CITY OF RAYMORE
100 Municipal Circle · Raymore, MO. 64083
Phone · 816-892-3045 · Fax · 816-892-3093

ADDENDUM NO. 4
Hawk Ridge Park Improvements
Project #18-253-201

All plan holders are hereby notified and agree by signature below, that the bid includes consideration of the following changes, amendments, and/or clarifications and costs associated with these changes and are included in the bid.

Addendum No. 4 - Questions and Clarifications, Geotech Report, Revised Bid Tab

A. The Owner will purchase the pre-fab bathroom and will be delivered to the site. Contractor is responsible for stubs, connections, water, electricity to the building.

1. **Who is responsible for the road to the site for the building?**
   Answer: Contractor
2. **Is the contractor responsible for Johnston Drive?**
   Answer: No
3. **When is the building anticipated to arrive?**
   Answer: The building will be ordered by the City. Date of delivery should be available when the contractor is selected.
4. **What is the allowable time for unloading and waiting time?**
   Answer:
5. **Who is responsible for the crane rental?**
   Answer: The owner will purchase the building as a package, delivery with crane will be included.

B. North Playground trails. Color coded drawing to show the trail details is attached. A heater will be added to one of the bathrooms. The interiro walls have been changed to prevent air from coming in. There is a requirement that the contractor install a vent according to code.

6. **The interior walls are not noted on the drawings.**
   Answer: Interior walls are detailed on sheet A220

C. Regarding the Amphitheater, the contractor will need to remove unsuitable fill and must be replaced by engineered fill.

7. **Will the fill be required just under the footings?**
   Answer: Yes.
8. **Will bearing capacity be needed under the entire Amphitheater?**
   Answer: It is estimated that the North corner, ⅓ of the amphitheater will need to get sound material. Fly ash/rock stabilization will be needed under the building only whee unsuitable material is present.
9. **Can the limestone seating and retaining wall use random lengths of limestone?**
   Answer: Yes as long as they are uniform, stable, and should not move at all.

D. There will be a concrete sidewalk connecting the existing sidewalk from Johnston Drive.

E. Please clarify the Bid Tab as there is confusion to the Asphalt listed for the N. Playground.

10. **The bid tab lists APWA Type 3 4" and APWA Type 1 2". Then on a separate line it lists APWA Type 1 2". Why?**
    Answer: These are two separate line items. The first item is for the full parking lot (4" base, 2" surface). The second line Type 1 2" is for the asphalt paving around the parking lot. The bid tab has been coreected and a revised one is in the addendum.
11. **Is recycled asphalt allowed for the base?**
    Answer: Yes. 30% maximum for base only.
12. **Are there specifications for Soding slopes? There is no item on the bid tab for Sod.**
    Answer: No, it is a seed only project, with seed blanket if we exceed 6:1 slope.
13. **Any 4-1 or greater slopes?**
    Answer: There should not be any slopes that exceed the 6:1 point in the project.
14. **For site excavation, is the cut quanity listed?**
    Answer: Yes, in the bid tab.
15. **Are there fill quantities listed?**
    Answer: No. Make sure it meets Engineering fill requirements where indicated.
16. **Is there a place to put the excess dirt?**
    Answer: Yes, on the west side of the park.
17. **The bid quantities are as listed on the bid tabs?**
    Answer: Yes.
18. **Will all base bids be taken into consideration?**
    Answer: Yes. One contractor will be selected.
19. **Erosion control is not listed under #6.**
    Answer: Erosion control has been added to amphitheater.
20. **Is testing for the Engineering fill required?**
    Answer: Yes. Contractor must have Geotech on site for testing and approval.
21. **All testing is on the General Contractor?**
    Answer: Yes.
22. **Is there special testing for borings, foundations, and soil borings?**
    Answer: Yes.
23. **When is the anticipated NTP?**
    Answer: July 2018
24. **Can the completion date be changed to one single date?**
    Answer: Yes. The date of completion will be December 31, 2018.
25. **Will there be a problem with delay in the biological plantings?**
    Answer: No as that is weather permitted.
26. **Having problems obtaining fees from KCPL.**
    Answer: Fees will be paid by the owner and the bid item will be removed from bid tab. Owner will coordinate work with contractor.
27. **Is the sub-structure metal?**
    Answer: Galvinized steel
28. **Can the lake be lowered?**
    Answer: The whole lake can NOT be lowered; however, lowering the lake is permittable in work zone only.
29. **Helical piers**
    Answer: The City has provided design criteria to be able to bid the helico piers. The City will get shop drawing with the selected contractors vendor with final structural numbers for the loading. The piers can be installed in the lake without draining the lake or making any provision for the water. They can be installed with extended crane from the shore or installed pier by pier as you build out into the water.
30. **Is the parking lot still light and heavy duty pavements?**
    Answer: The parking lot is now all one design, heavy duty.
31. **The revised bid form "X"ed out the Montrose Building line item since the City is providing the building. According to the specifications I am to prepare a gravel sub base for the building that is a minimum of 6"thickness of ¾" granular fill. I think we either need to add a line item for this work or eliminate**

the "X"'s off the bid form so I can put the cost for the base on this line item. I will also need to put in the cost for a temporary road to get the crane and truck access to the site and this cost would go on the same line item.

Answer: An additional line item has been added for the AB3 sub base for the building. The access to the Montrose site is the road and parking lot. The weight of one half of the building is approximately 76,000 pounds and the second half is 67,000 pounds.

F. Asphalt Location Map attached.

G. Geotech Report attached.

H. Second Revised Bid Proposal Form E 4/27/18 attached.

I. Second Revised Appendex A 04/27/18 attached

J. Full set of plans attached.

Any other questions regarding this proposal shall be submitted to Kim Quade, CPPB by e-mail at kquade@raymore.com or by phone at (816) 892-3045. There will be no questions allowed after May 4, 2018 at 5 p.m.

I hereby certify that the above have been considered and associated costs have been included in this bid.

Company Name: _____

By: _____

Title: _____

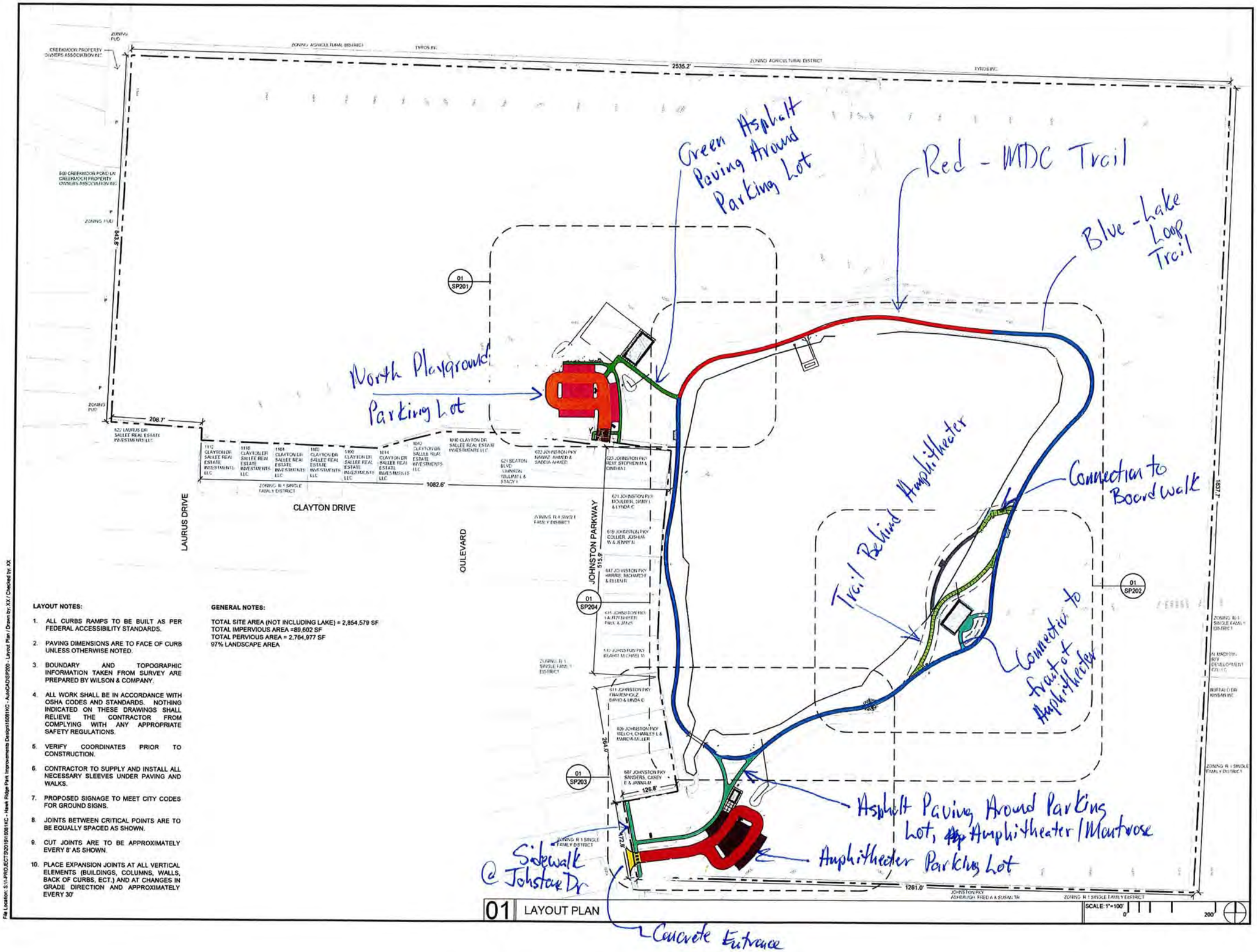
Address: _____

City, State, Zip: _____

Date: _____Phone: _____

Signature of Bidder: _____

ADDENDUM MUST BE SUBMITTED WITH BID



LAYOUT NOTES:

1. ALL CURBS RAMPS TO BE BUILT AS PER FEDERAL ACCESSIBILITY STANDARDS.
2. PAVING DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM SURVEY ARE PREPARED BY WILSON & COMPANY.
4. ALL WORK SHALL BE IN ACCORDANCE WITH OSHA CODES AND STANDARDS. NOTHING INDICATED ON THESE DRAWINGS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH ANY APPROPRIATE SAFETY REGULATIONS.
5. VERIFY COORDINATES PRIOR TO CONSTRUCTION.
6. CONTRACTOR TO SUPPLY AND INSTALL ALL NECESSARY SLEEVES UNDER PAVING AND WALKS.
7. PROPOSED SIGNAGE TO MEET CITY CODES FOR GROUND SIGNS.
8. JOINTS BETWEEN CRITICAL POINTS ARE TO BE EQUALLY SPACED AS SHOWN.
9. CUT JOINTS ARE TO BE APPROXIMATELY EVERY 8' AS SHOWN.
10. PLACE EXPANSION JOINTS AT ALL VERTICAL ELEMENTS (BUILDINGS, COLUMNS, WALLS, BACK OF CURBS, ECT.) AND AT CHANGES IN GRADE DIRECTION AND APPROXIMATELY EVERY 30'

GENERAL NOTES:

TOTAL SITE AREA (NOT INCLUDING LAKE) = 2,854,579 SF
TOTAL IMPERVIOUS AREA =89,602 SF
TOTAL PERVIOUS AREA = 2,764,977 SF
97% LANDSCAPE AREA

01 LAYOUT PLAN

SCALE: 1"=100'

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP200 - Layout Plan | Drawn by: XX | Checked by: CK

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER. STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8716

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2189

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-178
REGISTERED LANDSCAPE ARCHITECT
9/9/18

LAYOUT PLAN

CONFLUENCE PROJECT NO: 16081KC

SP200

ALPHA-OMEGA
GEOTECH

1701 State Avenue
Kansas City, KS 66102

t 913-371-0000
f 913-371-6710

AOGeotech.com

GEOTECHNICAL ENGINEERING REPORT

HAWK RIDGE PARK

JOHNSTON PARKWAY
RAYMORE, MISSOURI
(AOG 17-304E)

Date: August 2, 2017

Submitted to: Mr. Hank Moyers, ASLA
Confluence
525 17th Street
Des Moines, Iowa 50309

Submitted by: ALPHA-OMEGA GEOTECH, INC.

TABLE OF CONTENTS

ALPHA-OMEGA
GEOTECH

1701 State Avenue
Kansas City, KS 66102

t 913-371-0000
f 913-371-6710

AOGeotech.com

August 3, 2017

Mr. Hank Moyers, ASLA
Confluence
525 17th Street
Des Moines, Iowa 50309

HAWK RIDGE PARK

Johnston Drive, North of Hampton Drive
Raymore, Missouri
(AOG 17-204E)

Dear Mr. Moyers,

Alpha Omega Geotech, Inc. (AOG) has completed its geotechnical engineering investigation for the above-referenced project.

Attached are the following items that were utilized in the analysis and evaluation of the subsurface conditions at this site: a sketch giving the approximate location of the thirty-one (31) auger borings completed during this investigation with reference to the existing site features; detailed laboratory results of twenty (20) moisture contents (ASTM D2216), twelve (12) dry densities (ASTM D7263), one (1) set of Atterberg limits (ASTM D4318), and five (5) unconfined compression (ASTM D2166) tests; twelve (12) calibrated pocket penetrometer readings; and eight (8) auger boring (ASTM D1452) logs that describe the materials encountered, their approximate thicknesses, and the sampling depths where Shelby tube, thin-walled steel, samplers (ASTM D1587) and Standard Penetration (ASTM D1586) tests were performed.

Representatives of AOG located each of the selected borings by measuring from the existing site features, and these measurements should be considered accurate only to the extent implied by the method of measurement. Elevations were not determined in the field at the time of drilling. Each of the borings was completed by AOG using a CME 55 high-torque drill rig.

1.0 PROJECT AND SITE DESCRIPTION

At the time of this investigation, AOG was provided with a general site plan showing the proposed location of the new park structures. Based on this information, AOG understands the project consists of developing the new Hawk Ridge Park around the perimeter of the existing pond located off Johnston Parkway in Raymore, Missouri. Developing the new park will include construction of two small retaining walls, two signs, two shelters, a walking path and associated paving along the perimeter of the pond. It is anticipated that the structures will be lightly loaded, slab on grade shelter areas.

Currently, the proposed project site has an existing pond surrounded by trees, foliage, and open fields. Residential houses are located along Johnston Parkway which travels parallel with the west side of the pond. No grading plan was available at the time of this investigation, but AOG anticipates the existing grades in the areas of the proposed shelters are within two (2) feet, +/-, of the proposed construction grades.

2.0 SUBSURFACE INVESTIGATION

This subsurface exploration and the services documented, herein, were provided in accordance with the scope of work described in Alpha Omega Geotech's proposal number PW-5850 dated June 30, 2017 and authorized by Mr. Hank Moyers of Confluence.

Based on the information provided by Confluence, LLC and conversations with the same at the time of this exploration, AOG drilled eight (8) auger borings at the proposed site. The borings were advanced to their planned depths, or auger refusal, whichever occurred first. Four (4) borings with planned depths of twenty (20) feet were drilled within the footprints of the proposed shelter structures. Additionally, four (4) borings with planned depths of ten (10) feet were drilled at the approximate location of the proposed signs and retaining walls.

It should be understood that the depth of boring, split-spoon refusal or auger refusal reported, herein, applies to the type of drilling equipment used. As such, it might be possible to extend some of these borings deeper using different drilling equipment and/or techniques. Conversely, residual sandstone, shale and limestone materials through which AOG's drill rig penetrated, without achieving refusal, may be difficult to excavate depending upon the equipment being used. As such, Alpha-Omega Geotech, Inc. shall not be responsible, for the determination of Others, regarding the rippability, or ease of excavation, of the in-situ subgrade, bedrock and/or geo-intermediate materials.

Above the depth at which auger refusal or boring termination occurred, predominantly fat clay soils were encountered in the borings. Thin-walled, steel, Shelby tube samplers (ASTM D1587) were used to collect relatively undisturbed samples from these borings for laboratory analysis. Standard Penetration tests (SPT) (ASTM D1586) were also used to sample and evaluate the consistency of the in-situ subgrade materials encountered in these test borings. Standard Penetration Tests are conducted by advancing a hollow, split spoon sampler into the base of the auger hole by means of dropping a 140-pound hammer a distance of 30 inches onto the drill rods. Each drop of the hammer is one blow, and these blow counts are recorded for each of three, 6-inch advances of the sampler. The first 6-inch advance is the seating drive, and the summation of the blow counts of the final two, 6-inch advances is taken as the standard penetration resistance. The standard

penetration resistance, or N-value, as it is known, along with the soil classification, can be used to estimate the density, shear strength and other engineering properties of the materials encountered.

The N-values obtained from each of the SPT's completed in these borings using a CME automatic hammer are included on the boring logs and summarized in the Summary of Laboratory Testing sheet found in Appendix B. Samples retrieved during drilling efforts were returned to AOG's laboratory for testing and evaluation.

3.0 LABORATORY TESTING PROGRAM

Laboratory testing on materials collected during drilling was performed on samples selected by AOG. Results from these tests can be found in Appendix B and on the boring logs in Appendix C. The following laboratory tests were performed by qualified AOG personnel in accordance with ASTM specifications to determine pertinent engineering properties of the soils:

- Visual classification (ASTM D2488)
- Moisture content tests (ASTM D2216)
- Atterberg limits tests (ASTM D4318)
- Dry Unit Weight (ASTM D7263)
- Unconfined compression tests on soil (ASTM D2166)

The dry unit weights of specimens cut from the Shelby tube samples were found to be moderate, ranging from 83.3 pounds per cubic foot (pcf) to 110.5 pcf. Depending upon the material composition and depth below existing grade, the moisture content of the specimens cut from these tube samples ranged from 14.1 to 32.1 percent. The unconfined compressive strength of the specimen cut from the Shelby tube sample ranged from 1128 to 9046 pounds per square foot (psf). Calibrated pocket penetrometer readings ranging from 1.0 tons per square foot (tsf) (2000 psf) to >4.5 tsf (9000 psf) were obtained on the recovered Shelby tube samples. However, it should be noted that the pocket penetrometer values tend to over-estimate the strength of in-situ subgrade materials relative to the actual unconfined compressive strength test.

The Atterberg consistency limits were determined for one, generally, representative sample taken at a relatively shallow depth from within the proposed northwest shelter footprint. Based on the Atterberg limits, the sample was classified in accordance with the Unified Soil Classification System (USCS) as a fat clay, i.e. CH classification materials. The results of these laboratory analyses are presented in the following table:

Table #1: Atterberg Limits Results

ATTERBERG LIMITS TESTS					
Sample	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	USCS Classification
B2 ST-1	2-4	53	24	29	FAT CLAY (CH)

Based on the Atterberg limits, it is anticipated the majority of the onsite soil materials generally possess a high swelling potential. The swelling potential of a clay soil is an indication of the volume changes that may take place with variations in the soil moisture content.

Except for the samples for which the Atterberg limits were determined, all of the other soil classifications given throughout the laboratory test data, as well as, the boring logs, were made using the visual and tactile techniques described in ASTM D2488. As a result, additional analyses could reveal other soil types of different classification and potentially higher plasticity and swelling potential both onsite and within the nearby vicinity.

4.0 GROUNDWATER

Free water at depths ranging from nine (9) to eighteen (18) feet beneath existing grade (fbeg) was observed in Borings B1, B2, and B8 at the time of drilling. The remained borings remained dry and no free water was observed at the time of drilling. However, a twenty-four-hour water level was not established in any of the borings due to time restrictions, as well as, potential safety hazards associated with open bore holes.

Although the ground water levels given on the boring logs reflect the conditions observed at the time the borings were made, they should not be construed to represent an accurate or permanent condition. There is uncertainty involved with short-term water level observations in bore holes especially in clay soils of relatively low permeability. The groundwater level should be expected to fluctuate with variations in precipitation, site grading and drainage conditions. In addition, it is also possible that seasonal perched ground water may be encountered within these soil deposits and bedrock formations at different depths during other times of the year based on drainage conditions, seasonal snowmelt and rainwater infiltration.

5.0 GEOTECHNICAL CONSIDERATIONS

The following considerations are given based on observations made by AOG at the time of drilling, during reconnaissance trips, and based on the project requirements and description as stated above:

1) *Undocumented Fill:* Undocumented fill, in general, consists of foreign materials with unknown densities and consistencies. Undocumented fill is unsuitable beneath structures unless measures are taken to stabilize the materials prior to loading. Undocumented fill beneath foundations and slabs should be addressed in accordance with Section 6.3, "Undocumented Fill," this report.
2) *Expansive Materials:* Expansive clays were encountered during this exploration. Expansive clays are known to experience significant volume changes with changed in moisture. Expansive clays located beneath any slabs on grade should be removed in accordance with Section 8.0, "SLABS ON GRADE," of this report.
3) *Compressible Soils:* During this exploration, compressible soils with strain rates in excess of 10% were observed in Boring B4, which is located within the footprint of the southeast shelter. Any soft, compressible areas identified on the proposed project site must be corrected in accordance with Section 6.1, "Site Preparation," of this report.

6.0 SITE DEVELOPMENT

6.1 Site Preparation

Based on the information provided, AOG anticipates minimal amounts of cut and fill, less than two (2) feet from the current elevation, within the proposed structure footprint, will be required to achieve finish floor elevations. It is possible that additional cuts and fills may be required to obtain improved surface drainage.

Appropriate erosion control measures, such as proper site contouring during grading activities, as well as, silt fences, should be maintained to help keep any eroded materials onsite.

Within the footprint of the proposed new structure and associated paving, it is recommended that any topsoil, vegetation, utility backfill, and other deleterious material (i.e. concrete slabs, relic foundations, utilities, etc.) or pavements should be stripped and removed prior to the placement of any fill required to achieve the finished floor elevation. In accordance with the local building code, this should be verified by a representative of Alpha-Omega Geotech, Inc. prior to the placement of fill.

Once initial site stripping operations have been completed and prior to the placement of any engineered fill in this area, it is recommended that the exposed subgrade be moisture conditioned and recompacted, as needed, and be thoroughly evaluated by means of a proof-roll with a fully loaded, tandem-axle dump truck to locate any soft, compressible areas within the proposed project site. *Any soft, compressible areas identified on the proposed project site must be corrected by over-excavation to a suitable subgrade and replaced with an acceptable material.* Compressible soils with strain rates over 10% were observed in Boring B4, which is located within the boundaries of the southeast shelter footprint. This compressible zone is, likely, the result of a combination of the material composition and a, relatively, high moisture content. Some material removal and moisture conditioning should be anticipated during construction.

Although it is not anticipated that any extensive removal and replacement would be necessary, it is likely that some effort may be required to develop a stable platform on which to place the necessary fill material and address any other existing site conditions that become known during construction. It is generally anticipated that the extent of these efforts would strongly depend upon the ground moisture conditions at the time the site work begins. In the event that the ground is generally dry, it is possible that only a minimal amount of stabilization would be required, which may be possible to accomplish by simple moisture conditioning and recompaction efforts. *Nevertheless, it is recommended that a representative of Alpha-Omega Geotech, Inc. should be onsite to witness this proof-rolling and offer recommendations, as needed, to correct any problem areas identified.*

6.2 Undocumented Fill

Undocumented fill is a foreign material, of which no records of testing or evaluation by a qualified professional during the time of placement exist. The risks associated with supporting foundations and floor slabs on undocumented fill include total and differential settlements in excess of tolerable limits. Undocumented fill was encountered in the upper 8.5 feet of the planned northwest shelter and in the upper four (4) feet of the planned southeast shelter during this exploration. If undocumented fill is encountered during construction, it should be addressed in accordance with this report.

Undocumented fill is, generally, unsuitable beneath structures and pavements, and, if encountered during development, should be completely removed and replaced with engineered fill.

Partial fill remediation in pavement areas can be considered with an increased risk, which is accepted by the owner, for pavement distress. If partial fill remediation is desirable, AOG can provide additional recommendations based on observations at the time of construction.

6.3 Engineered Fill Placement

It is assumed that any fill material needed will come from cut areas and, if necessary, on-site or nearby borrow sources of similar material. It is recommended that unweathered shales should NOT be used to construct any of the necessary fill within either the new building or paved portions of the site. Assuming they are properly moisture conditioned and compacted, it generally appears that the clean clay soils encountered in the borings that are free of rubble, trash, concrete, asphalt, and other debris would be acceptable for use as controlled fill. However, due to their very high swelling potential, detailed recommendations for the placement of a non-expansive subbase are provided in Section 8.0, SLABS ON GRADE of this report.

Any imported fill materials for use as structural fill should be tested by Alpha-Omega Geotech, Inc. to determine if they are acceptable for the intended use. Any ground water seeps that are encountered must be diverted prior to placing fill.

In addition, no compaction of soil fill material should be performed during freezing weather. Nevertheless, as weather conditions dictate, it may be possible to substitute crusher-run limestone in lieu of soil fill to allow placement of engineered controlled fill material to continue during the cold fall and winter months. However, any frozen fill material must be stripped prior to placing subsequent lifts.

All general fill within the area of the new structures (except for the upper 22-inches, as discussed in Section 8.0, SLABS ON GRADE of this report, should be placed in lifts not exceeding 6 inches in thickness, and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content.

As required by the local building code, the compaction of any structural fill beneath the new buildings, pavements, and any other areas where settlement control is necessary, as well as, any slopes that are steeper than 4:1 (H:V) should be tested lift-by-lift by a representative of Alpha-Omega Geotech, Inc.

6.4 Drainage Considerations

Fluctuations of the ground water level can occur due to seasonal variations in the amount of rainfall and other climatic factors that were not evident at the time the borings were made. The possibility of ground water level fluctuations should be considered when developing the design and construction plans for the project. In spring and late fall, soil moisture contents may be abnormally high and drying of the soils that are exposed and/or undercutting may be required to develop a suitable base for the placement and compaction of engineered fill. Disking and aeration of the exposed soils may be sufficient to develop a stable base. However, if site grading begins during the summer or early fall, moisture contents may be abnormally low and the plastic clay soils encountered during this exploration may undergo significant volume changes with subsequent

increases in their moisture content. Therefore, when these conditions exist, disking and moisture conditioning of the exposed subgrade soils may be required.

It is important to consider drainage and construction elements that will help to inhibit future slab on grade problems, foundation cracks, as well as, intolerable settlements due to volume changes of the onsite soils. The surface drainage must be designed to prevent ponding and effectively move water away from both the new and existing buildings, pavements and other structures. It is also very important to place all materials under carefully controlled conditions of moisture and density to inhibit significant soil volume changes. Shrubs and trees with deep root systems and requiring large quantities of water should not be planted within 20 feet of the building lines. Any planters located near the building should have impermeable bases with weep holes to discharge water away from the wall lines. Down spouts should be connected to subsurface drains to carry the water to safe exits beyond the building lines, retaining walls, pavements, slopes and other site features or structures that could be adversely affected by water seepage.

In addition to controlling surface drainage, it is recommended that a gravity drainage system, such as a French drain or similar, designed to intercept free water prior to contact with foundations be installed in areas where the topography will direct water toward the proposed structure. foundation drainage systems should, also, be considered to prevent any free water accumulation and/or ingress at the foundations where shallow groundwater was encountered. Any basement or below grade slabs should have a permanent dewatering system, such as a sump pump or similar type system, installed to alleviate and water accumulation.

6.5 General

Permanent slopes should not be steeper than 3:1 (H:V) to help ensure their future stability and accommodate normal mowing equipment. The responsibility for excavation safety and stability of temporary construction slopes should lie solely with the contractor and should follow the OSHA regulations given in 29 CFR Part 1926.650 - .652, Subpart P. The stability of open excavations is dependent upon a number of factors including but not limited to the presence of gravel, sand and/or silt seams, ground water seepage, strength characteristics of the soil layers, slickensides and other unique geological features, the slope and height of the cut, surcharge loading and vibrations during construction, weather conditions, as well as, the length of time the excavation is left open. Alpha-Omega Geotech, Inc. does not assume any responsibility for construction site safety or the contractor's or other parties' compliance with all local, state and federal safety or other regulations including imprudent excavating practices that results in any damage to nearby structures, roadways, utilities, as well as, onsite or offsite improvements.

7.0 FOUNDATIONS

7.1 Foundation Recommendations

Based on the finding during this geotechnical exploration and AOG's understanding the proposed project, it is AOG's opinion that a shallow foundation system consisting of either earth-formed trench or spread footings may be used as economical foundation elements for the proposed structures. Footings should bear on native clay soils and/or engineered controlled fill. Undocumented fill observed in the areas of the proposed shelters should be removed in accordance with Section 6.3, "Undocumented Fill," of this report.

Based on the subsurface conditions that have been identified, Site Class C conditions (IBC 2012) may be assumed for seismic consideration.

Perimeter footings, and any footings in unheated areas, should be placed at least 3 feet below final exterior grade to provide adequate frost protection and place them in a more stable moisture environment. Under heated areas, the interior footings can be founded at shallower depths of at least 18 inches below the finished floor elevation. The footing excavations should be carried to undisturbed, inorganic soil or engineered fill.

7.2 Allowable Bearing Pressure

Provided all design and inspection recommendations as given in this report are closely followed and good construction practices are exercised, it is recommended an allowable bearing value of 2,500 psf may be used for design purposes to proportion the spread/wall footings. A twenty-percent increase, i.e. 3,000 psf, may be used for individual column footings. These allowable bearing capacity values, which are based on shear strength alone and not on settlement, incorporate a factor of safety of 3.0. *The actual bearing capacity of all subgrade supporting the foundation elements must be confirmed by a representative of Alpha-Omega Geotech, Inc. as the excavations for the load-bearing wall and column footings are completed and prior to placement of reinforcing steel and concrete.* For transient loading conditions, such as unsustained wind and earthquake, a 33 percent increase may be applied to the above-referenced allowable bearing capacity values.

7.3 Anticipated Settlement

Uniform bearing conditions should be provided beneath the footings to minimize differential settlements. If any soft or otherwise unsuitable material, including undocumented fill, is encountered in the footing excavations, it will have to be removed and replaced with engineered controlled fill. Recommendations for the over-excavation and replacement with engineered controlled fill can be made when the footing excavations are inspected during construction, if needed. *A representative of Alpha-Omega Geotech, Inc. should inspect all of the footing excavations to verify that uniform and competent bearing material is present beneath all of the foundation elements prior to the placement of any reinforcing steel and concrete.*

For spread footings designed and constructed in accordance with this report, it is anticipated that settlements will be limited to 0.5 inches of differential and .75 inches in total.

7.4 General

If possible, the over-dug footing excavations should not be left open for more than 24 hours to help reduce excessive sloughing, softening or drying of the exposed subgrade material. The base of the footing excavations should be free of water and loose soil prior to placing reinforcing steel and concrete. No groundwater is expected in the footing excavations since groundwater was not encountered in any of the borings that were made at the time of drilling. However, if groundwater is encountered within the expected depth of excavation for the footings, it is anticipated that it can be removed by the use of sumps and pumps. Based on the subsurface conditions that have been identified, it is anticipated that earth-formed trench footing excavations may be used effectively on this project. A minimum width of 12 inches should be used for trenched wall footings to allow for steel placement and inspection. Minimum widths of 16 and 24 inches should be used for formed wall and column footings, respectively.

8.0 SLABS ON GRADE

8.1 Slab Thicknesses

Slabs on grade that will be subjected to repeated wheel loads, such as passenger vehicles, should be at least 6 inches in thickness. Slabs that are **not** exposed to repeated wheel loads, should be at least 4 inches in thickness. Slabs in storage areas may need to be thicker due to shelving post and other concentrated floor loads.

8.2 Low Volume Change (LVC)

The following recommendations provided to help protect the slabs from damage caused by volume changes within the underlying subgrade, and should be implemented in conjunction with Section 7.0, FOUNDATIONS of this report:

1) Cut the subgrade a minimum of 22-inches beneath the base of slab elevation to allow placement of an 18-inch subbase and a 4-inch base course beneath the slab-on-grade.
2) Scarify and recompact the upper 9 inches of exposed subgrade to within 95 to 100 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content wet of the optimum moisture content 0 to 3 percent.
3) For the 18-inch granular subbase, place crusher-run limestone or rock dust in two (2), 9-inch lifts and compact to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density. The moisture content of this material at the time of placement must be sufficient to achieve the specified level of compaction.
4) Place a 4-inch base course of clean, open-graded crushed limestone. This granular base course should be compacted with a suitable vibratory steel wheel roller.

Alternatively, it would be possible to consider constructing the 22-inch subbase by stabilizing the onsite fat clay soil material with Type C flyash, blended at 15 percent by weight using a large Bomag Tiller. However, due to the amount of dust that is generated, the use of flyash stabilization may not be a viable alternative for this project site. In addition, it should also be noted that flyash stabilization is, generally, only effective when the ground temperature is a minimum of 50° to 60°F. Nevertheless, if this alternative is utilized, the flyash stabilized subbase should be placed in two (2), 9-inch lifts and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content. Compaction of the flyash-supplemented soil should be completed within one hour after incorporation. Additional compaction after two hours could cause degradation of the soil strength. Please note, when constructing in areas where fat clays are present, the owner should recognize there is an inherent risk of distress associated with volume changes of the soil, even with subgrade removal and/or treatment.

8.3 General

It is recommended that under-slab utility trenches should be backfilled with impermeable clay soil (*), flowable fill or lean concrete to help reduce the potential of these trenches acting as aqueducts transmitting groundwater beneath the new building, pavements, retaining walls and other structures.

(*) If impermeable clay soil is used as backfill, it should be placed in lifts not exceeding 6 inches in thickness and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content, which should be verified lift-by-lift during placement by a representative of Alpha-Omega Geotech, Inc. Although clay soil may be less costly than flowable fill or lean concrete, the OSHA excavation safety regulations given in 29 CFR Part 1926.650 - .652, Subpart P must be followed in the event that clay soil is used to backfill any utility trenches.

Finally, it should be noted that the recommendations given, herein, regarding placement of low-volume change fill to help protect the slabs on grade from volume changes associated with fluctuations within the moisture content of the underlying subgrade materials, would still apply.

Plumbing lines and other water leaks occurring beneath the structure's slab-on-grade floor can induce volume changes within the underlying subgrade materials. Therefore, it is recommended that all water supply and waste water lines should be tested for leaks prior to backfilling the utility trenches. In addition, it is also recommended that every effort should be made to maintain the plumbing in good working order and prevent or minimize water leaks and discharges.

It is assumed the concrete will be reinforced with properly placed steel reinforcement, such as #4 bars, and control joints will be cut during or shortly after finishing (to be designed by the project structural engineer). Properly placed wire mesh may be used as secondary reinforcement. Fiber reinforcement may also be considered to help control shrinkage cracking and the use of other admixtures may be considered to enhance the workability and performance of the concrete. Suitable construction and sawed joints should be used to control cracking of the slab. In addition, it is recommended that the slump and temperature of the concrete at the time of placement should be limited to standard American Concrete Institute (ACI) guidelines. Furthermore, it is also recommended that proper concrete curing techniques should be utilized and the addition of jobsite water to the concrete be avoided or very closely controlled to within acceptable parameters. Nevertheless, it should be noted that cracking of concrete used for slabs on grade is a normal occurrence and should be expected.

If a 18-inch thick subbase layer of crusher-run limestone (AB-3) or rock dust is used, as recommended, a modulus of subgrade reaction of 150 pci may be assumed for reinforcement and thickness design to support surface loads. If a higher modulus of subgrade reaction were desired, we would be pleased to work with the project's structural engineer to develop recommendations for alternate bases and/or subbases to achieve a higher modulus of subgrade reaction.

9.0 EARTH PRESSURE COEFICIENTS

A coefficient of sliding friction over the in-situ clay soils at this site may be taken as 0.32. A minimum factor of safety of 1.5 should be used when considering sliding resistance.

Active, passive and at-rest earth pressure coefficients of 0.25, 4.2 and 0.4 may be assumed for backfills of clean, open-graded crushed limestone.

Active, passive and at-rest earth pressure coefficients of 0.5, 1.9 and 1.0 may be assumed for the in-situ clay soils at this site.

However, the in-situ soils encountered during this exploration are classified as a Fat Clay and possess a high swelling potential, and, as such, should not be used as backfill since considerable lateral loads may develop with the addition of water.

If deflection of extended foundation walls or retaining walls is not tolerable, as rest earth pressures should be assumed.

These earth pressure coefficients do not include the effect of surcharge loads, hydrostatic loading or a sloping backfill nor do they incorporate a factor of safety. Also, these earth pressure coefficients do not account for high lateral pressures that may result from volume changes when expansive clay soils are used as backfill behind walls with unbalanced fill depths. In addition, any disturbed soils that are relied upon to provide some level of passive resistance should be placed in lifts not exceeding 6 inches in thickness and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content. It is recommended that a representative of Alpha-Omega Geotech, Inc. should verify the compaction of any such materials relied upon to provide passive pressure lift-by-lift during placement.

10.0 RETAINING WALLS

No specific information has been provided regarding the construction of the retaining walls near the proposed building and parking on the south end of the site. However, in the event that Mechanically Stabilized Earth (MSE) walls are utilized that will directly or indirectly support the foundations of the new building and parking, it should be recognized these passive wall systems that utilize geogrid reinforcement must undergo some amount of strain to develop resistive strength, which may result in settlement along the adjacent building line.

If MSE walls are planned within close proximity (within 20-feet of the reinforced zone) to any of the building or other areas that cannot undergo settlement, except for a drainage layer directly behind the face blocks, it is recommended that crusher-run limestone such as AB-3 should be used within the entire reinforced zone. The geogrid reinforcement should be placed and overlapped as needed in accordance with the manufacturer's recommendations, which should be verified by a representative of Alpha-Omega Geotech, Inc. In addition, it is recommended that the geogrid layers should be carefully stretched and staked firmly into position prior to placement of the crusher-run limestone.

During the construction of any critical retaining walls that will directly or indirectly support the structures or other areas where settlement behind the top of the wall cannot to tolerated, it is recommended that full-time construction observation, monitoring and testing should be implemented. This would include subgrade preparation beneath the wall alignment, proper installation of the geogrid layers, verification of lift thickness and the compaction of the fill within the reinforced zone.

In addition, it is recommended that a global stability analyses should be submitted with the wall design to help insure the proposed retaining wall design and geogrid lengths are sufficient to prevent a deep-seated slope failure extending into the underlying subgrade materials from compromising the stability of the adjacent

buildings. Please note, once the initial retaining wall design parameters (height, length, location, etc.) are established by Others, AOG can, and would be happy to, assist with a global stability analysis at an additional cost.

AOG would be pleased to work with the designer of any such MSE wall system to respond to any questions or geotechnical engineering related issues that may arise once more detailed information regarding any necessary retaining walls is available.

11.0 PAVEMENTS

11.1 Subgrade Preparation

Please note, a formal pavement design is beyond AOG's scope of service. Standard asphaltic concrete and concrete pavement designs for a given service life requires evaluation of the soil by means of a California Bearing Ratio (CBR) test or other methods, estimates of traffic volumes and axle weights, drainage requirements, and the desired level of maintenance. As such, some standard pavement design options based on assumptions made for materials of this nature are included in this section.

Without stabilization or treatment, the subgrade soils at this site are considered to be poor subgrade materials for the support of pavements. California Bearing Ratio (CBR) values we have obtained rarely exceed 5, soaked, for these materials. Pavements, either total strength flexible or rigid, do not usually perform well when they are placed directly on highly expansive, poor soil subgrades. Soft areas can develop during wet periods and differential shrinkage can occur during dry periods. As a result, no pavement can avoid damage from wheel loads under these circumstances.

Unless the subgrade is stabilized with Class C flyash, the subgrade for all pavements should consist of at least 9 inches of properly compacted soil, which will require tilling and recompacting in cut sections. It is recommended that any untreated aggregate base or flyash stabilized subgrade layers should extend at least 2 feet beyond the pavement and curb lines. The subgrade should be compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content. Any additional fill that is required to develop the paved areas should also be placed in loose lifts not exceeding 8 inches in thickness and compacted in accordance with these recommendations. The subgrade should be proof-rolled with a loaded tandem-axle dump truck after the final subgrade elevation has been established throughout the paved area. A representative of Alpha-Omega Geotech, Inc. should witness this proof-rolling.

Please note, if asphaltic pavements are used, annual maintenance including, but not limited to, crack sealing, fog sealing, and possible patch with overlay should be anticipated. In addition, the quality of the aggregates and overall composition of the asphalt or concrete mix, as well as, drainage conditions can have a profound effect upon the durability of the pavement section.

11.2 Pavement Sections

Table 2: Recompacted Subgrade Section

RECOMPACTED SUBGRADE SECTIONS (INCHES)			
PAVEMENT MATERIALS	**CAR PARKING**	**DRIVE LANES**	**HEAVY DUTY AREAS (i.e. Dumpster pads, approach lanes, etc.)**
Asphaltic Surface Course	2	2	NA
Asphaltic Base Course	3	5.5	NA
Portland Cement Concrete	5	7	8
Crushed Stone (3/4-inch minus)	4	4	4

*Reference Section 10.3, "Recompacted Subgrade Sections"

Table 3: Recommended Thicknesses with Flyash Subgrade Stabilization

FLYASH SUBGRADE STABILIZATION SECTIONS (INCHES)			
PAVEMENT MATERIALS	**CAR PARKING**	**DRIVE LANES**	**HEAVY DUTY AREAS (i.e. Dumpster pads, approach lanes, etc.)**
Asphaltic Surface Course	2	2	NA
Asphaltic Base Course	2	4	NA
Flyash Stabilization	12	12	NA
Portland Cement Concrete	4	6	7
Crushed Stone (3/4-inch minus)	4	4	4
Flyash Stabilization	12	12	12

*Reference Section 10.4, "Subgrade Stabilization Sections"

Table 4: Recommended Thicknesses with Geogrid Reinforcement & Baserock

GEOGRID REINFORCEMENT AND BASEROCK SUBGRADE STABILIZATION SECTIONS (INCHES)			
PAVEMENT MATERIALS	**CAR PARKING**	**DRIVE LANES**	**HEAVY DUTY AREAS (i.e. Dumpster pads, approach lanes, etc.)**
Asphaltic Surface Course	2	2	NA
Asphaltic Base Course	2	4	NA
Crushed Stone (3/4-inch minus)	6	6	NA
Portland Cement Concrete	4	6	7
Crushed Stone (3/4-inch minus)	6	6	6

*Reference Section 10.4, "Subgrade Stabilization Sections"

11.3 Recompacted Subgrade Sections

11.3.1 Flexible Pavements Sections

From an initial cost perspective, flexible asphaltic concrete pavement is the most economical pavement section. However, treating the subgrade with Class C flyash or using a geogrid reinforced base course can provide a higher quality pavement section, having a much longer service life. Nevertheless, if the subgrade is untreated and asphaltic pavement is used, areas used exclusively for automobile parking should consist of at least 5.0 inches of asphaltic concrete (2.0 inches of surface mix and 3.0 inches of base mix). *Drives should be constructed of at least 7.5 inches of asphaltic concrete (2.0 inches of surface and 5.5 inches of base mix).* The above-referenced pavement section represents minimum design thicknesses and, as such, periodic maintenance should be anticipated. If an increased pavement performance is desired, as described in Section 10.4, "Subgrade Stabilization," flyash stabilization or the use of a layer of base rock and geogrid reinforcement may be considered. Asphaltic cement concrete should NOT be used in areas where heavy truck loads/concentrations are expected.

It is also recommended that an asphalt binder grade of PG 64-28 should be considered to help reduce the potential of thermal cracking based on the climatic conditions of this region. However, for base mix asphalt placed at least 4 inches below the surface, an asphalt binder grade of PG 64-22 should be sufficient.

11.3.2 Rigid Pavement Sections

As an alternative, rigid Portland Cement concrete with a 4-inch thick base course of crushed limestone may also be used with minimum thicknesses of 5.0 and 7.0 inches for automobile parking areas and drive lanes, respectively. The above-referenced pavement section represents minimum design thicknesses and, as such, periodic maintenance should be anticipated. If a better pavement is desired, as described in Section 10.4, "Subgrade Stabilization," flyash stabilization or the use of a layer of base rock and geogrid reinforcement may be considered.

The crusher-run limestone base course should be compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content sufficient to achieve the specified level of compaction.

For areas where heavy truck loads/concentrations are anticipated, Portland Cement concrete is recommended. Portland cement concrete slabs having a thickness of 8 inches over a 4-inch, minimum, compacted, crusher-run limestone base should be used for dumpster stations, parking lot entrances, areas where a high concentration of heavily loaded trucks are anticipated, as well as, any areas where trucks accelerate/decelerate and execute sharp turning maneuvers.

11.4 Subgrade Stabilization Sections

Alternate pavement sections utilizing flyash, geogrids, granular base and/or subbase courses should be considered. Treating the subgrade with Class C flyash or using a geogrid reinforced base course can provide a pavement section having a much longer service life.

If specific pavement performance standards are to be met, AOG would be pleased to be of further assistance once the actual design loading conditions, service-life and maintenance expectations have been defined.

11.4.1 Flyash

The use of flyash is usually not effective during cold winter months. Notwithstanding this weather limitation, assuming the flyash is thoroughly and uniformly mixed with the subgrade, flyash stabilization can greatly reduce the swelling potential and improve the strength of the subgrade soil.

If the subgrade is stabilized with Class C flyash to a depth of 12 inches, full depth asphalt pavements with thicknesses of 4.0 and 6.0 inches for parking and drive lanes, respectively, can be used. Likewise, if the subgrade is stabilized with flyash, the Portland cement concrete pavement sections over a 4-inch thick base course of crushed limestone may also be reduced to 4.0 and 6.0 inches, respectively. The crushed limestone base course should be compacted to the specifications given in Section 10.3, "Rigid Pavement Sections," of this report.

Based on experience with similar projects, adding more flyash does not always increase the stiffness of the subgrade. In fact, too much flyash in the subgrade may cause excessive brittleness, which may result in reflective cracking problems to develop. It is usually cost effective to determine the optimum amount of flyash necessary by laboratory testing; however, it usually ranges from about 12 to 15 percent by weight. The Class C flyash should be thoroughly mixed with the subgrade soil by means of a Bomag tiller or other similar equipment specifically designed for such procedures and compacted to a minimum density of 95 percent of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within ± 3 percent of the optimum moisture content.

11.4.2 Geogrid Reinforcement & Base Rock

Soft areas can develop even when the subgrade is stabilized with Class C flyash. An even better pavement section can be developed by the use of a tri-axial geogrid over a properly compacted subgrade, as discussed in this report, and a layer of untreated crushed limestone base rock under either flexible or rigid pavements. The purpose of the geogrid is to help span soft spots that will inevitably develop in the subgrade. The geogrid helps to confine the base rock and acts as a "snowshoe," distributing the loads over the subgrade in a tri-axial direction. The layer of base rock, which is placed over the geogrid, must be thick enough to support construction traffic and paving equipment so the geogrid does not become exposed. In general, the crushed limestone base rock should not be less than approximately 6 inches in thickness. If this option is chosen, it is recommended that Tensar TX-140, which is a tri-axial polypropylene geogrid, be used. The geogrid reinforcement should be placed and overlapped as needed in accordance with the manufacturer's recommendations, which should be verified by a representative of Alpha-Omega Geotech, Inc.

Asphaltic concrete thicknesses of 4.0 and 6.0 inches for parking areas and drive lanes, respectively, can be used if geogrid and base rock stabilization are used. Similarly, the Portland cement concrete sections can be reduced to 4.0 and 6.0 inches for the respective areas. Although these thicknesses are the same as given if the subgrade is treated with Class C flyash, the use of a tri-axial geogrid and base rock usually represents the most effective, reasonable pavement section.

11.5 General

If asphaltic pavements are used, periodic maintenance including, but not limited to, crack sealing, fog sealing, and possible patch with overlay should be anticipated. In addition, the quality of the aggregates and overall composition of the asphalt or concrete mix, as well as, drainage conditions can have a profound effect upon the durability of the pavement section.

Where engineered controlled fill is placed beneath paved areas, it is recommended the compacted fill should extend a minimum distance of two (2) feet beyond the pavement edge or curb line, or a distance equal to the depth of the fill, whichever is greater.

Asphalt mixes meeting KDOT BM-2 and BM-2B specifications may be used for surface and base mixes, respectively. Compaction testing of each pavement layer is recommended to help ensure compliance with the mix design specifications.

For areas where heavy truck loads/concentrations are anticipated, Portland Cement concrete is should be used. It is recommended that load-transfer devices should be installed where construction joints are required. For dumpster stations, the concrete slabs should be large enough to accommodate the dumpster and at least the rear wheels of the disposal vehicle. Rigid pavements should have No. 4 bars on at least 2-foot centers and positioned in the upper third of the slab. Joints should be tooled or cut within 4 hours of hardening to a depth of at least one fourth of the thickness.

The subgrade should be moistened prior to placement of concrete. Fresh concrete should be properly cured as recommended by the American Concrete Institute (ACI). To help provide resistance to damage caused by alternating cycles of freezing and thawing, it is recommended that any exposed concrete should be properly air entrained; typically at 5 to 7 percent. In addition, it is also recommended the outer edges of pavement slabs should be thickened to help resist cracking associated with heavy wheel loads near these unrestrained areas.

If full-depth pavement is used, it is important the moisture content of the subgrade should be kept as constant as possible from the time of recompacting until the pavement is laid. However, if the subgrade becomes dry, it should be moistened for at least 72 hours prior to paving, but it should not be saturated. In all cases, pavements should be sloped to inhibit ponding and provide rapid surface drainage. If water is allowed to pond on or adjacent to the pavement, the subgrade could become saturated and lose its bearing capacity which would contribute to premature pavement deterioration under a single cycle of heavy wheel loads or a number of cycles of lighter wheel loads.

12.0 TESTING AND INSPECTION RECOMMENDATIONS

Unless Alpha-Omega Geotech, Inc. is retained to provide the construction observation, monitoring and testing services for this project, we cannot accept any responsibility for any conditions that deviate from those identified in this subsurface investigation nor for the performance of the foundations, pavements and other structures including any retaining walls that are a part of this project. Alpha-Omega Geotech, Inc. is accredited by AASHTO and we are experienced in construction quality control and have a fully-equipped soil, concrete,

aggregate, rock and asphalt testing laboratory, as well as, qualified field technicians to provide these field services.

It is not economically practical to perform enough exploratory borings on any site to identify all subsurface conditions. Some conditions affecting the design and/or construction may not become known until the project is underway. The boring logs, field SPT and laboratory test results depict subsurface conditions only at the specified locations and depths at the site. The boundaries between soil and rock layers indicated on the boring logs are based on observations made during drilling and an interpretation of the laboratory testing results. The exact depths of these boundaries are approximate and the transitions between soil and rock types may be gradual rather than being clearly defined. Also, due to the prior development at this site, as well as, the natural conditions of the formation of soils and rock, it is possible that unanticipated subsurface conditions may be encountered during construction. Monitoring of the subsurface conditions that are revealed during construction is needed to verify that subsurface conditions are consistent with those conditions identified in this preliminary geotechnical investigation. If variations in subsurface conditions are encountered, it will be necessary for Alpha-Omega Geotech, Inc. to re-evaluate the recommendations that have been made in this report.

Special Inspections should be performed in accordance with the local building code under which the project is designed, as adopted by Raymore, Missouri.

Prior to filling, it is recommended that a representative of Alpha-Omega Geotech, Inc. should verify that the site has been properly stripped of all topsoil and other deleterious material, benched as needed and prepared for the placement of fill. The compaction of any structural fill beneath the new building, pavements, and any other areas where settlement control is necessary should be tested lift-by-lift by a representative of Alpha-Omega Geotech, Inc. as it is being placed. This should include the prepared subgrade layers beneath the building's slab-on-grade, as well as, any other fill material relied upon to provide passive resistance. Also, in accordance with the local building code, any fill that is used to construct slopes steeper than 4:1 (H:V) must be placed as engineered controlled fill and the compaction tested lift-by-lift during placement.

Assuming that uniform fill material is used, nuclear density gauges (ASTM D2922/D3017) should be used to test compaction wherever necessary. However, if fill material of non-uniform consistency is used, other evaluation methods may be required. Such methods may include, but not be limited to, the use of a GeoGauge Stiffness meter, Dynamic Cone Penetrometer (DCP), proof-rolling or other visual inspection techniques.

Any geotextile fabric and geogrid reinforcement that is utilized should be placed and overlapped as needed in accordance with the manufacturer's recommendations, which should be verified by a representative of Alpha-Omega Geotech, Inc. Proper placement of the reinforcing steel for drilled piers, grade beams, pier caps, foundation walls and other structural elements including any necessary wing walls and retaining walls should be verified prior to the placement of concrete. The subgrade under the slabs on grade and pavements should be checked to verify they are in compliance with the density and moisture requirements. Wherever possible, in addition to compaction testing, cut and fill areas should be proof-rolled with a loaded tandem-axle dump truck to identify soft areas that will need to be corrected. A representative of Alpha-Omega Geotech, Inc. should observe this proof-rolling. Checks should also be made of the subbases, concrete and any pavement materials.

Finally, the inspection and testing services listed herein are given as a minimum and it should be understood that additional inspection and testing services might also be required or otherwise beneficial.

13.0 LIMITATIONS

This report is presented in broad terms to provide a comprehensive assessment of the interpreted subsurface conditions and their potential effect on the adequate design and economical construction of the proposed Hawk Ridge Park project located in Raymore, Missouri, as discussed herein. This report has been prepared for the exclusive use of our client for specific application to the project discussed herein and has been prepared within our client's directive and budgetary constraints and in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

It should be noted that the concept of risk is an important aspect of the geotechnical engineering evaluation and report since the recommendations given in this report are not based on exact science but rather analytical tools and empirical methods in conjunction with engineering judgment and experience. Therefore, the recommendations given herein should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soil materials and the proposed structures will perform as planned. Nevertheless, the geotechnical engineering recommendations presented herein are Alpha-Omega Geotech, Inc.'s professional opinion of those measures that are necessary for the proposed structures to perform according to the proposed design based on the information provided to Alpha-Omega Geotech, Inc., the referenced information gathered during the course of this investigation and our experience with these conditions.

Any significant structural changes to the proposed new structure or its location on this site relative to where these test borings were completed shall be assumed to invalidate the conclusions and recommendations given in this report until we have had the opportunity to review these changes and, if necessary, modify our conclusions and recommendations accordingly. It is also strongly suggested that Alpha-Omega Geotech, Inc. should review your plans and specifications dealing with the earthwork, foundations, as well as, any pavements prior to construction to confirm compliance with the recommendations given herein. Particular details of foundation design, construction specifications or quality control may develop, and we would be pleased to respond to any questions regarding these details.

If Alpha-Omega Geotech, Inc. is not retained to review the project plans and specifications, address to the proposed building and parking structure or their location on the site relative to where these test borings were completed, provide the recommended construction phase observation, monitoring and testing services and respond to any subsurface conditions that are identified during construction to evaluate whether or not changes in the recommendations given in this report are needed, we cannot be held responsible for the impact of those conditions on the project or the future performance of the buildings, pavements and/or structures that may be involved.

The scope of our services did not include any environmental assessment or investigation for the presence of hazardous or toxic materials in the soil, surface water, ground water or air, either on, below or adjacent to this site. In addition, no determination regarding the presence or absence of wetlands was made. Furthermore, it should be understood that the scope of geotechnical services for this project does not include either

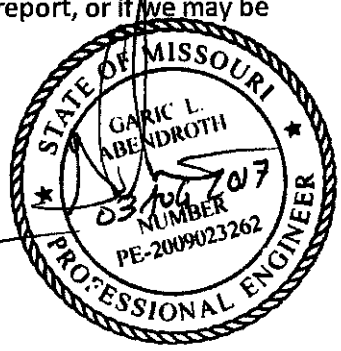
specifically or by implication any biological (i.e. mold, fungi or bacteria) assessment of the site or the proposed construction. Any statements in this report or included on the boring logs regarding odors, colors and unusual or suspicious items or conditions are strictly for informational purposes only.

We appreciate the opportunity to be of service to Confluence, as well as, the project developers and look forward to working with you throughout the construction process. We are prepared to provide the Special Inspection services that will be required by the local building code under which this project is designed, as adopted by the City of Raymore, Missouri, as well as, the other necessary construction observation, monitoring and testing services discussed in this report. If you have any questions concerning this report, or if we may be of further assistance, please call us at (913) 371-0000.

Sincerely,
ALPHA-OMEGA GEOTECH, INC.

Jacob Engler, P.E.
Geotechnical Engineer

Garic Abendroth, P.E.
Engineering Department Manager



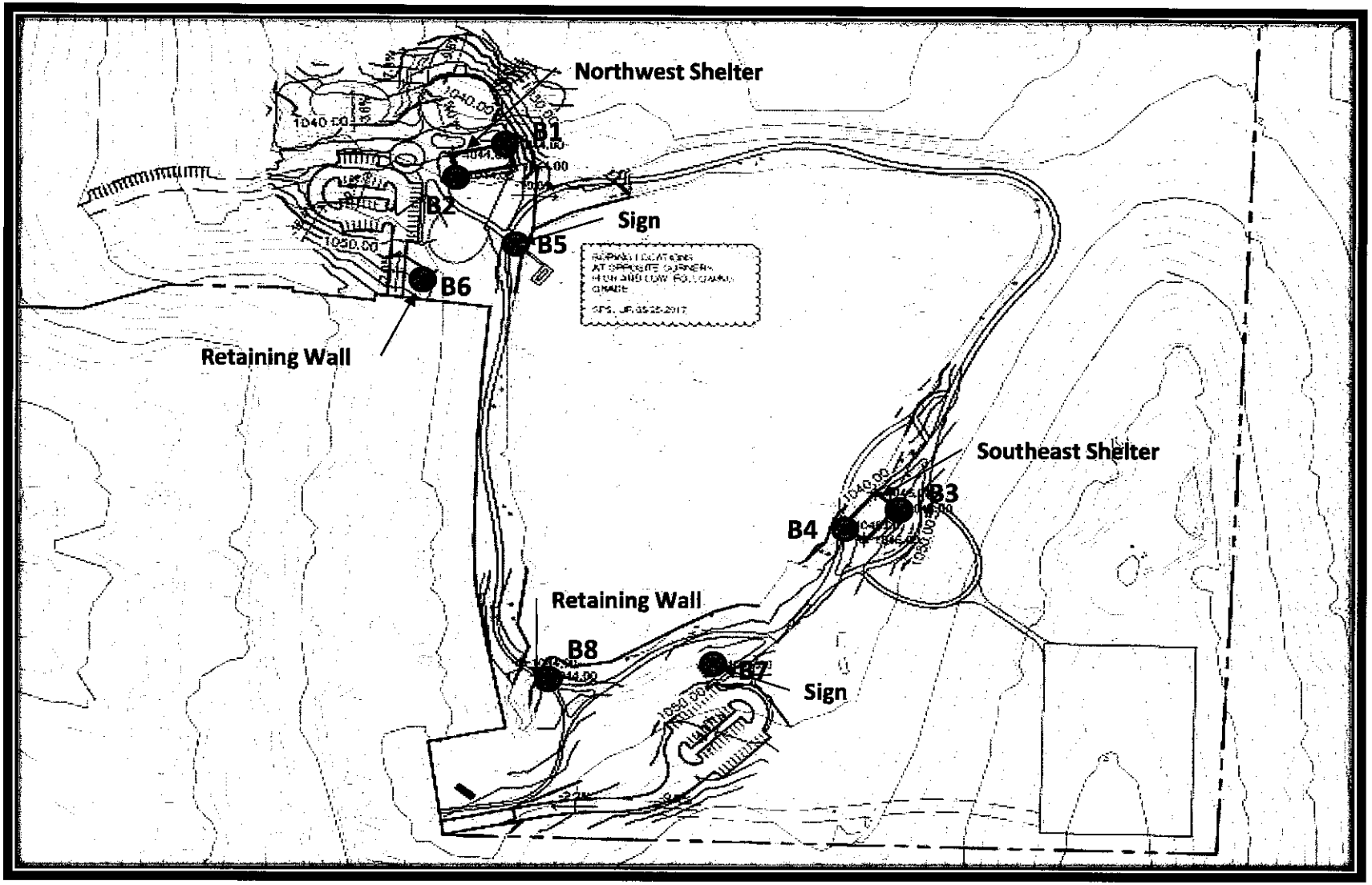
Enclosures

Appendix Section A

SITE SKETCH

Site and Boring Location Plans

Site Location Plan	Date: August 2, 2017	Project Name: **HAWK RIDGE PARK**	Project Number: 17-304E
ALPHA-OMEGA GEOTECH 1701 State Ave. Kansas City, KS 66102 913-371-0000		Notes: Images adopted from Google Earth	



Boring Location Plan	Date: August 2, 2017	Project Name: **HAWK RIDGE PARK**	Project Number: 17-304E
ALPHA-OMEGA GEOTECH 1701 State Ave. Kansas City, KS 66102 913-371-0000			Notes: Images adopted from Google Earth

Appendix Section B

LABORATORY TEST RESULTS

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: Hawk Ridge Park
PROJECT LOCATION: Raymore, MO
PROJECT NUMBER: 17-304E
DATE: 7/20/2017

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B-1	ST-1	2'-4'	Brown, mottled reddish brown and dark brown FAT CLAY with trace of slickened sides	24.9	97.9				CH		3939	3.3		PP = 2.0 tsf
B-1	ST-2	4'-6'	Brown, mottled dark brown, spotted reddish brown LEAN/FAT CLAY with trace of sand, gravel and organics (finger roots) (probable fill)	22.2	98.6				CL/CH					PP = 1.75 tsf
B-1	SS-1	6'-7.5'	Light brown LEAN CLAY with sand	20.2					CL					N = 19
B-1	SS-2	8.5'-10'	Reddish brown LEAN/FAT CLAY with sand and trace of gravel						CL/CH					N = 23
B-1	SS-3	13.5'-15'	Gray weathered shale with sand						SH					N = 50/4"
B-1	SS-4	18.5'-20'	Gray shale						SH					N = 50/5"
B-2	ST-1	2'-4'	Brown FAT CLAY with trace of sand and gravel (probable fill)	18.5	95.1	53	24	29	CH					PP = >4.5 tsf
B-2	ST-2	4'-6'	Brown LEAN/FAT CLAY with trace of sand and gravel	14.4	110.5				CL/CH		7358	2.2		PP = 4.5 tsf

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: Hawk Ridge Park
PROJECT LOCATION: Raymore, MO
PROJECT NUMBER: 17-304E
DATE: 7/20/2017

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B-2	SS-1	6'-7.5'	Brown FAT CLAY with trace of sand and gravel (probable fill)	14.3					CH					N = 5
B-2	SS-2	8.5'-10'	Light brown, spotted gray sandy LEAN CLAY						CL					N = 22
B-2	SS-3	13.5'-15'	Gray and brown LEAN CLAY with sand (weathered shale)						CL					N = 50/4"
B-2	SS-4	18.5'-20'	Gray shale						SH					N = 50/3"
B-3	ST-1	2'-4'	Dark brown FAT CLAY with trace of organics	22.2	100.4				CH		9046	5.9		PP = >4.5 tsf
B-3	ST-2	4'-6'	Brown, speckled reddish brown LEAN/FAT CLAY with trace of organics	22.9	99.9				CL/CH					PP = 4.5 tsf
B-3	SS-1	6'-7.5'	Brown, mottled gray, spotted reddish brown FAT CLAY	28.1					CH					N = 8
B-3	SS-2	8.5'-10'	Brown, spotted reddish brown and gray FAT CLAY						CH					N = 10
B-3	SS-3	13.5'-15'	Brown, spottd gray FAT CLAY						CH					N = 7

Summary of Laboratory Testing

SLT 22205

Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: Hawk Ridge Park
PROJECT LOCATION: Raymore, MO
PROJECT NUMBER: 17-304E
DATE: 7/20/2017

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%e	% Swell	Remarks
B-3	SS-4	18.5'-20'	Brown, mottled gray LEAN/FAT CLAY (weathered shale)						CL/CH					N = 48
B-4	ST-1	2'-4'	Brown LEAN CLAY with trace of organics (finger roots)(probable fill)	31.5	83.3				CL					PP = 1.25 tsf
B-4	ST-2	4'-6'	Dark brown, speckled reddish brown LEAN/FAT CLAY	29.9	90.4				CH		1128	15.5		PP = 1.0 tsf
B-4	SS-1	6'-7.5'	Brown, mottled gray and reddish brown FAT CLAY	24.8					CH					N = 7
B-4	SS-2	8.5'-10'	Brown, mottled gray and light reddish brown FAT CLAY						CH					N = 8
B-4	SS-3	13.5'-15'	Brown, mottled gray FAT CLAY						CH					N = 8
B-4	SS-4	18.5'-20'	Brown, mottled gray LEAN/FAT CLAY (weathered shale)						CL/CH					N = 56
B-5	ST-1	2'-4'	Brown, spotted reddish brown FAT CLAY	26.6	95.6				CH					PP = 3.5 tsf
B-5	SS-1	5'-6.5'	Reddish brown FAT CLAY with sand	19.9					CH					N = 9
B-5	SS-2	8.5'-10'	Brown LEAN CLAY with sand and trace of gravel						CL					N = 42

Summary of Laboratory Testing

SLT 22205

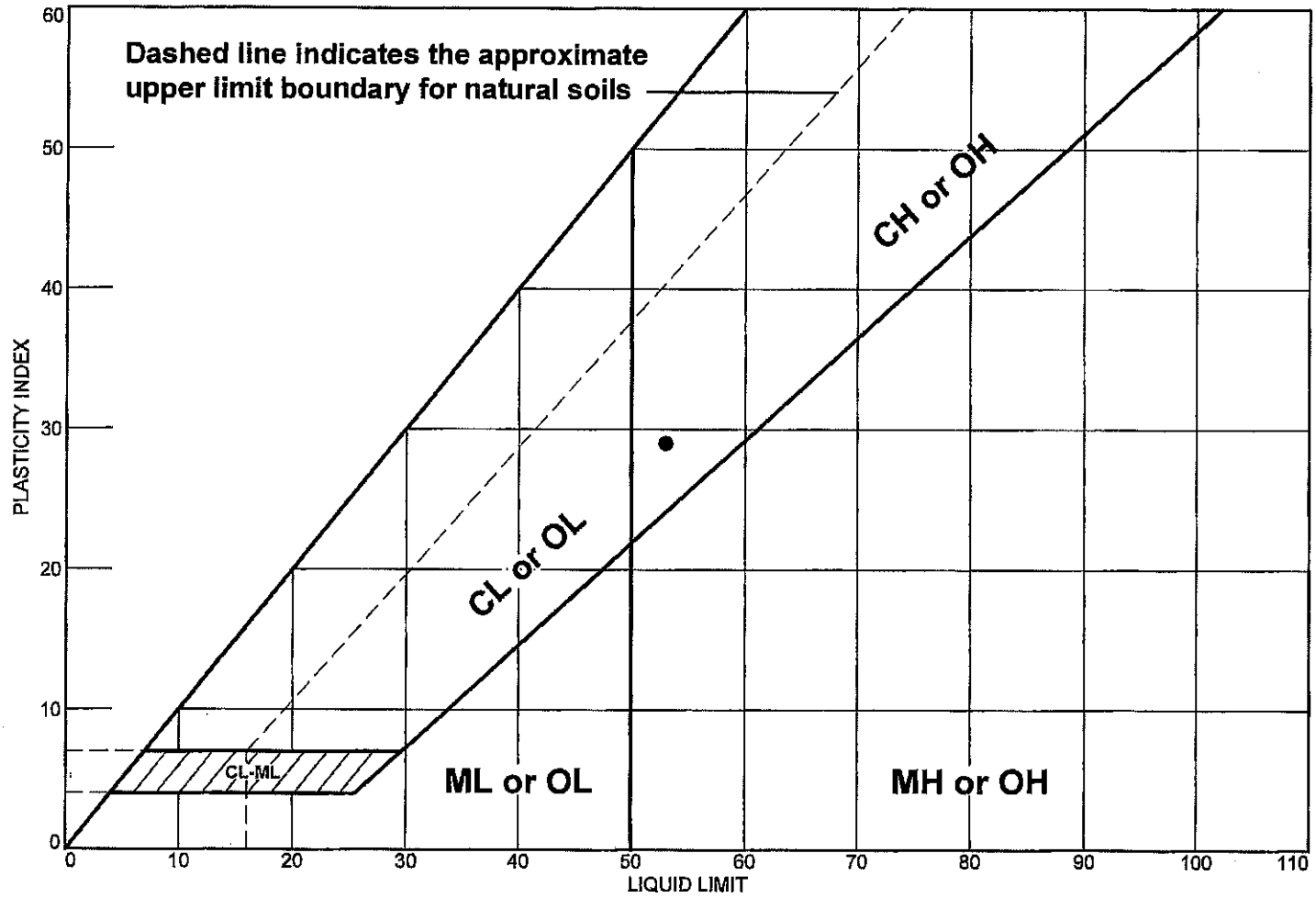
Alpha-Omega Geotech, Inc.
1701 State Avenue
Kansas City, KS 66102
Office: (913) 371-0000 Fax: (913) 371-6710
Website: www.aogeotech.com

ALPHA-OMEGA GEOTECH

PROJECT NAME: Hawk Ridge Park
PROJECT LOCATION: Raymore, MO
PROJECT NUMBER: 17-304E
DATE: 7/20/2017

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits LL	PL	PI	USCS/ Visual Class.	% Passing No. 200	Unconfined Compression (psf)	%ε	% Swell	Remarks
B-6	ST-1	2'-4'	Brown, mottled reddish brown FAT CLAY with trace of organics (finger roots)	20.9	102.6				CH		8307	5.0		PP = 4.0 tsf
B-6	SS-1	5'-6.5'	Brown FAT CLAY with sand and trace of gravel						CH					N = 9
B-6	SS-2	8.5'-10'	Light brown LEAN CLAY with sand	14.1					CL					N = 50/2"
B-7	ST-1	2'-4'	Brown, spotted light reddish brown and gray FAT CLAY with trace of organics (finger roots)	27.6	92.0				CH					PP = 1.25 tsf
B-7	SS-1	5'-6.5'	Light brown , mottled gray FAT CLAY	27.0					CH					N = 8
B-7	SS-2	8.5'-10'	Light brown, mottled gray FAT CLAY						CH					N = 12
B-8	ST-1	2'-4'	Dark brown FAT CLAY with trace of gravel and sand	23.7	94.1				CH					PP = 3.5 tsf
B-8	SS-1	5'-6.5'	Brown FAT CLAY						CH					N = 5
B-8	SS-2	8.5'-10'	Brown, speckled reddish brown LEAN/FAT CLAY	32.1					CL/CH					N = 4

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown FAT CLAY with trace of sand and gravel (probable fill)	53	24	29			

Project No. 17-304E **Client:** Confluence

Project: Hawk Ridge Park

● **Source of Sample:** B-2 **Depth:** 2 **Sample Number:** ST-1

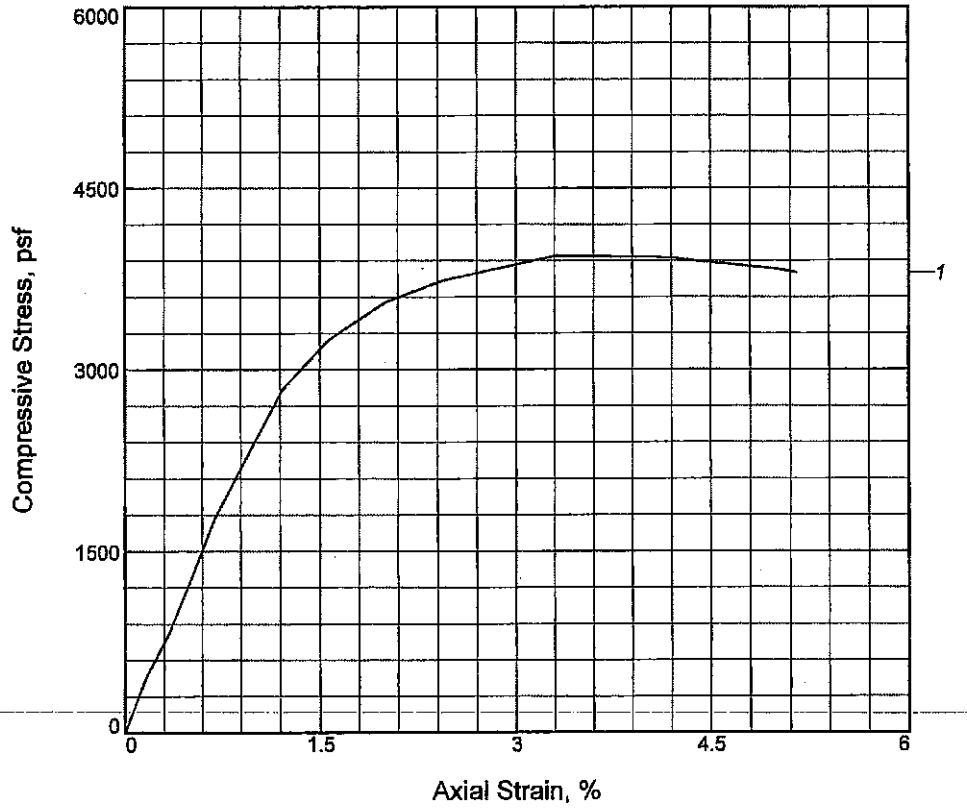
Remarks:

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: DB **Checked By:** GA

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	3939			
Undrained shear strength, psf	1969			
Failure strain, %	3.3			
Strain rate, in./min.	0.075			
Water content, %	24.9			
Wet density, pcf	122.3			
Dry density, pcf	97.9			
Saturation, %	93.1			
Void ratio	0.7211			
Specimen diameter, in.	2.870			
Specimen height, in.	5.750			
Height/diameter ratio	2.00			

Description: Brown, mottled reddish brown and dark brown FAT CLAY with trace of slickened sides

LL =	PL =	PI =	Assumed GS= 2.70	Type: Undisturbed

Project No.: 17-304E
Date Sampled: 7/22/2017
Remarks:

Client: Confluence

Project: Hawk Ridge Park

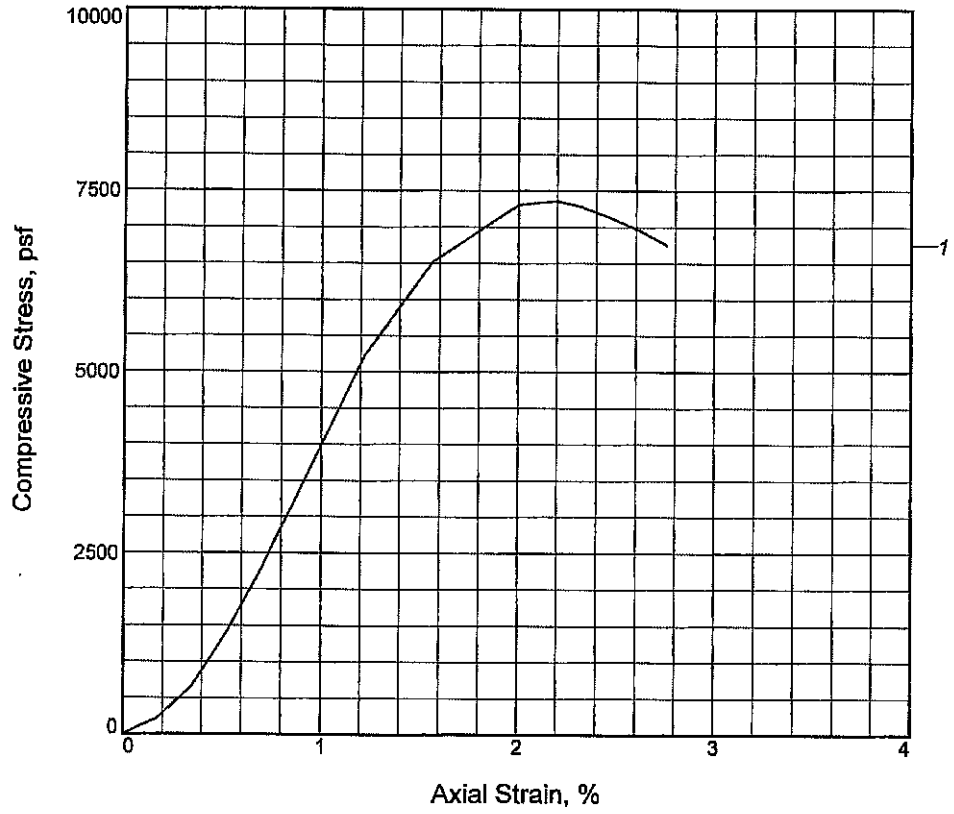
Source of Sample: B-1 **Depth:** 2
Sample Number: ST-1

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: DB **Checked By:** GA

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	7358			
Undrained shear strength, psf	3679			
Failure strain, %	2.2			
Strain rate, in./min.	0.075			
Water content, %	14.4			
Wet density, pcf	126.4			
Dry density, pcf	110.5			
Saturation, %	73.8			
Void ratio	0.5259			
Specimen diameter, in.	2.870			
Specimen height, in.	5.740			
Height/diameter ratio	2.00			

Description: Brown LEAN/FAT CLAY with trace of sand and gravel (probable fill)

LL =	**PL =**	**PI =**	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 17-304E
Date Sampled: 7/22/2017
Remarks:

Client: Confluence

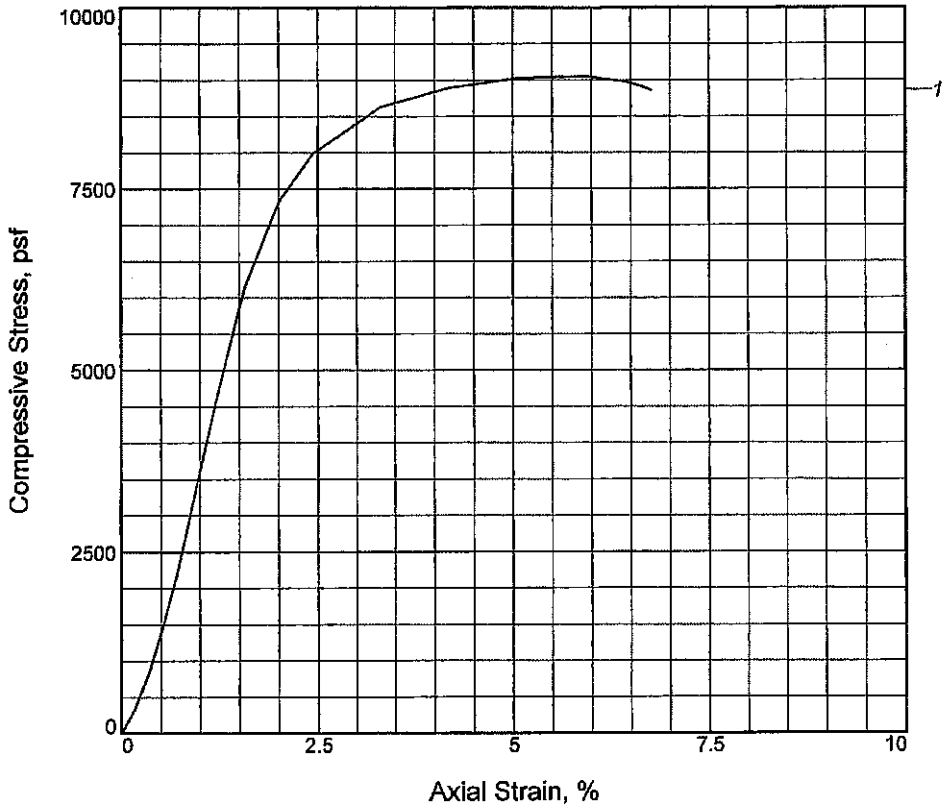
Project: Hawk Ridge Park

Source of Sample: B-2 **Depth:** 4
Sample Number: ST-2

ALPHA-OMEGA GEOTECH

Tested By: DB **Checked By:** GA

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	9046			
Undrained shear strength, psf	4523			
Failure strain, %	5.9			
Strain rate, in./min.	0.075			
Water content, %	22.2			
Wet density, pcf	122.7			
Dry density, pcf	100.4			
Saturation, %	88.3			
Void ratio	0.6794			
Specimen diameter, in.	2.870			
Specimen height, in.	5.740			
Height/diameter ratio	2.00			

Description: Dark brown FAT CLAY with trace of organics

LL =	**PL =**	**PI =**	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 17-304E
Date Sampled: 7/22/2017
Remarks:

Client: Confluence

Project: Hawk Ridge Park

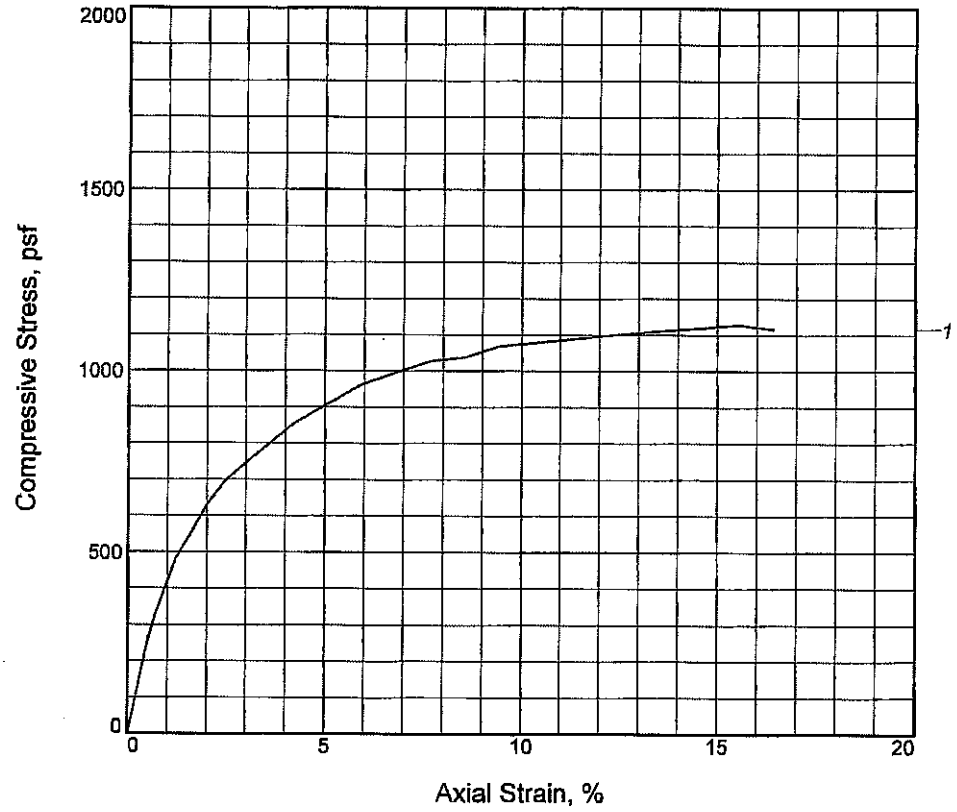
Source of Sample: B-3 **Depth:** 12
Sample Number: ST-1

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: DB **Checked By:** GA

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	1128			
Undrained shear strength, psf	564			
Failure strain, %	15.5			
Strain rate, in./min.	0.075			
Water content, %	29.9			
Wet density, pcf	117.4			
Dry density, pcf	90.4			
Saturation, %	93.4			
Void ratio	0.8648			
Specimen diameter, in.	2.870			
Specimen height, in.	5.730			
Height/diameter ratio	2.00			

Description: Dark brown, speckled reddish brown LEAN/FAT CLAY

LL =	PL =	PI =	**Assumed GS=** 2.70	**Type:** Undisturbed

Project No.: 17-304E
Date Sampled: 7/22/2017
Remarks:

Client: Confluence

Project: Hawk Ridge Park

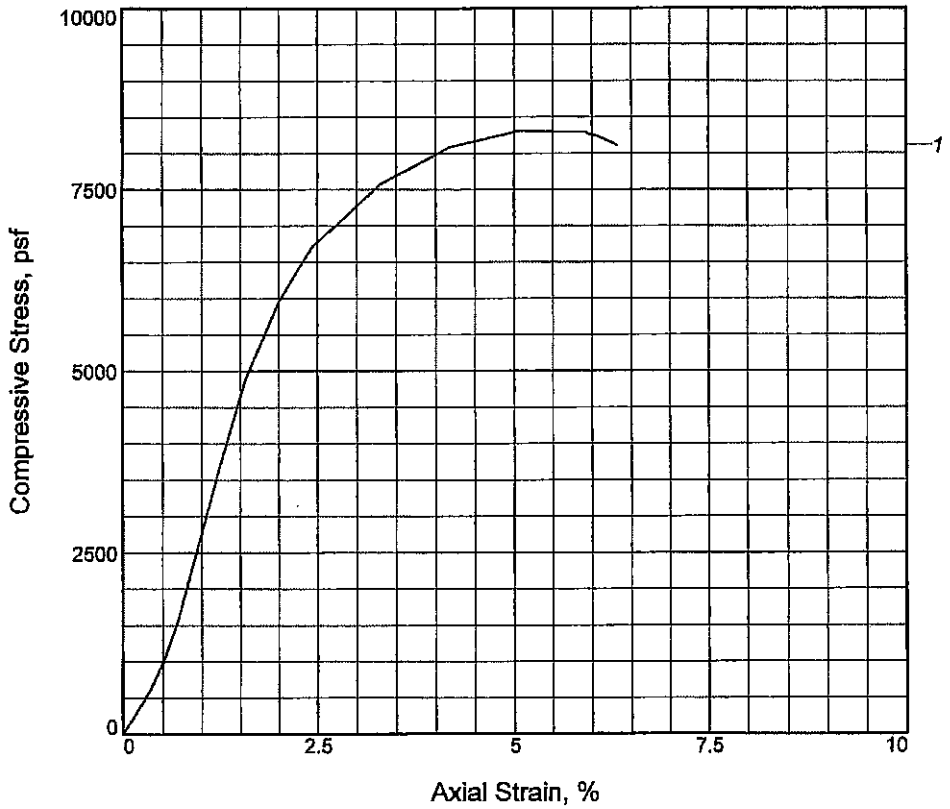
Source of Sample: B-4 **Depth:** 4
Sample Number: ST-2

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: DB **Checked By:** GA

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	8307			
Undrained shear strength, psf	4153			
Failure strain, %	5.0			
Strain rate, in./min.	0.075			
Water content, %	20.9			
Wet density, pcf	124.0			
Dry density, pcf	102.6			
Saturation, %	87.7			
Void ratio	0.6431			
Specimen diameter, in.	2.870			
Specimen height, in.	5.750			
Height/diameter ratio	2.00			

Description: Brown, mottled reddish brown FAT CLAY with trace of organics (finger roots)

LL =	PL =	PI =	Assumed GS= 2.70	Type: Undisturbed

Project No.: 17-304E
Date Sampled: 7/22/2017
Remarks:

Client: Confluence

Project: Hawk Ridge Park

Source of Sample: B-6 **Depth:** 2
Sample Number: ST-1

ALPHA-OMEGA GEOTECH

Figure 1 of 1

Tested By: DB **Checked By:** GA

Appendix Section C

BORING LOGS

Note: The logs of subsurface conditions shown in this section apply only at the specific boring location and depths at the date indicated and might not be indicative of all subsurface conditions that may be encountered. This information is not warranted to be representative of subsurface conditions at other locations, depths and times. The passage of time or construction operations at or adjacent to this site may result in changes to the soil conditions at these boring locations and depths. As a result, the character of subsurface materials shall be each bidder's responsibility.

