INVITATION TO BID AND INSTRUCTIONS TO BIDDERS

FY2018-016

OAK RIDGE FRIENDSHIP BELL PEACE PAVILION

NOTE: SUGGESTED SITE VISIT & PRE-BID CONFERENCE JULY 19, 2017 AT 1:00 P.M., LOCAL TIME, OAK RIDGE RECREATION CENTER B ROOM LOCATED AT 1403 OAK RIDGE TURNPIKE

BID OPENING

August 14, 2017
2:00 P.M. Local Time

at the
Central Services Complex
City of Oak Ridge
100 Woodbury Lane
P. O. Box 1
Oak Ridge, Tennessee 37831-0001

Telephone: (865) 425-1819
Fax: (865) 482-8475
Attn: Lyn Majeski

CITY OF OAK RIDGE, TENNESSEE
Invitation to Bid and Instructions to Bidders

FY2018-016 **July 7, 2017**

Project: Oak Ridge Friendship Bell Peace Pavilion

Invitation

Bids will be received by the City of Oak Ridge until 2:00 p.m., local time, August 14, 2017, then publicly opened in the Central Services Complex at 100 Woodbury Lane, Oak Ridge, Tennessee, for furnishing all labor, materials, supplies, tools, and equipment necessary to perform all work and services described in the Contract attached hereto, in strict accordance with the terms and provisions of said Contract and any attachments thereto. (See attached Plans and Specifications)

All bids must be completed and submitted on the Bid Form provided. The bids shall be submitted on or before the time set for the opening of bids. Bids received after the time so set are late bids and will not be considered. Late bids, unmarked envelopes, and incorrectly marked envelopes will not be opened. Electronic bids are not accepted.

Suggested Pre-Bid Conference & Site Visit

A suggested pre-bid conference and site visit will be held on July 19, 2017, at 1:00 p.m., local time, at 1403 Oak Ridge Turnpike in the Oak Ridge Recreation Center B Room. Prospective Bidders are not required to attend in order to submit a bid, but attendance is recommended. Please contact Lyn Majeski at (865) 425-1819 if directions to the pre-bid conference are needed.

Discrepancies

Should the Bidder find any discrepancies in, or omission from, the bid documents, or should the Bidder be in doubt as to their meaning, the Bidder shall at once notify Lyn Majeski at (865) 425-1819 or lmajeski@oakridgetn.gov and obtain an interpretation or clarification prior to submitting a bid. Any interpretation or clarification given in accordance with this provision shall be in writing and will be distributed to all known Bidders. Only questions answered in writing will be binding. Oral and other interpretations or clarifications will be without legal effect. All questions must be submitted no later than August 1, 2017 for adequate response time.

Prices

The Bidder shall submit unit bid prices as specified on Bid Form. Unit prices shall include overhead, profit, contingencies, etc. It is agreed that this bid document in its entirety is included in and made a part of the contract between the City and the successful Bidder.

Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

Withdrawal of Bids

Bids may be withdrawn on written or telegraphic request received from Bidders prior to the time fixed for opening the bids. Such written request must be on company letterhead signed by a company official and must indicate the specific bid project and bid price to be withdrawn in order to verify the identity of the bidder.

Rejection of Bids

The City reserves the right to reject any and all bids when such rejection is in the interest of the City of Oak Ridge; to reject the bid of a Bidder who has previously failed to perform properly or complete on time jobs of a similar nature; to reject the bid of a Bidder who is not, in the opinion of the City, in a position to perform the Contract, and to reject the bid of a Bidder not submitted in accordance with this Invitation to Bid.

References

With the bid, each Bidder shall furnish at least three (3) references for whom work similar to that covered by the specifications herein was performed, the year in which such work was performed and the manner of its execution, and giving such other information as will tend to show the Bidder's ability to perform the required work.

Equipment

The Bidder shall have available under Bidder's control, tools and equipment of the type, character and amount required to complete the proposed work within the specified time. Each Bidder shall furnish a list of the tools and equipment proposed for use on the work if requested.

Personnel

Each Bidder shall have available or shall agree to have available under Bidder's control sufficient equipment and personnel to complete the proposed work within the specified time.

Method of Work

Upon request, each Bidder shall describe the method or methods to be used in the performance of the required work.

Bidders Interested in More than One Bid

A party who has quoted prices to a Bidder is not thereby disqualified from quoting prices to other Bidders or from submitting a bid directly for the work; however, more than one bid for the same work from an individual or entity under the same or different name will not be considered.

Bid Surety

Each bid shall be accompanied by a bid guarantee payable to the City in the amount of ten percent (10%) of the total bid amount. The form of the bid guarantee shall be a bid bond or other suitable instrument (i.e. cashier's check, certified check, or Letter of Credit). The bid guarantees of unsuccessful Bidders shall be return to them by the City within fifteen (15) consecutive calendar days after execution of the Contract.

Drug-Free Workplace Affidavit Form

A Drug-Free Workplace Affidavit form is included in this bid package and must be submitted with the bid.

Insurance

The successful Bidder will be required to maintain Worker's Compensation, Comprehensive General Liability, and Comprehensive Automobile Liability and Property Damage Insurance in accordance with the provisions of the Contract Documents. The City of Oak Ridge, Tennessee shall be named as an additional insured.

Completion and Performance Bond, and Labor and Material Bond

The Contractor agrees to furnish a Completion and Performance Bond in the amount of twenty-five percent (25%) of the Contract price with good and sufficient surety or sureties acceptable to the City in connection with the performance of the work under this Contract. The form and conditions of said Completion and Performance Bond shall be as prescribed by the City.

The Contractor agrees to furnish a Labor and Material Bond in the amount of twenty-five percent (25%) of the Contract price with good and sufficient surety or sureties acceptable to the City, for the protection of persons furnishing labor and material in connection with the performance of the work under this Contract. The form and conditions of this bond shall be as prescribed by the City.

Award of Contract

The City will make the award as soon as practicable to the lowest responsible Bidder, price and other factors considered, provided it is reasonable and in the best interest of the City. The City reserves the right to award the contract to more than one bidder if in the best interest of the City. The successful Bidder(s) shall be required to execute the Contract attached hereto.

City Officers and Employees Not To Have Financial Interest

No contract shall be made with any officer or employee of the City or any firm or corporation in which any officer or employee of the City has financial interest.

Compliance with All Laws, Ordinances, Statutes, and Regulations

The Contractor shall comply with all federal, state, county and local laws, ordinances, statutes, and regulations. Pursuant to City Code § 5-413, the City may not accept bids from Bidders in default of any payment of any nature due to the City, including but not limited to taxes, licenses and fees.

Anti-Discrimination

The selected Bidder, in performing the work or furnishing the services covered by this project, shall not discriminate against any person because of race, creed, color, national origin, age, sex, sexual orientation, disability, religion or other legally protected status. The City of Oak Ridge encourages the utilization of minority and women-owned businesses in its contracting and subcontracting projects.

Background Checks

The selected Bidder shall only furnish employees who are competent and skilled for work under this contract. If, in the opinion of the City, an employee of the selected contractor is incompetent or disorderly, refuses to perform in accordance with the terms and conditions of the contract, threatens or uses abusive language while on City property, or is otherwise unsatisfactory, that employee shall be removed from all work under this contract. The selected contractor's employees working on this project may be subject to police background checks at the sole discretion of the City.

Retainage

For all contracts for the improvement of real property where the contract amount equals or exceeds $500,000.00 and the City of Oak Ridge, Tennessee has determined to retain a certain amount or percentage of the contract price, said retained amount will be deposited in a separate escrow account with TNBank, 401 South Illinois Avenue, Oak Ridge, Tennessee 37830.

All funds accumulated in said escrow account (together with any interest thereon) shall be paid to the contractor to whom such funds and interest are owed only upon satisfactory completion of the contract as evidence by a written release by the City in accordance with Tennessee Code Annotated § 66-11-144.

Liquidated Damages

The City may assess as liquidated damages and not as penalty the amount of five hundred dollars ($500.00) for each and every day of delay of the work under the Contract beyond the term specified for completion of the work. The City is entitled to deduct the amount of liquidated damages from the Contractor's compensation.

Project Schedule

Work shall commence within twenty-one (21) calendar days after the City's issuance of a written Notice to Proceed and shall be completed within one hundred and eighty (180) calendar days of commencement, unless an alternate schedule is approved by the parties in writing.

Bid Submittal Instructions

Pursuant to Tennessee Code Annotated § 62-6-119, each bid must be submitted in an opaque sealed envelope marked and addressed on the outside as follows:

From: Bidder's Name
Bidder's Address
*General Contractor's State of Tennessee License Number
*Bidder's License Date of Registration
*Bidder's License Category or Classification
*Bidder's License Expiration Date

*If bid equals or exceeds $25,000, include this information if a contractor's license is required for this project per the State of Tennessee's Contractors Licensing Board. (The same information must also be provided for major subcontractors.)

To:

In Person or By Overnight Delivery	Regular Mail
Attn: Lyn Majeski Finance Department City of Oak Ridge 100 Woodbury Lane Oak Ridge, TN 37830	Attn: Lyn Majeski Finance Department City of Oak Ridge P.O. Box 1 Oak Ridge, TN 37831-0001

If the bid is submitted by mail rather than hand-delivery, the sealed envelope containing the bid must be enclosed in another envelope addressed as stated above. Bids submitted by mail should indicate on the outside envelope, lower left corner, the following: "Sealed bid for FY2018-016: Oak Ridge Friendship Bell Peace Pavilion to be opened August 14, 2017 at 2:00 p.m. local time" to ensure the bid is delivered to the appropriate person at the City in a timely fashion. Late bids are not accepted and will not be opened.

FY2018-016 BID FORM

Project: Oak Ridge Friendship Bell Peace Pavilion

In compliance with the Invitation for Bids, dated July 7, 2017, the undersigned Bidder:

_____

* a corporation organized and existing under the laws of the State of: _____

* a partnership consisting of: _____

_____

_____

*an individual trading as: _____

_____

(*fill in as appropriate)

of the City of _____ in the State of _____ agrees that if this bid is accepted as hereinafter provided, it will furnish all labor, materials, supplies, tools, and equipment necessary to perform all work and services described in the Invitation for Bid and Instructions to Bidders, in strict accordance with the terms and provisions of the Contract attached thereto.

If written Notice of Award is received, the Bidder agrees to furnish to the City of Oak Ridge, within ten (10) working days after receipt of said Notice of Award, the Completion and Performance Bond; Labor and Material Bond or other suitable securities; and required insurance certificates naming the City of Oak Ridge as an additional insured.

Bidder acknowledges receipt the following addenda:

_____

_____

_____

Bidder understands that the City reserves the right to reject any or all bids and to waive any informality in the bidding.

Bidder agrees that this bid shall be good for a period of ninety (90) days from the date of opening. The successful bidder shall sign and return the contract for this project within ten (10) days of receipt from the City at which time this Bid Form will be incorporated by reference and said unit prices will be the unit prices used for payment under the contract.

FY2018-016 BID FORM
(continued)

Item No.	Description	Item Total
1	**Mobilization/Demobilization.** Total cost to travel, commence construction activities, and close-out constructions activities.	$
2	**Erosion Control.** Total cost to provide all labor, materials, equipment, and supplies to install the erosion control measures as shown on the plans and specifications.	$
3	**Seeding.** Total cost to provide all labor, materials, equipment, and supplies to establish grass in areas to be seeded as damaged by the contractor and for areas shown on the plans and specifications.	$
4	**Site Work.** Total cost to provide all labor, materials, equipment, and supplies for excavation and grade work required to construct the project in accordance with the plans and specifications. Total cost to include any fill material required to achieve specified grades.	$
5	**Cast-In-Place Concrete.** Total cost to provide all labor, materials (including structural steel), equipment, and supplies to construct all cast-in-lace concrete including the Bell support concrete frame, site slabs, site walls, and foundations, in accordance with the plans and specifications.	$
6	**Landscaping.** Total cost to provide all labor, materials, equipment, and supplies for landscaping of the site as shown in the plans and specifications, including precast bollards and benches, stabilized gravel paving, bluestone paving, topsoil, and mulch. Plant installation, other than seeding, is not included in this contract.	$
7	**Trellis.** Total cost to provide all labor, materials, equipment, and supplies to construct the trellis in accordance with the plans and specifications. (**Note**: Carbon fiber materials to be provided by Owner, all other materials to be provided by Contractor).	$
8	**Electrical & Lighting.** Total cost to provide all labor, materials, equipment, and supplies to install lighting in accordance with the plans and specifications. Contractor to employ or retain a licensed professional engineer in the project jurisdiction to design and detail an electrical plan to provide power from a pedestal on-site to the specified fixtures installed in accordance with the plans and specifications.	$
9	**Carbon Fiber Installation.** Total cost to provide all labor, materials, equipment, and supplies to install the carbon fiber trellis beams and seatbacks in accordance with the plans and specifications. (**Note**: Carbon fiber parts to be supplied by Owner.)	$
10	**Polycarbonate Roof.** Total cost to provide all labor, materials, equipment, and supplies to install the polycarbonate roof in accordance with the plans and specifications.	$
11	**Installation of the Friendship Bell.** Total cost to provide all labor, materials, equipment, and supplies to move the Friendship Bell from its current location adjacent to the project site to the project site and install on the concrete bell support frame in accordance with the plans and specifications.	$
	TOTAL BID PRICE	$

Note: The above prices shall include overhead, profit, contingencies, etc.

Total Bid Price (from previous page)

Oak Ridge Friendship Bell Peace Pavilion $_____

_____Dollars and _____ Cents

Bidder acknowledges receipt of the following addenda:

Addendum No. _____ Date: _____ Addendum No. _____ Date: _____
Addendum No. _____ Date: _____ Addendum No. _____ Date: _____
Addendum No. _____ Date: _____ Addendum No. _____ Date: _____

Bidder attests that no officers or employees of the City of Oak Ridge are members of, or have financial interest in, the business submitting this bid.

