortar; do not return to areas already set or disturb pavers for purposes of realigning finished surfaces or adjusting joints.
- H. Spaced Joint Widths: Provide hand tight joints.

3.6 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Pointing: During tooling of joints, enlarge voids or holes and completely fill with grout. Point joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.
- C. Cleaning: Remove excess grout from exposed paver surfaces; wash and scrub clean.

END OF SECTION 321400