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-1

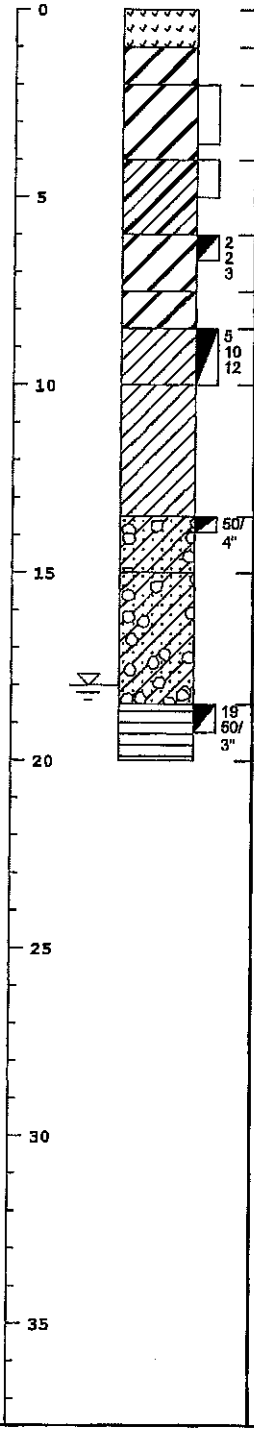
PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: NW Shelter **ELEVATION:** ND
DRILLER: Chuck Jacobs **LOGGED BY:** Mike Burdick, Sr.
DRILLING METHOD: AO/SS/ST **DATE:** 7/18/2017
DEPTH TO - WATER> INITIAL: ▽ 15' **AFTER 24 HOURS:** ▽ NA **CAVING>** ℄ None

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Dark brown LEAN/FAT CLAY with rock debris (probable fill)								CL-CH
										CH
		Brown, mottled reddish brown and dark brown FAT CLAY with trace of slickened sides (probable fill)	24.9	97.9				3939	2.0	CH
5		Brown, mottled reddish brown and dark brown FAT CLAY with trace of slickened sides (probable fill)	22.2	98.6					1.75	CL-CH
	5 8 11	Brown, mottled brown, spotted reddish brown LEAN/ FATCLAY with trace of sand, gravel and organics (finger roots)(probable fill)	20.2							CL
										CL
	7 9 14	Light brown LEAN CLAY with sand								CL-CH
10		Light brown LEAN CLAY with sand								CL-CH
		Reddish brown LEAN/FAT CLAY with sand and trace of gravel								
	50/ 4"	Reddish brown LEAN/FAT CLAY with sand and trace of gravel								SH
15	▽	Gray weathered shale with sand								
		Gray weathered shale with sand								
	33 50/ 5"	Gray shale								SH
20		End of boring at about 20'								
25										
30										
35										

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-2

PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: NW Shelter **ELEVATION:** ND
DRILLER: Chuck Jacobs **LOGGED BY:** Mike Burdick, Sr.
DRILLING METHOD: AO/SS/ST **DATE:** 7/18/2017
DEPTH TO - WATER> INITIAL: ▽ 18' **AFTER 24 HOURS:** ▽ NA **CAVING>** ⊏ None



Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
	Topsoil								
1	Brown FAT CLAY with trace of sand and gravel (probable fill)								CH
2	Brown FAT CLAY with trace of sand and gravel (probable fill)	18.5	95.1	53	29			>4.5	CH
4	Brown LEAN/FAT CLAY with trace of sand and gravel (probable fill)	14.4	110.5				7358	4.5	CL-CH
6	Brown FAT CLAY with trace of sand and gravel (probable fill)	14.3							CH
7.5	Brown FAT CLAY with trace of sand and gravel (probable fill)								CH
8.5	Light brown, spotted gray sandy LEAN CLAY								CL
10	Light brown, spotted gray sandy LEAN CLAY								CL
13.5	Gray and brown LEAN CLAY with sand (weathered shale)								CL
15	Gray and brown LEAN CLAY with sand (weathered shale)								CL
18.5	Gray shale								SH
20	End of boring at about 20'								

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-3

PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: SE Shelter **ELEVATION:** ND
DRILLER: Mike Burdick, Sr. **LOGGED BY:** Chuck Jacobs
DRILLING METHOD: AO/SS/ST **DATE:** 7/19/2017
DEPTH TO - WATER> INITIAL: ▽ None **AFTER 24 HOURS:** ▽ NA **CAVING>** ⊥ None

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Topsoil								
		1 Dark brown FAT CLAY with trace of organics								CH
		2 Dark brown FAT CLAY with trace of organics	22.2	100.4				9046	>4.5	CH
5		4 Brown, speckled reddish brown LEAN/FAT CLAY with trace of organics (finger roots)	22.9	99.9					4.5	CL-CH
	3 4 4	6 Brown, mottled gray, spotted reddish brown FAT CLAY	28.1							CH
		7.5 Brown, mottled gray, spotted reddish brown FAT CLAY								CH
	3 4 6	8.5 Brown, spotted reddish brown and gray FAT CLAY								CH
10		10 Brown, spotted reddish brown and gray FAT CLAY								CH
	3 3 4	13.5 Brown, spotted gray FAT CLAY								CH
15		15 Brown, spotted gray FAT CLAY								CH
	11 18 30	18.5 Brown, mottled gray LEAN/FAT CLAY (weathered shale)								CL-CH
20		20 End of boring at about 20'								
25										
30										
35										

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-4

PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: SE Shelter **ELEVATION:** ND
DRILLER: Mike Burdick, Sr. **LOGGED BY:** Chuck Jacobs
DRILLING METHOD: AO/SS/ST **DATE:** 7/19/2017
DEPTH TO - WATER> INITIAL: ▽ None **AFTER 24 HOURS:** ▽ NA **CAVING>** ℄ None

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Topsoil								
		1								CL
		Brown LEAN CLAY with trace of organics (finger roots)(probable fill)	31.5	83.3					1.25	CL
		2								
5		Brown LEAN CLAY with trace of organics (finger roots)(probable fill)	29.9	90.4				1128	1.0	CL-CH
	3 3 4	4 Dark brown, speckled reddish brown LEAN/FAT CLAY								
		6 Brown, mottled gray and reddish brown FAT CLAY	24.8							CH
		7.5 Brown, mottled gray and reddish brown FAT CLAY								CH
	3 4 4	8.5 Brown, mottled gray and light reddish brown FAT CLAY								CH
10		10 Brown, mottled gray and light reddish brown FAT CLAY								CH
	3 3 5	13.5 Brown, mottled gray FAT CLAY								CH
15		15 Brown, mottled gray FAT CLAY								CH
	13 26 30	18.5 Brown, mottled gray LEAN/FAT CLAY (weathered shale)								CL-CH
20		20 End of boring at about 20'								
25										
30										
35										

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-5

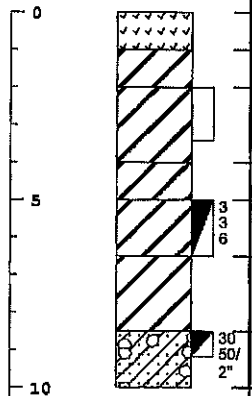
PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: NW Sign **ELEVATION:** ND
DRILLER: Chuck Jacobs **LOGGED BY:** Mike Burdick, Sr.
DRILLING METHOD: AO/SS/ST **DATE:** 7/18/2017
DEPTH TO - WATER> INITIAL: ▽ None **AFTER 24 HOURS:** ▽ NA **CAVING>** ℄ None

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Topsoil								
1		Brown, spotted reddish brown FAT CLAY								CH
2		Brown, spotted reddish brown FAT CLAY	26.6	95.6					3.5	CH
4		Brown, spotted reddish brown FAT CLAY								CH
5	3 4 5	Reddish brown FAT CLAY witb sand	19.9							CH
6.5		Reddish brown FAT CLAY with sand								CH
8.5	3 12 30	Brown LEAN CLAY with sand and trace of gravel								CL
10		End of boring at about 10'								
15										
20										
25										
30										
35										

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-6

PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: NW Wall **ELEVATION:** ND
DRILLER: Chuck Jacobs **LOGGED BY:** Mike Burdick, Sr.
DRILLING METHOD: AO/SS/ST **DATE:** 7/18/2017
DEPTH TO - WATER> INITIAL: ▽ None **AFTER 24 HOURS:** ▽ NA **CAVING>** ℄ None



Elevation / Depth (ft.)	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
	Topsoil								
1	Brown, mottled reddish brown FAT CLAY with trace of organics (finger roots)								CH
2		20.9	102.6				8307	4.0	CH
	Brown, mottled reddish brown FAT CLAY with trace of organics (finger roots)								CH
4	Brown, mottled reddish brown FAT CLAY with trace of organics (finger roots)								CH
5	Brown FAT CLAY with sand and trace of gravel								CH
6.5	Brown FAT CLAY with sand and trace of gravel	14.1							CL
8.5	Light brown LEAN CLAY with sand								
10	End of boring at about 10'								

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-7

PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: S. Sign **ELEVATION:** ND
DRILLER: Mike Burdick, Sr. **LOGGED BY:** Chuck Jacobs
DRILLING METHOD: AO/SS/ST **DATE:** 7/19/2017
DEPTH TO - WATER> INITIAL: ▽ None **AFTER 24 HOURS:** ▽ NA **CAVING>** ⊏ None

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Topsoil								
		Brown, spotted light reddish brown and gray FAT CLAY with trace of organics (finger roots)(probable fill)								CH
			27.6	92.0					1.25	CH
		Brown, spotted light reddish brown and gray FAT CLAY with trace of organics (finger roots)(probable fill)								CH
5	3 4 4		27.0							CH
		Brown, spotted light reddish brown and gray FAT CLAY with trace of organics (finger roots)(probable fill)								CH
		Light brown, mottled gray FAT CLAY								CH
	4 5 7	Light brown, mottled gray FAT CLAY								
10		Light brown, mottled gray FAT CLAY								
		End of boring at about 10'								
15										
20										
25										
30										
35										

ALPHA-OMEGA GEOTECH

LOG OF BORING
No. B-8

PROJECT: Hawk Ridge Park **PROJECT NO.:** 17-304E
CLIENT: Confluence
PROJECT LOCATION: Raymore, MO
LOCATION: S. Sign **ELEVATION:** ND
DRILLER: Mike Burdick, Sr. **LOGGED BY:** Chuck Jacobs
DRILLING METHOD: AO/SS/ST **DATE:** 7/19/2017
DEPTH TO - WATER> INITIAL: ▽ 9' **AFTER 24 HOURS:** ▽ NA **CAVING>** ℄ None

Elevation / Depth (ft.)	Soil Symbols Sampler Symbols and Field Test Data	Description	w%	DDen pcf	LL	PI	200 %	Uncomp. psf	PPen. tsf	USCS/ Visual Class.
0		Topsoil								
		Dark brown FAT CLAY with trace of gravel and sand								CH
		Dark brown FAT CLAY with trace of gravel and sand	23.7	94.1					3.5	CH
5	2 2 3	Dark brown FAT CLAY with trace of gravel and sand								CH
		Brown FAT CLAY								CH
	1 2 2	Brown, speckled reddish brown LEAN/FAT CLAY	32.1							CL-CH
10		End of boring at about 10'								
15										
20										
25										
30										
35										

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	LEAN/FAT CLAY
	FAT CLAY
	LEAN CLAY w/ trace of Sand
	Sandy LEAN/FAT CLAY
	weathered shale with sand
	SHALE
	Topsoil
	LEAN CLAY
	FAT CLAY w/ Sand

Symbol	Description
Misc. Symbols	
	Water table during drilling
Soil Samplers	
	Undisturbed thin wall Shelby tube
	Standard penetration test

Notes:

1. Borings were drilled on July 18, 2017 using auger only, shelby tube and split spoon techiniques.

2. Ground water was encountered while in the drilling process.

3. Borings were staked by Alpha-Omega Geotech, Inc.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs. Abbreviations are:

DDen =	natural dry density (pcf)	LL =	Liquid limit
w% =	natural moisture content (%)	PI =	Plasticity index
UComp =	Unconfined compression (psf)	PPen =	Pocket Penetrometer
-200 =	percent passing #200 sieve (%)	RQD =	Rock Quality
DCP =	Dynamic Cone Penetrometer		

SECOND REVISED BID PROPOSAL FORM E – Project No. 18-253-201
Hawk Ridge Park Improvements 4/27/2018

1. MDC REIMBURSED IMPROVEMENTS	**Units**	**Estimated Quantities**	**$/Units**	**Total**
8’ Width Asphalt Loop Trail / Sub-Base and testing	TON	234		$
18’x36’ ADA Fishing Dock	LS	1		$
45’ ADA Walkway	LS	1		$
45’ Stiff Arm	LS	1		$
Concrete bulkheads & Material	EA	2		$
Delivery and Installation	LS	1		$
Montrose Flush Building	City Provided	0	0.00	$0.00
Montrose Flush Building Installation	LS	1		$
8’ Width Concrete/Stone Edge Fishing Pier	LS	1		$
SUBTOTAL MDC REIMBURSED IMPROVEMENTS BASEBID				$
Alternates 1,2, and 3 are substitutes for the first line item. The City will consider the three trail alternates.				
Alternate 1 8’ Concrete Trail/Sub-Base	CY	115		$
Alternate 2 10’ Concrete Trail/Sub Base	CY	144		$
Alternate 3 10’ Asphalt Trail/Sub-Base	TON	292		$

2. LAKE LOOP TRAIL	**Units**	**Estimated Quantities**	**$/Units**	**Total**
8’ Width Asphalt Loop Trail / Sub-Base and testing	TON	485		$
6’ x 40’ Bridge and Abutment	Lump Sum	1		$
Trail Water Crossing	LF	40		$
8’ Connection to Boardwalk	TON	10		$
Superstructure of Boardwalk	LS	1		$
Substructure of Boardwalk	Linear Feet	900		$
SUBTOTAL LAKE LOOP TRAIL BASE BID				$
Alternates 1,2,and 3 are are substitutes for the first line item. The City will consider the three trail alternates.				
Alternate 1 8’ Concrete Trail/Sub-Base	CY	305		$
Alternate 2 10’ Concrete Trail/Sub Base	CY	380		$
Alternate 3 10’ Asphalt Trail/Sub-Base	TON	606		$
Alternate 6 is a stand alone alternate. It is an option to increase the bridge to 8 feet wide and will replace the 6 foot bridge				
Alternate 6 8’ x 40’ Bridge and Abutment in lieu of 6’ x 40’ Bridge and Abutment	LS	1		$

3. NORTH PLAYGROUND PARKING	**Units**	**Estimated Quantities**	**$/Units**	**Total**
Demolition of Asphalt Pavement	LS	1		$
Concrete Shelter Surround	CY	37		$
Asphalt Paving around Parking Lot APWA Type 3, 4 inches thick	TON	99		$
Parking Lot, and Driveway APWA Type 1, 4 inches Asphalt with testing	TON	441		$
Parking Lot and Driveway APWA Type 3, 2 inches Asphalt with testing	TON	223		$
Fly ash Stabilization, 9 inches deep, 15%	SF	16823		$
Parking Signage	EA	8		$
Parking Lot Striping	LS	1		$
Parking Stops	EA	40		$
North Shelter/Restroom	LS	1		$
Bioswale Soils	CY	105		$
Bioswale Drain Pipe	LF	175		$
Bioswale Plantings (1 Gal.)	EA	468		$
Turf Type Tall Grass Seeding	SF	48,900		$
Parking Lot Lighting, Electrical and Base	LS	1		$
2” Copper Water Service Line	LF	9		$
2” HDPE Water Service Line	LF	235		$

Water Meter Pit	LS	1		$
Connection to Existing Water Main	LS	1		$
Water Service Stub for Bathroom	LS	1		$
Flush Mount Hydrant	LS	1		$
Sanitary Sewer Service Line	LF	80		$
Connect to Existing Sanitary Sewer Main	LS	1		$
Sanitary Sewer Service Stub for Bathroom	LS	1		$
Sanitary Sewer Cleanout	EA	3		$
Aggregate at North Shelter	SF	112		$
Heater in one bathroom, and heat tape in mechanical room	LS	1		$
SUBTOTAL NORTH PLAYGROUND PARKING BASE BID				$

4. AMPHITHEATER/Montrose Flush Building Rough-in	**Units**	**Estimated Quantities**	**$/Units**	**Total**
Asphalt Trail around parking lot	TON	76		$
Parking Lot, and Driveway APWA Type 1, 4 inches Asphalt with testing	TON	442		$
Parking Lot and Driveway APWA Type 3, 2 inches Asphalt with testing	TON	224		$
Fly Ash Stabilization 9 inches deep, 15%	SF	17891		$
Parking Signage	EA	4		$
Parking Lot Striping	LS	1		$

Parking Stops	EA	33		$
Amphitheater	LS	1		$
Drain Pipe at Amphitheater	LF	42		$
Parking Lot Lighting, Electrical and Base	LS	1		$
Turf Type Tall Grass Seeding	SF	33,000		$
Bioswale Soils	CY	85		$
Bioswale Drain Pipe	LF	150		$
Bioswale Plantings (1 Gal.)	EA	372		$
Water Meter Pit	LS	1		$
Connection to Existing Water Main	LS	1		$
Water Service Stub for Bathroom	LS	1		$
Flush Mount Hydrant	LS	1		$
Sanitary Sewer Service Line	LF	290		$
Connect to Existing Sanitary Sewer Main	LS	1		$
Sanitary Sewer Service Stub for Bathroom	LS	1		$
Sanitary Sewer Cleanout	EA	3		$
Limestone Seating Wall/Retaining Wall Behind Amphitheater	LF	86		$
Dry Fire Hydrant	LS	1		$
Over-excavation of Amphitheater foundation	CY	260		$
Placement of Engineered Fill for Amphitheater foundation	CY	260		$

South Bathroom Concrete	CY	998		$
Asphalt Trail Behind Amphitheater	TON	78		$
Connection to the Front of the Amphitheater	CY	20		$
2” Copper Water Service Line (Bored)	LF	75		$
2” HDPE Water Service Line	LF	270		$
Concrete Sidewalk along Johnston Dr.	CY	9		$
Concrete Parking Lot Driveway	CY	25		$
Aggregate at Amphitheater	SF	365		$
SUBTOTAL AMPHITHEATER/Montrose Flush Building Rough-in BASE BID				$

5. PARK SIGNAGE/SITE FURNISHINGS	**Units**	**Estimated Quantities**	**$/Units**	**Total**
Trash Receptacles	EA	6		$
Bike Racks	EA	3		$
Entry Signage	EA	2		$
Limestone Seating Blocks	EA	36		$
SUBTOTAL PARK SIGNAGE/SITE FURNISHINGS BASE BID				$

6. Project wide				
Mobilization, Bonds and Insurance	LS	1		$
Construction Staking	LS	1		$
Temporary Traffic Control	LS	1		$

Concrete Testing	EA	20		$
Site Clearing and Grubbing	AC	4		$
Site Grading	CY	13,246		$
Erosion Control	LS	1		$
SUBTOTAL Project Wide				$

TOTAL PROJECT BASE BIDS	**Total**
1. MDC Reimbursed Improvements	$
2. Lake Loop Trail	$
3. North Playground/Parking	$
4. Amphitheater/Montrose Flush Building Rough-in	$
5. Park Signage / Site Furnishings	$
6. Project wide	$
TOTAL	$

Total Bid for Project Number: 18-253-201

$_____
In blank above insert numbers for the sum of the bid total.

($_____)

In blank above write out the sum of the bid total.

BID OF:_____
(Firm Name)

DATE: _____

SECOND REVISED Appendix A 4/27/2018

Methods and Payments

1. MDC Reimbursed Improvements

8' Width Asphalt Loop Trail / Sub-Base: 4" APWA Type 1 Recycled Asphalt with 2" APWA Type 3 Surface Course and 2" AB3 Base Course: 4" APWA Type 1 Recycled Asphalt (30% maximum recycled material) and 2" APWA Type 3 Surface shall be measured and paid per ton or tenth part thereof of. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt over the AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

18'x36' ADA Fishing Dock: Prefabricated ADA Fishing Doc. This item will be a lump sum item.

45' ADA Walkway: Prefabricated ADA Walkway connecting to ADA Fishing Dock. This item will be a lump sum item.

45' Stiff Arm: Prefabricated stiff arm and foundation tie-ins. This item will be a lump sum item.

Concrete Bulkheads & Material: Concrete bulkheads shall be paid for at the unit bid price each. This item shall include all the equipment, labor and materials for connections with fishing dock and stiff arm.

Delivery and Installation: Delivery and installation by fabrication company for ADA fishing Dock, 45' ADA Walkway, and 45' Stiff Arms necessary to deliver complete dock structure. This item will include any restoration necessary from the transportation inside the park or measures to prevent any damage. This item will be a lump sum item.

Montrose Flush Building: City to furnish prefabricated CXT Montrose Multi-User Flush Building with standard simulated cedar shake roof and barn wood wall texture, three 16-gauge galvanized steel doors and frames, vitreous china plumbing fixtures (2-lavatories, 3 water closets, 1 urinal), three 3-roll toilet paper holders, two exhaust fans, three GFI outlets, five floor drains, two S/S mirrors, ADA grab bars, ADA signs, one hose bib in chase area, and motion controlled interior lights and photocell controlled exterior lights. Missouri state engineered sealed drawings. Including freight/delivery to site, crane, off loading and setting of the building on contractor prepared accessible site.

Montrose Flush Building Installation: This line item is to prepare the site for the building delivery. This line item includes the 6" of AB3 to be placed under the building. The AB3 material shall be installed in 2 separate lifts of 3" each when completely compacted. The material should be placed level and compacted to support a minimum of 1500 pounds per square foot. The plumbing stub in is covered under separate line items. Contractor to have electrical and plumber on site during

delivery to make field adjustments as necessary and provide all electrical and plumbing connections to building once set. Contractor to refer to specification section 13 0000 for installation instructions and tie in locations. The building can be delivered in the roadbed of the driveway and parking lot.

8' Width Concrete / Stone Edge Fishing Pier: Concrete / stone edge fishing pier will be paid on a lump sum basis. All leveling material, jointing, and incidental work shall be included in the lump sum contract price.

(Alternate 1) 8' Concrete Trail/Sub-Base: 6" sidewalks will be measured per cubic yard or tenth part thereof. All leveling material, jointing, and incidental work shall be included in the unit price. AB3 is subsidiary to the line item.

(Alternate 2) 10' Concrete Trail/Sub-Base: 6" Sidewalks will be measured per cubic yard or tenth part thereof. All leveling material, jointing, and incidental work shall be included in the unit price. AB3 is subsidiary to the line item.

(Alternate 3) 10' Asphalt Trail/Sub-Base: 4" APWA Type 1 Recycled Asphalt with 2" Type 3 Surface Course and 2" AB3 Base Course: 4" APWA Type 1 Recycled Asphalt (30% maximum recycled material) with 2" APWA Type 3 Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place asphalt a minimum of 6" thick over the AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

2. Lake Loop Trail

8' Width Asphalt Loop Trail / Sub-Base: 4" APWA Type 3 Asphalt Surface Course with 2" AB3 Base Course: 4" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over the 2" AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

6' x 40' Pony Truss Pedestrian Bridge and Abutment: Contractor to furnish and install Contech or approved equal Weathering Steel Pony Truss Pedestrian Bridge w/ pine decking – 40' Span x 6' width. Lump Sum price to include freight/delivery, installation of all abutments, materials and bridge components.

Trail Water Crossing: The payment for this item will be per linear foot of 30" pipe installed. The cost shall include all bedding material, labor and equipment. The cost shall also include the four end sections to the pipes.

8' Connection to Boardwalk: 4" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over the 2" AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt

delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

Superstructure to Boardwalk: This item will be a lump sum item for all parts to construct the boardwalk above the piers. This line item will include the connection component to the piers. This item shall include all labor, materials and equipment to complete the superstructure of the boardwalk.

Substructure to Boardwalk: This item will be paid for by the linear foot of piling installed. The substructure will be helical piers to be designed for an estimated a dead load of 15PSF, live load of 80PSF and lateral loading of 50PSF. These estimated loads should be used for bidding purposes. Final loads will be provided by the City prior to shop drawing submittal.

Alternate 1. 8' Concrete Trail/Sub-Base: 5" sidewalks with 4" of AB3 will be measured per cubic yard or tenth part thereof. All leveling material, jointing, and incidental work shall be included in the unit price. AB3 is subsidiary to the line item.

Alternate 2. 10' Concrete Trail/Sub-Base: 5" sidewalks with 4" of AB3 will be measured per cubic yard or tenth part thereof. All leveling material, jointing, and incidental work shall be included in the unit price. AB3 is subsidiary to the line item.

Alternate 3. 10' Asphalt Trail/Sub-Base: 4" APWA Type 3 Asphalt Surface Course with 2" AB3 Base Course: 4" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over the 2" AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

Alternate 4. Removed

Alternate 5. Removed

Alternate 6. 8' x 40' Pony Truss Pedestrian Bridge and Abutment: Contractor to furnish and install Contech or approved equal Weathering Steel Pony Truss Pedestrian Bridge w/ pine decking – 40' Span x 8' width. Lump Sum price to include freight/delivery, installation of all abutments, materials and bridge components.

3. North Playground/Parking

Demolition of Asphalt Pavement: Payment will be made at lump sum. This item shall include removal from the property subsidiary to the item. If overexcavation occurs, the fill shall be engineered fill or equal. It is a one time payment and will not be paid for additional demolition

Concrete Shelter Surround: Concrete pavement around the north shelter will be measured per cubic yard or tenth part thereof. All AB3 leveling material, grading and incidental work shall be included in the unit price.

Asphalt Paving Around Parking Lot: 4" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over the 2" AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

Parking Lot Paving: 4" APWA Type 1 Recycled Asphalt Base Course: 4" APWA Type 1 Recycled Asphalt Surface (30% maximum recycled material) shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over 9" fly ash stabilization. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements.

Parking Lot Paving: 2" APWA Type 3 Asphalt Surface Course: 2" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 2" thick over the asphalt Sub-Base and 9" fly ash stabilization. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements.

Fly Ash Stabilization: Payment will be made square foot at a 9 inch depth. All incidental construction shall be included in the square foot price. This line item will also include all testing to meet geotechnical recommendations.

Parking Signage: The cost per each unit bid price shall include all labor, equipment, signage, connectors, posts and setting materials required to place.

Parking Lot Striping: The lump sum unit bid price shall include all labor, equipment and materials required to place approximately 1030 linear feet of striping.

Parking Stops: The cost per each unit bid price shall include all labor, equipment and materials required to place.

North Shelter/Restroom: The lump sum price shall include all labor, equipment and materials required to place concrete foundations, furnish and install prefabricated Poligon or approved equal structure, restrooms and storage area, fireplace, service counters, grills, signage, picnic tables, and aggregate apron.

Bioswale Soils: The cost per cubic yard bid price shall include all labor, equipment and materials required to place cubic yards or tenth part thereof for bioswale soils meeting drawing specifications.

Bioswale Drain Pipe: Drain line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Bioswale Plantings (1 Gal.): The cost per each unit bid price shall include all labor, equipment and materials required to place bioswale plantings in the prepared parking area bioswales.

Turf Type Tall Grass Seeding: Seeding will be measured per square foot. Seeding will be measured complete, in-place, to the nearest square foot. No measurement will be made in areas that are not grassed, such as street paving, driveways, parking areas, gardens, and sidewalks. Areas that are disturbed which lie outside the Contractor's seeding limits, as defined by the Plans or Contract Documents, will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction.

Parking Lot Lighting, Electrical and Base: The lump sum unit bid price shall include all labor, equipment and materials required to place parking light bases, poles and fixtures and run necessary electrical connections. Subsidiary to this line item, the electrical contractor shall be responsible for electrical connections from utility transformer to power distribution equipment, and from power distribution equipment to all electrical devices including but not limited to parking lot lighting, receptacles, and exterior lights.

2" Copper Water Service Line: 2" Copper service line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

2" HDPE Water Service Line: 2" HDPE water service line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Water Meter Pit: The total lump sum price shall include all labor, equipment and materials required to place.

Connection to Existing Water Main: The total lump sum price shall include all labor, equipment and materials required to place.

Water Service Stub for Bathroom: The total lump sum price shall include all labor, equipment and materials required to place.

Flush Mount Hydrant: The total lump sum price shall include all labor, equipment and materials required to place.

Sanitary Sewer Service Line: Sewer line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Connect to Existing Sanitary Sewer Main: The total lump sum price shall include all labor, equipment and materials required to place.

Sanitary Sewer Service Stub for Bathroom: The lump sum cost shall include all labor, equipment and materials required to place.

Sanitary Sewer Cleanout: The cost per each unit bid price shall include all labor, equipment and materials required to place.

Aggregate at the North Shelter: Aggregate at the base of the north shelter will be measured per square foot or tenth part thereof. All grading and incidental work shall be included in the price per square foot. Aggregate should be a minimum of 6 inches thick.

Heater in one bathroom plus heat tape in mechanical room: This lump sum will pay for a 10,000 BTU heat with a minimum horizontal throw of 9 linear feet. The price will include wiring to electrical panel, thermostat, and all other parts to install. The water lines from the mechanical room to the bathroom must have heat tape installed to prevent freezing. The price will also include an exhaust vent with all necessary parts and wiring to operate as needed.

4. Amphitheater/Montrose Flush Building Rough-in

Asphalt Paving Around Parking Lot: 4" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over the 2" AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

Parking Lot Paving: 4" APWA Type 1 Recycled Asphalt Base Course: 4" APWA Type 1 Recycled Asphalt Surface (30% maximum recycled material) shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over 9" fly ash stabilization. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements.

Parking Lot Paving: 2" APWA Type 3 Asphalt Surface Course: 2" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 2" thick over the asphalt Sub-Base and 9" fly ash stabilization. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements.

Fly Ash Stabilization: Payment will be made square foot at a 9 inch depth. All incidental construction shall be included in the square foot price. This line item will also include all testing to meet geotechnical recommendations.

Parking Signage: The cost per each unit bid price shall include all labor, equipment and materials required to place.

Parking Lot Striping: The lump sum unit bid price shall include all labor, equipment and materials required to place.

Parking Stops: The cost per each unit bid price shall include all labor, equipment and materials required to place approximately 765 linear feet of striping.

Amphitheater: The lump sum price shall include all labor, equipment and materials required to place concrete foundations, furnish and install prefabricated Poligon or approved equal structure, movable screens, concrete seat walls, sliding aluminum screens and aggregate apron.

Drain Pipe at Amphitheater: Drain line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Parking Lot Lighting, Electrical and Base: The lump sum unit bid price shall include all labor, equipment and materials required to place parking light bases, poles and fixtures and run necessary electrical connections. Subsidiary to this line item, the electrical contractor shall be responsible for electrical connections from utility transformer to power distribution equipment, and from power distribution equipment to all electrical devices including but not limited to parking lot lighting, receptacles, and exterior lights.

Turf Type Tall Grass Seeding: Seeding will be measured per square foot. Seeding will be measured complete, in-place, to the nearest square foot. No measurement will be made in areas that are not grassed, such as street paving, driveways, parking areas, gardens, and sidewalks. Areas that are disturbed which lie outside the Contractor's seeding limits, as defined by the Plans or Contract Documents, will not be measured for payment, but shall be restored to a condition equal to or better than that existing prior to construction.

Bioswale Soils: The cost per cubic yard bid price shall include all labor, equipment and materials required to place cubic yards or tenth
meeting drawing specifications.

Bioswale Drain Pipe: Drain line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Bioswale Plantings (1 Gal.): The cost per each unit bid price shall include all labor, equipment and materials required to place bioswale plantings in the prepared parking area bioswales.

Water Meter Pit: The total lump sum price shall include all labor, equipment and materials required to place.

Connection to Existing Water Main: The total lump sum price shall include all labor, equipment and materials required to place.

Water Service Stub for Bathroom: The total lump sum price shall include all labor, equipment and materials required to place.

Flush Mount Hydrant: The total lump sum price shall include all labor, equipment and materials required to place.

Sanitary Sewer Service Line: Sewer line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Connect to Existing Sanitary Sewer Main: The total lump sum price shall include all labor, equipment and materials required to place.

Sanitary Sewer Service Stub for Bathroom: The total lump sum price shall include all labor, equipment and materials required to place.

Sanitary Sewer Cleanout: The cost per each unit bid price shall include all labor, equipment and materials required to place.

Limestone Wall behind Amphitheater: The cost per linear foot bid price shall include all AB3 leveling material, grading, labor, equipment and materials required to place.

Dry Fire Hydrant: The lump sum cost shall include all part of the hydrant, plumbing and lines to connect the dry hydrant to the lake. It shall also cover the cost of the concrete pad around the hydrant.

Amphitheater Over Excavation: This is to remove all unsuitable materials from under the amphitheater. The City will make a final determination of how much material must be removed from the site. This will be measured by the cubic yard.

Engineered Fill Replacement: This is to replace the over excavated material. This will be measured by the cubic yard. The contractor is responsible for finding appropriate backfill soil and have proper testing by a geotech engineer for soil type and installation testing.

Concrete Restroom Surround: Concrete pavement around the MDC Restroom will be measured per cubic yard or tenth part thereof. All AB3 leveling material, grading and incidental work shall be included in the price per cubic yard.

8' Asphalt Trail behind Amphitheater: 4" APWA Type 3 Asphalt Surface shall be measured and paid per ton or tenth part thereof for the specified depth. The unit price for this item shall include all equipment, labor and materials to place a surface course of asphalt a minimum of 4" thick over the AB3 Sub-Base. The unit price for this item shall include all the equipment, labor and materials to verify that the asphalt delivered to the project conforms to the Marshall properties of the mix design and that the compacted density of the asphalt mat meets the project requirements. AB3 is subsidiary to the line item.

8' Connection to the Front of the Amphitheater: 5" sidewalks with 4" of AB3 will be measured per cubic yard or tenth part thereof. All leveling material, jointing, and incidental work shall be included in the unit price. AB3 is subsidiary to the line item.

2" Copper Water Service Line (Bored): 2" Copper service line will be paid on a linear foot method. Boring shall be included in the cost per linear foot of pipe per each size and type.

2" HDPE Water Service Line: 2" HDPE water service line will be paid on a linear foot method. Excavation, bedding, and backfill shall be included in the cost per linear foot of pipe per each size and type.

Concrete Sidewalk Along Johnston Drive: This is the sidewalk along the street. This will be paid for in cubic yards and built to city sidewalk standards.

Concrete Parking Lot Driveway: 8" non-reinforced concrete pavement into the south parking lot will be measured per cubic yards or tenth part thereof. All AB3 leveling material, grading and incidental work shall be included in the price per square foot.

Aggregate at the Amphitheater: Aggregate at the base of the amphitheater will be measured per square foot or tenth part thereof. All grading and incidental work shall be included in the price per square foot. Aggregate should be a minimum of 6 inches thick.

5. Park Signage/Site Furnishings

Trash Receptacles: The cost per unit bid price shall include all labor, equipment and materials required to place.

Bike Racks: The cost per unit bid price shall include all labor, equipment and materials required to place.

Entry Signage: The cost per unit bid price shall include all labor, equipment and materials required to place.

Limestone Seating Blocks: The cost per unit bid price shall include all labor, equipment and materials required to place.

6. Project wide

Mobilization, Bonds, and Insurance: Mobilization, Bonds and Insurance will be considered a lump sum item for payment. The total lump sum price for this item shall not exceed 5% of the total base bid price. Payment shall be made on the schedule enclosed in the bid documents.

Construction Staking: Construction and Survey Controls shall be paid for as a lump sum item. The unit cost for this item shall include all labor, equipment and materials to develop and establish necessary control, detail dimensions, slope stakes and measurements required for proper layout and performance of the work The contractor is responsible for all restaking.

Temporary Traffic Control: Traffic Control shall be considered a lump sum for payment. The unit bid cost for this item shall include all materials, labor and equipment required to provide a safe working environment including, but not limited to, all signage to control traffic through the work area as required by the MUTCD.

Concrete Testing: Concrete Testing shall be paid for at the unit bid price per each. The unit bid price for this line item shall include all labor, materials and equipment required to test the concrete for temperature, slump, air content and compressive strength. Each test shall consist of 4 cylinders to be broken at 7, 14, 21, and 28

days. Tests shall be conducted once per day or as directed by the City's representative.

Site Clearing and Grubbing: Clearing and Grubbing shall be considered a lump sum item for payment. The unit cost for this line item shall include all labor, materials and equipment necessary to prepare the site for construction as per plan. This includes any necessary removal and disposal of any above or underground materials, natural or man-made.

Site Grading: Embankment may be listed in the Contract Documents and measured to determine the quantity in cubic yards or tenth part thereof.

Erosion Control: Including silt fencing, rock ditch and stabilized construction entrances will be paid as a lump sum price. The unit bid price shall include all labor, equipment and materials required to install, maintain, replace when necessary and ultimately remove from plan locations or as where required by the Owner.

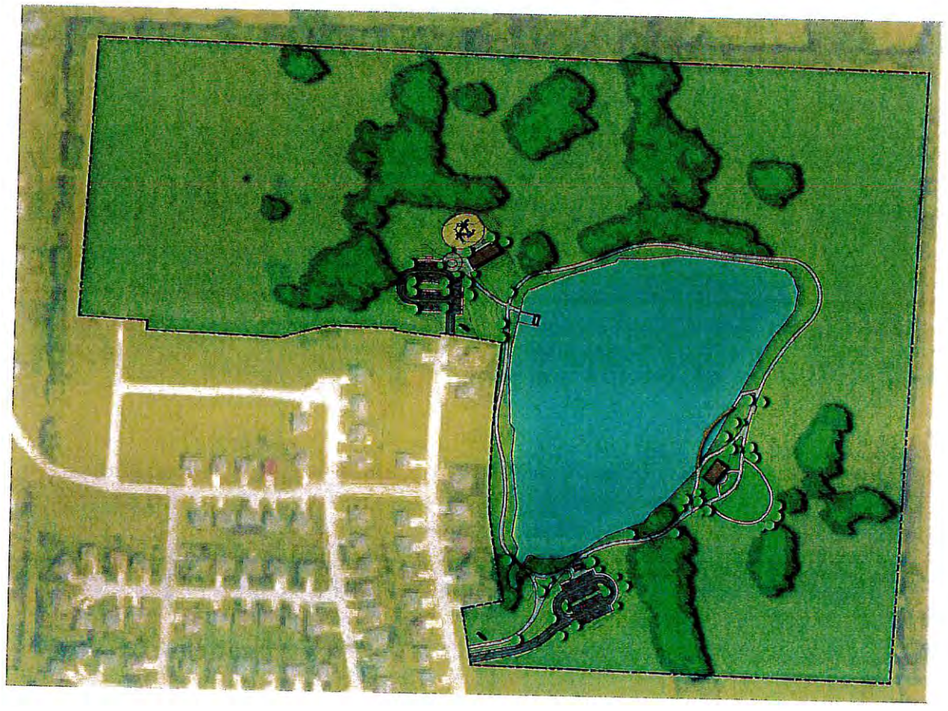
HAWK RIDGE PARK

701 JOHNSTON PARKWAY

CITY OF RAYMORE

RAYMORE / MISSOURI

CONFLUENCE PROJECT NO: 16081KC



SYMBOLS AND ABBREVIATIONS

- PROPERTY LINE
- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- CENTERLINE
- FIBER OPTIC LINE
- GAS LINE
- EASEMENT LINE
- SILT FENCE
- PROPOSED INDEX CONTOUR
- PROPOSED CONTOUR
- EXISTING INDEX CONTOUR
- EXISTING CONTOUR
- C-# HORIZONTAL CURVE
- CLR. CLEARANCE
- DIA. DIAMETER
- EJ EXPANSION JOINT
- FES FLARED END SECTION
- FFE FINISHED FLOOR ELEVATION
- FL FLOW LINE
- HP HIGH POINT
- LP LOW POINT
- MFR. MANUFACTURER
- N.I.C. NOT IN CONTRACT
- PVC P.V.C. PIPE
- R RADIUS
- RCP REINFORCED CONCRETE PIPE
- RIM RIM ELEVATION
- FIRE HYDRANT
- WATER VALVE
- TEE CONNECTION
- LIGHT POLE, SINGLE FIXTURE
- LIGHT POLE, DOUBLE FIXTURE
- SPOT ELEVATION
- HORIZONTAL CONTROL POINTS
- KEY NOTE
- SURFACE DRAINAGE
- STORM MANHOLE
- SANITARY MANHOLE
- CLEANOUT
- STORM SEWER CURB INTAKE
- STORM SEWER AREA INTAKE
- HANDICAP PARKING STALL

CONFLUENCE

DRAWING INDEX

VICINITY SKETCH

STRUCTURAL ENGINEER

STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PHONE: 913.214.2169
CONTACT: MATT ENSTROM

MATT ENSTROM — 03.09.18 DATE

SHEETS COVERED BY THIS SEAL: S001, S101, S201, SP403, SP404

MEP ENGINEER

HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PHONE: 816.663.8718
CONTACT: MARCUS PERRY

JAMES DIETZ — DATE

SHEETS COVERED BY THIS SEAL: P001, P111, P211

ANDREA C. MULVANY — DATE

SHEETS COVERED BY THIS SEAL: E001, E002, E003, E011, E111, E112, E211, E212, E311, E312, E411, E412, E511, E512

CIVIL ENGINEER

WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PHONE: 816.701.3100
CERT. OF AUTHORITY #2003007599
CONTACT: JUSTIN KLAUDT

JUSTIN C. KLAUDT — 3-9-18 DATE

SHEETS COVERED BY THIS SEAL: C100, C101, C102, C200, C301, C302, C303

ARCHITECT

SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PHONE: 816.541.2288
CONTACT: KWAME SMITH

KERRY NEWMAN — 3/9/2018 DATE

SHEETS COVERED BY THIS SEAL: A001, A111, A112, A131, A132, A210, A220, A311, A312, A321, A322, A323

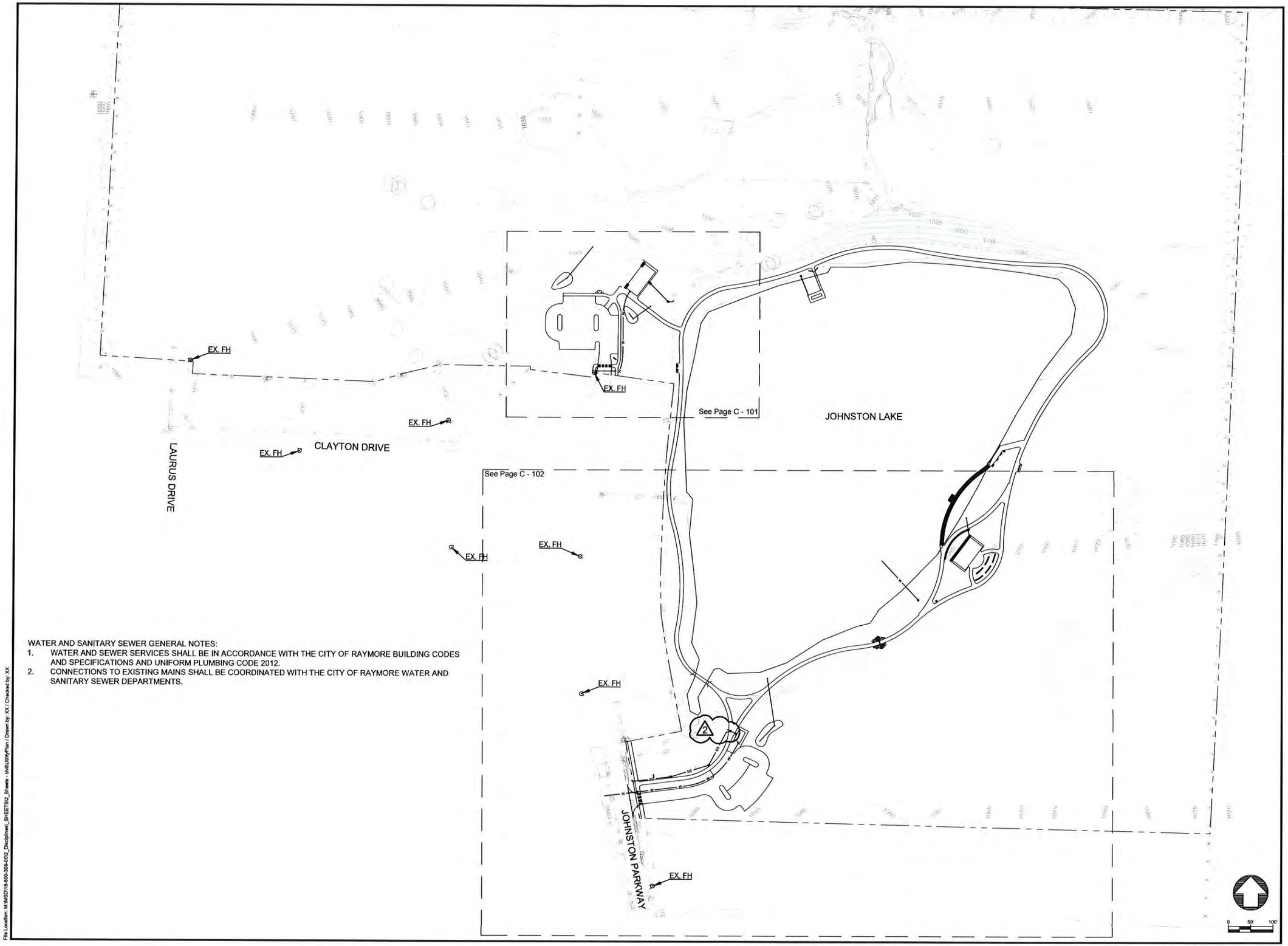
LANDSCAPE ARCHITECT

CONFLUENCE COMPANY, INC.
417 DELAWARE STREET
KANSAS CITY, MISSOURI 64105
PHONE: 816.531.7227
CONTACT: HANK MOYERS

TERRY BERKBUEGLER — DATE

SHEETS COVERED BY THIS SEAL: SP100, SP200, SP201, SP202, SP203, SP204, SP300, SP301, SP302, SP303, SP304, S400, SP401, SP402, L100, L101, L102, L103, L104, L200

File Location: S:\1-PROJECTS\2016\16091KC - Hawk Ridge Park\Improvements Design\16091KC - AutoCAD\00- Cover Sheet / Drawn by: XX / Checked by: XX



WATER AND SANITARY SEWER GENERAL NOTES:

1. WATER AND SEWER SERVICES SHALL BE IN ACCORDANCE WITH THE CITY OF RAYMORE BUILDING CODES AND SPECIFICATIONS AND UNIFORM PLUMBING CODE 2012.
2. CONNECTIONS TO EXISTING MAINS SHALL BE COORDINATED WITH THE CITY OF RAYMORE WATER AND SANITARY SEWER DEPARTMENTS.

File Location: M:\MSD\16-600-309-000_Disciplines_SHEETS\2_Sheets - civil\UtilityPlan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

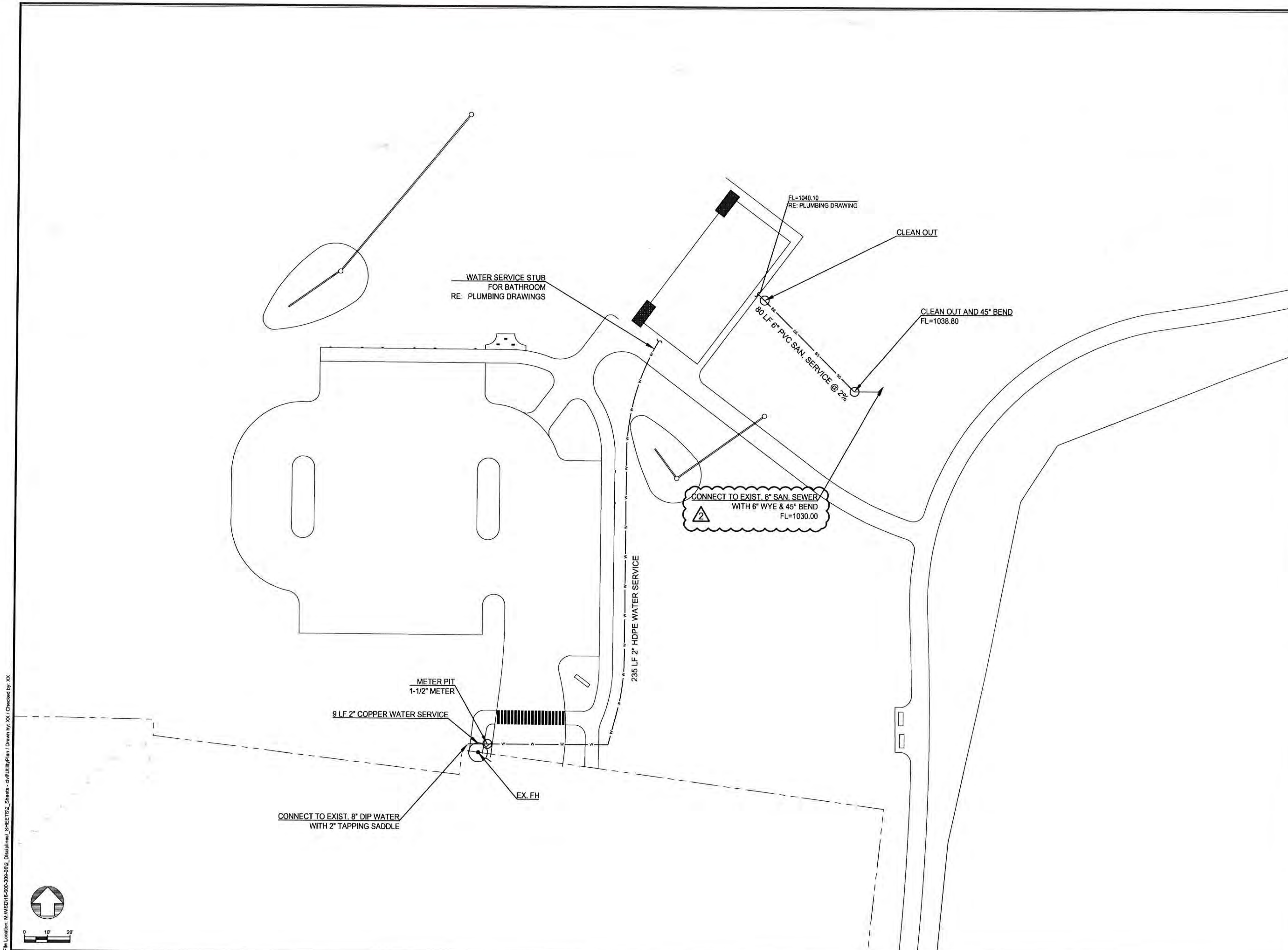
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	04/23/18	ADDENDUM NO. 2

STATE OF MISSOURI
JUSTIN C. KRAUSE
NUMBER
PE-2004026503
4-23-18
PROFESSIONAL ENGINEER

OVERALL UTILITY PLAN

CONFLUENCE PROJECT NO: 16081KC

C-100



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

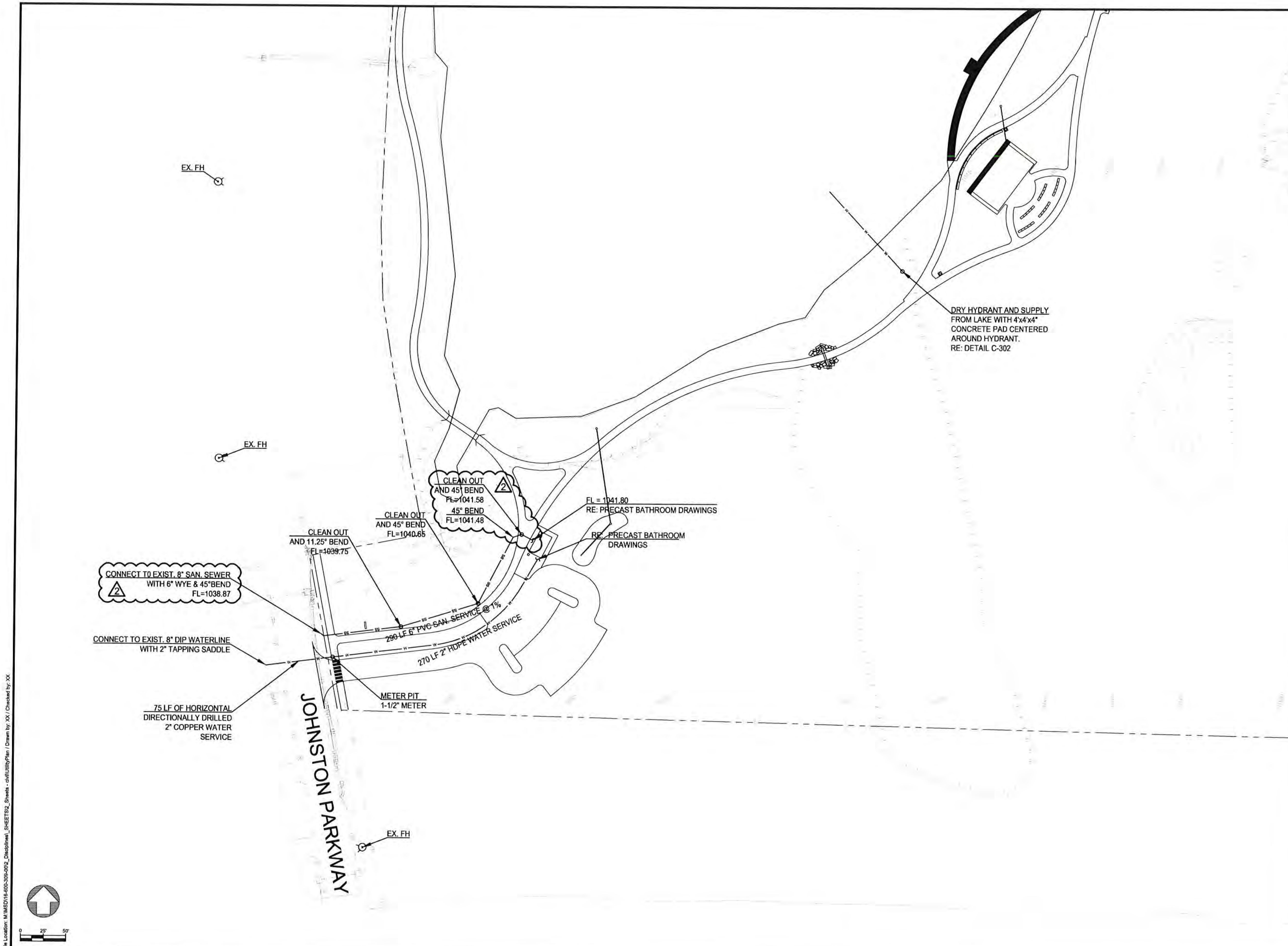
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	04/23/18	ADDENDUM NO. 2

STATE OF MISSOURI
JUSTIN C. KLAUDT
NUMBER
PE-2004026503
4-23-18
PROFESSIONAL ENGINEER

UTILITY PLAN NORTH

CONFLUENCE PROJECT NO: 16081KC

C-101



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

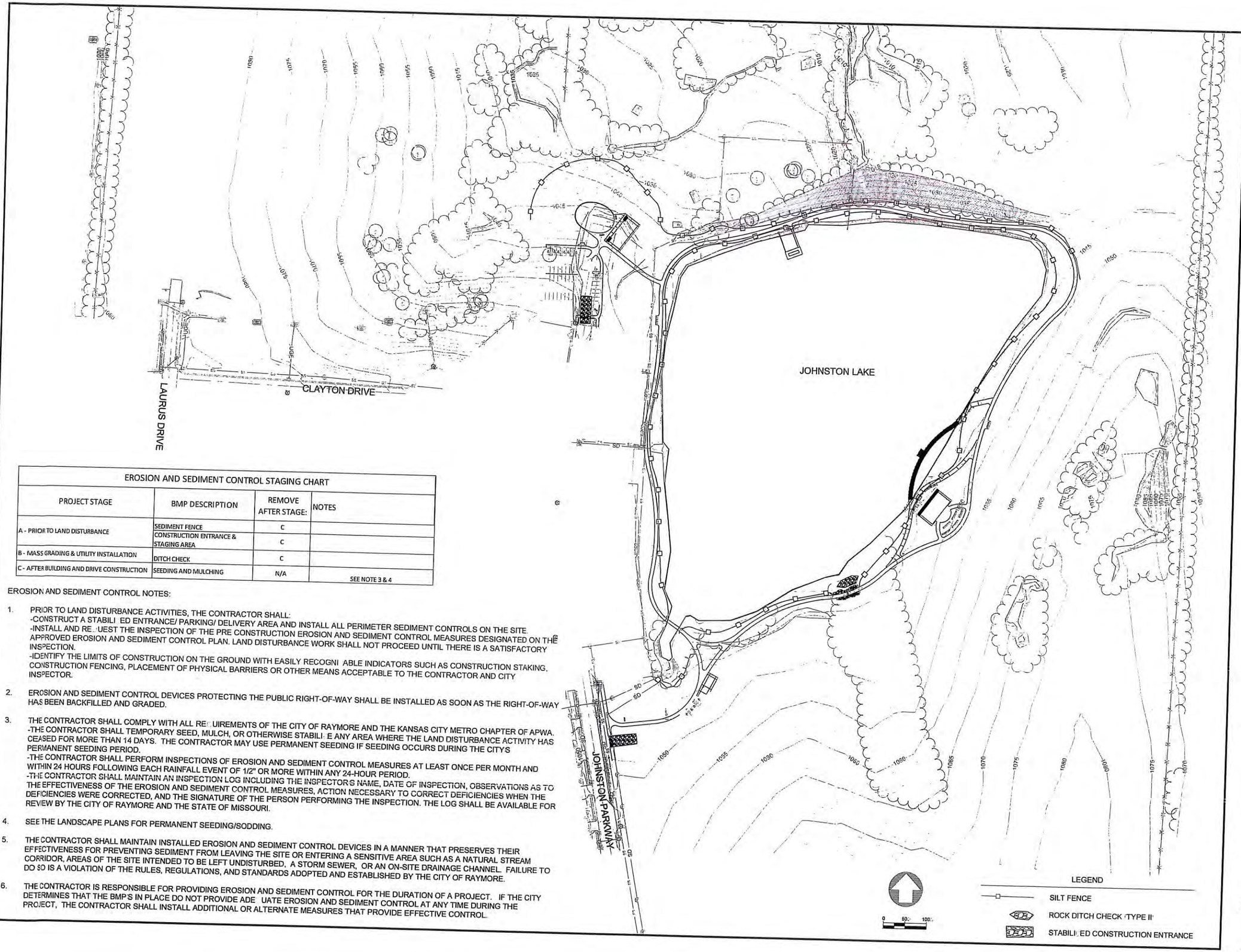
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	04/23/18	ADDENDUM NO. 2

STATE OF MISSOURI
JUSTIN C. KLAUDT
NUMBER
PE-2004026503
4-23-18
PROFESSIONAL ENGINEER

UTILITY PLAN SOUTH

CONFLUENCE PROJECT NO: 16081KC

C-102



EROSION AND SEDIMENT CONTROL STAGING CHART			
PROJECT STAGE	BMP DESCRIPTION	REMOVE AFTER STAGE:	NOTES
A - PRIOR TO LAND DISTURBANCE	SEDIMENT FENCE	C	
	CONSTRUCTION ENTRANCE & STAGING AREA	C	
B - MASS GRADING & UTILITY INSTALLATION	DITCH CHECK	C	
C - AFTER BUILDING AND DRIVE CONSTRUCTION	SEEDING AND MULCHING	N/A	SEE NOTE 3 & 4

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO LAND DISTURBANCE ACTIVITIES, THE CONTRACTOR SHALL:
   -CONSTRUCT A STABILI ED ENTRANCE/ PARKING/ DELIVERY AREA AND INSTALL ALL PERIMETER SEDIMENT CONTROLS ON THE SITE
   -INSTALL AND RE..UEST THE INSPECTION OF THE PRE CONSTRUCTION EROSION AND SEDIMENT CONTROL MEASURES DESIGNATED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. LAND DISTURBANCE WORK SHALL NOT PROCEED UNTIL THERE IS A SATISFACTORY INSPECTION.
   -IDENTIFY THE LIMITS OF CONSTRUCTION ON THE GROUND WITH EASILY RECOGNI ABLE INDICATORS SUCH AS CONSTRUCTION STAKING, CONSTRUCTION FENCING, PLACEMENT OF PHYSICAL BARRIERS OR OTHER MEANS ACCEPTABLE TO THE CONTRACTOR AND CITY INSPECTOR.
2. EROSION AND SEDIMENT CONTROL DEVICES PROTECTING THE PUBLIC RIGHT-OF-WAY SHALL BE INSTALLED AS SOON AS THE RIGHT-OF-WAY HAS BEEN BACKFILLED AND GRADED.
3. THE CONTRACTOR SHALL COMPLY WITH ALL RE..UIREMENTS OF THE CITY OF RAYMORE AND THE KANSAS CITY METRO CHAPTER OF APWA.
   -THE CONTRACTOR SHALL TEMPORARY SEED, MULCH, OR OTHERWISE STABILI E ANY AREA WHERE THE LAND DISTURBANCE ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS. THE CONTRACTOR MAY USE PERMANENT SEEDING IF SEEDING OCCURS DURING THE CITYS PERMANENT SEEDING PERIOD.
   -THE CONTRACTOR SHALL PERFORM INSPECTIONS OF EROSION AND SEDIMENT CONTROL MEASURES AT LEAST ONCE PER MONTH AND WITHIN 24 HOURS FOLLOWING EACH RAINFALL EVENT OF 1/2" OR MORE WITHIN ANY 24-HOUR PERIOD.
   -THE CONTRACTOR SHALL MAINTAIN AN INSPECTION LOG INCLUDING THE INSPECTOR'S NAME, DATE OF INSPECTION, OBSERVATIONS AS TO THE EFFECTIVENESS OF THE EROSION AND SEDIMENT CONTROL MEASURES, ACTION NECESSARY TO CORRECT DEFICIENCIES WHEN THE DEFICIENCIES WERE CORRECTED, AND THE SIGNATURE OF THE PERSON PERFORMING THE INSPECTION. THE LOG SHALL BE AVAILABLE FOR REVIEW BY THE CITY OF RAYMORE AND THE STATE OF MISSOURI.
4. SEE THE LANDSCAPE PLANS FOR PERMANENT SEEDING/SODDING.
5. THE CONTRACTOR SHALL MAINTAIN INSTALLED EROSION AND SEDIMENT CONTROL DEVICES IN A MANNER THAT PRESERVES THEIR EFFECTIVENESS FOR PREVENTING SEDIMENT FROM LEAVING THE SITE OR ENTERING A SENSITIVE AREA SUCH AS A NATURAL STREAM CORRIDOR, AREAS OF THE SITE INTENDED TO BE LEFT UNDISTURBED, A STORM SEWER, OR AN ON-SITE DRAINAGE CHANNEL. FAILURE TO DO SO IS A VIOLATION OF THE RULES, REGULATIONS, AND STANDARDS ADOPTED AND ESTABLISHED BY THE CITY OF RAYMORE.
6. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING EROSION AND SEDIMENT CONTROL FOR THE DURATION OF A PROJECT. IF THE CITY DETERMINES THAT THE BMP'S IN PLACE DO NOT PROVIDE ADE..UATE EROSION AND SEDIMENT CONTROL AT ANY TIME DURING THE PROJECT, THE CONTRACTOR SHALL INSTALL ADDITIONAL OR ALTERNATE MEASURES THAT PROVIDE EFFECTIVE CONTROL.

File Location: M:\MSD\16-600-399-000_Disciplines_SHEETS\2_Sheets - civil\ErosionControlPlan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
JUSTIN K. KRAUST
NUMBER PE-2004026503
3-9-18
PROFESSIONAL ENGINEER

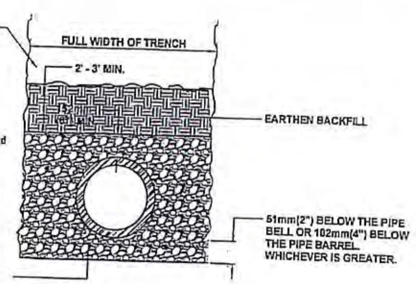
EROSION CONTROL PLAN

CONFLUENCE PROJECT NO: 16081KC

C-200

WATER METER SETTING NOTES

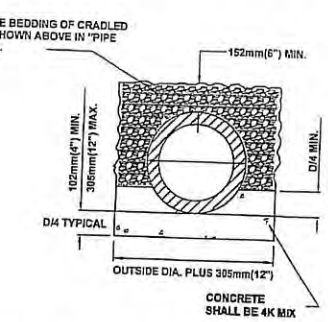
1-1/2" METER MODEL AND ASSEMBLY SHALL BE IN ACCORDANCE WITH CITY OF RAYMORE TECHNICAL SPECIFICATIONS AND APPROVED BY THE CITY OF RAYMORE PUBLIC WORKS.



PIPE BEDDING

CONCRETE CRADLE QUANTITY

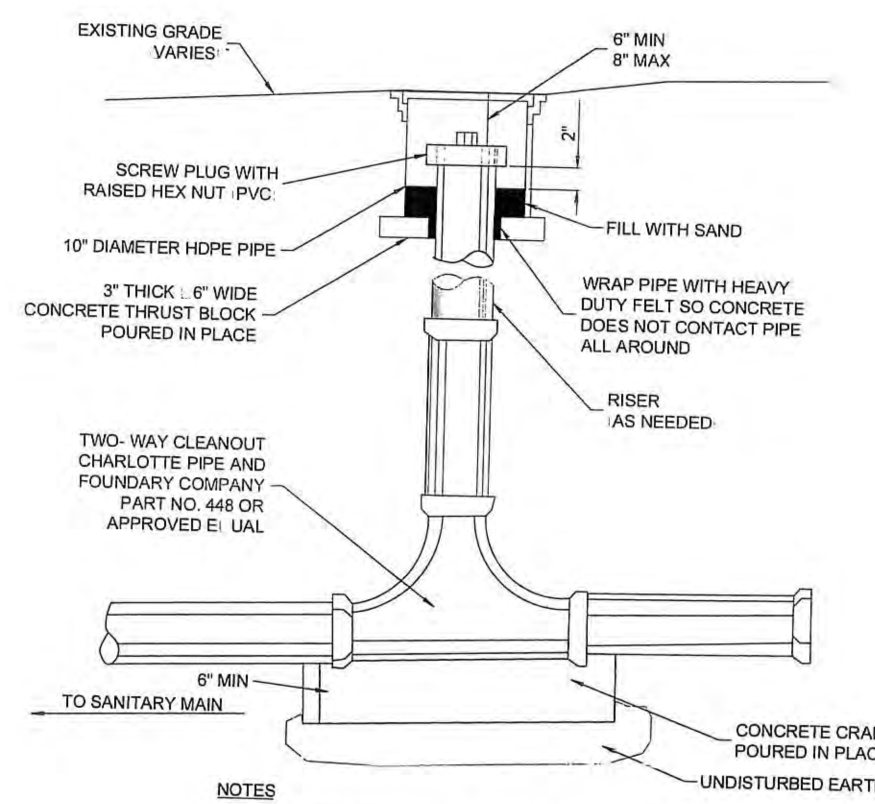
Pipe Size	Cu. Yds./Ft
8"	.032
10"	.038
12"	.043
15"	.057
18"	.076
21"	.097
24"	.120



CONCRETE CRADLE

Engineering Department City of Raymore 100 Municipal Circle Raymore, MO 64083 816-331-1852 Fax 816-331-8067	CITY OF RAYMORE	
DRAWN Modified 2013	DATE	PIPE BEDDING & CRADLE FOR SANITARY SEWER PIPE
CHECKED		SIZE A · FSCM NO. · DWG NO. San – 8 · REV
APPROVED		SCALE NONE · SHEET 1 OF 1

PIPE BEDDING FOR SANITARY SEWER DETAIL



NOTES

1. CAST IRON COVER SHALL READ "SEWER". CLEANOUT COVER SHALL BE NEENAH FOUNDARY R-6014 OR APPROVED EQUAL.
2. CLEANOUT COVER SHALL HAVE NEENAH FOUNDARY TYPE "E" COUNTERSUNK BOLTS OR APPROVED EQUAL.

TWO-WAY CLEANOUT INSTALLATION

N.T.S.

SANITARY SEWER CLEANOUT DETAIL

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH 816 531 7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET STE 31
KANSAS CITY, MISSOURI 64108
PH 816 541 2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER. STE 200
KANSAS CITY MISSOURI 64131
PH 816 701 3100
CERT OF AUTHORITY 2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH 816 663 8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC
8234 ROBINSON ST
OVERLAND PARK, KANSAS 66204
PH 913 214 2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION

RAYMORE, MISSOURI

REVISION SCHEDULE

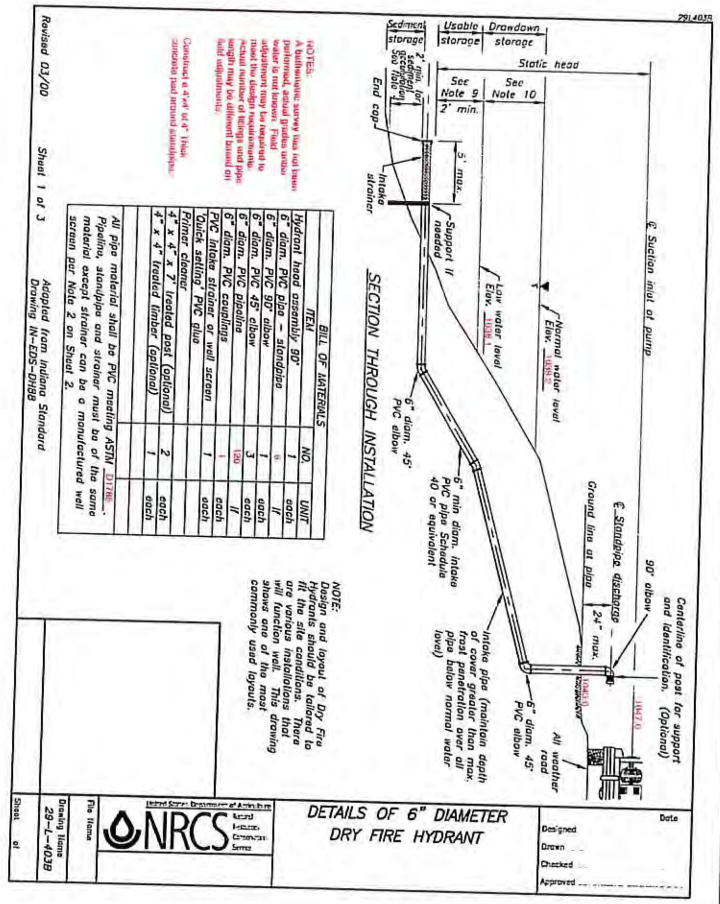
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

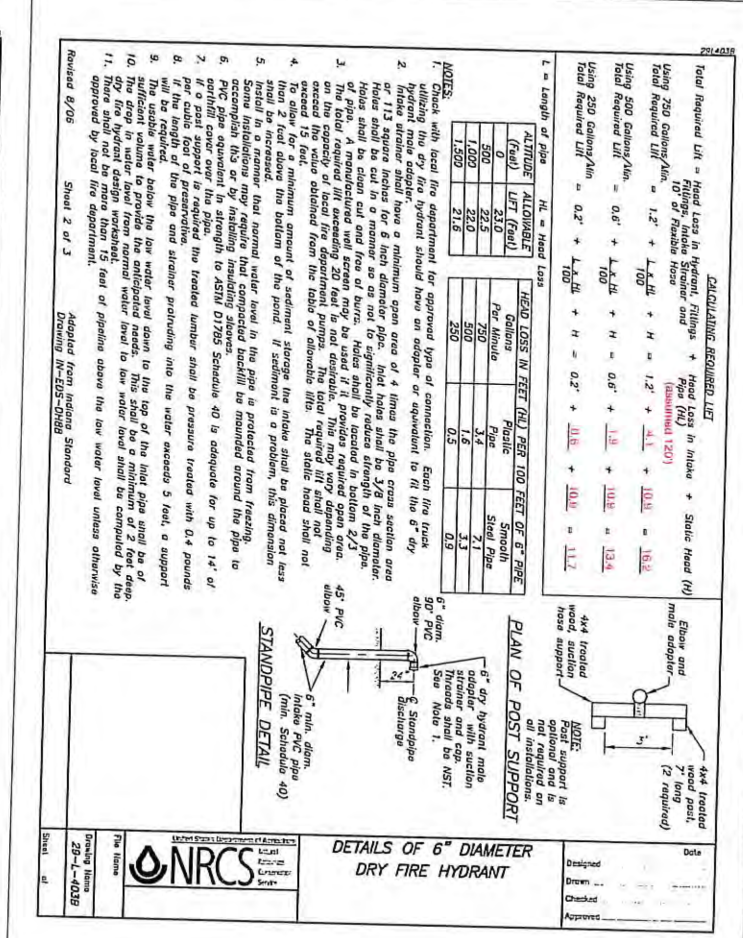
STATE OF MISSOURI · JUSTIN C. KRAUDT · NUMBER PE-2004026503 · 3-9-18 · PROFESSIONAL ENGINEER

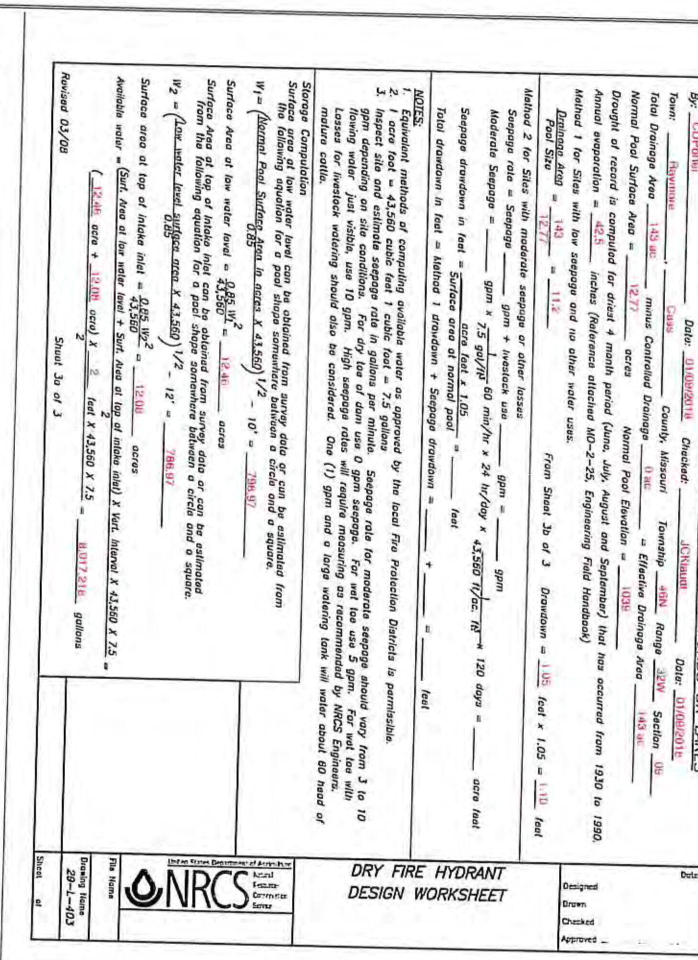
WATER & SANITARY SEWER DETAILS

CONFLUENCE PROJECT NO 16081KC

C-301

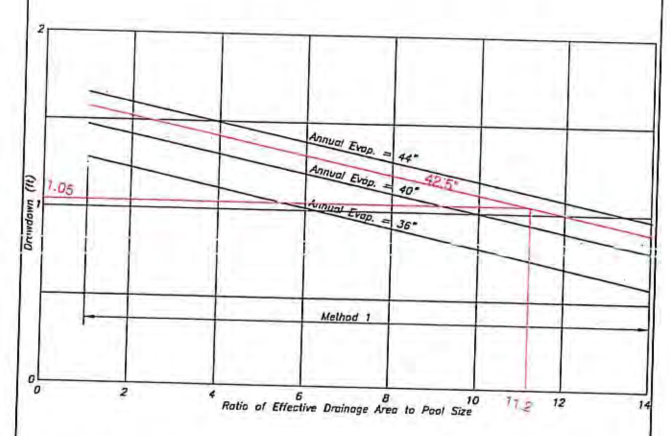


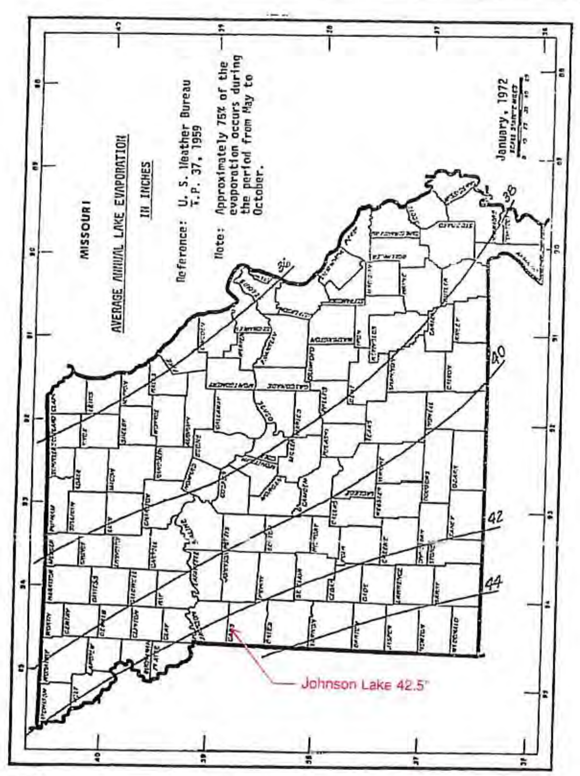




Note:

1. 55% of yearly evaporation will occur during the 4 month period of June thru September.
2. Annual Lake Evaporation may be taken from Missouri Supplement MO-2-25 to Engineering Field Handbook (EFH).
3. Interpolate below data to obtain drawdown for actual annual evaporation.
4. Drawdown is for four month period (June thru September) that occurs during a drought of record that accumulated from 1930 to 1980.
5. This is a very simple procedure. The only information needed is the ratio of effective drainage area to pool size and annual evaporation. The drawdown shown represents a 60 year period and is assumed to be equivalent to the 50 year drought. The 1.05 factor shown on page 3a represents the reduction in surface area as water level drops. For total drawdown complete page 3a.
6. If upstream ponds or lakes control more than 10% of total drainage area the controlled drainage area should be deducted from the total drainage area.





CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY INC
415 DELAWARE SUITE 400
KANSAS CITY, MISSOURI 64105
PH 816 531 7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET STE 31
KANSAS CITY, MISSOURI 64108
PH 816 5?1 2269

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER. STE 200
KANSAS CITY MISSOURI 64131
PH 816 701 3100
CERT OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STE 300
KANSAS CITY, MISSOURI 64108
PH 816 663 8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC
8234 ROBINSON ST
OVERLAND PARK, KANSAS 66204
PH 913 214 2169

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE, MISSOURI

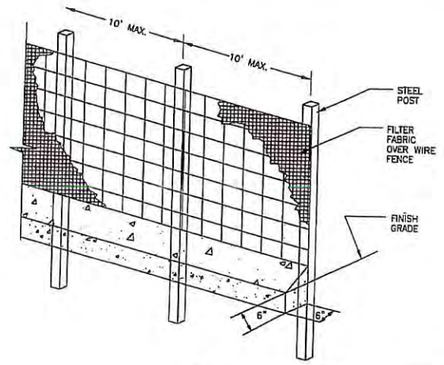
REVISION SCHEDULE

STATE OF MISSOURI — JUSTIN C. KRAUST — NUMBER PE-2004026503 — 3-9-18 — PROFESSIONAL ENGINEER

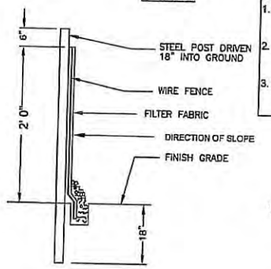
DRY HYDRANT DETAILS

CONFLUENCE PROJECT NO 16061KC

C-302



ELEVATION



CROSS–SECTION

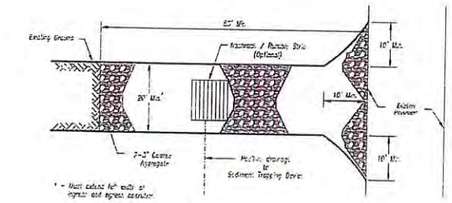
Notes:

1. Bottom of fence and filter fabric shall be trenched 6 inches into the subgrade.
2. Regular silt fence does not require the wire fence and wood stakes can be substituted for the steel posts.
3. Silt deposits must be removed before exceeding one third the height of the fence.

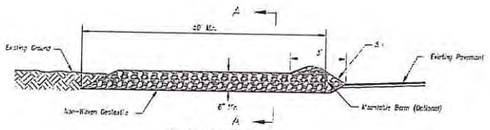
SILT FENCE

Engineering Department City of Raymore 100 Municipal Circle Raymore, MO 64083 816-331-1652 Fax 816-331-8067	CITY OF RAYMORE
DRAWN Modified 2013 / DATE	Regular & Reinforced Silt Fence
CHECKED	SIZE A / FSCM NO. / DWG NO. St - 14 / REV
APPROVED	SCALE NONE / SHEET OF

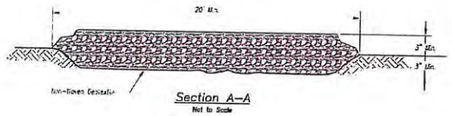
SILT FENCE DETAIL



Plan View
Not to Scale



Side Elevation
Not to Scale



Section A–A
Not to Scale

Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed area.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 3:1(H:V) side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

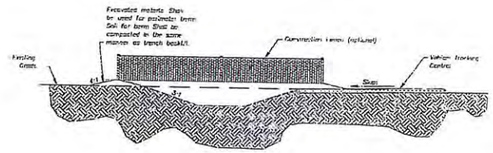
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The expected loading out of the subsurface pit shall be 21. The vehicle tracking pad shall be sloped towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete trucks and pump rigs.
5. A non-plastic impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

1. Concrete washout material shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washout concrete.
3. Concrete washout water, washed pieces of concrete, and all other debris in the subsurface pit shall be transported from the job site in a water-tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.



CONCRETE WASHOUT

Construction entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control. Concrete Washout modified from 2003 City of Great Bend Standard Drawings.

AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METRO CHAPTER
CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT	STANDARD DRAWING NUMBER ESC-01 ADOPTED: 10/24/2016

CONSTRUCTION ENTRANCE DETAIL

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY INC
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 21
KANSAS CITY, MISSOURI 64108
PH 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH 816.70.3100
CERT OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH 816.655.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC
6234 ROBINSON ST
OVERLAND PARK, KANSAS 66202
PH 913.214.2168

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

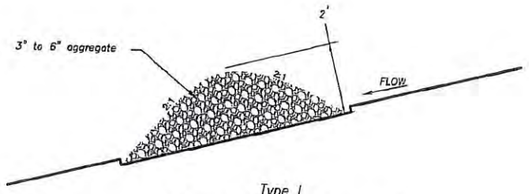
1	8/9/18	CONSTRUCTION DOCUMENTS

STATE OF MISSOURI
JUSTIN D. KILGUST
NUMBER PE-2004026503
3-9-18
PROFESSIONAL ENGINEER

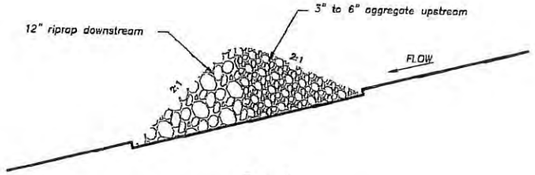
EROSION CONTROL DETAILS

CONFLUENCE PROJECT NO 16061KC

C-303



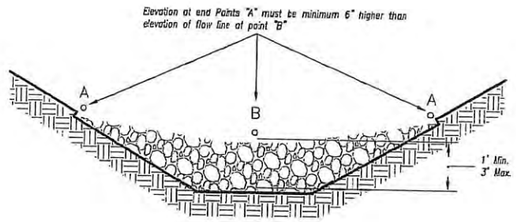
Type I
(2 Acres or less of Drainage Area)
Not to Scale



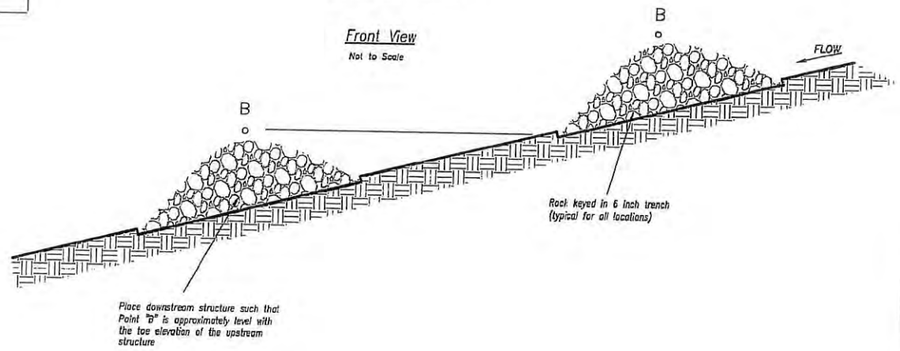
Type II
(2–10 Acres of Drainage Area)
Not to Scale

ROCK DITCH CHECK

Temporary Rock Ditch Check Spacing	
Ditch Centerline Slope (%)	Spacing Interval (Feet)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29
Note: Use this spacing only for Rock Ditch Checks.	



Front View
Not to Scale



Spacing Between Check Dams (all types)
Not to Scale

Notes:

1. Rock check dams shall be used only for drainage areas less that 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 6%.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter APWA American Public Works Association
KANSAS CITY METRO CHAPTER
ROCK DITCH CHECKS
STANDARD DRAWING NUMBER ESC-10
ADOPTED: 10/24/2016

ROCK DITCH CHECK DETAIL

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY INC
415 DELAWARE SUITE 400
KANSAS CITY, MISSOURI 64105
PH 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET STE 31
KANSAS CITY, MISSOURI 64108
PH 816.561.2266

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER STE 200
KANSAS CITY, MISSOURI 64131
PH 816.701.2100
CERT OF AUTHORITY #2003007596

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH 816.653.8710

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC
8234 ROBINSON ST
OVERLAND PARK, KANSAS 66204
PH 913.214.2166

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

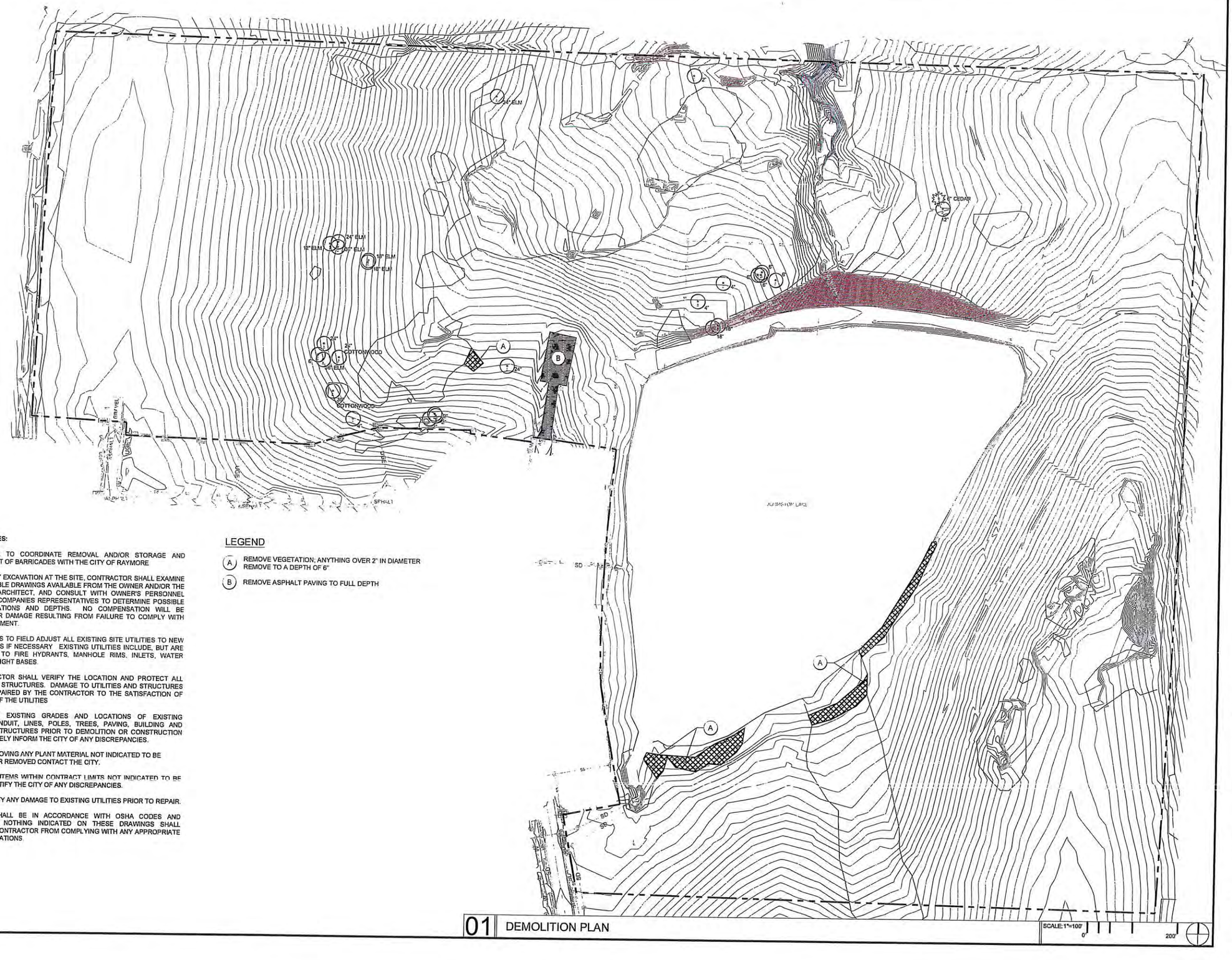
NUM	DATE	DESCRIPTION
1	02/24/16	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
JUSTIN C. KRAUDT
NUMBER PE-2004026503
3-9-18
PROFESSIONAL ENGINEER

EROSTION CONTROL DETAILS

CONFLUENCE PROJECT NO 16081KC

C-304



DEMOLITION NOTES:

1. CONTRACTOR TO COORDINATE REMOVAL AND/OR STORAGE AND REPLACEMENT OF BARRICADES WITH THE CITY OF RAYMORE
2. PRIOR TO ANY EXCAVATION AT THE SITE, CONTRACTOR SHALL EXAMINE ANY APPLICABLE DRAWINGS AVAILABLE FROM THE OWNER AND/OR THE LANDSCAPE ARCHITECT, AND CONSULT WITH OWNER'S PERSONNEL AND UTILITY COMPANIES REPRESENTATIVES TO DETERMINE POSSIBLE UTILITY LOCATIONS AND DEPTHS. NO COMPENSATION WILL BE ALLOWED FOR DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT.
3. CONTRACTORS TO FIELD ADJUST ALL EXISTING SITE UTILITIES TO NEW FINISH GRADES IF NECESSARY. EXISTING UTILITIES INCLUDE, BUT ARE NOT LIMITED TO FIRE HYDRANTS, MANHOLE RIMS, INLETS, WATER VALVES AND LIGHT BASES.
4. THE CONTRACTOR SHALL VERIFY THE LOCATION AND PROTECT ALL UTILITIES AND STRUCTURES. DAMAGE TO UTILITIES AND STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER OF THE UTILITIES
5. FIELD VERIFY EXISTING GRADES AND LOCATIONS OF EXISTING UTILITIES, CONDUIT, LINES, POLES, TREES, PAVING, BUILDING AND OTHER SITE STRUCTURES PRIOR TO DEMOLITION OR CONSTRUCTION AND IMMEDIATELY INFORM THE CITY OF ANY DISCREPANCIES.
6. PRIOR TO REMOVING ANY PLANT MATERIAL NOT INDICATED TO BE PROTECTED OR REMOVED CONTACT THE CITY.
7. PROTECT ALL ITEMS WITHIN CONTRACT LIMITS NOT INDICATED TO BE REMOVED. NOTIFY THE CITY OF ANY DISCREPANCIES.
8. REPORT TO CITY ANY DAMAGE TO EXISTING UTILITIES PRIOR TO REPAIR.
9. ALL WORK SHALL BE IN ACCORDANCE WITH OSHA CODES AND STANDARDS. NOTHING INDICATED ON THESE DRAWINGS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH ANY APPROPRIATE SAFETY REGULATIONS

LEGEND

(A) REMOVE VEGETATION; ANYTHING OVER 2" IN DIAMETER REMOVE TO A DEPTH OF 6"

(B) REMOVE ASPHALT PAVING TO FULL DEPTH

01 DEMOLITION PLAN

SCALE: 1"=100'

0 200'

File Location: S:\1 PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - DEMO PLAN / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

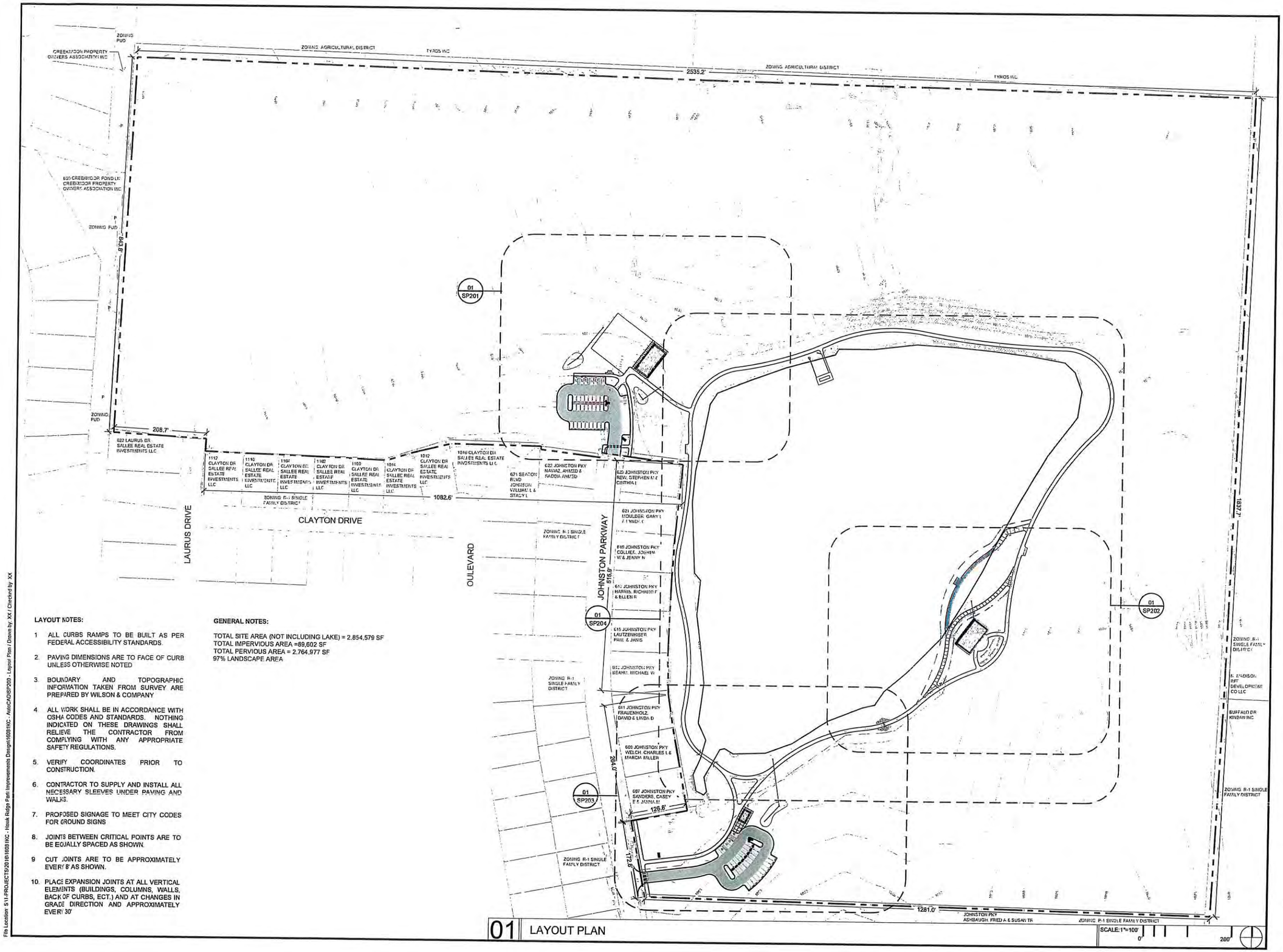
ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERGQUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
7/9/18

DEMOLITION PLAN

CONFLUENCE PROJECT NO: 16081KC

SP100



LAYOUT NOTES:

1. ALL CURBS RAMPS TO BE BUILT AS PER FEDERAL ACCESSIBILITY STANDARDS.
2. PAVING DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED
3. BOUNDARY AND TOPOGRAPHIC INFORMATION TAKEN FROM SURVEY ARE PREPARED BY WILSON & COMPANY
4. ALL WORK SHALL BE IN ACCORDANCE WITH OSHA CODES AND STANDARDS. NOTHING INDICATED ON THESE DRAWINGS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH ANY APPROPRIATE SAFETY REGULATIONS.
5. VERIFY COORDINATES PRIOR TO CONSTRUCTION.
6. CONTRACTOR TO SUPPLY AND INSTALL ALL NECESSARY SLEEVES UNDER PAVING AND WALKS.
7. PROPOSED SIGNAGE TO MEET CITY CODES FOR GROUND SIGNS
8. JOINTS BETWEEN CRITICAL POINTS ARE TO BE EQUALLY SPACED AS SHOWN.
9. CUT JOINTS ARE TO BE APPROXIMATELY EVERY 8' AS SHOWN.
10. PLACE EXPANSION JOINTS AT ALL VERTICAL ELEMENTS (BUILDINGS, COLUMNS, WALLS, BACK OF CURBS, ECT.) AND AT CHANGES IN GRADE DIRECTION AND APPROXIMATELY EVERY 30'

GENERAL NOTES:

TOTAL SITE AREA (NOT INCLUDING LAKE) = 2,854,579 SF
TOTAL IMPERVIOUS AREA =89,602 SF
TOTAL PERVIOUS AREA = 2,764,977 SF
97% LANDSCAPE AREA

01 LAYOUT PLAN

SCALE: 1"=100'
0 200

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP200 - Layout Plan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
03/09/18

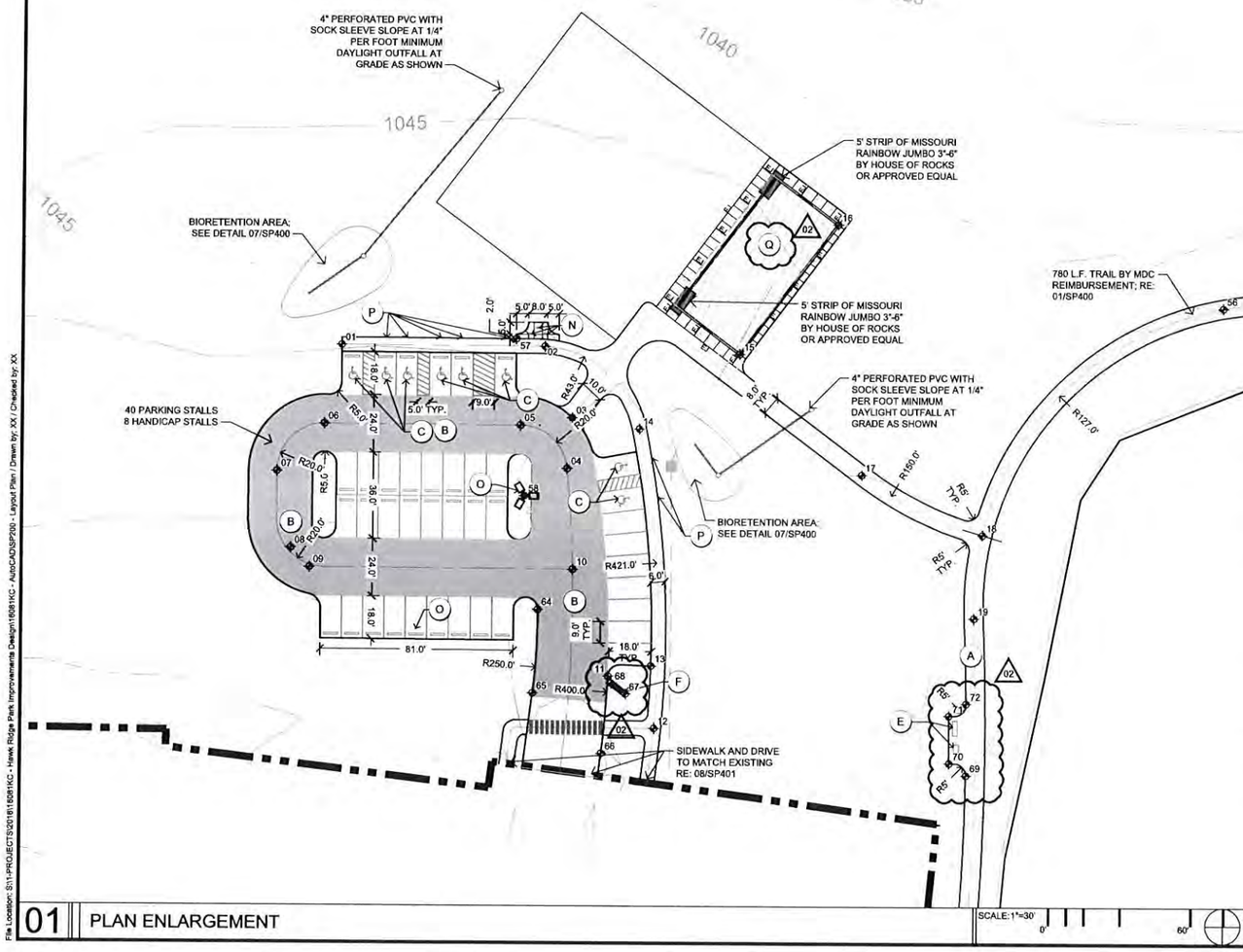
LAYOUT PLAN

CONFLUENCE PROJECT NO: 16081KC

SP200

KEY

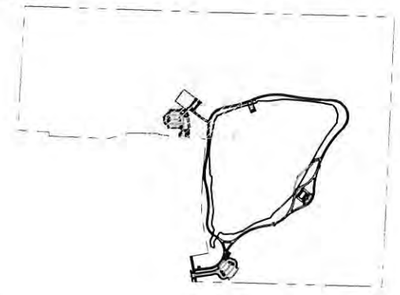
- HEAVY DUTY ASPHALT; SEE DETAIL 02/SP400
- LIGHT DUTY ASPHALT; SEE DETAIL 02/SP400
- CONCRETE PAVING; SEE DETAIL 01/SP400
- 5' STRIP OF MISSOURI RAINBOW JUMBO 3" - 6" BY HOUSE OF ROCKS OR APPROVED EQUAL



01 PLAN ENLARGEMENT

SCALE: 1"=30'

KEY MAP



LEGEND

- (A) CONSTRUCT 8' ASPHALT SIDEWALK (BASE BID); SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 8' SIDEWALK; SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 10' SIDEWALK; SEE DETAIL 01/SP400 ALL SIDEWALKS TO HAVE A MAX CROSS SLOPE OF 2%.
- (B) CONSTRUCT ASPHALT ROAD AND PARKING LOT; SEE DETAIL 02/SP400
- (C) CONSTRUCT ADA ACCESSIBLE STALLS; SEE DETAIL 08/SP400
- (D) CONSTRUCT LIMESTONE SEAT WALL; SEE DETAIL 03/SP401
- (E) INSTALL LIMESTONE BLOCK BENCH; SEE DETAIL 02/SP401
- (F) CONSTRUCT ENTRY SIGNAGE; SEE DETAIL 04/SP401
- (G) INSTALL MDC FUNDED RESTROOM PER MANUFACTURERS RECOMMENDATIONS; SEE NOTE #1
- (H) CONSTRUCT BOARDWALK; (BID ALTERNATE); SEE SP403 AND SP404
- (I) INSTALL BRIDGE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAILS 02/SP402, 03/SP402, 04/SP402, 06/SP402, 07/SP402, AND 08/SP402. CONTRACTOR TO SUBMIT STAMPED STRUCTURAL ABUTMENT DETAILS FROM CONTECH OR APPROVED EQUAL.
- (J) CONSTRUCT LOW WATER CROSSING; SEE DETAIL 01/SP402
- (K) CONSTRUCT MDC ADA ACCESSIBLE FISHING DOCK; SEE SHEETS Z-511 TO Z-516
- (L) CONSTRUCT MDC FISHING PIER; SEE DETAIL 01/SP401
- (M) INSTALL TRASH RECEPTACLE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 07/SP401
- (N) INSTALL BIKE RACK PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 06/SP401
- (O) INSTALL PARKING LOT LIGHTING; SEE LIGHTING PLANS
- (P) INSTALL HANDICAP PARKING SIGN; SEE DETAIL 09/SP400
- (Q) CONSTRUCT NORTH SHELTER / RESTROOM; RE: ARCH 02

Control Point	Position X	Position Y
01	2797198.255370	966431.595832
02	2797283.436338	966431.165349
03	2797295.180278	966401.433943
04	2797293.060659	966380.193191
05	2797273.260868	966398.216352
06	2797191.057992	966398.636021
07	2797171.134517	966378.737240
08	2797176.980237	966346.702227
09	2797184.939706	966338.661899
10	2797295.616441	966338.102473
11	2797310.792766	966293.463074
12	2797330.306272	966271.747641
13	2797328.978037	966297.796757
14	2797323.516189	966396.869026
15	2797365.443680	966428.196312
16	2797406.374653	966482.497835
17	2797416.670889	966377.894847
18	2797467.924468	966352.845845
19	2797464.455293	966318.069387
20	2797443.650961	966054.478430
21	2797448.651356	965921.795706
22	2797458.640966	965684.534476
23	2797495.144679	965586.622415
24	2797528.180286	965564.045030
25	2797538.841701	965555.843395
26	2797570.229771	965424.151757
27	2797477.189726	965353.040223
28	2797405.218466	965344.106591
29	2797362.105935	965375.497577
30	2797481.377928	965319.317300

Control Point	Position X	Position Y
31	2797535.488801	965336.908201
32	2797555.445914	965301.635945
33	2797583.857535	965296.491625
34	2797651.163140	965375.112683
35	2797641.860426	965402.715703
36	2797623.663278	965411.061838
37	2797597.558816	965402.066839
38	2797611.914563	965454.870047
39	2797598.630180	965461.817914
40	2797664.149437	965556.651828
41	2797867.015929	965645.749213
42	2797987.153299	965699.861103
43	2798118.847717	965778.243911
44	2798128.106672	965781.921616
45	2798104.920471	965818.013556
46	2798144.446950	965870.451792
47	2798185.444369	965857.693581
48	2798186.571298	965870.196148
49	2798383.866420	966310.031103
50	2798310.157117	966500.161971
51	2797992.356398	966532.474248
52	2797783.172789	966509.620212
53	2797757.047513	966498.349678
54	2797762.568952	966484.869687
55	2797732.458480	966474.634425
56	2797569.017426	966447.990145
57	2797271.397700	966434.226227
58	2797275.018753	966368.702011
59	2797612.304633	965394.302811
60	2797917.048966	965646.549335

Control Point	Position X	Position Y
61	2797922.021772	965648.351199
62	2797915.110507	965667.135606
63	2797910.137701	965665.337293
64	2797280.812733	966321.261399
65	2797278.853516	966286.363511
66	2797308.006862	966261.221788
67	2797318.170159	966286.044092
68	2797312.147722	966290.514020
69	2797461.357180	966252.487119
70	2797454.368638	966257.552912
71	2797454.189504	966277.293409
72	2797461.441357	966282.367751
73	2797405.559164	965360.447710
74	2797406.483032	965353.004830
75	2798041.110947	965748.264349
76	2798112.585328	965908.770990
77	2797759.796270	966483.786936
78	2797765.385334	966485.976856
79	2797496.680594	965588.946477
80	2797530.367811	965567.072698
A01	2798053.626335	965839.250723
A02	2798052.171123	965873.763897
A03	2798104.655328	965911.751954
A04	2798212.784799	966033.384685
A05	2798239.038279	966104.820580
A06	2798185.017831	966090.299921
A07	2798171.887174	966070.098216
A08	2798156.952136	966052.106391
A09	2798236.050702	966107.963696
A10	2798228.673248	966090.551421

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2 (A)	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY L. BOOMBUEGLER
NUMBER LA - 179
LANDSCAPE ARCHITECT
4/23/18

PLAN ENLARGEMENT

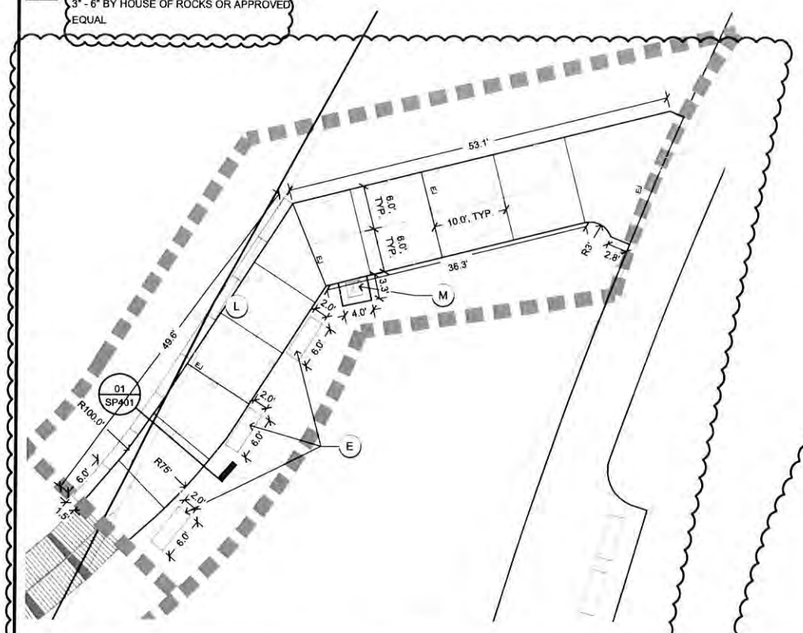
CONFLUENCE PROJECT NO: 16081KC

SP201

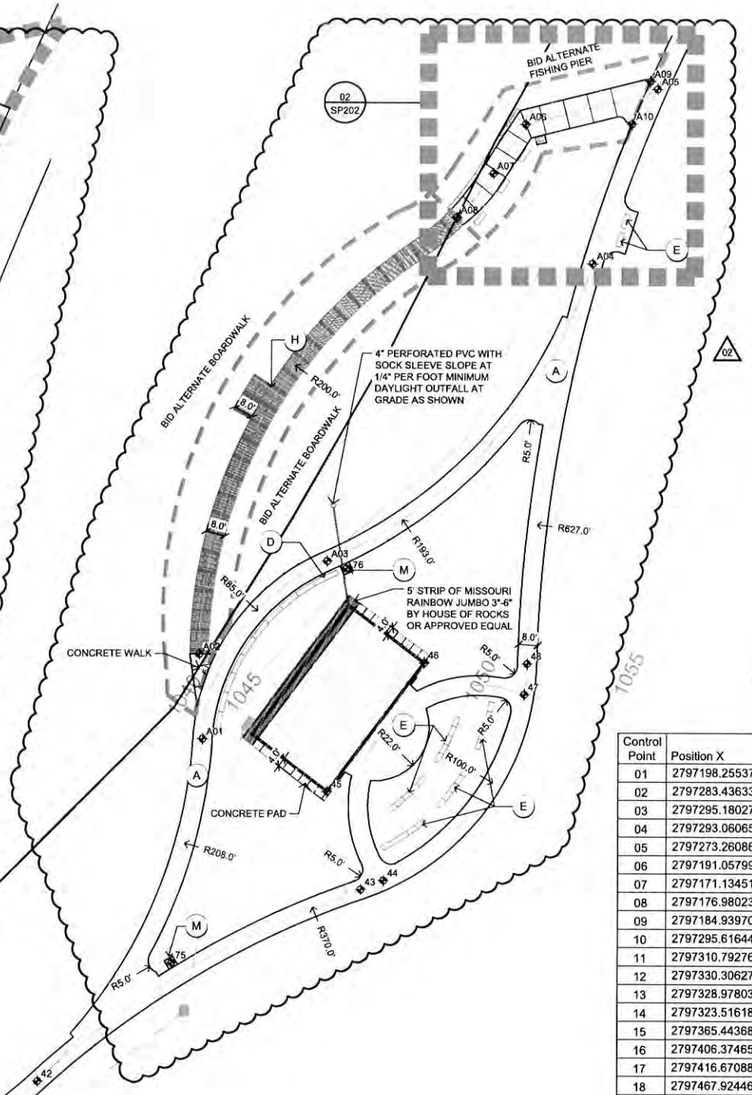
File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP200 - Layout Plan / Drawn by: XX / Checked by: XX

KEY

- HEAVY DUTY ASPHALT; SEE DETAIL 02/SP400
- LIGHT DUTY ASPHALT; SEE DETAIL 02/SP400
- CONCRETE PAVING; SEE DETAIL 01/SP400
- 5' STRIP OF MISSOURI RAINBOW JUMBO 3" - 6" BY HOUSE OF ROCKS OR APPROVED EQUAL

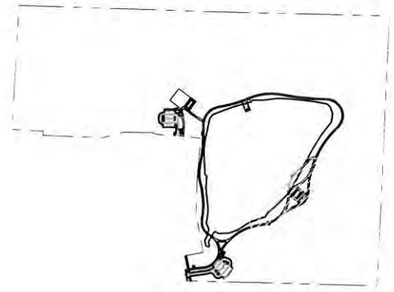


02 PLAN ENLARGEMENT SCALE:1"=10' 0 20'



01 PLAN ENLARGEMENT SCALE:1"=30' 0 60'

KEY MAP



LEGEND

- (A) CONSTRUCT 8' ASPHALT SIDEWALK (BASE BID); SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 8' SIDEWALK; SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 10' SIDEWALK; SEE DETAIL 01/SP400 ALL SIDEWALKS TO HAVE A MAX CROSS SLOPE OF 2%.
- (B) CONSTRUCT ASPHALT ROAD AND PARKING LOT; SEE DETAIL 02/SP400
- (C) CONSTRUCT ADA ACCESSIBLE STALLS; SEE DETAIL 08/SP400
- (D) CONSTRUCT LIMESTONE SEAT WALL; SEE DETAIL 03/SP401
- (E) INSTALL LIMESTONE BLOCK BENCH; SEE DETAIL 02/SP401
- (F) CONSTRUCT ENTRY SIGNAGE; SEE DETAIL 04/SP401
- (G) INSTALL MDC FUNDED RESTROOM PER MANUFACTURERS RECOMMENDATIONS; SEE NOTE #1
- (H) CONSTRUCT BOARDWALK: (BID ALTERNATE); SEE SP403 AND SP404
- (I) INSTALL BRIDGE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAILS 02/SP402, 03/SP402, 04/SP402, 06/SP402, 07/SP402, AND 08/SP402. CONTRACTOR TO SUBMIT STAMPED STRUCTURAL ABUTMENT DETAILS FROM CONTECH OR APPROVED EQUAL.
- (J) CONSTRUCT LOW WATER CROSSING; SEE DETAIL 01/SP402
- (K) CONSTRUCT MDC ADA ACCESSIBLE FISHING DOCK; SEE SHEETS Z-511 TO Z-516
- (L) CONSTRUCT MDC FISHING PIER; SEE DETAIL 01/SP401
- (M) INSTALL TRASH RECEPTACLE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 07/SP401
- (N) INSTALL BIKE RACK PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 06/SP401
- (O) INSTALL PARKING LOT LIGHTING; SEE LIGHTING PLANS
- (P) INSTALL HANDICAP PARKING SIGN; SEE DETAIL 09/SP400
- (Q) CONSTRUCT NORTH SHELTER / RESTROOM; RE: ARCH 02

Control Point	Position X	Position Y
01	2797198.255370	966431.595832
02	2797283.436338	966431.165349
03	2797295.180278	966401.433943
04	2797293.060659	966380.193191
05	2797273.260868	966398.216352
06	2797191.057992	966398.636021
07	2797171.134517	966378.737240
08	2797176.980237	966346.702227
09	2797184.939706	966338.661899
10	2797295.616441	966338.102473
11	2797310.792766	966293.463074
12	2797330.306272	966271.747641
13	2797328.978037	966297.796757
14	2797323.516189	966396.869026
15	2797365.443680	966428.196312
16	2797406.374653	966482.497835
17	2797416.670889	966377.894847
18	2797467.924468	966352.845845
19	2797464.455293	966318.069387
20	2797443.650961	966054.478430
21	2797448.651356	965921.795706
22	2797458.640966	965684.534476
23	2797495.144679	965586.622415
24	2797528.180286	965564.045030
25	2797538.841701	965555.843395
26	2797570.229771	965424.151757
27	2797477.189726	965353.040223
28	2797405.218466	965344.106591
29	2797362.105935	965375.497577
30	2797481.377928	965319.317300

Control Point	Position X	Position Y
31	2797535.488801	965336.908201
32	2797555.445914	965301.635945
33	2797583.857535	965296.491625
34	2797651.163140	965375.112683
35	2797641.860426	965402.715703
36	2797623.663278	965411.061838
37	2797597.558816	965402.066839
38	2797611.914563	965454.870047
39	2797598.630180	965461.817914
40	2797664.149437	965556.651828
41	2797867.015929	965645.749213
42	2797987.153299	965699.861103
43	2798118.847717	965778.243911
44	2798128.106672	965781.921616
45	2798104.920471	965818.013556
46	2798144.446950	965870.451792
47	2798185.444369	965857.693581
48	2798186.571298	965870.196148
49	2798383.866420	966310.031103
50	2798310.157117	966500.161971
51	2797992.356398	966532.474248
52	2797783.172789	966509.620212
53	2797757.047513	966498.349678
54	2797762.568952	966484.869687
55	2797732.458480	966474.634425
56	2797569.017426	966447.990145
57	2797271.397700	966434.226227
58	2797275.018753	966368.702011
59	2797612.304633	965394.302811
60	2797917.048966	965646.549335

Control Point	Position X	Position Y
61	2797922.021772	965648.351199
62	2797915.110507	965667.135606
63	2797910.137701	965665.337293
64	2797280.812733	966321.261399
65	2797278.853516	966286.363511
66	2797308.006862	966261.221788
67	2797318.170159	966286.044092
68	2797312.147722	966290.514020
69	2797461.357180	966252.487119
70	2797454.368638	966257.552912
71	2797454.189504	966277.293409
72	2797461.441357	966282.367751
73	2797405.559164	965360.447710
74	2797406.483032	965353.004830
75	2798041.110947	965748.264349
76	2798112.585328	965908.770990
77	2797759.796270	966483.786936
78	2797765.385334	966485.976856
79	2797496.680594	965588.946477
80	2797530.367811	965567.072698
A01	2798053.626335	965839.250723
A02	2798052.171123	965873.763897
A03	2798104.655328	965911.751954
A04	2798212.784799	966033.384685
A05	2798239.038279	966104.820580
A06	2798185.017831	966090.299921
A07	2798171.887174	966070.098216
A08	2798156.952136	966052.106391
A09	2798236.050702	966107.963696
A10	2798228.673248	966090.551421

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
02	4/23/18	ADDENDUM 02

STATE OF MISSOURI — TERRY J. BERKSUEGLER — NUMBER LA - 1778 — LANDSCAPE ARCHITECT — 4/23/18

PLAN ENLARGEMENT

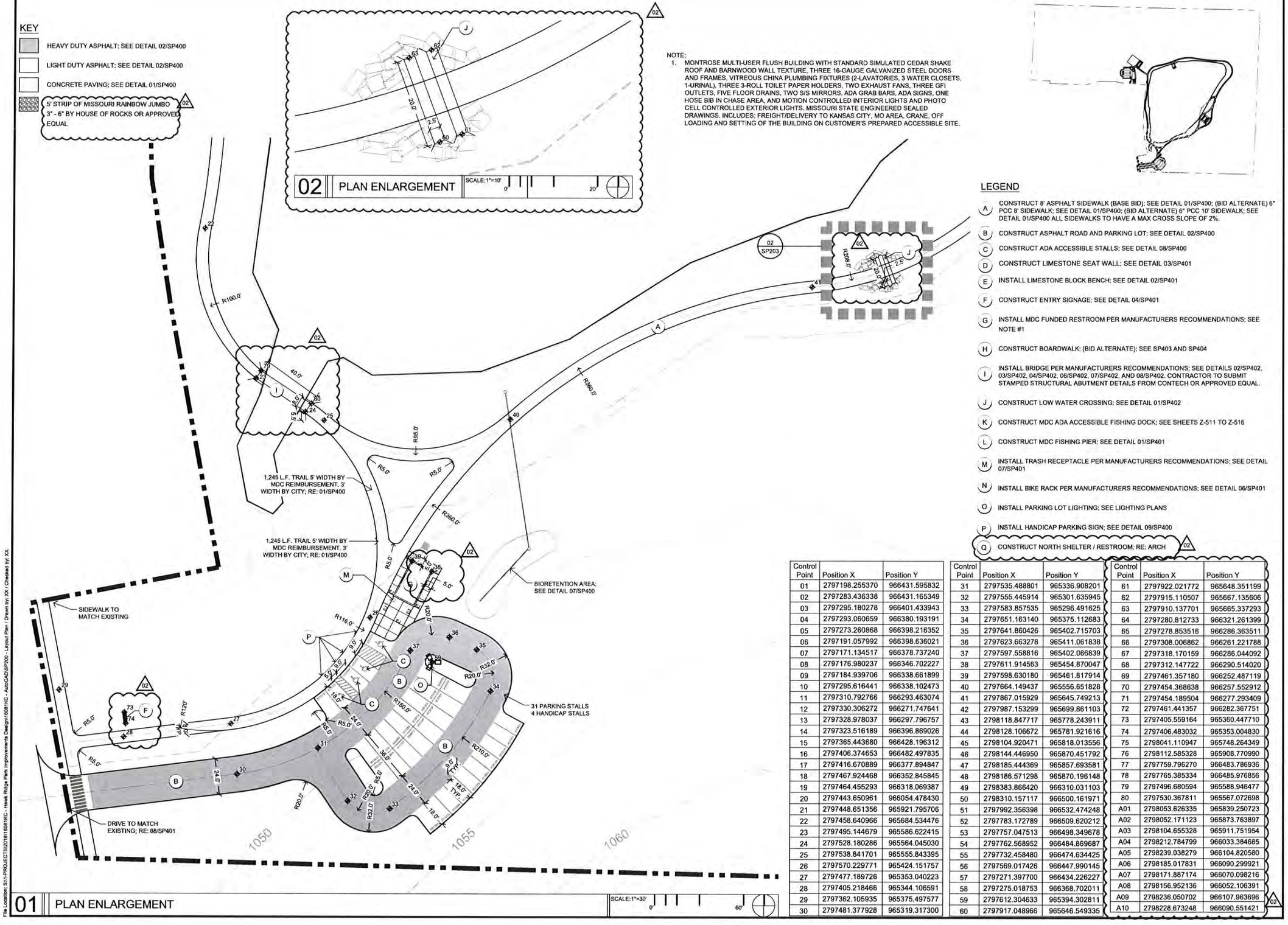
CONFLUENCE PROJECT NO: 16081KC

SP202

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP200 - Layout Plan / Drawn by: XX / Checked by: XX

KEY

- HEAVY DUTY ASPHALT; SEE DETAIL 02/SP400
- LIGHT DUTY ASPHALT; SEE DETAIL 02/SP400
- CONCRETE PAVING; SEE DETAIL 01/SP400
- 5' STRIP OF MISSOURI RAINBOW JUMBO 3" - 6" BY HOUSE OF ROCKS OR APPROVED EQUAL



NOTE:

1. MONTROSE MULTI-USER FLUSH BUILDING WITH STANDARD SIMULATED CEDAR SHAKE ROOF AND BARNWOOD WALL TEXTURE, THREE 16-GAUGE GALVANIZED STEEL DOORS AND FRAMES, VITREOUS CHINA PLUMBING FIXTURES (2-LAVATORIES, 3 WATER CLOSETS, 1-URINAL), THREE 3-ROLL TOILET PAPER HOLDERS, TWO EXHAUST FANS, THREE GFI OUTLETS, FIVE FLOOR DRAINS, TWO S/S MIRRORS, ADA GRAB BARS, ADA SIGNS, ONE HOSE BIB IN CHASE AREA, AND MOTION CONTROLLED INTERIOR LIGHTS AND PHOTO CELL CONTROLLED EXTERIOR LIGHTS. MISSOURI STATE ENGINEERED SEALED DRAWINGS. INCLUDES: FREIGHT/DELIVERY TO KANSAS CITY, MO AREA, CRANE, OFF LOADING AND SETTING OF THE BUILDING ON CUSTOMER'S PREPARED ACCESSIBLE SITE.

KEY MAP

LEGEND

- (A) CONSTRUCT 8' ASPHALT SIDEWALK (BASE BID); SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 8' SIDEWALK; SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 10' SIDEWALK; SEE DETAIL 01/SP400 ALL SIDEWALKS TO HAVE A MAX CROSS SLOPE OF 2%.
- (B) CONSTRUCT ASPHALT ROAD AND PARKING LOT; SEE DETAIL 02/SP400
- (C) CONSTRUCT ADA ACCESSIBLE STALLS; SEE DETAIL 08/SP400
- (D) CONSTRUCT LIMESTONE SEAT WALL; SEE DETAIL 03/SP401
- (E) INSTALL LIMESTONE BLOCK BENCH; SEE DETAIL 02/SP401
- (F) CONSTRUCT ENTRY SIGNAGE; SEE DETAIL 04/SP401
- (G) INSTALL MDC FUNDED RESTROOM PER MANUFACTURERS RECOMMENDATIONS; SEE NOTE #1
- (H) CONSTRUCT BOARDWALK; (BID ALTERNATE); SEE SP403 AND SP404
- (I) INSTALL BRIDGE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAILS 02/SP402, 03/SP402, 04/SP402, 06/SP402, 07/SP402, AND 08/SP402. CONTRACTOR TO SUBMIT STAMPED STRUCTURAL ABUTMENT DETAILS FROM CONTECH OR APPROVED EQUAL.
- (J) CONSTRUCT LOW WATER CROSSING; SEE DETAIL 01/SP402
- (K) CONSTRUCT MDC ADA ACCESSIBLE FISHING DOCK; SEE SHEETS Z-511 TO Z-516
- (L) CONSTRUCT MDC FISHING PIER; SEE DETAIL 01/SP401
- (M) INSTALL TRASH RECEPTACLE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 07/SP401
- (N) INSTALL BIKE RACK PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 06/SP401
- (O) INSTALL PARKING LOT LIGHTING; SEE LIGHTING PLANS
- (P) INSTALL HANDICAP PARKING SIGN; SEE DETAIL 09/SP400
- (Q) CONSTRUCT NORTH SHELTER / RESTROOM; RE: ARCH 02

Control Point	Position X	Position Y
01	2797198.255370	966431.595832
02	2797283.436338	966431.165349
03	2797295.180278	966401.433943
04	2797293.060659	966380.193191
05	2797273.260868	966398.216352
06	2797191.057992	966398.636021
07	2797171.134517	966378.737240
08	2797176.980237	966346.702227
09	2797184.939706	966338.661899
10	2797295.616441	966338.102473
11	2797310.792766	966293.463074
12	2797330.306272	966271.747641
13	2797328.978037	966297.796757
14	2797323.516189	966396.869026
15	2797365.443680	966428.196312
16	2797406.374653	966482.497835
17	2797416.670889	966377.894847
18	2797467.924468	966352.845845
19	2797464.455293	966318.069387
20	2797443.650961	966054.478430
21	2797448.651356	965921.795706
22	2797458.640966	965684.534476
23	2797495.144679	965586.622415
24	2797528.180286	965564.045030
25	2797538.841701	965555.843395
26	2797570.229771	965424.151757
27	2797477.189726	965353.040223
28	2797405.218466	965344.106591
29	2797362.105935	965375.497577
30	2797481.377928	965319.317300

Control Point	Position X	Position Y
31	2797535.488801	965336.908201
32	2797555.445914	965301.635945
33	2797583.857535	965296.491625
34	2797651.163140	965375.112683
35	2797641.860426	965402.715703
36	2797623.663278	965411.061838
37	2797597.558816	965402.066839
38	2797611.914563	965454.870047
39	2797598.630180	965461.817914
40	2797664.149437	965556.651828
41	2797867.015929	965645.749213
42	2797987.153299	965699.861103
43	2798118.847717	965778.243911
44	2798128.106672	965781.921616
45	2798104.920471	965818.013556
46	2798144.446950	965870.451792
47	2798185.444369	965857.693581
48	2798186.571298	965870.196148
49	2798383.866420	966310.031103
50	2798310.157117	966500.161971
51	2797992.356398	966532.474248
52	2797783.172789	966509.620212
53	2797757.047513	966498.349678
54	2797762.568952	966484.869687
55	2797732.458480	966474.634425
56	2797569.017426	966447.990145
57	2797271.397700	966434.226227
58	2797275.018753	966368.702011
59	2797612.304633	965394.302811
60	2797917.048966	965646.549335

Control Point	Position X	Position Y
61	2797922.021772	965648.351199
62	2797915.110507	965667.135606
63	2797910.137701	965665.337293
64	2797280.812733	966321.261399
65	2797278.853516	966286.363511
66	2797308.006862	966261.221788
67	2797318.170159	966286.044092
68	2797312.147722	966290.514020
69	2797461.357180	966252.487119
70	2797454.368638	966257.552912
71	2797454.189504	966277.293409
72	2797461.441357	966282.367751
73	2797405.559164	965360.447710
74	2797406.483032	965353.004830
75	2798041.110947	965748.264349
76	2798112.585328	965908.770990
77	2797759.796270	966483.786936
78	2797765.385334	966485.976856
79	2797496.680594	965588.946477
80	2797530.367811	965567.072698
A01	2798053.626335	965839.250723
A02	2798052.171123	965873.763897
A03	2798104.655328	965911.751954
A04	2798212.784799	966033.384685
A05	2798239.038279	966104.820580
A06	2798185.017831	966090.299921
A07	2798171.887174	966070.098216
A08	2798156.952136	966052.106391
A09	2798236.050702	966107.963696
A10	2798228.673248	966090.551421

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER. STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

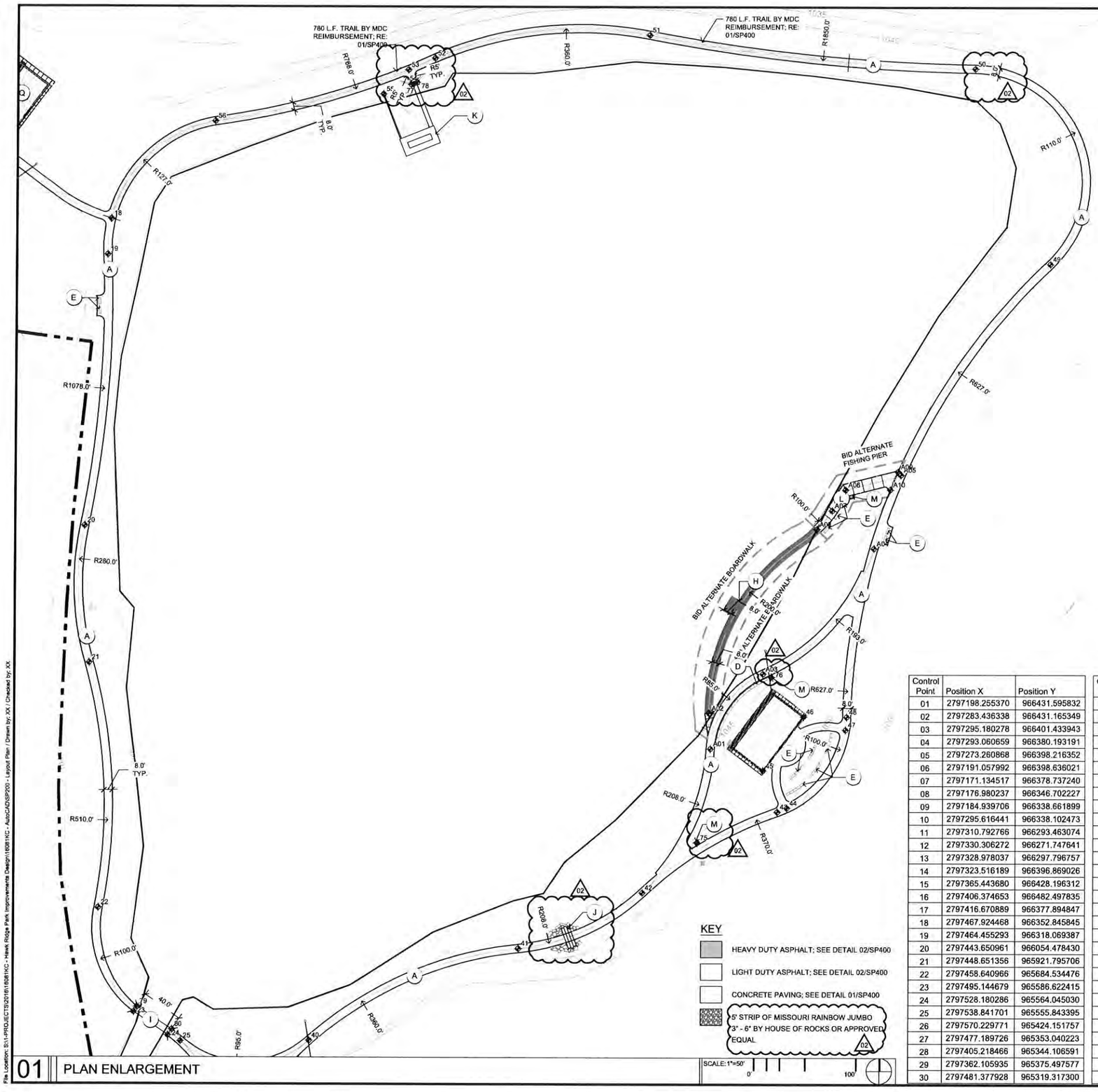
STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
4/23/18

PLAN ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

SP203

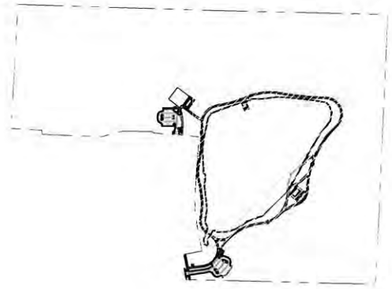
File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP200 - Layout Plan / Drawn by: XX / Checked by: XX



01 PLAN ENLARGEMENT

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP200 - Layout Plan / Drawn by: XX / Checked by: XX

KEY MAP



LEGEND

- (A) CONSTRUCT 8' ASPHALT SIDEWALK (BASE BID); SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 8' SIDEWALK; SEE DETAIL 01/SP400; (BID ALTERNATE) 6" PCC 10' SIDEWALK; SEE DETAIL 01/SP400 ALL SIDEWALKS TO HAVE A MAX CROSS SLOPE OF 2%.
- (B) CONSTRUCT ASPHALT ROAD AND PARKING LOT; SEE DETAIL 02/SP400
- (C) CONSTRUCT ADA ACCESSIBLE STALLS; SEE DETAIL 08/SP400
- (D) CONSTRUCT LIMESTONE SEAT WALL; SEE DETAIL 03/SP401
- (E) INSTALL LIMESTONE BLOCK BENCH; SEE DETAIL 02/SP401
- (F) CONSTRUCT ENTRY SIGNAGE; SEE DETAIL 04/SP401
- (G) INSTALL MDC FUNDED RESTROOM PER MANUFACTURERS RECOMMENDATIONS; SEE NOTE #1
- (H) CONSTRUCT BOARDWALK; (BID ALTERNATE); SEE SP403 AND SP404
- (I) INSTALL BRIDGE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAILS 02/SP402, 03/SP402, 04/SP402, 06/SP402, 07/SP402, AND 08/SP402. CONTRACTOR TO SUBMIT STAMPED STRUCTURAL ABUTMENT DETAILS FROM CONTECH OR APPROVED EQUAL.
- (J) CONSTRUCT LOW WATER CROSSING; SEE DETAIL 01/SP402
- (K) CONSTRUCT MDC ADA ACCESSIBLE FISHING DOCK; SEE SHEETS Z-511 TO Z-516
- (L) CONSTRUCT MDC FISHING PIER; SEE DETAIL 01/SP401
- (M) INSTALL TRASH RECEPTACLE PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 07/SP401
- (N) INSTALL BIKE RACK PER MANUFACTURERS RECOMMENDATIONS; SEE DETAIL 06/SP401
- (O) INSTALL PARKING LOT LIGHTING; SEE LIGHTING PLANS
- (P) INSTALL HANDICAP PARKING SIGN; SEE DETAIL 09/SP400
- (Q) CONSTRUCT NORTH SHELTER / RESTROOM; RE: ARCH 02

Control Point	Position X	Position Y
01	2797198.255370	966431.595832
02	2797283.436338	966431.165349
03	2797295.180278	966401.433943
04	2797293.060659	966380.193191
05	2797273.260868	966398.216352
06	2797191.057992	966398.636021
07	2797171.134517	966378.737240
08	2797176.980237	966346.702227
09	2797184.939706	966338.661899
10	2797295.616441	966338.102473
11	2797310.792766	966293.463074
12	2797330.306272	966271.747641
13	2797328.978037	966297.796757
14	2797323.516189	966396.869026
15	2797365.443680	966428.196312
16	2797406.374653	966482.497835
17	2797416.670889	966377.894847
18	2797467.924468	966352.845845
19	2797464.455293	966318.069387
20	2797443.650961	966054.478430
21	2797448.651356	965921.795706
22	2797458.640966	965684.534476
23	2797495.144679	965586.622415
24	2797528.180286	965564.045030
25	2797538.841701	965555.843395
26	2797570.229771	965424.151757
27	2797477.189726	965353.040223
28	2797405.218466	965344.106591
29	2797362.105935	965375.497577
30	2797481.377928	965319.317300

Control Point	Position X	Position Y
31	2797535.488801	965336.908201
32	2797555.445914	965301.635945
33	2797583.857535	965296.491625
34	2797651.163140	965375.112683
35	2797641.860426	965402.715703
36	2797623.663278	965411.061838
37	2797597.558816	965402.066839
38	2797611.914563	965454.870047
39	2797598.630180	965461.817914
40	2797664.149437	965556.651828
41	2797867.015929	965645.749213
42	2797987.153299	965699.861103
43	2798118.847717	965778.243911
44	2798128.106672	965781.921616
45	2798104.920471	965818.013556
46	2798144.446950	965870.451792
47	2798185.444369	965857.693581
48	2798186.571298	965870.196148
49	2798383.866420	966310.031103
50	2798310.157117	966500.161971
51	2797992.356398	966532.474248
52	2797783.172789	966509.620212
53	2797757.047513	966498.349678
54	2797762.568952	966484.869687
55	2797732.458480	966474.634425
56	2797569.017426	966447.990145
57	2797271.397700	966434.226227
58	2797275.018753	966368.702011
59	2797612.304633	965394.302811
60	2797917.048966	965646.549335

Control Point	Position X	Position Y
61	2797922.021772	965648.351199
62	2797915.110507	965667.135606
63	2797910.137701	965665.337293
64	2797280.812733	966321.261399
65	2797278.853516	966286.363511
66	2797308.006862	966261.221788
67	2797318.170159	966286.044092
68	2797312.147722	966290.514020
69	2797461.357180	966252.487119
70	2797454.368638	966257.552912
71	2797454.189504	966277.293409
72	2797461.441357	966282.367751
73	2797405.559164	965360.447710
74	2797406.483032	965353.004830
75	2798041.110947	965748.264349
76	2798112.585328	965908.770990
77	2797759.796270	966483.786936
78	2797765.385334	966485.976856
79	2797496.680594	965588.946477
80	2797530.367811	965567.072698
A01	2798053.626335	965839.250723
A02	2798052.171123	965873.763897
A03	2798104.655328	965911.751954
A04	2798212.784799	966033.384685
A05	2798239.038279	966104.820580
A06	2798185.017831	966090.299921
A07	2798171.887174	966070.098216
A08	2798156.952136	966052.106391
A09	2798236.050702	966107.963696
A10	2798228.673248	966090.551421

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

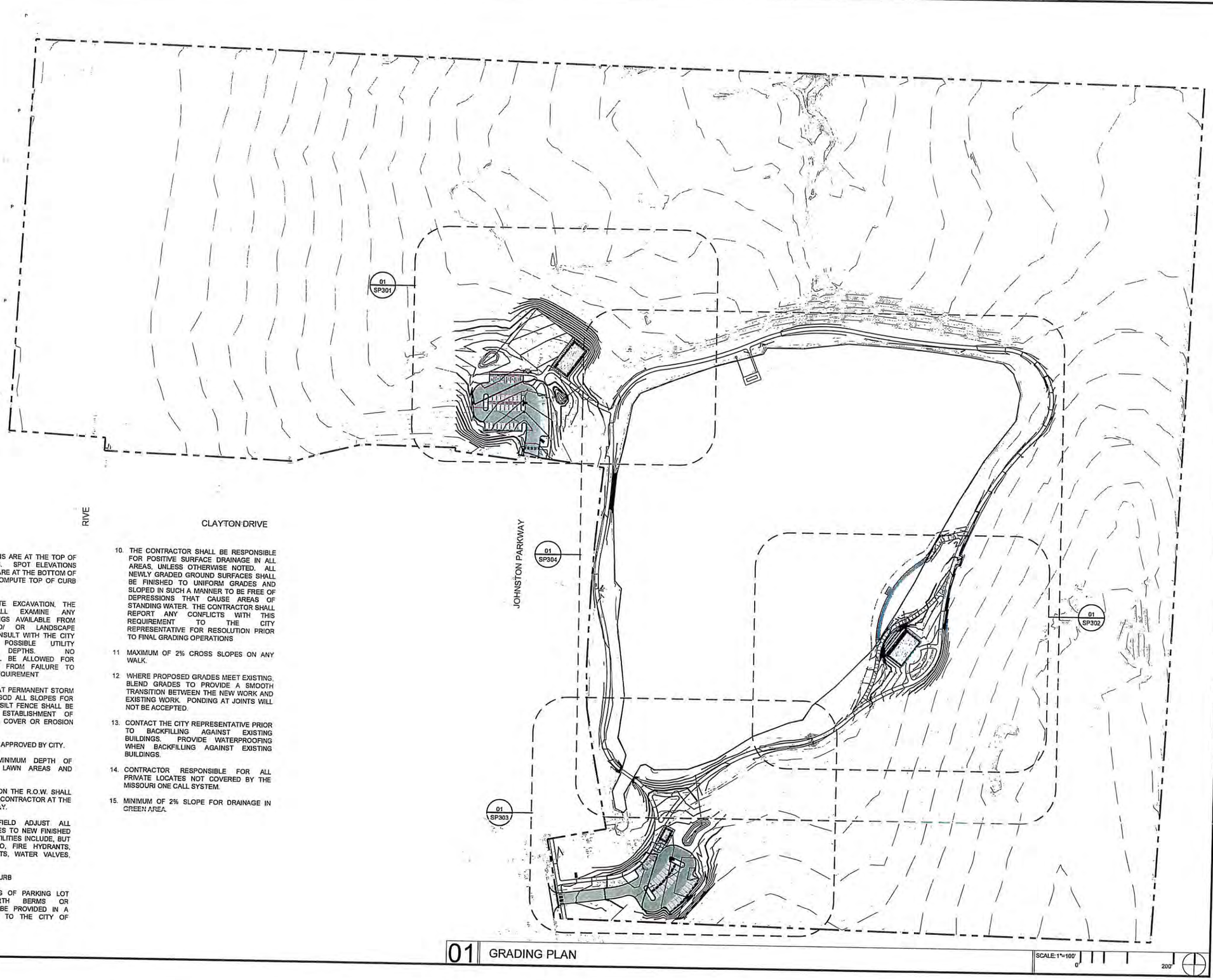
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
A	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA - 179
LANDSCAPE ARCHITECT
4/23/18

PLAN ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

SP204



GRADING NOTES

1. ALL SPOT ELEVATIONS ARE AT THE TOP OF FINISHED SURFACES. SPOT ELEVATIONS SHOWN IN PARKING ARE AT THE BOTTOM OF CURB. ADD 6" TO COMPUTE TOP OF CURB ELEVATION.
2. PRIOR TO ANY SITE EXCAVATION, THE CONTRACTOR SHALL EXAMINE ANY APPLICABLE DRAWINGS AVAILABLE FROM THE OWNER AND/ OR LANDSCAPE ARCHITECT, AND CONSULT WITH THE CITY TO DETERMINE POSSIBLE UTILITY LOCATIONS AND DEPTHS. NO COMPENSATION WILL BE ALLOWED FOR DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT
3. INSTALL SILT FENCE AT PERMANENT STORM SEWER INLETS AND SOD ALL SLOPES FOR EROSION CONTROL. SILT FENCE SHALL BE MAINTAINED UNTIL ESTABLISHMENT OF PERMANENT GROUND COVER OR EROSION CONTROL MEASURE.
4. FINAL BERM SHAPE TO APPROVED BY CITY.
5. SEE SPECS FOR MINIMUM DEPTH OF TOPSOIL FOR ALL LAWN AREAS AND PLANTING BEDS.
6. ALL DEBRIS SPILLED ON THE R.O.W. SHALL BE PICKED UP BY THE CONTRACTOR AT THE END OF EACH WORK DAY.
7. CONTRACTOR TO FIELD ADJUST ALL EXISTING SITE UTILITIES TO NEW FINISHED GRADES. EXISTING UTILITIES INCLUDE, BUT ARE NOT LIMITED TO, FIRE HYDRANTS, MANHOLE RIMS, INLETS, WATER VALVES, AND LIGHT BASES.
8. BACK FILL TO TOP OF CURB
9. ADEQUATE SCREENING OF PARKING LOT AREAS WITH EARTH BERMS OR LANDSCAPING SHALL BE PROVIDED IN A MANNER ACCEPTABLE TO THE CITY OF RAYMORE
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSITIVE SURFACE DRAINAGE IN ALL AREAS, UNLESS OTHERWISE NOTED. ALL NEWLY GRADED GROUND SURFACES SHALL BE FINISHED TO UNIFORM GRADES AND SLOPED IN SUCH A MANNER TO BE FREE OF DEPRESSIONS THAT CAUSE AREAS OF STANDING WATER. THE CONTRACTOR SHALL REPORT ANY CONFLICTS WITH THIS REQUIREMENT TO THE CITY REPRESENTATIVE FOR RESOLUTION PRIOR TO FINAL GRADING OPERATIONS
11. MAXIMUM OF 2% CROSS SLOPES ON ANY WALK.
12. WHERE PROPOSED GRADES MEET EXISTING, BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN THE NEW WORK AND EXISTING WORK. PONDING AT JOINTS WILL NOT BE ACCEPTED.
13. CONTACT THE CITY REPRESENTATIVE PRIOR TO BACKFILLING AGAINST EXISTING BUILDINGS. PROVIDE WATERPROOFING WHEN BACKFILLING AGAINST EXISTING BUILDINGS.
14. CONTRACTOR RESPONSIBLE FOR ALL PRIVATE LOCATES NOT COVERED BY THE MISSOURI ONE CALL SYSTEM.
15. MINIMUM OF 2% SLOPE FOR DRAINAGE IN GREEN AREA.

01 GRADING PLAN

SCALE: 1"=100' 0 200'

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP300 - Grading Plan - Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
6234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS

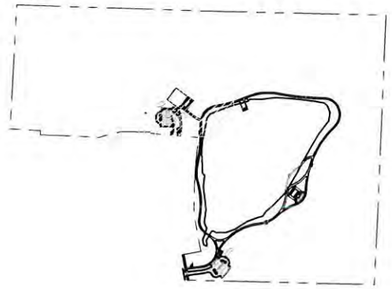
STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
3/9/18

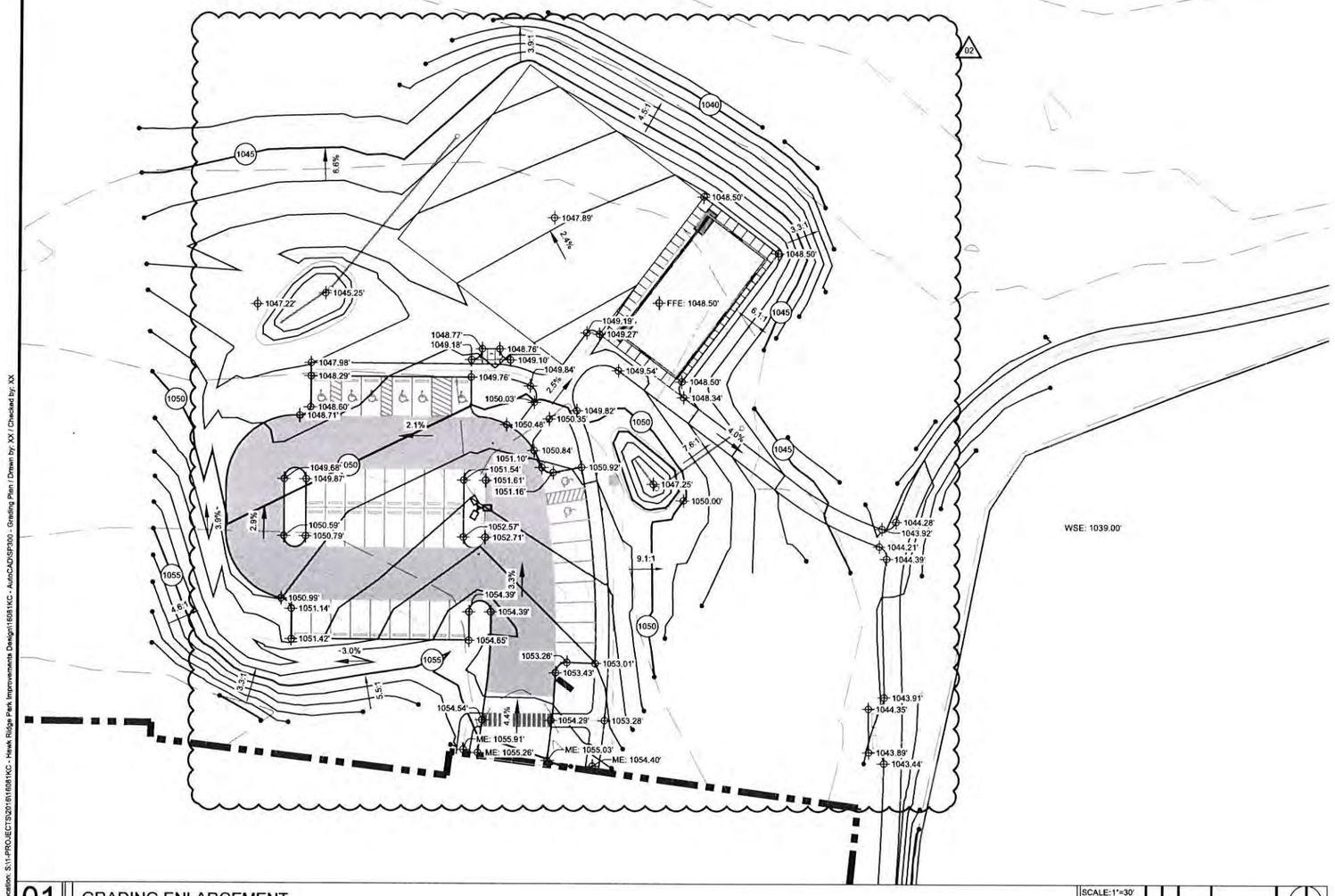
GRADING PLAN

CONFLUENCE PROJECT NO: 16081KC

SP300

KEY MAP





01 GRADING ENLARGEMENT

SCALE:1"=30'
0 60

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP300 - Grading Plan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON
ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL
ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

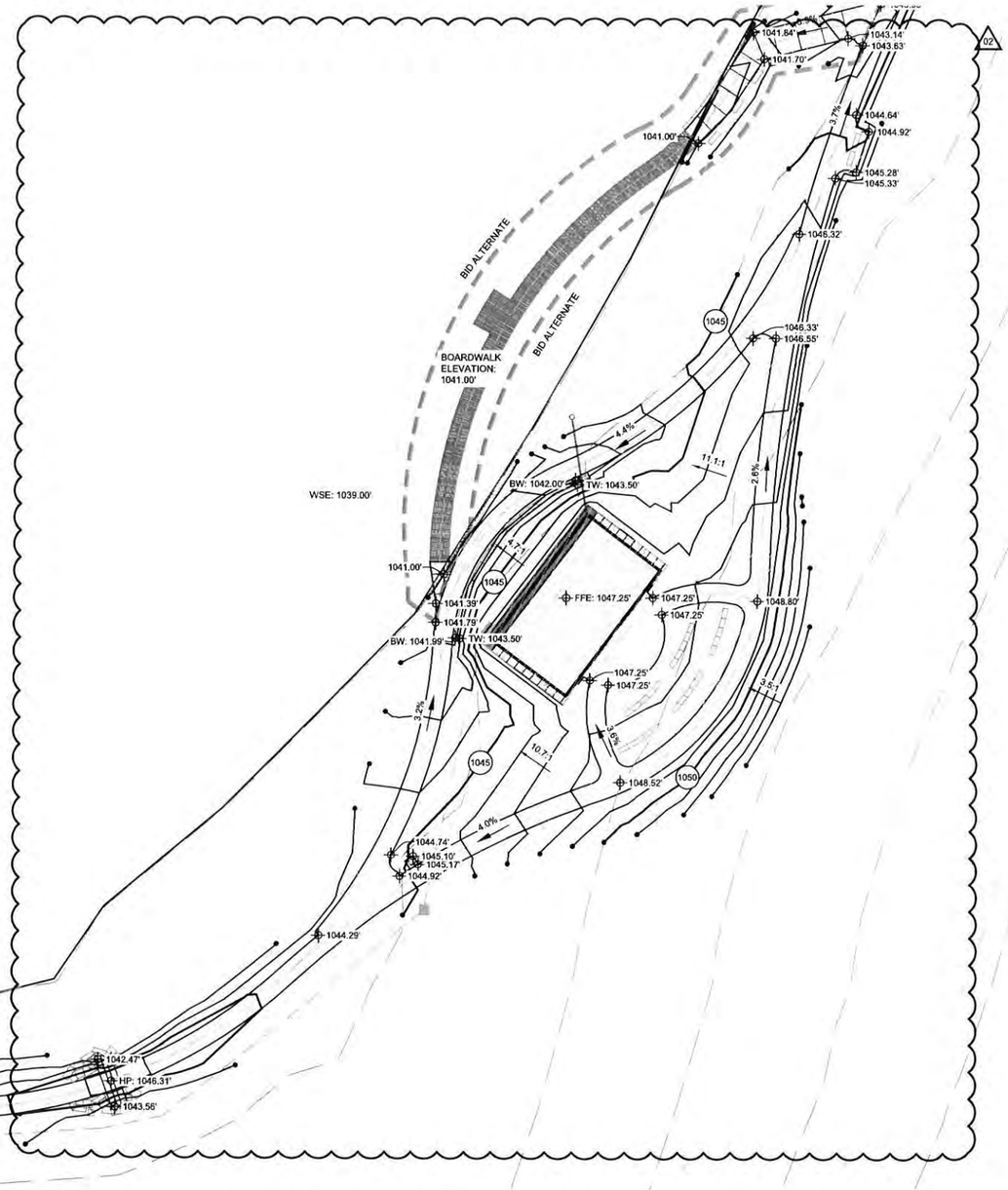
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-178
LANDSCAPE ARCHITECT
4/23/18

GRADING
ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

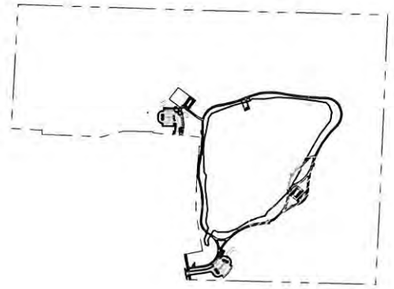
SP301



01 GRADING ENLARGEMENT

SCALE:1"=30'

KEY MAP



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

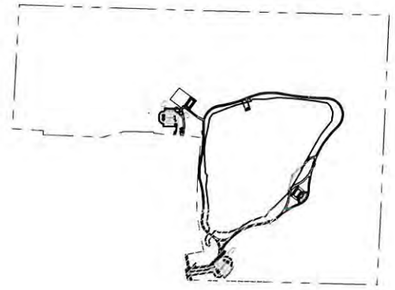
STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA - 178
LANDSCAPE ARCHITECT
4/23/18

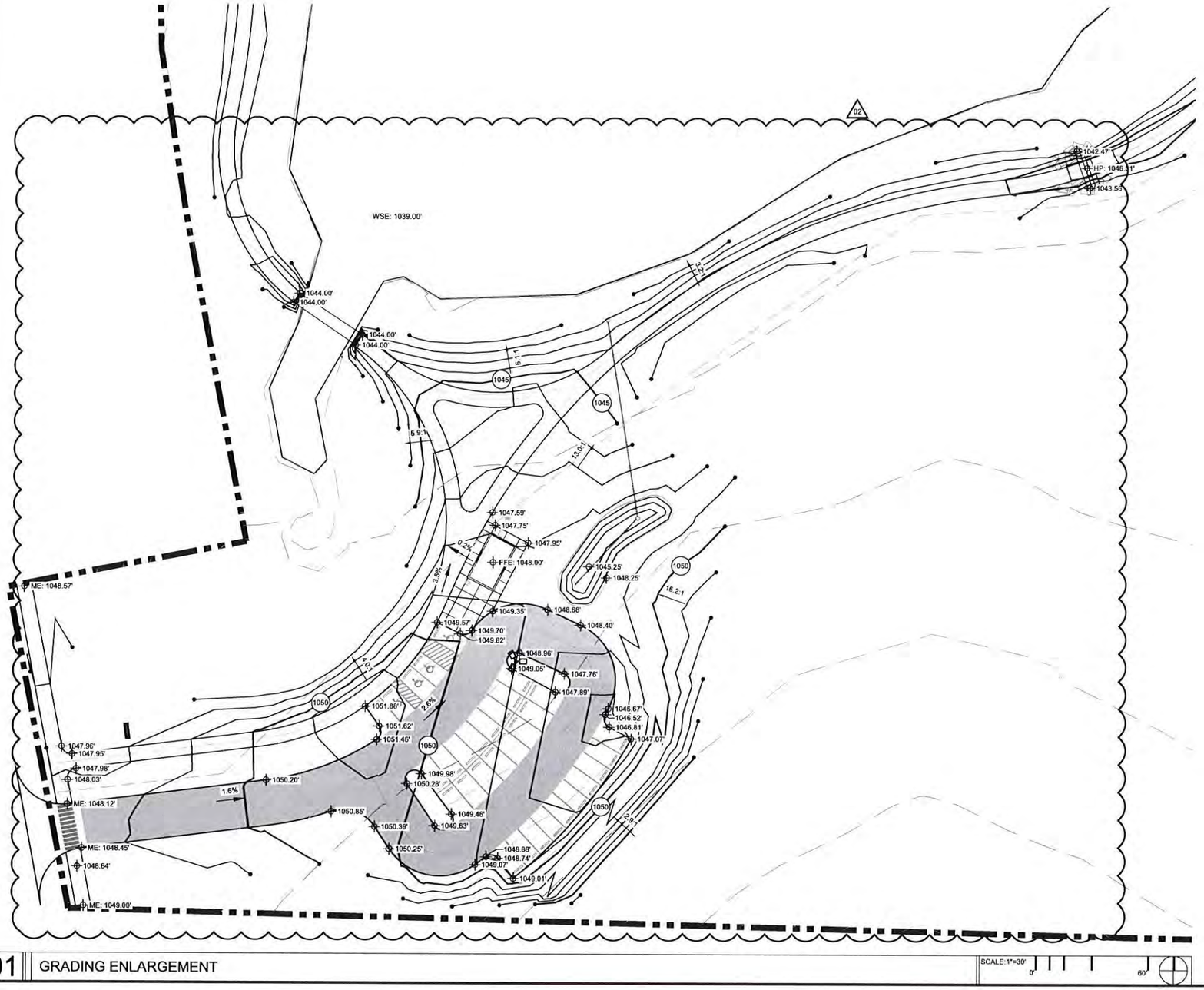
GRADING ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

SP302

KEY MAP





01 GRADING ENLARGEMENT

SCALE: 1"=30'
0' 60'

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP300 - Grading Plan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA - 178
LANDSCAPE ARCHITECT
4/23/18

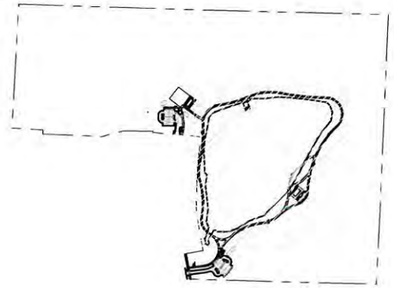
GRADING ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

SP303

01 GRADING ENLARGEMENT

KEY MAP



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

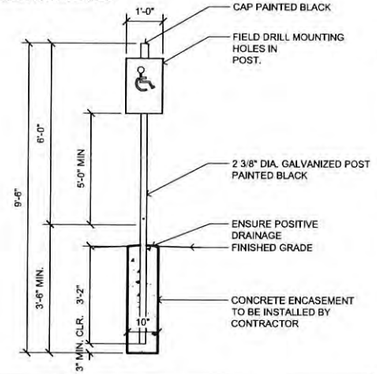
STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA - 178
LANDSCAPE ARCHITECT
4/23/18

GRADING ENLARGEMENT

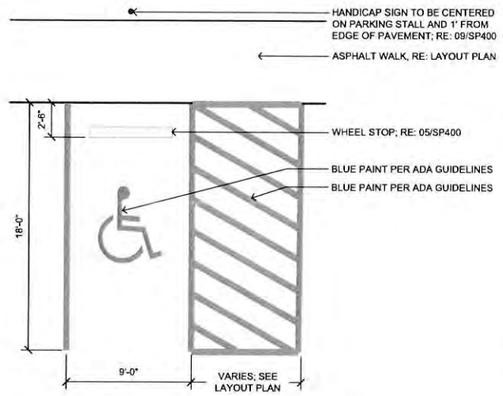
CONFLUENCE PROJECT NO: 16081KC

SP304

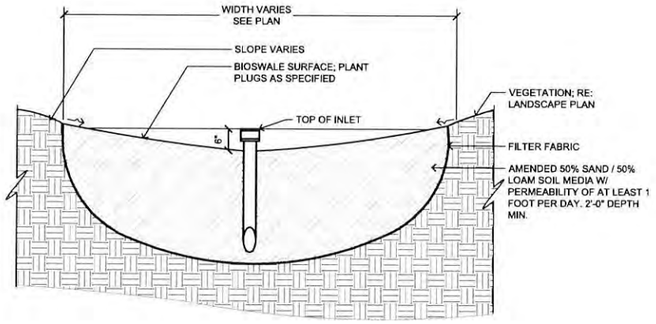
NOTES:
1. SIGN TO BE ON THE ALL SIGN POSTS.
2. SIGNS TO CONFORM TO MUTCD STANDARDS
3. SUBMIT CUT SHEETS OF POLE, SIGNAGE, CAP FOR APPROVAL.
4. SIGN 1 IS MUTCD-R7-8, SIGN 2 IS MUTCD-R7-8A.