By:_____ Telephone #:_____
Signature

Name:_____ Fax #_____

Title: _____ Email: _____

Business
Name:_____ Date:_____

Mailing
Address:_____ Physical
Address:_____

_____ _____

Tax ID Number:_____

NOTE: In accordance with the Invitation to Bid, the following attachments are required: a Bid Bond in the amount of ten percent (10%) of the total bid price and at least three (3) references.

BID BOND

FY2018-016

KNOW ALL MEN BY THESE PRESENTS,

That we, _____,

(hereinafter called the "Principal"), as Principal, and the _____ , of

_____ a

corporation duly organized under the laws of the State of _____

(hereinafter called the "Surety"), as Surety, are held and firmly bound unto the City of Oak Ridge, Tennessee, (hereinafter called the "Obligee"), as Obligee, in the sum of ten percent (10%) of the bid price for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for:

_____.

NOW THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the Invitation to Bid and Instructions to Bidders with good and sufficient surety for the faithful performance of such contract, or in the event of the failure of the Principal to enter such contract and give such bond, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____ A.D. 2017.

IN THE PRESENCE OF:

_____(Seal)
Principal

_____ _____
Witness Title

_____ _____(Seal)
Witness Surety

_____
Title

DRUG-FREE WORKPLACE AFFIDAVIT

STATE OF_____)
)
COUNTY OF _____)

The undersigned principal officer of _____, an employer of five (5) or more employees, contracting with the City of Oak Ridge, Tennessee, to provide construction services, hereby states under oath as follows:

1. That the undersigned is a principal officer of _____ _____ (hereinafter referred to as the "Company") and is duly authorized to execute this Affidavit on behalf of the Company.

2. The Company submits this Affidavit pursuant to Tennessee Code Annotated § 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services or who is awarded a contract to provide construction services or who provides construction services to the state or local government to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9 of the Tennessee Code.

3. The Company is in compliance with Tennessee Code Annotated § 50-9-113.

Further affiant saith not.

_____
Principal Officer

State of _____)
)ss.
County of _____)

Before me personally appeared _____ with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged that such person executed the foregoing affidavit for the purposes therein contained.

Witness my hand and official seal this _____ day of _____, 2017.

_____
Notary Public

My Commission Expires:_____.

CONTRACT

FY2018-016

This Contract entered into this _____ day of _____, 2017, by and between the City of Oak Ridge, Tennessee, a municipal corporation, hereinafter called the "City," and

_____,

a _____, hereinafter called the "Contractor."

WITNESSETH

In consideration of the mutual promises of the parties hereto, the parties do hereby agree as follows:

ARTICLE 1 – Scope of This Contract

The work to be done consists of furnishing all labor, materials, supplies, tools, equipment and other incidentals necessary to perform all work and services required for the Oak Ridge Friendship Bell Peace Pavilion in accordance with the attached Plans and Specifications which is incorporated herein by reference as if fully set forth verbatim. All work performed under this Contract shall be in strict accordance with the terms and provisions of this Contract, the Plans and Specifications, and the bid of the Contractor, all attached hereto and incorporated herein by reference.

In performance of this Contract, the Contractor binds himself to the City to comply fully with all provisions, undertakings, and obligations hereinafter set forth.

ARTICLE 2 – Term

This Contract shall become effective upon its execution and shall continue in full force and effect through June 30, 2018. Work shall commence within twenty-one (21) calendar days after the City's issuance of a written Notice to Proceed and shall be completed within one hundred and eighty (180) calendar days of commencement, unless an alternate schedule is approved by the parties in writing.

ARTICLE 3 – Changes

A. City may, by written order, and without notice to the Sureties, make changes in the specifications of this Contract within the general scope thereof. If any such changes cause an increase or decrease in the scope of this Contract or in the time required for its performance, an equitable adjustment shall be made and this Contract shall be modified in writing accordingly.

B. Should the Contractor encounter conditions materially different from those shown in the specifications, the City shall be notified in writing immediately of such conditions before they are disturbed. The City shall thereupon promptly investigate the conditions and if it finds that they do so materially differ from those specified, this Contract shall be modified to provide for any increase or decrease of cost and difference in time resulting from the conditions so found.

C. Except as otherwise herein provided, no charge for any extra work or material will be allotted unless the same has been approved in writing by the City, and the price stated.

ARTICLE 4 – Inspections and Defective Work

All workmanship and services shall be subject to inspections, examinations and tests by the City at any and all times during the performance of this Contract. The City shall have the right to reject defective workmanship and to require correction. Rejected workmanship shall be satisfactorily corrected without charge therefore. If the Contractor fails to proceed at once to correct such defective workmanship, the City may proceed with such corrective work and the Contractor shall be liable for all direct cost occasioned in the performance therefore.

This provision does not negate, modify or replace any warranties contained elsewhere in this Contract. This provision shall survive the termination or suspension of this Contract.

Neither payment nor any provisions in the Contract document shall relieve the Contractor of responsibility for faulty materials or defective workmanship. The City shall give notice of observed defects with reasonable promptness. The deterioration due to ordinary use and normal wear is excepted from this guarantee.

The Contractor shall reimburse the City for the cost of damage, if any, as well as the cost of replacing defective materials or workmanship. If replacements are not made within ten (10) days after notice is given of such defect in workmanship, or thirty (30) days in case of materials, then the City shall have the right to make replacements and charge the cost of same to Contractor or the Contractor's surety.

ARTICLE 5 – Site Investigation

The Contractor represents that it has visited the site and determined the nature of the work and the difficulties and facilities attending execution of the work, and all other matters, which can in any way affect the work under this Contract.

ARTICLE 6 – Delays, Damages

If the Contractor refuses or fails to prosecute the work with such diligence as will ensure its completion within the time specified in Article 2, or fails to complete the work within such time, the City may terminate this Contract. In such event, the City may take over the work and prosecute the same to completion by contract or otherwise, and the Contractor shall be liable to the City for any excess cost occasioned thereby. If this Contract is so terminated, the City may take possession of and utilize in completing the work such materials, appliances, tools and equipment as may be on the site of the work and necessary therefore.

ARTICLE 7 – Payment

As consideration for performing all work and services set forth in this Contract, and as full consideration thereof, the City agrees to pay the Contractor $_____ in accordance with the bid sheet of the Contractor which is incorporated by reference into this Contract. The Contractor shall submit monthly invoices detailing the services provided for the prior month. The City shall pay such invoices within thirty (30) calendar days of receipt for work satisfactorily performed. The City will withhold five percent (5%) retainage on this project until final payment.

ARTICLE 8 – Final Payment

Upon completion of the work and services covered by this Contract and before final payment, the Contractor must furnish evidence to satisfy the City that all suppliers of materials used and all labor and other employees working for the Contractor pursuant to this Contract have been fully paid. Upon final payment, the City is to be released from all liability whatsoever growing out of this Contract.

ARTICLE 9 – Indemnification by Contractor

To the fullest extent permitted by all applicable laws and regulations, the Contractor hereby agrees to protect, indemnify and hold harmless the City and their consultants, agents and employees from and against any and all claims, loss, expense, damage, charges and costs direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professional and court costs), collectively referred to as "claims," for injury to or death of persons and injury to or destruction of property suffered or alleged to have been suffered as a result of any act or omission on the part of the Contractor, any of the Contractor's subcontractors, anyone for whose acts any of them may be liable, or others whose services are engaged by the Contractor or anyone directly or indirectly employed or controlled by either of them in the course of the performance of the work provided for in the Contract, except such injury, destruction or death as may be caused by the sole negligence or fault of the City.

When the City submits notice, the Contractor shall promptly defend any aforementioned action. In any and all claims against the City or any of their consultants, agents or employees by any employee of the Contractor, any of the Contractor's subcontractors, anyone for whose acts any of them may be liable, or others whose services are engaged by the Contractor or anyone directly or indirectly employed or controlled by either of them in the course of the performance of the work provided for in the Contract, the indemnification obligation described herein shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts. The limits of insurance required in this Contract shall not limit the Contractor's obligations under this article.

The terms of this article shall survive the termination or suspension of this Contract.

ARTICLE 10 – Completion and Performance Bond and Labor and Material Bond

A. Completion and Performance Bond

Prior to commencing work under this Contract, the Contractor agrees to furnish and to maintain during the term of this Contract a Completion and Performance Bond in the amount of twenty-five percent (25%) of the Contract price with good and sufficient surety or sureties acceptable to the City in connection with the performance of the work under this Contract, including any amendments or extensions hereof. The form and conditions of said Performance Bond shall be as prescribed by the City. The bond will be required at the beginning of each contract term and will be in an amount equal to the contract price for that year.

In lieu of a Performance Bond, the City will accept other suitable Securities agreed upon by both parties. At all times during the term of this Contract, the Contractor shall provide the City with evidence that the Contractor has obtained such Performance Bond or Securities. A certificate from the surety showing that the bond premiums have been paid by the Contractor shall accompany the bond.

B. Labor and Material Bond

Prior to commencing work under this Contract, the Contractor agrees to furnish and to maintain during the term of this Contract a Labor and Material Bond in the amount of twenty-five percent (25%) of the Contract price with good and sufficient surety or sureties acceptable to the City, conditioned that the Contractor shall promptly make payments to the persons supplying labor, material, or supplies to the Contractor or subcontractors in the performance of the work under this Contract and any amendment or extension thereof. The form and conditions of this bond shall be as prescribed by the City. The bond will be required at the beginning of each contract term and will be in an amount equal to the contract price for that year.

In lieu of a Labor and Material Bond, the City will accept other suitable Securities agreed upon by both parties. At all times during the term of this Contract, the Contractor shall provide the City with evidence that the Contractor has obtained such Labor and Material Bond or Securities. A certificate from the surety showing that the bond premiums have been paid by the Contractor shall accompany the bond.

ARTICLE 11 – Rate of Progress

Notwithstanding any other provisions in this Contract, the Contractor shall furnish sufficient labor, materials, supplies, tools, and equipment, and shall work such hours, including overtime, Sundays, and/or Holidays, as may be necessary to carry out the work in accordance with the approved schedules for its completion not later than the respective times allowed for completion set forth in these Contract Documents. Should the Contractor refuse or fail to comply with its obligations set forth in the preceding sentence after receipt of any written directive or request by the City that the Contractor furnish additional labor, materials, supplies, tools, and equipment, and/or work additional hours, including overtime, Sundays, and/or Holidays, the City may terminate the Contractor's right to proceed with the whole or any part of the work under this Contract.

ARTICLE 12 – Compliance with All Laws, Ordinances, Statutes, and Regulations

The Contractor shall comply with all federal, state, county and local laws, ordinances, statutes, and regulations.

ARTICLE 13 – Insurance

The Contractor shall at all times during the Contract maintain in full force and effect Comprehensive General Liability, Workers' Compensation and Property Damage Insurance in the amounts set forth below and naming the City of Oak Ridge, Tennessee as an *additional insured*.

The Contractor shall maintain policies providing the following insurance protection, each policy containing a requirement that, in the event of change or cancellation, thirty (30) days' prior written notice be sent by mail to the City. Certificates of Insurance describing the coverage shall be furnished by the Contractor and shall contain the following express obligation:

"This is to certify that the policies of insurance described herein have been issued to the insured for whom this certificate is issued and are in force at this time. In the event of cancellation or material change in a policy affecting the certificate holder, thirty (30) days' prior written notice will be given the certificate holder."

1. Comprehensive General Liability:

Bodily Injury	$1,000,000 $1,000,000	each occurrence aggregate
Property Damage	$500,000	each occurrence
Or Combined Single Limit of	$2,000,000	

2. Workers' Compensation and Employer's Liability as provided for in applicable statutes.

3. Comprehensive Automobile Liability (Including all owned, non-owned and hired vehicles)

Bodily Injury	$1,000,000 $1,000,000	each person each occurrence
Property Damage	$500,000	each occurrence
Or Combined Single Limit of	$2,000,000	

The Contractor may purchase at its own expense such additional or other insurance protection as it may deem necessary. Maintenance of the required minimum insurance protection does not relieve the Contractor of responsibility for any losses not covered by the above-required policies.

Before commencement of work hereunder, the Contractor agrees to furnish to the City of Oak Ridge (Legal Department, P.O. Box 1, Oak Ridge, Tennessee 37831-0001) a Certificate of Insurance or other evidence satisfactory to the City to the effect that such insurance has been procured and is in force.

ARTICLE 14 – Permits and Licenses

The Contractor shall obtain, at the Contractor's expense, all permits, licenses and bonds required by law or ordinance and maintain the same in full force and effect.

ARTICLE 15 – Subcontracting and Assignment

A. The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

B. The Contractor shall not award, assign, transfer or pledge any work to any subcontractor without prior written approval of the City, which approval will not be given until the Contractor submits to the city a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the City may require.

C. The Contractor shall be as fully responsible to the City for the acts and omissions of subcontractors, and of persons either directly or indirectly employed by said subcontractors, as the Contractor is for the acts and omissions of persons directly employed by the Contractor.

D. The Contractor shall make a condition of all subcontracts and/or cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and other Contract Documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the City may exercise over the Contractor under any provision of the Contract Documents.

E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and the City.

ARTICLE 16 – Superintendence by the Contractor

The Contractor shall give its personal superintendence to the work or have a competent foreman or superintendent satisfactory to the City on the site at all times during the progress of the work, with authority to act on behalf of the Contractor.

ARTICLE 17 – Termination

Notwithstanding any other provisions in this Contract, the Contractor shall furnish all labor, materials, supplies, tools and equipment necessary to perform the work and services within allowed times for completion as set forth in these Contract Documents. Should the Contractor refuse or fail to comply with its obligations, or in the event the Contractor shall violate any of the provisions of this Contract, or the quality or quantity of the work performed is, in the judgment of the City, below standard and therefore unsatisfactory, the City shall have the right to cancel this Contract upon thirty (30) days written notice to the Contractor and to complete the work undertaken by the Contractor without incurring any liability to the Contractor except to pay the Contractor the fair value to the City of the work satisfactorily performed by the Contractor.