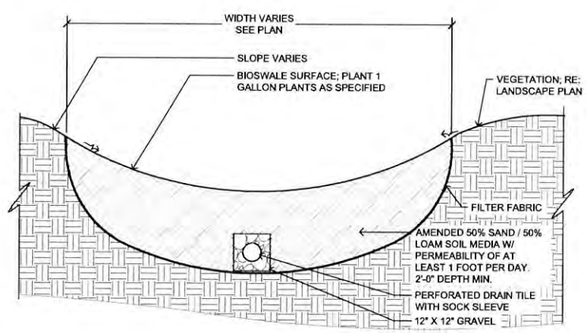
09 SP400 | SECTION: HANDICAP PARKING SIGN | 1/2" = 1'-0"



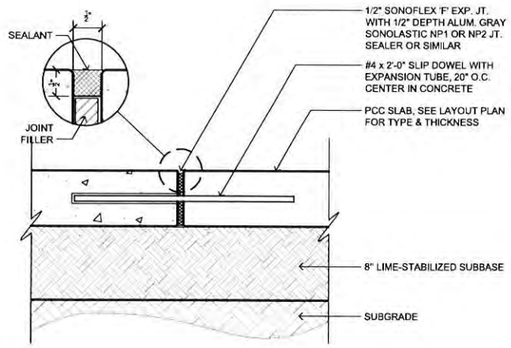
08 SP400 | PLAN: HANDICAP LAYOUT | 3/16" = 1'-0"



07 SP400 | SECTION: INLET BIORETENTION DETAIL | 1/2" = 1'-0"

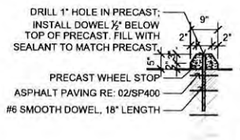


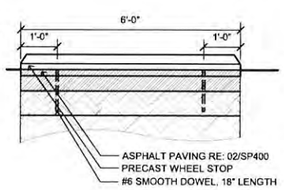
06 SP400 | SECTION: TYPICAL BIORETENTION DETAIL | 1/2" = 1'-0"



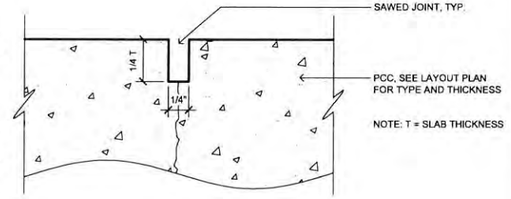
04 SP400 | EXPANSION JOINT WITH SLIP DOWEL | 1-1/2" = 1'-0"

NOTES:
1. SUBMIT CUT SHEET OF PRECAST WHEEL STOP FOR APPROVAL.



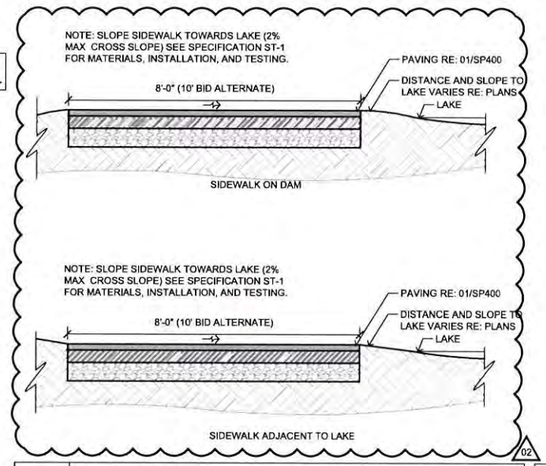


NOTE:
1. CONTRACTOR TO PROVIDE MOCKUP FOR REVIEW AND APPROVAL.
2. ALL CONCRETE IS KCMMB 4K

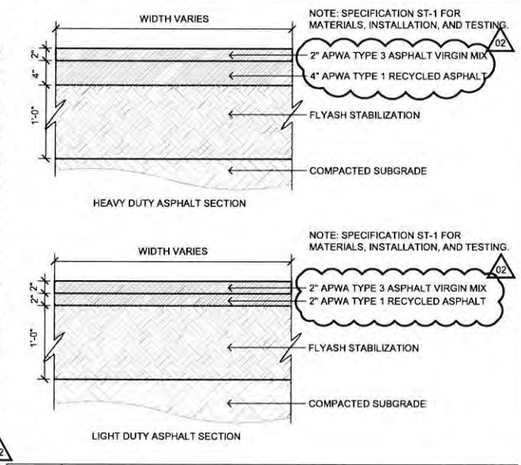


05 SP400 | SECTION: PRECAST CURB STOP | 1/2" = 1'-0"

03 SP400 | SECTION: CUT JOINT, TYP. | 3/4" = 1'-0"

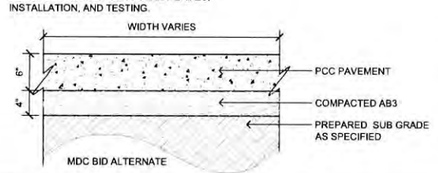


01B SP400 | SECTION: SIDEWALK PROFILE | 1/2" = 1'-0"

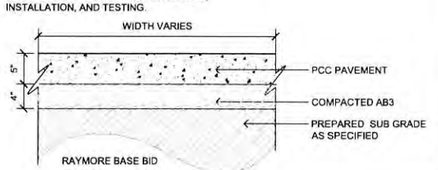


02 SP400 | SECTION: ASPHALT PAVING | NTS

NOTE: ALL CONCRETE IS KCMMB 4K
2% MAX CROSS SLOPE
SEE SPECIFICATION ST-1 FOR MATERIALS, INSTALLATION, AND TESTING.

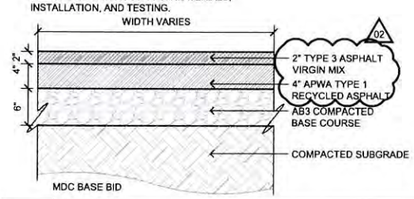


NOTE: ALL CONCRETE IS KCMMB 4K
2% MAX CROSS SLOPE
SEE SPECIFICATION ST-1 FOR MATERIALS, INSTALLATION, AND TESTING.

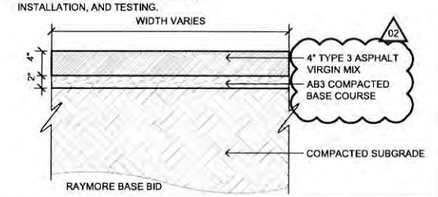


SECTION: CONCRETE SIDEWALK (BID ALT.) | 1" = 1'-0"

NOTE: 2% MAX CROSS SLOPE
SEE SPECIFICATION ST-1 FOR MATERIALS, INSTALLATION, AND TESTING.



NOTE: 2% MAX CROSS SLOPES
SPECIFICATION ST-1 FOR MATERIALS, INSTALLATION, AND TESTING.



01 SP400 | SECTION: ASPHALT SIDEWALK (BASE BID) | 1" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
02	4/23/18	ADDENDUM 02

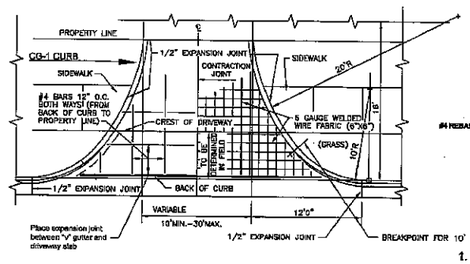
STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-178
LANDSCAPE ARCHITECT
4/23/18

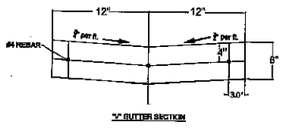
SITE DETAILS

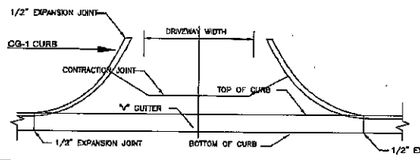
CONFLUENCE PROJECT NO: 16081KC

SP400

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP400 - Site Details / Drawn by: XX / Checked by: XX



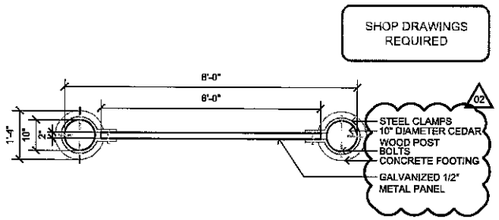




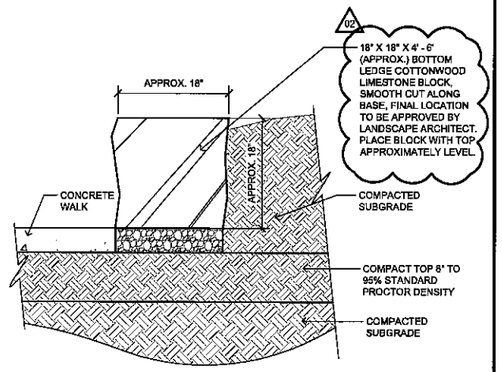
Notes:

1. All concrete shall be a KCMMB 4K mix design.
2. Place expansion joint between CG-1 curb and driveway slab (not shown for clarity) in addition to locations shown in detail. No monolithic pours.
3. Slab can either be 5" thick with no reinforcing, 7" thick with 6 gauge welded wire fabric, or 6" thick with #4 rebar on 12 " centers.
4. Contraction joints shall be located so as to form no panel larger than 12' by 12'. Joints are to be sawn 2" deep.
5. CG-1 curb can be eliminated for residential drives.
6. Drive shall slope towards the curb at 1/4" to 1/2" per foot, except thru the sidewalk area where the slope shall not exceed 1/4" per foot.
7. Driveway slab shall be placed on 4" of clean gravel.

08 SP401 | CITY STANDARD DRIVEWAY | 1/8" = 1'-0"



05 SP401 | PLAN: ENTRY SIGNAGE | 1/2" = 1'-0"



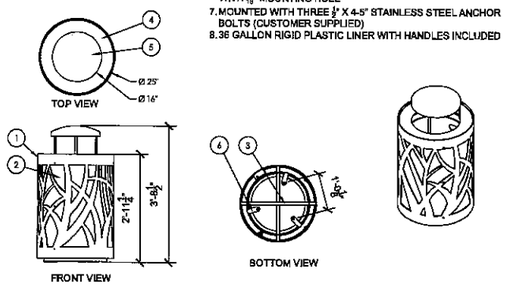
03 SP401 | SECTION: LIMESTONE RETAINING WALL | 1" = 1'-0"

SITE SCAPES
P.O. BOX 22326 LINCOLN, NE 68542
P(402) 421.9484 F(402) 421. 9479
WWW.SITESCAPEONLINE.COM E-MAIL: INFO@SITESCAPEONLINE.COM

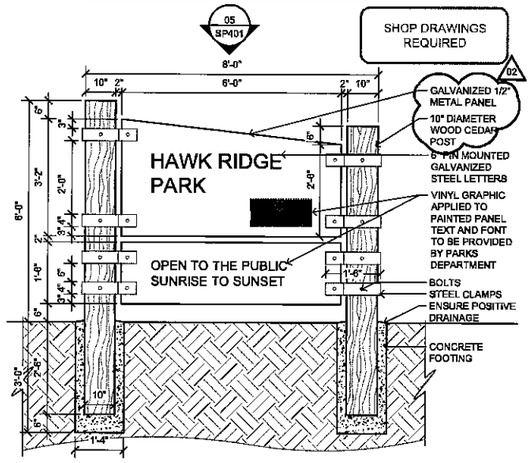
TALLGRASS TRASH RECEPTACLE
PRODUCT NO. TG2-3001

NOTES:
1. INSTALL TRASH RECEPTACLE ACCORDING TO MANUFACTURER'S SPECIFICATIONS
2. DURACOAT BRONZE FINISH
3. SEE SITE PLAN FOR LOCATIONS

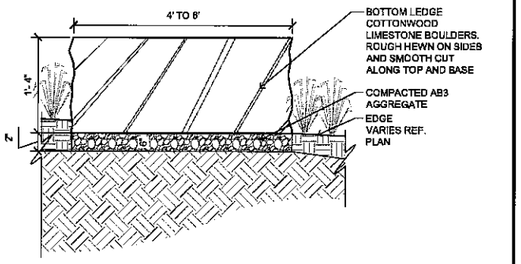
MATERIAL LIST:
1. CONTAINER - 7 GAUGE LASER CUT STEEL
2. BACKING- $\frac{1}{8}$" ALUMINUM SHEET
3. SUPPORT BARS - 1" X $\frac{3}{8}$" STEEL FLAT BAR
4. LID - 24" X .075" WALL STEEL LID ATTACHED TO BASKET WITH STAINLESS STEEL AIRCRAFT CABLE
5. DOME - 16" X .105" WALL STEEL DOME
6. SURFACE MOUNT PLATES - $\frac{3}{4}$" X 1$\frac{1}{2}$" STAINLESS STEEL FLAT WITH $\frac{3}{8}$" MOUNTING HOLE
7. MOUNTED WITH THREE $\frac{3}{8}$" X 4-5" STAINLESS STEEL ANCHOR BOLTS (CUSTOMER SUPPLIED)
8. 36 GALLON RIGID PLASTIC LINER WITH HANDLES INCLUDED



07 SP401 | TRASH RECEPTACLE | 1/2" = 1'-0"

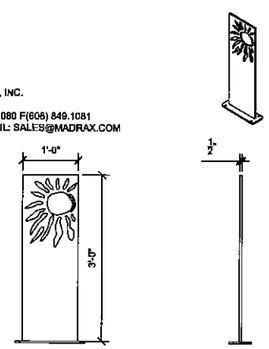


04 SP401 | ELEVATION: ENTRY SIGNAGE | 1/2" = 1'-0"



02 SP401 | SECTION: LIMESTONE BENCH | 3/8" = 1'-0"

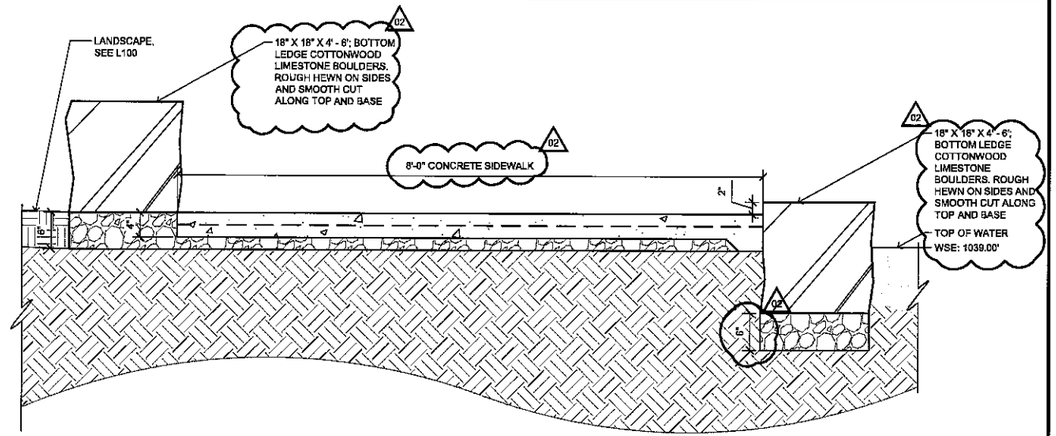
MADRAX DIVISION
GRABER MANUFACTURING, INC.
1080 UNIEK DRIVE
P(800) 448.7931 P(608) 849.1080 F(608) 849.1081
WWW.MADRAX.COM, E-MAIL: SALES@MADRAX.COM



PART: SHBR-SUN-8F(IG)

NOTES:
1. INSTALL BIKE RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS
2. GALVANIZED FINISH
3. SEE SITE PLAN FOR LOCATIONS

08 SP401 | BIKE RACK: MADRAX SHADOW RACK | 3/4" = 1'-0"



01 SP401 | SECTION: MDC FISHING PIER | 1" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
419 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2285

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.683.5718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

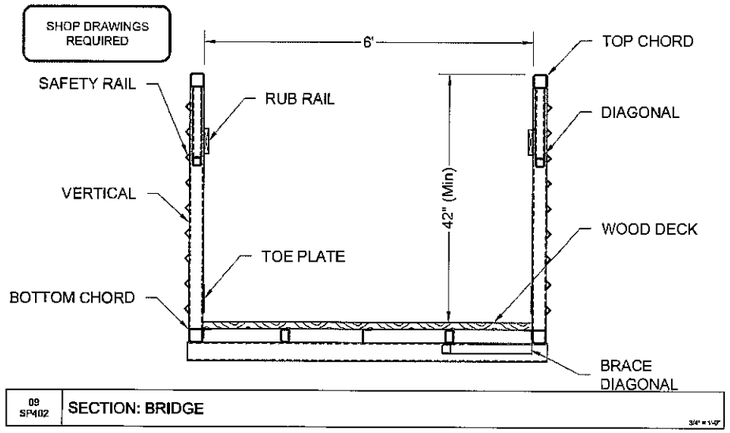
ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY J. BERKGUEGLER
NUMBER LA - 1778
LANDSCAPE ARCHITECT
4/23/18

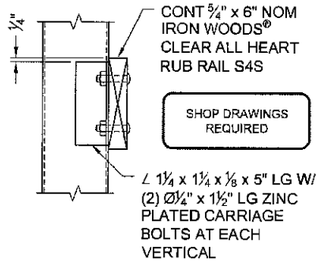
SITE DETAILS

CONFLUENCE PROJECT NO: 16081KC

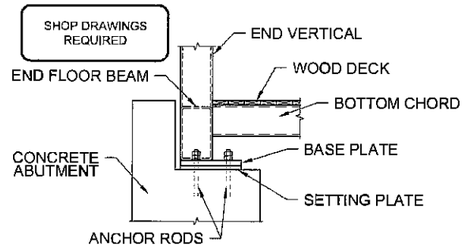
SP401



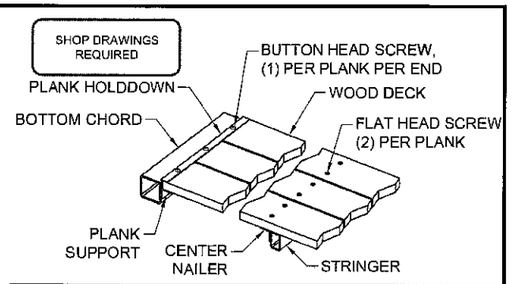
09 SP402 | SECTION: BRIDGE 3/4" = 1'-0"



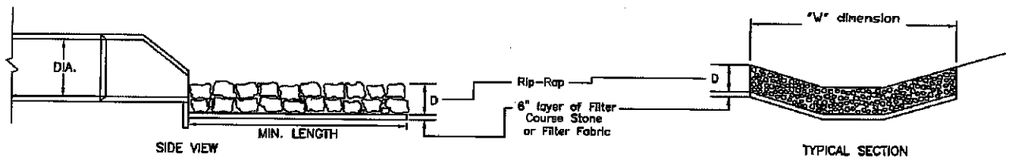
08 SP402 | RUB RAIL DETAIL 3/4" = 1'-0"

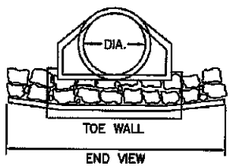


07 SP402 | BEARING SIDE VIEW 3/4" = 1'-0"



04 SP402 | WOOD DECKING DETAIL 3/4" = 1'-0"



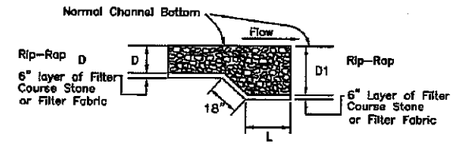


ROCK LINING FOR CULVERT OUTLETS

CULVERT SIZE. DIA INCH	MINIMUM D X W FEET	MINIMUM LENGTH FEET	END RIP-RAP L X D1 FEET	EQUIVALENT PIPE ARCH CULVERT (APPROX.)	EQUIVALENT CONC. BOX CULV. (APPROX.)
18	1.5 X 8	12	3 X 2		
24	1.5 X 8	14	3 X 2		2' X 1-1/2'
30	1.5 X 8	16	3 X 2	8-5	2' X 2'
36	1.5 X 10	18	3 X 2	8-6	3' X 2'
42	2 X 10	20	4 X 2.75	8-7	3' X 3'
48	2 X 12	20	4 X 2.75	8-8	4' X 3'
54	2 X 13.5	22	4 X 2.75	8-9	4' X 4'
60	2 X 15	26	4 X 2.75	8-10	5' X 4'
66	2 X 15	26	4 X 2.75	8-11	5' X 6'
72	2 X 20	30	4 X 2.75	8-12	5' X 8'
84	2.5 X 25	36	5 X 3.3		6' X 6'
96	2.5 X 30	40	5 X 3.3		7' X 7'
108	3 X 32	40	6 X 4		8' X 8'

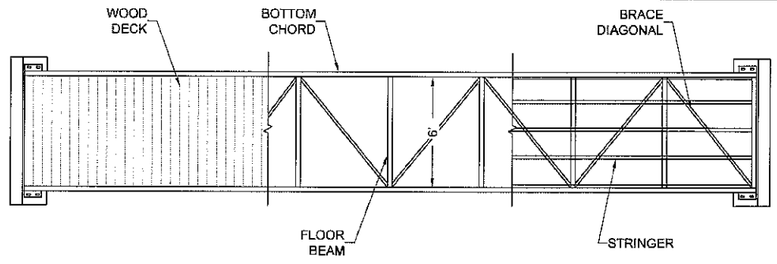
THE DIMENSIONS SHOWN IN THE TABLE CAN BE APPLIED TO BOX OR ARCH CULVERTS OF EQUIVALENT WATERWAY AREA.

06 SP402 | SECTION: LOW WATER CROSSING SURFACE TREATMENT 1/2" = 1'-0"

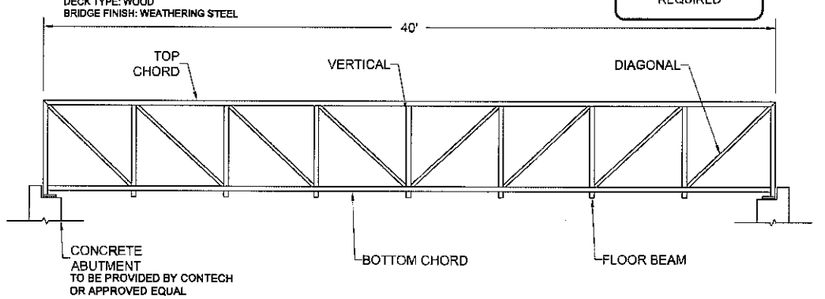


SECTION THROUGH DOWNSTREAM END OF RIP-RAP

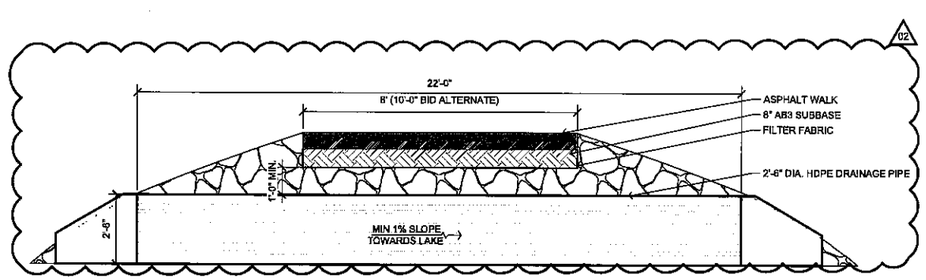
NOTE:
ALL MATERIALS NEED TO CONFORM TO APWA SECTION 2605.



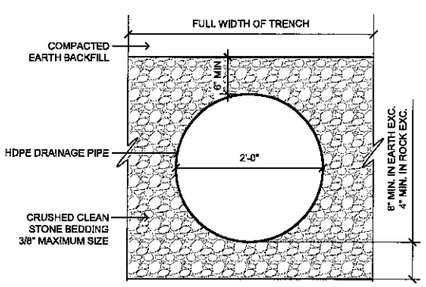
03 SP402 | PLAN: BRIDGE 1/8" = 1'-0"



02 SP402 | ELEVATION: BRIDGE 1/8" = 1'-0"



05 SP402 | SECTION: LOW WATER CROSSING 3/8" = 1'-0"



01 SP402 | SECTION: LOW WATER CROSSING PIPE BEDDING 1" = 1'-0"

File Location: I:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP400 - Site Details / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.883.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

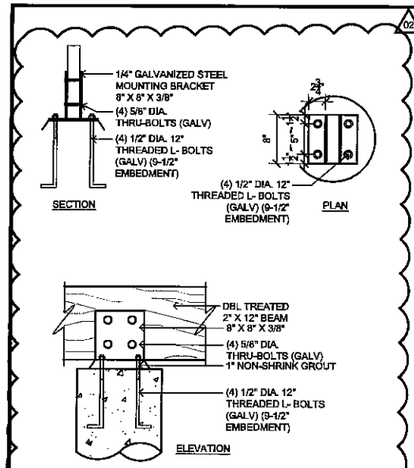
ISSUE	DATE	DESCRIPTION
1	05/09/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
4/23/18

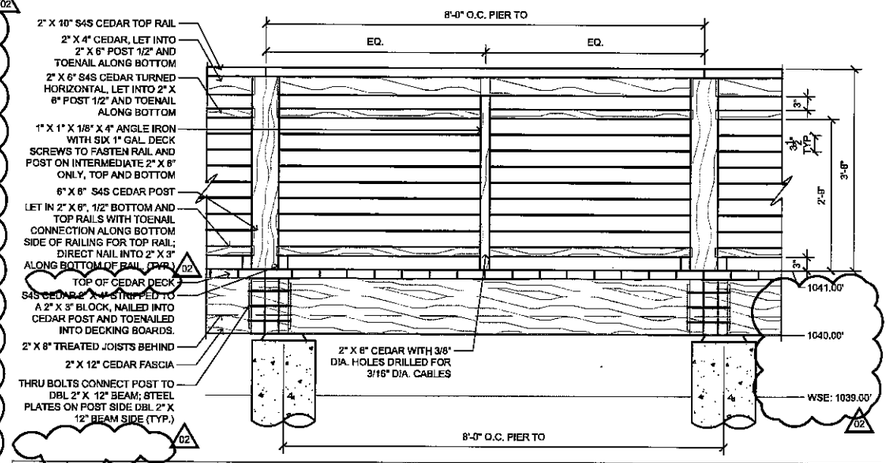
SITE DETAILS

CONFLUENCE PROJECT NO: 16081KC

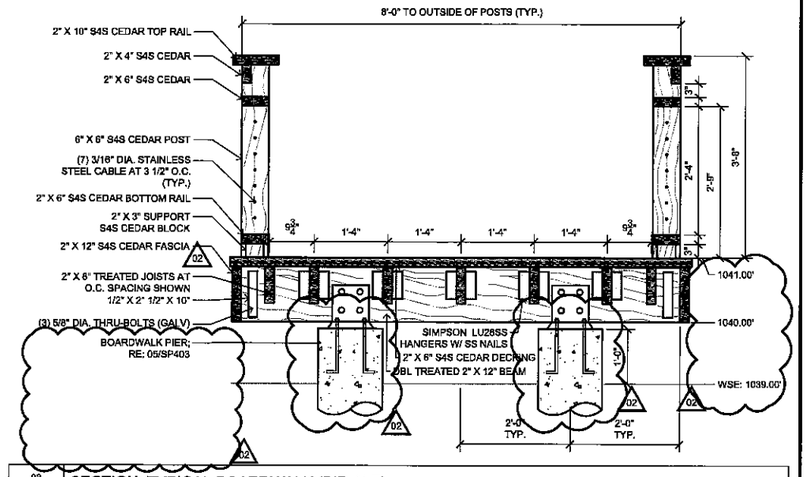
SP402



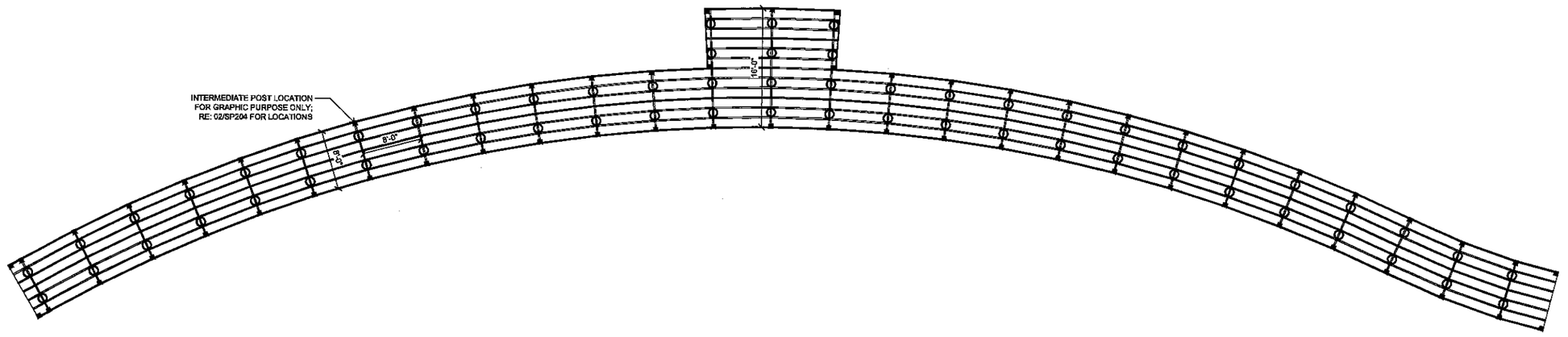
05 SP403 SECTION: BOARDWALK (BID ALT)



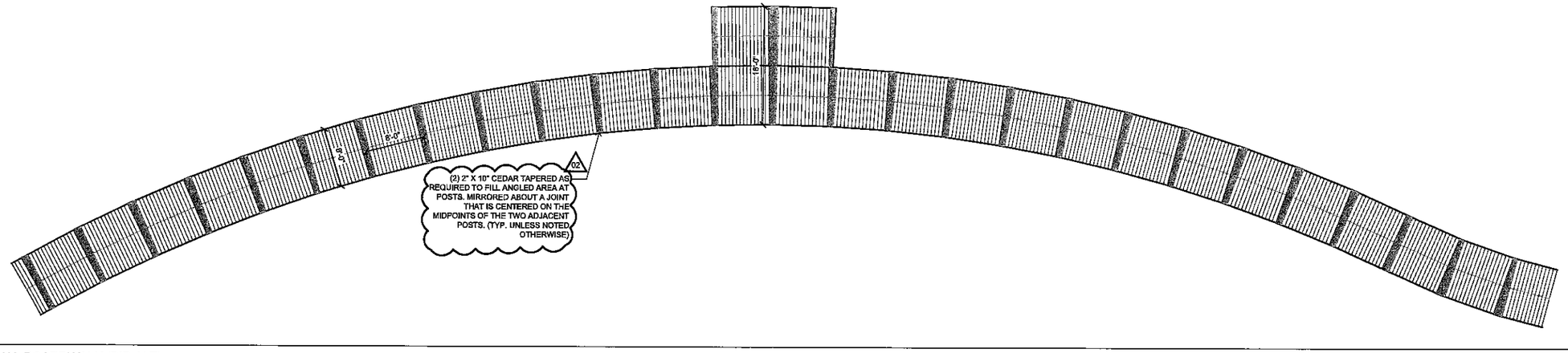
04 SP403 SECTION: TYPICAL BOARDWALK (BID ALT)



03 SP403 SECTION: TYPICAL BOARDWALK (BID ALT)



02 SP403 PLAN: BOARDWALK STRUCTURE (BID ALT)



01 SP403 PLAN: BOARDWALK (BID ALT)

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\SP403 - Site Details / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.683.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2189

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
02	4/23/18	ADDENDUM 02

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA - 778
LANDSCAPE ARCHITECT
4/23/18

SITE DETAILS

CONFLUENCE PROJECT NO: 16081KC

SP403

NOTES:

1. ABUTMENT LOADS AND DIMENSIONS ARE PRELIMINARY. THE CONTRACTOR SHALL PROVIDE BRIDGE DRAWINGS AND CALCULATIONS FROM THE BRIDGE MANUFACTURER FOR REVIEW PRIOR TO FABRICATION OR CONSTRUCTION OF ANY ABUTMENT COMPONENTS. MODIFICATIONS TO THE DETAILS SHOWN MAY BE NECESSARY DUE TO FINAL BRIDGE DESIGN AND/OR SOIL CONDITIONS AND SHALL BE ACCOMMODATED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER

2. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FULLY COMPLETED. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO EXECUTE AND DETERMINE PROCEDURES AND SEQUENCING TO ENSURE STABILITY DURING CONSTRUCTION.

3. A GEO-TECHNICAL ENGINEER SHALL OBSERVE EXCAVATION TO CONFIRM SUBGRADE PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE.

4. ALL CONCRETE SHALL BE KCMMB-4K (4000 PSI) MEETING THE MATERIALS TESTING STANDARDS DEFINED IN 03 3400 ST-1-PART 3.

5. ALL REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60.

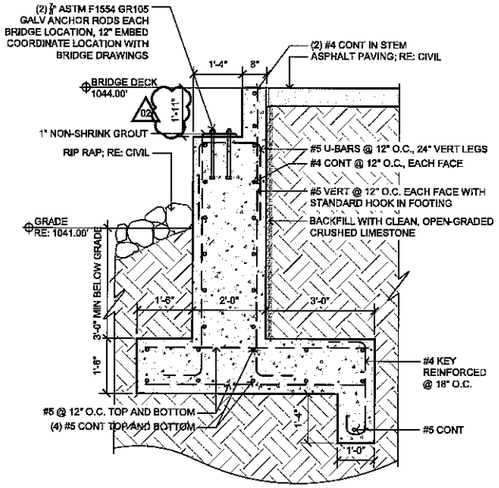
DESIGN LOADS (PER BEARING)

THERMAL FORCE - 1.1K

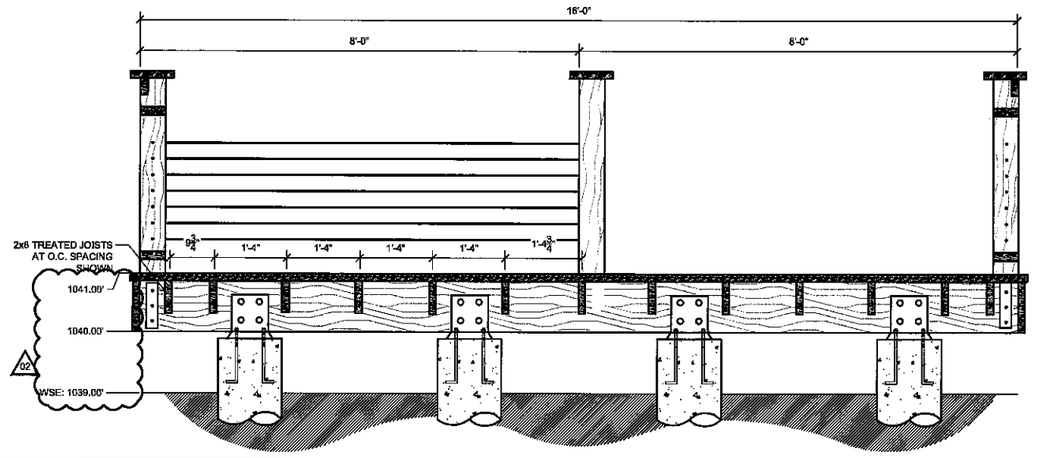
DEAD LOAD - 3.0K

LIVE LOAD - 6.0K

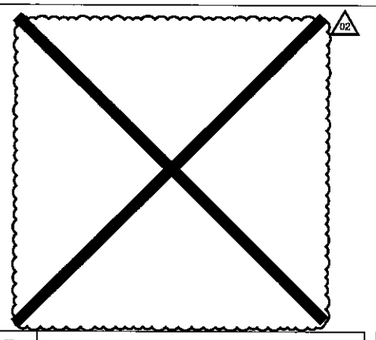
ACTIVE EQUIV. FLUID PRESSURE: 65 PCF
ALLOWABLE SOIL BEARING: 2,500 PSF



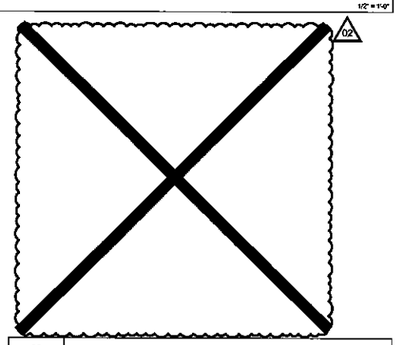
08 SP404 | SECTION: BRIDGE ABUTMENT DETAIL 1/2" = 1'-0"



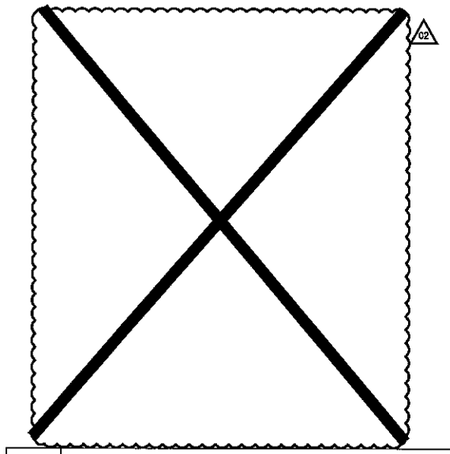
03 SP404 | SECTION: BOARDWALK (BID ALT) 3/4" = 1'-0"



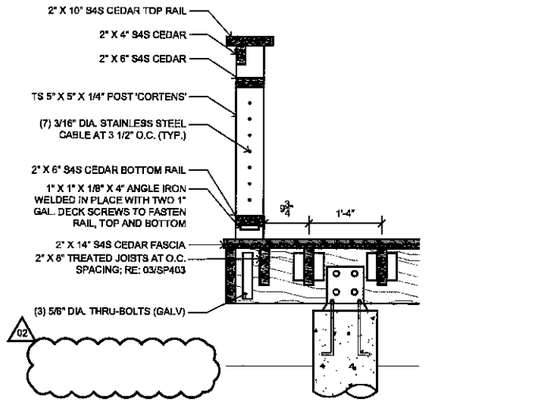
07 SP404 | SECTION: PIER 1" = 1'-0"



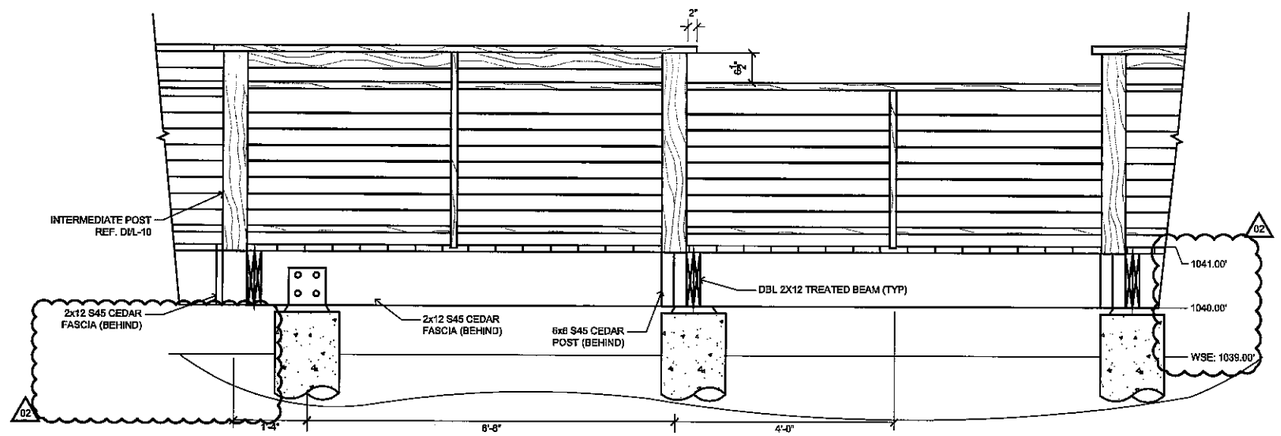
06 SP404 | ELEVATION: PIER 1/2" = 1'-0"



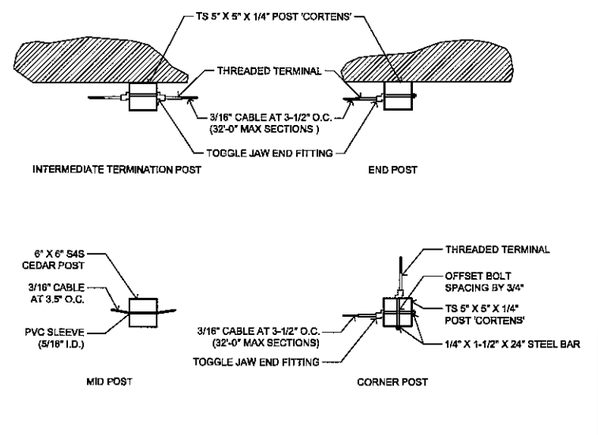
04 SP404 | SECTION: BOARDWALK ABUTMENT DETAIL (BID ALT) 3/4" = 1'-0"



02 SP404 | SECTION: BOARDWALK INTERMEDIATE POST (BID ALT) 3/4" = 1'-0"



05 SP404 | SECTION: BOARDWALK (BID ALT) 3/4" = 1'-0"



01 SP404 | PLAN: BOARDWALK CABLING DETAILS (BID ALT) 3/4" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.683.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2189

HAWK RIDGE PARK

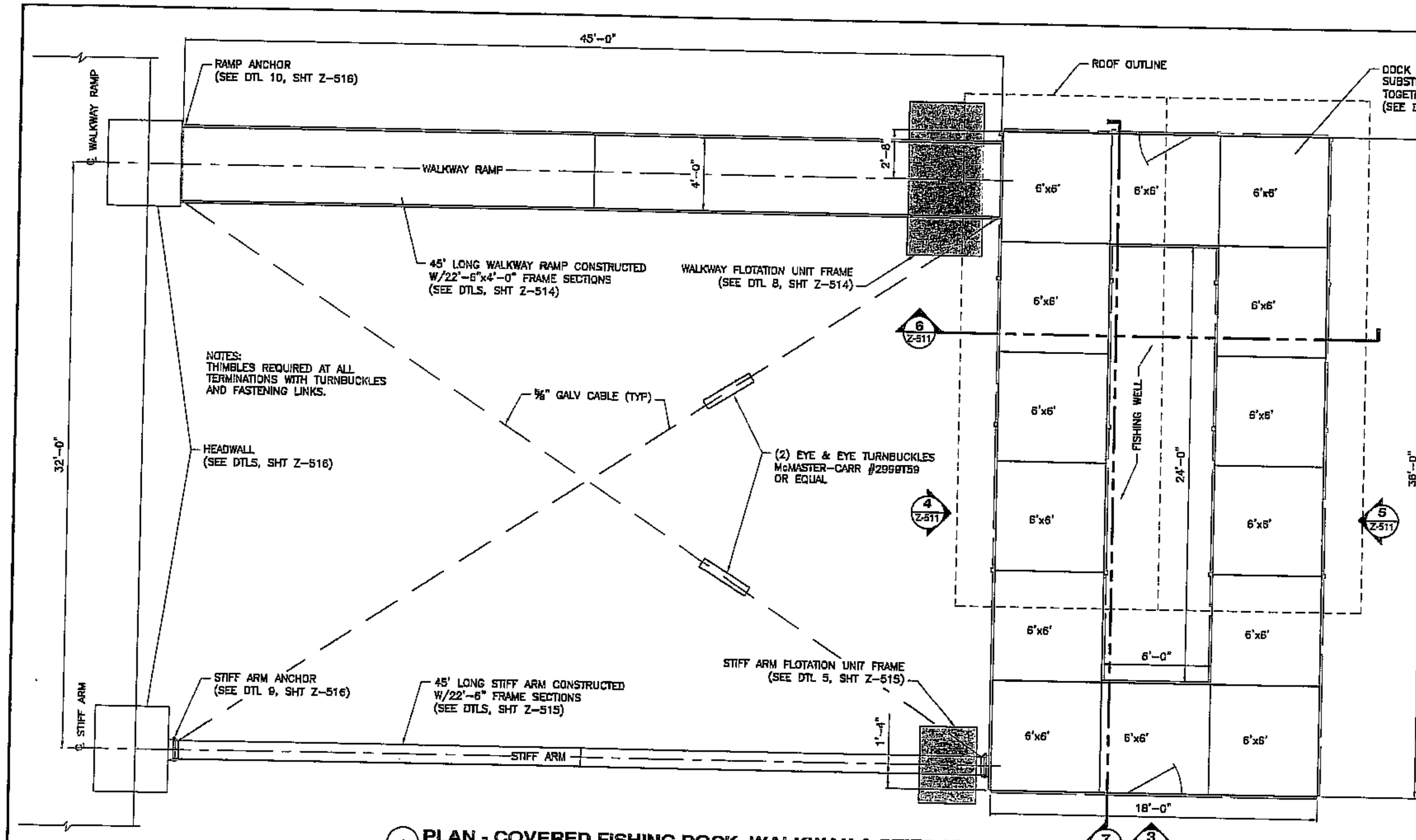
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE		
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	4/23/18	ADDENDUM 02

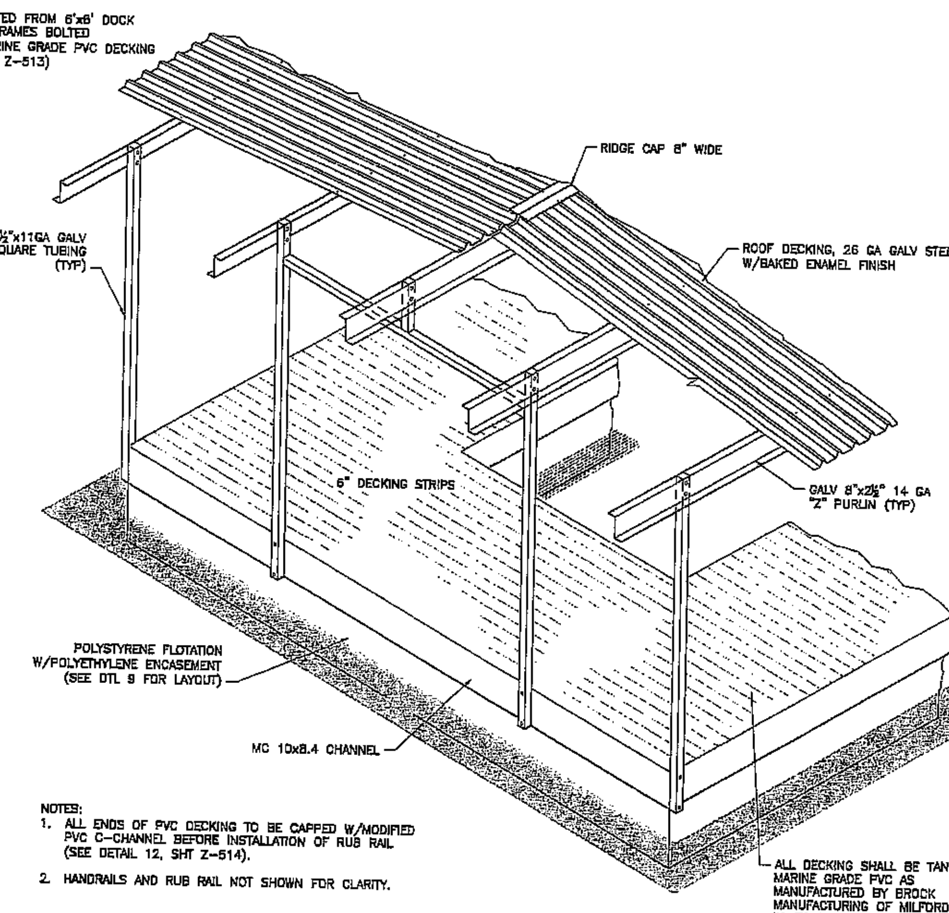
SITE DETAILS

CONFLUENCE PROJECT NO: 16081KC

SP404

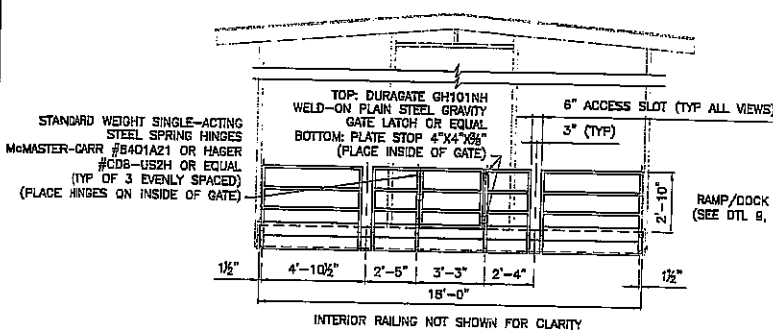


1 **PLAN - COVERED FISHING DOCK, WALKWAY & STIFF ARM**
SCALE: 1/4"=1'-0"

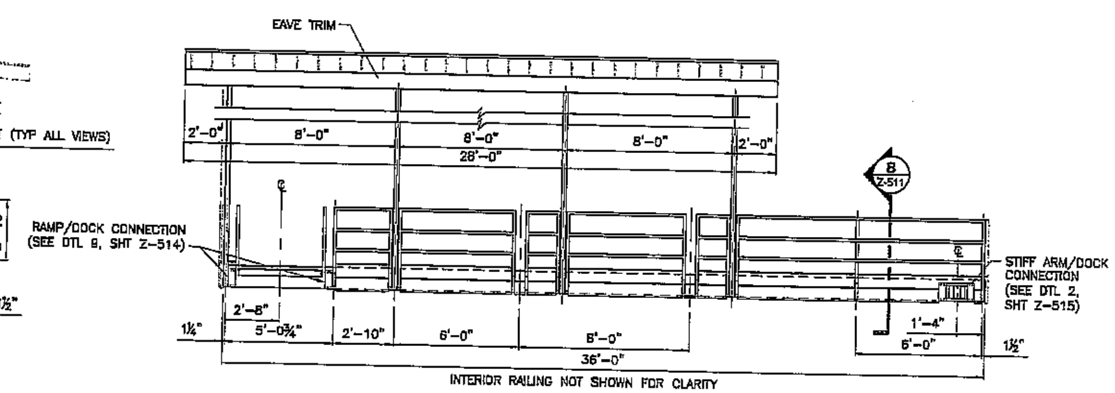


NOTES:
1. ALL ENDS OF PVC DECKING TO BE CAPPED W/MODIFIED PVC C-CHANNEL BEFORE INSTALLATION OF RUB RAIL (SEE DETAIL 12, SHT Z-514).
2. HANDRAILS AND RUB RAIL NOT SHOWN FOR CLARITY.

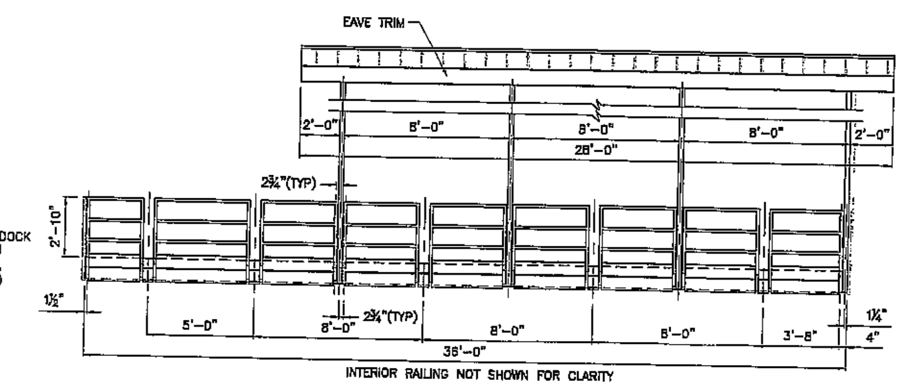
2 **FISHING DOCK - PARTIAL ISOMETRIC**
SCALE: NTS



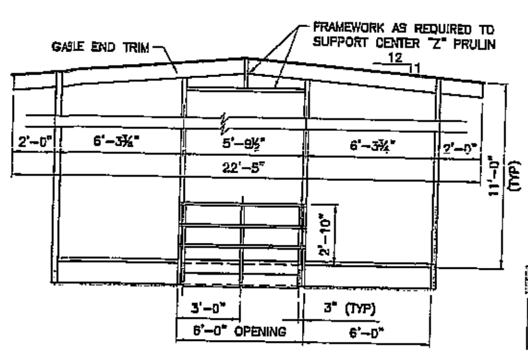
3 **TYPICAL END ELEVATION**
SCALE: 1/4"=1'-0"



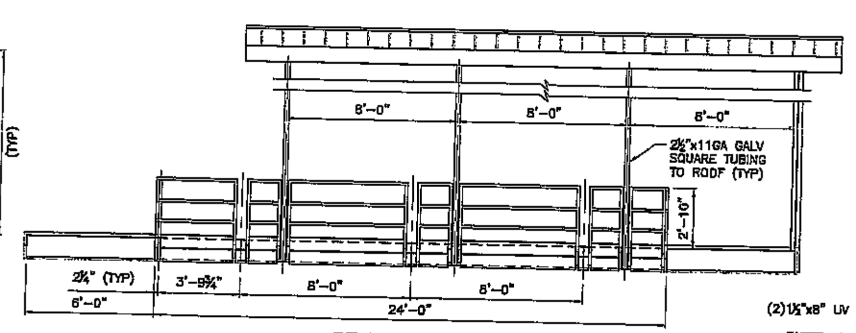
4 **BANK SIDE ELEVATION**
SCALE: 1/4"=1'-0"



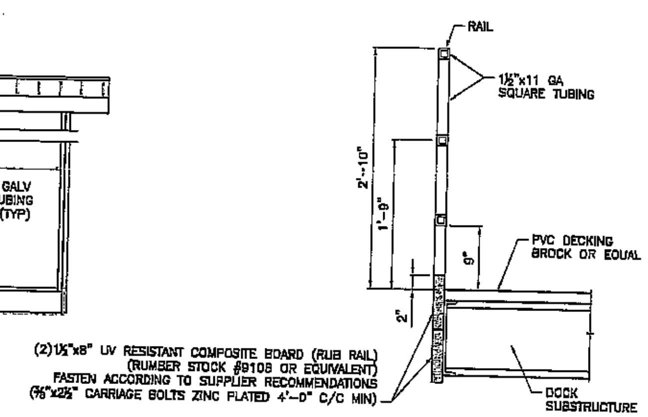
5 **WATER SIDE ELEVATION**
SCALE: 1/4"=1'-0"



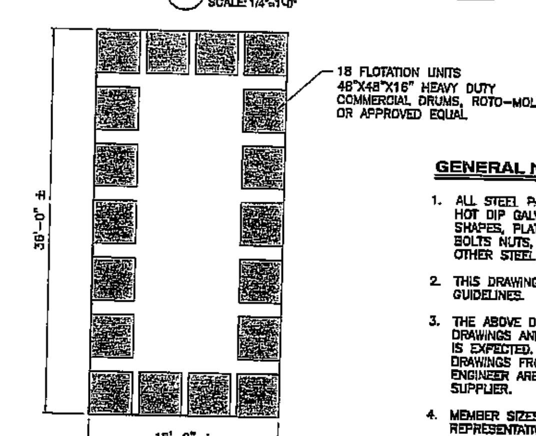
6 **SECTION**
SCALE: 1/4"=1'-0"



7 **SECTION**
SCALE: 1/4"=1'-0"



8 **TYPICAL SECTION - RAIL**
SCALE: 1"=1'-0"



9 **PLAN -DOCK FLOTATION LAYOUT**
SCALE: 1/8"=1'-0"

GENERAL NOTE:

1. ALL STEEL PARTS AND ASSEMBLIES SHALL BE HOT DIP GALVANIZED. THIS INCLUDES ALL STEEL SHAPES, PLATES, BARS, TUBING, ROOF PANELS, BOLTS NUTS, WASHERS, ANCHORS, AND ALL OTHER STEEL MATERIALS.
2. THIS DRAWING CONFORMS TO ADA ACCESSIBILITY GUIDELINES.
3. THE ABOVE DRAWINGS ARE NOT DESIGN DRAWINGS AND ARE A REPRESENTATION OF WHAT IS EXPECTED. SEALED AND SIGNED SHOP DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER ARE REQUIRED FROM THE DOCK SUPPLIER.
4. MEMBER SIZES AND CONFIGURATIONS ARE REPRESENTATIVE OF WHAT IS EXPECTED. A REGISTERED PROFESSIONAL ENGINEER SHALL ACCOUNT FOR ALL RELEVANT DESIGN CODES TO CALCULATE AND SPECIFY THE APPROPRIATE MEMBER SIZES AND CONFIGURATIONS.

MISSOURI CONSERVATION DEPARTMENT
DESIGN AND DEVELOPMENT
MISSOURI DEPARTMENT OF CONSERVATION
P.O. BOX 180, JEFFERSON CITY, MO 65102
(573) 522-4115 www.mdc.mo.gov

February 17, 2017
JACOB D. CAREAGA
CIVIL ENGINEER
PE-2004017138

FISHING DOCK COVERED 18'x36'

STANDARD DRAWING

MARK	DATE	DESCRIPTION
0	02/16/17	ORIGINAL ISSUE

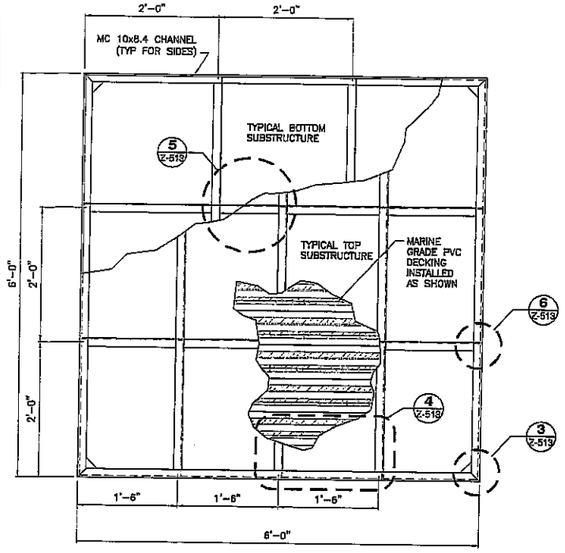
ISSUE

PROJECT NO: STANDARD
CAD DWG FILE: Z-511.dwg
DRAWN BY: JCQ
DESIGNED BY: JDC
CHECKED BY:
SHEET TITLE

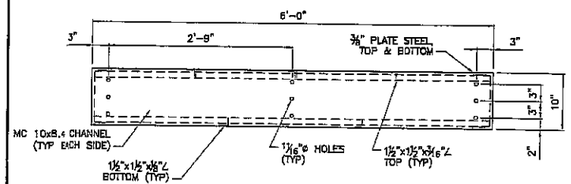
18' x 36' FISHING DOCK

Z-511

SHEET 1 OF 5

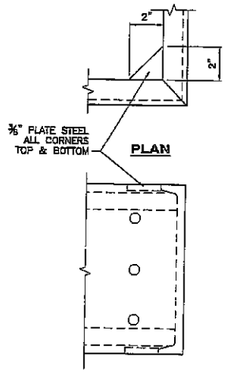


1 PLAN - DOCK SUBSTRUCTURE FRAME
SCALE: 1"=1'-0"



NOTE:
6'x6' SUB-FRAME SECTIONS SHALL BE SECURELY BOLTED TOGETHER AS SHOWN.

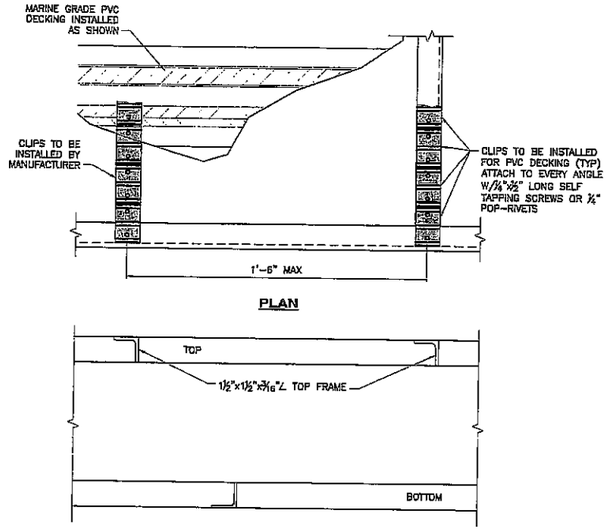
2 ELEVATION - DOCK SUBSTRUCTURE FRAME
SCALE: 1"=1'-0"



PLAN

ELEVATION

3 DETAIL
SCALE: 3"=1'-0"

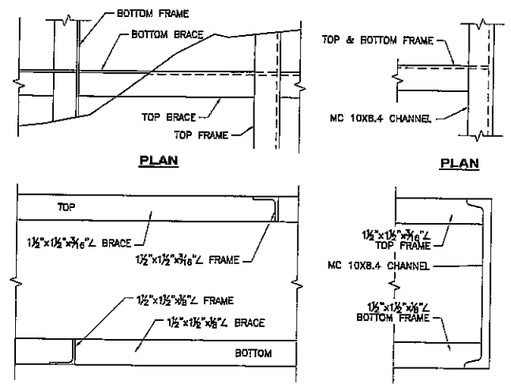


PLAN

ELEVATION

NOTE:
ALL TOP SURFACES SHALL BE GROUND SMOOTH FOR FLAT SURFACE.

4 DETAIL
SCALE: 3"=1'-0"



PLAN

ELEVATION

5 DETAIL
SCALE: 3"=1'-0"

PLAN

ELEVATION

6 DETAIL
SCALE: 3"=1'-0"

GENERAL NOTE:

1. ALL STEEL PARTS AND ASSEMBLIES SHALL BE HOT DIP GALVANIZED. THIS INCLUDES ALL STEEL SHAPES, PLATES, BARS, TUBING, ROOF PANELS, BOLTS NUTS, WASHERS, ANCHORS, AND ALL OTHER STEEL MATERIALS.
2. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION COMPLIES WITH CURRENT ADA ACCESSIBILITY GUIDELINES.
3. THE ABOVE DRAWINGS ARE NOT DESIGN DRAWINGS AND ARE A REPRESENTATION OF WHAT IS EXPECTED. SEALED AND SIGNED SHOP DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER ARE REQUIRED FROM THE DOCK SUPPLIER.
4. MEMBER SIZES AND CONFIGURATIONS ARE REPRESENTATIVE OF WHAT IS EXPECTED. A REGISTERED PROFESSIONAL ENGINEER SHALL ACCOUNT FOR ALL RELEVANT DESIGN CODES TO CALCULATE AND SPECIFY THE APPROPRIATE MEMBER SIZES AND CONFIGURATIONS.

DESIGN AND DEVELOPMENT
MISSOURI DEPARTMENT OF CONSERVATION
P.O. BOX 180, JEFFERSON CITY, MO 65102
(573) 522-4115 www.mdc.mo.gov

STATE OF MISSOURI
JACOB D. CAREAGA
NUMBER PE-2004017139
PROFESSIONAL ENGINEER

February 17, 2017

JACOB D. CAREAGA
CIVIL ENGINEER
PE-2004017139

COURTESY DOCK OR FISHING DOCK STRUCTURE DETAILS

STANDARD DRAWING

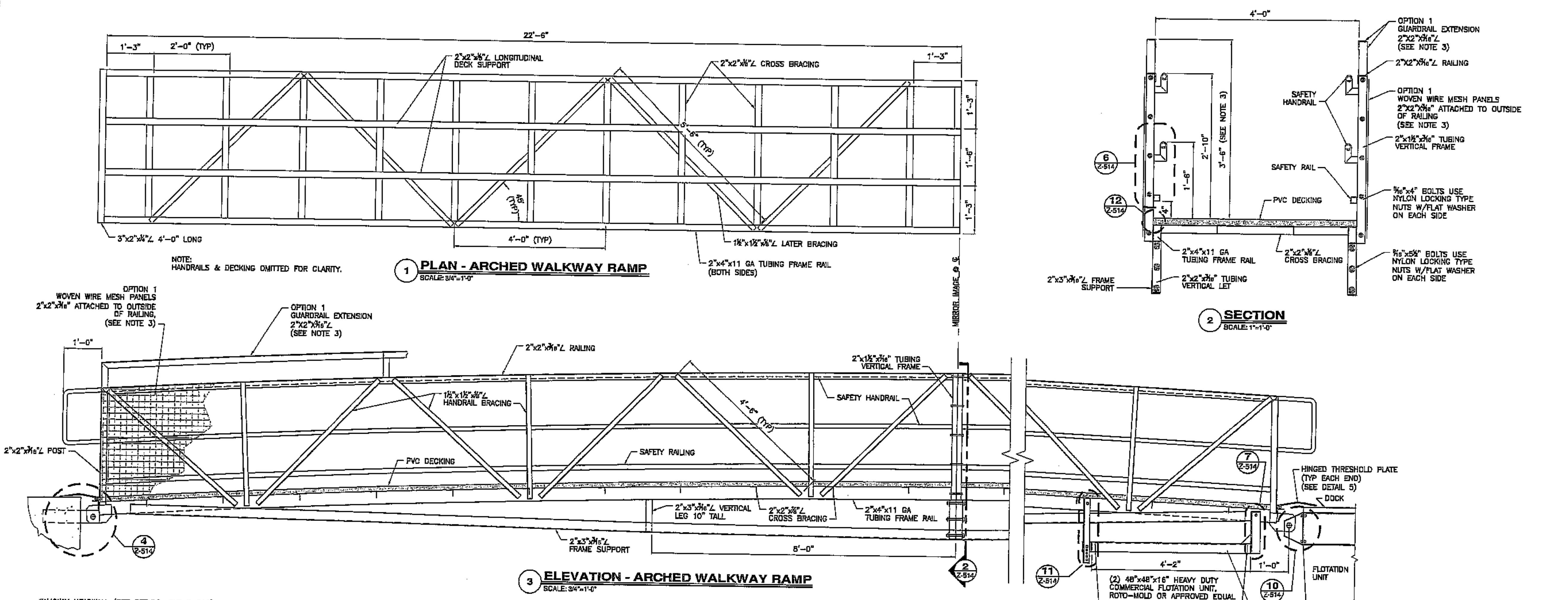
MARK	DATE	DESCRIPTION
0	02/16/17	ORIGINAL ISSUE

PROJECT NO:	STANDARD
CAD DWG FILE:	Z-513.dwg
DRAWN BY:	JCQ
DESIGNED BY:	JDC
CHECKED BY:	
SHEET TITLE	

DOCK STRUCTURE DETAILS

Z-513

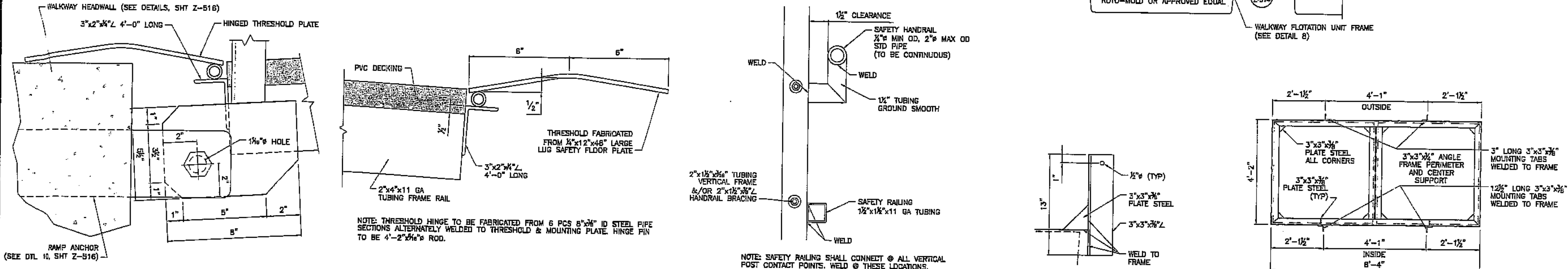
SHEET 2 OF 5



1 PLAN - ARCHED WALKWAY RAMP
SCALE: 3/4"=1'-0"

2 SECTION
SCALE: 1"=1'-0"

3 ELEVATION - ARCHED WALKWAY RAMP
SCALE: 3/4"=1'-0"



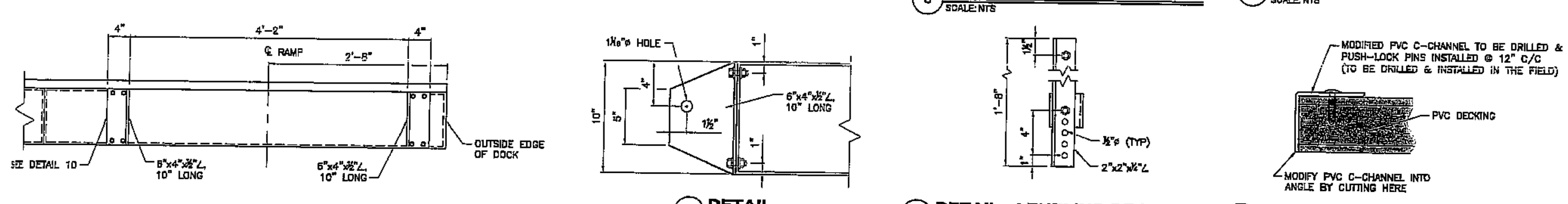
4 DETAIL - HEADWALL/RAMP CONNECTION
SCALE: 4"=1'-0"

5 DETAIL - HINGED THRESHOLD PLATE
SCALE: 4"=1'-0"

6 ELEVATION - PIPE SAFETY HANDRAIL / SAFETY RAILING
SCALE: NTS

7 DETAIL - ATTACHMENT BRACKET
SCALE: NTS

8 WALKWAY FLOTATION UNIT FRAME
SCALE: 1/2"=1'-0"



9 RAMP/DOCK CONNECTION
SCALE: 1"=1'-0"

NOTE:
RAMP CONNECTION TO DOCK SHOWN AS RIGHT SIDE CONNECTION. FOR LEFT SIDE CONNECTION, MIRROR IMAGE.

10 DETAIL
SCALE: 2"=1'-0"

11 DETAIL - LEVELING BRACKET
SCALE: NTS

12 DETAIL - MODIFIED C-CHANNEL
SCALE: NTS

GENERAL NOTE:

1. ALL STEEL PARTS AND ASSEMBLIES SHALL BE HOT DIP GALVANIZED. THIS INCLUDES ALL STEEL SHAPES, PLATES, BARS, TUBING, ROOF PANELS, BOLTS NUTS, WASHERS, ANCHORS, AND ALL OTHER STEEL MATERIALS.
2. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION COMPLIES WITH CURRENT ADA ACCESSIBILITY GUIDELINES.
3. OPTION 1: INSTALL A GUARD COMPLYING WITH SECTIONS 1015.3 (HEIGHT) AND 1015.4 (OPENING LIMITATIONS) OF THE IBC (2015 EDITION) WHEN THE WALKWAY RAMP COULD PRESENT A POTENTIAL FALL HAZARD OF 30 INCHES OR GREATER. THE PROJECT ENGINEER SHALL DETERMINE IF OPTION 1 SHALL BE INSTALLED AND DISTANCE ALONG WALKWAY RAMP OPTION 1 IS REQUIRED.
4. THE ABOVE DRAWINGS ARE NOT DESIGN DRAWINGS AND ARE A REPRESENTATION OF WHAT IS EXPECTED. SEALED AND SIGNED SHOP DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER ARE REQUIRED FROM THE DOCK SUPPLIER.
5. MEMBER SIZES AND CONFIGURATIONS ARE REPRESENTATIVE OF WHAT IS EXPECTED. A REGISTERED PROFESSIONAL ENGINEER SHALL ACCOUNT FOR ALL RELEVANT DESIGN CODES TO CALCULATE AND SPECIFY THE APPROPRIATE MEMBER SIZES AND CONFIGURATIONS.

DESIGN AND DEVELOPMENT
MISSOURI DEPARTMENT OF CONSERVATION
P.O. BOX 180, JEFFERSON CITY, MO 65102

JACOB D. CAREAGA
CIVIL ENGINEER
PE-2004017138
February 17, 2017

COURTESY DOCK OR FISHING DOCK ARCHED WALKWAY RAMP 4' WIDE x 45' LONG

STANDARD DRAWING

MARK	DATE	DESCRIPTION
0	02/16/17	ORIGINAL ISSUE

ISSUE

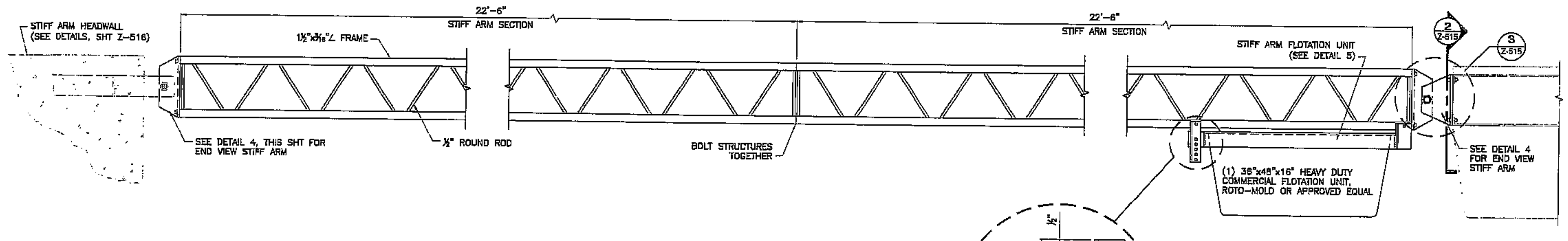
PROJECT NO: STANDARD
CAD DWG FILE: Z-514.dwg
DRAWN BY: JCQ
DESIGNED BY: JDC
CHECKED BY:
SHEET TITLE

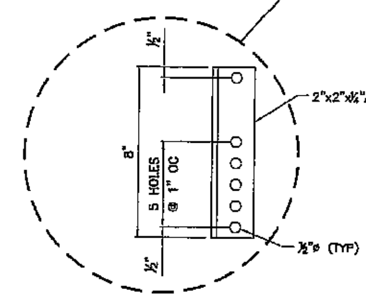
ARCHED WALKWAY RAMP DETAILS

Z-514

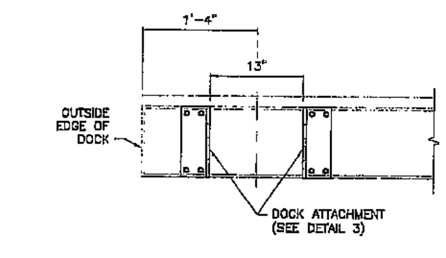
SHEET 3 OF 5

Path and filename: N:\CAD\Shared\Condemn\Standard Drawings\Docks\Z-514.dwg Printed on 02/16/17 1:25 PM by Jack Crouse



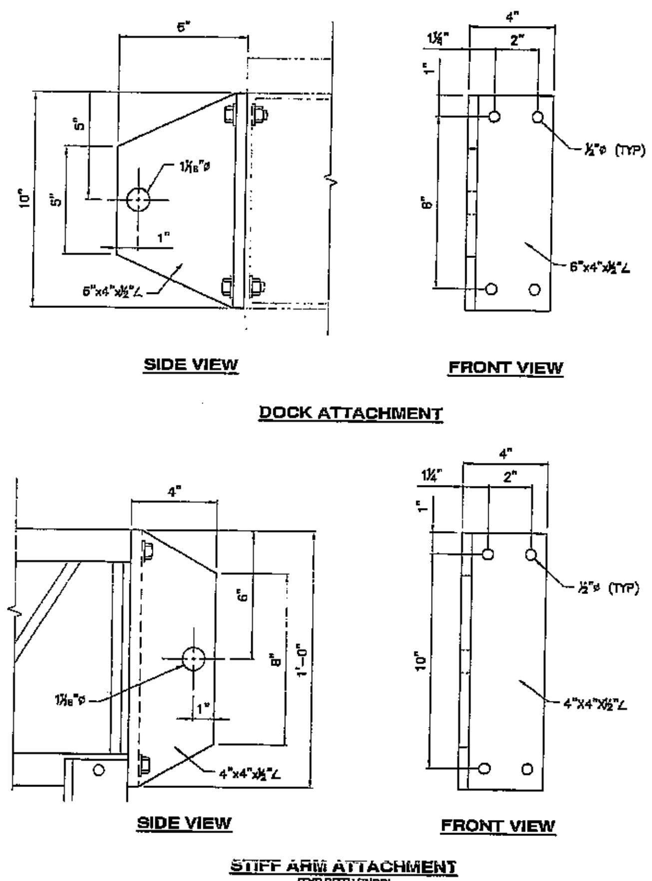


1 **ELEVATION - STIFF ARM**
SCALE: 1"=1'-0"

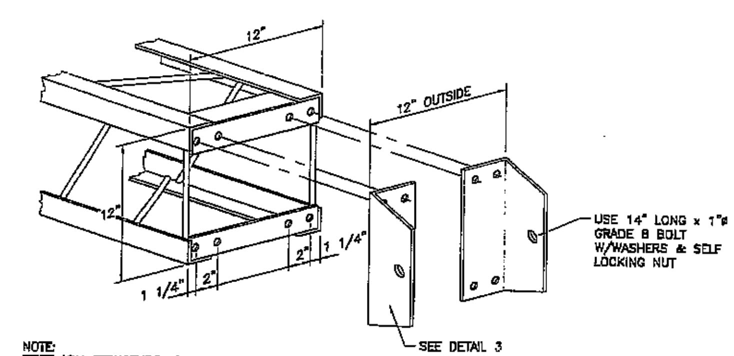


2 **STIFF ARM/DOCK CONNECTION**
SCALE: 1"=1'-0"

NOTE:
STIFF ARM CONNECTION TO DOCK SHOWN AS LEFT SIDE CONNECTION. FOR RIGHT SIDE CONNECTION, MIRROR IMAGE.