ARTICLE 18 – Termination of Contract for Cause

If, through any cause, the Contractor shall fail to fulfill in timely and proper manner the obligations under this Contract, or if the Contractor shall violate any of the covenants, agreements, or stipulations of this Contract, the City shall thereupon have the right to terminate this Contract by giving written notice to the Contractor of such termination and specifying the effective date thereof, at least five (5) days before the effective date of such termination. In such event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports prepared by the Contractor under this Contract shall, at the option of the City, become the City's property and the Contractor shall be entitled to receive just and equitable compensation for any work satisfactorily completed hereunder.

Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of the Contract by the Contractor, and the City may withhold any payments to the Contractor for the purpose of set-off until such time as the exact amount of damages due the City from the Contractor is determined.

ARTICLE 19 – Anti-Discrimination

The Contractor, in performing the work or furnishing the services covered by this Contract, shall not discriminate against any person because of race, creed, color, national origin, age, sex, sexual orientation, disability, religion or other legally protected status. The City of Oak Ridge encourages the utilization of minority and women-owned businesses in its contracting and subcontracting projects and the Contractor is encouraged to actively solicit the participation of these businesses. The Contractor shall inform all of its subcontractors and vendors providing work or services under this Contract of this requirement and shall ensure compliance therewith.

ARTICLE 20 – Personnel

A. The Contractor represents that it has, or will, secure at the Contractor's expense, all personnel required to perform the work and services outlined in this Contract. Such personnel shall not be employees of or have any contractual relationship with the City.

B. All of the services required hereunder will be performed by the Contractor or under the Contractor's supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under state and local laws to perform such services.

ARTICLE 21 – Reports and Information

At such times and in such forms as the City may require, the Contractor shall furnish to the City such periodic reports as are requested by the City pertaining to the work and services covered by this Contract, the costs and obligations incurred or to be incurred in connection herewith, and any other matters covered by this Contract. The City can audit the Contractor's and the Contractor's subcontractors' financial records pertaining to this project.

ARTICLE 22 – Liquidated Damages

The City and the Contractor hereby agree that any actual damage amount for delay in the completion of the work under this Contract is unknown and would be difficult if not impossible to estimate; therefore, the parties agree that the City may assess as liquidated damages and not as penalty the amount of five hundred dollars ($500.00) for each and every day of delay of the work under the Contract beyond the term specified for completion of the work. The City is entitled to deduct the amount of liquidated damages from the Contractor's compensation.

ARTICLE 23 – Governing Law

This Contract is governed by the laws of the State of Tennessee.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written, the City of Oak Ridge, by its Mayor, by authority duly given.

APPROVED AS TO FORM AND LEGALITY:

_____
City Attorney

CITY OF OAK RIDGE, TENNESSEE

_____
Mayor

(CONTRACTOR)

_____
Signature

_____
(Printed or Typed Name and Title)

Attachments: Specifications
Bid Documents
Contractor's Bid

Approved by Resolution _____

LABOR AND MATERIAL BOND

FY2018-016

Know all men by these presents

That We _____

AS PRINCIPAL, and

_____

AS SURETY are held firmly bound unto the

_____

hereinafter called the Obligee, in the penal sum of

_____ Dollars ($_____)

lawful money of the United States, for payment of which sum well and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS: Said Principal has entered into a certain Contract with said Obligee dated _____ 20_____ (hereinafter called the Contract) for the full and complete performance of

_____ ,

which Contract and the specifications for said work shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, the condition of this obligation is such that if said Principal and all contractors to whom any portion of the work provided for in said Contract is sublet and all assignees of said Principal and of such contractors shall promptly make payments to the persons supplying him, or them, with labor, material, fuel or supplies, for or in the prosecution of the work provided for in said Contract, or in any amendment or extension of or addition to said Contract, and for payment of reasonable attorney's fees, incurred by the Claimant or Claimants in suits on said Bond, then the above obligation shall be void; otherwise to remain in full force and effect. Provided, however, that this Bond is subject to the following conditions and limitations:

(a) Any person, firm or corporation that has furnished labor, materials, fuel or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right of action against the Principal and Surety of this Bond which right of action shall be asserted in a proceeding, instituted in the county in which the Principal does business. Such right of action shall be asserted in a proceeding instituted in the name of the Claimant or Claimants for his or their use and benefit against said Principal and Surety or either of them, (but not later than one year after the final

settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint the City Manager of the City of Oak Ridge, Tennessee, as the agent of each of them to receive and accept service of process or other pleading issued or filed in any proceeding instituted on this Bond and hereby consent that such service shall be the same as personal service on the Principal and/or Surety.

(c) The Surety shall not be liable hereunder for any damages or compensation recoverable under any worker's compensation or employers' liability statute.

(d) This bond is furnished in compliance with Tennessee Code Annotated Section 12-4-201 et seq.

In Witness whereof the parties hereto have executed this agreement on the day and date first above written in two counterparts, each of which shall without proof or accounting for the other counterpart, be deemed an original contract.

SIGNED, SEALED AND DELIVERED this _____ day of _____, 20_____.

Attest:_____ By:_____(Seal)
Principal

Attest:_____ By:_____(Seal)

COMPLETION AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: FY2018-016

THAT _____
(Name and address of legal title of Contractor)

as Principal, hereinafter called Contractor, and _____
SURETY, hereinafter called Surety, and held and firmly bound unto the City of Oak Ridge, as Obligee, in the amount of _____ Dollars ($_____)

for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, 20_____
entered into a Contract with the City of Oak Ridge for

_____ in accordance with the specifications and approved amendments, which Contract is by reference made a part hereof, including all the obligations thereunder, and is hereinafter referred to as the Contract.

NOW, THEREFORE, the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, including all the obligations thereunder, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

Whenever Contractor shall be, and declared by City to be, in default under the Contract or any part thereof, the City having performed the City's obligation thereunder, the Surety may promptly remedy the default, or shall promptly at the City's option:

(1) Complete the Contract in accordance with its terms and conditions; OR

(2) Obtain a bid or bids for submission to the City for completing the Contract in accordance with the terms and conditions, and upon determination by Owner and Surety of lowest responsible bidder, arrange for a contract between such bidder and the City and make available as work progresses (even though there shall be a default or a succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion or any obligations thereunder.

Any suit under this bond must be instituted before the expiration of two years from the date on which final payment under the Contract falls due.

SIGNED AND SEALED THIS _____ DAY OF _____ A.D., 20_____
IN THE PRESENCE OF:

_____ By_____
Witness Principal (Seal)

_____ By_____
Witness Surety (Seal)

PLANS AND SPECIFICATIONS

The Plans and Specifications are attached and incorporated herein by reference into this bid package. It is a multi-page attachment that includes, but is not limited to, Drawings provided by demian\wilbur\architects (Structural: Keast & Hood Strcutural Engineers; Landscape Architect: Landscape Architecture Bureau LLC), Report for Limited Geotechnical Exploration (GEOServices, LLC), and Lighting (Factory Sales Agency – FSA Lighting).

INTERNATIONAL FRIENDSHIP BELL
Oak Ridge Tennessee

LIST OF DRAWINGS

demian|wilbur|architects

740 7th Street SE
Washington, DC 20003

202\640\2929
fax 202\640\2905

demianwilbur.com

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KEAST & HOOD
STRUCTURAL ENGINEERS

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Email: info@labindc.com

LAB
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REGISTRATION

PROJECT INFORMATION

INTERNATIONAL FRIENDSHIP BELL

BISSELL PARK, OAK RIDGE, TN

PROJECT NUMBER 201653

ISSUE RECORD

MARK	DATE	DESCRIPTION
	07.05.2017	ISSUED FOR PRICING

DRAWING INFORMATION

Drawing Scale: 12" = 1'-0"
Drawn By: JRM
Checked By: ZD

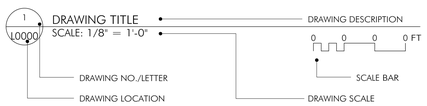
CS

B

A

SYMBOLS

DRAWING TITLE



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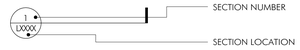

DETAIL KEY

NORTH ARROW

ELEVATION DATUM

PLAN DATUM

REVISION

LEGEND

CENTER LINE

C_L CENTER LINE R RADIUS

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, COUNTY AND/OR LOCAL STATUTES, ORDINANCES, REGULATIONS, LAWS AND CODES. THE CONTRACTOR SHALL TAKE ALL NECESSARY STEPS TO ENSURE SUCH COMPLIANCE AT NO ADDITIONAL COST TO THE OWNER. IF ANY INCONSISTENCIES ARE FOUND BETWEEN CODE REQUIREMENTS AND THE CONTENT OF THE CONTRACT DOCUMENTS (CD'S), THE CONTRACTOR WILL INFORM THE LANDSCAPE ARCHITECT (LA) IMMEDIATELY AND STOP WORK UNTIL GIVEN APPROVAL TO PROCEED BY THE LA.
2. THE CONTRACTOR SHALL FULLY EXAMINE AND BE FAMILIAR WITH THE CONDITIONS OF THE SITE AND THE DRAWINGS AND SPECIFICATIONS. SHOULD THE CONTRACTOR FIND, AFTER VISITING THE SITE OR DURING CONSTRUCTION, ANY DISCREPANCIES, OMISSIONS, AMBIGUITIES, OR CONFLICTS IN THE CDS OR BE IN DOUBT AS TO THEIR MEANING, THEY SHALL IMMEDIATELY BRING THESE ITEMS TO THE ATTENTION OF THE LA AND SHALL NOT PROCEED WITH WORK UNTIL THESE DISCREPANCIES ARE RESOLVED AND WRITTEN APPROVAL IS GIVEN BY THE LA. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR ALL NECESSARY REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
3. CONSULT ALL DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS PRIOR TO BEGINNING CONSTRUCTION. SHOULD THERE BE ANY DISCREPANCIES BETWEEN LANDSCAPE ARCHITECTURAL, ARCHITECTURAL, OR ENGINEERING DRAWINGS, THE CONTRACTOR IS TO CONTACT LANDSCAPE ARCHITECT TO REVIEW AND COORDINATE BEFORE PROCEEDING WITH WORK.
4. PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE LA, ARCHITECT, AND OWNER.
5. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK. CONTACT THE LOCAL UTILITY AGENCY A MINIMUM OF 72 HOURS IN ADVANCE. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED FOR DAMAGE TO UTILITIES, PIPES AND STRUCTURES DUE TO THEIR WORK.
6. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING CONDITIONS TO REMAIN. CONTRACTOR SHALL PROMPTLY REPAIR ANY DAMAGE TO EXISTING SITE ELEMENTS SUCH AS PAVEMENT, DRIVEWAYS, AND OTHER ADJACENT FACILITIES CAUSED BY CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO THE OWNER. REPAIRS TO EXISTING SITE ELEMENTS SHALL MATCH THE EXISTING IN CONSTRUCTION, MATERIAL AND FINISH, PER THE OWNER'S APPROVAL, AND SHALL BLEND WITH THE ADJACENT EXISTING SITE CONDITIONS AS SEAMLESSLY AS POSSIBLE.
7. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL WORK AND RELATED ACTIVITIES WITHIN THE PROPERTY LINE OR THE DESIGNATED LIMIT OF WORK. AT NO TIME IS ACCESS, STORAGE, OR MOVEMENT OF MATERIALS, MACHINERY, OR DEBRIS TO TAKE PLACE OUTSIDE OF THE PROJECT LIMIT OF WORK LINE OR PROPERTY LINES.
8. CONSTRUCTION ACCESS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF WAY. ANY STREETS, SIDEWALKS, ALLEYS, OR DRIVEWAYS DISTURBED DURING CONSTRUCTION MUST BE CLEARED OF DEBRIS, SWEPT, AND WASHED ON A DAILY BASIS DURING CONSTRUCTION. THE CONTRACTOR SHALL KEEP THE SITE CLEAN AND FREE OF TRASH AT ALL TIMES DURING CONSTRUCTION.
9. INSTALL TEMPORARY TREE PROTECTION AND TEMPORARY EROSION CONTROL MEASURES PRIOR TO ANY LAND DISTURBANCE AS REQUIRED BY LOCAL CODES AND AS SHOWN ON THE DRAWINGS. REFER TO THE CIVIL ENGINEER'S EROSION CONTROL DRAWINGS.
10. THE CONTRACTOR SHALL INSPECT ALL TREE PROTECTION AND EROSION CONTROL DEVICES AND CORRECT ANY DEFICIENCIES AT THE END OF EACH WORK DAY TO ENSURE THEIR PERFORMANCE. THE CONTRACTOR SHALL REMOVE SOIL TRAPPED BY EROSION CONTROL DEVICES AS REQUIRED TO PREVENT SOIL LEVEL FROM OVER-TOPPING THE DEVICE OR BULGING AT ANY POINT DURING CONSTRUCTION. SEE CIVIL ENGINEER'S DOCUMENTS.
11. ALL EXISTING TREES TO REMAIN SHALL BE FENCED AT THE DRIP LINE OF THEIR CANOPIES, OR PER PLANS IF PLANS INDICATE A LARGER TREE PROTECTION ZONE. DO NOT DRIVE VEHICLES, STOCKPILE SOIL OR CONSTRUCTION MATERIALS, OR PERFORM ANY CONSTRUCTION OPERATIONS WITHIN THE DRIP LINE, ROOT ZONE, OR PROTECTIVE FENCING OF EXISTING TREES. CONTRACTORS NOT FOLLOWING THESE PROTECTIVE RULES SHALL BE LIABLE FOR THE COST OF AN ARBORIST'S FEES AND ALL COSTS ASSOCIATED WITH TREATMENT AND/OR REPLACEMENT OF THE TREES. BEFORE FINAL GRADING AND PLANTING BEGINS, THE LA WILL INSPECT TREE PROTECTION AREAS FOR COMPACTION AND MECHANICAL DAMAGE. IF THE LA DETERMINES THAT EITHER OF THESE EXISTS, THE CONTRACTOR WILL REMEDY AT HIS EXPENSE. MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO EVALUATION BY A LICENSED ARBORIST, AIRSPADING, BIOPLEX TREATMENT, CABLING, ROOT PRUNING AND PRUNING OF CANOPY/LIMBS.
12. THE LA SHALL APPROVE ALL TRENCHING OR OTHER DISTURBANCE REQUIRED WITHIN THE ROOT ZONES OF TREES PRIOR TO EXECUTION. THE CONTRACTOR IS RESPONSIBLE FOR CONSULTING THE ARBORIST PRIOR TO MAJOR EXCAVATION, AS DIRECTED BY THE LA. APPROVED TRENCHING SHALL BE PERFORMED USING A VERMEER TRENCHING MACHINE, VIBRATORY PLOW OR EQUIVALENT.
13. ROOT PRUNING SHALL BE COMPLETED PRIOR TO BASE OR SUBGRADE PREPARATION AND PRIOR TO ANY EXCAVATION ADJACENT TO ANY EXISTING TREE. TREE ROOTS SHALL BE ROOT PRUNED TO AVOID TEARING AND SHREDDING BY GRADING EQUIPMENT. ROOT PRUNING SHALL BE TO A DEPTH OF 18". THE CONTRACTOR SHALL TRENCH AROUND THE TREE BEYOND THE EDGE OF THE TREE PROTECTION AREA AND THEN CLEAR THE SOIL BY HAND TO THE EDGE OF THE TREE PROTECTION AREA AND HAND-PRUNE THE ROOTS. ROOTS SHALL BE CUT CLEANLY, AS FAR FROM THE TRUNK OF THE TREE AS POSSIBLE.
14. EXCAVATION IN AN AREA WHERE ROOTS ARE PRESENT SHALL NOT CAUSE THE TEARING OR RIPPING OF TREE ROOTS. ROOTS MUST BE CLEANLY SEVERED PRIOR TO CONTINUING WITH EXCAVATION, OR TUNNELED AROUND TO PREVENT DAMAGE TO THE ROOT.
15. AT SITES WHERE ROOT PRUNING OR EXCAVATION HAS TAKEN PLACE NEAR TREES TO REMAIN, AND MANY LIVING ROOTS REMAIN EXPOSED TO THE AIR, THE CONTRACTOR SHALL COVER THE EXPOSED ROOTS WITH SAND, SOIL, OR MOIST BURLAP WITHIN 2 HOURS. ROOT ENDS SHALL BE COVERED WITH SOIL OR BURLAP AND KEPT MOIST UNTIL THE FINAL BACKFILL OR GRADE IS ESTABLISHED.
16. ALL TREE PRUNING AND REMOVAL PERFORMED SHALL BE EXECUTED UNDER THE SUPERVISION OF A CERTIFIED ARBORIST. PRUNING SHALL BE PERFORMED TO THE STANDARDS OF THE INTERNATIONAL SOCIETY OF ARBORISTS PRUNING GUIDELINES, AND TO ANSI A-300.
17. THE CONTRACTOR SHALL PROVIDE MOCK-UPS IN THE FIELD OF PROPOSED SITE FEATURES, THAT ARE SO DESIGNATED IN THE DOCUMENTS, FOR APPROVAL BY OWNER AND LA PRIOR TO CONSTRUCTION. ALL MOCK-UPS SHALL BE PRESERVED TO BE USED FOR REFERENCE DURING CONSTRUCTION. DO NOT REMOVE MOCK-UPS UNTIL CONSTRUCTION IS COMPLETE.
18. SUBSTITUTIONS IN LANDSCAPE PRODUCTS AND MATERIALS ARE NOT PERMITTED WITHOUT PRIOR APPROVAL BY THE LA.
19. THE CONTRACTOR, OR THEIR REPRESENTATIVE, SHALL BE ON SITE AT THE TIME OF ALL MATERIALS DELIVERIES. IF THEY ARE NOT AVAILABLE TO ACCEPT THE DELIVERY, THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY RESULTING LOSSES OR DAMAGE.
20. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR CONSTRUCTION PRIOR TO COMMENCING WORK.
21. THE CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED CONSTRUCTION INSPECTIONS.
22. THE CONTRACTOR IS RESPONSIBLE FOR LICENSING, BONDING, AND INSURANCE AS REQUIRED BY APPLICABLE REGULATORY AGENCIES.
23. THE CONTRACTOR SHALL OBTAIN THE OWNER'S APPROVAL FOR TIMES OF DAY DURING WHICH CONSTRUCTION OPERATIONS MAY OCCUR. ALL CONSTRUCTION OPERATIONS SHALL OCCUR WITHIN TIMES SPECIFIED BY LOCAL ORDINANCES.
24. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THEIR WORK WITH ALL OTHER TRADES ON THE SITE.
25. IT IS THE CONTRACTORS RESPONSIBILITY TO GROUND AND BOND ALL METAL OBJECTS IN THE LANDSCAPE, AS REQUIRED BY CODE.
26. UPON COMPLETION OF THE PROJECT, ALL EXCESS SOIL, TEMPORARY FENCING, CONSTRUCTION SIGNS, TAGS, EROSION CONTROL MEASURES, STABILIZATION MATERIALS, AND OTHER DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY. ALL PAVED AREAS, WALLS, ETC. SHALL BE THOROUGHLY WASHED AND CLEANED.
27. REFER TO INDIVIDUAL DRAWINGS FOR FURTHER NOTES.

ABBREVIATION LIST

A	ADJ	ADJACENT, ADJUSTABLE
	AFF	ABOVE FINISH FLOOR
	ALT	ALTERNATE
	ALUM	ALUMINUM
	APPROX	APPROXIMATE
	ARCH	ARCHITECT(URAL)
B	BC	BOTTOM OF CURB
	BD	BOARD
	BLDG	BUILDING
	BLKG	BLOCKING
	BOT	BOTTOM
	BRK	BRICK
	BS	BOTTOM OF STAIR
	BW	BOTTOM OF WALL
C	CEM	CEMENT
	CIP	CAST IN PLACE
	CJ	CONTROL JOINT
	CMU	CONCRETE MASONRY UNIT
	COL	COLUMN
	CONC	CONCRETE
	CU FT	CUBIC FEET
D	DD	DECK DRAIN
	DIA	DIAMETER
	DIAG	DIAGONAL
	DIM	DIMENSION
	DN	DOWN
	DS	DOWN SPOUT
	DWG(S)	DRAWING(S)
E	E	EAST
	EA	EACH
	EJ	EXPANSION JOINT
	EL	ELEVATION
	ELEC	ELECTRIC(AL)
	EQ	EQUAL
	EQUIP	EQUIPMENT
	EXP	EXPOSED
	EXIST	EXISTING
	EXT	EXTERIOR
F	FAB	FABRIC
	FIN	FINISH
	FT	FOOT, FEET
	FTG	FOOTING
	FS	FINISHED SURFACE
	FG	FINISHED GRADE
G	GA	GAUGE
	GALV	GALVANIZED
	GC	GENERAL CONTRACTOR
H	HDW	HARDWARE
	HDWD	HARDWOOD
	HM	HOLLOW METAL
	HOR	HORIZONTAL
	HT	HEIGHT
	HVAC	HEATING/VENTILATING/ AIR CONDITIONING
I	ID	INSIDE DIAMETER
	INCL	INCLUD(E), (ED), (ING)
	INSUL	INSULAT(E), (ED), (ING), (ION)
	INT	INTERIOR
J	JT	JOINT
K	KO	KNOCK OUT
L	L	LENGTH
	LT	LIGHT
M	MAS	MASONRY
	MATL	MATERIAL
	MAX	MAXIMUM
	MECH	MECHANICAL
	MED	MEDIUM
	MFR	MANUFACTURER
	MIN	MINIMUM
	MISC	MISCELLANEOUS
	MO	MASONRY OPENING
	MTL	METAL
N	N	NORTH
	NIC	NOT IN CONTRACT
	No., #	NUMBER
	NOM	NOMINAL
	NTS	NOT TO SCALE
O	OC	ON CENTER
	OD	OUTSIDE DIAMETER
	OPNG	OPENING
	OPP	OPPOSITE
P	PA	PLANTED AREA
	PERF	PERFORAT(E), (ED), (ION)
	PL	PLATE
	PLYWD	PLYWOOD
	PNL	PANEL
	PNT	PAINT(ED)
	PSF	POUNDS PER SF
	PSI	POUNDS PER SI
	PT	POINT
	P.O.B.	POINT OF BEGINNING
R	RAD	RADIUS
	RB	RUBBER BASE
	RD	ROOF DRAIN
	RE:	REFER TO
	REINF	REINFORC(E), (ED), (ING)
	REQD	REQUIRED
	REV	REVISION
	RL	RAIN LEADER
S	S	SOUTH
	SCHED	SCHEDUL(E), (ED)
	SD	STORM DRAIN
	SF	SQUARE FEET
	SHT	SHEET
	SIM	SIMILAR
	SQ	SQUARE
	SS	STAINLESS STEEL, SOLID
	STD	STANDARD
	STL	STEEL
	STN	STAIN(ED)
	SUSP	SUSPEND(ED)
T	TA	TURF AREA
	TBD	TO BE DECIDED
	TC	TOP OF CURB
	TEL	TELEPHONE
	THK	THICK(NESS)
	TOM	TOP OF MASONRY
	TOS	TOP OF STEEL
	TS	TOP OF STAIR
	TW	TOP OF WALL
	TV	TELEVISION
	TYP	TYPICAL
U	UNO	UNLESS NOTED OTHERWISE
V	VERT	VERTICAL
	VIF	VERIFY IN FIELD
W	W	WEST, WIDE, WIDTH
	W/	WITH
	W/O	WITHOUT
	WD	WOOD
	WT	WEIGHT

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CONSULTANTS

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KEAST & HOOD STRUCTURAL ENGINEERS

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714 7TH STREET SE WASHINGTON, DC 20003
P. 202 543 6550 F. 202 543 6553

REGISTRATION

PROJECT INFORMATION

INTERNATIONAL FRIENDSHIP BELL

BISSELL PARK, OAK RIDGE, TN

PROJECT NUMBER 201653

ISSUE RECORD

MARK	DATE	DESCRIPTION
	7-5-17	**ISSUED FOR PRICING**

DRAWING INFORMATION

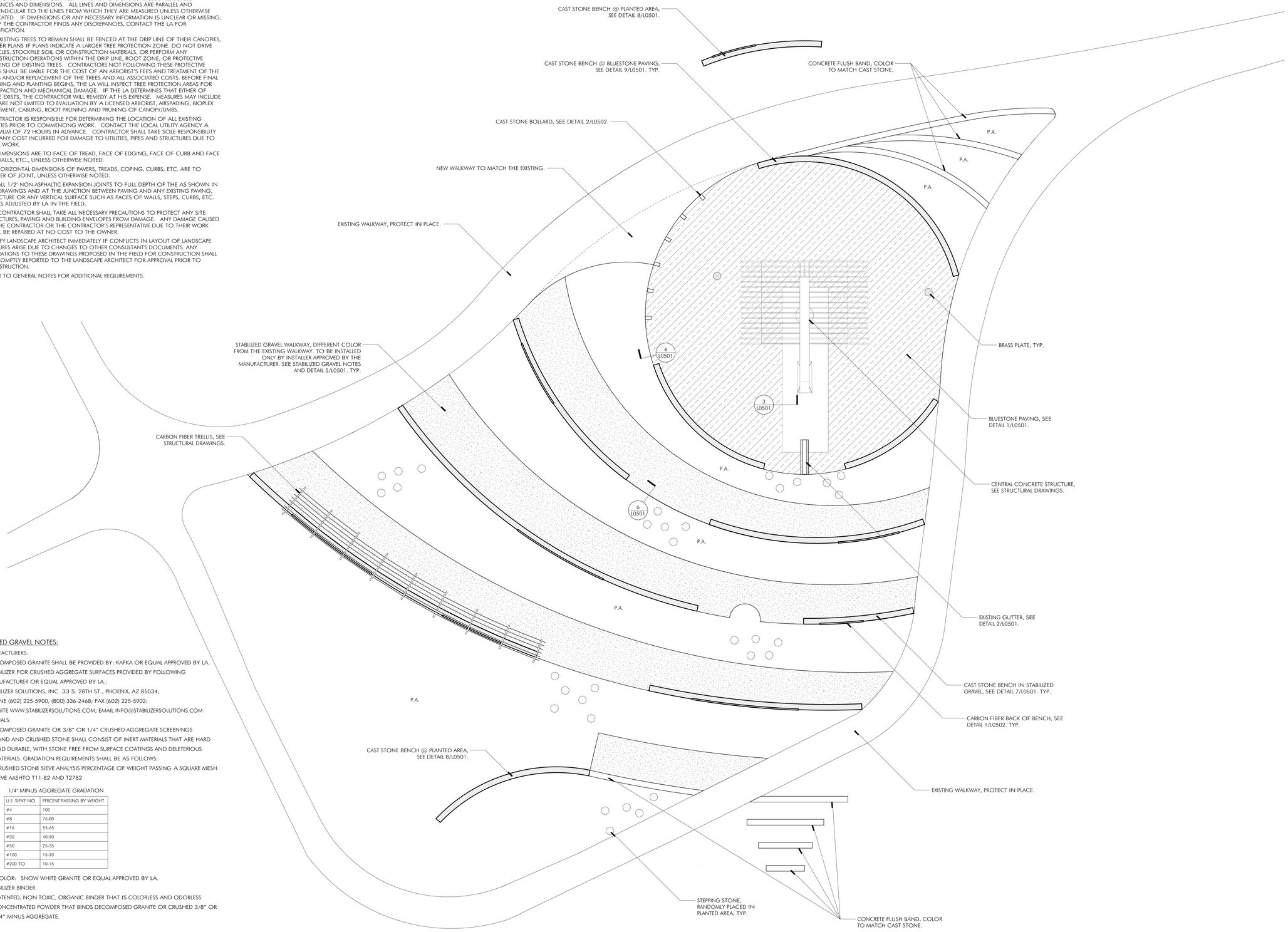
Drawing Scale: **AS INDICATED**
Drawn By: **RR**
Checked By: **JF**