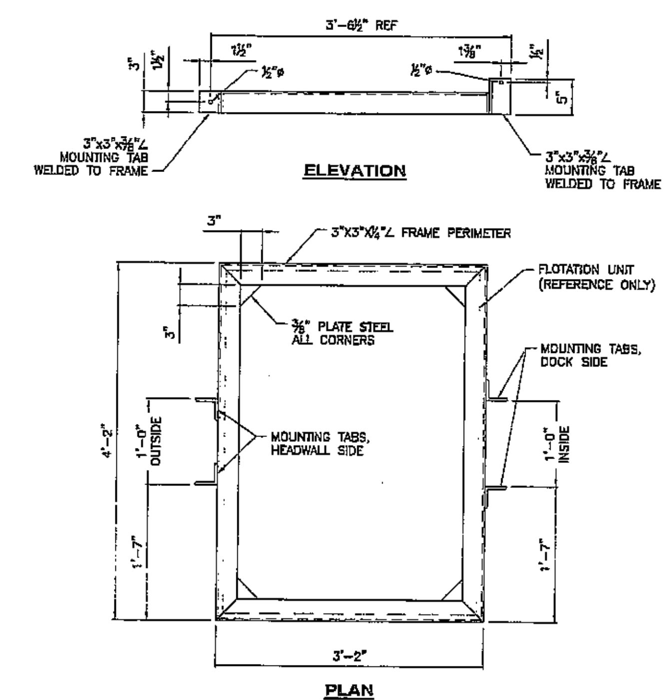


3 **ATTACHMENT DETAILS**
SCALE: 3"=1'-0"



NOTE:
STIFF ARM STRUCTURES TO BE FABRICATED IN 22'-6" LONG SECTIONS. SECTIONS SHALL HAVE PREDRILLED HOLES AS SHOWN.

4 **END VIEW STIFF ARM**
SCALE: NTS



5 **STIFF ARM FLOTATION UNIT FRAME**
SCALE: 1"=1'-0"

GENERAL NOTES:

1. ALL STEEL PARTS AND ASSEMBLIES SHALL BE HOT DIP GALVANIZED. THIS INCLUDES ALL STEEL SHAPES, PLATES, BARS, TUBING, ROOF PANELS, BOLTS NUTS, WASHERS, ANCHORS, AND ALL OTHER STEEL MATERIALS.
2. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION COMPLIES WITH CURRENT ADA ACCESSIBILITY GUIDELINES.
3. THE ABOVE DRAWINGS ARE NOT DESIGN DRAWINGS AND ARE A REPRESENTATION OF WHAT IS EXPECTED. SEALED AND SIGNED SHOP DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER ARE REQUIRED FROM THE DOCK SUPPLIER.
4. MEMBER SIZES AND CONFIGURATIONS ARE REPRESENTATIVE OF WHAT IS EXPECTED. A REGISTERED PROFESSIONAL ENGINEER SHALL ACCOUNT FOR ALL RELEVANT DESIGN CODES TO CALCULATE AND SPECIFY THE APPROPRIATE MEMBER SIZES AND CONFIGURATIONS.

DESIGN AND DEVELOPMENT
MISSOURI DEPARTMENT OF CONSERVATION
P.O. BOX 180, JEFFERSON CITY, MO 65102
(573) 522-4115 www.mdc.mo.gov

February 17, 2017
JACOB D. CAREAGA
CIVIL ENGINEER
PE-2004017139

COURTESY DOCK OR FISHING DOCK STIFF ARM STRUCTURE DETAILS

STANDARD DRAWING

MARK	DATE	DESCRIPTION
0	02/16/17	ORIGINAL ISSUE

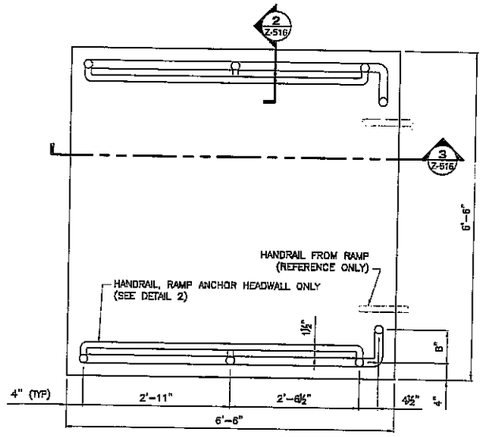
ISSUE

PROJECT NO: STANDARD
CAD DWG FILE: Z-515.dwg
DRAWN BY: JCG
DESIGNED BY: JDC
CHECKED BY:
SHEET TITLE

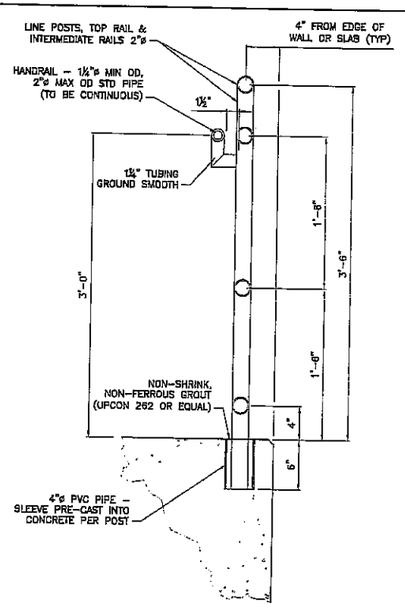
STIFF ARM STRUCTURE DETAILS

Z-515

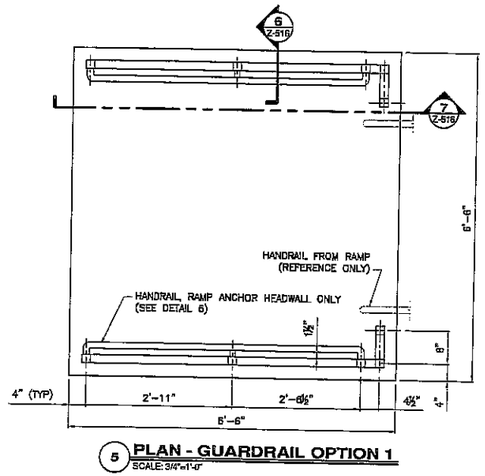
SHEET 4 OF 5



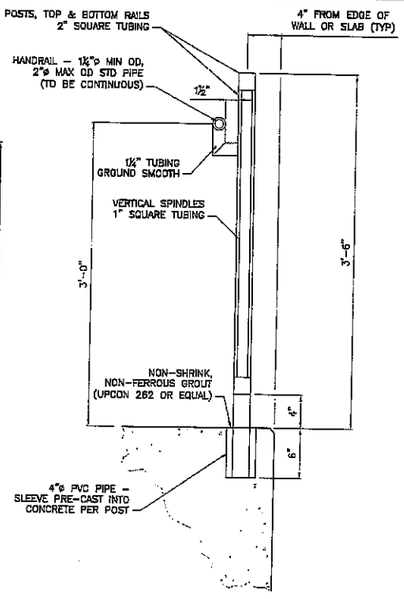
1 **PLAN - HEADWALL**
SCALE: 3/4"=1'-0"



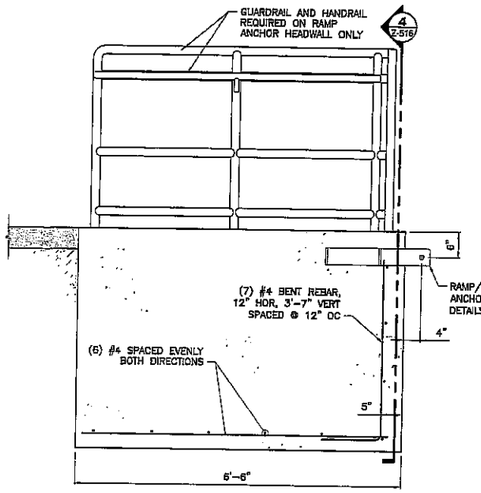
2 **DETAIL - GUARDRAIL AND HANDRAIL**
SCALE: 1 1/2"=1'-0"



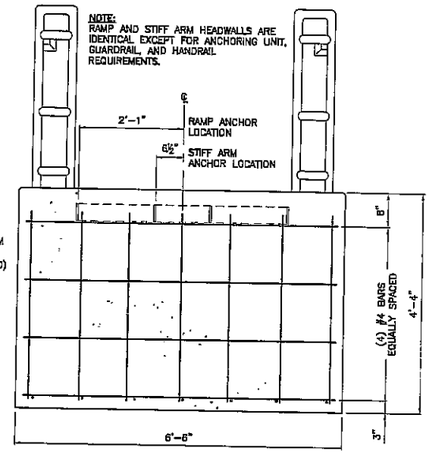
5 **PLAN - GUARDRAIL OPTION 1**
SCALE: 3/4"=1'-0"



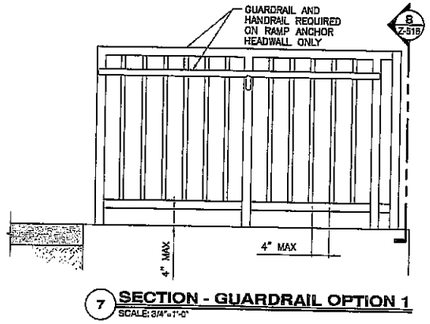
6 **DETAIL- GUARDRAIL OPTION 1**
SCALE: 1 1/2"=1'-0"



3 **SECTION - HEADWALL**
SCALE: 3/4"=1'-0"

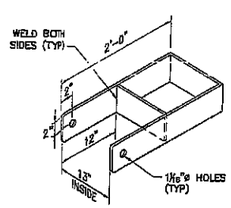


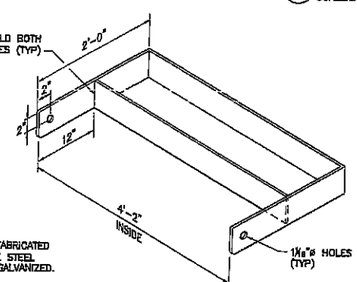
4 **SECTION - HEADWALL**
SCALE: 3/4"=1'-0"



7 **SECTION - GUARDRAIL OPTION 1**
SCALE: 3/4"=1'-0"

8 **SECTION - GUARDRAIL OPTION 1**
SCALE: 3/4"=1'-0"





ANCHORS TO BE FABRICATED
FROM 4"x⅜" PLATE STEEL
AND HOT DIPPED GALVANIZED.

9 **STIFF ARM ANCHOR**
SCALE: NTS

10 **RAMP ANCHOR**
SCALE: NTS

GUARDRAIL & HANDRAIL SPECIFICATIONS

1. LINE POSTS, TOP RAIL & INTERMEDIATE RAIL TO BE 2"ø STD PIPE (0.154 WALL THICKNESS).
2. HANDRAIL SHALL BE 1½"ø MIN – 2"ø MAX STD PIPE (0.140 WALL THICKNESS)(1.315" OD).
3. ENDS OF PIPE FOR HANDRAIL SHALL BE CAPPED, WELDED & GROUND SMOOTH.
4. GUARDRAIL AND HANDRAIL SHALL BE GROUND SMOOTH AND GALVANIZED AS PER SPECIFICATIONS.
5. GUARDRAIL AND HANDRAIL SHALL BE SHOP FABRICATED AND GALVANIZED AS PER SPECIFICATIONS.
6. 2" SQUARE STRUCTURAL TUBING WITH 3/16" MIN WALL THICKNESS MAY BE USED FOR LINE POSTS, TOP RAIL & INTERMEDIATE RAILS IN LIEU OF STANDARD ROUND PIPE.
7. ALL HOLES AND/OR OPENINGS IN FABRICATED GUARDRAIL AND HANDRAIL SHALL BE FILLED AND PAINTED AS PER SPECIFICATIONS AND AS APPROVED BY ENGINEER.
8. NO FIELD WELD SPLICES SHALL BE ALLOWED UNLESS APPROVED IN WRITING BY THE ENGINEER.

GENERAL NOTE:

1. ALL STEEL PARTS AND ASSEMBLIES SHALL BE HOT DIP GALVANIZED. THIS INCLUDES ALL STEEL SHAPES, PLATES, BARS, TUBING, ROOF PANELS, BOLTS NUTS, WASHERS, ANCHORS, AND ALL OTHER STEEL MATERIALS.
2. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION COMPLIES WITH CURRENT ADA ACCESSIBILITY GUIDELINES.
3. OPTION 1: INSTALL A GUARD COMPLYING WITH SECTIONS 1015.3 (HEIGHT) AND 1015.4 (OPENING LIMITATIONS) OF THE IBC (2015 EDITION) WHEN THE HEADWALL FOR THE RAMP COULD PRESENT A POTENTIAL FALL HAZARD OF 30 INCHES OR GREATER. THE PROJECT ENGINEER SHALL DETERMINE IF OPTION 1 SHALL BE REQUIRED.
4. THE ABOVE DRAWINGS ARE NOT DESIGN DRAWINGS AND ARE A REPRESENTATION OF WHAT IS EXPECTED. SEALED AND SIGNED SHOP DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER ARE REQUIRED FROM THE DOCK SUPPLIER.
5. MEMBER SIZES AND CONFIGURATIONS ARE REPRESENTATIVE OF WHAT IS EXPECTED. A REGISTERED PROFESSIONAL ENGINEER SHALL ACCOUNT FOR ALL RELEVANT DESIGN CODES TO CALCULATE AND SPECIFY THE APPROPRIATE MEMBER SIZES AND CONFIGURATIONS.

GUARDRAIL OPTION 1 SPECIFICATIONS

1. LINE POSTS, TOP & BOTTOM RAILS TO BE 2" SQUARE STRUCTURAL TUBING WITH 3/16" MIN WALL THICKNESS.
2. VERTICAL SPINDLES TO BE 1" SQUARE STRUCTURAL TUBING WITH ⅛" MIN WALL THICKNESS.
3. NO SPACE IN THE GUARDRAIL GREATER THAN THAT THROUGH WHICH A 4 INCH SPHERE COULD PASS.
4. ENDS OF TUBING FOR GUARDRAIL SHALL BE CAPPED, WELDED & GROUND SMOOTH.
5. GUARDRAIL SHALL BE GROUND SMOOTH AND GALVANIZED AS PER SPECIFICATIONS.
6. GUARDRAIL SHALL BE SHOP FABRICATED AND GALVANIZED AS PER SPECIFICATIONS.
7. ALL HOLES AND/OR OPENINGS IN FABRICATED GUARDRAIL SHALL BE FILLED AND PAINTED AS PER SPECIFICATIONS AND AS APPROVED BY ENGINEER.
8. NO FIELD WELD SPLICES SHALL BE ALLOWED UNLESS APPROVED IN WRITING BY THE ENGINEER.

DESIGN AND DEVELOPMENT
NATURAL RESOURCES
NATURAL RESOURCES DEPARTMENT OF CONSERVATION
P.O. BOX 130, JEFFERSON CITY, MO 65102
(573) 522-4115 www.mdc.mo.gov

STATE OF MISSOURI
JACOB D CARRAGA
NUMBER PE-2004017138
CIVIL
February 17, 2017
JACOB D CARRAGA
CIVIL ENGINEER
PE-2004017138

COURTESY DOCK OR FISHING DOCK HEAD WALL DETAILS

STANDARD DRAWING

MARK	DATE	DESCRIPTION
0	02/16/17	ORIGINAL ISSUE

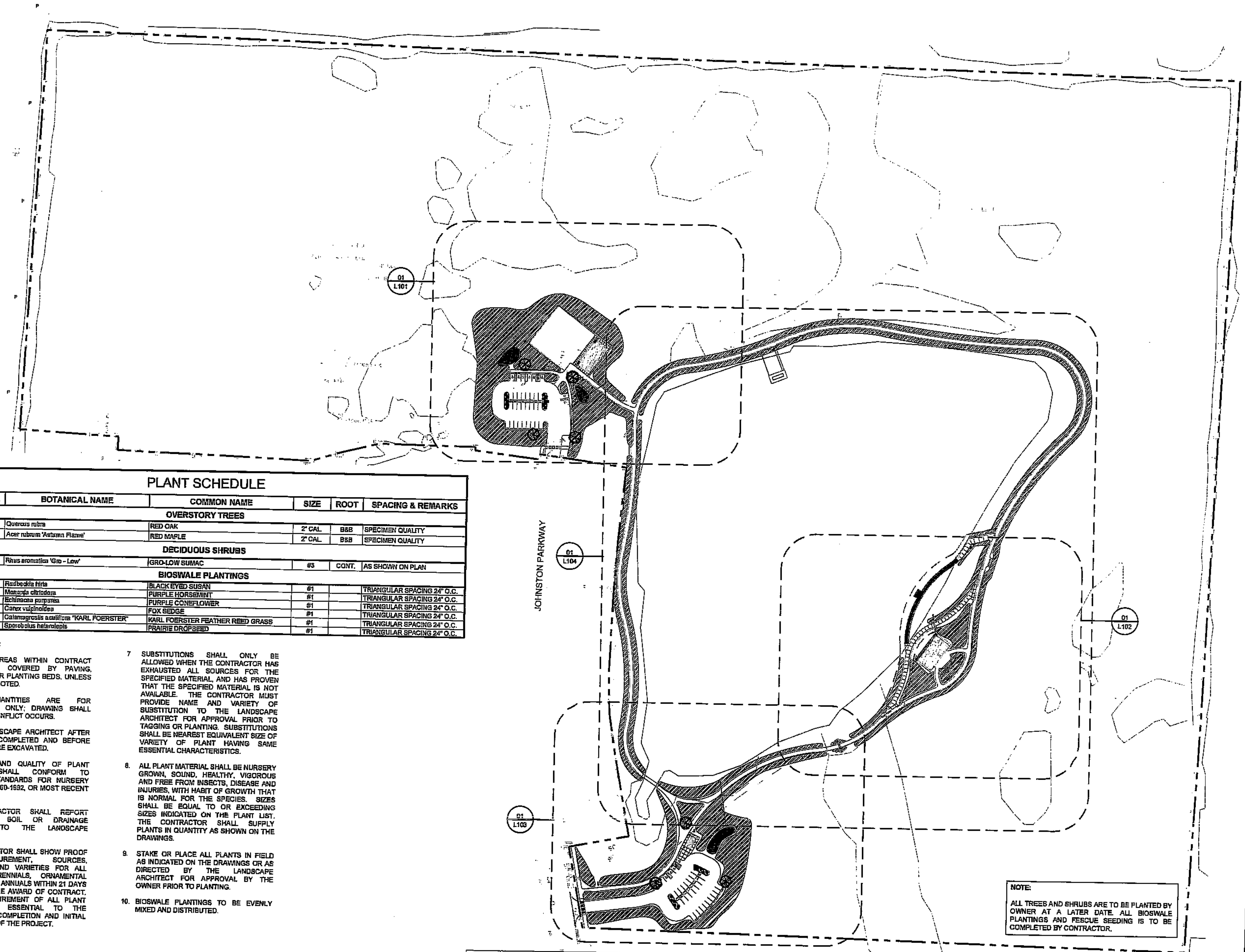
ISSUE

PROJECT NO: STANDARD
CAD DWG FILE: Z-516.dwg
DRAWN BY: JDC
DESIGNED BY: JDC
CHECKED BY:
SHEET TITLE

HEAD WALL DETAILS

Z-516

SHEET 5 OF 5



01 PLANTING PLAN

PLANT SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING & REMARKS
OVERSTORY TREES						
QR	4	Quercus rubra	RED OAK	2" CAL	B&B	SPECIMEN QUALITY
AR	3	Acer rubrum 'Autumn Flame'	RED MAPLE	2" CAL	B&B	SPECIMEN QUALITY
DECIDUOUS SHRUBS						
RA	21	Rhus aromatica 'Gro - Low'	GRO-LOW SUMAC	#3	CONT.	AS SHOWN ON PLAN
BIOSWALE PLANTINGS						
RH	140	Rudbeckia hirta	BLACK EYED SUSAN	#1		TRIANGULAR SPACING 24" O.C.
MC	140	Monarda citriodora	PURPLE HORSEMINT	#1		TRIANGULAR SPACING 24" O.C.
EP	140	Echinacea purpurea	PURPLE CONEFLOWER	#1		TRIANGULAR SPACING 24" O.C.
CV	140	Carex vulpinoidea	FOX SEDGE	#1		TRIANGULAR SPACING 24" O.C.
CA	140	Calamagrostis acutiflora "KARL FOERSTER"	KARL FOERSTER FEATHER REED GRASS	#1		TRIANGULAR SPACING 24" O.C.
SH	140	Sporobolus heterolepis	PRAIRIE DROPSEED	#1		TRIANGULAR SPACING 24" O.C.

PLANTING NOTES:

1. SOD ALL AREAS WITHIN CONTRACT LIMITS, NOT COVERED BY PAVING, BUILDINGS, OR PLANTING BEDS, UNLESS OTHERWISE NOTED.
2. PLANT QUANTITIES ARE FOR INFORMATION ONLY; DRAWING SHALL PREVAIL IF CONFLICT OCCURS.
3. NOTIFY LANDSCAPE ARCHITECT AFTER STAKING IS COMPLETED AND BEFORE PLANT PITS ARE EXCAVATED.
4. KIND, SIZE AND QUALITY OF PLANT MATERIAL SHALL CONFORM TO AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60-1992, OR MOST RECENT EDITION.
5. THE CONTRACTOR SHALL REPORT SUBSURFACE SOIL OR DRAINAGE PROBLEMS TO THE LANDSCAPE ARCHITECT.
6. THE CONTRACTOR SHALL SHOW PROOF OF PROCUREMENT, SOURCES, QUANTITIES AND VARIETIES FOR ALL SHRUBS, PERENNIALS, ORNAMENTAL GRASSES, AND ANNUALS WITHIN 21 DAYS FOLLOWING THE AWARD OF CONTRACT. TIMELY PROCUREMENT OF ALL PLANT MATERIAL IS ESSENTIAL TO THE SUCCESSFUL COMPLETION AND INITIAL ACCEPTANCE OF THE PROJECT.
7. SUBSTITUTIONS SHALL ONLY BE ALLOWED WHEN THE CONTRACTOR HAS EXHAUSTED ALL SOURCES FOR THE SPECIFIED MATERIAL, AND HAS PROVEN THAT THE SPECIFIED MATERIAL IS NOT AVAILABLE. THE CONTRACTOR MUST PROVIDE NAME AND VARIETY OF SUBSTITUTION TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO TAGGING OR PLANTING. SUBSTITUTIONS SHALL BE NEAREST EQUIVALENT SIZE OF VARIETY OF PLANT HAVING SAME ESSENTIAL CHARACTERISTICS.
8. ALL PLANT MATERIAL SHALL BE NURSERY GROWN, SOUND, HEALTHY, VIGOROUS AND FREE FROM INSECTS, DISEASE AND INJURIES, WITH HABIT OF GROWTH THAT IS NORMAL FOR THE SPECIES. SIZES SHALL BE EQUAL TO OR EXCEEDING SIZES INDICATED ON THE PLANT LIST. THE CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITY AS SHOWN ON THE DRAWINGS.
9. STAKE OR PLACE ALL PLANTS IN FIELD AS INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE LANDSCAPE ARCHITECT FOR APPROVAL BY THE OWNER PRIOR TO PLANTING.
10. BIOSWALE PLANTINGS TO BE EVENLY MIXED AND DISTRIBUTED.

File Location: S:\1-PROJECTS\2016\16081KC - Hawk Ridge Park Improvements Design\16081KC - AutoCAD\L100 - Planting Plan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
6234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

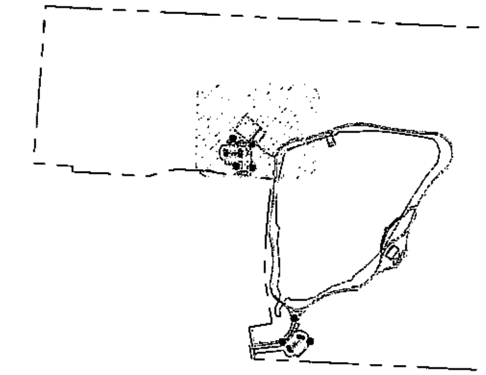
ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS

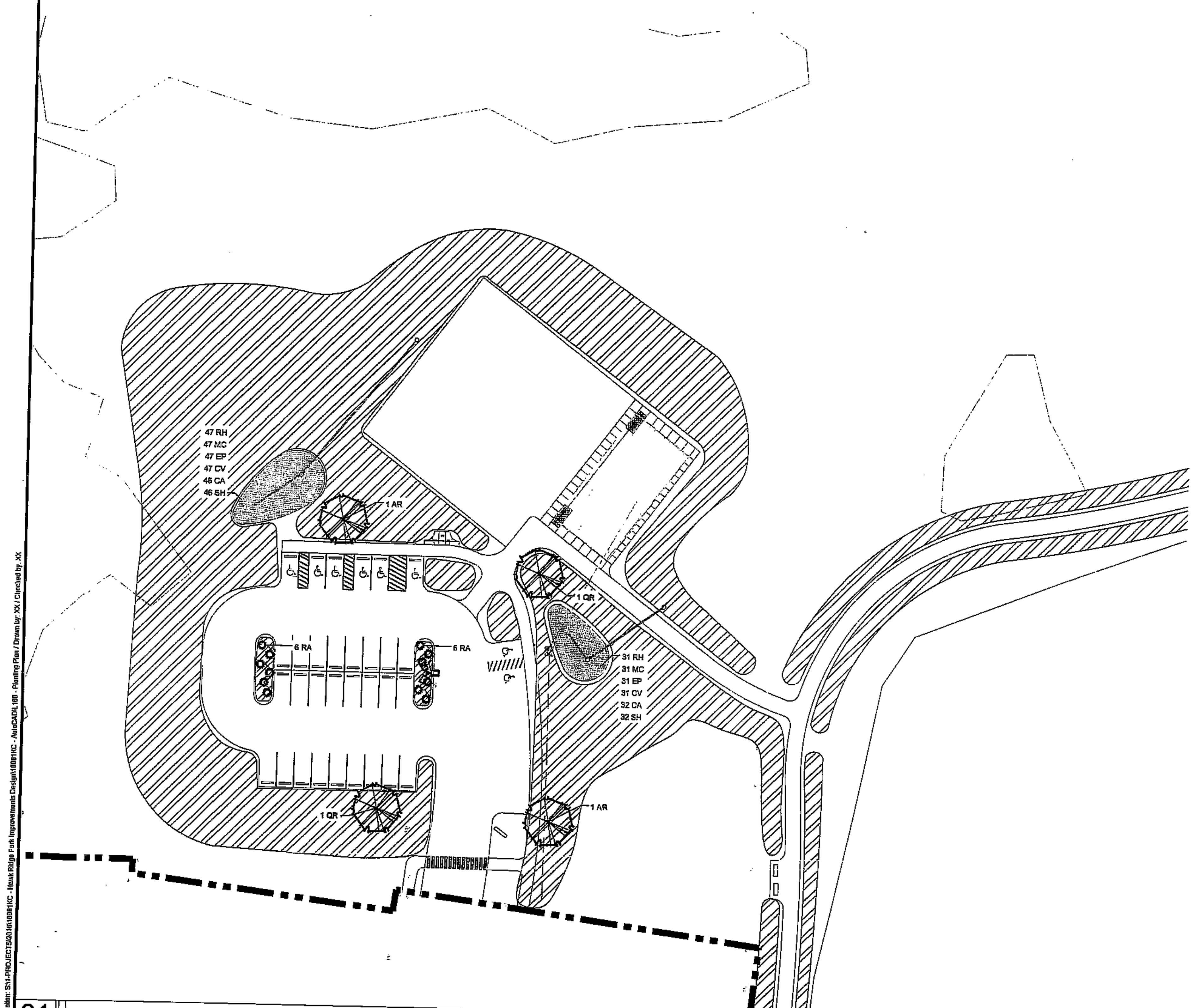
STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT

PLANTING PLAN

CONFLUENCE PROJECT NO: 16081KC

L100





01 | PLANTING ENLARGEMENT

SCALE: 1"=30' 0 60'

NOTE:

ALL TREES AND SHRUBS ARE TO BE PLANTED BY OWNER AT A LATER DATE. ALL BIOSWALE PLANTINGS AND FESCUE SEEDING IS TO BE COMPLETED BY CONTRACTOR.

KEY

- FESCUE GRASS SEEDING
- BIOSWALE PLANTINGS

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2286

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

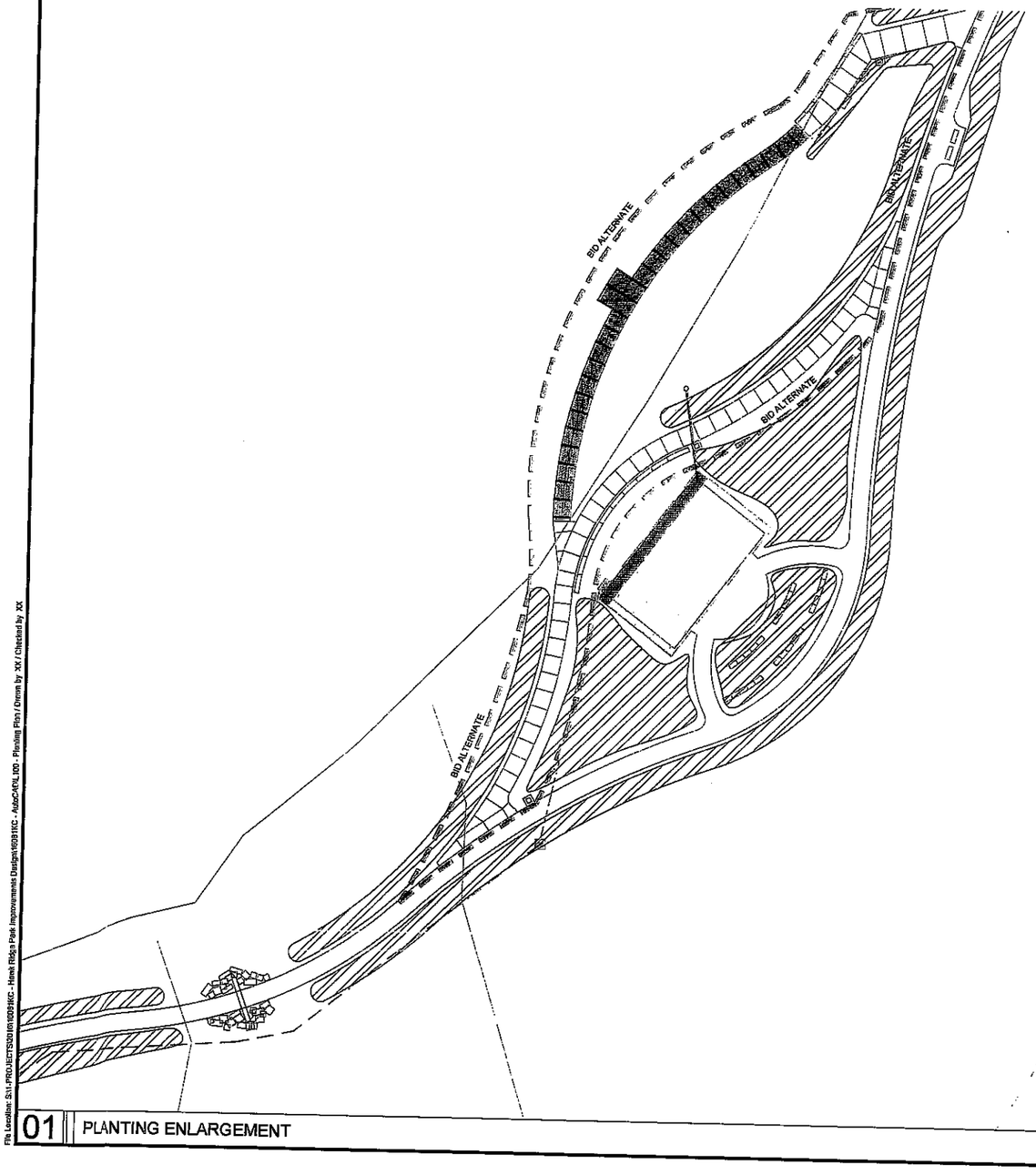
REVISION SCHEOULE

ISSUE	DATE	DESCRIPTION
1	03/05/16	CONSTRUCTION DRAWINGS

PLANTING ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

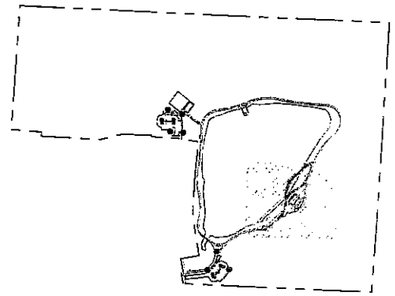
L101



01 PLANTING ENLARGEMENT

SCALE: 1"=30'

KEY MAP



NOTE:

ALL TREES AND SHRUBS ARE TO BE PLANTED BY OWNER AT A LATER DATE. ALL BIOSWALE PLANTINGS AND FESCUE SEEDING IS TO BE COMPLETED BY CONTRACTOR.

KEY

FESCUE GRASS SEEDING

BIOSWALE PLANTINGS

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.683.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

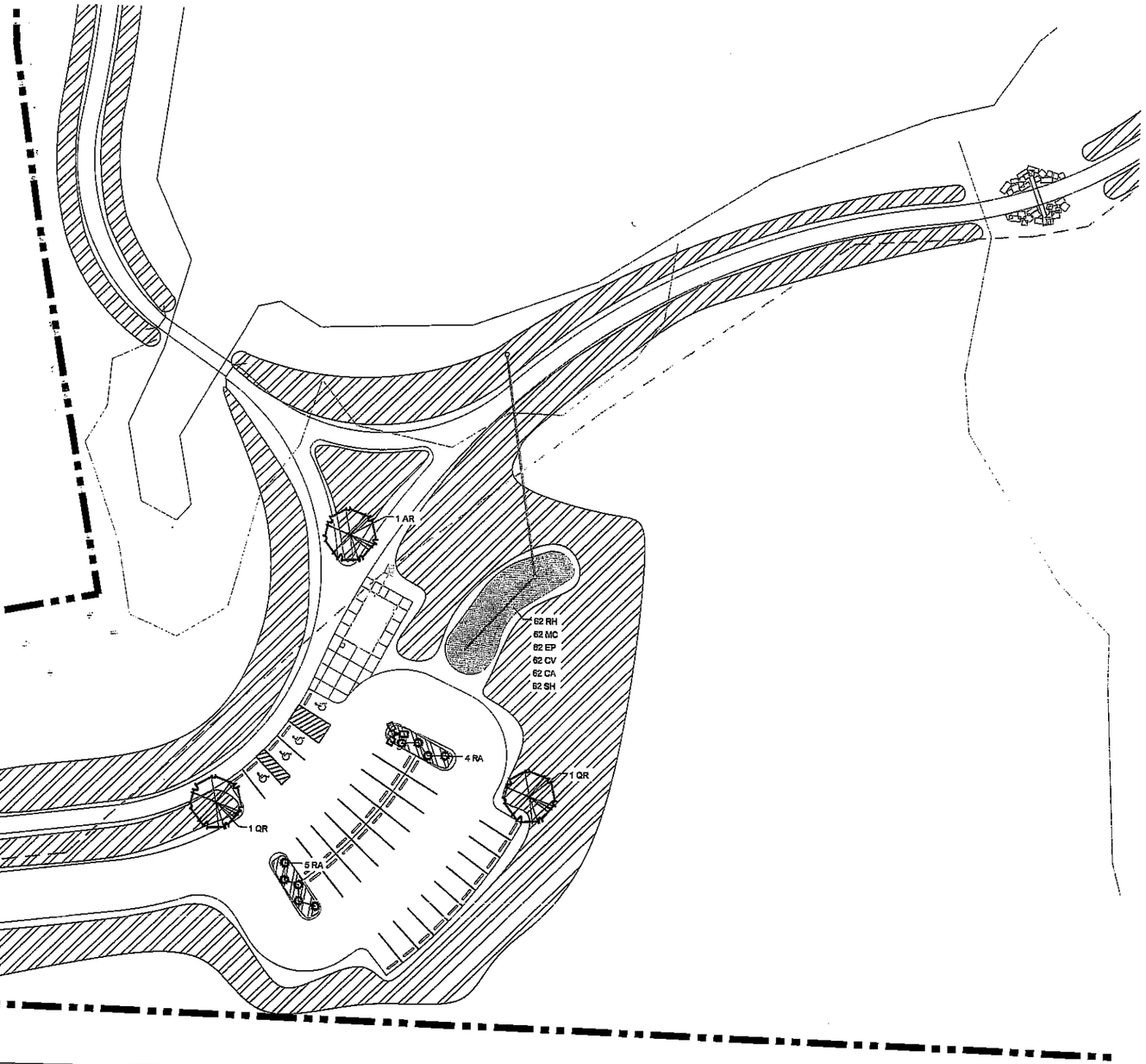
ISSUE	DATE	DESCRIPTION
1	01/09/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
01/09/18

PLANTING ENLARGEMENT

CONFLUENCE PROJECT NO: 16061KC

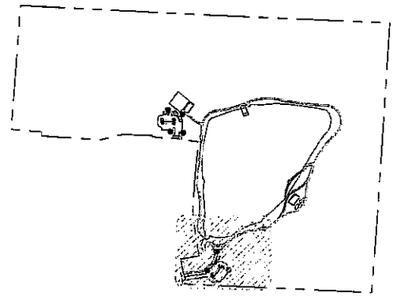
L102



01 PLANTING ENLARGEMENT

SCALE:1"=30'

KEY MAP



NOTE:

ALL TREES AND SHRUBS ARE TO BE PLANTED BY OWNER AT A LATER DATE. ALL BIOSWALE PLANTINGS AND FESCUE SEEDING IS TO BE COMPLETED BY CONTRACTOR.

KEY

FESCUE GRASS SEEDING

BIOSWALE PLANTINGS

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007999

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.693.6719

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2159

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

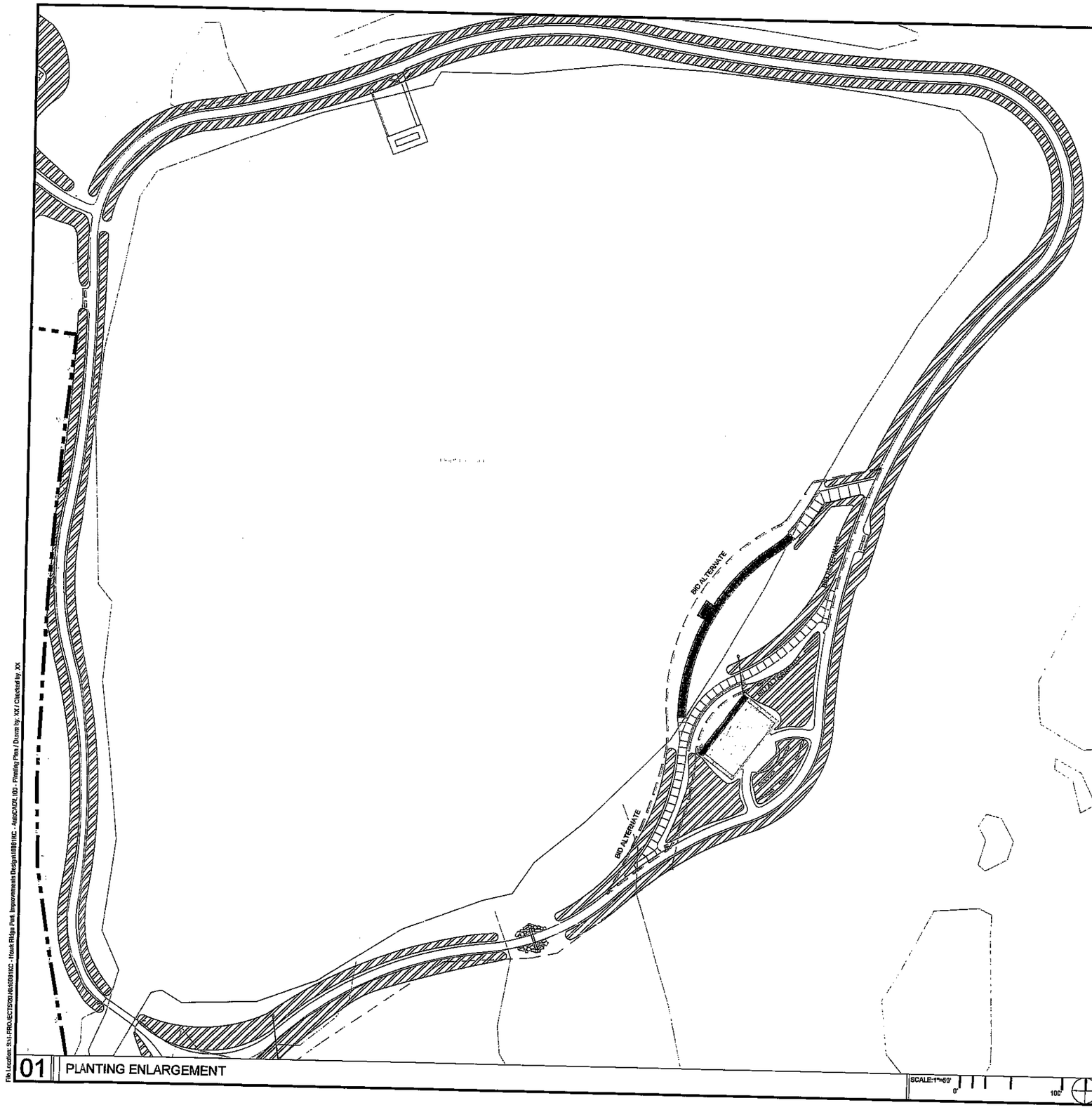
ISSUE	DATE	DESCRIPTION
1	03/08/19	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERKHEIMER
NUMBER LA-179
REGISTERED LANDSCAPE ARCHITECT
3/8/19

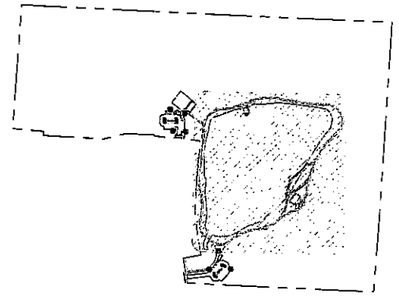
PLANTING ENLARGEMENT

CONFLUENCE PROJECT NO: 16081KC

L103



KEY MAP



NOTE:

ALL TREES AND SHRUBS ARE TO BE PLANTED BY OWNER AT A LATER DATE. ALL BIOSWALE PLANTINGS AND FESCUE SEEDING IS TO BE COMPLETED BY CONTRACTOR.

KEY

FESCUE GRASS SEEDING

BIOSWALE PLANTINGS

SCALE: 1"=60'

0' 100'

01 PLANTING ENLARGEMENT

File Location: S:\1-PROJECTS\90\16\16091KC - Hawk Ridge Park Improvements Design\16091KC - AutoCAD\L 0D - Planting Plan / Drawn by: XX / Checked by: XX

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.653.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

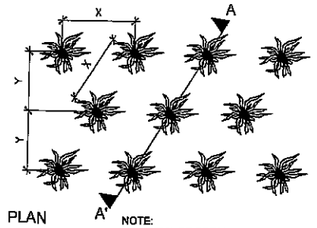
ISSUE	DATE	DESCRIPTION
1	03/07/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-179
LANDSCAPE ARCHITECT
03/07/18

PLANTING ENLARGEMENT

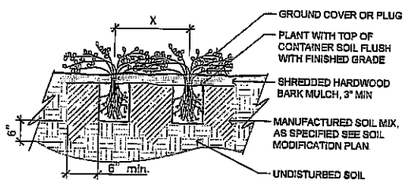
CONFLUENCE PROJECT NO: 16091KC

L104



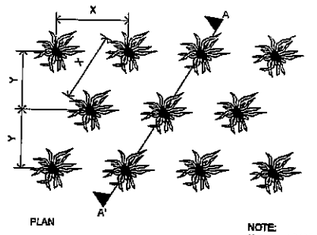
PLAN

NOTE:
X = DISTANCE SPECIFIED WITHIN PLANT SCHEDULE
Y = DISTANCE 'X' MULTIPLIED BY .865



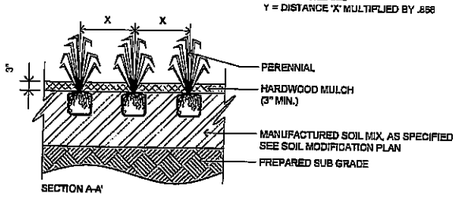
02 L200 PLAN / SECTION: GROUNDCOVER PLANTING,TYP.

1/2" = 1'-0"



PLAN

NOTE:
X = DISTANCE SPECIFIED WITHIN PLANT SCHEDULE
Y = DISTANCE 'X' MULTIPLIED BY .866



SECTION A-A'

01 L200 PLAN / SECTION: GRASS/PERENNIAL PLANTING,TYP.

1/2" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, STE 200
KANSAS CITY, MISSOURI 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MISSOURI 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

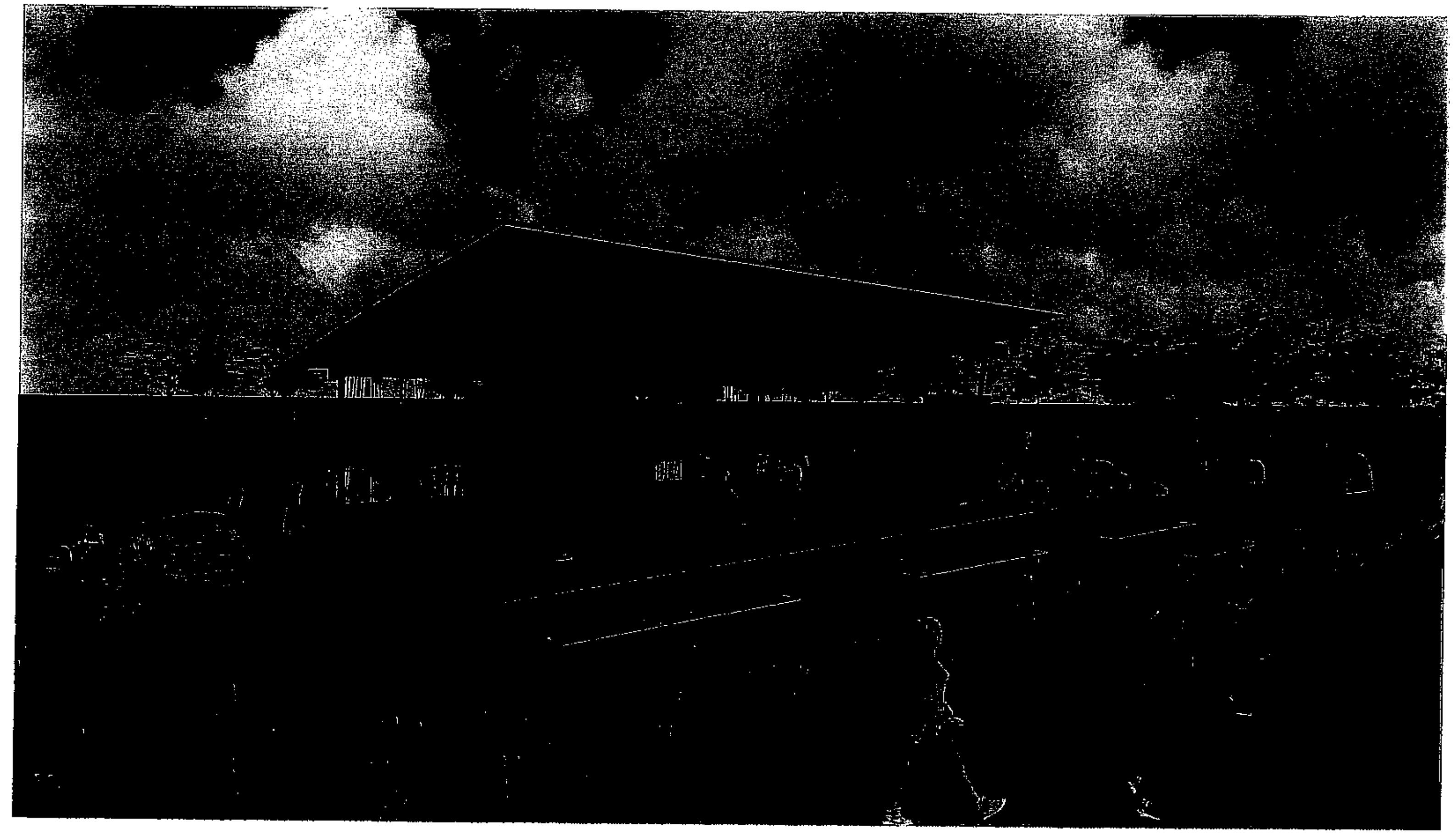
ISSUE	DATE	DESCRIPTION
1	030910	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
TERRY J. BERKBUEGLER
NUMBER LA-176
LICENSED LANDSCAPE ARCHITECT
9/9/10

PLANTING DETAILS

CONFLUENCE PROJECT NO: 16081KC

L200



AMPHITHEATRE ILLUSTRATION - NOT TO SCALE (FOR REFERENCE ONLY)

SHELTER ILLUSTRATION - NOT TO SCALE (FOR REFERENCE ONLY)

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION

RAYMORE, MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/08/2016	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
NUMBER
ARCHITECT

ILLUSTRATIONS

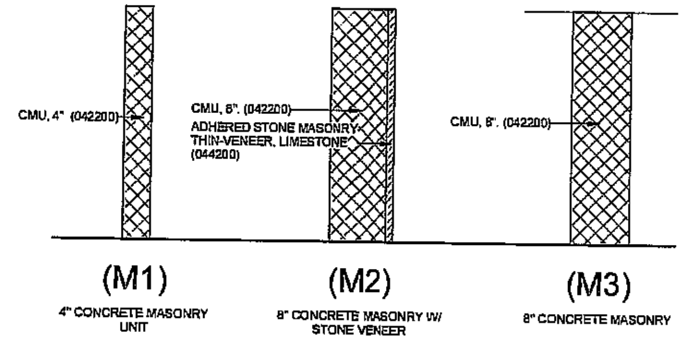
CONFLUENCE PROJECT NO: 16081KC

A001

GENERAL NOTES - PARTITIONS

1. REFER TO PARTITION TYPE SYMBOLS ON FLOOR PLANS.
2. REFER TO CODE PLAN FOR MINIMUM REQUIRED FIRE RATING IN HOURS.
3. PARTITION TYPES DO NOT INDICATE WHICH SIDE FINISH MATERIALS ARE APPLIED. REFER TO FINISH PLAN.
4. REFER TO THE PROJECT MANUAL FOR MINIMUM GAGE STUDS. RUNNERS, FURRING CHANNELS, MISC. ANGLES & CLIPS.
5 PARTITIONS ARE DIMENSIONED TO THE FACE OF THE GYPSUM/ VENEER/BACKER BOARD - NOT APPLIED FINISH MATERIAL (i.e. VENEER, CERAMIC TILE, ETC.)
6. REFER TO STRUCTURAL DRAWINGS FOR DESIGN OF LOAD BEARING PARTITIONS.
7. WHERE MASONRY CONSTRUCTION IS INDICATED, CONTRACTOR TO PROVIDE ANCHORS INTO MASONRY AND GROUT CELLS FULL AS REQUIRED TO MOUNT FIXTURES AND ACCESSORIES PER MANUFACTURER'S RECOMMENDATIONS.
8. WHERE INTERIOR MASONRY IS TO BE EXPOSED, BULLNOSE CORNER UNITS TO BE USED. STARTER COURSE TO BE SQUARE UNIT WITH BULLNOSE ABOVE.
9 WHERE MASONRY CONSTRUCTION IS INDICATED, CONTRACTOR SHALL COORDINATE LOCATION, SIZE, TYPE, AND SPACING OF ALL MASONRY ANCHORS AND REINFORCEMENT WITH STRUCTURAL DRAWINGS.

GENERAL NOTES - PARTITIONS
12" = 1'-0"



TYPES - WALLS
1" = 1'-0"

FLOOR PLAN SYMBOLS

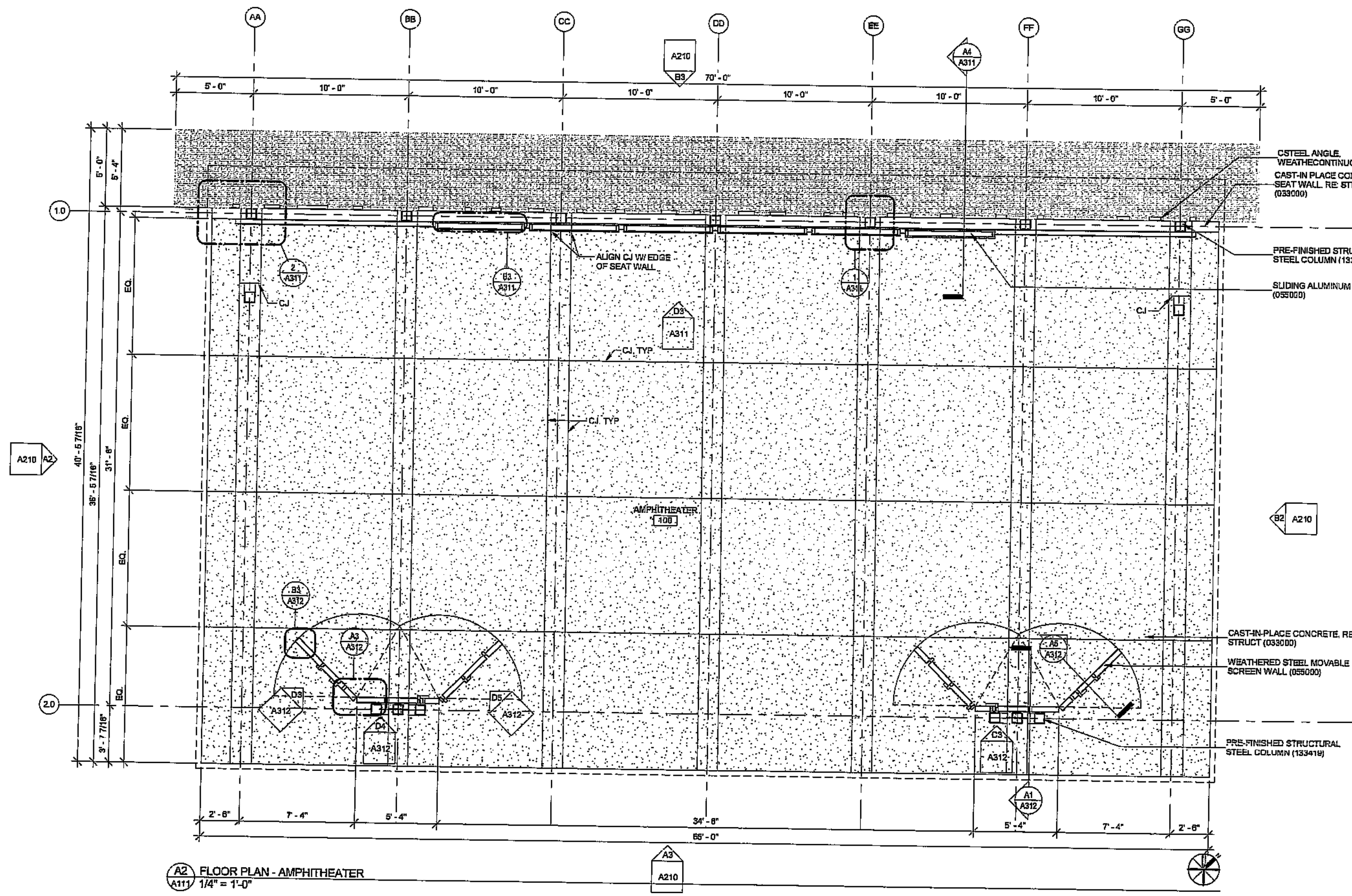
- NEW CONSTRUCTION
- ROOM NAME AND NUMBER
- CENTER LINE
- 101 DOOR INDICATION TAG
- PARTITION TYPE
- PLAN KEYNOTES
- SPOT ELEVATION
- DRAWING REVISION
- NEW GRID IDENTIFIER

SYMBOLS - FLOOR PLAN
1/8" = 1'-0"

GENERAL NOTES - FLOOR PLAN

1 DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY. VERIFY ALL DIMENSION PRIOR TO START OF WORK. IN THE EVENT OF DISCREPANCY, NOTIFY ARCHITECT AND OBTAIN RESOLUTION BEFORE PROCEEDING."
2 NOTIFY THE ARCHITECT OF ANY AND ALL DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF WORK. FAILURE TO NOTIFY THE ARCHITECT WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO PERFORM THE WORK AS INTENDED BY THE CONTRACT DOCUMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT."
3. VERIFY EXISTING DIMENSIONS, CONDITIONS AND CLEARANCES PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS"
4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS, ELEVATIONS, AND DETAIL SHOWN ON THE DRAWINGS. ANY DISCREPANCIES WHICH WILL PREVENT THE ACCOMPLISHMENT OF INTENT SHOWN ON DRAWINGS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT. INDICATED CONDITIONS ARE NOT INTENDED AS REPRESENTATIONS OR WARRANTIES OF ACCURACY. IT IS EXPRESSLY UNDERSTOOD THAT THE OWNER WILL NOT BE RESPONSIBLE FOR INTERPRETATIONS OR CONCLUSIONS DRAWN BY THE CONTRACTOR."
5. (## ## ##) INDICATES REFERENCED SPECIFICATIONS FOR PRODUCTS AND MATERIALS SHOWN ON THE DRAWINGS AND SPECIFIED IN THE PROJECT MANUAL."

GENERAL NOTES - FLOOR PLAN
12" = 1'-0"



A2 FLOOR PLAN - AMPHITHEATER
A111 1/4" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
6234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	[illegible]	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
KERRY EARL NEWMAN
NUMBER A-003831
ARCHITECT

FLOOR PLAN - AMPHITHEATER & GENERAL NOTES

CONFLUENCE PROJECT NO: 16081KC

A111

ROOM FINISH AND MATERIALS LEGEND		
SC	SEALED CONCRETE	033300
	-	
BC	BROOMED CONCRETE	033300
	LIGHT BROOM TEXTURE ONE-DIRECTIONAL PATTERN PARRALEL TO SHORT SIDE OF SPACE	
WD-1	WOOD TYPE - 1	062000
	RE: SPEC.	
P-1	PAINT COLOR TYPE - 1	099113 & 099123
	RESTROOMS COLOR SELECTED FROM MANUF. FULL RANGE	
P-2	PAINT COLOR TYPE - 2	099113 & 099123
	EXTERIOR PAINT, DOORWAYS, EXPOSED ELECTRICAL, ETC. COLOR SELECTED FROM MANUF. FULL RANGE	
ST-1	STONE VENEER	042000
	RE: SPEC.	
CC-1	CONCRETE COUNTER	123600
	RE: SPEC.	
T-1	WALL TILE	093013
	FIREPLACE SURROUND, RE: SPEC. COLOR SELECTED FROM MANUF. FULL RANGE	

LEGEND - ROOM FINISH AND MATERIALS
1" = 1'-0"

WORKSHEET - ROOM FINISHES

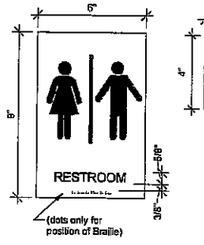
Number	Name	Floor Finish	WALLS				Ceiling Finish	Comments
			Wall Finish E	Wall Finish N	Wall Finish S	Wall Finish W		
100	AMPHITHEATER	BC	-	-	-	-	OTS	
101	RENTABLE SPACE	BC	ST-1	-	-	-	OTS	
102	CORRIDOR	BC	-	-	ST-1	-	OTS	
103	RENTABLE SPACE	BC	-	-	-	ST-1	OTS	
104	RESTROOM	SC	P-1	P-1	P-1	P-1	OTS	
105	STORAGE	SC	P-1	P-1	P-1	-	OTS	
106	RESTROOM	SC	P-1	P-1	P-1	P-1	OTS	
107	RESTROOM	SC	P-1	P-1	P-1	P-1	OTS	
108	RESTROOM	SC	P-1	P-1	P-1	P-1	OTS	

SIGNAGE SCHEDULE

SIGN NO.	SIGN TYPE	TYPE DESCRIPTION	ROOM NO.	ROOM NAME	SIGN MESSAGE	MOUNTING LOCATION	COMMENTS
104	1	RESTROOM	104	RESTROOM	RESTROOM	ADJ. TO DOOR	
105	2	ROOM SIGNAGE	105	STORAGE	PARK MAINTENANCE	ADJ. TO DOOR	
106	1	RESTROOM	106	RESTROOM	RESTROOM	ADJ. TO DOOR	
107	1	RESTROOM	107	RESTROOM	RESTROOM	ADJ. TO DOOR	
108	1	RESTROOM	108	RESTROOM	RESTROOM	ADJ. TO DOOR	

DOOR & FRAME SCHEDULE

DOOR NUMBER	DOOR					FRAME	
	TYPE	MATERIAL	WIDTH	HEIGHT	THICKNESS	MATERIAL	TYPE
104	A	H.M.	3' - 0"	7' - 0"	1 3/4"	H.M.	1
105	B	H.M.	3' - 0"	7' - 0"	1 3/4"	H.M.	1
106	A	H.M.	3' - 0"	7' - 0"	1 3/4"	H.M.	1
107	A	H.M.	3' - 0"	7' - 0"	1 3/4"	H.M.	1
108	A	H.M.	3' - 0"	7' - 0"	1 3/4"	H.M.	1



SIGN TYPE 1

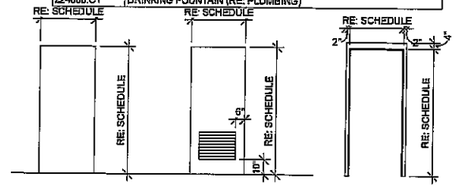
SIGN TYPE 2

1. SIGN BACKGROUND ALUMINUM FACE PANEL W/ SANDED NON-DIRECTION FINISH, FASTEN TO STONE SUBSTRATE W/ TAMPERPROOF CONCEALED HARDWARE.
2. 1/4" THICK PLASTIC SIGN PANEL, DARK COLOR PER MANUF. FULL RANGE, ATTACHED TO SIGN BACKGROUND PANEL.
3. SIGN MESSAGE 5/8" UC LETTERS; COLOR WHITE, FONT FUTURA MED TYP. RAISED PICTOGRAM SYMBOLS 1/32"; GRADE 2 BRAILLE RASTER BEADS.
4. SIGNS MANUFACTURED IN COMPLIANCE WITH ALL LOCAL AND ADA CODE REQUIREMENTS FOR: BACKGROUND AND LETTER CONTRAST, CHARACTER, WIDTH, MOUNTING HEIGHTS.
5. PROVIDE SHOP DRAWING LAYOUTS FOR APPROVAL PRIOR TO FABRICATION.
6. FIELD VERIFY SIGN LOCATIONS.

D4 / A112 SIGN TYPES
3" = 1'-0"

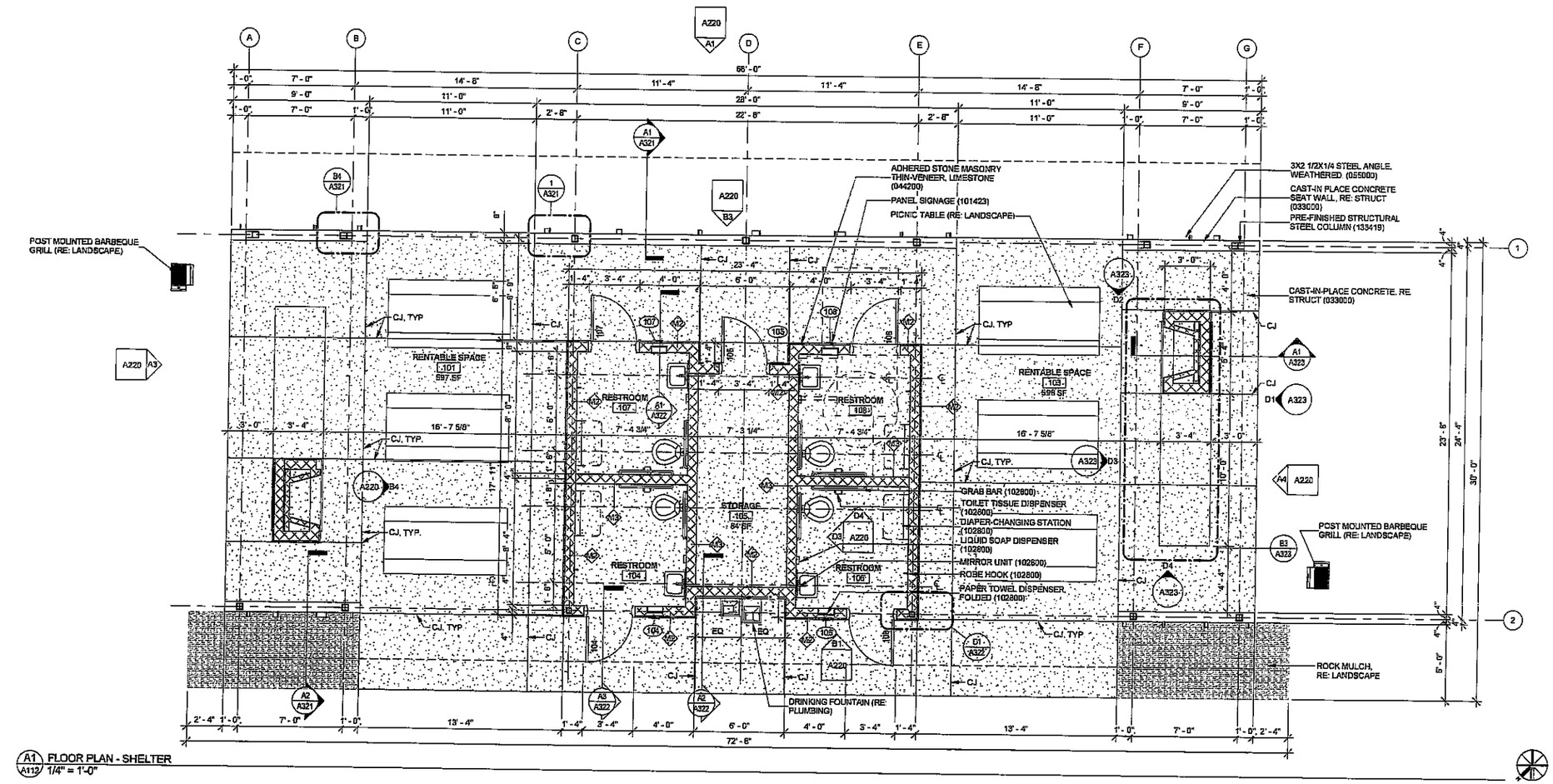
LEGEND - KEYNOTES

Key Value	Keynote Text
033000.A1	CAST-IN-PLACE CONCRETE, RE: STRUCT (033000)
033000.B5	CAST-IN PLACE CONCRETE SEAT WALL, RE: STRUCT (033000)
044313.A3	ADHERED STONE MASONRY THIN-VENEER, LIMESTONE (044200)
055000.A5	3X2 1/2X1/4 STEEL ANGLE, WEATHERED. (055000)
101423.A1	PANEL SIGNAGE (101423)
102800	GRAB BAR (102800)
102800.MS2	DIAPER-CHANGING STATION (102800)
102800.PS6	ROBE HOOK (102800)
102800.PW1	TOILET TISSUE DISPENSER (102800)
102800.PW3	PAPER TOWEL DISPENSER, FOLDED (102800)
102800.PW8	LIQUID SOAP DISPENSER (102800)
102800.PW16	MIRROR UNIT (102800)
129000.A1	POST MOUNTED BARBEQUE GRILL (RE: LANDSCAPE)
129000.A2	PICNIC TABLE (RE: LANDSCAPE)
133400.A3	PRE-FINISHED STRUCTURAL STEEL COLUMN (133419)
224000.C1	DRINKING FOUNTAIN (RE: PLUMBING)



TYPES - DOORS
1/4" = 1'-0"

TYPES - FRAMES
1/4" = 1'-0"



A1 / A112 FLOOR PLAN - SHELTER
1/4" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.683.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

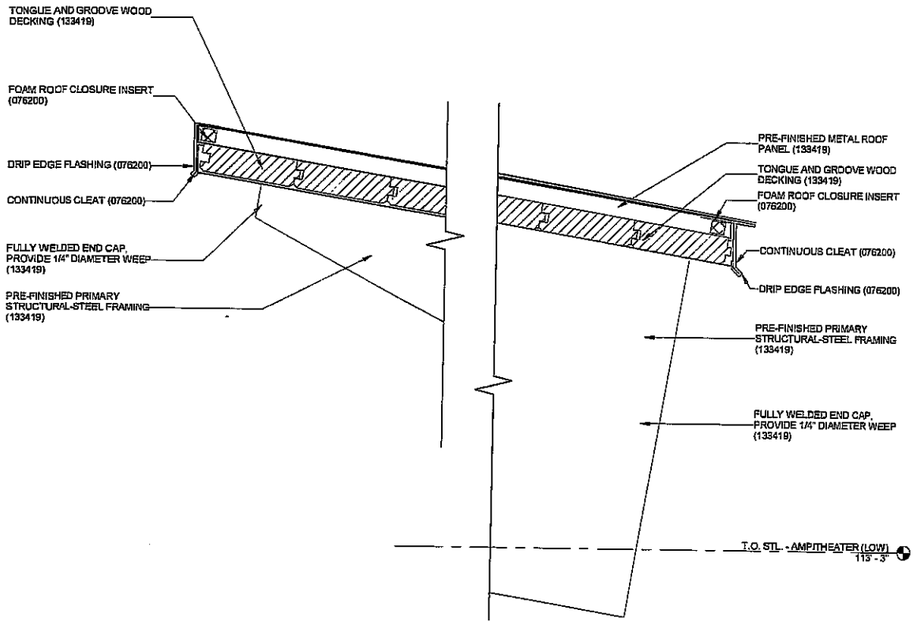
ISSUE	DATE	DESCRIPTION
1	03/05/2019	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
KERRY EARL NEWMAN
NUMBER A-03901
ARCHITECT
3/5/2019

FLOOR PLAN & SCHEDULES - SHELTER

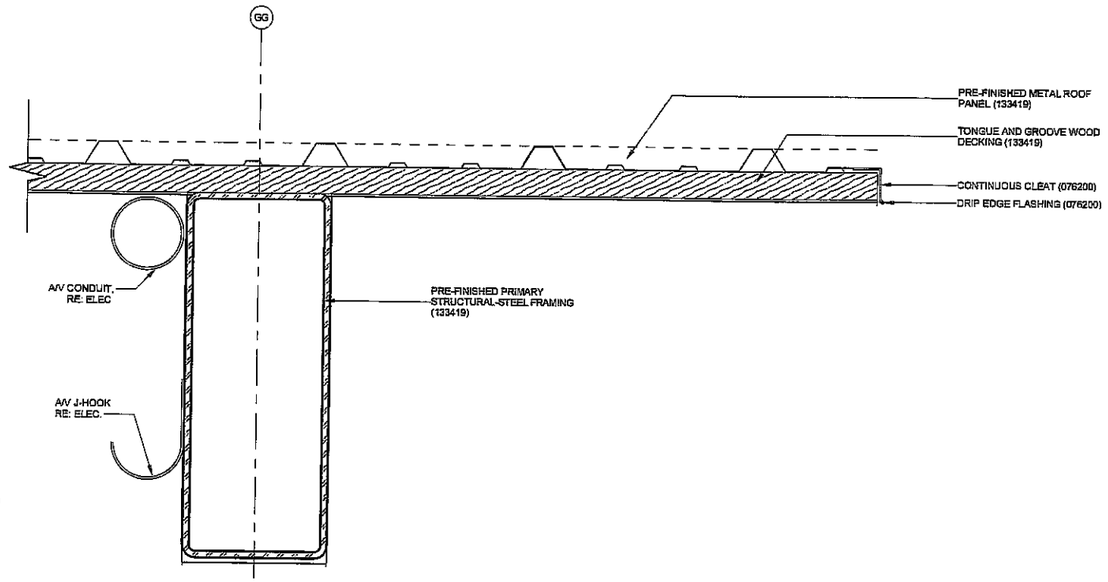
CONFLUENCE PROJECT NO: 16081KC

A112

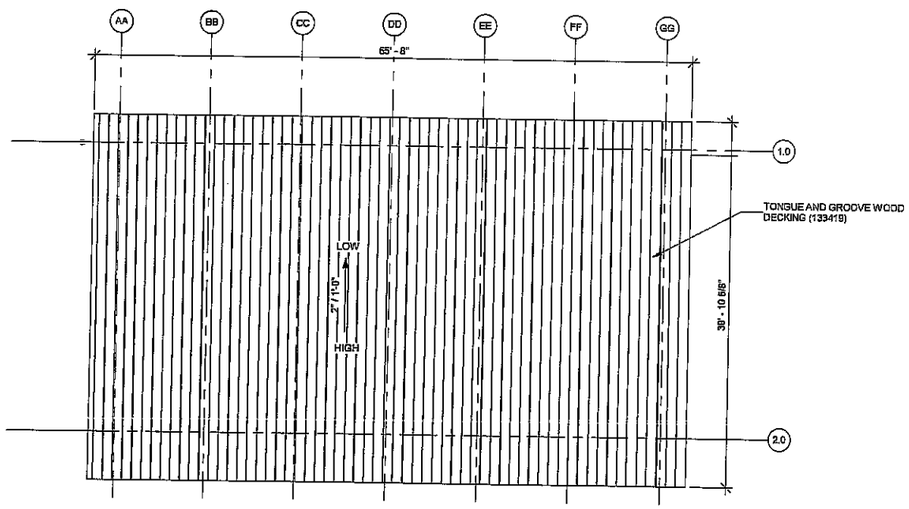


D1 / A131 SECTION DETAIL - HIGH EAVE - AMPHITHEATER
3" = 1'-0"

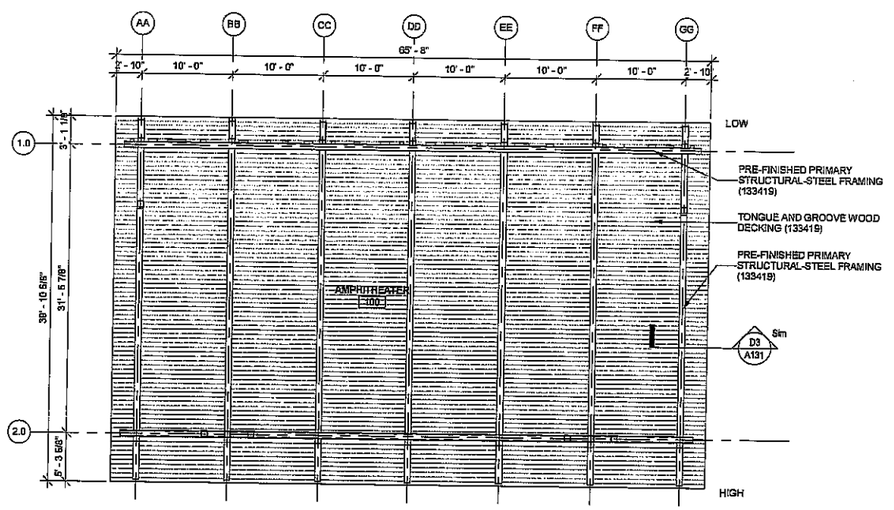
D2 / A131 SECTION DETAIL - DRIP EDGE
3" = 1'-0"



D3 / A131 SECTION DETAIL - TYPICAL EAVE - AMPHITHEATER
3" = 1'-0"



A1 / A131 ROOF PLAN - AMPHITHEATER
1/8" = 1'-0"



A3 / A131 REFLECTED CEILING PLAN - AMPHITHEATER
1/8" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/2018	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
KERRY KARL NEWMAN
NUMBER A-2003031
ARCHITECT
03/09/2018

CEILING & ROOF PLAN - AMPHITHEATER

CONFLUENCE PROJECT NO: 16081KC

A131

REFLECTED CEILING PLAN SYMBOLS

GYPSUM BOARD

RECESSED LIGHT FIXTURE. RE: ELECTRICAL.

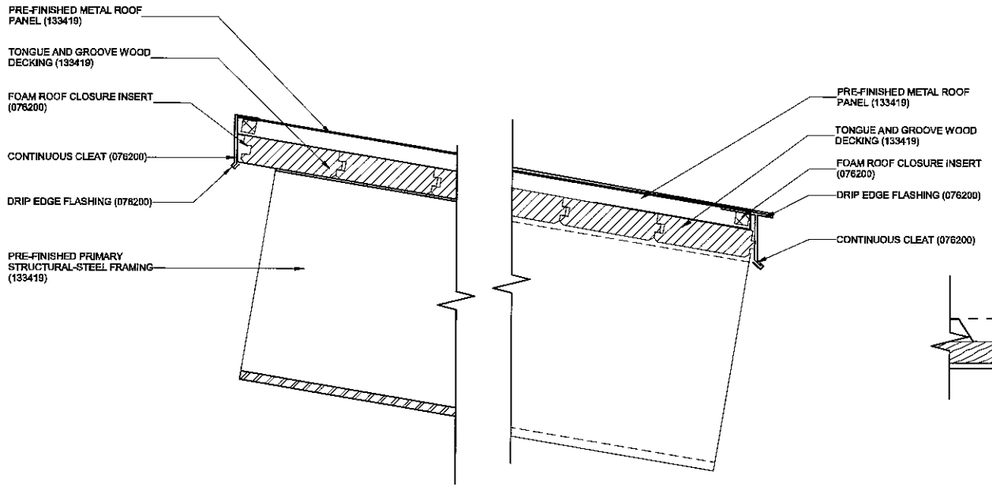
? REFLECTED CEILING PLAN KEYNOTE

ROOM NAME ← ROOM NAME
← ROOM NUMBER

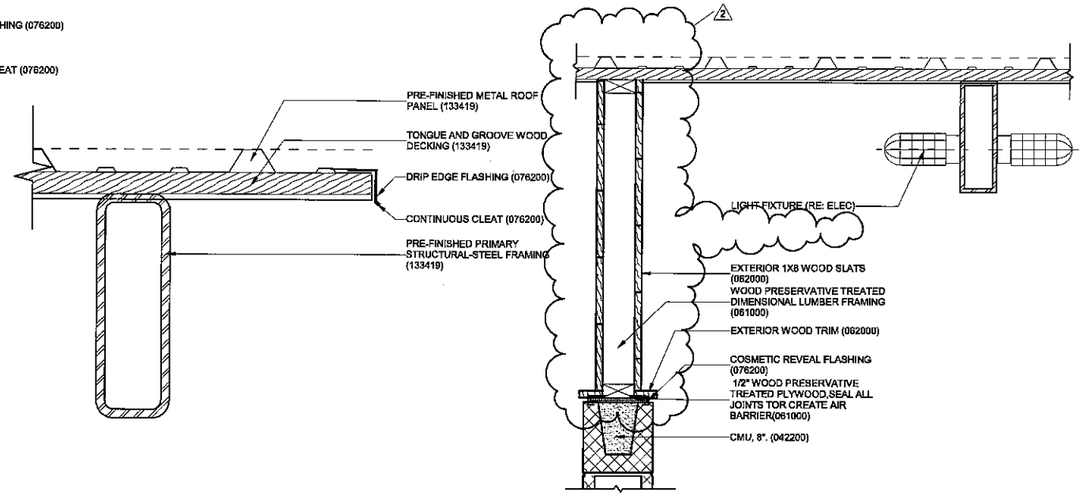
TYPE / 9'-0" AFF ← CEILING MATERIAL AND FINISH TYPE / CEILING HEIGHT

GENERAL NOTES - REFLECTED CEILING PLAN

1. CEILING HEIGHTS INDICATED ARE MEASURED FROM MAIN FLOOR BENCHMARK ELEVATION OF 100'-0".
2. WHERE RECESSED LIGHT FIXTURES ARE INDICATED TO BE INSTALLED IN ACOUSTICAL TILE CEILINGS, FIXTURES ARE TO BE INSTALLED AT CENTER OF TILE UNLESS NOTED OTHERWISE.
3. ELECTRICAL CONDUIT SHALL BE ROUTED WITH-IN STRUCTURE.
4. REFER TO ELECTRICAL DRAWINGS FOR LIGHT FIXTURE TYPES AND SPECIFICATIONS.
5. COORDINATE FINAL MOUNTING LOCATION OF CEILING MOUNTED FIRE EXIT DEVICES WITH ARCHITECT PRIOR TO INSTALL.
6. REFER TO MECHANICAL DRAWINGS FOR DIFFUSERS, THERMO-STATS, AND OTHER MECHANICAL RELATED EQUIPMENT AND DEVICES.