GENERAL NOTES

L0000

LAYOUT NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND LAYOUT DIMENSIONS IN THE FIELD. DO NOT PROCEED WITH ANY WORK IF ANY DISCREPANCIES, SUCH AS OBSTRUCTIONS AND/OR GRADE DIFFERENCES THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN, ARE PRESENT. SUCH CONDITIONS SHALL BE REPORTED TO THE LANDSCAPE ARCHITECT (LA) IMMEDIATELY. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR ALL REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
2. DO NOT SCALE DRAWINGS. ALL WRITTEN DIMENSIONS SUPERSEDE ALL SCALED DISTANCES AND DIMENSIONS. ALL LINES AND DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED. IF DIMENSIONS OR ANY NECESSARY INFORMATION IS UNCLEAR OR MISSING, OR IF THE CONTRACTOR FINDS ANY DISCREPANCIES, CONTACT THE LA FOR CLARIFICATION.
3. ALL EXISTING TREES TO REMAIN SHALL BE FENCED AT THE DRIP LINE OF THEIR CANOPIES, OR PER PLANS IF PLANS INDICATE A LARGER TREE PROTECTION ZONE. DO NOT DRIVE VEHICLES, STOCKPILE SOIL OR CONSTRUCTION MATERIALS, OR PERFORM ANY CONSTRUCTION OPERATIONS WITHIN THE DRIP LINE, ROOT ZONE, OR PROTECTIVE FENCING OF EXISTING TREES. CONTRACTORS NOT FOLLOWING THESE PROTECTIVE RULES SHALL BE LIABLE FOR THE COST OF AN ARBORIST'S FEES AND TREATMENT OF THE TREES AND/OR REPLACEMENT OF THE TREES AND ALL ASSOCIATED COSTS. BEFORE FINAL GRADING AND PLANTING BEGINS, THE LA WILL INSPECT TREE PROTECTION AREAS FOR COMPACTION AND MECHANICAL DAMAGE. IF THE LA DETERMINES THAT EITHER OF THESE EXISTS, THE CONTRACTOR WILL REMEDY AT HIS EXPENSE. MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO EVALUATION BY A LICENSED ARBORIST, AIRSPADING, BIOPLEX TREATMENT, CABLING, ROOT PRUNING AND PRUNING OF CANOPY/LIMBS.
4. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK. CONTACT THE LOCAL UTILITY AGENCY A MINIMUM OF 72 HOURS IN ADVANCE. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED FOR DAMAGE TO UTILITIES, PIPES AND STRUCTURES DUE TO THEIR WORK.
5. ALL DIMENSIONS ARE TO FACE OF TREAD, FACE OF EDGING, FACE OF CURB AND FACE OF WALLS, ETC., UNLESS OTHERWISE NOTED.
6. ALL HORIZONTAL DIMENSIONS OF PAVERS, TREADS, COPING, CURBS, ETC. ARE TO CENTER OF JOINT, UNLESS OTHERWISE NOTED.
7. INSTALL 1/2" NON-ASPHALTIC EXPANSION JOINTS TO FULL DEPTH OF THE AS SHOWN IN THE DRAWINGS AND AT THE JUNCTION BETWEEN PAVING AND ANY EXISTING PAVING, STRUCTURE OR ANY VERTICAL SURFACE SUCH AS FACES OF WALLS, STEPS, CURBS, ETC. OR AS ADJUSTED BY LA IN THE FIELD.
8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ANY SITE STRUCTURES, PAVING AND BUILDING ENVELOPES FROM DAMAGE. ANY DAMAGE CAUSED BY THE CONTRACTOR OR THE CONTRACTOR'S REPRESENTATIVE DUE TO THEIR WORK SHALL BE REPAIRED AT NO COST TO THE OWNER.
9. NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IF CONFLICTS IN LAYOUT OF LANDSCAPE FEATURES ARISE DUE TO CHANGES TO OTHER CONSULTANTS DOCUMENTS. ANY ALTERATIONS TO THESE DRAWINGS PROPOSED IN THE FIELD FOR CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO CONSTRUCTION.
10. REFER TO GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.



STABILIZED GRAVEL NOTES:

1. MANUFACTURERS:
   A. DECOMPOSED GRANITE SHALL BE PROVIDED BY: KAFKA OR EQUAL APPROVED BY LA.
   B. STABILIZER FOR CRUSHED AGGREGATE SURFACES PROVIDED BY FOLLOWING MANUFACTURER OR EQUAL APPROVED BY LA.:
   STABILIZER SOLUTIONS, INC. 33 S. 28TH ST., PHOENIX, AZ 85034;
   PHONE (602) 225-5900, (800) 336-2468; FAX (602) 225-5902;
   WEBSITE WWW.STABILIZERSOLUTIONS.COM; EMAIL INFO@STABILIZERSOLUTIONS.COM
2. MATERIALS:
   A. DECOMPOSED GRANITE OR 3/8" OR 1/4" CRUSHED AGGREGATE SCREENINGS
      1. SAND AND CRUSHED STONE SHALL CONSIST OF INERT MATERIALS THAT ARE HARD AND DURABLE, WITH STONE FREE FROM SURFACE COATINGS AND DELETERIOUS MATERIALS. GRADATION REQUIREMENTS SHALL BE AS FOLLOWS:
      2. CRUSHED STONE SIEVE ANALYSIS PERCENTAGE OF WEIGHT PASSING A SQUARE MESH SIEVE AASHTO T11-82 AND T2782

1/4" MINUS AGGREGATE GRADATION

U.S. SIEVE NO.	PERCENT PASSING BY WEIGHT
#4	100
#8	75-80
#16	55-65
#30	40-50
#50	25-35
#100	15-20
#200 TO	10-15

      3. COLOR: SNOW WHITE GRANITE OR EQUAL APPROVED BY LA.
   B. STABILIZER BINDER
      1. PATENTED, NON TOXIC, ORGANIC BINDER THAT IS COLORLESS AND ODORLESS CONCENTRATED POWDER THAT BINDS DECOMPOSED GRANITE OR CRUSHED 3/8" OR 1/4" MINUS AGGREGATE.

1 / L0101 MATERIAL AND LAYOUT PLAN
Scale: 1" = 10 ft

0 10 20 FT

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REGISTRATION

PROJECT INFORMATION

INTERNATIONAL FRIENDSHIP BELL

BISSELL PARK, OAK RIDGE, TN

PROJECT NUMBER 201653

ISSUE RECORD

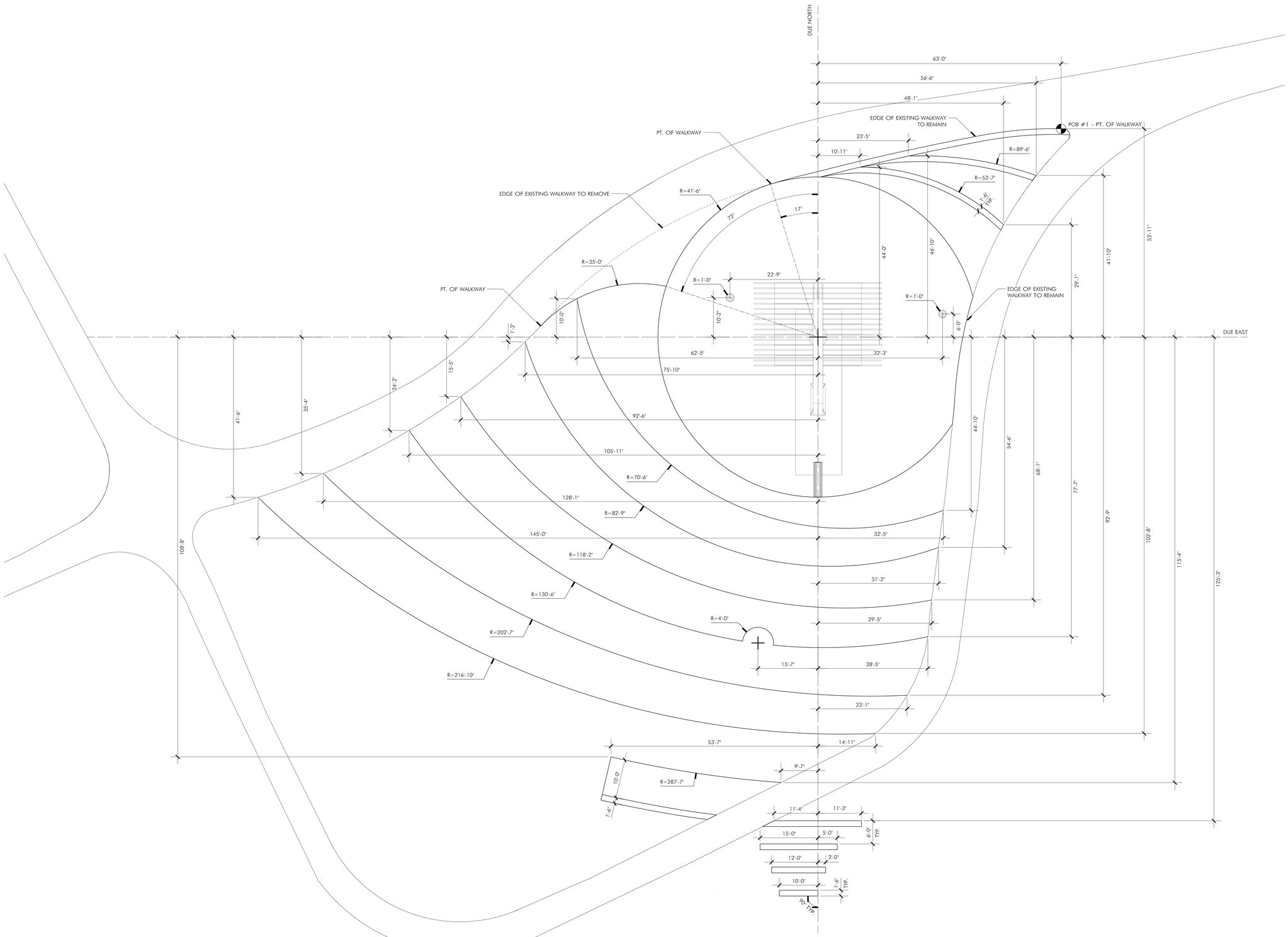
MARK	DATE	DESCRIPTION
	7-5-17	**ISSUED FOR PRICING**

DRAWING INFORMATION

Drawing Scale: **1" = 10'-0"**
Drawn By: **RR**
Checked By: **JF**

MATERIAL AND LAYOUT PLAN

L0101



1 / L0102 MATERIAL AND LAYOUT PLAN
Scale: 1" = 10 ft

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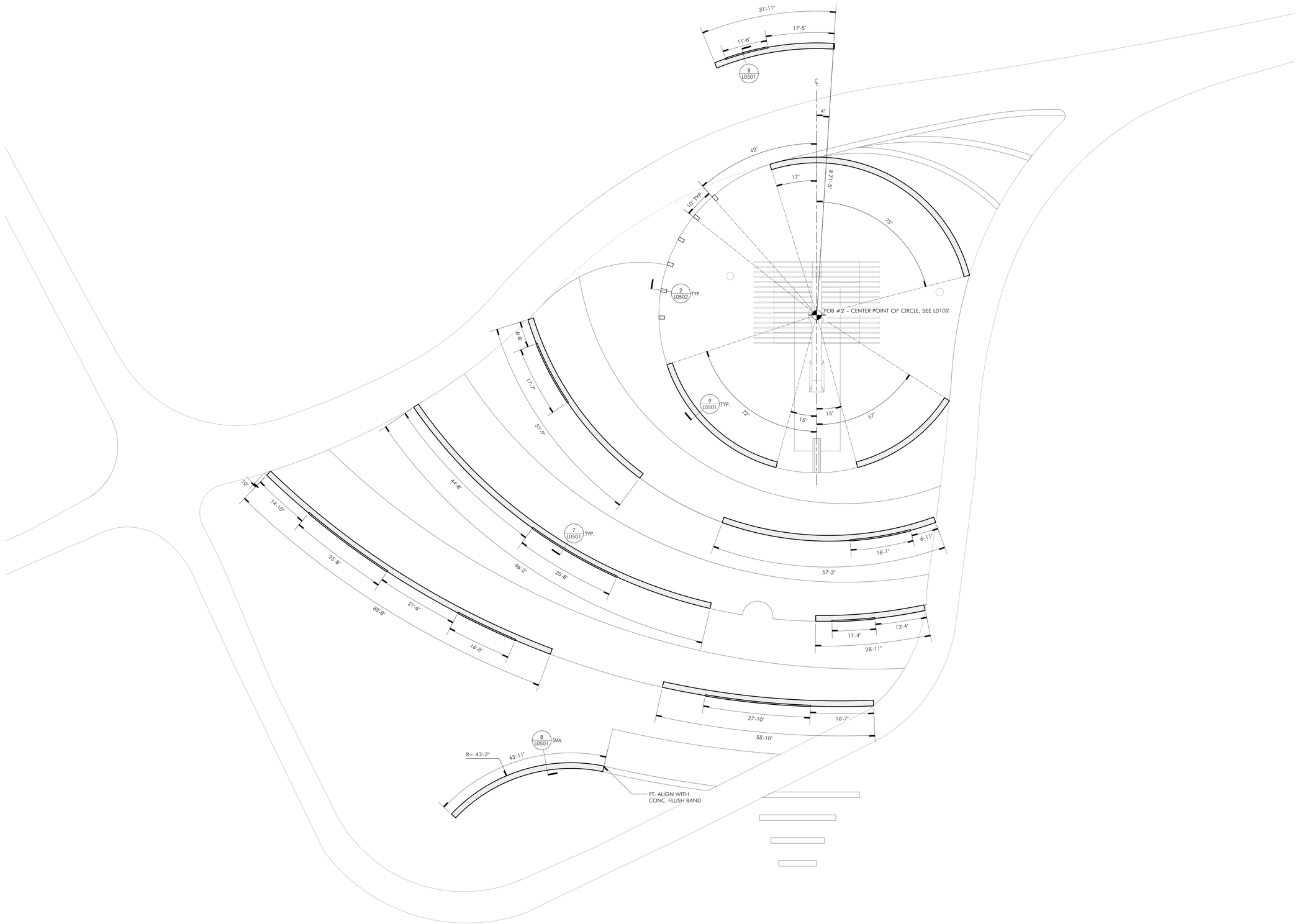
MATERIAL AND LAYOUT PLAN

L0102



1 / L0103 MATERIAL AND LAYOUT PLAN
Scale: 1" = 10 ft

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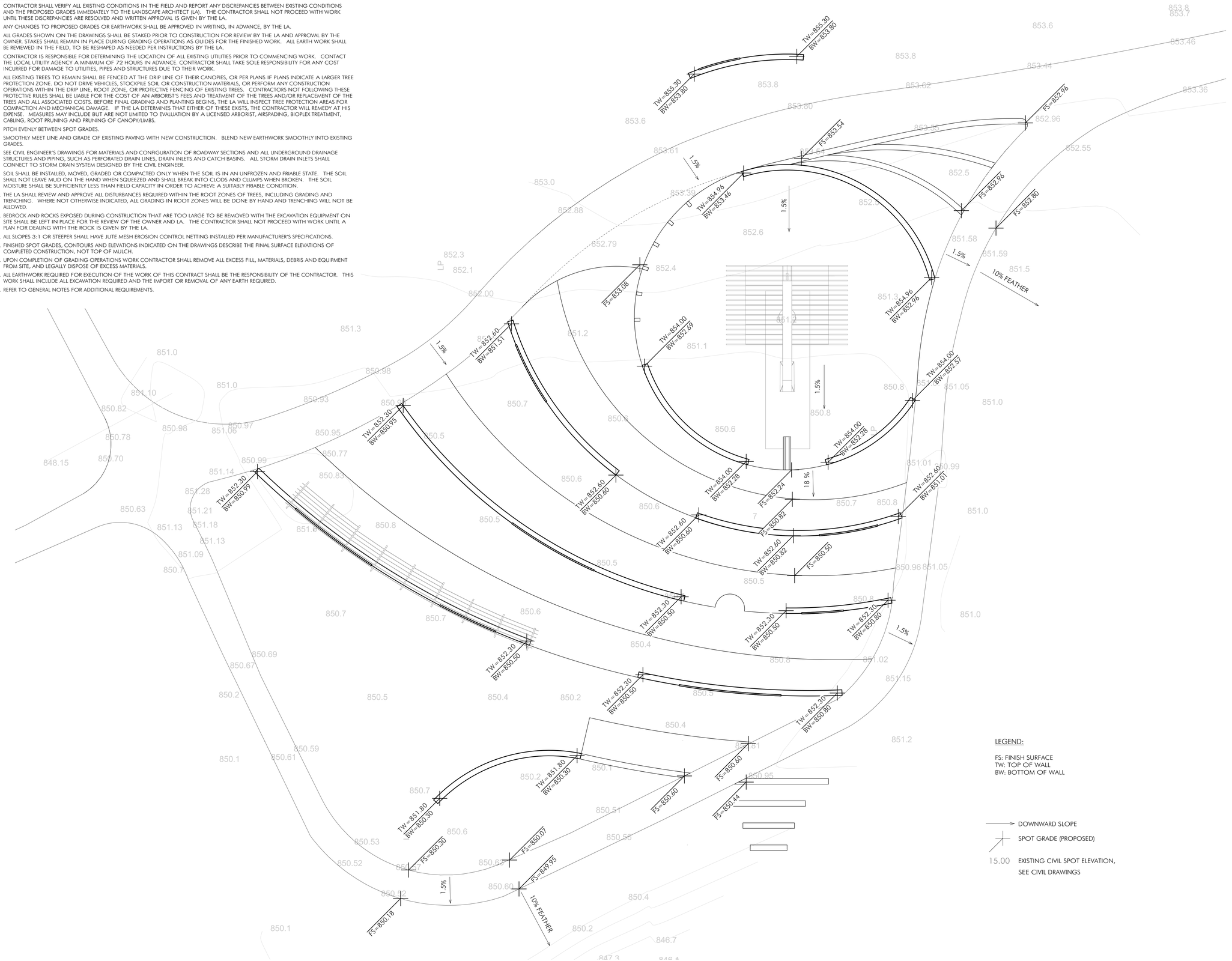
MATERIAL AND LAYOUT PLAN

L0103

GRADING NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE PROPOSED GRADES IMMEDIATELY TO THE LANDSCAPE ARCHITECT (LA). THE CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL THESE DISCREPANCIES ARE RESOLVED AND WRITTEN APPROVAL IS GIVEN BY THE LA.
2. ANY CHANGES TO PROPOSED GRADES OR EARTHWORK SHALL BE APPROVED IN WRITING, IN ADVANCE, BY THE LA.
3. ALL GRADES SHOWN ON THE DRAWINGS SHALL BE STAKED PRIOR TO CONSTRUCTION FOR REVIEW BY THE LA AND APPROVAL BY THE OWNER. STAKES SHALL REMAIN IN PLACE DURING GRADING OPERATIONS AS GUIDES FOR THE FINISHED WORK. ALL EARTH WORK SHALL BE REVIEWED IN THE FIELD, TO BE RESHAPED AS NEEDED PER INSTRUCTIONS BY THE LA.
4. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK. CONTACT THE LOCAL UTILITY AGENCY A MINIMUM OF 72 HOURS IN ADVANCE. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED FOR DAMAGE TO UTILITIES, PIPES AND STRUCTURES DUE TO THEIR WORK.
5. ALL EXISTING TREES TO REMAIN SHALL BE FENCED AT THE DRIP LINE OF THEIR CANOPIES, OR PER PLANS IF PLANS INDICATE A LARGER TREE PROTECTION ZONE. DO NOT DRIVE VEHICLES, STOCKPILE SOIL OR CONSTRUCTION MATERIALS, OR PERFORM ANY CONSTRUCTION OPERATIONS WITHIN THE DRIP LINE, ROOT ZONE, OR PROTECTIVE FENCING OF EXISTING TREES. CONTRACTORS NOT FOLLOWING THESE PROTECTIVE RULES SHALL BE LIABLE FOR THE COST OF AN ARBORIST'S FEES AND TREATMENT OF THE TREES AND/OR REPLACEMENT OF THE TREES AND ALL ASSOCIATED COSTS. BEFORE FINAL GRADING AND PLANTING BEGINS, THE LA WILL INSPECT TREE PROTECTION AREAS FOR COMPACTION AND MECHANICAL DAMAGE. IF THE LA DETERMINES THAT EITHER OF THESE EXISTS, THE CONTRACTOR WILL REMEDY AT HIS EXPENSE. MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO EVALUATION BY A LICENSED ARBORIST, AIRSPADING, BIOPLEX TREATMENT, CABLING, ROOT PRUNING AND PRUNING OF CANOPY/LIMBS.
6. PITCH EVENLY BETWEEN SPOT GRADES.
7. SMOOTHLY MEET LINE AND GRADE OF EXISTING PAVING WITH NEW CONSTRUCTION. BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING GRADES.
8. SEE CIVIL ENGINEER'S DRAWINGS FOR MATERIALS AND CONFIGURATION OF ROADWAY SECTIONS AND ALL UNDERGROUND DRAINAGE STRUCTURES AND PIPING, SUCH AS PERFORATED DRAIN LINES, DRAIN INLETS AND CATCH BASINS. ALL STORM DRAIN INLETS SHALL CONNECT TO STORM DRAIN SYSTEM DESIGNED BY THE CIVIL ENGINEER.
9. SOIL SHALL BE INSTALLED, MOVED, GRADED OR COMPACTED ONLY WHEN THE SOIL IS IN AN UNFROZEN AND FRIABLE STATE. THE SOIL SHALL NOT LEAVE MUD ON THE HAND WHEN SQUEEZED AND SHALL BREAK INTO CLODS AND CLUMPS WHEN BROKEN. THE SOIL MOISTURE SHALL BE SUFFICIENTLY LESS THAN FIELD CAPACITY IN ORDER TO ACHIEVE A SUITABLY FRIABLE CONDITION.
10. THE LA SHALL REVIEW AND APPROVE ALL DISTURBANCES REQUIRED WITHIN THE ROOT ZONES OF TREES, INCLUDING GRADING AND TRENCHING. WHERE NOT OTHERWISE INDICATED, ALL GRADING IN ROOT ZONES WILL BE DONE BY HAND AND TRENCHING WILL NOT BE ALLOWED.
11. BEDROCK AND ROCKS EXPOSED DURING CONSTRUCTION THAT ARE TOO LARGE TO BE REMOVED WITH THE EXCAVATION EQUIPMENT ON SITE SHALL BE LEFT IN PLACE FOR THE REVIEW OF THE OWNER AND LA. THE CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL A PLAN FOR DEALING WITH THE ROCK IS GIVEN BY THE LA.
12. ALL SLOPES 3:1 OR STEEPER SHALL HAVE JUTE MESH EROSION CONTROL NETTING INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
13. FINISHED SPOT GRADES, CONTOURS AND ELEVATIONS INDICATED ON THE DRAWINGS DESCRIBE THE FINAL SURFACE ELEVATIONS OF COMPLETED CONSTRUCTION, NOT TOP OF MULCH.
14. UPON COMPLETION OF GRADING OPERATIONS WORK CONTRACTOR SHALL REMOVE ALL EXCESS FILL, MATERIALS, DEBRIS AND EQUIPMENT FROM SITE, AND LEGALLY DISPOSE OF EXCESS MATERIALS.
15. ALL EARTHWORK REQUIRED FOR EXECUTION OF THE WORK OF THIS CONTRACT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS WORK SHALL INCLUDE ALL EXCAVATION REQUIRED AND THE IMPORT OR REMOVAL OF ANY EARTH REQUIRED.
16. REFER TO GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.



LEGEND:

FS: FINISH SURFACE
TW: TOP OF WALL
BW: BOTTOM OF WALL

DOWNWARD SLOPE

SPOT GRADE (PROPOSED)

15.00 EXISTING CIVIL SPOT ELEVATION, SEE CIVIL DRAWINGS

1 L0201 GRADING PLAN
Scale: 1" = 10 ft

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INTERNATIONAL FRIENDSHIP BELL