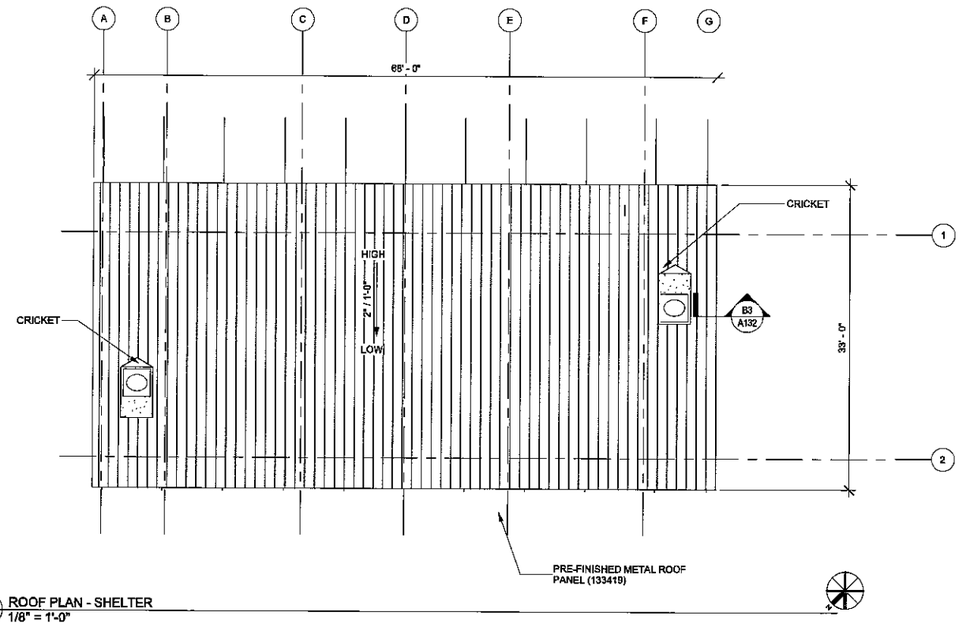
B1 / A132 SECTION DETAIL - HIGH EAVE - SHELTER
3" = 1'-0"



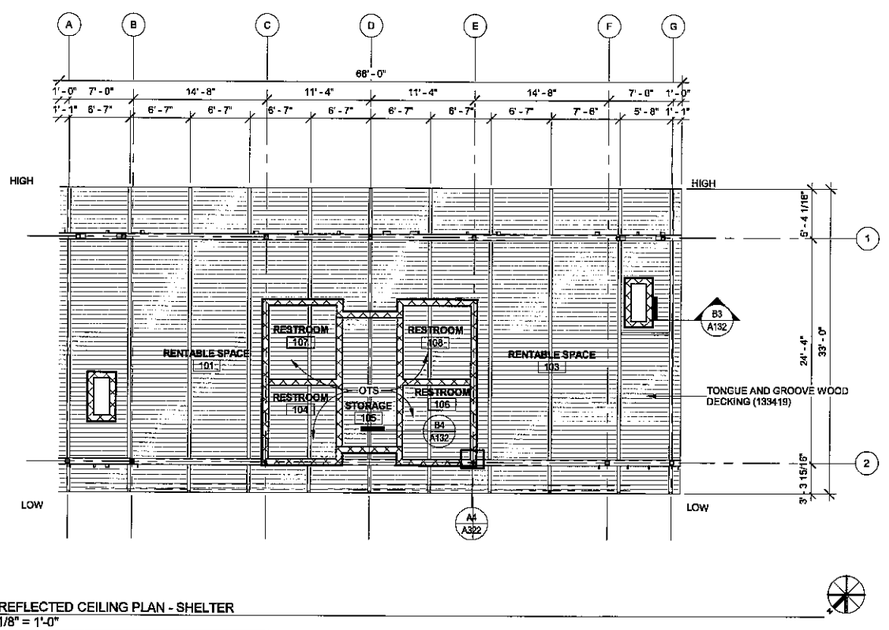
B2 / A132 SECTION DETAIL - GUTTER
3" = 1'-0"

B3 / A132 SECTION DETAIL - TYPICAL EAVE - SHELTER
3" = 1'-0"

B4 / A132 SECTION DETAIL - RESTROOM COVE LIGHT
1 1/2" = 1'-0"



A1 / A132 ROOF PLAN - SHELTER
1/8" = 1'-0"



A3 / A132 REFLECTED CEILING PLAN - SHELTER
1/8" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

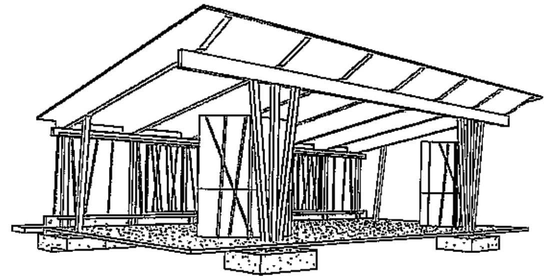
ISSUE	DATE	DESCRIPTION
1	03/09/2016	CONSTRUCTION DRAWINGS
2	04/29/2016	ADDENDUM #2

STATE OF MISSOURI
KERRY KARL NEWMAN
NUMBER A-00951
ARCHITECT
4/29/2016

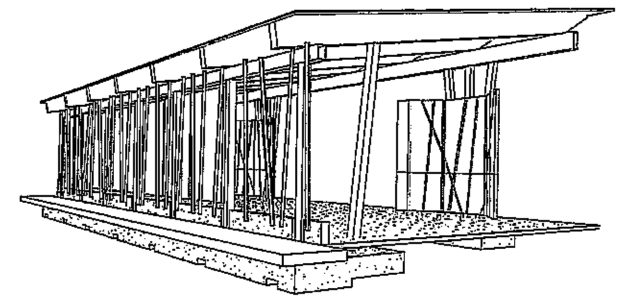
CEILING & ROOF PLAN - SHELTER

CONFLUENCE PROJECT NO: 16091KC

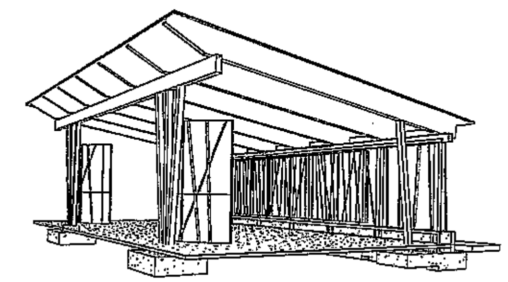
A132



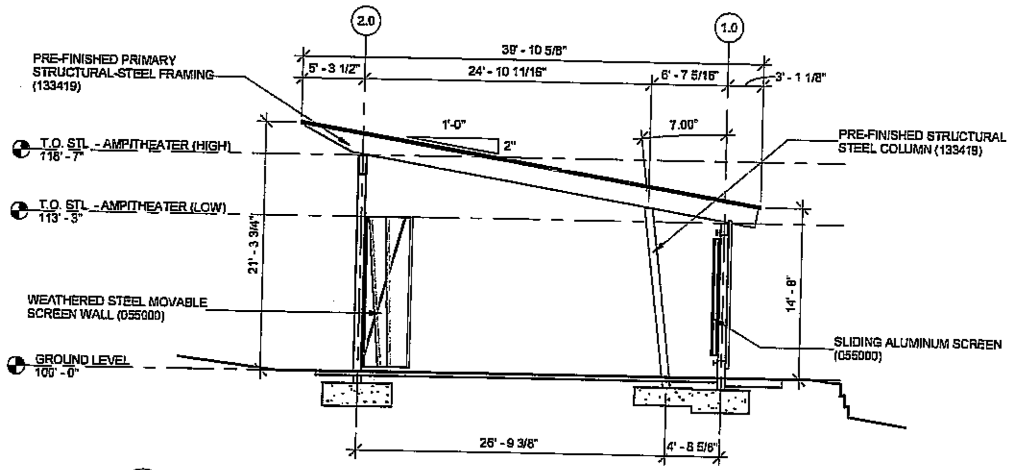
C2 A210 3-DIMENSIONAL VIEW - LOOKING NORTH



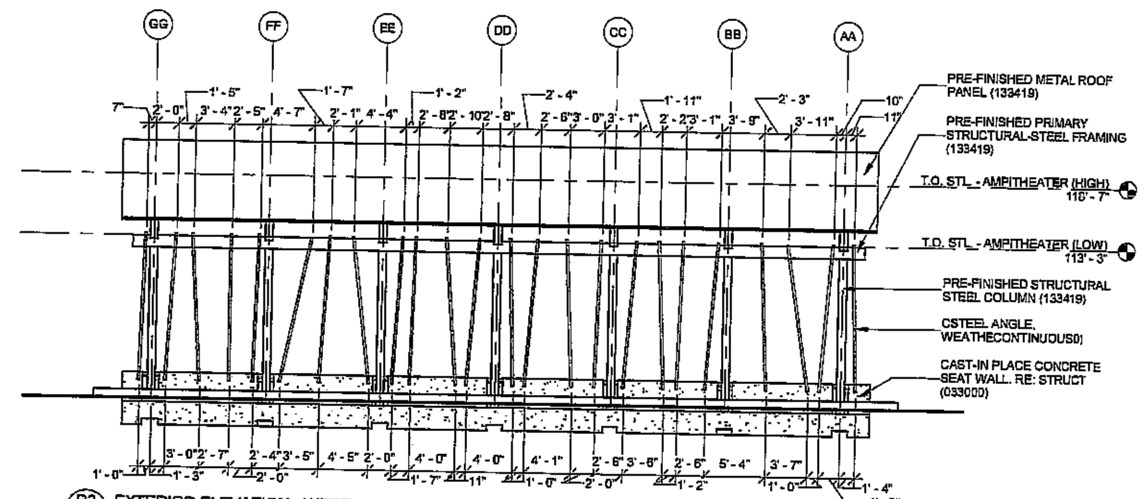
C3 A210 3-DIMENSIONAL VIEW - LOOKING EAST



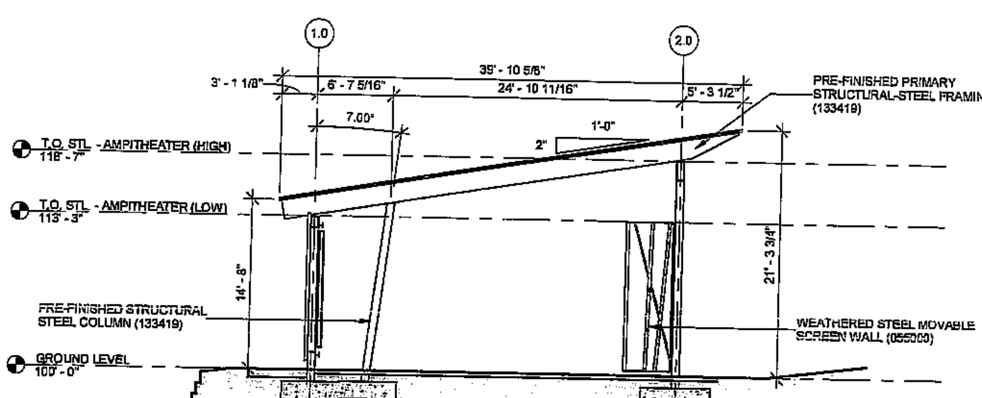
C4 A210 3-DIMENSIONAL VIEW - LOOKING SOUTH



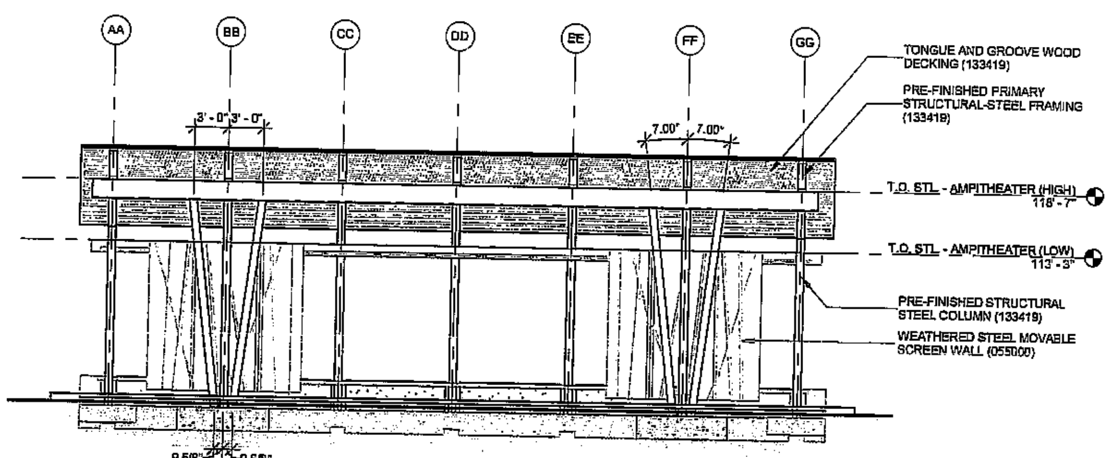
B2 A210 EXTERIOR ELEVATION - NORTH 1/8" = 1'-0"



B3 A210 EXTERIOR ELEVATION - WEST 1/8" = 1'-0"



A2 A210 EXTERIOR ELEVATION - SOUTH 1/8" = 1'-0"



A3 A210 EXTERIOR ELEVATION- EAST 1/8" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7225

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8716

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

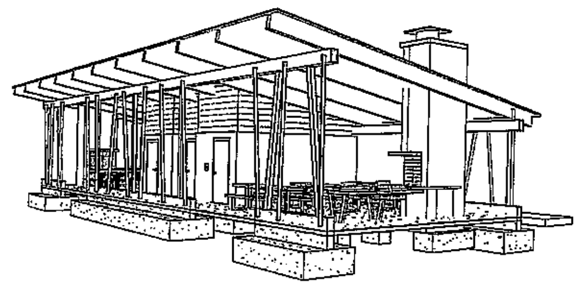
ISSUE	DATE	DESCRIPTION
1	[illegible]	CONSTRUCTION DRAWINGS

STATE OF MISSOURI — ARCHITECT

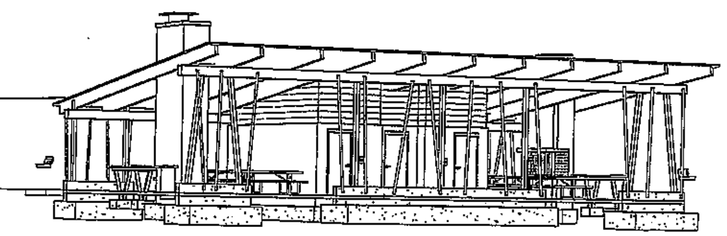
ELEVATIONS - AMPHITHEATER

CONFLUENCE PROJECT NO: 16081KC

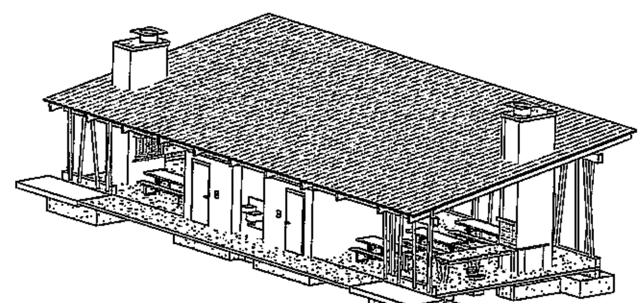
A210



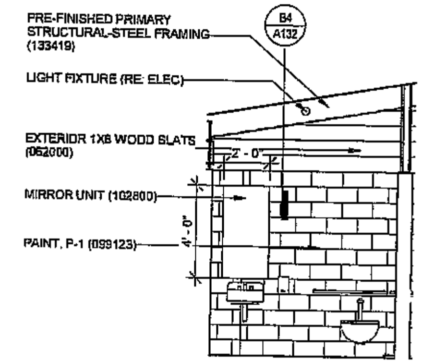
1 A220 3-DIMENSIONAL VIEW - SHELTER



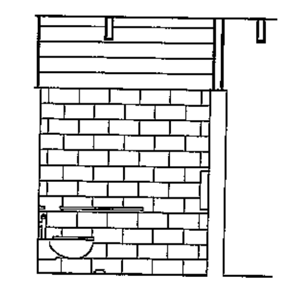
2 A220 3-DIMENSIONAL VIEW - SHELTER FROM LAKE



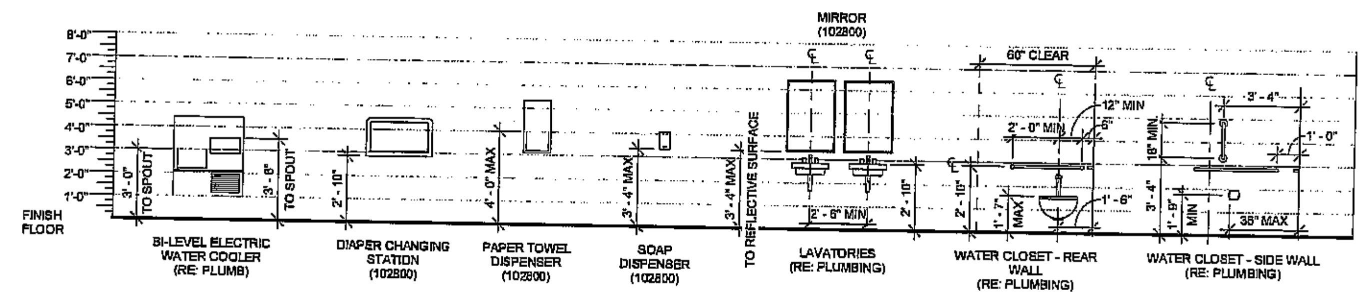
3 A220 3-DIMENSIONAL AERIAL VIEW - SHELTER



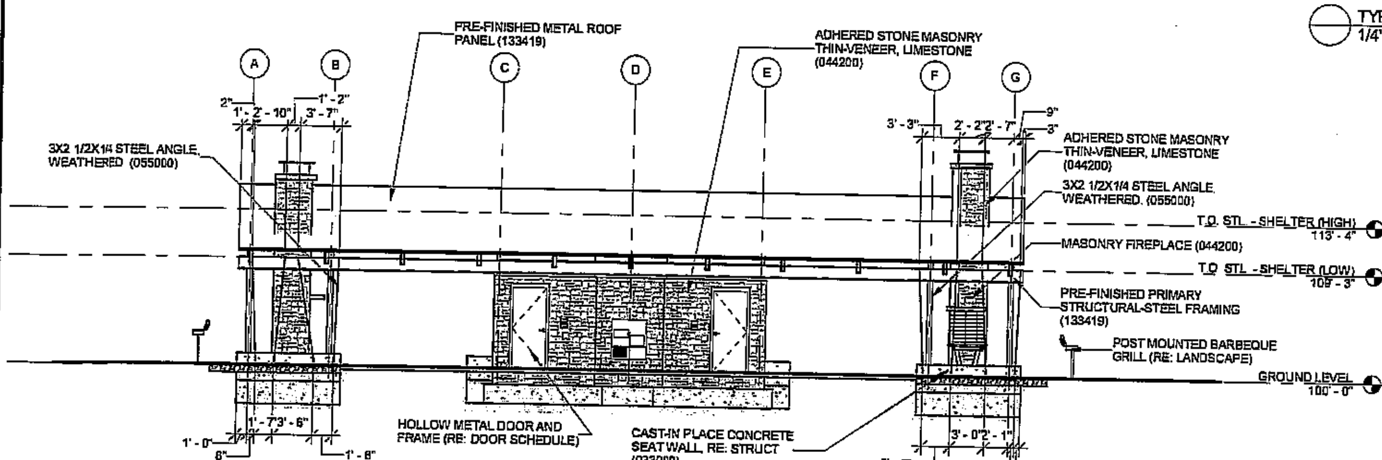
D3 A220 INT. ELEV. - RESTROOM WET WALL
1/4" = 1'-0"



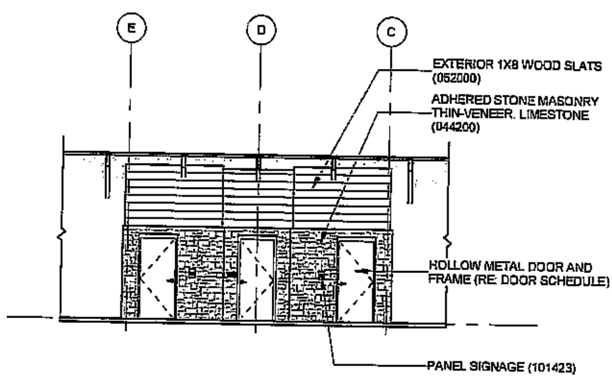
D4 A220 INT. ELEV. - RESTROOM STALL
1/4" = 1'-0"



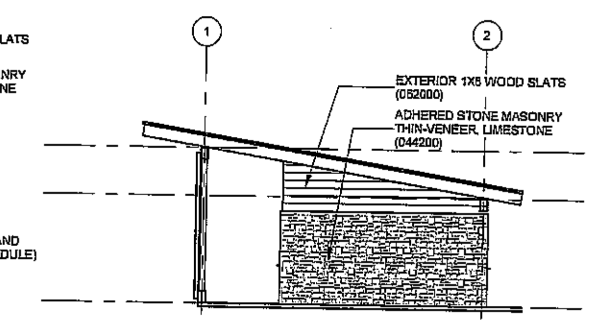
TYPES - TYPICAL FIXTURE HEIGHTS
1/4" = 1'-0"



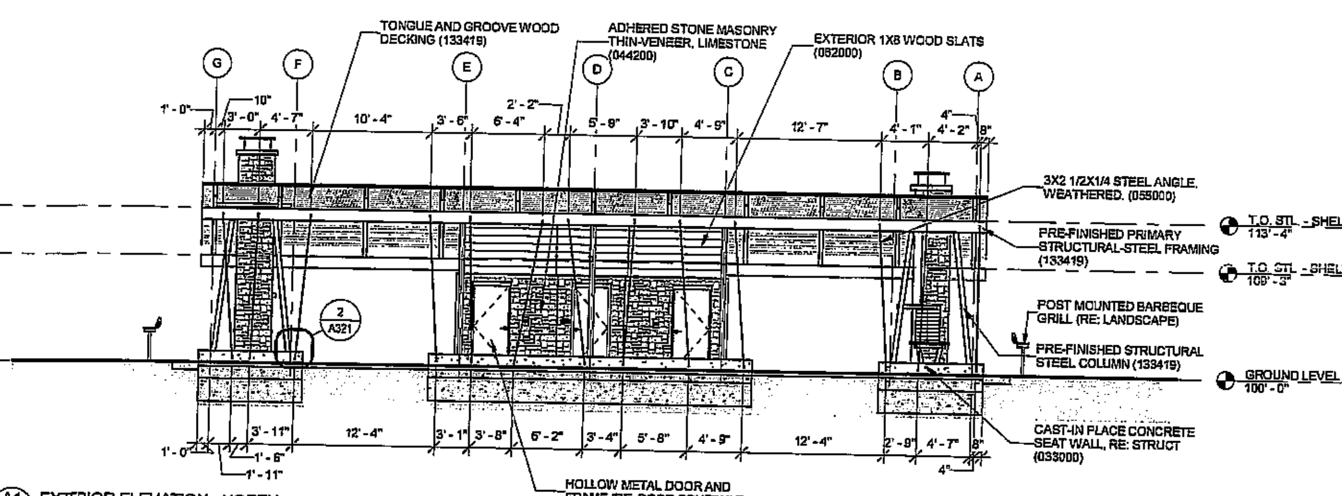
B1 A220 EXTERIOR ELEVATION - SOUTH
1/8" = 1'-0"



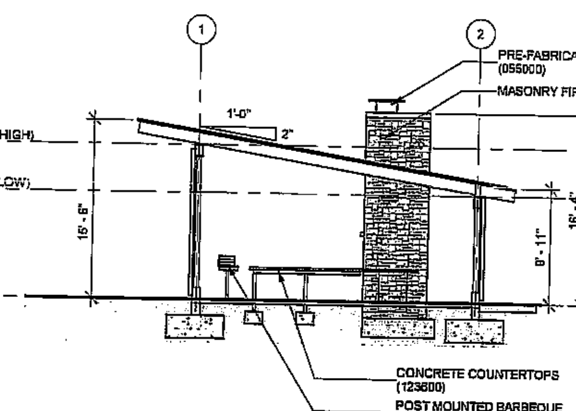
B3 A220 INTERIOR ELEVATION - RESTROOMS NORTH
1/8" = 1'-0"



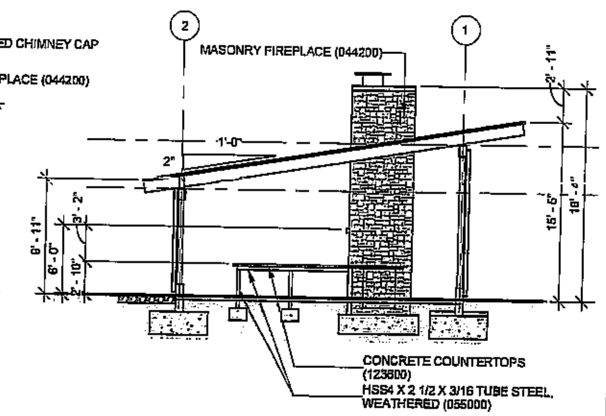
B4 A220 INTERIOR ELEVATION - RESTROOMS TYPICAL SIDE
1/8" = 1'-0"



A1 A220 EXTERIOR ELEVATION - NORTH
1/8" = 1'-0"



A3 A220 EXTERIOR ELEVATION - WEST
1/8" = 1'-0"



A4 A220 EXTERIOR ELEVATION - EAST
1/8" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007569

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

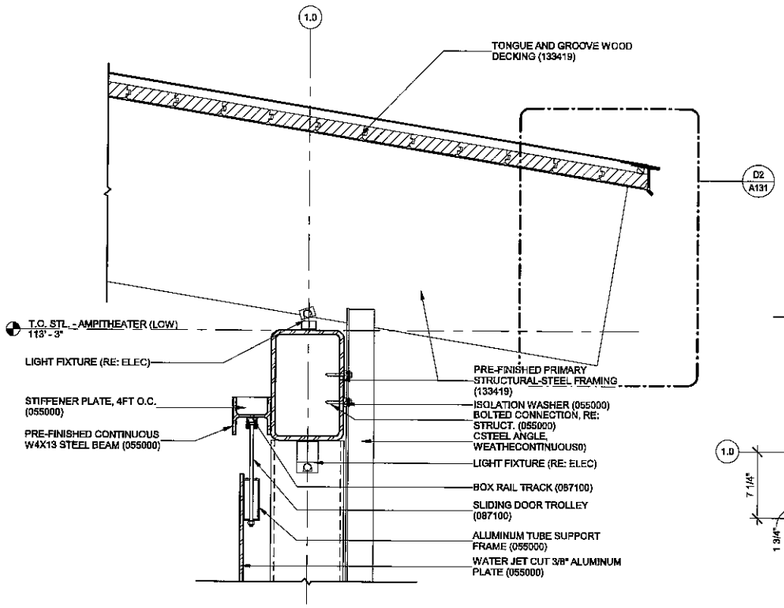
CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE		
ISSUE	DATE	DESCRIPTION
1	03/09/2018	CONSTRUCTION DRAWINGS

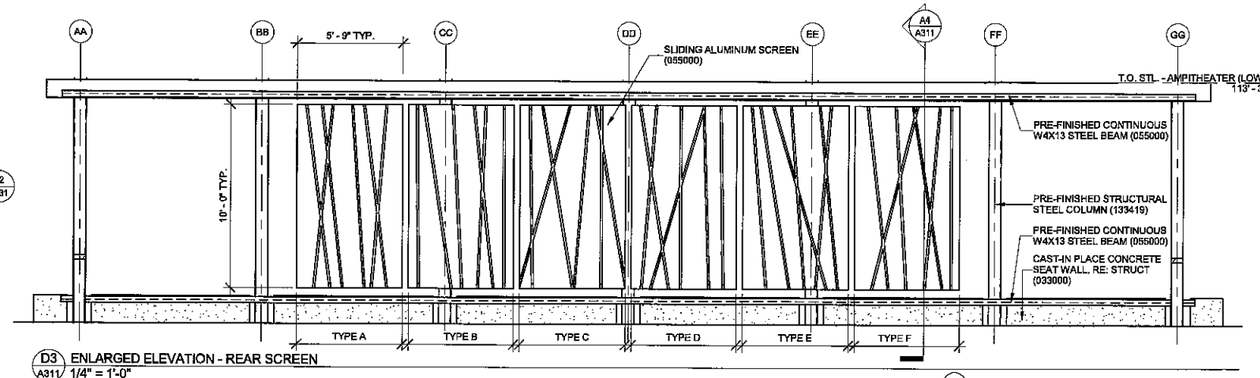
ELEVATIONS - SHELTER

CONFLUENCE PROJECT NO: 16081KC

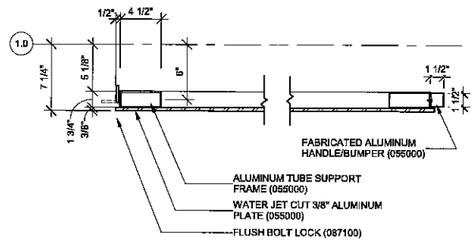
A220



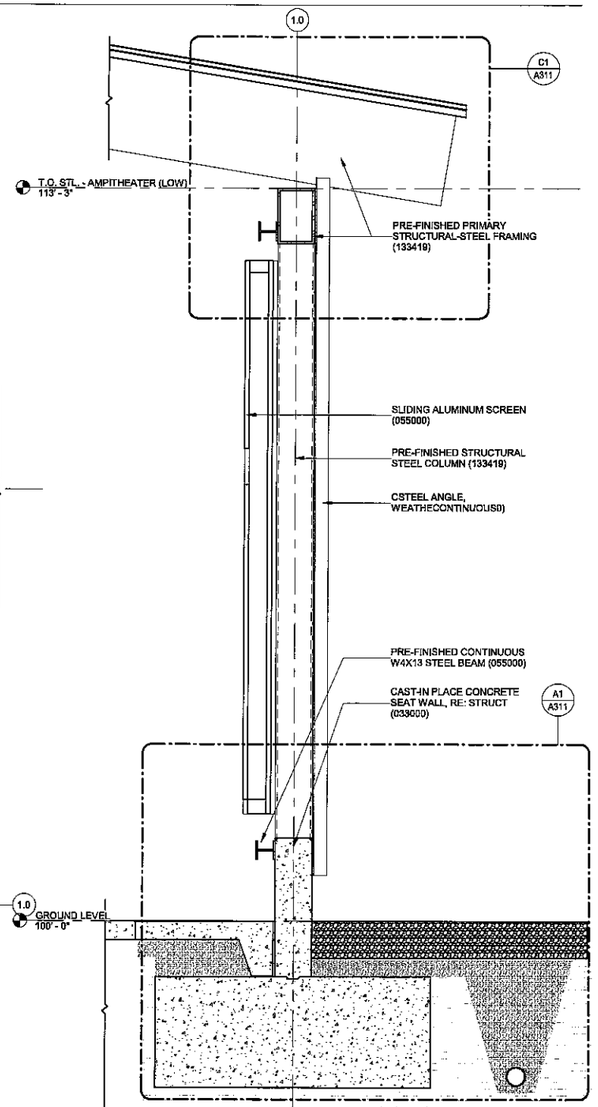
C1 SECTION DETAIL - REAR SCREEN HEAD & LOW EAVE
A311 1 1/2" = 1'-0"



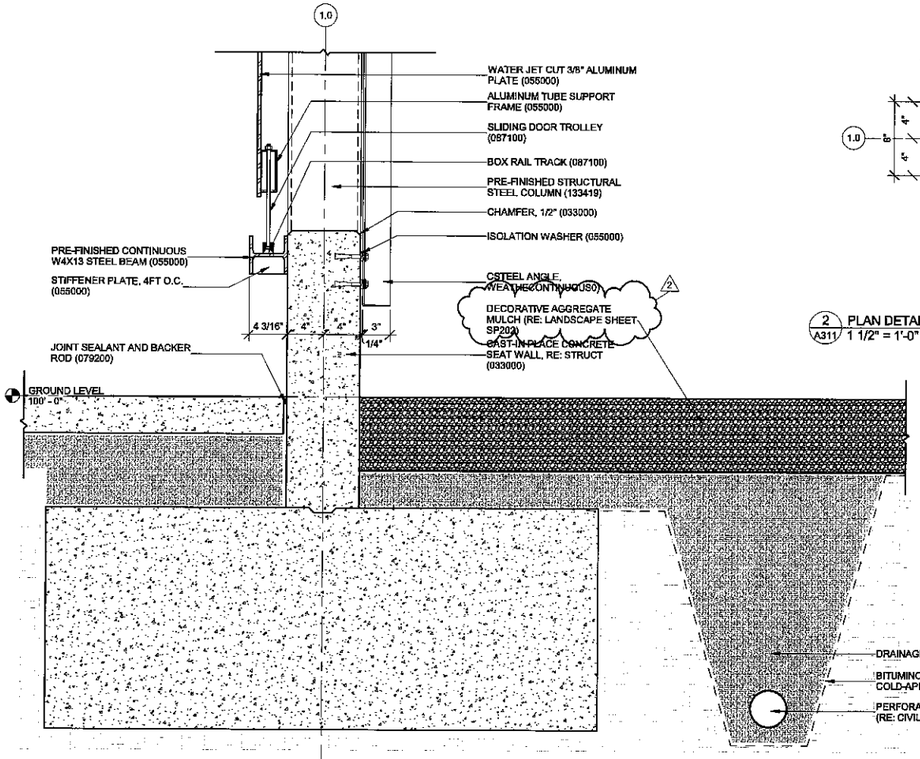
D3 ENLARGED ELEVATION - REAR SCREEN
A311 1/4" = 1'-0"



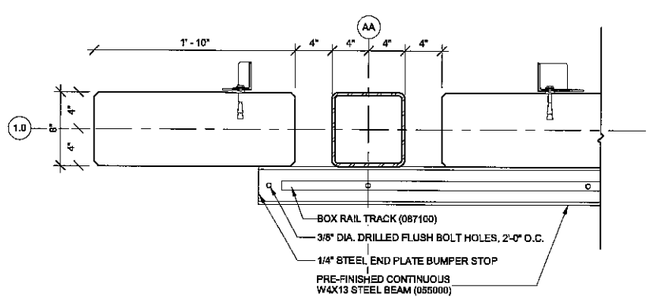
B3 TYPICAL PLAN DETAIL - REAR SCREEN
A311 1 1/2" = 1'-0"



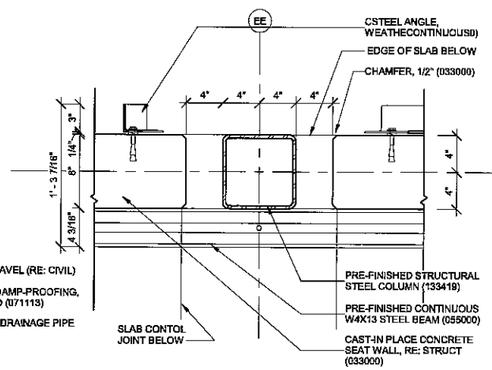
A4 WALL SECTION - REAR SCREEN
A311 3/4" = 1'-0"



A1 SECTION DETAIL - REAR SCREEN SILL
A311 1 1/2" = 1'-0"



2 PLAN DETAIL - SCREEN WALL
A311 1 1/2" = 1'-0"



1 PLAN DETAIL - COLUMN
A311 1 1/2" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.653.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

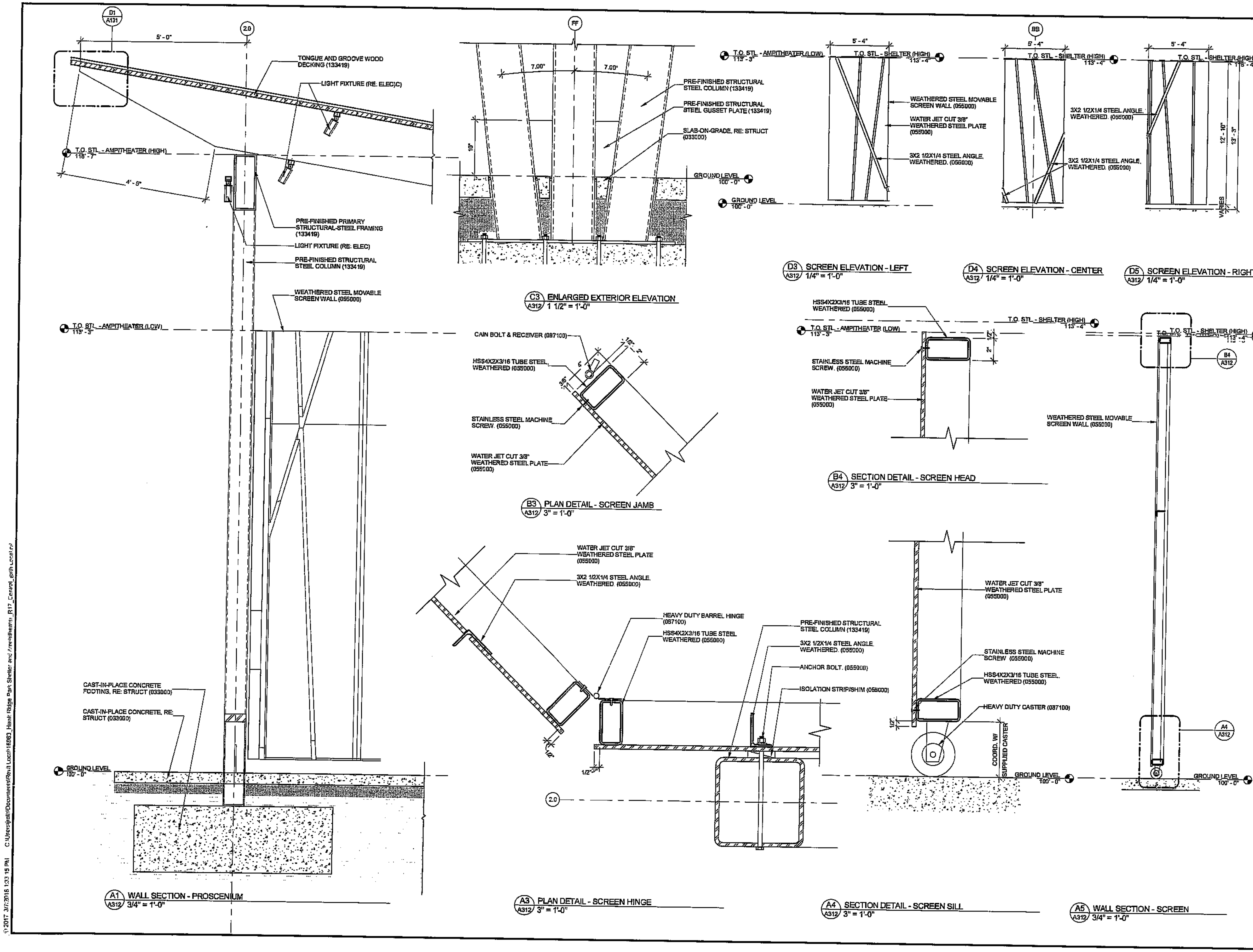
ISSUE	DATE	DESCRIPTION
1	03/09/2018	CONSTRUCTION DRAWINGS
2	04/20/2018	ADDENDUM #2

STATE OF MISSOURI
KERRY KARL NEWMAN
NUMBER A-005831
4/20/2018
ARCHITECT

WALL SECTIONS & DETAILS - AMPHITHEATER

CONFLUENCE PROJECT NO: 16081KC

A311



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

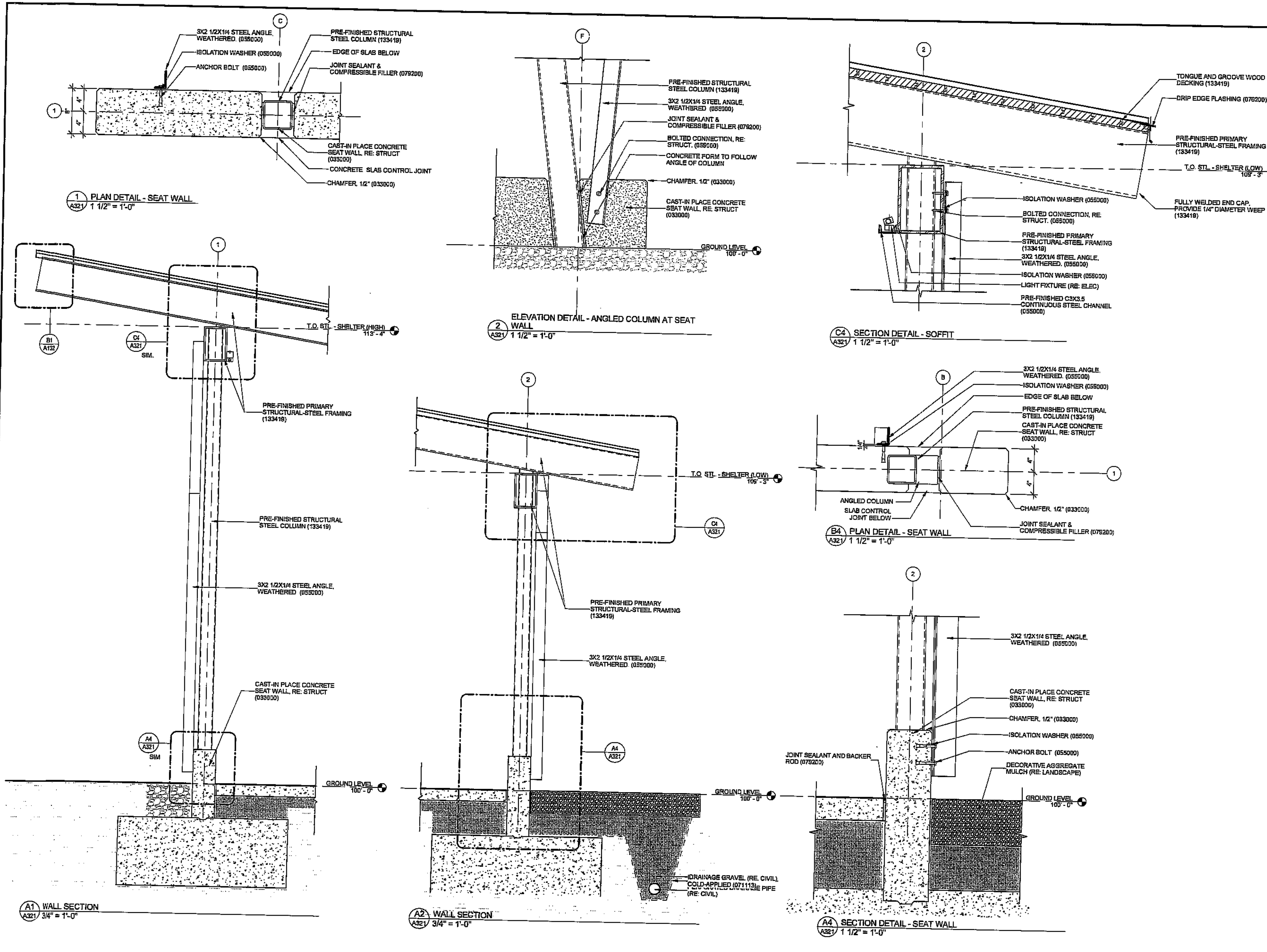
REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/2018	CONSTRUCTION DRAWINGS

WALL SECTIONS & DETAILS - AMPHITHEATER

CONFLUENCE PROJECT NO: 16081KC

A312



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

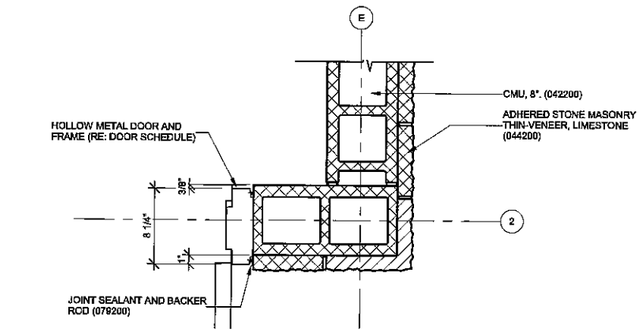
ISSUE	DATE	DESCRIPTION
1	[illegible]	CONSTRUCTION DRAWINGS

STATE OF MISSOURI ARCHITECT

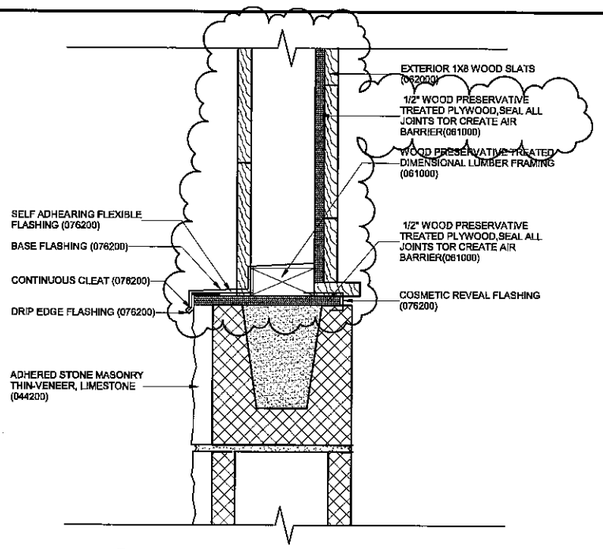
WALL SECTIONS & DETAILS - SHELTER

CONFLUENCE PROJECT NO: 18081KC

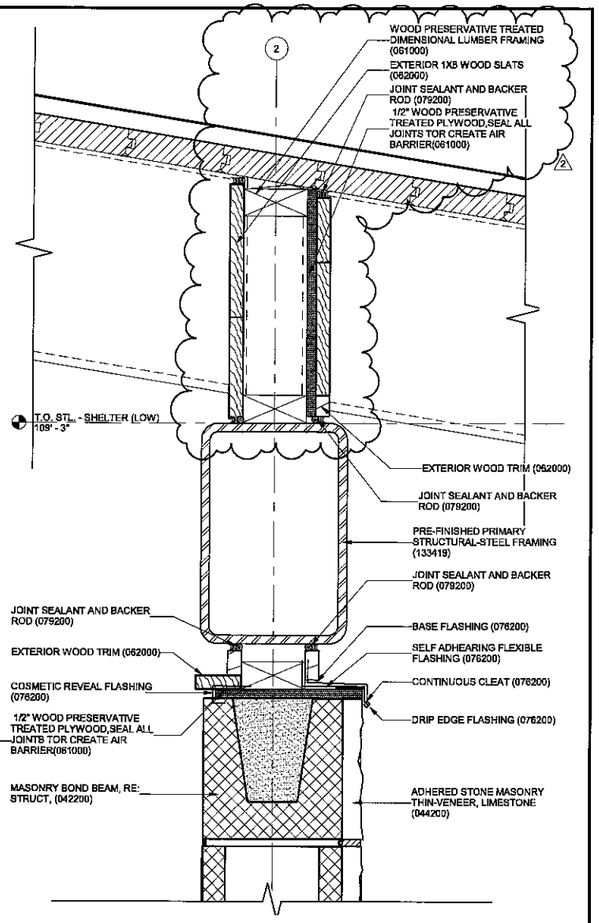
A321

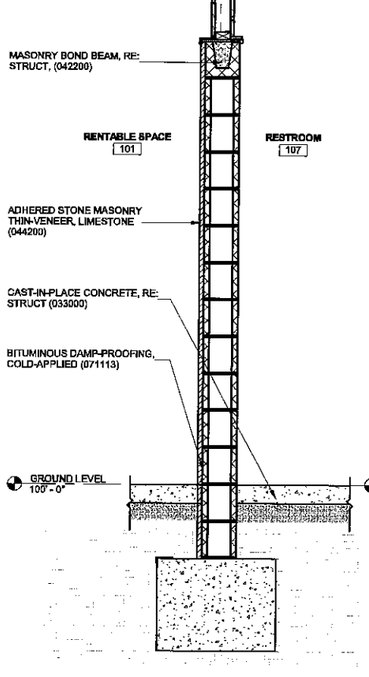


D1 / A322 PLAN DETAIL - RESTROOM CORNER
1 1/2" = 1'-0"

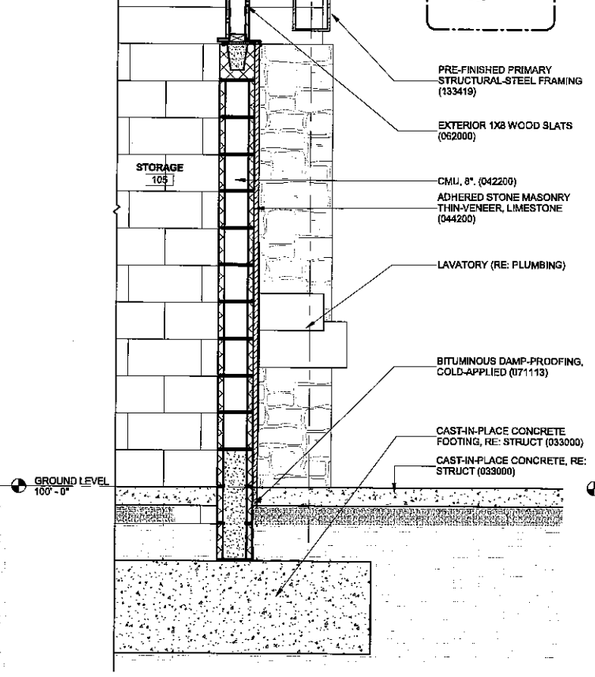


C3 / A322 SECTION DETAIL - VENTILATION SILL
3" = 1'-0"

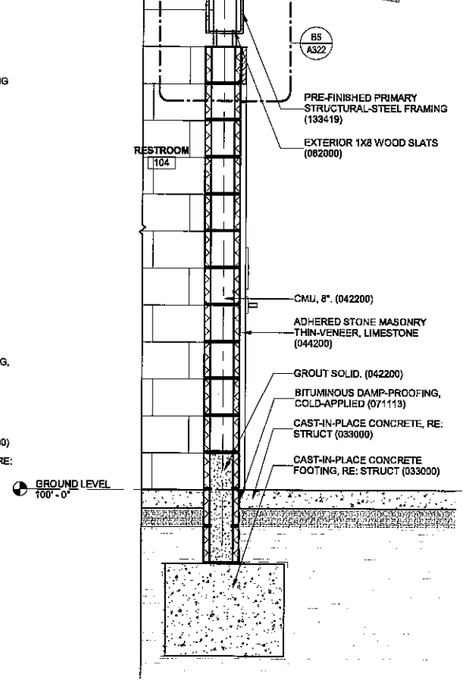




A1 / A322 WALL SECTION - RESTROOM VENTILATION
3/4" = 1'-0"

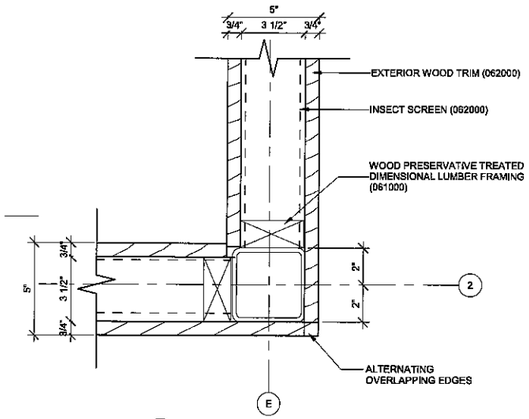


A2 / A322 WALL SECTION - DRINKING FOUNTAIN
3/4" = 1'-0"



A3 / A322 WALL SECTION - RESTROOM
3/4" = 1'-0"

B5 / A322 SECTION DETAIL - VENTILATION AT BEAM
3" = 1'-0"



A4 / A322 PLAN DETAIL - VENTILATION
3" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

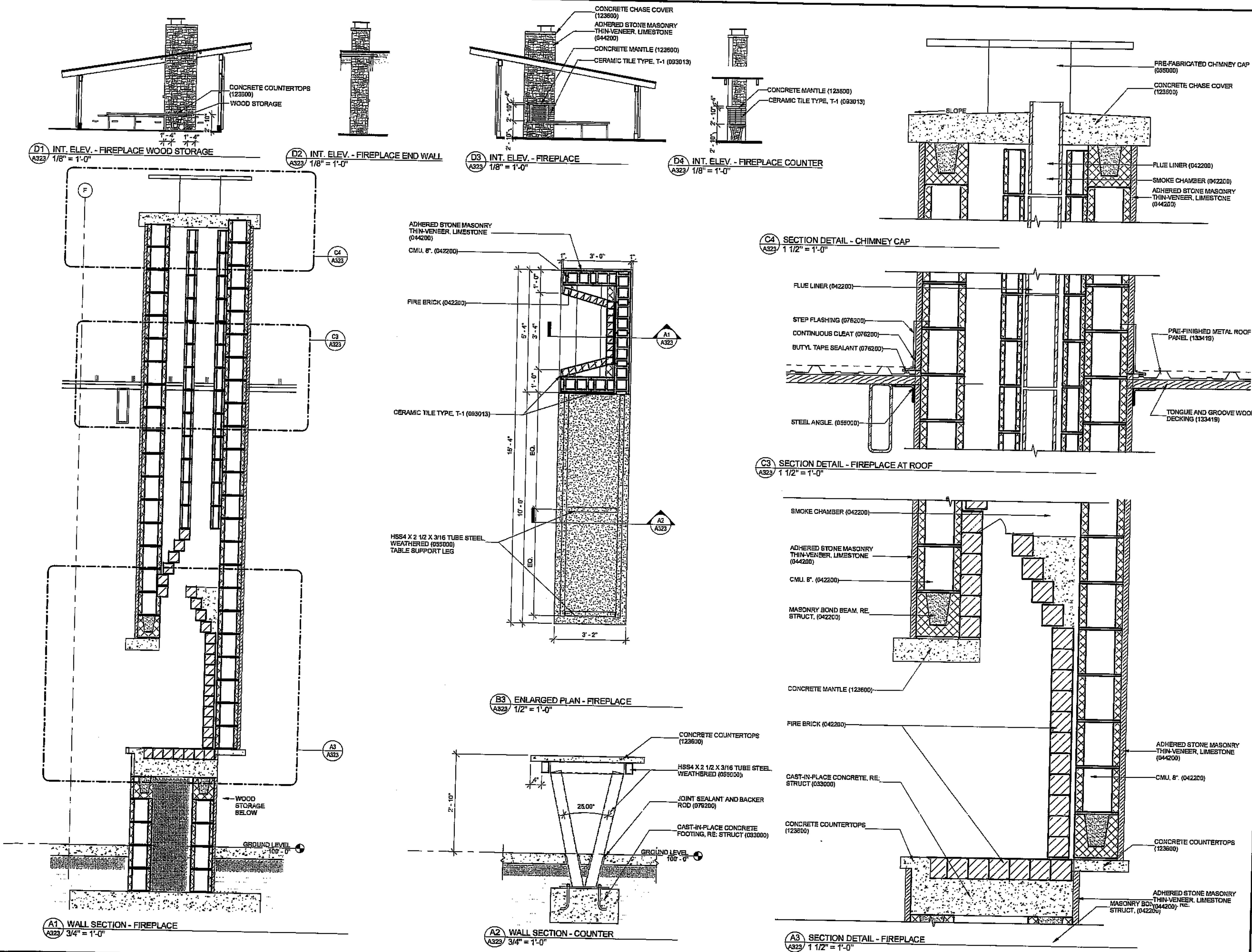
REVISION SCHEDULE		
ISSUE	DATE	DESCRIPTION
1	03/09/2018	CONSTRUCTION DRAWINGS
2	04/23/2018	ADDENDUM #2

STATE OF MISSOURI
KERRY KARL EWING
NUMBER A-005831
ARCHITECT
3/9/2018

WALL SECTIONS & DETAILS - SHELTER

CONFLUENCE PROJECT NO: 16061KC

A322



CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

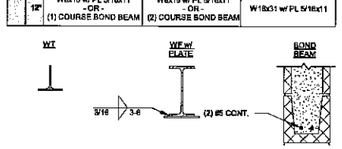
ISSUE	DATE	DESCRIPTION
1	03/09/2018	CONSTRUCTION DRAWINGS

STATE OF MISSOURI — KERRY KARL NEWMAN — NUMBER A-005831 — ARCHITECT

WALL SECTIONS & DETAILS - SHELTER

CONFLUENCE PROJECT NO: 16081KC

A323



GP GENERAL PARAMETERS

GP1 STRUCTURAL DRAWINGS ARE A PORTION OF THE CONTRACT DOCUMENTS AND ARE INTENDED TO BE USED WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS FROM THESE DRAWINGS INTO THEIR SHOP DRAWINGS AND WORK.

GP2 VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF ANY ITEMS.

GP3 DRAWINGS SHALL BE COORDINATED WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ADDITIONAL OPENINGS, ELECTRICAL COMPONENTS, FLOOR DEPRESSIONS, ETC. NOT SHOWN ON DRAWINGS. COORDINATE LOCATION, SIZE AND REINFORCEMENT OF ALL OPENINGS WITH RESPECTIVE TRADES BEFORE FABRICATION. REPORT ANY DISCREPANCIES AND/OR INTERFERENCE PROBLEMS TO THE ARCHITECT AND STRUCTURAL ENGINEER OF RECORD.

GP4 THESE GENERAL NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE PROVIDED, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.

GP5 [illegible]

GP6 CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.

GP7 RETAINING WALLS AND BASEMENT WALLS WHICH TIE TO UPPER SLABS SHALL NOT BE BACKFILLED UNTIL THE UPPER SLABS REACH FULL DESIGN STRENGTH, UNLESS ADEQUATE BRACING IS PROVIDED AT THE TOP OF THE WALL.

GP8 AS USED IN GENERAL NOTES AND THROUGHOUT STRUCTURAL DRAWINGS: THE TERM "CONTRACTOR" IS DEFINED TO INCLUDE ANY OR ALL OF THE FOLLOWING: GENERAL CONTRACTOR AND THEIR SUBCONTRACTORS, CONSTRUCTION MANAGER AND THEIR SUBCONTRACTORS, FABRICATORS, INSTALLERS, DELEGATED DESIGNERS/ENGINEERS AND ERECTORS.

DP DESIGN PARAMETERS

DP1 THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE ICC INTERNATIONAL BUILDING CODE, 2012 EDITION.

DP2 UNIFORM LIVE LOADS:

TYPICAL ROOF (GOVERNED BY SNOW)	20 PSF
DRIFT LOAD AS SHOWN ON PLAN	

DP3 CONCENTRATED LIVE LOADS:
N/A

DP4 SNOW DESIGN PARAMETERS:

GROUND SNOW LOAD (Pg)	20 PSF
FLAT ROOF SNOW LOAD (Pf)	20 PSF
SNOW EXPOSURE FACTOR (C/E)	1.0
SNOW LOAD IMPORTANCE FACTOR (I)	1.0
SNOW LOAD THERMAL FACTOR (Ct)	1.2

DP5 EARTHQUAKE DESIGN PARAMETERS:

SEISMIC IMPORTANCE FACTOR (I/E)	1.0
Ss	0.114g
S1	0.067g
SEISMIC SITE CLASS	D
Sds	0.122g
Sd1	0.107g
SHORT-PERIOD SITE COEFFICIENT (Fa)	1.6
LONG-PERIOD SITE COEFFICIENT (Fv)	2.4
SEISMIC DESIGN CATEGORY	B
SEISMIC-FORCE-RESISTING SYSTEM: STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE	
SEISMIC BASE SHEAR (V) N-S	1.5 k
SEISMIC BASE SHEAR (V) E-W	1.5 k
SEISMIC RESPONSE COEFFICIENT (Cs) N-S	0.04
SEISMIC RESPONSE COEFFICIENT (Cs) E-W	0.04
RESPONSE MODIFICATION FACTOR (R) N-S	3.0
RESPONSE MODIFICATION FACTOR (R) E-W	3.0
REDUNDANCY FACTOR (ρ) N-S	1.0
REDUNDANCY FACTOR (ρ) E-W	1.0
SEISMIC ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE ANALYSIS	

DP6 WIND DESIGN PARAMETERS:

BASIC WIND SPEED (V) (3 SECOND GUST)	115 MPH
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	C
INTERNAL PRESSURE COEFFICIENT	0.00 (OPEN)
BASIC DESIGN PRESSURE @ ROOF	PER BLDG DESIGNER
NET WIND UPLIFT @ ROOF	PER BLDG DESIGNER

DP7 ALLOWABLE WALL DEFLECTIONS:

EXTERIOR (CLADDING DESIGN)	L/360
(BRICK VENEER DESIGN)	L/600 ≤ 0.3"
INTERIOR	L/360

DP8 ALLOWABLE FRAMING DEFLECTIONS:

ROOF LIVE LOAD	L/360
ROOF TOTAL LOAD	L/240
FLOOR LIVE LOAD	L/360
FLOOR TOTAL LOAD	L/240

DP9 ASSUMED FUTURE CONSTRUCTION:

VERTICAL	NONE
HORIZONTAL	NONE

FP FOUNDATION PARAMETERS

FP1 SIZE AND BOTTOM ELEVATIONS OF FOOTINGS HAVE BEEN ESTABLISHED BASED ON THE ASSUMED MINIMUM ALLOWABLE BEARING PRESSURE OF 2500 PSF WITH A 20% INCREASE FOR INDIVIDUAL COLUMN FOOTINGS PER THE GEOTECHNICAL REPORT PREPARED BY ALPHA-OMEGA GEOTECH, INC., DATED AUGUST 2, 2017. AS EXCAVATION PROGRESSES, UNANTICIPATED SOIL CONDITIONS MAY REQUIRE CHANGES. CONTACT STRUCTURAL ENGINEER OF RECORD FOR EVALUATION OF THESE CHANGES.

FP2 ALLOWABLE SOIL BEARING PRESSURE

CONTINUOUS FOOTINGS	2500 PSF
INDIVIDUAL COLUMN FOOTINGS	3000 PSF

FP3 MINIMUM FOOTING DEPTH FOR FROST PROTECTION (BELOW FINISHED GRADE) .... 36 IN.

FP4 DESIGN EARTH PRESSURE COEFFICIENTS (BACKFILLS):

ACTIVE	0.25
PASSIVE	4.2
AT REST	0.4

FP5 GEOTECHNICAL ENGINEER IS SOLE JUDGE OF THE SUITABILITY OF UNDERLYING MATERIAL TO SUPPORT FOUNDATIONS. BEARING MATERIAL SHALL BE APPROVED BY GEOTECHNICAL ENGINEER BEFORE FOUNDATION INSTALLATION. DO NOT PROCEED WITHOUT APPROVAL.

FP6 PRIOR TO COMMENCING EARTHWORK, CONTRACTOR SHALL REVIEW AND BE FAMILIAR WITH ALL ASPECTS OF THE GEOTECHNICAL REPORT. CONTACT GEOTECHNICAL ENGINEER IF QUESTIONS OR DISCREPANCIES.

2

FP7 ALL FILL WITHIN THE BUILDING FOOTPRINT AND EXTENDING 6'-0" BEYOND (OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER) SHALL BE ENGINEERED FILL PLACED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

SU SUBMITTALS

SU1 GENERAL CONTRACTOR TO PROVIDE A SHOP DRAWING SUBMITTAL LOG ITEMIZING ALL PROPOSED SUBMITTALS FOR APPROVAL BY STRUCTURAL ENGINEER OF RECORD.

SU2 ALL SHOP DRAWINGS SHALL BE CHECKED BY THE FABRICATOR AND APPROVED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL TO THE STRUCTURAL ENGINEER OF RECORD. SHOP DRAWING REVIEW BY ENGINEER IS LIMITED TO VERIFYING GENERAL CONFORMANCE TO THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR ANY CHANGES FROM THE CONTRACT DOCUMENTS, DIMENSIONAL ERRORS, COORDINATION ERRORS, OR OMISSIONS IN SHOP DRAWINGS.

SU3 SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION REGARDING ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING:
- CONCRETE MIX DESIGNS (5 DAYS BEFORE POUR, MIN.)
- CONCRETE REINFORCEMENT
- MASONRY REINFORCEMENT
- PREMANUFACTURED STEEL SHELTERS

SU4 SHOP DRAWINGS SHALL INCLUDE CONNECTIONS AS WELL AS SIZE, SPACING, AND GRADE OF ALL MEMBERS. PLANS AND ANY DETAILING NECESSARY FOR DETERMINING FIT AND PLACEMENT SHALL ALSO BE INCLUDED.

SU5 IF THE SHOP DRAWINGS DIFFER FROM OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BEAR THE SEAL AND SIGNATURE OF AN ENGINEER REGISTERED IN THE APPROPRIATE STATE. ANY CHANGES TO THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ARE SUBJECT TO REVIEW AND APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.

SU6 DESIGN DRAWINGS, SHOP DRAWINGS, AND CALCULATIONS FOR THE DESIGN AND FABRICATION OF ITEMS THAT ARE DESIGNED BY THE CONTRACTOR, INCLUDING:
- PREMANUFACTURERED STEEL SHELTERS

SHALL BEAR THE SEAL AND SIGNATURE OF AN ENGINEER REGISTERED IN THE APPROPRIATE STATE AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION. CALCULATIONS SHALL BE INCLUDED FOR ALL CONNECTIONS TO THE STRUCTURE, CONSIDERING LOCALIZED EFFECTS ON STRUCTURAL ELEMENTS INDUCED BY THE CONNECTION LOADS.

SU7 ITEMS THAT ARE DESIGNED BY THE CONTRACTOR SHALL BE DESIGNED TO RESIST THE LIVE LOADS INDICATED IN STRUCTURAL NOTES, DEAD LOAD, SELF WEIGHT, ANY ADDITIONAL LOADING INDICATED ON PLANS AND DETAILS, SNOW DRIFT, AND A NET WIND UPLIFT.

SU8 ITEMS THAT ARE DESIGNED BY THE CONTRACTOR SHALL INCLUDE ANY RELEVANT TECHNICAL LITERATURE FROM MANUFACTURER. ALSO PROVIDE A CERTIFICATION FROM THE MANUFACTURER SHOWING THE PRODUCT IS IN COMPLIANCE WITH ALL APPLICABLE CODES AND STANDARDS.

SU9 THE CONTRACTOR SHALL COORDINATE SEISMIC RESTRAINTS OF MECHANICAL, PLUMBING, AND ELECTRICAL EQUIPMENT, MACHINERY, AND ASSOCIATED PIPING WITH THE STRUCTURE. ANY CONNECTIONS TO STRUCTURE SHALL CONFORM TO ASCE 7, CHAPTER 13 AND SHALL BE DESIGNED BY AN ENGINEER REGISTERED IN THE APPROPRIATE STATE, AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION.

SU10 FIELD ENGINEERED DETAILS DEVELOPED BY THE CONTRACTOR THAT DIFFER FROM OR ADD TO THE STRUCTURAL DRAWINGS SHALL BEAR THE SEAL AND SIGNATURE OF AN ENGINEER REGISTERED IN THE APPROPRIATE STATE AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO CONSTRUCTION.

SP SPECIAL INSPECTION

SP1 SPECIAL INSPECTION PROGRAM SHALL CONFORM TO CHAPTER 17 OF THE IBC.

SP2 THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR TO PERFORM THE REQUIRED TESTS AND SPECIAL INSPECTIONS WITH QUALIFICATIONS DESCRIBED PER IBC CHAPTER 17 AND THE PROJECT SPECIFICATIONS.

SP3 SPECIAL INSPECTION REPORTS SHALL BE FURNISHED TO BUILDING OFFICIAL, OWNER, ARCHITECT, STRUCTURAL ENGINEER, AND CONTRACTOR.

SP4 SPECIAL INSPECTOR SHALL SUBMIT A FINAL REPORT STATING THAT THE STRUCTURAL WORK WAS, TO THE BEST OF THE SPECIAL INSPECTOR'S KNOWLEDGE, PERFORMED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.

CN CONCRETE NOTES

CN1 CONCRETE WORK SHALL CONFORM TO CHAPTER 19 OF THE IBC.

CN2 WHERE NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE, THE EXISTING CONCRETE SURFACE SHALL BE CLEANED AND ROUGHENED TO A MINIMUM OF 1/4" AMPLITUDE.

CN3 ALL EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE CHAMFERED 1/2" U.N.O.

CN4 CONCRETE FORMWORK:
- CN4.1 SLEEVES, OPENINGS, CONDUIT, AND OTHER EMBEDDED ITEMS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO POURING CONCRETE. CONDUITS EMBEDDED IN SLABS SHALL NOT BE LARGER IN OUTSIDE DIMENSION THAN ONE THIRD OF THE THICKNESS OF THE SLAB AND SHALL NOT BE SPACED CLOSER THAN THREE DIAMETERS ON CENTER.
- CN4.2 VERIFY ALL BLOCK OUTS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING REQUIREMENTS PRIOR TO POURING.

CN5 CONCRETE REINFORCEMENT:
- CN5.1 DETAILING, FABRICATION, AND PLACEMENT OR REINFORCEMENT SHALL CONFORM TO ACI-315.
- CN5.2 ALL REINFORCEMENT TO BE ASTM A615 GRADE 60 U.N.O. WELDED WIRE FABRIC TO BE ASTM A185 WITH WIRE CONFORMING TO ASTM A82. REINFORCING STEEL SHALL BE SECURELY TIED IN PLACE USING #16 ANNEALED IRON WIRE. REINFORCEMENT SHALL BE CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
- CN5.3 ALL CONTINUOUS REINFORCING SHALL BE SPLICED USING CLASS B TENSION SPLICES, U.N.O.
- CN5.4 BARS IN BEAMS AND SLABS SHALL BE SUPPORTED ON WELL-CURED CONCRETE BLOCKS OR APPROVED METAL CHAIRS, AS SPECIFIED BY THE CRSI MANUAL OF STANDARD PRACTICE, MSP-1.
- CN5.5 CONTINUE HORIZONTAL WALL BARS THROUGH PILASTERS, COLUMNS, AND INTERSECTING WALLS. REFER TO TYPICAL DETAILS FOR LAYOUT OF CORNER BARS AND BARS IN SMALL WALL SECTIONS. SLAB BARS SHALL BE HOOKED INTO WALLS OR HOOKED DOWELS SHALL BE PROVIDED TO MATCH SLAB REINFORCING. PROVIDE HOOKED DOWELS FROM FOOTINGS TO MATCH VERTICAL WALL REINFORCING.
- CN5.6 ADD TWO DIAGONAL #5 BARS, FOUR FEET LONG, CENTERED, AT EACH CORNER OF FOUNDATION OR SLAB OPENING, U.N.O.
- CN5.7 U.N.O., INSTALL WWF 1 1/2" FROM TOP OF ALL SLABS ON GRADE, TOPPING SLABS ON DECK, OR TOPPING SLABS ON PRECAST. LAP JOINTS TWO FULL MESHES BUT NOT LESS THAN 8". AT CONSTRUCTION JOINTS, LOCATE WWF AT MID DEPTH OF SLAB.

CN6 COVERAGE FOR REINFORCEMENT:
- CN6.1 CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH .... 3"
- CN6.2 CONCRETE EXPOSED TO EARTH AND WEATHER:
  - #6 THRU #18 BARS .... 2"
  - #5 BAR, W31 OR D31 WIRE AND SMALLER .... 1 1/2"
- CN6.3 CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
  - SLABS, WALLS, JOISTS:
    - #14 AND #18 .... 1 1/2"
    - #11 BAR AND SMALLER .... 3/4"
  - BEAMS, COLUMNS:
    - PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS .... 1 1/2"

CN7 CONCRETE COMPRESSIVE STRENGTHS SHALL BE VERIFIED BY STANDARD 28-DAY CYLINDER TESTS PER ASTM C39 AND SHALL BE AS FOLLOWS:

FOOTINGS	f'c = 3,000 PSI
CURBS	f'c = 4,000 PSI
SLABS ON GRADE	f'c = 4,000 PSI

CN8 SPECIAL INSPECTOR SHALL BE NOTIFIED IF ANY WATER IS TO BE ADDED IN FIELD.

CN CONCRETE NOTES (CONT.)

CN9 CONCRETE FOUNDATIONS:
- CN9.1 ALL FOUNDATION EXCAVATIONS MUST BE REVIEWED AND APPROVED BY THE SOILS ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
- CN9.2 ACCURATELY SET AND SECURELY SUPPORT REINFORCING, DOWELS, AND ANCHOR BOLTS PRIOR TO PLACEMENT OF CONCRETE. WET-STICKING OR FLOATING OF REINFORCING, DOWELS, AND ANCHOR RODS IS NOT ALLOWED.
- CN9.3 PROVIDE CONSTRUCTION JOINTS, INSERTS, SLEEVES, DOWELS, ANCHORS, ETC., AS SHOWN. ITEMS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND ACCORDING TO USUAL ACCEPTED STANDARDS OF THE TRADE. ANCHOR RODS PER ASTM F1554 AS SHOWN.
- CN9.4 ALL FOUNDATION COLD JOINTS SHALL BE KEYED. CONTINUOUS REINFORCING SHALL EXTEND ONE DEVELOPMENT LENGTH PLUS 6". LOCATE FOUNDATION COLD JOINTS AT EXPANSION JOINTS IN MASONRY VENEER WHEN POSSIBLE.
- CN9.5 REINFORCING SHOWN ON DETAILS IS THE REQUIRED MINIMUM. AT CONTRACTOR'S OPTION AND EXPENSE, ADDITIONAL REINFORCING MAY BE PERMITTED TO ASSIST IN EASE OF CONSTRUCTABILITY. ADDITIONAL REINFORCING MUST BE SUBMITTED FOR REVIEW ON SHOP DRAWINGS.

CN10 PROVIDE MINIMUM 5000 PSI NON-SHRINK, NON-METALLIC GROUT UNDER COLUMN BASE PLATES. GROUT SHALL NOT CONTAIN GYPSUM. COLUMN BASES TO BE GROUTED BEFORE PLACEMENT OF CONCRETE TOPPING ON STEEL FORMS.

CN11 MINIMUM 4" CONCRETE SLAB ON GRADE WITH WWF 6X6-W2.1 X W2.1, OVER VAPOR BARRIER, OVER A MINIMUM 6" COMPACTABLE, TRIMMABLE, GRANULAR FILL. TYP. U.N.O. ON DRAWINGS AND GEOTECHNICAL REPORT.

CN12 PROVIDE SLAB CONTROL JOINTS AS FOLLOWS, U.N.O.:
- CN12.1 SLABS (ON GRID LINE WHERE PRACTICAL) AND:
  - SLAB-ON-GRADE .... 10' ± 2'
  - PRECAST TOPPING SLABS .... 10' ± 2'
- CN12.3 CONTROL JOINT LAYOUT SHOULD MAINTAIN AN APPROXIMATE ASPECT RATIO OF 1:1.

CN13 PERMANENTLY EXPOSED EMBEDDED PLATES AND ANGLES TO BE HOT-DIP GALVANIZED AFTER FABRICATION, U.N.O. NO LOADS OR WELDS SHALL BE PLACED ON EMBEDDED PLATES OR ANGLES FOR A MINIMUM OF 7 DAYS AFTER CASTING.

CN14 EPOXY REPAIR ADHESIVE SHALL CONFORM TO ASTM C881 AND SHALL BE A TWO-COMPONENT, LIQUID EPOXY WITH NON-SAG CONSISTENCY AND A LONG POT LIFE. THE EPOXY ADHESIVE SHALL BE SUITABLE FOR USE IN DRY OR DAMP CONDITIONS. MINIMUM SHEAR STRENGTH SHALL BE 5,000 PSI; MINIMUM TENSILE STRENGTH SHALL BE 4,000 PSI. HOLE SIZES AND INSTALLATION SHALL BE IN STRICT COMPLIANCE WITH THE APPROVED ICC REQUIREMENTS. DO NOT CUT REINFORCING IN NEW OR EXISTING CONCRETE DURING PLACEMENT.

CN15 COLD WEATHER PROTECTION
- CN15.1 DURING COLD WEATHER CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR PROTECTING CURING CONCRETE PER THE RQMTS. OF ACI 306.
- CN15.2 DURING COLD WEATHER CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR PROTECTING FOUNDATIONS THAT DO NOT EXTEND TO FROST DEPTH FROM HEAVING. AT CONTRACTOR'S OPTION, BOTTOM OF FOOTINGS MAY BE EXTENDED BEYOND THE FROST ZONE, IN LIEU OF SURFACE PROTECTION METHODS. NO ADD'L REINFORCING WILL BE REQ'D AT EXTENDED FOUNDATIONS. ALL MITIGATION WORK SHALL BE PART OF THE CONTRACTOR BID AND NOT COMPENSIBLE BY CHANGE ORDER.
- CN15.3 CONTRACTOR TO PROVIDE A FROST STOOP PER TYP. STOOP DETAIL @ ALL EXTERIOR DOORS, SEE ARCH. FOR DOOR LOCATIONS.

CM CONCRETE MASONRY NOTES

CM1 CONCRETE MASONRY WORK SHALL CONFORM TO CHAPTER 21 OF THE IBC.

CM2 ALL WALLS ARE NOMINAL 8" CMU STACKED WITH A RUNNING BOND PATTERN UNLESS NOTED OTHERWISE ON THE DRAWINGS. JOINT REINFORCING SHALL NOT EXTEND THROUGH CONTROL JOINTS. BOND BEAM REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS. INTERSECTING WALLS SHALL BE BONDED BY OVERLAPPING COURSES.

CM3 ALL UNITS SHALL BE NORMAL WEIGHT CONCRETE MASONRY W/ MINIMUM COMPRESSIVE STRENGTH = 1,900 PSI (ASSEMBLY f'm = 1,500 PSI) AND CONFORM TO ASTM C90. UNITS SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH ASTM C140. LINEAL SHRINKAGE FOR UNITS SHALL NOT EXCEED 0.065%. CONCRETE MASONRY WALLS SHALL BE REINFORCED AS SHOWN ON THE PLANS AND DETAILS AND, IF NOT SHOWN, SHALL BE REINFORCED AS NOTED BELOW.

CM4 CONCRETE MASONRY REINFORCEMENT:
- CM4.1 REINFORCING STEEL SHALL CONFORM TO IBC SECTION 2103.13. REBAR REINFORCEMENT SHALL BE ASTM A615 GRADE 60 U.N.O. AND SHALL BE SECURELY PLACED IN ACCORDANCE WITH ACI 530.1 SECTION 3.4. TIES AND STIRRUPS SHALL BE ASTM A615 GRADE 40 (MIN.). PROVIDE MINIMUM LAP FOR REINFORCING BARS PER ACI 530 (48 BAR DIAMETERS, WITH A MINIMUM OF 18").
- CM4.2 JOINT REINFORCING SHALL BE ASTM A82, LADDER OR TRUSS TYPE DESIGN, NO. 9 WIRE AT SIDES AND CROSS RODS. INSTALL CONTINUOUS JOINT REINFORCING 16" ON CENTERS VERTICALLY. INSTALL CONTINUOUS JOINT REINFORCING IN THE FIRST AND SECOND BED JOINTS ABOVE AND BELOW OPENINGS AND EXTEND REINFORCING 24" BEYOND EACH SIDE OF OPENING. LAP JOINT REINFORCING SPLICES A MINIMUM OF 6 INCHES.
- CM4.3 CONTINUOUS BOND BEAMS REINFORCED WITH (2) #5 CONTINUOUS BARS SHALL BE PROVIDED AT ALL FLOOR AND ROOF LINES, AT THE TOP OF WALLS AND AT INTERMEDIATE STAIR LANDING LEVELS. STEP BOND BEAMS AS REQUIRED TO MATCH ROOF SLOPES. CONTINUE BOND BEAM REINFORCING THROUGH CONTROL JOINTS U.N.O. AT OPENINGS WHERE A STRUCTURAL STEEL HEADER IS NOT SHOWN ON PLAN OR HEADER SCHEDULE, SEE NOTE CM8. PROVIDE A BOND BEAM REINFORCED W/ (2) #5 BARS AT SILL LOCATIONS. EXTEND BARS AT OPENINGS 2'-0" PAST THE OPENING AT EACH SIDE. PROVIDE (1) BAR, MATCHING VERTICAL BAR SIZE, FOR THE FULL HEIGHT OF THE WALL AT EACH SIDE OF OPENINGS, WALL ENDS, AND WALL INTERSECTIONS, U.N.O.
- CM4.4 DOWELS TO MASONRY WALLS SHALL BE EMBEDDED A MINIMUM OF 1'-6" OR HOOKED INTO THE SUPPORTING STRUCTURE AND BE OF THE SAME SIZE AND SPACING AS WALL REINFORCING. PROVIDE CORNER BARS TO MATCH THE HORIZONTAL WALL REINFORCING AT WALL INTERSECTIONS.
- CM4.5 ALL EXTERIOR MASONRY WALLS AND INTERIOR LOAD BEARING MASONRY WALLS SHALL BE REINFORCED WITH #5 BARS VERTICAL, CENTERED IN WALL, AT 48" O.C. UNLESS NOTED OTHERWISE IN THE PLANS AND SECTIONS.
- CM4.6 NON-LOAD BEARING MASONRY WALLS (NOT SHOWN ON STRUCTURAL DRAWINGS) SHALL BE REINFORCED WITH #4 BARS VERTICAL, CENTERED IN WALL, AT 96" O.C. UNLESS NOTED OTHERWISE IN THE PLANS AND SECTIONS. SEE ARCH. FOR NON-LOAD BEARING MASONRY WALL LOCATIONS.

CM5 VERTICAL CONTROL JOINTS SHALL BE SPACED USING THE LESSER OF EITHER A 1.5:1 LENGTH TO HEIGHT RATIO OR 25 FT ON CENTER. COORDINATE JOINTS w/ ARCH. DRAWINGS. BOND BEAM REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS.
- CM5.1 LOCATE VERTICAL CONTROL JOINTS A MINIMUM OF 8" AWAY FROM HEADER BEARING LOCATIONS
- CM5.2 LOCATE VERTICAL CONTROL JOINTS ADJACENT TO CORNERS OR WALL INTERSECTIONS WITHIN A DISTANCE EQUAL TO HALF THE CONTROL JOINT SPACING LISTED IN NOTE CM5.

CM6 UNLESS NOTED OTHERWISE, MORTAR SHALL BE TYPE S AND SHALL CONFORM TO IBC SECTION 2103 AND ASTM C270. MORTAR BED JOINT THICKNESS SHALL NOT EXCEED 5/8".

CM7 GROUT:
- CM7.1 GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI (TYPE S) AND SHALL CONFORM TO IBC SECTION 2103 AND ASTM C476. GROUT SHALL CONSIST OF A MIXTURE OF CEMENTITIOUS MATERIALS AND AGGREGATE TO WHICH SUFFICIENT WATER HAS BEEN ADDED TO CAUSE THE MIXTURE TO FLOW WITHOUT SEGREGATION OF THE CONSTITUENTS.
- CM7.2 GROUT CELLS SOLID AT REINFORCING, BOND BEAMS, INSERTS, ANCHORS, ELEVATOR GUIDE RAILS, AND 24" BELOW BEARING POINT OF STEEL SECTIONS AND 12" TO EACH SIDE. CELLS WHICH ARE TO RECEIVE GROUT ARE TO BE FREE OF PROTRUDING MORTAR AND DROPPINGS. GROUT BOND BEAMS OVER OPENINGS IN ONE CONTINUOUS POUR. SUPPORT AND SECURE REINFORCEMENT AGAINST DISPLACEMENT BEFORE GROUTING.

CM8 PROVIDE MASONRY HEADERS OVER OPENINGS LARGER THAN 12" IN LENGTH AS INDICATED IN SCHEDULE BELOW, U.N.O. HEADERS SHALL BEAR 8" ON EACH SIDE OF OPENING. PERMANENTLY EXPOSED STEEL HEADERS TO BE HOT-DIP GALVANIZED AFTER FABRICATION, U.N.O.
- CM8.1 ALL STEEL HEADERS OVER 6'-0" LONG SHALL HAVE #5 DBA x 2'-6" SPACED TO MATCH WALL REINFORCING.

CM CONCRETE MASONRY NOTES (CONT.)

CM8 PROVIDE MASONRY HEADERS OVER OPENINGS LARGER THAN 12" IN LENGTH AS INDICATED IN SCHEDULE BELOW, U.N.O. HEADERS SHALL BEAR 8" ON EACH SIDE OF OPENING. PERMANENTLY EXPOSED STEEL HEADERS TO BE HOT-DIP GALVANIZED AFTER FABRICATION, U.N.O.