BISSELL PARK, OAK RIDGE, TN

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Checked By: **JF**

GRADING PLAN

L0201

PLANTING NOTES

1. DO NOT PROCEED WITH PLANTING IF EXISTING CONDITIONS ON THE SITE DIFFER FROM THOSE SHOWN IN THE SURVEY, PARTICULARLY IF OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE LA. THE CONTRACTOR SHALL ASSUME COMPLETE RESPONSIBILITY FOR ALL REVISIONS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.
2. NO PLANTING SHALL BE DONE BEFORE ACCEPTANCE OF GRADING BY THE LA.
3. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK. CONTACT THE LOCAL UTILITY AGENCY A MINIMUM OF 72 HOURS IN ADVANCE. CONTRACTOR SHALL TAKE SOLE RESPONSIBILITY FOR ANY COST INCURRED FOR DAMAGE TO UTILITIES, PIPES AND STRUCTURES DUE TO PLANTING WORK.
4. ALL EXISTING TREES TO REMAIN SHALL BE FENCED AT THE DRIP LINE OF THEIR CANOPIES, OR PER PLANS IF PLANS INDICATE A LARGER TREE PROTECTION ZONE. DO NOT DRIVE VEHICLES, STOCKPILE SOIL OR CONSTRUCTION MATERIALS, OR PERFORM ANY CONSTRUCTION OPERATIONS WITHIN THE DRIP LINE, ROOT ZONE, OR PROTECTIVE FENCING OF EXISTING TREES. CONTRACTORS NOT FOLLOWING THESE PROTECTIVE RULES SHALL BE LIABLE FOR THE COST OF AN ARBORIST'S FEES AND TREATMENT OF THE TREES AND/OR REPLACEMENT OF THE TREES AND ALL ASSOCIATED COSTS. BEFORE FINAL GRADING AND PLANTING BEGINS, THE LA WILL INSPECT TREE PROTECTION AREAS FOR COMPACTION AND MECHANICAL DAMAGE. IF THE LA DETERMINES THAT EITHER OF THESE EXISTS, THE CONTRACTOR WILL REMEDY AT HIS EXPENSE. MEASURES MAY INCLUDE BUT ARE NOT LIMITED TO EVALUATION BY A LICENSED ARBORIST, AIRSPADING, BIOPLEX TREATMENT, CABLING, ROOT PRUNING AND PRUNING OF CANOPY/LIMBS.
5. THE NUMBER OF PLANTS TO BE INSTALLED SHALL BE THE NUMBER SHOWN GRAPHICALLY ON THE DRAWINGS. IF THERE ARE CONFLICTS BETWEEN THE NUMBER OF PLANTS SHOWN ON THE DRAWINGS AND THE NUMBER SHOWN IN THE PLANT LIST, THE NUMBER OF PLANTS ON THE DRAWINGS SHALL BE INSTALLED. BRING ALL SUCH CONFLICTS TO THE ATTENTION OF THE LANDSCAPE ARCHITECT (LA).
6. FINAL LOCATION OF ALL PLANT MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE LA. ALL TREE LOCATIONS SHALL BE STAKED IN THE FIELD FOR REVIEW AND APPROVAL OF THE LA BEFORE COMMENCING WITH PLANTING. THE CONTRACTOR SHALL NOTIFY THE LA FOR INSPECTION FOR EACH AREA BEFORE INSTALLATION. THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE LA OF ANY UNDERGROUND OBSTACLES DISCOVERED DURING PLANTING THAT MAY AFFECT THE LOCATION OF PLANTS, AND WILL NOT PROCEED UNTIL FINAL LOCATIONS ARE APPROVED BY THE LA.
7. ALL PLANT MATERIAL SHALL BE APPROVED BY THE LA PRIOR TO AND/OR AT THE TIME OF ITS ARRIVAL ON SITE. THE CONTRACTOR WILL NOTIFY THE LA OF ALL PLANT DELIVERIES AT LEAST 48 HOURS IN ADVANCE. THE LA WILL REJECT ANY PLANTS THAT ARE DAMAGED, DESICCATED, DISEASED, DO NOT HAVE FULL AND BALANCED FORM, WHOSE ROOT BALLS ARE LOOSE OR CRACKED, DO NOT MEET THE SIZE OR SPECIES/CULTIVAR SPECIFIED IN THE DRAWINGS, OR DO NOT MEET INDUSTRY STANDARDS OF QUALITY. REJECTED PLANTS WILL BE REPLACED BY THE CONTRACTOR IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER.
8. NO SUBSTITUTIONS OF PLANT SPECIES/CULTIVARS SHALL BE MADE WITHOUT THE PRIOR WRITTEN PERMISSION OF THE LA. THE LA RESERVES THE RIGHT TO MAKE SUBSTITUTIONS, ADDITIONS AND DELETIONS IN THE PLANTING SCOPE WHILE WORK IS IN PROGRESS. EQUITABLE ADJUSTMENTS TO THE CONTRACT PRICE, BASED ON THE COST OF COMPARABLE PLANTS IN THE CONTRACT, SHALL BE MADE SUBJECT TO THE OWNER'S APPROVAL.
9. ALL TREES AND SHRUBS SHALL BE PLANTED PLUMB AND TRUE. ALL TREES SHALL BE MARKED ON THE NORTH SIDE IN THE NURSERY, AND WILL BE PLANTED WITH THE NORTH SIDE FACING NORTH, PER THE NURSERY MARKING, UNLESS OTHERWISE DIRECTED BY THE LA. SEE PLANTING DETAILS AND SPECIFICATIONS FOR TREE, SHRUB, PERENNIAL, AND BULB PLANTING, INCLUDING STAKING METHODS, PLANT PIT DIMENSIONS AND PLANTING SOIL REQUIREMENTS.
10. ALL AREAS DISTURBED BY CONSTRUCTION OPERATIONS AND NOT OTHERWISE SPECIFIED SHALL BE SEEDED/SODDED PER THE SPECIFICATIONS.
11. IMMEDIATELY AFTER DIGGING PLANTS, PROTECT FROM DRYING AND DAMAGE UNTIL DELIVERED TO THE PLANTING SITE. ROOT BALLS SHALL BE CHECKED REGULARLY AND WATERED SUFFICIENTLY TO MAINTAIN ROOT VIABILITY.
12. BRANCHES SHALL BE TIED WITH ROPE OR TWINE IN SUCH A MANNER THAT NO DAMAGE WILL OCCUR TO THE BARK OR BRANCHES.
13. DURING TRANSPORTATION OF PLANT MATERIAL, THE CONTRACTOR SHALL EXERCISE CARE TO PREVENT INJURY AND DRYING OUT OF THE TREES. SHOULD THE ROOTS BE DRIED OUT, LARGE BRANCHES BROKEN, BALLS OF EARTH BROKEN OR LOOSENED, OR AREAS OF BARK TORN OR ABRADED, THE LA MAY REJECT THE INJURED TREE(S) AND ORDER THEM REPLACED AT NO ADDITIONAL COST TO THE OWNER. ALL LOADS OF PLANTS SHALL BE COVERED AT ALL TIMES WITH TARPAULIN OR CANVAS. LOADS THAT ARE NOT PROTECTED WILL BE REJECTED.
14. CONTRACTOR SHALL PROVIDE LABOR TO CARE FOR ALL PLANTS AND LAWN AREAS UNTIL SITE IS READY FOR INSTALLATION. PLANTS THAT CANNOT BE PLANTED IMMEDIATELY AFTER DELIVERY SHALL BE KEPT IN THE SHADE, WELL PROTECTED WITH SOIL, WET MULCH, OR OTHER ACCEPTABLE MATERIAL, AND KEPT WELL WATERED. PLANTS SHALL NOT REMAIN UNPLANTED ANY LONGER THAN THREE DAYS AFTER DELIVERY. PLANTS SHALL BE LIFTED AND HANDLED WITH SUITABLE SUPPORT OF THE SOIL BALL TO AVOID DAMAGE.
15. ALL PLANTING SHALL HAVE A WARRANTY REPLACEMENT GUARANTEE FOR A PERIOD OF TWO (FILL IN THE PROPER PERIOD) YEARS BEGINNING AT THE DATE OF FINAL COMPLETION. CONTRACTOR TO WARRANT PLANTS SUCH THAT AT THE END OF THE WARRANTY PERIOD, ALL TREES AND SHRUBS WILL BE IN AN UNDAMAGED, THRIVING CONDITION, EXCEPT FOR DEFECTS RESULTING FROM NEGLECT, ABUSE OR DAMAGE BY OTHERS OR INCIDENTS WHICH ARE BEYOND THE CONTRACTOR'S CONTROL. CONTRACTOR IS RESPONSIBLE FOR PERIODIC INSPECTION AND DOCUMENTATION REQUIRED TO PROVE THE LISTED EXCEPTIONS TO WARRANTY AGREEMENT.
16. POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT OR HIS/HER REPRESENTATIVE BEFORE EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
17. ALL PLANTS SHALL BE SET SO THAT THEY BEAR THE SAME RELATION TO THE REQUIRED GRADE AS THEY BORE TO THE NATURAL GRADE BEFORE BEING TRANSPLANTED.
18. WATER IMMEDIATELY AFTER PLANTING. WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACK FILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING PIT ARE THOROUGHLY SATURATED.
19. SPACING AND VARIETY OF GROUND COVER SHALL BE AS SHOWN ON APPROVED DRAWINGS. IMMEDIATELY AFTER PLANTING GROUND COVER, CONTRACTOR SHALL THOROUGHLY WATER THE GROUND COVER.
20. UPON COMPLETION OF ALL PLANTING WORK AND BEFORE FINAL ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL MATERIAL, EQUIPMENT, AND DEBRIS RESULTING FROM HIS WORK. ALL PAVED AREAS SHALL BE BROOM CLEANED AND THE SITE LEFT IN A NEAT AND ACCEPTABLE CONDITION AS APPROVED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
21. DURING THE WARRANTY PERIOD, ALL TREES, SHRUBS OTHER PLANTS AND PLANT BEDS SHALL BE MAINTAINED BY PRUNING, CULTIVATING AND WEEDING AS REQUIRED FOR HEALTHY GROWTH. THIS WORK SHALL INCLUDE RESTORING PLANTING SAUCERS; RESETTING TREES AND SHRUBS TO PROPER GRADES OR VERTICAL POSITION AS REQUIRED; RESTORING OR REPLACING DAMAGED WRAPPINGS, IF ANY.
22. LAWNS SHALL BE MAINTAINED BY WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING, AND OTHER OPERATIONS SUCH AS ROLLING, REGRADING AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.
23. ALL TREES IN PUBLIC SPACE TO BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE RELEVANT JURISDICTION.
24. IF CONTRACT GROWING IS CALLED FOR, THE CONTRACTOR SHALL PURCHASE THE MATERIAL AND HAVE IT SEGREGATED AND GROWN FOR THE JOB UPON APPROVAL OF THE PLANT MATERIAL. THE DEPOSIT NECESSARY FOR SUCH CONTRACT GROWING IS TO BE BORNE BY THE CONTRACTOR.
25. PERIODIC INSPECTIONS BY A QUALIFIED ARBORIST MAY BE CALLED FOR DURING CONSTRUCTION ACTIVITIES, PARTICULARLY AS EXISTING OR TRANSPLANTED TREES ARE IMPACTED BY TRENCHING/GRADING OPERATIONS. ANY RECOMMENDATIONS BY THE ARBORIST FOR MAINTAINING THE HEALTH OF TREES ARE TO BE IMPLEMENTED, AND THE COST BORN BY THE CONTRACTOR.
26. DO NOT PLACE MULCH AGAINST PLANT TRUNKS OR STEMS.
27. NEWLY PLANTED TREES SHOULD BE PRUNED ONLY TO REMOVE DEAD OR BROKEN BRANCHES.
28. REFER TO GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
29. ALL PLANT MATERIALS SHALL MEET OR EXCEED THE STANDARDS DESCRIBED IN ANSI-Z60.1, AMERICAN STANDARDS FOR NURSERY STOCK BY THE AMERICAN HORTICULTURE INDUSTRY ASSOCIATION, CURRENT EDITION. (NOTE TO PM: ONLY IF NO SPECS ON JOB)
30. TREES DESIGNATED B&B SHALL BE PROPERLY DUG IN SIZES AND SHAPES AS SPECIFIED IN THE AMERICAN STANDARD FOR NURSERY STOCK WITH FIRM, NATURAL BALLS OF SOIL RETAINING AS MANY FIBROUS ROOTS AS POSSIBLE. BALLS SHALL BE FIRMLY WRAPPED WITH NONSYNTHETIC, ROTTABLE BURLAP AND SECURED WITH NAILS AND HEAVY, NONSYNTHETIC, ROTTABLE TWINE, OR WITH A WIRE BASKET. THE ROOT COLLAR SHALL BE APPARENT AT SURFACE OF BALL. SPECIAL CARE SHOULD BE TAKEN TO AVOID LOOSENING, OR BREAKING THE ROOT BALL. ANY WIRE BASKETS ARE TO BE REMOVED AT TIME OF PLANTING. (NOTE TO PM: ONLY IF NO SPECS IN PROJECT)
31. PREPARED SOIL SHALL BE TAMPED FIRMLY AT BOTTOM OF PIT. FILL PREPARED SOIL AROUND BALL OF PLANT 1/2 WAY AND COMPACT TO 80%-85%. WATER THOROUGHLY. COMPLETE BACK FILL COMPACT TO 80%-85% AND WATER THOROUGHLY. (NOTE TO PM: ONLY IF NO SPECS)
32. THE LANDSCAPE CONTRACTOR SHALL ARRANGE WITH A NURSERY TO SECURE PLANT MATERIAL NOTED ON THE DRAWINGS AND HAVE THOSE PLANTS AVAILABLE FOR REVIEW BY THE OWNER AND LANDSCAPE ARCHITECT WITHIN THIRTY (30) DAYS OF AWARD OF CONTRACT. PROVIDE 10 DAYS NOTICE BEFORE DIGGING FOR LA APPROVAL OF PLANTS. (NOTE TO PM: ONLY IF NO SPECS)
33. NO EXISTING TREES OR SHRUBS SHALL BE REMOVED BY THE CONTRACTOR WITHOUT PRIOR APPROVAL OF THE LA. (NOTE TO PM: ONLY IF APPLICABLE)
34. IRRIGATION INSTALLATION SHALL BE DONE PRIOR TO LAWN PLANTING. THE LAWN CONTRACTOR SHALL INSPECT THE AREA TO BE PLANTED PRIOR TO THEIR PREPARATION TO ENSURE THAT TRENCHED AREAS ARE PROPERLY BACKFILLED AND COMPACTED. THE LAWN CONTRACTOR SHALL NOT PROCEED UNTIL WRITTEN CERTIFICATION IS GIVEN BY THE IRRIGATION CONTRACTOR THAT THE IRRIGATION SYSTEM IS FUNCTIONING AND APPROVED FOR USE.
35. PRIOR TO ANY LAWN PLANTING, CONFIRM THAT LAWN AREAS ARE GRADED TO A SMOOTH, EVEN SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE. REMOVE ANY DEBRIS, ROOTS OR STICKS OVER ½" DIAMETER AND STONES OVER ¾" FROM THE GRADED SURFACE. ROLL AND RAKE. REMOVE RIDGES AND FILL DEPRESSIONS.
36. CONTRACTOR SHALL FENCE LAWN AREAS AFTER PLANTING TO PREVENT ANY TRAFFIC, PEDESTRIAN OR VEHICULAR, FROM DISTURBING THE LAWN WHILE IT ESTABLISHES.
37. ANY AREAS OF DAMAGED LAWN CAUSED BY THE CONTRACTOR SHALL BE RESTORED WITH SOD TO MATCH ADJACENT LAWN CONDITIONS. IF SEED IS USED IN AREAS OF DISTURBANCE, SEED SHALL MATCH EXISTING LAWN CONDITIONS AND SHREDDED STRAW MULCH, OR APPROVED EQUAL, SHALL BE APPLIED IMMEDIATELY AFTER SEEDING.
38. MAINTAIN ALL SEEDED AND SODDED AREAS UNTIL FINAL ACCEPTANCE OF THE CONTRACT. ANY AREAS WHICH FAIL TO SHOW A UNIFORM STAND OF VIGOROUS GROWTH SHALL BE REPAIRED WITH THE ORIGINAL MIXTURE UNTIL ALL DESIGNATED AREAS ARE ACCEPTABLE.
39. ALL LAWN SEED SHALL BE FRESH, CLEAN, NEW CROP SEED. GRASS SHALL BE OF THE PREVIOUS YEAR'S CROP AND IN NO CASE SHALL THE WEED SEED CONTENT EXCEED 1 PERCENT BY WEIGHT. THE SEED SHALL BE FURNISHED AND DELIVERED IN THE PROPORTION SPECIFIED IN NEW, CLEAN, SEALED, AND PROPERLY LABELED CONTAINERS. ALL SEED SHALL COMPLY WITH THE FEDERAL SEED ACT AND STATE SEED LAWS. SUBMIT MANUFACTURER'S CERTIFICATES OF COMPLIANCE. SEED WHICH HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED SHALL NOT BE ACCEPTABLE.
40. FOLLOWING PREPARATION, THE CONTRACTOR SHALL SUPPLY AND INSTALL SOD IN AREAS SHOWN ON PLAN AND OTHER AREAS DISTURBED BY CONSTRUCTION.
41. SOD SHALL BE STATE CERTIFIED SOD AND BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" PLUS OR MINUS 1/4" AT THE TIME OF CUTTING. MEASUREMENTS FOR THICKNESS SHALL EXCLUDE TOP GROWTH AND THATCH.
42. SOD SHALL BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.
43. SOD SHALL NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT, EITHER EXCESSIVELY WET OR DRY, MAY ADVERSELY AFFECT ITS SURVIVAL.
44. MOISTEN ALL AREAS TO RECEIVE SOD. LIGHTLY IRRIGATE SOIL IMMEDIATELY PRIOR TO LAYING SOD.
45. LAY SOD TO FORM A SOLID MASS WITH TIGHTLY FILLED JOINTS. BUTT ENDS AND SIDES OF SOD STRIPS. DO NOT OVERLAY EDGES. STAGGER STRIPS TO OFFSET JOINTS IN ADJACENT COURSES. REMOVE EXCESS SOD TO PREVENT SMOTHERING OF ADJACENT GRASS. INSTALL INITIAL ROW OF SOD IN A STRAIGHT LINE (PARALLEL TO CONTOURS, WALKS, OR ROADWAYS) BEGINNING AT THE BOTTOM OF SLOPES. PLACE SUBSEQUENT ROW PARALLEL TO AND LIGHTLY AGAINST THE PREVIOUSLY INSTALLED ROW.
46. PEG SOD ON SLOPES GREATER THAN 3:1 (SHOULD TURF BE INSTALLED HERE AT ALL?) TO PREVENT SLIPPAGE. USE SOFTWOOD STAKES 3/4" DIAMETER, 8" LENGTH WITH ONE END SHARPENED
47. ROLL SOD WITH LIGHT LAWN ROLLER TO ENSURE CONTACT WITH SUBGRADE. WATER SOD THOROUGHLY WITH A FINE SPRAY.
48. MOISTEN PREPARED LAWN AREAS BEFORE PLANTING IF SOIL IS DRY. WATER THOROUGHLY AND ALLOW SURFACE MOISTURE TO DRY BEFORE PLANTING LAWNS. DO NOT CREATE MUDDY SOIL CONDITIONS.
49. INSTALL SEED EVENLY BY SOWING EQUAL QUANTITIES IN TWO DIRECTIONS, AT RIGHT ANGLES TO EACH OTHER.
50. SOW SPECIFIED GRASS SEED MIXTURE AT A RATE OF 150 LBS. PER ACRE.
51. AFTER SEEDING, RAKE SURFACE SLIGHTLY TO INCORPORATE SEED INTO TOP 1/4" OF SOIL. ROLL LIGHTLY AND WATER WITH A FINE SPRAY.
52. PROTECT SEEDED AREAS WITH SLOPE OF 3:1 OR GREATER WITH EROSION CONTROL FABRIC. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
53. PROTECT BUILDING, PAVING, PLANTINGS, AND ALL NON-SEEDED AREAS FROM OVERSPRAY OF SEEDED LAWN PRODUCTS.