CM8.1 ALL STEEL HEADERS OVER 6'-0" LONG SHALL HAVE #5 DBA x 2'-6" SPACED TO MATCH WALL REINFORCING.

WALL THICKNESS	MAXIMUM MASONRY OPENING 4'-0"	8'-0"	12'-0"
6"	WT4x9	WT5x15	—
8"	W8x10 w/ PL 5/16x7 - OR - (1) COURSE BOND BEAM	W8x10 w/ PL 5/16x7 - OR - (2) COURSE BOND BEAM	W16x31 w/ PL 5/16x7
10"	W8x10 w/ PL 5/16x9 - OR - (1) COURSE BOND BEAM	W8x10 w/ PL 5/16x9 - OR - (2) COURSE BOND BEAM	W16x31 w/ PL 5/16x9
12"	W8x10 w/ PL 5/16x11 - OR - (1) COURSE BOND BEAM	W8x15 w/ PL 5/16x11 - OR - (2) COURSE BOND BEAM	W16x31 w/ PL 5/16x11

TYPICAL STRUCTURAL ABBREVIATIONS

(PERIODS w/ ABBREVIATIONS MAY BE OMITTED WITHOUT CHANGING MEANING).

&	AND
@	AT
A.B.	ANCHOR BOLT
A.C.I.	AMERICAN CONCRETE INSTITUTE
A.E.S.S.	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
A.I.S.C.	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
A.S.T.M.	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ADD.	ADDENDUM
ADD'L	ADDITIONAL
ALT.	ALTERNATE
ARCH.	ARCHITECTURAL
B.P.	BASE PLATE
B/	BOTTOM OF
BLDG.	BUILDING
BRG.	BEARING
C.I.P.	CAST IN PLACE
C.J.	CONSTRUCTION JOINT
C.M.U.	CONCRETE MASONRY UNIT
C.P.	COMPLETE PENETRATION
CL	CENTERLINE
CLG.	CEILING
CLR.	CLEAR
CONC.	CONCRETE
CONN.	CONNECTION
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
CONTR.	CONTRACTOR
D.B.A.	DEFORMED BAR ANCHOR
D.L.	DEAD LOAD
DET.	DETAIL
DIA. or Φ	DIAMETER
DIAG.	DIAGONAL
DIM.	DIMENSION
DN.	DOWN
DWGS.	DRAWINGS
E.F.	EACH FACE
E.J.	EXPANSION JOINT
E.W.	EACH WAY
EA.	EACH
EL.	ELEVATION
ELEC.	ELECTRICAL
EQ.	EQUAL
EXT.	EXTERIOR
F.S.	FAR SIDE
FIN.	FINISH
FM	FOUNDATION MISCELLANEOUS
FNDN.	FOUNDATION
FT	FOOT/FEET
GA.	GAGE
GALV.	GALVANIZED
GC.	GENERAL CONTRACTOR
H.P.	HIGH POINT
HORIZ.	HORIZONTAL
HT.	HEIGHT
I.B.C.	INTERNATIONAL BUILDING CODE
IN.	INCH/INCHES
INT.	INTERIOR
K or k	KIP
L	ANGLE
L.L.	LIVE LOAD
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
L.P.	LOW POINT
LB.	POUND
L.S.H.	LONG SIDE HORIZONTAL
L.S.V.	LONG SIDE VERTICAL
LONG.	LONGITUDINAL
LT. GA.	LIGHT GAGE
M.E.P.	MECHANICAL, ELECTRICAL, PLUMBING
M.S.J.C.	MASONRY STANDARDS JOINT COMMITTEE
MAX.	MAXIMUM
MECH.	MECHANICAL
MFR.	MANUFACTURER
MIN.	MINIMUM
MISC.	MISCELLANEOUS
MTL.	METAL
N.D.S.	NATIONAL DESIGN SPECIFICATION
N.I.C.	NOT IN CONTRACT
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.S.H.A.	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
O.W.J.	OPEN WEB JOIST
OPNG.	OPENING
OPP.	OPPOSITE
P.C.I.	PRECAST/PRESTRESSED CONCRETE INSTITUTE
P.P.	PARTIAL PENETRATION
P.S.I.	POUNDS PER SQUARE INCH
P.S.F.	POUNDS PER SQUARE FOOT
P.C.F.	POUNDS PER CUBIC FOOT
PL	PLATE
PLBG.	PLUMBING
QTY.	QUANTITY
R or RAD.	RADIUS
REF.	REFERENCE
REINF.	REINFORCING
REQ'D.	REQUIRED
REV.	REVISION
RRE	RAKER RHODES ENGINEERING
S.D.I.	STEEL DECK INSTITUTE
S.J.I.	STEEL JOIST INSTITUTE
S.O.G.	SLAB ON GRADE
SCHED.	SCHEDULE
SIM.	SIMILAR
SPA.	SPACING/SPACES
SPECS.	SPECIFICATIONS
STD.	STANDARD
STRUC.	STRUCTURAL
T/	TOP OF
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD (FIELD VERIFY)
w/	WITH
w/o	WITHOUT
W.F.	WIDE FLANGE
W.P.	WORKPOINT
W.W.F.	WELDED WIRE FABRIC

NOTE:
SEE FDN. PLAN FOR SLAB THICKNESS, REINFORCING & JOINT LOCATIONS

① TYP. SLAB ON GRADE

1 1/2" = 1'-0"

NOTE:
SEE FDN. PLAN FOR SLAB THICKNESS, REINFORCING & JOINT LOCATIONS

② TYP. SLAB ON GRADE CONSTRUCTION JOINT

1 1/2" = 1'-0"

NOTE:
SEE FDN. PLAN FOR SLAB THICKNESS, REINFORCING & JOINT LOCATIONS

③ TYP. SLAB ON GRADE CONTROL JOINT

1 1/2" = 1'-0"

④ TYP. SLAB ISOLATION JOINT @ HSS COLUMN

1/2" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	04/23/18	ADDENDUM #2

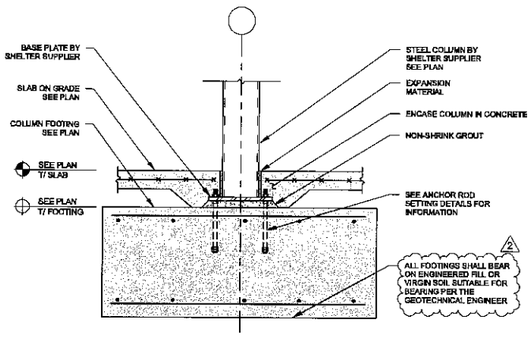
MATTHEW J. ENSTROM
PE-2011013093

STRUCTURAL NOTES

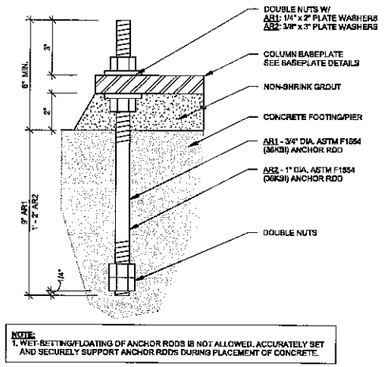
CONFLUENCE PROJECT NO: 16081KC

S001

© 2017 4/19/2018 6:12:10 PM C:\Users\menstrom\Documents\RRE17077 Hawk Ridge Park-Central_R17_menstrom@stand-sei.com.rvt



1 TYP. STEEL COLUMN @ INTERIOR FOOTING
3/4" = 1'-0"



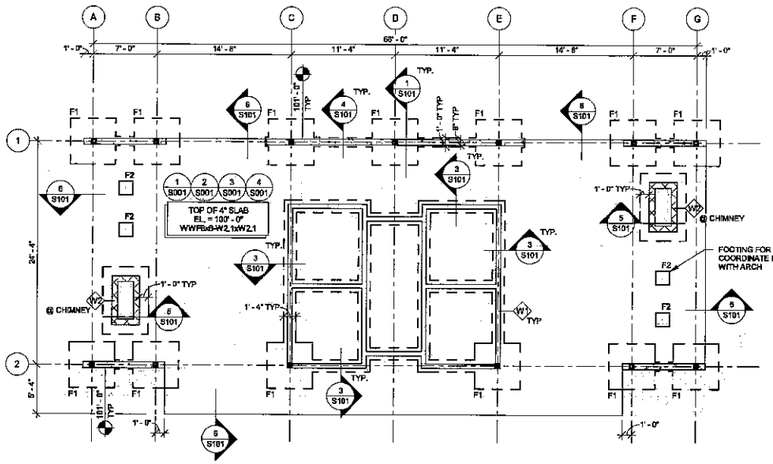
NOTE:
1. WET-SETTING/FLOATING OF ANCHOR RODS IS NOT ALLOWED. ACCURATELY SET AND SECURELY SUPPORT ANCHOR RODS DURING PLACEMENT OF CONCRETE.

2 TYP. ANCHOR ROD SETTING DETAIL
3" = 1'-0"

CMU WALL SCHEDULE				
MARK	NOMINAL WALL SIZE	VERT. REINFORCEMENT	HORZ. REINFORCEMENT	NOTES
W1	8"	#5 @ 32" O.C.	LADDER TYPE @ 16" O.C.	
W2	8"	#5 @ 16" O.C.	LADDER TYPE @ 16" O.C.	CHIMNEY

NOTE: 1) CMU WALLS SHOWN ON PLAN ARE TYPE W1 U.N.O.
2) SEE STRUCTURAL NOTES FOR NON-LOAD BEARING MASONRY WALL REINFORCEMENT.

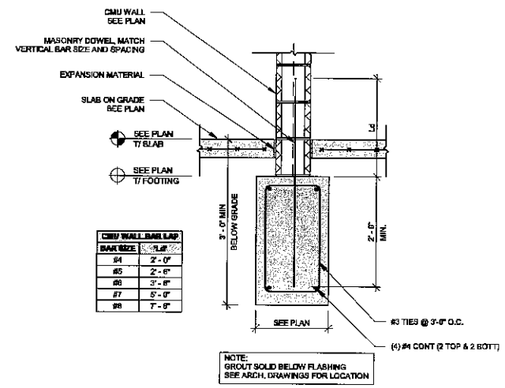
FOOTING SCHEDULE				
Type Comments	WIDTH	LENGTH	THICKNESS	REINFORCEMENT
F1	5'-0"	5'-0"	2'-4"	(5) #5 E.W. - TOP & BOTTOM
F2	1'-6"	1'-6"	2'-4"	(3) - #4 E.W. - BOTTOM
F3	8'-6"	8'-6"	2'-4"	(10) #5 E.W. - TOP & BOTTOM
F4	7'-0"	10'-0"	2'-4"	#5 @ 12" O.C. E.W. - TOP & BOTTOM



NOTES:
1. SEE ARCH FOR WALL LOCATIONS AND OTHER INFORMATION NOT SHOWN
2. SEE S001 FOR GENERAL NOTES AND TYPICAL SLAB DETAILS
3. PREMANUFACTURED SHELTER FRAMING BY SHELTER SUPPLIER
4. SEE S201 FOR CMU WALL DETAILS
5. GROUT BOND BEAMS ABOVE ALL CMU WALL OPENINGS PER GENERAL NOTES
6. T/ FTG EL = 99'-4", U.N.O.

NORTH

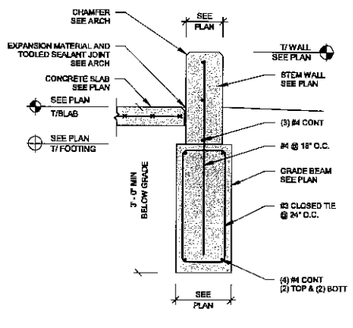
A SHELTER FOUNDATION PLAN
1/8" = 1'-0"



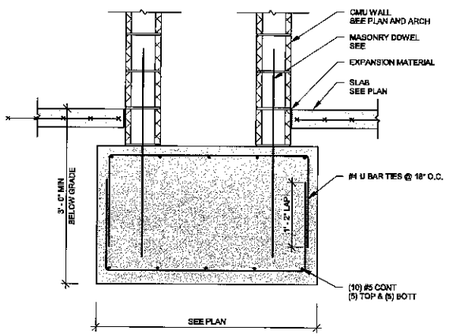
CMU WALL BAR LAP	
BAR SIZE	"LAP"
#4	2'-0"
#5	2'-6"
#6	3'-6"
#7	5'-0"
#8	7'-0"

NOTE:
GROUT SOLID BELOW FLASHING
SEE ARCH. DRAWINGS FOR LOCATION

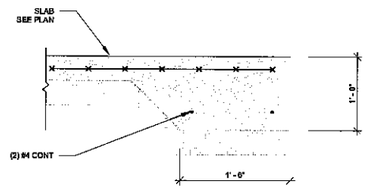
3 CMU WALL FOOTING
3/4" = 1'-0"



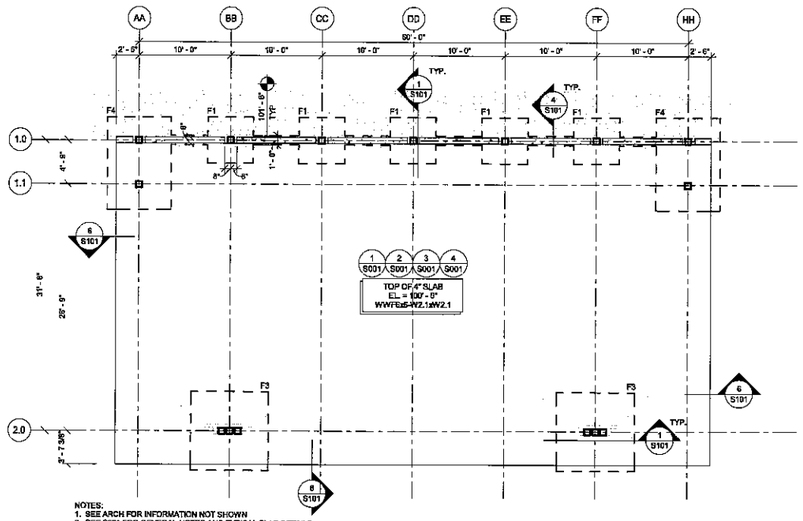
4 TYPICAL CURB SECTION
3/4" = 1'-0"



5 FIREPLACE FOUNDATION SECTION
3/4" = 1'-0"



6 TURNED DOWN SLAB EDGE
1" = 1'-0"



NOTES:
1. SEE ARCH FOR INFORMATION NOT SHOWN
2. SEE S001 FOR GENERAL NOTES AND TYPICAL SLAB DETAILS
3. PREMANUFACTURED SHELTER FRAMING BY SHELTER SUPPLIER
4. T/ FTG EL = 99'-4", U.N.O.
5. THE GEOTECHNICAL REPORT NOTES COMPRESSIBLE SOILS WITHIN THE BOUNDARIES OF THE AMPITHEATER FOOTPRINT. SOME MATERIAL REMOVAL AND MOISTURE CONDITIONING AS DIRECTED BY THE GEOTECHNICAL ENGINEER SHOULD BE ANTICIPATED DURING CONSTRUCTION.

FOUNDATION SYMBOL KEY
T/ WALL/ STEEL
T/ FOOTING
T/ JOIST BEARING
T/ BRICK LEDGE
ELEV. STEP
EXIST. BLDG.

NORTH

B AMPHITEATER FOUNDATION PLAN
1/8" = 1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH: 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER. SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.665.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK
CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

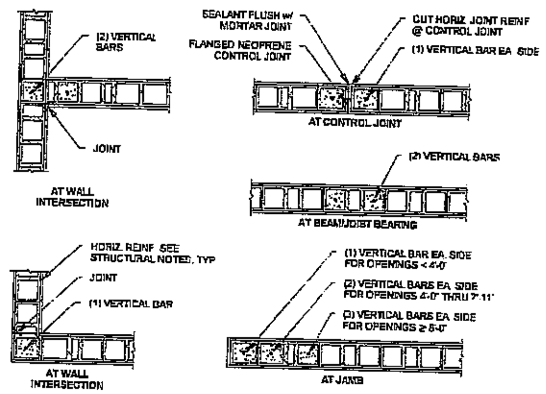
REVISION SCHEDULE		
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS
2	04/23/18	ADDENDUM #2

STATE OF MISSOURI
MATTHEW J. ENSTROM
NUMBER PE-2011013093
PROFESSIONAL ENGINEER

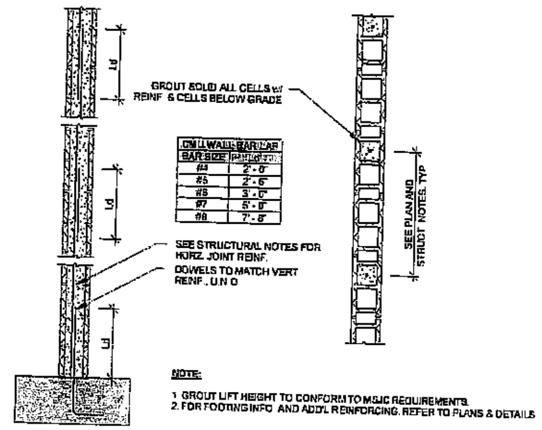
FOUNDATION PLANS AND DETAILS

CONFLUENCE PROJECT NO: 16081KC

S101



① TYP. 8" CMU WALL REINF.
N.T.S.



② TYP. CMU REINFORCING PLACEMENT
N.T.S.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE COMPANY, INC.
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTURE
2100 CENTRAL STREET, SUITE 31
KANSAS CITY, MISSOURI 64108
PH. 816.474.1397

CIVIL ENGINEER
WILSON & COMPANY
800 E 101ST TER, SUITE 200
KANSAS CITY, MO 64131
PH: 816.701.3100
CERT. OF AUTHORITY #2003007599

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN STREET, SUITE 300
KANSAS CITY, MO 64108
PH: 816.663.8718

STRUCTURAL ENGINEER
STAND STRUCTURAL ENGINEERING INC.
8234 ROBINSON ST.
OVERLAND PARK, KANSAS 66204
PH: 913.214.2169

HAWK RIDGE PARK

CITY OF RAYMORE PARKS AND RECREATION
RAYMORE, MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

STATE OF MISSOURI
MATTHEW J. ENSTROM
NUMBER PE-2011012053
PROFESSIONAL ENGINEER
03/09/18

MASONRY DETAILS

CONFLUENCE PROJECT NO: 16081KC

S201

PLUMBING SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS MAY BE USED. V2.00

ANNOTATION

Symbol	Description
(1)	PLUMBING PLAN NOTE CALLOUT
(1)	PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
[1]	EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
CU / 1	MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
	CONNECTION POINT OF NEW WORK TO EXISTING
1 / M1	DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
1 / M1	SECTION CUT DESIGNATION

STANDARD MOUNTING HEIGHTS

REFER TO THE ARCHITECTURAL DRAWINGS FOR PLUMBING FIXTURE MOUNTING HEIGHTS. UNO, INSTALL PLUMBING FIXTURES WITH THE MOUNTING HEIGHTS AS LISTED BELOW WITH FINAL APPROVAL BY THE ARCHITECT.

Fixture	Height
LAVATORY OR SINK	
STANDARD HEIGHT	31" FLOOR TO RIM
ADA ACCESSIBLE	34" FLOOR TO RIM
URINAL	
STANDARD HEIGHT	24" FLOOR TO RIM
ADA ACCESSIBLE	17" FLOOR TO RIM
WATER CLOSET	
STANDARD HEIGHT	15" FLOOR TO RIM
ADA ACCESSIBLE	17" TO 19" FLOOR TO TOP OF SEAT
WATER COOLER OR DRINKING FOUNTAIN	
STANDARD HEIGHT	41" FLOOR TO SPOUT
ADA ACCESSIBLE	36" FLOOR TO SPOUT
HOSE BIBBS	42" FLOOR TO CENTERLINE
NON FREEZE WALL HYDRANTS	36" AFT TO CENTERLINE
	18" AFG TO CENTERLINE

UNLESS NOTED OTHERWISE, MOUNTING HEIGHTS LISTED ARE ABOVE FINISHED FLOOR (AFF) OR ABOVE FINISHED GRADE (AFG).

ABBREVIATIONS

ADA	AMERICANS WITH DISABILITIES ACT	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MBH	1000 BTU PER HOUR
AFG	ABOVE FINISHED GRADE	MH	MANHOLE
AHU	AIR HANDLING UNIT	MIN	MINIMUM
AP	ACCESS PANEL	N/C	NORMALLY CLOSED
BAS	BUILDING AUTOMATION SYSTEM	N/O	NORMALLY OPEN
BFF	BELOW FINISHED FLOOR	NIC	NOT IN CONTRACT
BFG	BELOW FINISHED GRADE	ORD	OVERFLOW ROOF DRAIN
BOP	BOTTOM OF PIPE	PDI	PLUMBING DRAINAGE INSTITUTE
BOS	BOTTOM OF STRUCTURE	PH	PHASE
BTU	BRITISH THERMAL UNIT	PRV	PRESSURE REDUCING VALVE
CP	CONDENSATE PUMP	PVC	POLYVINYL CHLORIDE
CPVC	CHLORINATED POLYVINYL CHLORIDE	RCP	REINFORCED CONCRETE PIPE
CU	COPPER	RD	ROOF DRAIN
DI	DUCTILE IRON	RPM	REVOLUTIONS PER MINUTE
DN	DOWN	RTU	ROOFTOP UNIT
DFU	DRAINAGE FIXTURE UNIT	SF	SQUARE FEET
DS	DOWNSPOUT	SP	SUMP PUMP
(E)	EXISTING	SS	STAINLESS STEEL, SANITARY SEWER, SOIL STACK
EMS	ENERGY MANAGEMENT SYSTEM	TDH	TOTAL DYNAMIC HEAD
ETR	EXISTING TO REMAIN	TFA	TO FLOOR ABOVE
EWC	ELECTRIC WATER COOLER	TFB	TO FLOOR BELOW
FD	FLOOR DRAIN	TYP	TYPICAL
FFA	FROM FLOOR ABOVE	UL	UNDERWRITERS LABORATORIES, INC.
FFB	FROM FLOOR BELOW	UNO	UNLESS NOTED OTHERWISE
FF	FINISHED FLOOR	UPS	UNINTERRUPTIBLE POWER SUPPLY
FL	FLOW LINE	V	VOLT(S)
FLA	FULL LOAD AMPS	VCP	VITRIFIED CLAY PIPE
FLR	FLOOR	VFD	VARIABLE FREQUENCY DRIVE
GPM	GALLONS PER MINUTE	VS	VENT STACK
HD	HEAD, HUB DRAIN	VTR	VENT THROUGH ROOF
HZ	HERTZ	W/	WITH
IE	INVERT ELEVATION	W/O	WITHOUT
IN WC	INCHES OF WATER COLUMN	WC	WATER COLUMN
JB	JUNCTION BOX	WS	WASTE STACK
J-BOX	JUNCTION BOX	WSFU	WATER SUPPLY FIXTURE UNIT
kW	KILOWATT		
MAU	MAKE-UP AIR UNIT		

PIPING

- DOMESTIC HOT WATER (HW)
- SOIL PIPING - ABOVE FLOOR (S)
- SOIL PIPING - BELOW FLOOR (S)
- WASTE PIPING - ABOVE FLOOR (W)
- WASTE PIPING - BELOW FLOOR (W)
- WATER SERVICE (WS)
- CONDENSATE PUMP DISCHARGE (PD)
- EXISTING PIPING TO BE REMOVED
- EXISTING PIPING TO REMAIN
- VENT PIPING (V)
- FLOOR DRAIN (FD), SIZE & TYPE
- ROOF DRAIN (RD), SIZE & TYPE
- BALL VALVE
- CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- BALANCING VALVE WITH PRESSURE PORTS
- WATER METER
- STRAINER
- STRAINER WITH BLOWOFF
- RELIEF/SAFETY VALVE
- PA — PIPE ANCHOR
- EJ — EXPANSION JOINT
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- UNION
- FLANGE CONNECTION
- HOSE BIBB (HB)
- NONFREEZE WALL HYDRANT (NW)
- CLEANOUT
- CAP
- WALL CLEANOUT (WCO)
- FLOOR CLEANOUT (FCO)
- EXTERIOR CLEANOUT (ECO)
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT-OFF VALVE (SOV)
- "A" — WATER HAMMER ARRESTER (WHA) WITH PDI SIZES, (A, B, C, D, & E)

GENERAL NOTES:

1. PROVIDE A CONSTRUCTION RECORD SET OF "AS-BUILT" DOCUMENTS TO THE ARCHITECT AND OWNER'S CONSTRUCTION MANAGER REFLECTING ANY VARIANCES OF INSTALLED PIPING LOCATIONS OR EQUIPMENT CONTRARY TO THE CONSTRUCTION DOCUMENTS, REFER TO SPECIFICATIONS.
2. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY THE ARCHITECT AND OWNER'S CONSTRUCTION MANAGER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
3. PROVIDE TO THE ARCHITECT AND OWNER'S CONSTRUCTION MANAGER A COPY OF INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS, REFER TO SPECIFICATIONS.
4. INSTALLATION SHALL COMPLY WITH LEGALLY CONSTITUTED CODES AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION AND ALSO MEET ALL REQUIREMENTS OF THE LANDLORD. OBTAIN A COPY OF THE LANDLORD'S REQUIREMENTS AND REVIEW PRIOR TO SUBMITTING BID.
5. PLANS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CODE REQUIREMENTS.
6. VERIFY LOCATION AND DEPTH OF UTILITIES AT POINTS OF CONNECTION BEFORE START OF PIPING INSTALLATION.
7. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF PLUMBING FIXTURES.
8. DO NOT SCALE FLOOR PLANS FOR EXACT HORIZONTAL LOCATION OF PIPE ROUTING.
9. INSTALL CONCEALED PIPING TIGHT TO THE STRUCTURE AND AS HIGH AS POSSIBLE. INSTALL EXPOSED PIPING TIGHT TO THE STRUCTURE, WALL OR CEILING AND AS HIGH AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS.
10. VALVES SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.
11. PIPING IN FINISHED AREAS SHALL BE ROUTED CONCEALED; EXPOSED PIPING, WHERE NECESSARY, SHALL BE ROUTED AS HIGH AS POSSIBLE AND TIGHT TO WALLS.
12. INSTALL NO PLASTIC PIPE OF ANY KIND ABOVE SLAB INSIDE OR UNDER THE BUILDING. INSTALL NO PLASTIC PIPE IN THE CEILING RETURN AIR PLENUM.
13. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
14. COORDINATE PIPING INSTALLATION WITH STRUCTURAL GRADE BEAMS, FOOTINGS, COLUMN PIERS, ETC. SLEEVE PIPING THROUGH GRADE BEAMS, FOOTING, ETC. WHERE REQUIRED AND AS NOTED ON PLANS. COORDINATE SLEEVE INSTALLATIONS WITH THE ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR AND GENERAL CONTRACTOR BEFORE CONCRETE IS INSTALLED.
15. CLEAN FAUCET AERATORS AND PIPE STRAINERS PRIOR TO TURNING BUILDING OVER TO THE OWNER.
16. PROVIDE TRAP PRIMERS WHERE REQUIRED BY LOCAL AUTHORITIES.
17. COORDINATE PIPE ROUTING AWAY FROM ELECTRICAL PANELS. DO NOT INSTALL PIPING OVER ELECTRICAL PANELS.
18. VERIFY WITH THE ARCHITECT THAT ALL EXPOSED WATER PIPING USING RUST INHIBITOR PAINT SHALL BE PAINTED. PAINT AND COLOR SHALL BE COORDINATED WITH THE ARCHITECT AND / OR OWNER.
19. COORDINATE ALL ROOF PENETRATIONS WITH OTHER TRADES. MAINTAIN 10' MINIMUM CLEARANCE FROM ALL AIR INTAKES. MAINTAIN 2' CLEARANCE FROM ALL OTHER EQUIPMENT.
20. INSULATE PIPING ROUTED IN EXTERIOR BUILDING WALLS WITH MINIMUM 2" BATT INSULATION TO PREVENT FREEZING.
21. PROVIDE "HEAVY-DUTY" NO-HUB COUPLINGS ON SANITARY PIPING 3" AND LARGER. SEE DIVISION 22 SPECIFICATION SECTION "SANITARY DRAINAGE AND VENT AND PIPING SPECIALTIES" FOR MORE INFORMATION.
22. PROVIDE TRANSITION ADAPTER COUPLINGS FOR CONNECTION OF PVC DWV TO CAST IRON SANITARY, WASTE AND VENT PIPE AT SLAB ON GRADE. SEE DIVISION 22 SPECIFICATION SECTION "SANITARY DRAINAGE AND VENT PIPING AND SPECIALTIES" FOR MORE INFORMATION.
23. WATER HAMMER ARRESTORS SHALL BE SIZE "A" UNLESS NOTED OTHERWISE.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2268

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1		CONSTRUCTION DRAWINGS

STATE OF MISSOURI — JAMES J. DIETZ — NUMBER PE-2007020258 — PROFESSIONAL ENGINEER

Mar 8 2018

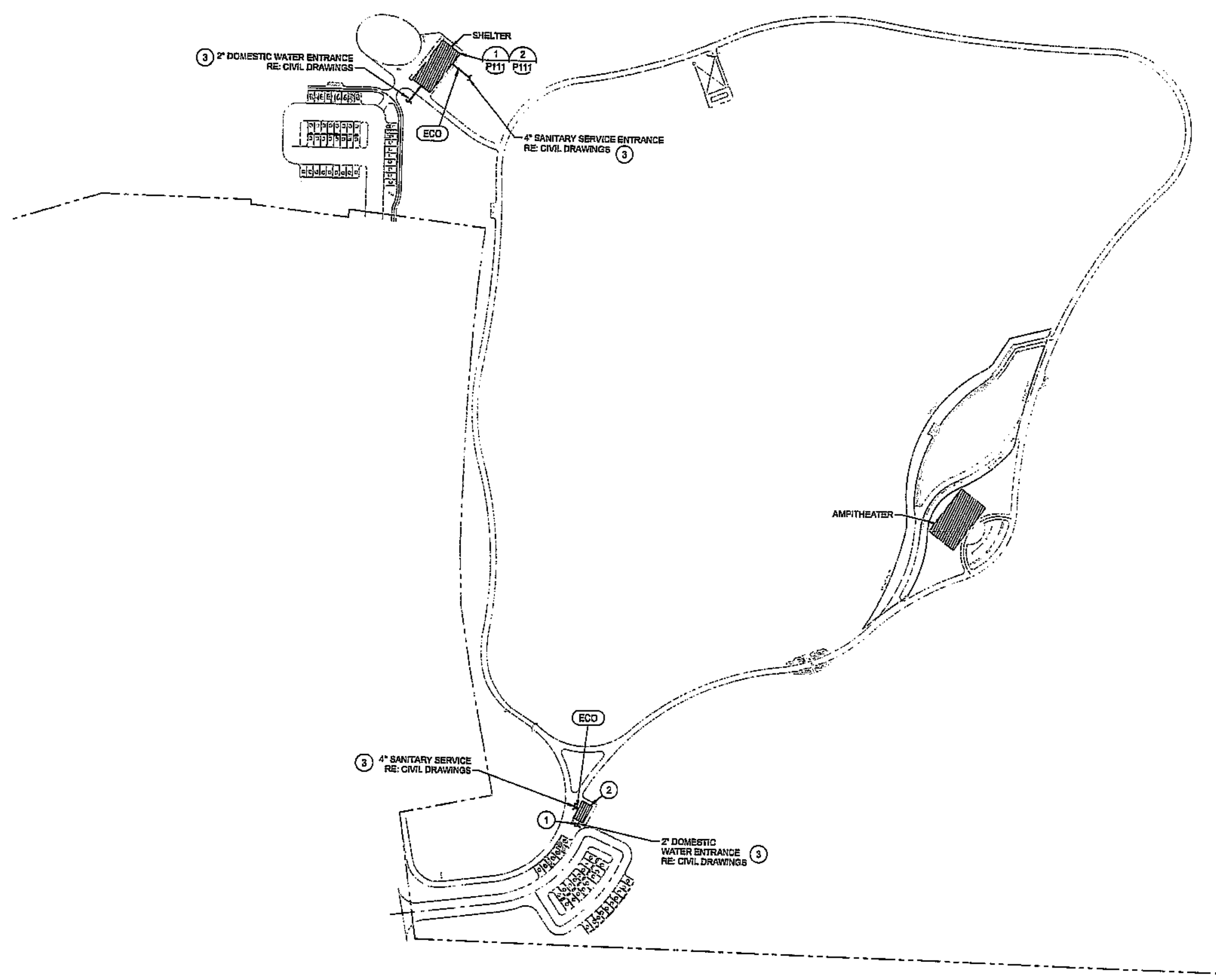
JAMES J. DIETZ
LICENSE # PE-2007020258

PLUMBING LEGENDS

CONFLUENCE PROJECT NO: 16081KC

P000

JAMES J. DIETZ



1 **PLUMBING SITE PLAN**
SCALE: 1"=100'-0"

GENERAL NOTES:

REFER TO SHEET P000 FOR GENERAL NOTES.

KEY NOTES:

1. WATER METER IN WATER METER PIT. REFER TO CIVIL PLANS FOR EXACT INSTALLATION LOCATION ON SITE. VERIFY AND COORDINATE FINAL LOCATION WITH THE ARCHITECT.
2. MODULAR RESTROOM SCOPE OF WORK:

   MODULAR UNIT IS PROVIDED BY OTHERS. PLUMBING CONTRACTOR SHALL PROVIDE ONE 4" SANITARY STUB AND ONE 2" DOMESTIC WATER STUB PER MANUFACTURER RECOMMENDATIONS. FIELD VERIFY AND COORDINATE EXACT PLUMBING PIPE STUB LOCATIONS AND DIMENSIONS, PIPING INVERT ELEVATIONS, PIPE SIZES, AND CLEANOUT LOCATIONS WITH ALL DISCIPLINES. NOTIFY ARCHITECT AND PLUMBING ENGINEER OF ANY OTHER COORDINATION ITEMS WITHIN THE PLUMBING ENGINEERS SCOPE OF WORK.
3. REFER TO CIVIL PLANS FOR EXACT LOCATION OF SERVICE EXIT / ENTRANCE. COORDINATE LOCATION OF SERVICE EXIT / ENTRANCE WITH ALL DISCIPLINES.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	[illegible]	[illegible] ON DRAWINGS

STATE OF MISSOURI
JAMES J. DIETZ
NUMBER PE-2007020258
PROFESSIONAL ENGINEER

Mar 8 2018

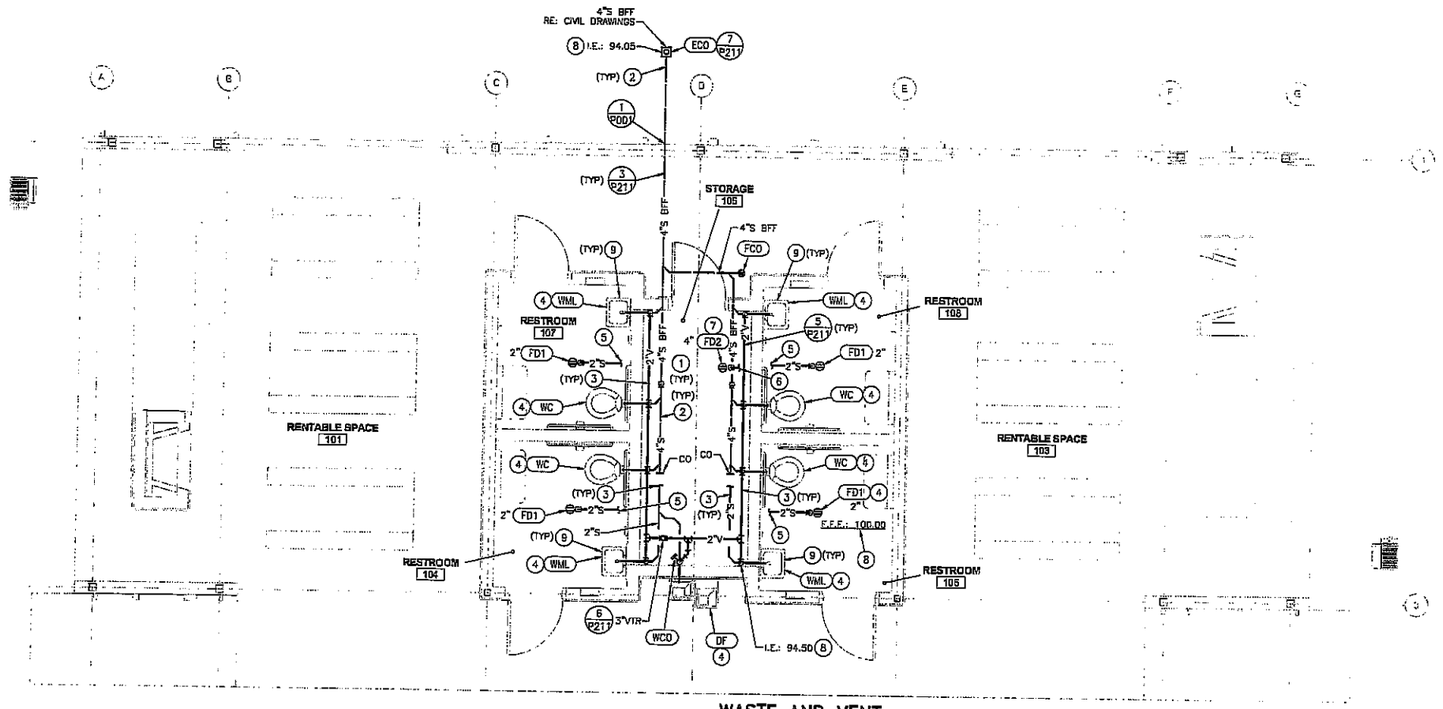
JAMES J. DIETZ
LICENSE # PE-2007020258

PLUMBING
SITE PLAN

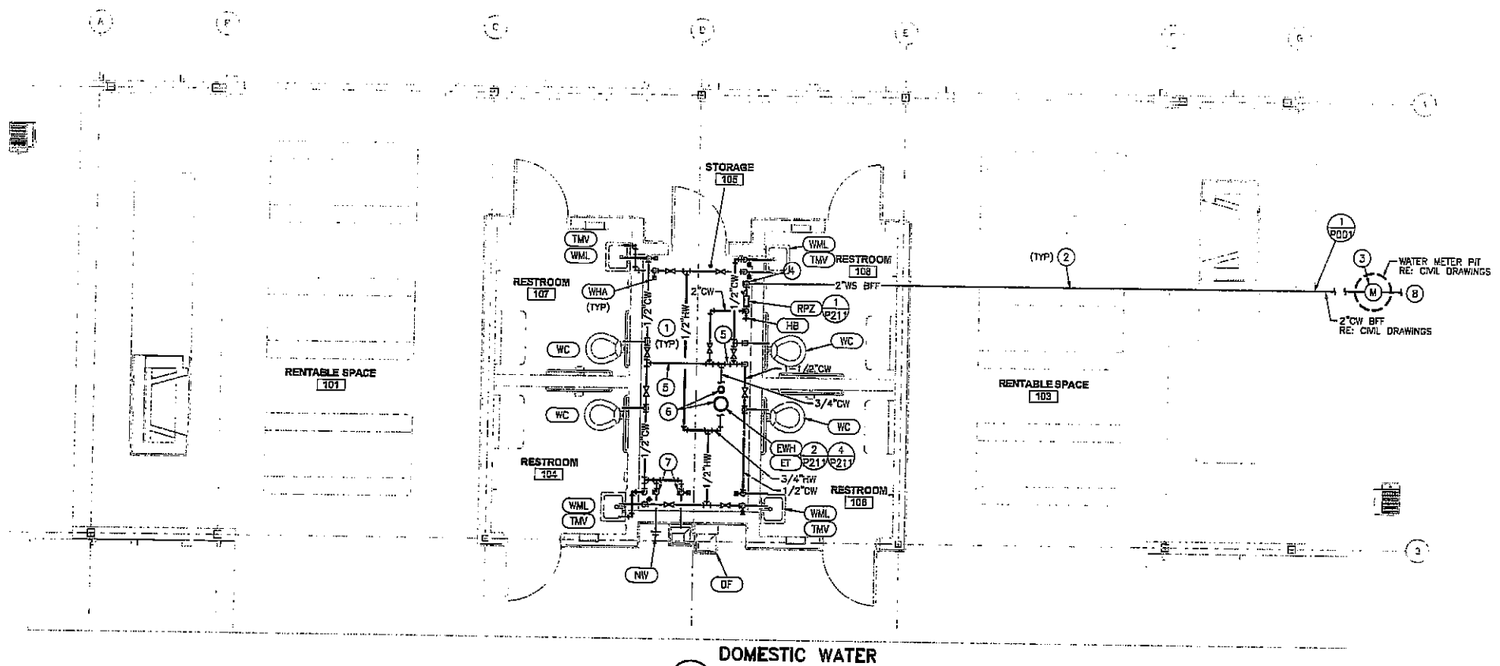
CONFLUENCE PROJECT NO: 16081KC

P001

JAMES J. DIETZ



1 WASTE AND VENT PLUMBING FLOOR PLAN – SHELTER
SCALE: 1/4"=1'-0"



2 DOMESTIC WATER PLUMBING FLOOR PLAN – SHELTER
SCALE: 1/4"=1'-0"

GENERAL PLUMBING NOTES:

REFER TO SHEET P000 FOR GENERAL NOTES.

KEY NOTES WASTE AND VENT:

1. DO NOT INSTALL ANY PLUMBING PIPING OVER ELECTRICAL PANELS OR EQUIPMENT.
2. PIPING SHOWN DASHED SHALL BE INSTALLED BELOW GRADE.
3. REFER TO WASTE AND VENT RISER DIAGRAMS FOR PIPING DETAILS AND CONTINUATION IN CHASE.
4. PROVIDE PLUMBING FIXTURE AT CHASE WALL. REFER TO PLUMBING RISER DIAGRAMS FOR PIPING DETAILS AND CONTINUATION IN CHASE. TYPICAL FOR ALL PLUMBING FIXTURES, THIS TYPE, SHOWN ON THIS FLOOR PLAN.
5. PROVIDE FLOOR DRAIN AND ROUTE 2" SANITARY TO CHASE. REFER TO WASTE AND VENT RISER DIAGRAMS FOR PIPING DETAILS AND CONTINUATION IN CHASE. TYPICAL FOR ALL FLOOR DRAINS, THIS TYPE, SHOWN ON THIS FLOOR PLAN.
6. PROVIDE FLOOR DRAIN AND ROUTE 4" SANITARY TO CHASE. REFER TO WASTE AND VENT RISER DIAGRAMS FOR PIPING DETAILS AND CONTINUATION IN CHASE. TYPICAL FOR ALL FLOOR DRAINS, THIS TYPE, SHOWN ON THIS FLOOR PLAN.
7. PROVIDE FLOOR DRAIN FOR DOMESTIC WATER SERVICE ENTRANCE. INSTALL RELIEF VALVE UNDER REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY.
8. REFER TO ARCHITECTURAL PLANS FOR EXACT FINISHED FLOOR ELEVATION. THE FINISHED FLOOR ELEVATION SHOWN 100.00 IS INTENDED FOR PIPING INVERT ELEVATION REFERENCE ONLY AND SHALL NOT BE CONSIDERED AS A FINAL PIPING INVERT ELEVATIONS FOR CONSTRUCTION. COORDINATE FINAL INVERT ELEVATIONS WITH THE ARCHITECT AND CIVIL.
9. PLUMBING FIXTURE CONNECTION SIZES NOTE SHOWN FOR CLARITY. REFER TO PLUMBING FIXTURE CONNECTION SCHEDULE FOR CONNECTION DETAILS AND INFORMATION.

KEY NOTES DOMESTIC WATER:

1. DO NOT INSTALL ANY PLUMBING PIPING OVER ELECTRICAL PANELS OR EQUIPMENT.
2. PIPING SHOWN DASHED SHALL BE INSTALLED BELOW GRADE.
3. WATER METER IN WATER METER PIT. REFER TO CIVIL PLANS FOR EXACT INSTALLATION LOCATION ON SITE. VERIFY AND COORDINATE FINAL LOCATION WITH THE ARCHITECT.
4. 2" COLD WATER FROM BELOW FINISHED FLOOR
5. 1-1/2 COLD WATER.
6. REFER TO WATER HEATER AND EXPANSION TANK DETAILS FOR WATER HEATING SYSTEM INSTALLATION.
7. 1/2" COLD WATER DOWN. PROVIDE SHUT OFF VALVE IN COLD WATER RISER. DROP AT 6'-0" AFF.
8. REFER TO CIVIL PLANS FOR EXACT LOCATION OF SERVICE EXIT / ENTRANCE. COORDINATE LOCATION OF SERVICE EXIT / ENTRANCE WITH ALL DISCIPLINES.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
600 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1601 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6339718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1		ON DRAWINGS

JAMES J. DIETZ
NUMBER PE-2007020258
PROFESSIONAL ENGINEER

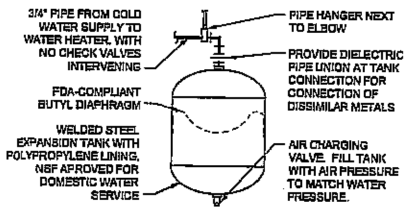
Mar 8 2018

JAMES J. DIETZ
LICENSE # PE-2007020258

PLUMBING
SHELTER

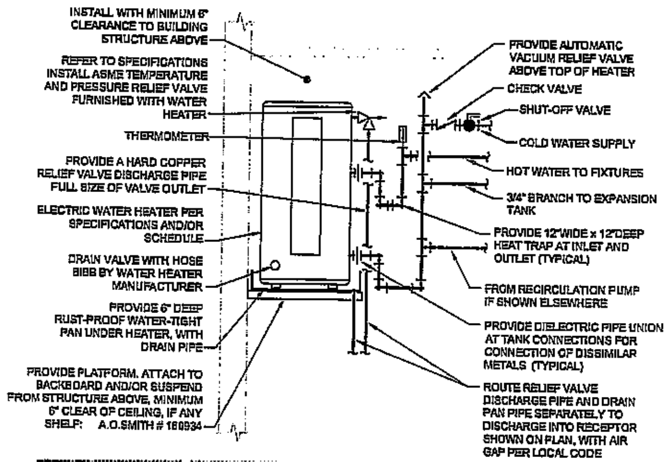
CONFLUENCE PROJECT NO: 16081KC

P111



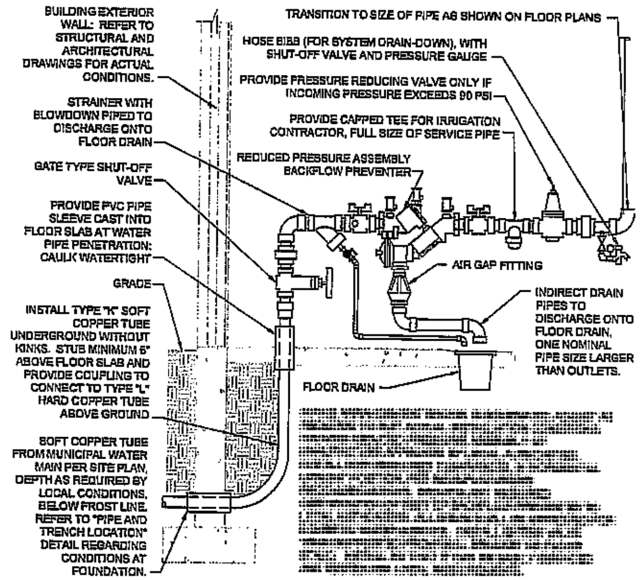
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED. PROVIDE SEISMIC STRAP OR BRACING WHEN REQUIRED BY LOCAL AUTHORITIES.

4 SMALL EXPANSION TANK
NO SCALE



[illegible]

2 ELECTRIC WATER HEATER OVERHEAD
NO SCALE



1 DOMESTIC WATER SERVICE ENTRY
NO SCALE

PLUMBING FIXTURE SCHEDULE:

FIXTURES IN THIS SCHEDULE OR THEIR APPROVED EQUIVALENT ARE PROVIDED BY THE PLUMBING CONTRACTOR. SUBMIT SHOP DRAWINGS ON EACH OF THESE ITEMS REFER TO SPECIFICATIONS FOR FURTHER INFORMATION AND INSTALLATION REQUIREMENTS. VERIFY ROUGH-IN REQUIREMENTS WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND INSTALL PER MANUFACTURER'S RECOMMENDATIONS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE PLUMBING FIXTURE MOUNTING HEIGHTS.

RPZ REDUCED PRESSURE ZONE BACKFLOW PREVENTER: WATTS # 009QT-S, MEETING ASSE 1013, CAST BRONZE BODY, QUARTER TURN TEST COCKS, QUARTER TURN BALL VALVES, BRONZE STRAINER, AND # 909AG AIR GAP FITTING.

ECO EXTERIOR CLEANOUT: JAY R. SMITH # 4261L SERIES DUCO CAST IRON DOUBLE FLANGED HOUSING WITH HEAVY DUTY SECURED SCORIATED CAST IRON COVER WITH LIFTING DEVICE AND CLEANOUT BODY WITH ABS PLASTIC PLUG WITH GASKET SEAL AND PUSH-ON JOINT. REFER TO SPECIFICATIONS FOR INSTALLATION.

FCO [illegible]

WCO WALL CLEANOUT: JAY R. SMITH # 4530S, CAST IRON CLEANOUT TEE. COUNTER SUNK PLUG, STAINLESS STEEL ROUND COVER AND SCREW, AND IRON PLUG WITH GASKET SEAL. REFER TO SPECIFICATIONS FOR INSTALLATION.

DF FREEZELESS DRINKING FOUNTAIN (ADA ACCESSIBLE): ELKAY # EDFP217FPK LEAD FREE, BARRIER FREE, WALL-MOUNTED MODULAR DUAL LEVEL STAINLESS STEEL CONSTRUCTION, VANDAL-RESISTANT KIT, AND FREEZE RESITANT VALVE SYSTEM WITH MOUNTING BRACKET AND FRONT HEAVY-DUTY PUSH-BUTTON. PROVIDE (2) ELKAY #LKFRB1 FREEZEPROOF PIPE BOXES.

PROVIDE ELKAY # MP20 SURFACE MOUNTING PLATE (FOR MASONRY WALLS ONLY) OR ELKAY # ML100 IN WALL FLOOR SUPPORT LEGS (FOR STUD WALLS ONLY).

TRIM- McGUIRE # LF2165CC LEAD FREE BRASS COMPRESSION ANGLE STOP VALVE WITH RISER AND ESCUTCHEON, McGUIRE # B8872CF 1-1/4" 17 GAUGE CAST CHROME PLATED BRASS ADJUSTABLE P-TRAP AND WASTE ARM WITH CLEANOUT PLUG AND ESCUTCHEON.

FD1 FLOOR DRAIN: JAY R .SMITH # 2005L (-A), CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 6" ROUND NICKEL BRONZE STRAINER. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.

TRAP SEAL: PROVIDE TRAP SEAL PER SPECIFICATIONS FOR ACTUAL FLOOR DRAIN MODEL AND SIZE.

FD2 EQUIPMENT FLOOR DRAIN: JAY R. SMITH # 2131L (-B), 5" DEEP CAST IRON BODY, 12" ROUND, LOOSE, MEDIUM DUTY, CAST IRON GRATE, SEDIMENT BUCKET, BOTTOM OUTLET, SEEPAGE PAN, AND MEMBRANE FLASHING CLAMP. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.

TRAP SEAL: PROVIDE TRAP SEAL PER SPECIFICATIONS FOR ACTUAL FLOOR DRAIN MODEL AND SIZE.

HB HOSE BIBB: PRIER PRODUCTS # C-158NP.75, ROUGH CHROME PLATED BRASS 3/4" FEMALE FIP INLET. 3/4" THREADED HOSE CONNECTION, METAL WHEEL HANDLE, AND ASSE 1011 INTEGRAL VACUUM BREAKER.

NW NON-FREEZE WALL HYDRANT: PRIER PRODUCTS # C-634NBX1, SATIN NICKEL PLATED BRASS 1" MALE INLET BY 3/4" FEMALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, HYDRANT LENGTH AS REQUIRED FOR INSTALLED WALL THICKNESS, ADJUSTABLE WALL CLAMP, BRASS BOX WITH SATIN NICKEL PLATED FINISH AND INTEGRAL ASSE 1052 DOUBLE CHECK VACUUM BREAKER.

WML WALL-MOUNTED LAVATORY (ADA ACCESSIBLE): AMERICAN STANDARD # 0355.012 "LUCERNE" 20-1/2" X 18-1/4" RECTANGULAR WALL MOUNTED WHITE VITREOUS CHINA FIXTURE WITH FAUCET LEDGE AND FRONT OVERFLOW.

FAUCET- CHICAGO FAUCET # 802-VE2805ABXKCP 4" CENTERSET. VANDAL RESISTANT, LEAD FREE FAUCET WITH # 380 LEVER HANDLES, CERAMIC QUARTER TURN CARTRIDGES AND # E2805 0.5 GPM AERATOR.

[illegible]

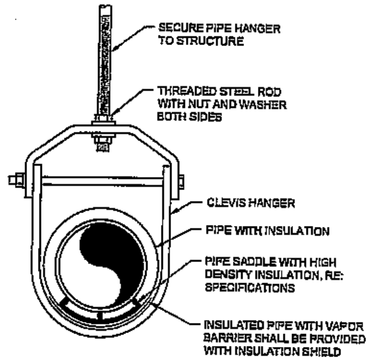
WC WALL-MOUNTED WATER CLOSET (ADA ACCESSIBLE): AMERICAN STANDARD # 2257. 101 "AFWALL MILLENNIUM FLOWISE" WHITE VITREOUS CHINA FIXTURE WITH ELONGATED UNIVERSAL BOWL AND DIRECT-FED SIPHON JET ACTION.

VALVE- SLOAN "SLOAN" # 111 1.6 GALLON PER FLUSH, EXPOSED CHROME-PLATED DIAPHRAGM TYPE FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM AND PROTECTED ORIFICE. OSCILLATING ADA COMPLIANT HANDLE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER. AND SWEAT ADAPTER KIT. INSTALL FLUSH VALVE HANDLE ON THE WIDE SIDE OF THE STALL.

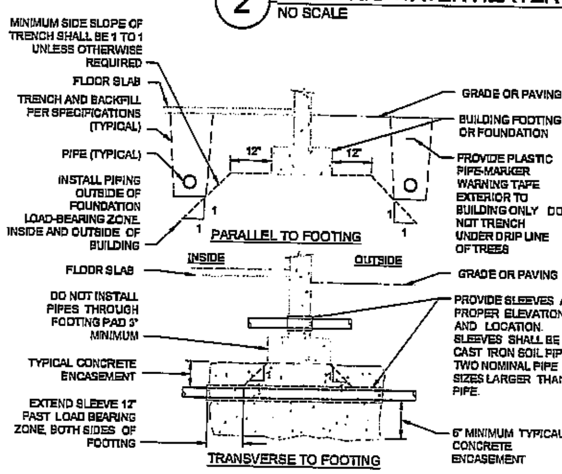
TRIM- CHURCH # 9500SSCT WHITE OPEN-FRONT CONTOURED, SOLID PLASTIC, HEAVY DUTY, SEAT LESS COVER WITH SELF-SUSTAINING CHECK HINGES AND STAINLESS STEEL BOLTS. PROVIDE SUITABLE FIXTURE CARRIER

WHA WATER HAMMER ARRESTER: PRECISION PLUMBING PRODUCTS, HARD DRAWN COPPER BODY WITH WROUGHT COPPER FITTINGS, PISTON TYPE WITH LUBRICATED EPDM "O" RING SEALS, MEETING ASSE 1010 OR PDI WH-201. PROVIDE PDI SIZES "A" THROUGH "F" AS SHOWN ON PLANS. PROVIDE SIZE "A" UNLESS SHOWN OTHERWISE ON THE PLANS.

TMV THERMOSTATIC MIXING VALVE. POWER LFe480 SERIES



5 CLEVIS PIPE HANGER DETAIL
NO SCALE



VERIFY EXCAVATION CONDITIONS (SOIL/ROCK) WITH GEOTECHNICAL REPORT AND/OR SITE INVESTIGATIONS. REFER TO SPECIFICATIONS FOR OTHER CONDITIONS. DO NOT INSTALL PIPES UNDER INTERIOR BUILDING SPREAD FOOTINGS OR PILE CAPS. COORDINATE WITH AFFECTED CONTRACTORS PRIOR TO THE START OF WORK.

3 PIPE AND TRENCH LOCATION
NO SCALE

ELECTRIC STORAGE WATER HEATER SCHEDULE

MARK	MANUFACTURER/ MODEL#	AREA SERVED	TANK SIZE (GALLONS)	ELECTRICAL DATA VOLTS	PHASE	KW	RECOVERY (GPH)	NOTES
EWH	A.O. SMITH # DEL-6	RESTROOM	6	120	1	1.5	10	A, B, C

NOTES:

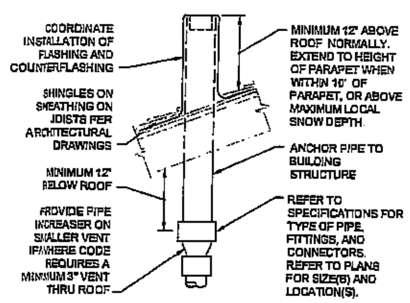
A. 80° TEMPERATURE RISE WITH 120°F OPERATING TEMPERATURE.
B. SINGLE ELEMENT
C. "LOW BOY" DESIGN

EXPANSION TANK SCHEDULE

MARK	MANUFACTURER/ MODEL #	TANK SIZE (GALLONS)	MIN. ACCEPTANCE VOLUME (GALLONS)	AIR PRESSURE SETTING (PSI)
ET	AMTROL ST-5	2	0.9	0.1

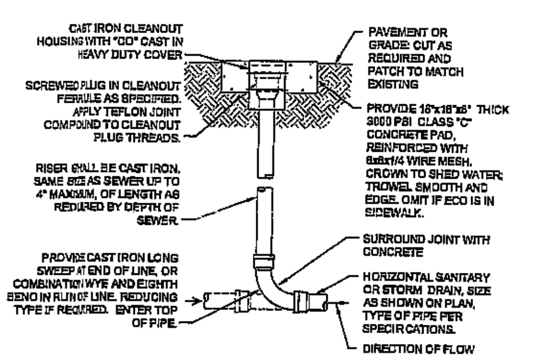
NOTES:

A. CHARGE TANK WITH AIR TO IDENTICAL PRESSURE AS STATIC DOMESTIC WATER PRESSURE



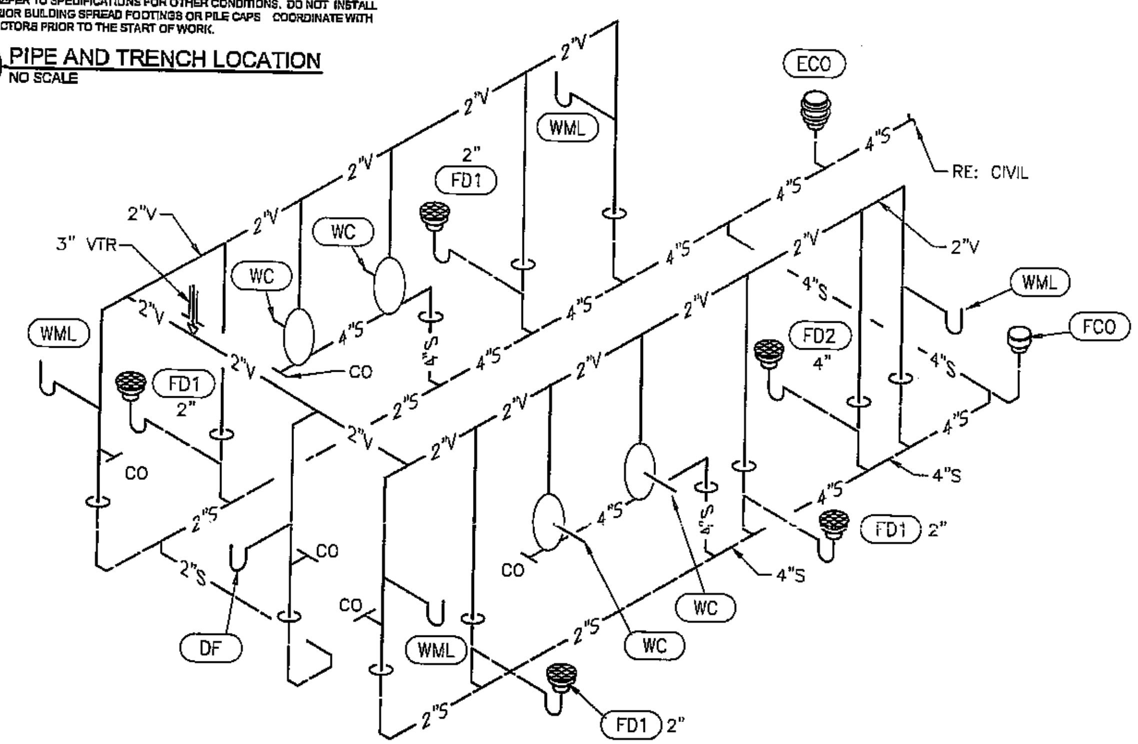
LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, TWENTY FIVE FEET FROM ANY OPENING OR FRESH AIR INTAKE IN MEDICAL FACILITIES AND ONE FOOT FROM ANY VERTICAL SURFACE. REFER TO CODES FOR OTHER VENT TERMINATION REQUIREMENTS. LOCATE VTR MINIMUM 18" FROM ADJACENT WALL, ROOF PEAK, GUTTER, EXPANSION JOINT, EQUIPMENT CURB, OR OTHER ROOF FEATURE. OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS. INSULATE LAST SIX FEET OF VENT PIPE INSIDE BUILDING PER SPECIFICATIONS.

6 VENT THRU ROOF
NO SCALE



LOCATE EXTERIOR CLEANOUTS AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT MINIMUM 75 FOOT INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE EARTH BACKFILL AND COMPACTION PER ARCHITECTURAL SPECIFICATIONS. REFER TO SPECIFICATIONS AND SCHEDULES FOR MORE INFORMATION.

7 EXTERIOR CLEANOUT
NO SCALE



8 WASTE AND VENT RISER
NO SCALE

FIXTURE BRANCH CONNECTION SCHEDULE

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET (FV)	1-1/4"	–	4"	2"
LAVATORY/ HAND SINK	1/2"	1/2"	2"	1-1/2"
DRINKING FOUNTAIN	1/2"	–	2"	1-1/2"
FLOOR DRAIN	–	–	2"	2"

NOTE:

PIPE SIZES SHOWN ARE MINIMUM

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2289

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	[illegible]	[illegible] ON DRAWINGS

STATE OF MISSOURI JAMES J. DIETZ NUMBER PE-2007020258 PROFESSIONAL ENGINEER

Mar 8 2018

JAMES J. DIETZ
LICENSE # PE-2007020258

PLUMBING SCHEDULES & DETAILS

CONFLUENCE PROJECT NO: 16081KC

P211

File Location: J:\Kansas City\2016\16500003636 Hawk Ridge Park Improvements - Raymore - MO\01Plum\16500003636 P211 / Drawn by: XX / Checked by: XX

JAMES J. DIETZ

ELECTRICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED.

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCES (CENTERLINE)	84"
ALARMS	48"
AIRFLOW/GATOR PANELS	48"
CONTROLS (TOP OF DEVICE)	48"
EXIT SIGNS (WALL MOUNTED)	84"
FIRE ALARM ANNUNCIATOR PANEL (DISPLAY)	60"
FIRE ALARM BELL (EXTERIOR)	120"
FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)	60"
INTERCOM (AREA ONLY)	36"
INTERCOMS (TOP OF DEVICE)	48"
PULL STATIONS (TOP OF DEVICE)	48"
PHOTO CELLS	144"
RECEPTACLES	18"
RECEPTACLES (EXTERIOR)	24"
RECEPTACLES (GARAGES)	24"
RECEPTACLES (POOLS)	27"
RECEPTACLES (ABOVE COUNTER)	42"
RECEPTACLES IN EQUIPMENT ROOMS	44"
REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)	48"
REMOTE INDICATING LIGHT (FINISHED AREAS)	CEILING
SAFETY SWITCHES (TOP OF DEVICE)	48"
STARTERS (TOP OF DEVICE)	48"
SWITCHES	44"
TELEPHONE, DATA OUTLETS	SAME AS ADJACENT DEVICE, UNO
TELEPHONE TERMINAL BOARD (BOTTOM)	6"
TELEVISION OUTLETS	REFER TO ARCH DRAWINGS
VISIBLE APPLIANCES (CENTERLINE)	84"

USE THE DEFAULT MOUNTING HEIGHTS SHOWN ABOVE UNLESS NOTED OTHERWISE IN THE SPECIFICATIONS OR ELSEWHERE. MOUNTING HEIGHTS LISTED ARE ABOVE FINISHED FLOOR (AFF) OR ABOVE FINISHED GRADE (AFG) TO BOTTOM OF OUTLET BOX. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS

AF	AMPERE FRAME SIZE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AS	AMPERE SWITCH
AT	AMPERE TRIP SETTING
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
BAS	BUILDING AUTOMATION SYSTEM
BKR	BREAKER
C	CONDUIT
CAT	CATEGORY
CATV	CABLE TELEVISION SYSTEM
CCTV	CLOSED CIRCUIT TELEVISION
CD	CANDELA
CKT	CIRCUIT
CODE	APPLICABLE CODE AS ADOPTED BY JURISDICTION
CT	CURRENT TRANSFORMER
CTR	CENTER
CVD	CUMULATIVE VOLTAGE DROP
DISNO	DISSOLUTION
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
(E)	EXISTING
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCA	FAULT CURRENT AMPS AVAILABLE
FCU	FAN COIL UNIT
FF	FINISHED FLOOR
FLA	FULL LOAD AMPS
FLR	FLOOR
GC	GENERAL CONTRACTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GES	GROUNDING ELECTRODE SYSTEM
GFR	GROUND FAULT RELAY
G	GROUND
IG	ISOLATED GROUND
ISC	SHORT CIRCUIT CURRENT
J/M/J-BOX	JUNCTION BOX
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
LTG/LTS	LIGHTING/LIGHTS
MAU	MAKEUP AIR UNIT
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
N/A	NOT APPLICABLE
NF	NON-FUSED
NL	NIGHT LIGHT (3HR ON)
NRTL	NATIONALLY RECOGNIZED TESTING LAB (CSA,ETL,NSF,UL)
OS	OCCUPANCY SENSOR
P	POLE
PART	PARTIAL CIRCUIT
PH	PHASE
(P)	PHASE
PNL	PANEL
PNLBD	PANELBOARD
PROVIDE	FURNISH AND INSTALL
PT	POTENTIAL TRANSFORMER
QTY	QUANTITY
RCPT	RECEPTACLE
RELO	RELOCATE
RLA	RUNNING LOAD AMPS
RTU	ROOFTOP UNIT
SCCR	SHORT-CIRCUIT CURRENT RATING
SD	SMOKE DUCT DETECTOR
SF	SQUARE FEET
SPDT	SINGLE-POLE, DOUBLE-THROW
SPST	SINGLE-POLE, SINGLE-THROW
ST	SHUNT TRIP
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBD	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TGB	TELECOMMUNICATIONS GROUND BUS BAR
TL	TWISTLOCK
TMGB	TELECOMMUNICATIONS MAIN GROUND BUS BAR
TX	TRANSFORMER
TYP	TYPICAL
UF	UNDERFLOOR
UG	UNDERGROUND
UL	UNDERWRITERS LAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VD	VOLTAGE DROP
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
W/	WITH
WP	WEATHER PROOF
WR	WEATHER RESISTANT
WT	WATERTIGHT
XP	EXPLOSION-PROOF

ANNOTATION

- MECHANICAL OR FIRE PROTECTION PLAN CALLOUT
- PLUMBING PLAN NOTE CALLOUT
- ELECTRICAL PLAN NOTE CALLOUT
- TECHNOLOGY PLAN CALLOUT
- PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
- EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- SECTION CUT DESIGNATION

CIRCUITING & WIRING

- HOMERUN TO PANELBOARD. INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO PANELBOARD SCHEDULES FOR BRANCH CIRCUIT CONDUCTOR SIZES
- CONDUIT CONCEALED
- CONDUIT IN/UNDER FLOOR/GROUND CONSTRUCTION
- EXPOSED CONDUIT
- FLEXIBLE CONDUIT
- LOW VOLTAGE CABLE (NOT ROUTED IN CONDUIT)
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- CONNECTION POINT OR EQUIPMENT TERMINATION
- EQUIPMENT TERMINATION

CONDUCTOR TICK MARK LEGEND

WHERE TICK MARKS ARE SHOWN, THE FOLLOWING SHALL GOVERN:

- SWITCHED HOT (PHASE) CONDUCTORS (SHOWN TRAILING NEUTRAL)
- NEUTRAL (GROUNDED) CONDUCTOR
- UNSWITCHED HOT (PHASE) CONDUCTORS (SHOWN LEADING NEUTRAL)
- NOTE: HASH MARKS INDICATE QUANTITY OF CONDUCTORS
- EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION OR BARE)
- ISOLATED GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION WITH YELLOW TRACER)

BRANCH CIRCUIT CONDUCTOR TABLE

WHERE TICK MARKS ARE NOT SHOWN, THE FOLLOWING SHALL GOVERN:

# OF POLES	HOT (PHASE)*	NEUTRAL (GROUNDED)**	GROUNDING***
1P	(1)	(1) UNO	(1)
2P	(2)	(1) UNO	(1)
3P	(3)	(1) UNO	(1)

* PROVIDE ADDITIONAL CONDUCTORS THROUGH ENTIRE CIRCUIT (SWITCHED, UNSWITCHED(N), ETC.) AS INDICATED THRO LOCKOUT CONSTRUCTION DOCUMENTS AND AS REQUIRED FOR A COMPLETE AND WORKING SYSTEM.

** REFER TO SPECIFICATIONS FOR LIMITATIONS ON SHARING NEUTRAL (GROUNDED) CONDUCTORS. DO NOT CIRCUIT AS A MULTI-WIRE BRANCH CIRCUIT, UNO.

*** PROVIDE ADDITIONAL ISOLATED GROUNDING CONDUCTORS WHERE INDICATED.

REFER TO SPECIFICATIONS, PLANS, NOTES, WIRING AND CONTROL DIAGRAMS FOR ADDITIONAL CIRCUITING REQUIREMENTS.

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINE-TYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THIS PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE

LIGHTING (REFER TO LIGHT FIXTURE SCHEDULE FOR MORE INFO)

- LIGHT FIXTURE
  - a = SWITCHED BY SWITCH "a"
  - A = LIGHT FIXTURE TYPE "A"
  - ⊥ = WALL MOUNT
  -) = ARROW INDICATES AIMING DIRECTION
- LIGHT FIXTURE CIRCUITED AS A NIGHT LIGHT (NL)
- EMERGENCY LIGHT FIXTURE WITH EMERGENCY LIGHTING BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- NIGHT LIGHT/EMERGENCY LIGHT FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- LIGHT FIXTURE WITH DUAL BALLASTS CIRCUITED SEPARATELY (SHADING DUPLES EMERGENCY LIGHT FIXTURE)
- LIGHTING TRACK WITH LIGHT FIXTURE TYPES AS INDICATED
- MIRROR LIGHTS
- EXTERIOR SITE PARKING LOT LIGHT FIXTURE
- EXIT SIGN - CEILING / WALL MOUNTED, ARROWS AS INDICATED
- EMERGENCY BATTERY PACK LIGHT FIXTURE - CEILING/WALL MOUNTED
- AREA (AREA FOR EVACUATION ASSISTANCE) SIGN - CEILING/WALL MOUNTED, ARROWS AS INDICATED

POWER EQUIPMENT & DEVICES

- ELECTRICAL SERVICE PANELBOARD (SURFACE OR FLUSH MOUNT)
- TERMINAL CABINET (SURFACE OR FLUSH MOUNT), TYPE AS NOTED
- PLYWOOD TERMINAL BOARD FOR TELEPHONE SYSTEM, UNO, SIZE AS NOTED
- ELECTRICAL DISTRIBUTION PANELBOARD
- SWITCHBOARD OR MOTOR CONTROL CENTER ON HOUSEKEEPING PAD
- TRANSFORMER
- MOTOR
- DISCONNECT SWITCH - "200/3/60/3R" DENOTES AMPERES/POLE/FUSE/NEMA RATING, NF= NON-FUSED, CB= CIRCUIT BREAKER (200A/3P/60), NO VALUE (200/3/60) FOR NEMA ENCL RATING MEANS STANDARD NEMA 1 RATING
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER "30/3/15/1SVSF DENOTES AMPERES/POLE/FUSE/NEMA STARTER SIZE/NEMA ENCL RATING, NF= NON-FUSED, CB= CIRCUIT BREAKER (30A/3P/15), NO VALUE (20/3/15/1) FOR NEMA ENCL RATING MEANS STANDARD NEMA 1 ENCL RATING
- MAGNETIC MOTOR STARTER, NEMA SIZE AS NOTED 3-POLE, UNO
- 20A, 120V FRACTIONAL HORSEPOWER DISCONNECT
- MANUAL MOTOR STARTER DISCONNECT
- FRACTIONAL HORSEPOWER MANUAL CONTROLLER
- INTEGRAL HORSEPOWER MANUAL CONTROLLER
- VFD — VARIABLE FREQUENCY DRIVE
- R — RELAY OR CONTACTOR (IN SCHEMATICS)
- C, P — MAGNETIC CONTACTOR, SIZE, COIL VOLTAGE AND NUMBER OF POLES AS INDICATED (BLANK = LTG CONTACTOR, P = POWER CONTACTOR)
- TS — TIME SWITCH
- PC — PHOTOCELL

LIGHTING CONTROL, WIRING DEVICES & BOXES

V2.00

- SINGLE POLE WALL SWITCH (NO LETTER DESIGNATION)
- SWITCH LETTER DESIGNATIONS AS FOLLOWS:
  - 2 = TWO POLE
  - 3 = THREE-WAY
  - 4 = FOUR-WAY
  - D = DIMMER
  - F = FAN SPEED CONTROL
  - K = KEYED
  - LV = LOW VOLTAGE
  - OS = OCCUPANCY SENSOR
  - P = SPST PILOT LIGHT
  - VS = VACANCY SENSOR
  - WP = WEATHER PROOF
- ALC — AUTOMATIC LOAD CONTROL RELAY
- BTS — BRANCH CIRCUIT TRANSFER SWITCH
- SIMPLEX RECEPTACLE - NEMA 5-20R, UNO
- DUPLEX RECEPTACLE - NEMA 5-20R, UNO
- DOUBLE DUPLEX RECEPTACLE - NEMA 5-20R, UNO
- SPECIAL RECEPTACLE - NEMA TYPE AS NOTED
- TWIST-LOCK TYPE RECEPTACLE
- GFCI or GFCI — GFCI TYPE RECEPTACLE*
- ISOLATED GROUND TYPE RECEPTACLE*
- EMERGENCY or EM — EMERGENCY RECEPTACLE*
- RECEPTACLE INSTALLED ABOVE COUNTER OR BACKSPLASH*
- RECEPTACLE INSTALLED IN CEILING*
- RECEPTACLE INSTALLED IN FLOOR*
- RECEPTACLE INSTALLED VIA DROP CORD*
- RECEPTACLE LETTER DESIGNATIONS AS FOLLOWS:
  - C = CONTROLLED
  - CH = CLOCK HANGER TYPE
  - D = DEMOLISHED
  - EXISTING = EXISTING
  - EM = EMERGENCY POWER
  - H = HORIZONTALLY MOUNTED
  - IG = ISOLATED GROUND
  - R = RELOCATED
  - S = SWITCHED
  - TR = TAMPER RESISTANT
  - TV = TELEVISION
  - USB = USB/DUPLEX
  - WP = WEATHER PROOF COVER
  - WR = WEATHER RESISTANT
- MULTI-OUTLET ASSEMBLY
- TELEPHONE OUTLET
- DATA OUTLET
- MULTI-SERVICE OUTLET, TELEPHONE AND DATA
  - ABOVE COUNTER, TYP
  - WALL, TYP
  - FLOOR, TYP
- A — ADULT-SERVICE POWER POLE WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- A — MULTI-SERVICE FLOOR BOX WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- A — POKE THROUGH, A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- T — THERMOSTAT
- J J — JUNCTION BOX/OUTLET BOX
- B — BLANK FACE GFCI FEED THROUGH DEVICE

*SYMBOL DEMONSTRATED WITH DUPLEX RECEPTACLE, WHEN USED IN COMBINATION WITH OTHER DEVICES MEANING IS SIMILAR FOR THOSE DEVICE TYPES.

REFER TO LIGHTING CONTROL DEVICE SCHEDULE FOR ADDITIONAL DEVICE SYMBOLS AND DEFINITIONS SPECIFIC TO THIS PROJECT.

ELECTRICAL ONE-LINE & RISER DIAGRAM

- SWITCH (RATING AS INDICATED)
- DRAWOUT CIRCUIT BREAKER (RATINGS AS INDICATED)
- FUSED SWITCH (RATING, POLES AND FUSE TYPE AS INDICATED)
- COMBINATION FUSED SWITCH/STARTER AND STARTER SIZE
- CIRCUIT BREAKER (RATINGS AS INDICATED)
- COMBINATION CIRCUIT BREAKER/STARTER AND STARTER SIZE
- PANELBOARD (REFER TO SCHEDULE)
- PANELBOARD (REFER TO SCHEDULES) MULTI-SECTION
- ISOLATED POWER PANELBOARD W/ INTEGRAL TRANSFORMER (REFER TO SCHEDULES)
- TRANSFORMER (TYPE AND RATING AS INDICATED)
- SHIELDED TRANSFORMER (TYPE AND RATINGS AS INDICATED)
- AUTOMATIC TRANSFER SWITCH (RATINGS AS INDICATED)
- AUTOMATIC TRANSFER SWITCH WITH BYPASS (RATINGS AS INDICATED)
- GENERATOR (RATINGS AS INDICATED)
  - NON-SEPARATELY DERIVED SOURCE
  - OR
  - SEPARATELY DERIVED SOURCE
- MDP — SWITCHGEAR, SWITCHBOARD AND/OR DISTRIBUTION PANELBOARD (TYPE, RATING, DEVICES AND ACCESSORIES AS INDICATED)
- COMBINATION DIGITAL VOLT METER/AMMETER
- CIRCUIT IDENTIFICATION (REFER TO CIRCUIT SCHEDULE)
- GFR — GROUND FAULT RELAY
- PFR — PHASE FAILURE RELAY
- KIR — KIRK-KEY INTERLOCK
- ST — SHUNT TRIP
- AM — AMMETER (RANGE AS SPECIFIED OR REQUIRED)
- VM — VOLTMETER (RANGE AS SPECIFIED OR REQUIRED)
- UTILITY METER M — UTILITY METER (AS REQUIRED BY UTILITY)
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- WH D 15 — WATT-HOUR METER, "D" DENOTES DEMAND REGISTER, "15" DENOTES MINUTES OF DEMAND INTERVAL
- CURRENT TRANSFORMER RATING AS SPECIFIED OR REQUIRED
- POTENTIAL TRANSFORMER RATING AS SPECIFIED OR REQUIRED
- SPD — SURGE-PROTECTIVE DEVICE
- GROUND CONNECTION
- GROUND CONNECTION WITH TEST WELL
- GROUND ROD
- LIGHTNING ARRESTER
- CAPACITOR
- CONTACT (OPEN OR CLOSED)
- HEATER
- HP — MOTOR
- BR — BLOCK LOAD KW OR KVA
- Fe — FAULT POINT REFERENCED IN SHORT CIRCUIT CURRENT AND VOLTAGE DROP SPREADSHEET

GENERAL ELECTRICAL NOTES:

1. READ THE SPECIFICATIONS AND REVIEW DRAWINGS OF ALL DIVISIONS OF WORK. COORDINATE THIS WORK WITH ALL OTHER DIVISIONS OF WORK AND ALL SUBCONTRACTORS. PROVIDE ALL SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS.
2. [redacted]
3. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY THE ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
4. FURNISH TO THE ARCHITECT A COPY OF INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS.
5. DRAWINGS AND SPECIFICATIONS GOVERN, WHERE THEY EXCEED CODE REQUIREMENTS
6. ALL GFCI PROTECTED CIRCUITS SHALL HAVE INDIVIDUAL AND DEDICATED NEUTRALS.
7. ALL DATA WIRING IS BY OTHERS. PROVIDE DATA CONDUITS, WITH PULL WIRES.
8. [redacted]
9. REFER TO SPECIFICATIONS FOR ADDITIONAL PANELBOARD INSTALLATION REQUIREMENTS AND IDENTIFICATION.
10. PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING HEIGHTS.
11. ALL JUNCTION BOXES SHALL BE RIGIDLY ATTACHED TO STRUCTURE OR MILLWORK
12. VERIFY REQUIREMENTS WITH EQUIPMENT SUPPLIER AND PROVIDE ALL NECESSARY ITEMS TO MEET THE EQUIPMENTS ELECTRICAL INSTALLATION REQUIREMENTS
13. ALL SITE LIGHTING BRANCH CIRCUIT WIRING SHALL BE ROUTED IN MINIMUM OF 1-1/4" CONDUIT, UNLESS NOTED OTHERWISE
14. MINIMUM CONDUCTOR SIZE FOR ALL EXTERIOR LIGHTING CIRCUITS SHALL BE #10 AWG, UNLESS NOTED OTHERWISE.
15. LOCATIONS OF UTILITIES SHOWN ON THIS PLAN HAVE BEEN OBTAINED FROM INFORMATION AVAILABLE. VERIFY LOCATIONS OF ALL UTILITY LINES BEFORE PERFORMING WORK. NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
16. IN GENERAL, DO NOT ROUTE CONDUIT UNDER POST-TENSIONED CONCRETE SLABS. ROUTE CONDUIT UNDER POUR-IN-PLACE WALKWAYS OR UNDER LANDSCAPE. CONSULT WITH LANDSCAPE ARCHITECT AND STRUCTURAL ENGINEER FOR PREFERRED CONDUIT ROUTING.
17. COORDINATE FINAL POLE LOCATIONS WITH OWNER PRIOR TO ORDERING POLES AND LIGHTS AND VERIFY CHANGES WITH SPORTS LIGHTING MANUFACTURER. INSTALLATION OF POLE BASES TO BE COORDINATE WITH POST-TENSIONED SLAB INSTALLATION.
18. COORDINATE ROUTING OF SITE ELECTRICAL WITH EXISTING FENCE POST LOCATIONS, SIGNAGE, PAVEMENT, ETC PRIOR TO ROUGH-IN OF CONDUITS.
19. CONDUIT AND CABLE ROUTING SHOWN ON PLAN IS DIAGRAMMATIC ONLY. DETERMINE BEST ROUTING IN FIELD AND DOCUMENT EXACT ROUTING ON RECORD DRAWINGS.
20. PROVIDE GRS CONDUIT ELBOW AT ALL CONDUIT BENDS.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1601 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6836718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/28/18	CONSTRUCTION DRAWINGS

ANDREA C. MULVANY
LICENSE # PE-2013035332
March 2018

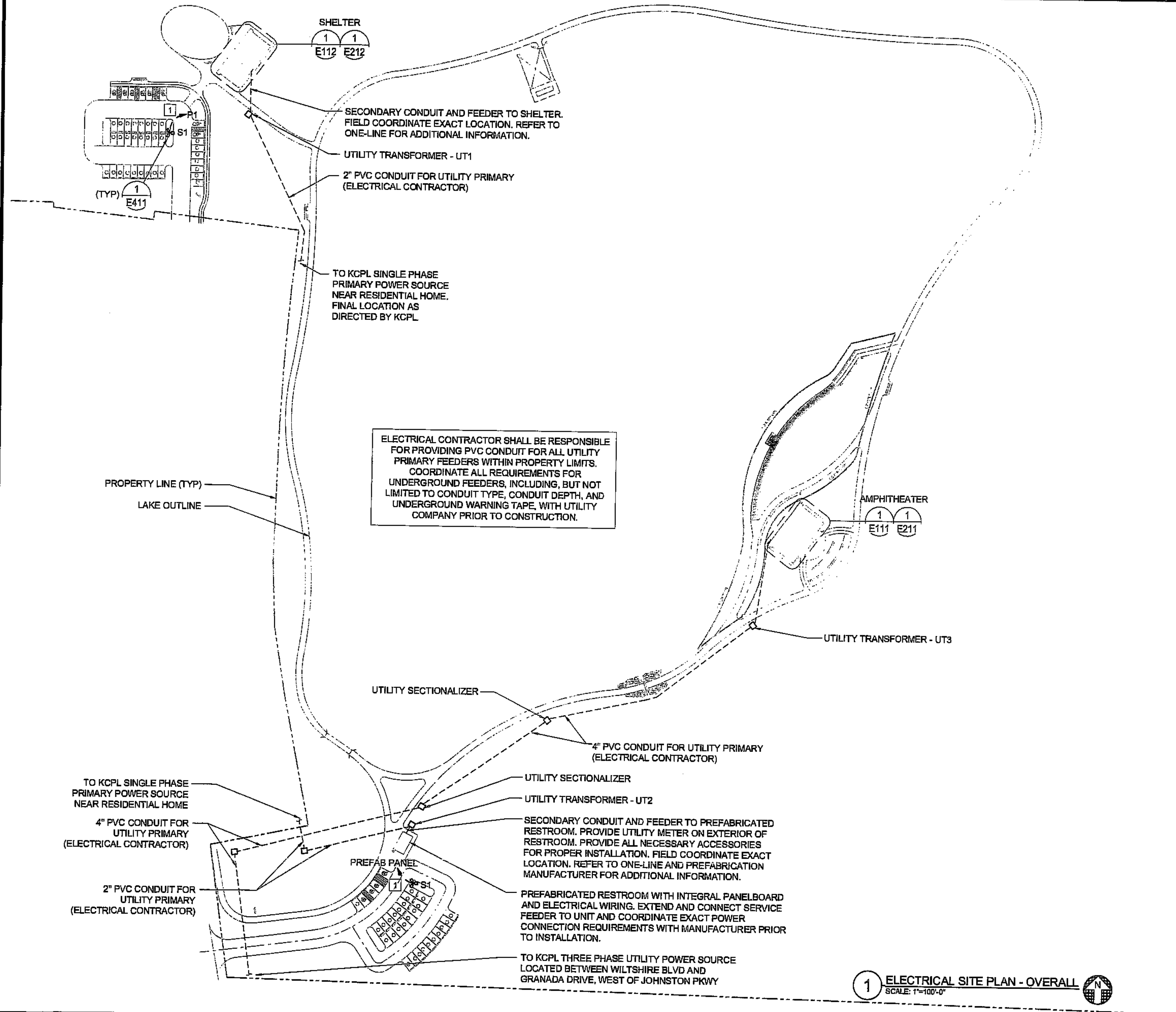
ELECTRICAL LEGENDS

CONFLUENCE PROJECT NO: 16081KC

E000

File Location: J:\Kansas City\2016\16081003358 Hawk Ridge Park Improvements - Raymore - MO\05\Revit\16081003358 E000 / Drawn by: XX / Checked by: XX

ANDREA C. MULVANY



GENERAL ELECTRICAL NOTES:

1. REFER TO SHEET E000 FOR GENERAL ELECTRICAL NOTES.
2. CONTRACTOR SHALL COORDINATE TRANSFORMER CONCRETE PAD SIZES WITH KCPL PER TRANSFORMER KVA SIZE AND UTILITY CONCRETE PAD REQUIREMENTS.
3. COORDINATE KCPL REQUIREMENTS FOR DUCT BANKS UNDER PAVED AREAS. PROVIDE DUCT BANKS FOR PRIMARY CONDUITS AS REQUIRED PER KCPL STANDARDS.

☐ ELECTRICAL PLAN NOTES

1 ROUTE CIRCUIT THROUGH CONTACTOR AND CONTROL VIA PHOTOCELL ON/OFF.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	[illegible]	CONSTRUCTION DRAWINGS

ANDREA C. TRAPP LICENSED 19819 KANSAS PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039892
Mar 8 2018

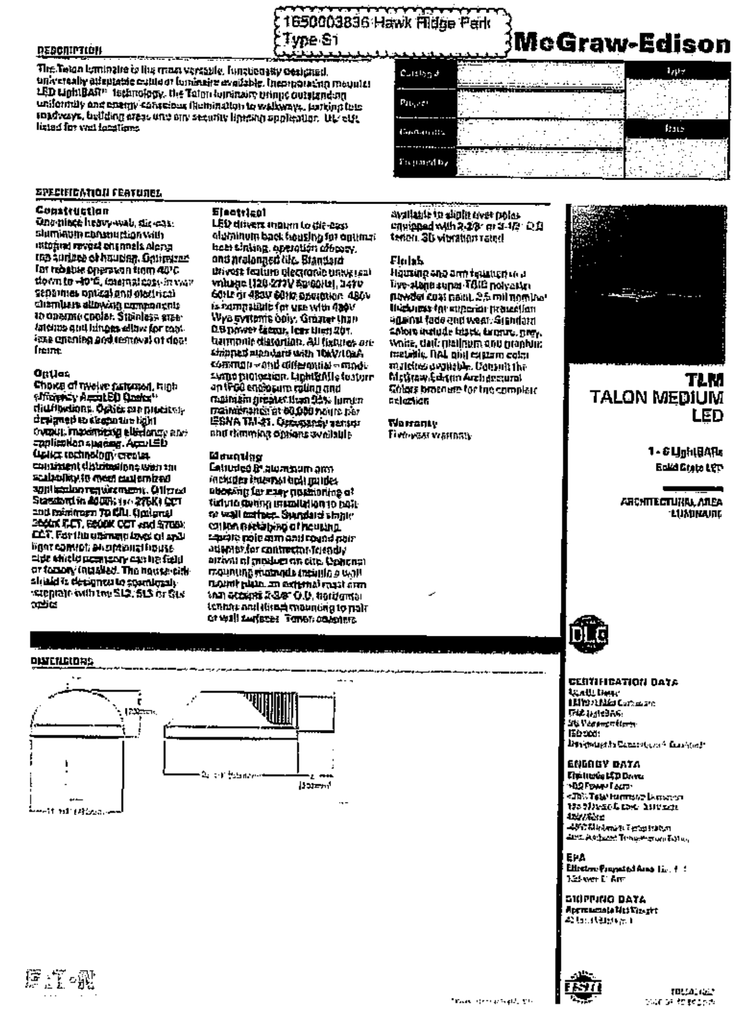
ELECTRICAL SITE PLAN OVERALL

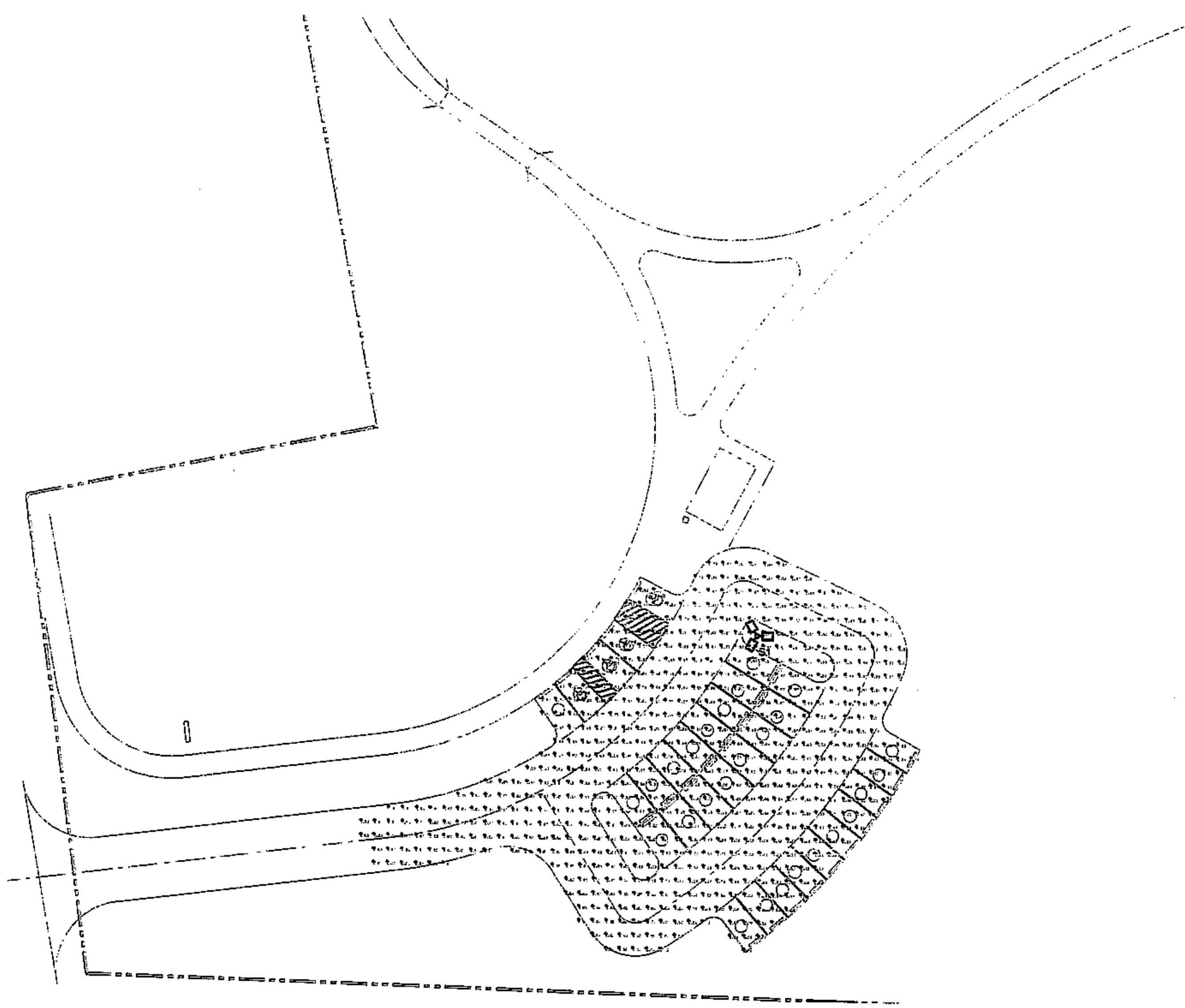
CONFLUENCE PROJECT NO: 16081KC

E001

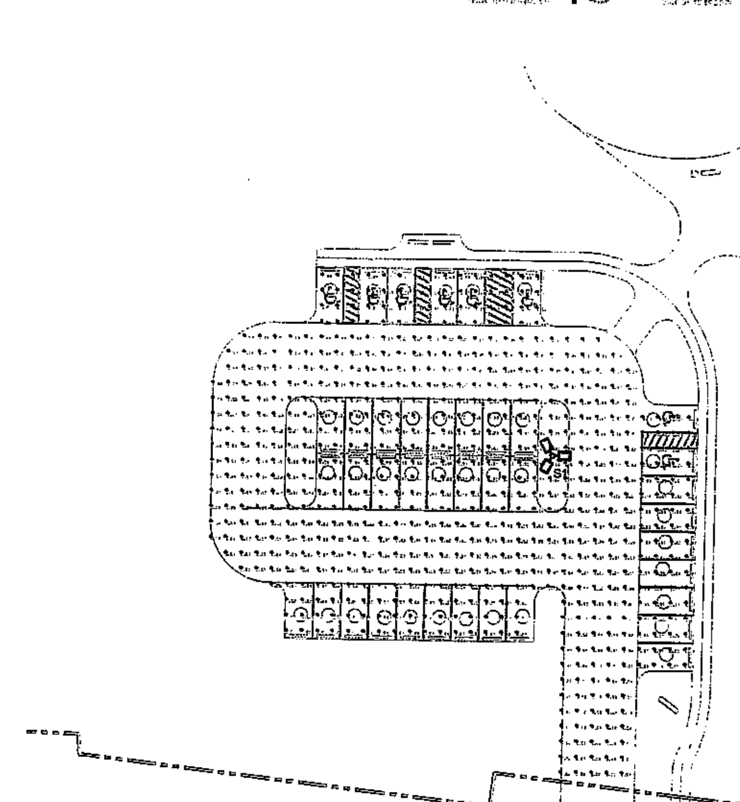
PARKING LOT LIGHTING SHALL PROVIDE SECURITY LEVEL LIGHTING FOR POLICE OPERATIONS PER CITY OF RAYMORE RECOMMENDATIONS.

S1	MCGRAW-EDISON TLM-E02-LED-E1-SL2-BZ OR EQUAL BY EATON-LUMARK #PFPRV SERIES	•	(2) 21 LED LIGHTBARS 5700K, 70 CRI 6,110 LUMENS 60,000 HOURS	120	155	160	NOMINAL 17" WIDE X 24" LONG X 8" TALL TRIPLE-HEAD, POLE MOUNTED AT 120 DEGREES. LED WITH IESNA TYPE II DISTRIBUTION WITH SPILL CONTROL. FIXTURE SHALL BE MOUNTED TO POLE WITH 8" ALUMINUM ARM. DARK BRONZE FINISH. 5 YEAR WARRANTY. BOTTOM OF FIXTURE SHALL BE MAXIMUM 25'-0" TALL ABOVE FINISHED GRADE. ROUND ALUMINUM POLE WITH BASE COVER, DRILL MOUNTINGS AND ACCESSORIES FOR LUMINAIRE CONFIGURATION INDICATED. POLE THICKNESS/GAUGE AS REQUIRED TO MEET COMPLETE LUMINAIRE/POLE ASSEMBLY REQUIREMENTS FOR SITE CONDITIONS. POLE AND BASE SHALL BE RATED FOR 80MPH WIND SPEEDS. DARK BRONZE FINISH.





2 SOUTH ENTRY - PHOTOMETRIC CALCULATIONS
SCALE: 1"=30'-0"



1 NORTH ENTRY - PHOTOMETRIC CALCULATIONS
SCALE: 1"=30'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2289

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6636718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

ANDREA C. TRAPP LICENSED 19819 KANSAS PROFESSIONAL ENGINEER

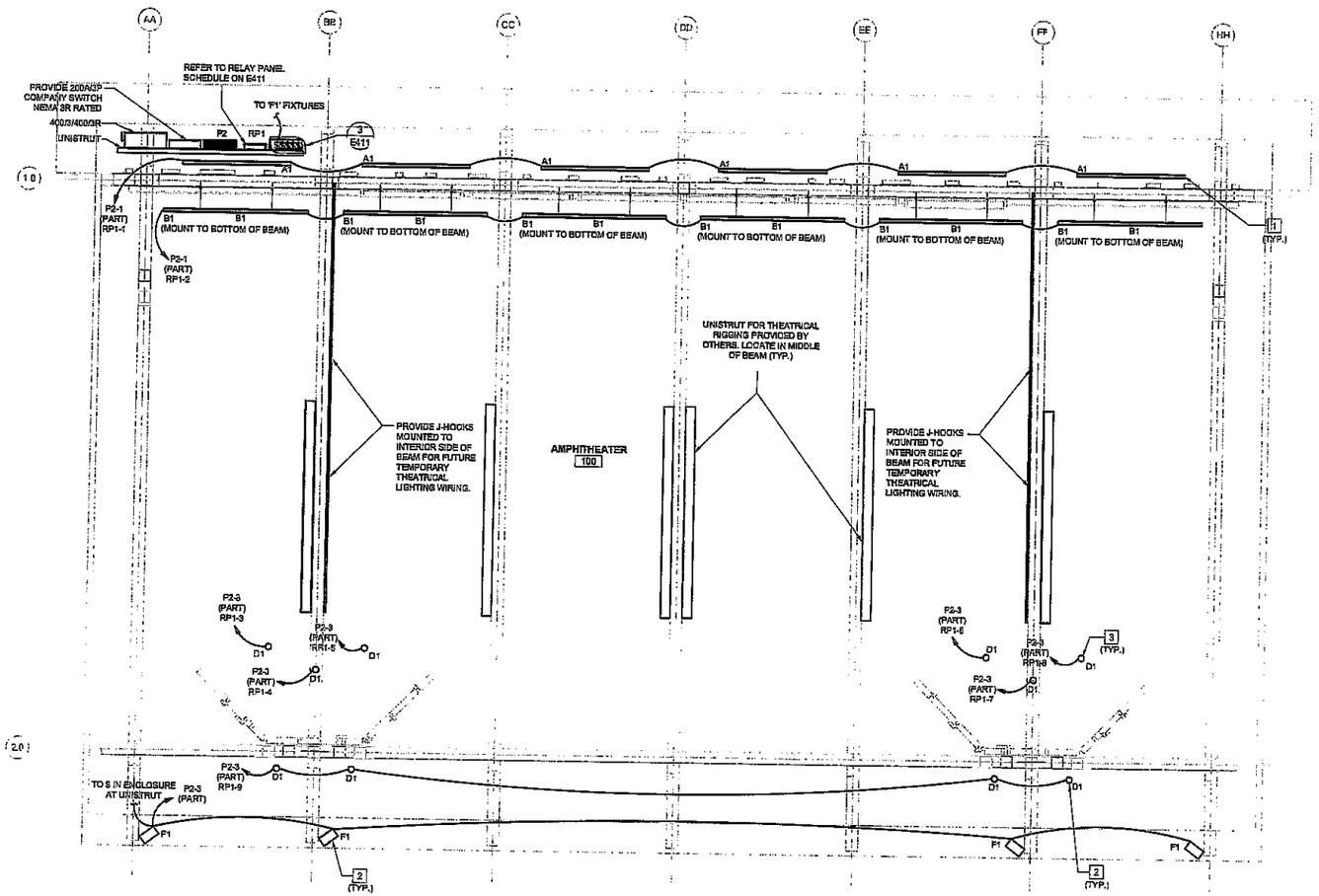
ANDREA C. MULVANY
LICENSE # PE-2013039892
Mar 8 2018

PHOTOMETRIC CALCULATIONS

CONFLUENCE PROJECT NO: 16081KC

E011

ANDREA C. MULVANY



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

GENERAL ELECTRICAL NOTES:

1. REFER TO SHEET E000 FOR GENERAL ELECTRICAL NOTES.
2. REFER TO ARCHITECTURAL ELEVATIONS AND DETAILS FOR TYPICAL MOUNTING LOCATIONS AND CONFIGURATIONS.

☐ ELECTRICAL PLAN NOTES

1. FIXTURE CENTERED BETWEEN BEAMS. CENTER FIXTURES ON TOP OF LATER BEAM BETWEEN ROOF BEAM MEMBERS LIGHT SOURCE SHALL BE AIMED AT SAME DEGREES AS ROOF PITCH. ROUTE CONDUIT RACEWAY THROUGH HOLLOW METAL STEEL STRUCTURE. COORDINATE WITH PRE-ENGINEERED MANUFACTURER.
2. MOUNT FIXTURE TO SIDE OF BEAM STRUCTURE. RE: ARCH COORDINATE CONDUIT RACEWAY/ROUTING THROUGH STRUCTURE WITH PRE-ENGINEERED STRUCTURE MANUFACTURER. REFER TO ARCHITECTURAL MOUNTING DETAIL FOR FURTHER INFORMATION. (TYP.)
3. REFER TO ARCHITECTURAL MOUNTING DETAIL (TYP. THIS FIXTURE)

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
418 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.581.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
600 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6538718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

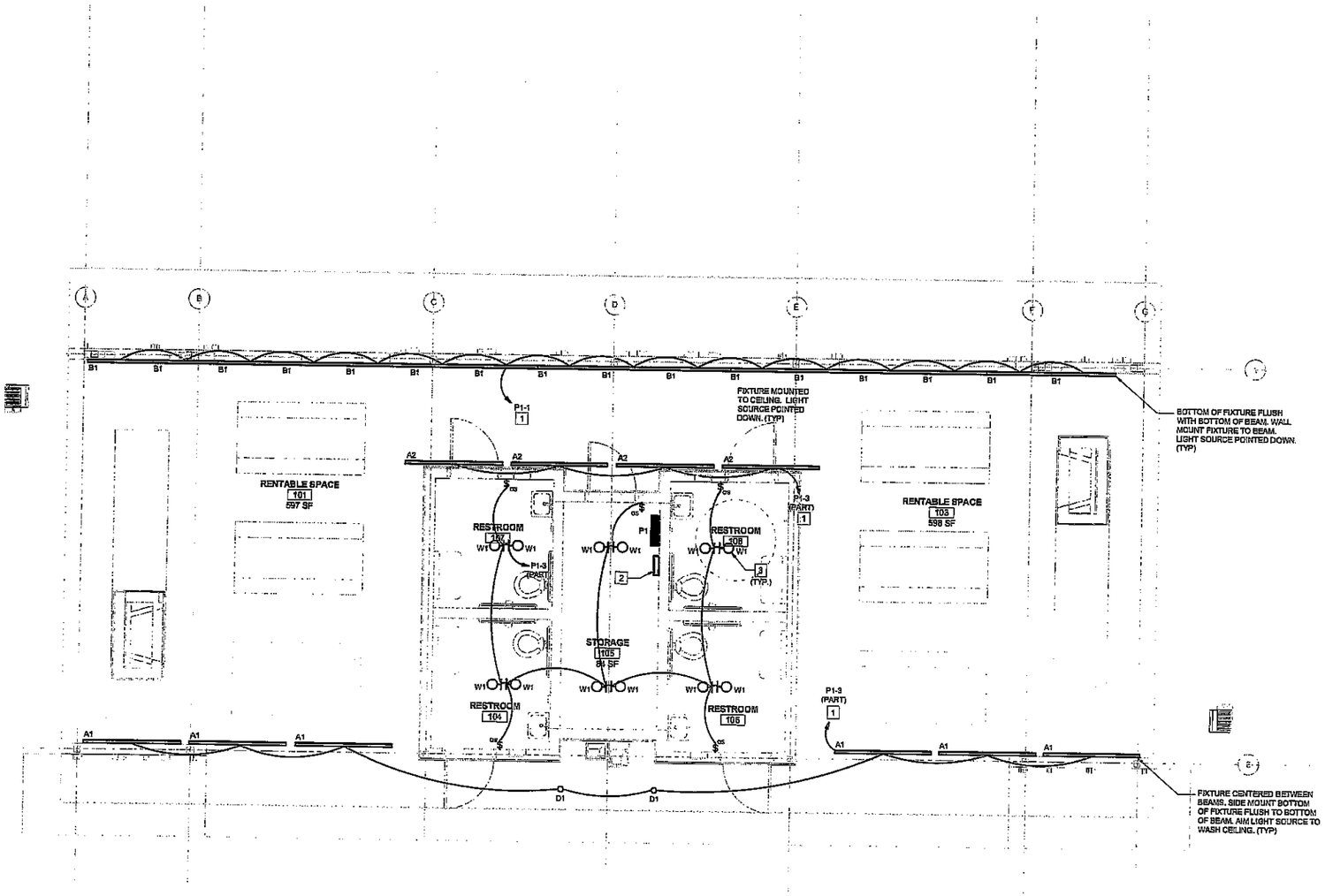
ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS

ANDREA C. MULVANY
LICENSE # PE-2013039892
Mar 5 2018

LIGHTING
AMPITHEATER

CONFLUENCE PROJECT NO: 16031KC

E111



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

GENERAL ELECTRICAL NOTES:

1 REFER TO SHEET E000 FOR GENERAL ELECTRICAL NOTES.

ELECTRICAL PLAN NOTES

1. CONTROL VIA PHOTOCELL ON/OFF.
2. CONTACTOR WITH INTEGRAL TIMECLOCK FOR EXTERIOR SHELTER LIGHTING. LIGHTING TO TURN OFF AT END OF DAY TIME SPECIFIED BY OWNER. REFER TO DETAIL 2, SHEET E411.
3. FIXTURE MOUNTED TO SIDE OF BEAM. REFER TO ARCHITECTURAL MOUNTING DETAIL. (TYP. THIS FIXTURE)

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6535718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE		
ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

ANDREA C. MULVANY
LICENSE # PE-2010039892
May 8, 2018

LIGHTING
SHELTER

CONFLUENCE PROJECT NO: 16081KC

E112

File Location: J:\Kansas City\2016\16081KC\BIM\16081KC Hawk Ridge Park Improvements - Raymore - MOD\01\Revit\16081KC E112 / Drawn by: XX / Checked by: XX

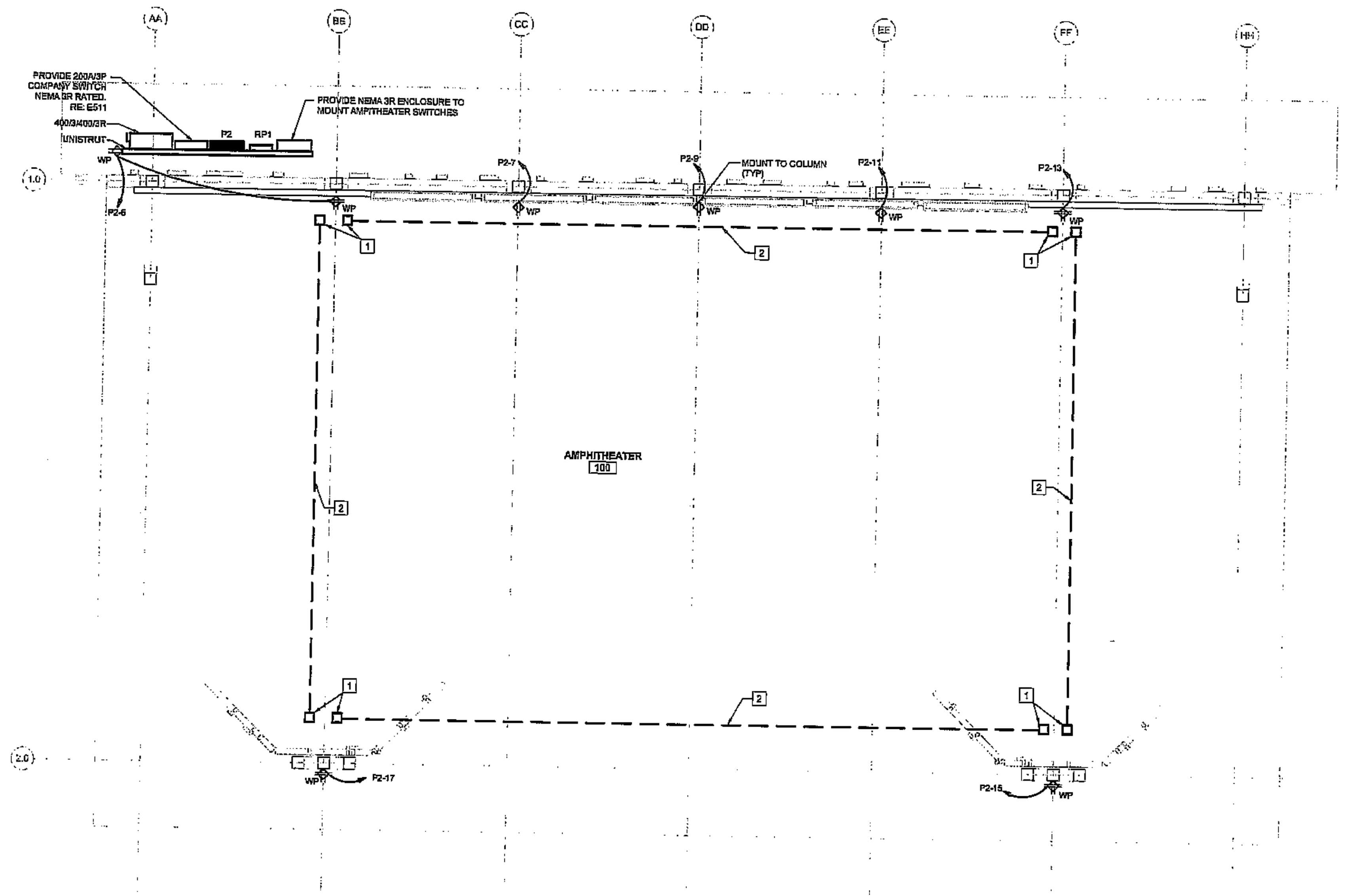
ANDREA C. MULVANY

GENERAL ELECTRICAL NOTES:

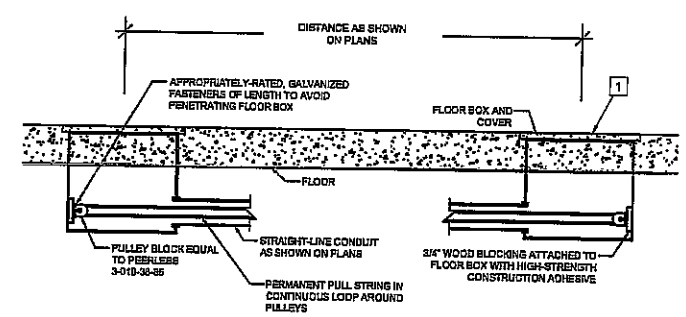
1 REFER TO SHEET E000 FOR GENERAL ELECTRICAL NOTES.

☐ ELECTRICAL PLAN NOTES

1. WIREMOLD CCFD TYPE 6 BOX WITH CCFB-NS-H-C1 COVER. MOUNT WITH COVER FLUSH WITH FINISHED FLOOR. ORIENT BOX WITH SHORTER SIDES FACING SUCH THAT CONNECTION IN ON SHORTER SIDE. REFER TO DETAIL 2 ON THIS SHEET
2. 4" PVC CONDUIT FOR TEMPORARY AUDIO CABLING. INSTALL IN STRAIGHT LINE WITH NO BENDS. PROVIDE PERMANENT PULL STRING ON PULLEY SYSTEM. REFER TO DETAIL 2 ON THIS SHEET.



1 POWER FLOOR PLAN - SHELTER
SCALE: 1/4"=1'-0"



2 FLOOR BOX CABLE PULLEY DETAIL
SCALE: 1/4"=1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/08/16	CONSTRUCTION DRAWINGS

ANDREA C. TRAPP LICENSED 18819 KANSAS PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039892
Mar 8 2018

POWER
AMPITHEATER

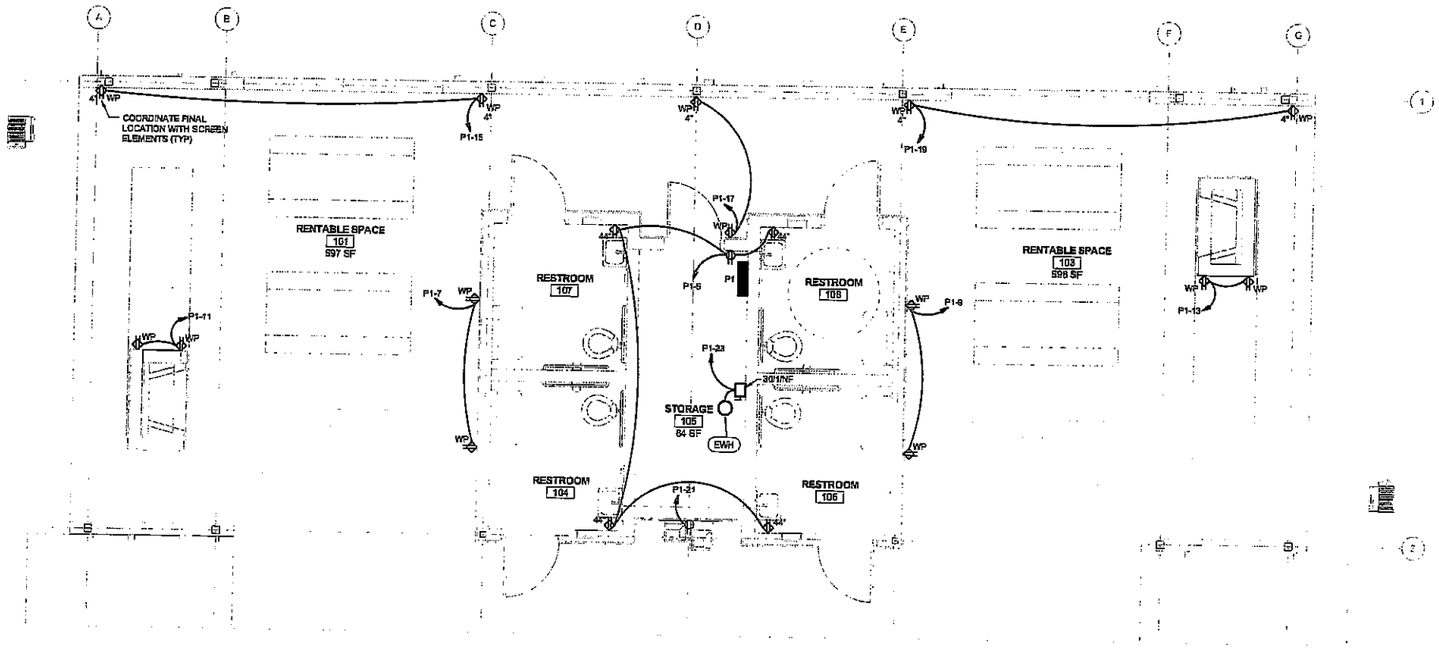
CONFLUENCE PROJECT NO: 16081KC

E211

ANDREA C. MULVANY

GENERAL ELECTRICAL NOTES:

1. REFER TO SHEET E000 FOR GENERAL ELECTRICAL NOTES



1 POWER FLOOR PLAN - SHELTER
SCALE: 1/4"=1'-0"

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2268

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1501 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/05/18	CONSTRUCTION DRAWINGS

ANDREA C. TRAPP
LICENSED
19819
KANSAS
PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039802
Mar 5 2018

POWER
SHELTER

CONFLUENCE PROJECT NO: 16031KC

E212

LIGHT FIXTURE SCHEDULE

TYPE	MANUFACTURER/MODEL #	LAMPS NO.	LAMPS TYPE	VOLT	INPUT WATTS	INPUT VA	DESCRIPTION	NOTES
A1	ECOSENSE TROV L50ASYM L50-E-48"-12-30-80-MULT-ASYM OR PRE-APPROVED EQUAL	-	LED 3000K, 80 CRI 923 LUMENS/FT	120	12	14	NOMINAL 2" WIDE X 2" TALL X 72" LONG ASYMETRIC GRAZING. EXTRUDED ALUMINUM. WET LOCATION LISTED. PROVIDE FINE ADJUSTABLE L BRACKET. PROVIDE ALL MOUNTING, CABLES AND BOXES AS REQUIRED FOR A COMPLETE INSTALLATION.	2,5
A2	ECOSENSE TROV L50ASYM L50-E-48"-6-30-80-MULT-ASYM OR PRE-APPROVED EQUAL	-	LED 3000K, 80 CRI 462 LUMENS/FT	120	6	8	NOMINAL 2" WIDE X 2" TALL X 72" LONG ASYMMETRIC GRAZING. EXTRUDED ALUMINUM. WET LOCATION LISTED. PROVIDE FINE ADJUSTABLE L BRACKET. PROVIDE ALL MOUNTING, CABLES AND BOXES AS REQUIRED FOR A COMPLETE INSTALLATION.	2,5
B1	LUMENPULSE-LUMENFACADE LOGP HO-120-48-30K-30X60-UMAS-CC-KOGRD OR PRE-APPROVED EQUAL	-	LED 3000K, 80 CRI 3,862 LUMENS	120	61	68	NOMINAL 3" WIDE X 3.5" TALL X 48" LONG 30 DEGREE BY 60 DEGREE BEAM. EXTRUDED ALUMINUM. WET LOCATION LISTED. PROVIDE UNIVERSAL ADJUSTABLE WALL MOUNTING KIT AND RADIAL LOUVER. LIGHT SOURCE POINTED TOWARD THE GROUND. PROVIDE ALL MOUNTING, CABLES AND BOXES AS REQUIRED FOR A COMPLETE INSTALLATION. FIXTURE TO BE CUSTOM COLOR SPECIFIED BY ARCHITECT.	2,5
D1	B-K LIGHTING DS-LED-e66-SP-BZP-12-11 OR PRE-APPROVED EQUAL	-	LED 3000K, 80 CRI 1,984 LUMENS	120	7	9	LED FLOODLIGHT WITH A SPOT OPTIC. DIMMING. ALUMINUM WITH BRONZE FINISH. PROVIDE WITH SOFT FOCUS LENS AND HONEYCOMB BAFFLE.	2
F1	SPEC GRADE AFL-80W-60X135-BL-TL-FL OR PRE-APPROVED EQUAL	-	LED 3500K, 80 CRI 8,660 LUMENS 100,000 HOURS	120	80	90	NOMINAL 16 1/4" WIDE X 14 3/8" LONG X 3 1/2" DEEP. DIE-CAST ALUMINUM. LED FLOODLIGHT WITH A SPOT OPTIC. BLACK FINISH	2
S1	MCGRAW-EDISON TLM-E02-LED-E1-SL2-BZ OR EQUAL BY EATON-LUMARK #FFPRV SERIES	-	(2) 21 LED LIGHTBARS (1) 5700K, 70 CRI 5,110 LUMENS 60,000 HOURS	120	156	160	NOMINAL 17" WIDE X 24" LONG X 8" TALL TRIPLE-HEAD, POLE MOUNTED AT 120 DEGREES. LED WITH IESNA TYPE II DISTRIBUTION WITH SPILL CONTROL. FIXTURE SHALL BE MOUNTED TO POLE WITH 8" ALUMINUM ARM, DARK BRONZE FINISH. 5 YEAR WARRANTY. BOTTOM OF FIXTURE SHALL BE MAXIMUM 25'-0" TALL ABOVE FINISHED GRADE. ROUND ALUMINUM POLE WITH BASE COVER, DRILL MOUNTINGS AND ACCESSORIES FOR LUMINAIRE CONFIGURATION INDICATED. POLE THICKNESS/GAUGE AS REQUIRED TO MEET COMPLETE LUMINAIRE/POLE ASSEMBLY REQUIREMENTS FOR SITE CONDITIONS. POLE AND BASE SHALL BE RATED FOR 90MPH WIND SPEEDS. DARK BRONZE FINISH.	1,6,7,8
W1 (1)	HUBBELL VBGL-1-UNV EATON LIGHTING LITHONIA	-	LED 4000K, 70 CRI LUMENS 72,000 HOURS	120	11	13	WALL MOUNT LED GLOBE. RUGGED DIE-CAST ALUMINUM HOUSING. POWDER-COAT PAINT IWTH CORROSION RESISTANCE. FROSTED GLASS LENS AND VANDAL RESISTANT SET SCREWS. IP66 LISTED	1

LIGHT FIXTURE SCHEDULE NOTES

GENERAL NOTES:

A. REPRESENTATIVE AGENTS SHALL BE ALLOWED TO OFFER MINI-LOT PRICING (MLP) FOR LIGHT FIXTURES SPECIFED.
B. VERIFY CEILING CONDITIONS AND COORDINATE LIGHT FIXTURE MOUNTING HARDWARE AND TRIMS NEEDED TO SUIT CEILING CONDITIONS PRIOR TO ORDERING.
C. VERIFY QUANTITIES, MODEL NUMBERS AND DESCRIPTIONS WITH MANUFACTURER PRIOR TO PLACING ORDER.
D. VERIFY FINISH AND COLOR WITH ARCHITECT PRIOR TO PLACING ORDER.
E. REFER TO ARCHITECTURAL DRAWINGS AND DETAILS FOR EXACT LOCATIONS, MOUNTING HEIGHTS AND ADDITIONAL MOUNTING INFORMATION. CONTACT ARCHITECT IMMEDIATELY IF THERE ARE DISCREPANCIES BETWEEN THE ARCHITECTURAL AND ELECTRICAL LIGHTING PLANS.
F. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND CATALOG NUMBERS ONLY. FIRST READ THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS IN CONJUNCTION WITH THE CATALOG NUMBER TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURES LISTED ARE THE BASIS FOR THE DESIGN.
G. CONTRACTOR SHALL PROVIDE ALL LIGHT FIXTURES UNLESS NOTED OTHERWISE.
H. REFER TO LIGHTING CONTACTOR OR RELAY SCHEDULE AND PANELBOARD SCHEDULES FOR CONTROL INFORMATION.
J. REFER TO DIVISION 26 SPECIFICATIONS FOR MORE INFORMATION REGARDING CONTROL WIRING AND COMPATIBILITY.

NOTES:

1. CATALOG NUMBER REPRESENTS MANUFACTURER LISTED FIRST. OTHER MANUFACTURERS LISTED ARE CONSIDERED EQUIVALENT FOR SUBSTITUTION.
2. DUE TO AESTHETIC OR PERFORMANCE CRITERIA, SPECIFIED MANUFACTURER SHALL BE THE ONLY MANUFACTURER ALLOWED TO BID UNLESS OTHERWISE APPROVED BY ARCHITECT.
3. CONTRACTOR SHALL SUPPLY A COMPLETE AND OPERATIONAL SYSTEM TO COMPLY WITH DESIGN INTENT
4. PROVIDE FACTORY-INSTALLED MAXIMUM WATTAGE LABEL ON INCANDESCENT, HALOGEN AND ENERGY-SAVING FLUORESCENT LAMPED LIGHT FIXTURES THAT CORRESPOND TO THE MAXIMUM WATTAGE INDICATED IN THE LIGHT FIXTURE SCHEDULE
5. CONFIRM FINAL FIXTURE LENGTHS WITH FIELD-CONFIRMED CONDITIONS PRIOR TO ORDERING.
6. REFER TO POLE BASE DETAILS FOR ADDITIONAL INFORMATION.
7. SUBMIT MANUFACTURER CERTIFIED POLE AND SUPPORT COMPONENT CERTIFICATES FOR EXACT ASSEMBLY AND LOCAL CONDITIONS. REFER TO 265600 FOR SUBMITTAL REQUIREMENTS
8. SUBMIT SIGNED/SEALED POLE FOUNDATION.

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/05/18 [uncertain reading]	CONSTRUCTION DRAWINGS

ANDREA C. TRAPP LICENSED 18819 KANSAS PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039892

Mar 8 2018

LIGHTING FIXTURE SCHEDULE

CONFLUENCE PROJECT NO: 16081KC

E311

ANDREA C. MULVANY

PANELBOARD: P1 NEW

BUS AMPS: 125A
MAIN SIZE/TYPE: 100A MCB
VOLTS/PHASE: 240/120V, 1PH, 3W
SECTION: 1

FED FROM: UTILITY TRANSFORMER UT-1
AIC RATING: 10000 FULLY RATED
SERVES: SHELTER
MOUNTING: SURFACE
LOCATION: STORAGE RM

EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	DESCRIPTION	CKT NO.
1	LTG - N. LINEAR UP & DOWN	1,000		12	20	1	1	20				SPARE	2
3	LTG - S. LINEAR,DL,RRS		212	12	20	1	1	20				SPARE	4
5	RCPT - RRS, STORAGE	900		12	20	1	1	20				SPARE	6
7	RCPT - WEST CORE WALL		360	12	20	1	1	20				SPARE	8
9	RCPT - EAST CORE WALL	360		12	20	1	1	20				SPARE	10
11	RCPT - WEST FIREPLACE WALL		360	12	20	1	1	20				SPARE	12
13	RCPT - EAST FIREPLACE WALL	360		12	20	1	1	20				SPARE	14
15	RCPT - NW & N COLUMN 1		180	12	20	1	1	20				SPARE	16
17	RCPT - MID N. COLUMN & STOR DOOR	360		12	20	1	1	20				SPARE	18
19	RCPT - NE & N COLUMN 2		360	12	20	1	1	20				SPARE	20
GF 21	RCPT - WATER COOLER	600		12	20	1	1	20				SPARE	22
23	WATER HEATER		1,500	12	20	1	1	20				SPARE	24
25	SPARE				20	1	1	20				SPARE	26
27	SPARE				20	1	1	20				SPARE	28
29	SPARE				20	1	1	20				SPARE	30
31	SPARE				20	1	1	20				SPARE	32
33	SPARE				20	1	1	20				SPARE	34
35	SPARE				20	1	1	20				SPARE	36
37	SPARE				20	1	1	20				SPARE	38
39	SPARE				20	1	1	20				SPARE	40
41	SPARE				20	1	1	20				SPARE	42
	SUBTOTAL	3,580	2,972									SUBTOTAL	

TOTAL PHASE A - VA	3,580
AMPS	30
TOTAL PHASE B - VA	2,972
AMPS	25
TOTAL PNLBD - VA	6,552
AMPS	27

LOAD	CONN. VA	DF	LOAD	CONN. VA	DF
COOLING		1.00	REFRIG		1.00
HEATING		0	SIGN/DISP		1.25
LIGHTING	1,212	1.25	KITCHEN		1.00
RECEPTACLES	3,840	1.0/.5	EXISTING		1.00
MOTORS		1.00	LRG MOTOR		1.25
SUPP HEAT	1,500	1.00	SHOW WNDW		1.25
MISC EQUIP		1.00	LTG TRACK		1.00

TOTAL DEMAND
6,855 VA
29 A

PANELBOARD NOTES

GF - GFCI TYPE CIRCUIT BREAKER

PANELBOARD: P2 (NEW)

BUS AMPS: 100A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1

FED FROM: UTILITY TRANSFORMER UT-3
AIC RATING: 10000 FULLY RATED
SERVES: AMPHITHEATER
MOUNTING: SURFACE
LOCATION: AMPHITHEATER UNISTRUT

EQUIPMENT GROUND BUS

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	VOLTAMPS/PHASE C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	VOLTAMPS/PHASE B	VOLTAMPS/PHASE C	DESCRIPTION	CKT NO.
C1 1	LTG - NORTH UP AND DOWN	900			12	20	1	1	20					SPARE	2
C1 3	LTG - SOUTH SPOTS / FLOODS		450		12	20	1	1	20					SPARE	4
5	RCPT - NORTH WALL 1			360	12	20	1	1	20					SPARE	6
7	RCPT - NORTH WALL 2	180			12	20	1	1	20					SPARE	8
9	RCPT - NORTH WALL 3		180		12	20	1	1	20					SPARE	10
11	RCPT - NORTH WALL 4			180	12	20	1	1	20					SPARE	12
13	RCPT - NORTH WALL 1	360			12	20	1	1	20					SPARE	14
15	RCPT - SOUTHEAST WALL		360		12	20	1	1	20					SPARE	16
17	RCPT - SOUTHWEST WALL			360	12	20	1	1	20					SPARE	18
19	SPARE					20	1	1	20					SPARE	20
21	SPARE					20	1	1	20					SPARE	22
23	SPARE					20	1	1	20					SPARE	24
25	SPARE					20	1	1	20					SPARE	26
27	SPARE					20	1	1	20					SPARE	28
29	SPARE					20	1	1	20					SPARE	30
31	SPARE					20	1	1	20					SPARE	32
33	SPARE					20	1	1	20					SPARE	34
35	SPARE					20	1	1	20					SPARE	36
37	SPARE					20	1	1	20					SPARE	38
39	SPARE					20	1	1	20					SPARE	40
41	SPARE					20	1	1	20					SPARE	42
	SUBTOTAL	1,440	990	900										SUBTOTAL	

TOTAL PHASE A - VA	1,440
AMPS	12
TOTAL PHASE B - VA	990
AMPS	8
TOTAL PHASE C - VA	900
AMPS	8
TOTAL PNLBD - VA	3,330
AMPS	9

LOAD	CONN. VA	DF	LOAD	CONN. VA	DF
COOLING		1.00	REFRIG		1.00
HEATING		0	SIGN/DISP		1.25
LIGHTING	1,350	1.25	KITCHEN		1.00
RECEPTACLES	1,980	1.0/.5	EXISTING		1.00
MOTORS		1.00	LRG MOTOR		1.25
SUPP HEAT		1.00	SHOW WNDW		1.25
MISC EQUIP		1.00	LTG TRACK		1.00

TOTAL DEMAND
3,668 VA
10 A

PANELBOARD NOTES

C# - VIA LTG CONTACTOR #

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

ANDREA C. MULVANY
LICENSE # PE-2013039882
Mar 8 2018

ELECTRICAL PANEL SCHEDULES

CONFLUENCE PROJECT NO: 16081KC

E312

ANDREA C. MULVANY

Drawn by: XX / Checked by: XX

CASS: CLOCK AUTOMATION SCENARIOS SCHEDULE

(GLOBAL CONTROL OF ALL RELAY PANELS)

ZONE	DESCRIPTION	AUTOMATION SCENARIO: SCHEDULE ON/OFF	MANUAL ON/ SCHEDULE OFF	ASTRONOMIC ON/OFF	ASTRONOMIC ON/ SCHEDULE OFF
A	AMPHITHEATER GENERAL LIGHTING				
B	AMPHITHEATER SPOT LIGHTING				X
	SECURITY INPUT		X		
		RECEIVES INPUT FROM SECURITY SYSTEM TO TURN ALL LIGHTS ON			

TYPICAL SCHEDULE.
** CONFIRM FINAL TIME SCHEDULE FROM OWNER PRIOR TO SYSTEM PROGRAMMING
OCCUPIED HOURS.
MON-FRI: 7:00 AM - 10:00 PM
SATURDAY: 7:00 AM - 10:00 PM
SUNDAY: 7:00 AM - 10:00 PM
FLICK WARN 5 MINUTES - 2 HOUR OVERRIDE

RELAY PANEL SCHEDULE

PANEL NAME: RP1
LOCATION: AMPHITHEATER

RELAY	CIRCUIT	LOAD CONTROLLED	ZONE
1	P2-1	LTG - AMPHITHEATER NORTH UPLIGHTING	A
2	P2-1	LTG - AMPHITHEATER NORTH DOWNLIGHITNG	A
3	P2-3	LTG - SW SPOT LIGHT 1	B
4	P2-3	LTG - SW SPOT LIGHT 2	B
5	P2-3	LTG - SW SPOT LIGHT 3	B
6	P2-3	LTG - SE SPOT LIGHT 1	B
7	P2-3	LTG - SE SPOT LIGHT 2	B
8	P2-3	LTG - SE SPOT LIGHT 3	B
9	P2-3	LTG - SOUTH GENERAL LIGHTING	A
10			
11			
12			
13			
14			
15			
16			

LIGHTING CONTROL DEVICE SCHEDULE

OCCUPANCY SENSORS

WALL SWITCH OCCUPANCY SENSORS

SYMBOL TYPE	MANUFACTURER MODEL/SERIES	EQUIVALENT MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	ON MODE	TIME DELAY	VOLTAGE	NOTES
S^{OS}	WATTSTOPPER PW-100	COOPER HUBBELL LEVITON SENSORSWITCH	WALL MOUNT PASSIVE INFRARED OCCUPANCY SENSOR SINGLE RELAY. INTEGRAL MANUAL OVERRIDE SWITCH. LINE VOLTAGE.	MAJOR 30' x 35' MINOR 15' x 20'	MANUAL	15 MIN	120/277V	

WALL SWITCHES

SYMBOL TYPE	MANUFACTURER MODEL/SERIES	EQUIVALENT MANUFACTURER	DEVICE DESCRIPTION	VOLTAGE	NOTES
S^{LV1}	WATTSTOPPER LMSW 101	COOPER HUBBELL LEVITON SENSORSWITCH	LOW VOLTAGE MOMENTARY SWITCH FOR MANUAL ON/OFF CONTROL. INTEGRAL LED ILLUMINATED WHEN LOAD IS ON	24V	3
S^{LV5}	WATTSTOPPER LMSW-105	LC&D COOPER	DIGITAL MULTI-BUTTON SWITCH FOR MANUAL ON/OFF AND SCENE CONTROL. INTEGRAL LED AT EACH BUTTON IS ILLUMINATED WHEN LOAD IS ON. "MS" INDICATES MASTER SWITCH; REFER TO SWITCH SCHEDULE FOR PROGRAMMING "#S" INDICATES LOCAL CONTROL SWITCH, WITH # DESIGNATING BUTTON QUANTITY. REFER TO LIGHTING PLAN FOR PROGRAMMING. SHALL BE FROM SAME MANUFACTURER AS RELAY PANEL	24V	

WALL DIMMING SWITCHES

SYMBOL TYPE	MANUFACTURER MODEL/SERIES	EQUIVALENT MANUFACTURER	DEVICE DESCRIPTION	LOAD TYPE	WATTAGE	VOLTAGE	NOTES
S^{LVD1}	WATTSOPPER LMDM 101	COOPER HUBBELL LEVITON	0-10V LOW VOLTAGE PUSH BUTTON TYPE DIMMER SWITCH WITH LED STATUS INDICATOR.	0-10V	1000	120V 277V	

GENERAL NOTES.

- A. OCCUPANCY SENSOR LAYOUT BASED ON WATTSTOPPER COVERAGE PATTERNS. ADJUST QUANTITIES AND LOCATIONS FOR EQUIVALENT MANUFACTURERS LISTED BELOW PER MANUFACTURER-SPECIFIC SPACING CRITERIA.
- B. MANUFACTURERS CONSIDERED EQUIVALENT FOR SUBMISSION ARE LISTED IN "EQUIVALENT MANUFACTURER" COLUMN IN SCHEDULE. DURING SUBMITTALS, PROVIDE PRODUCT CUTSHEETS AND SHOP DRAWINGS (AS FURTHER DEFINED IN GENERAL NOTES OF THIS SCHEDULE) FOR ENGINEER'S REVIEW
- C. SHOP DRAWINGS FOR LIGHTING CONTROL DEVICES THAT ARE INTENDED FOR USE AS A LIGHTING CONTROL SYSTEM SHALL INCLUDE PROJECT SPECIFIC LIGHTING CONTROL SCHEMATICS AND SCHEDULES. ALSO, AT ENGINEER'S REQUEST, PROVIDE A SCALED EQUIPMENT PLAN FOR REVIEW OF EQUIPMENT LOCATIONS WITHIN PROJECT SPACE CONSTRAINTS.
- D. OCCUPANCY SENSOR SHOP DRAWINGS SHALL INCLUDE LIGHTING PLANS SHOWING LOCATION, MOUNTING HEIGHT, ORIENTATION AND COVERAGE AREAS FOR EACH OCCUPANCY SENSOR. ALSO INCLUDE ON PLANS OTHER CEILING MOUNTED SYSTEMS, SHOWING COORDINATION WITH CEILING DEVICES INCLUDING BUT NOT LIMITED TO HVAC SUPPLY AND RETURN GRILLES, SPRINKLERS, AND LIGHT FIXTURES.
- E. PROVIDE ALL OCCUPANCY SENSORS BY THE SAME MANUFACTURER.
- F. VERIFY COLOR(S) FOR ALL WALL AND CEILING MOUNTED LIGHTING CONTROL DEVICES WITH THE ARCHITECT
- G. PROVIDE COPIES OF OPERATION INSTRUCTIONS FOR ALL DEVICES TO OWNER.
- H. ALL WALL SWITCH AND CEILING SENSORS SHALL HAVE AN ADJUSTABLE TIME DELAY RANGE OF 0-30 MIN. UNO
- I. DO NOT INSTALL LINE VOLTAGE SENSORS ON GFCI PROTECTED CIRCUITS.
- J. LIGHTING CONTROLS PRICING SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING. ANY LIGHTING CONTROLS PRICING THAT IS SUBMITTED WITH LIGHT FIXTURE PRICING (UNIT OR MINI-LOT) WILL BE IMMEDIATELY REJECTED IN ITS ENTIRETY.
- K. INSTALL WALL BOX DIMMERS TO ACHIEVE FULL RATING SPECIFIED AND INDICATED AFTER DE-RATING FOR GANGING AS INSTRUCTED BY MANUFACTURER.
- L. CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING COMPATIBILITY OF ALL LIGHTING CONTROL DEVICES IN THIS SCHEDULE THAT ARE INTENDED TO OPERATE TOGETHER
- M. PROVIDE A NEUTRAL CONDUCTOR TO ALL WALL BOX DIMMERS. DO NOT SHARE NEUTRAL CONDUCTOR ON LOAD SIDE OF DIMMER.

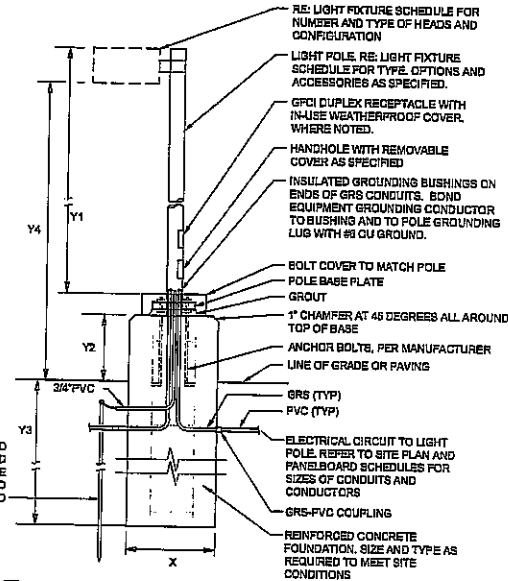
SCHEDULED NOTES:

1. REQUIRES A NEUTRAL CONDUCTOR FOR OPERATION.
2. FOR SELECTED DAYLIGHT SENSOR, CONFIRM FINAL LOCATION AND INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS. INCLUDE MANUFACTURER'S RECOMMENDED LOCATION WITH SUBMITTALS FOR REVIEW.
3. MOMENTARY SWITCH SHALL BE COMPATIBLE WITH ITS CONNECTED LIGHTING CONTROL DEVICE (I.E. OCCUPANCY SENSOR, RELAY PANEL, ETC.)
4. LIGHT LEVEL SETPOINT REPRESENTS AVERAGE MEASURED VALUE AT HORIZONTAL TASK PLANE WITHIN DAYLIT ZONE AND DOES NOT NECESSARILY REFLECT VALUE MEASURED AT THE SENSOR ITSELF. DURING STARTUP, COMMISSION DAYLIGHT SENSOR AND LIGHTING CONTROLLER TO ADJUST LIGHTS ON/OFF AND RAISE/LOWER TO SATISFY INDICATED SETPOINT.
5. SENSORSWITCH DOES NOT HAVE ULTRASONIC TECHNOLOGY SENSORS. THEREFORE, THEY MAY SUBMIT ALTERNATE TECHNOLOGY SENSORS THAT CAN MEET EQUIVALENT COVERAGE AND PERFORMANCE OF ULTRASONIC FOR REVIEW AND CONSIDERATION.
6. REQUIRES COMPATIBLE POWER PACK FOR SWITCHING BALLASTS AND DRIVERS

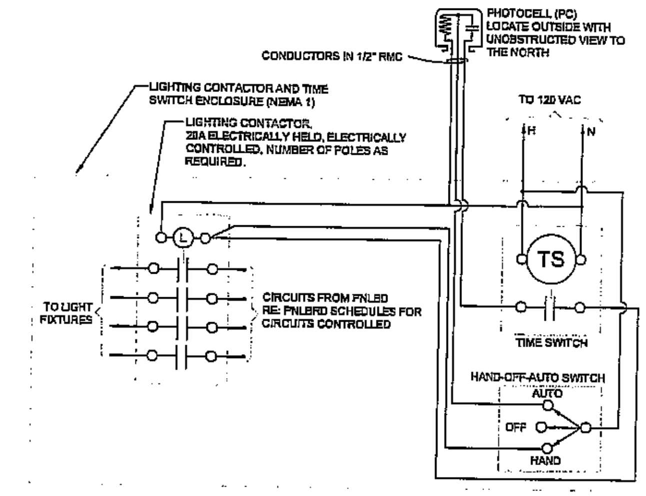
TABLE OF DIMENSIONS*	
X	POLE HEIGHT < 16' = 1'-6"
	POLE HEIGHT > 16' = 2'-0"
Y1	REFER TO LIGHT FIXTURE SCHEDULE FOR POLE HEIGHT
Y2	VEHICULAR AREAS - 2'-0" (VERIFY HEIGHT REQUIREMENTS PER CITY CODES)
Y3	1/4 OF POLE HEIGHT Y1
Y4	REFER TO LIGHT FIXTURE SCHEDULE

* NOTE:
ALL DIMENSIONS ARE APPROXIMATE AND ARE SHOWN FOR REFERENCE ONLY.

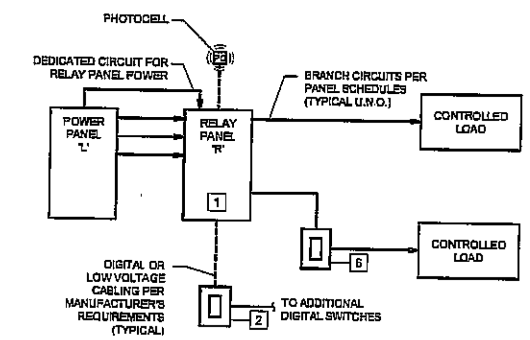
** CONTRACTOR SHALL ENGAGE THE SERVICES OF A STRUCTURAL ENGINEER LICENSED IN THE STATE OF KANSAS TO DESIGN THE ANCHOR BOLTS AND REINFORCED CONCRETE POLE BASE. SUBMIT ANCHOR BOLT AND POLE BASE DESIGN WITH LIGHT FIXTURE SUBMITTAL PACKAGE.



1 POLE BASE DETAIL
NO SCALE



2 EXTERIOR LIGHTING CONTROL FOR ONE CONTACTOR, HAND-OFF-AUTO, PC & TS
NO SCALE



LIGHTING CONTROL DIAGRAM GENERAL NOTES:

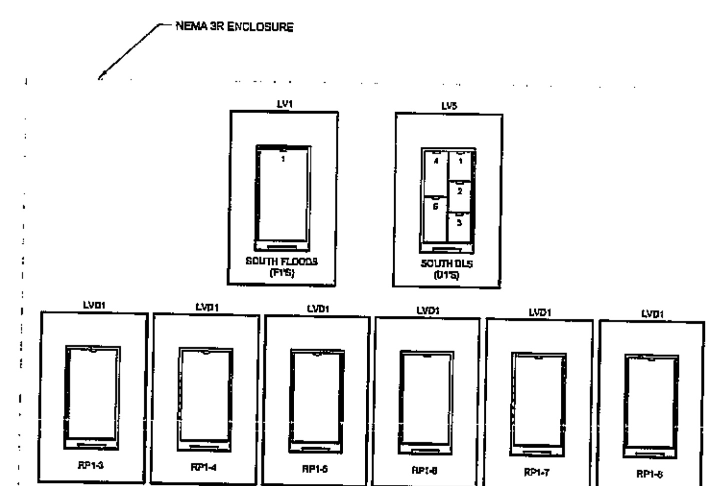
1. LIGHTING CONTROL DIAGRAM IS DIAGRAMMATIC AND REPRESENTS THE GENERAL SCOPE OF WORK AND THE LOCATION OF DEVICES IN RELATION TO EACH OTHER ALONG THE POWER CIRCUIT. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH SELECTED MANUFACTURER. PROVIDE ALL PARTS AND PIECES REQUIRED FOR A FULLY FUNCTIONAL SYSTEM.
2. LIGHTING CONTROL SYSTEM INCLUDING, BUT NOT LIMITED TO INTEGRAL TIME CLOCK, RELAYS, AND DIGITAL LIGHTING CONTROL SWITCHES. PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASE.
3. INTEGRAL TIME CLOCK SHALL BE ASTRONOMIC AND PROGRAMMABLE WITH 365 DAY AND HOLIDAY SCHEDULING AND 24 HOUR BATTERY BACK-UP. RELAYS SHALL BE MECHANICALLY HELD, SINGLE POLE, 20A RATED, NORMALLY CLOSED CONTACTS. LIGHTING CONTROL SYSTEM SHALL COMPLY WITH ALL LOCAL AND STATE ENERGY CODES.
4. CIRCUITING SHOWN ON THE PLAN CORRESPONDS TO THE LIGHTING CONTROL SCHEME. IF CIRCUITING IS CHANGED IN THE FIELD, ENSURE THAT SYSTEM PROGRAMMING WITH REVISED CIRCUITING MEETS THE ORIGINAL LIGHTING CONTROL SCHEME. UPDATE RELAY PANEL SCHEDULES IN RECORD DRAWINGS
5. COORDINATE WITH OWNER FOR PROGRAMMABLE TIME CLOCK SCHEDULES. PROVIDE THE GENERAL CONTRACTOR WITH OPERATIONS MANUAL AFTER JOB IS COMPLETE. A COPY OF THE RECORD DRAWINGS AND RELAY SCHEDULE WITH ANY FIELD CONDITION CHANGES IDENTIFIED SHALL BE LEFT IN THE DOOR OF THE PANEL.

LIGHTING CONTROL DIAGRAM KEYED NOTES:

[1] STAND-ALONE LIGHTING CONTROL RELAY PANEL INFORMATION:
a. MANUFACTURERS: LC&D BLUE BOX LT, GREENGATE LITEKEEPER, WATTSTOPPER SERIES
b. ENCLOSURE: SURFACE MOUNT, NEMA 3R
c. INTEGRAL TIME CLOCK: REFER TO CASS AND RELAY PANEL SCHEDULES ON THIS SHEET FOR TIME CLOCK AND RELAY PROGRAMMING

[2] DIGITAL LIGHTING CONTROL SWITCH. REFER TO DETAILS 3 ON THIS SHEET AND TO AMPITHEATER LIGHTING PLAN FOR ADDITIONAL INFORMATION

4 RELAY PANEL DETAIL
NO SCALE



3 AMPHITHEATER LIGHTING CONTROL SWITCHES DIAGRAM
NO SCALE

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

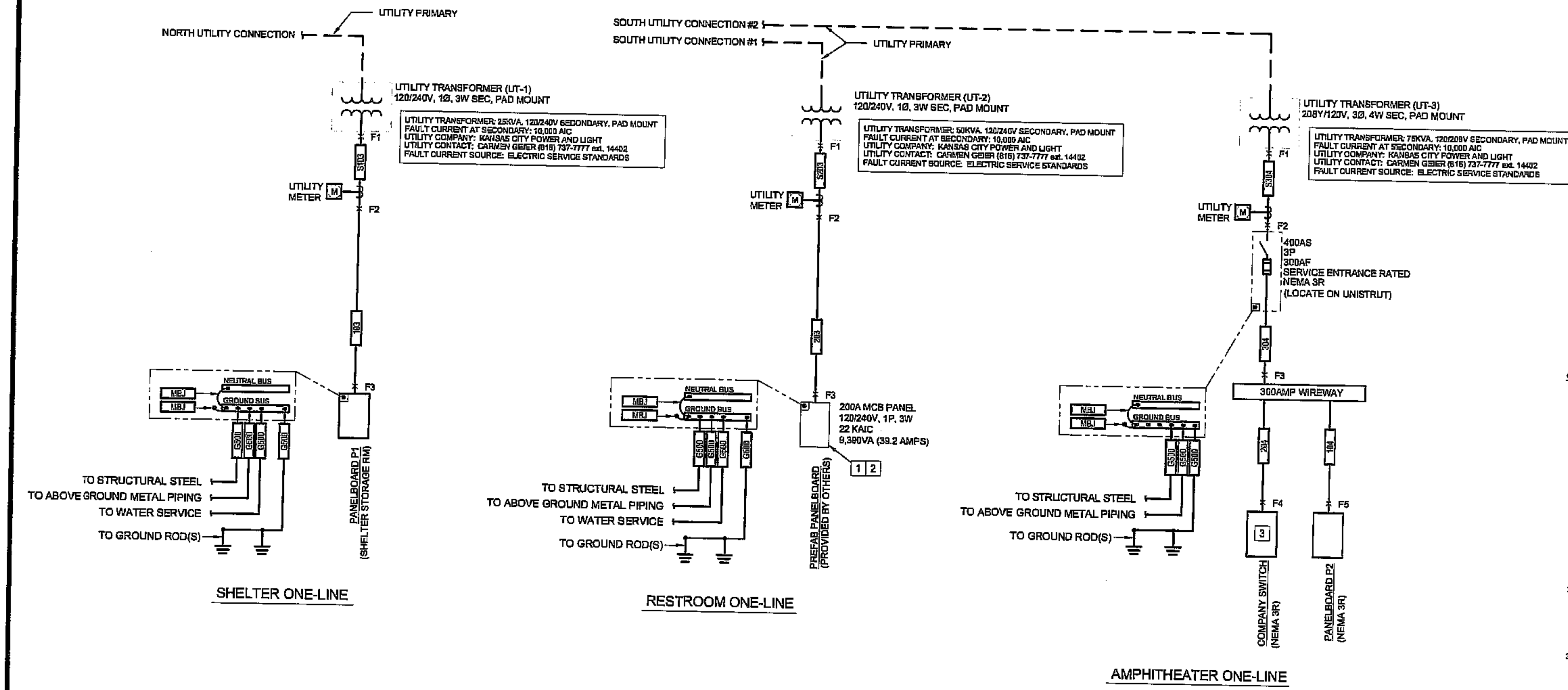
ANDREA C. TRAPP LICENSED 19819 KANSAS PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039892
Mar 8 2018

ELECTRICAL DETAILS

CONFLUENCE PROJECT NO: 16081KC

E411



1 ELECTRICAL ONE LINES
SCALE: NOT TO SCALE

CIRCUIT SCHEDULE:

[illegible] TO NFPA 70.

- 103 — 100A, (3)#3, (1)#8G, 1-1/4" C
- 104 — 100A, (4)#3, (1)#8G, 1-1/4" C
- 203 — 200A, (3)#3/0, (1)#6G, 2" C
- 204 — 200A, (4)#3/0, (1)#6G, 2" C
- 304 — 300A, (4)-350kcmil, (1)#4G, 3" C
- S103 — 100A, (3)#3, 1-1/4" C
- S203 — 200A, (3)#3/0, 2" C
- S304 — 300A, (4)-350kcmil, (1)#4G, 3" C
- G100 — GND, #8 COPPER GROUND, 3/4" C
- G500 — GND, #1/0 COPPER GROUND, 1" C

GENERAL ONE-LINE NOTES:

1. REFER TO SHEET E000 FOR GENERAL ELECTRICAL NOTES.
2. REFER TO SHEET E001 FOR ADDITIONAL INFORMATION.
3. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY PRIMARY CONDUITS WITHIN PROJECT SITE BOUNDARIES. FIELD COORDINATE EXACT LOCATIONS WITH KCPL PRIOR TO CONSTRUCTION.

ONE-LINE PLAN NOTES

1 PROVIDE ELECTRICAL CONNECTION TO PREFABRICATED RESTROOM. PROVIDE ALL ELECTRICAL CONNECTIONS REQUIRED PER MANUFACTURER REQUIREMENTS.

2 PROVIDE CONTACTOR WITH INTEGRAL TIMECLOCK AND PHOTOCELL FOR PARKING LOT LIGHTING CONTROL. LOCATE PHOTOCELL ON NORTH SIDE OF BUILDING. LOCATE NEAR PREFABRICATED PANEL AND UTILIZE SPARE 20A 1-POLE CIRCUIT IN PREFABRICATED PANEL. REFER TO DETAIL 2, SHEET E411

3 200A COMPANY SWITCH, 120/208V, 3-PHASE, 4-WIRE, PLUS GROUND, NEMA 3R RATED, 65K AIC RATING. ACCOMMODATES SINGLE-POLE CAM-STYLE CONNECTORS AND UP TO #4/0 CLASS K CABLING USING 500kcmil SCREW TERMINALS. SAFETY INTERLOCK COMPONENT TO DISCONNECT POWER WHEN CABINET DOOR IS OPENED

SHELTER - PANEL P1 ELECTRICAL SERVICE LOAD SUMMARY			
BUILDING OCCUPANCY TYPE: A	SERVICE DESCRIPTION: 240Y/120V, 1PH		
LOAD DESCRIPTION	Connected KVA	Demand FACTOR	Demand KVA
HVAC - SUMMER	0.00	100%	0.00
HVAC - WINTER	0.00	100%	0.00
LIGHTING (PER NEC-220)	0.10	125%	0.13
RECEPTACLES	4.02	100%;50%	4.02
EXTERIOR LIGHTING	1.11	125%	1.39
TOTAL LOAD	5.23	KVA	5.54
TOTAL AMPACITY	21.80	AMPS	23.06
SERVICE AMPACITY	100	AMPS	100.00
SPARE CAPACITY		AMPS	77

AMPITHEATER ELECTRICAL SERVICE LOAD SUMMARY			
BUILDING OCCUPANCY TYPE: A	SERVICE DESCRIPTION: 208Y/120V, 3PH		
LOAD DESCRIPTION	Connected KVA	Demand FACTOR	Demand KVA
HVAC - SUMMER	0.00	100%	0.00
HVAC - WINTER	0.00	100%	0.00
LIGHTING (PER NEC-220)	0.00	125%	0.00
RECEPTACLES	1.98	100%;50%	1.98
EXTERIOR LIGHTING	1.35	125%	1.69
TOTAL LOAD	57.33	KVA	57.67
TOTAL AMPACITY	159.13	AMPS	160.07
SERVICE AMPACITY	300	AMPS	300.00
SPARE CAPACITY		AMPS	140

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
416 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2288

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6636718

HAWK RIDGE PARK

CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

ISSUE	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

ANDREA C. TRAPP LICENSED 18819 KANSAS PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039592
Mar 9 2018

ELECTRICAL ONE LINE

CONFLUENCE PROJECT NO: 16081KC

E511

NORTH UTILITY CONNECTION

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where
ISC $_{f2}$ = ISC $_{f1}$ x M $_{f2}$ M= 1/(1+f)
ISC $_{f1}$ = short circuit current at fault point 1
ISC $_{f2}$ = short circuit current at fault point 2

Feeder $f_{3\phi}$ = 1.732 x L x Isc / C x E
Feeder $f_{1\phi}$ = 2 x L x Isc / C x E
XFMR $f_{3\phi}$ = (Isca)(Vp) x 1.73 x %Z / 100,000 x KVA
XFMR $f_{1\phi}$ = (Isca)(Vp) x %Z / 100,000 x KVA
IS $_{sca}$ = Vp x M x IP $_{sca}$ / Vs

VOLTAGE DROP (3Ø)
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf)) x L/#) x I x 1.73 / E
VOLTAGE DROP (1Ø)
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf)) x 2 x L/# x I) / E

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit
E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot
Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, Tx - Transformer

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

Date of Calculations 11/28/2017
System Voltage 240/120V - 1 phase

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ Tx	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Transformer: Degree Rise	Transformer: kVA	Transformer: New Xfmr Z	Transformer: Existing Xfmr Z	Transformer: Secondary Voltage	Transformer: Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			10,000 at the secondary of the utility transformer																									
	Motor Contribution				The connected full load motor amps (includes compressors) on the system.																		Source Isc + 5% Motor Contribution =			10000			1
2	100A DISC	1	1	10000	NM	CU	1 Set(s) of 3 AWG	4811	–	240	5	0.9	56	0.000250	0.000047	0.451027								0.087	0.92	9263	-0.05%	-0.05%	2
2	PANEL P1	2	1	9263	NM	CU	1 Set(s) of 3 AWG	4811	–	240	45	0.9	56	0.000250	0.000047	0.451027								0.626	0.61	5620	-0.41%	-0.46%	2

SOUTH UTILITY CONNECTION #1

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where
ISC $_{f2}$ = ISC $_{f1}$ x M $_{f2}$ M= 1/(1+f)
ISC $_{f1}$ = short circuit current at fault point 1
ISC $_{f2}$ = short circuit current at fault point 2

Feeder $f_{3\phi}$ = 1.732 x L x Isc / C x E
Feeder $f_{1\phi}$ = 2 x L x Isc / C x E
XFMR $f_{3\phi}$ = (Isca)(Vp) x 1.73 x %Z / 100,000 x KVA
XFMR $f_{1\phi}$ = (Isca)(Vp) x %Z / 100,000 x KVA
IS $_{sca}$ = Vp x M x IP $_{sca}$ / Vs

VOLTAGE DROP (3Ø)
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf)) x L/#) x I x 1.73 / E
VOLTAGE DROP (1Ø)
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf)) x 2 x L/# x I) / E

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit
E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot
Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, Tx - Transformer

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

Date of Calculations 11/28/2017
System Voltage 240/120V - 1 phase

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ Tx	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Transformer: Degree Rise	Transformer: kVA	Transformer: New Xfmr Z	Transformer: Existing Xfmr Z	Transformer: Secondary Voltage	Transformer: Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			10,000 at the secondary of the utility transformer																									
	Motor Contribution				The connected full load motor amps (includes compressors) on the system.																		Source Isc + 5% Motor Contribution =			10000			1
2	200A DISC	1	1	10000	NM	CU	1 Set(s) of 3/0 AWG	13923	–	240	5	0.9	56	0.000077	0.000042	0.451027								0.025	0.97	9756	-0.02%	-0.02%	2
3	PREFAB	2	1	9756	NM	CU	1 Set(s) of 3/0 AWG	13923	–	240	30	0.9	56	0.000077	0.000042	0.451027								0.174	0.85	8266	-0.11%	-0.13%	3

SOUTH UTILITY CONNECTION #2

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where
ISC $_{f2}$ = ISC $_{f1}$ x M $_{f2}$ M= 1/(1+f)
ISC $_{f1}$ = short circuit current at fault point 1
ISC $_{f2}$ = short circuit current at fault point 2

Feeder $f_{3\phi}$ = 1.732 x L x Isc / C x E
Feeder $f_{1\phi}$ = 2 x L x Isc / C x E
XFMR $f_{3\phi}$ = (Isca)(Vp) x 1.73 x %Z / 100,000 x KVA
XFMR $f_{1\phi}$ = (Isca)(Vp) x %Z / 100,000 x KVA
IS $_{sca}$ = Vp x M x IP $_{sca}$ / Vs

VOLTAGE DROP (3Ø)
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf)) x L/#) x I x 1.73 / E
VOLTAGE DROP (1Ø)
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf)) x 2 x L/# x I) / E

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit
E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot
Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, Tx - Transformer

%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

System Voltage 208Y/120V - 3 phase

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ Tx	Feeder: Material	Feeder: Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Conductor: Reactance (X)	Conductor: Arccos (pf) (Radians)	Transformer: Type	Transformer: Degree Rise	Transformer: kVA	Transformer: New Xfmr Z	Transformer: Existing Xfmr Z	Transformer: Secondary Voltage	Transformer: Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			10,000 at the secondary of the utility transformer																									
	Motor Contribution				The connected full load motor amps (includes compressors) on the system																		Source Isc + 5% Motor Contribution =			10000			1
2	300A DISC	1	3	10000	NM	CU	2 Set(s) of 3/0 AWG	13923	–	208	150	0.9	320	0.000077	0.000042	0.451027								0.440	0.69	6903	-1.75%	-1.75%	2
3	300A WIREWAY	2	3	6903	NM	CU	2 Set(s) of 3/0 AWG	13923	–	208	5	0.9	320	0.000077	0.000042	0.451027								0.010	0.99	6833	-0.06%	-1.81%	3
4	COMPANY SWITCH	3	3	6833	NM	CU	2 Set(s) of 3/0 AWG	13923	–	208	5	0.9	160	0.000077	0.000042	0.451027								0.010	0.99	6764	-0.03%	-1.84%	4
5	AMPITHEATER PANEL	3	3	6833	NM	CU	2 Set(s) of 3/0 AWG	13923	–	208	5	0.9	160	0.000077	0.000042	0.451027								0.010	0.99	6764	-0.03%	-1.84%	5

CONFLUENCE

LANDSCAPE ARCHITECT
CONFLUENCE
415 DELAWARE, SUITE 400
KANSAS CITY, MISSOURI 64105
PH: 816.531.7227 FAX: 816.531.7229

ARCHITECT
SFS ARCHITECTS
2100 CENTRAL STREET, STE 31
KANSAS CITY, MISSOURI 64108
PH: 816.541.2268

CIVIL ENGINEER
WILSON ENGINEERING
800 E 101ST TER, STE 200
KANSAS CITY, MO 64131
PH: 816.701.3100

MEP ENGINEER
HENDERSON ENGINEERING
1801 MAIN, STE 300
KANSAS CITY, MO 64108
PH: 816.6638718

HAWK RIDGE PARK
CITY OF RAYMORE PARK AND RECREATION
RAYMORE/ MISSOURI

REVISION SCHEDULE

DELTA	DATE	DESCRIPTION
1	03/09/18	CONSTRUCTION DRAWINGS

ANDREA C. TROPP LICENSED 19819 KANSAS PROFESSIONAL ENGINEER

ANDREA C. MULVANY
LICENSE # PE-2013039892
Mar 8 2018

ELECTRICAL FAULT CALCULTIONS

CONFLUENCE PROJECT NO: 16081KC

E512

ANDREA C. MULVANY