PLANTING LEGEND

EXISTING TREE TO REMAIN

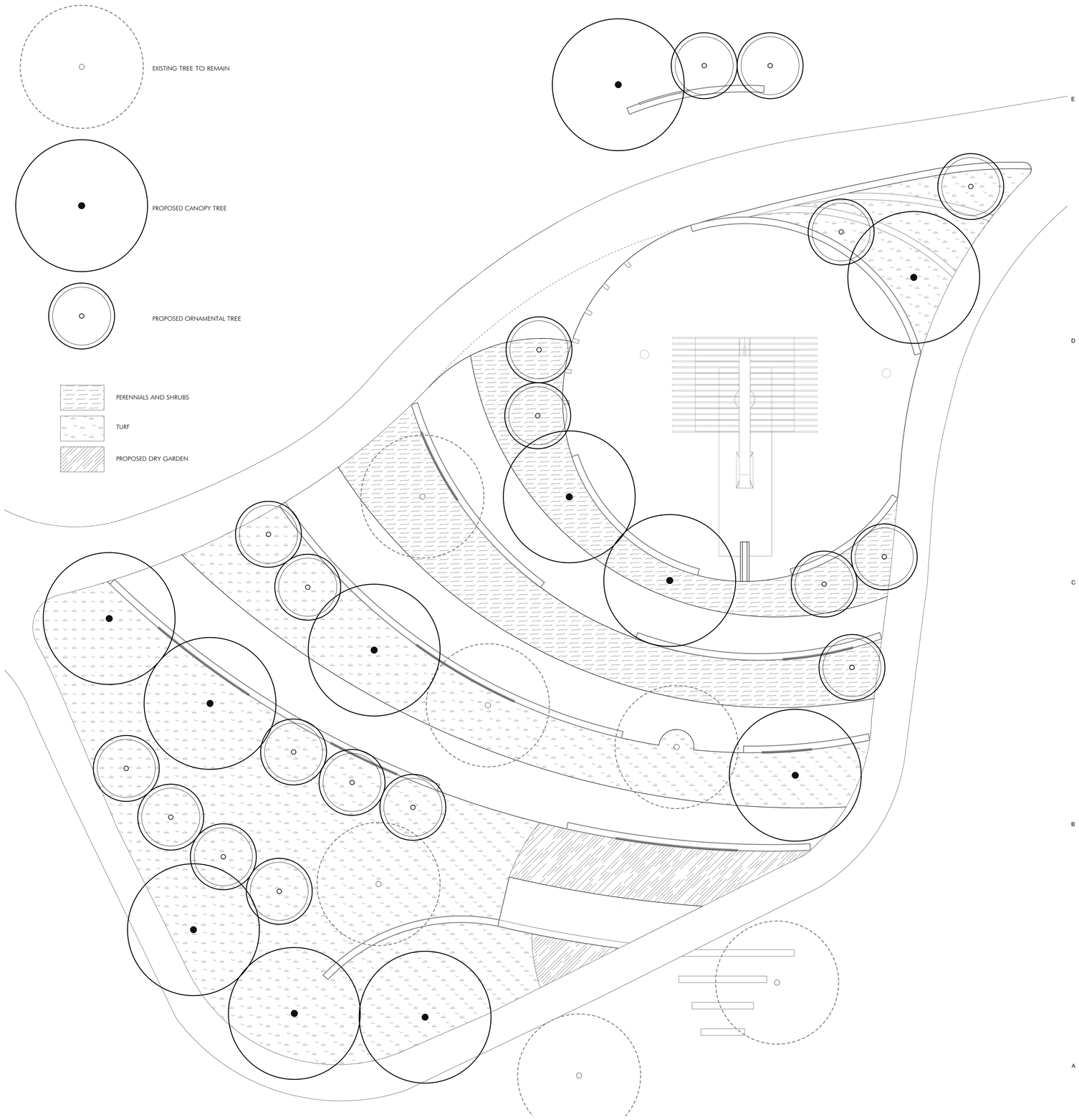
PROPOSED CANOPY TREE

PROPOSED ORNAMENTAL TREE

PERENNIALS AND SHRUBS

TURF

PROPOSED DRY GARDEN



1 / L0301 LANDSCAPE PLANTING PLAN
Scale: 1" = 10 ft

0 10 20 FT

N

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REGISTRATION

PROJECT INFORMATION

INTERNATIONAL FRIENDSHIP BELL

BISSELL PARK, OAK RIDGE, TN

PROJECT NUMBER 201653

ISSUE RECORD

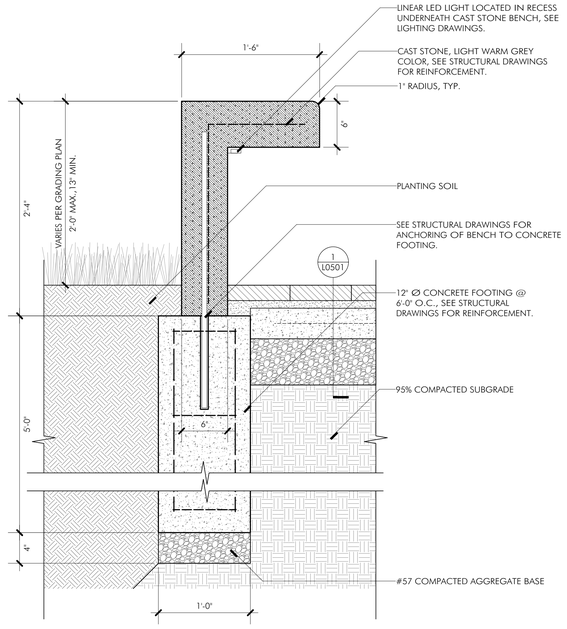
MARK	DATE	DESCRIPTION
	7-5-17	**ISSUED FOR PRICING**

DRAWING INFORMATION

Drawing Scale: **1" = 10'-0"**
Drawn By: **RR**
Checked By: **JF**

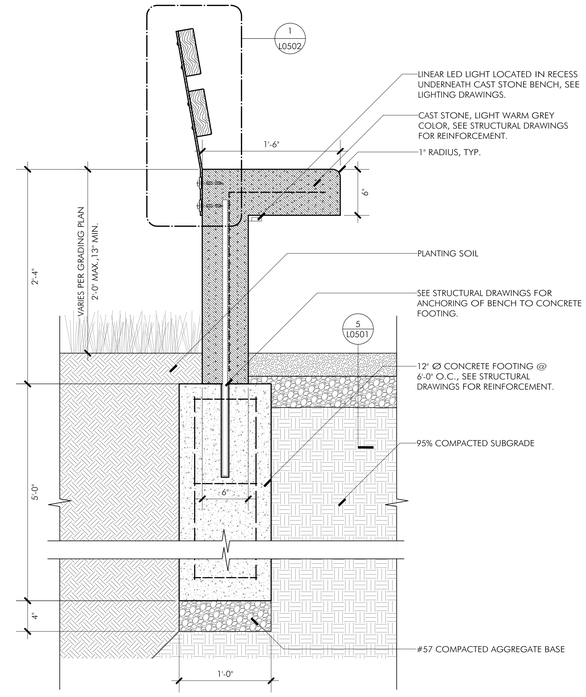
LANDSCAPE PLANTING PLAN

L0301



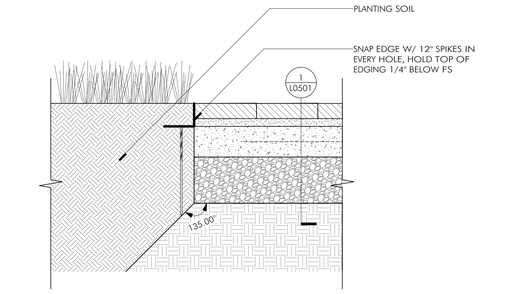
SHOP DRAWING REQUIRED

9 L0501 CAST STONE BENCH @ BLUESTONE PAVING
Scale: 1 1/2" = 1'-0"

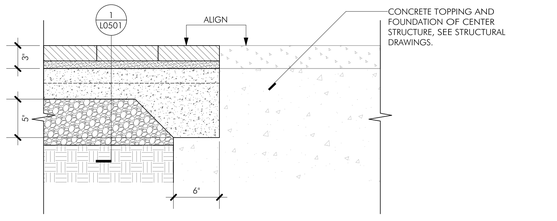


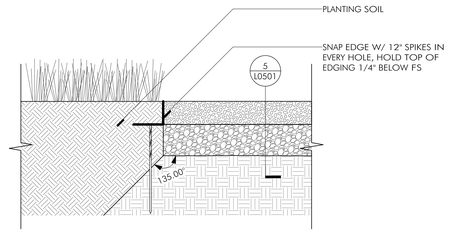
SHOP DRAWING REQUIRED

7 L0501 CAST STONE BENCH @ STABILIZED GRAVEL
Scale: 1 1/2" = 1'-0"



4 L0501 BLUESTONE PAVING @ PLANTED AREA
Scale: 1 1/2" = 1'-0"

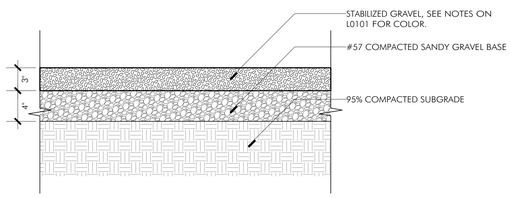




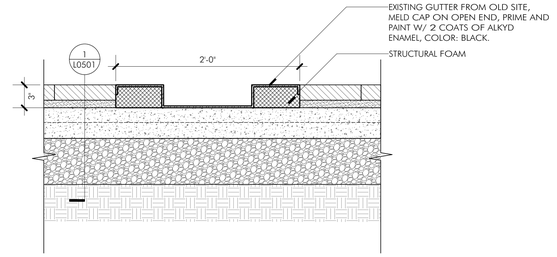
6 L0501 STABILIZED PAVING @ PLANTED AREA
Scale: 1 1/2" = 1'-0"

SHOP DRAWING REQUIRED

8 L0501 CAST STONE BENCH @ PLANTED AREA
Scale: 1 1/2" = 1'-0"

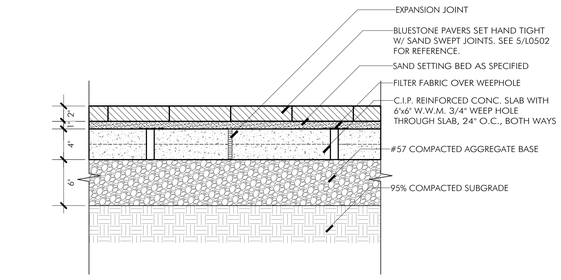


5 L0501 STABILIZED GRAVEL PAVING
Scale: 1 1/2" = 1'-0"



SHOP DRAWING REQUIRED

2 L0501 EXISTING GUTTER @ BLUESTONE PAVING
Scale: 1 1/2" = 1'-0"



1 L0501 BLUESTONE PAVING
Scale: 1 1/2" = 1'-0"

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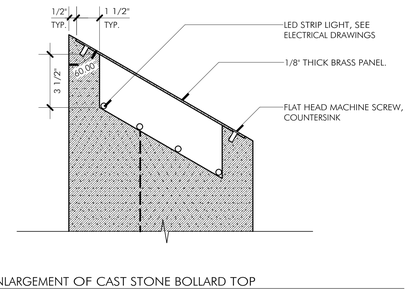
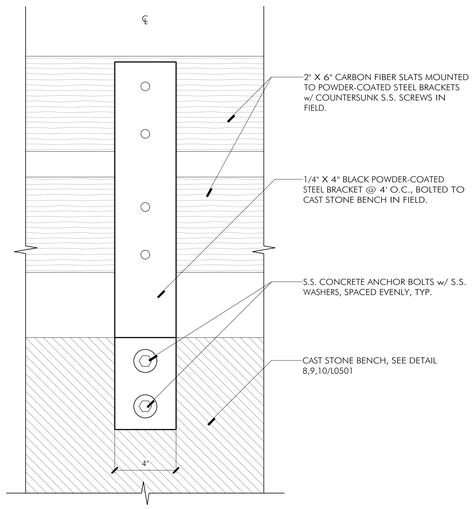
LANDSCAPE DETAILS

L0501

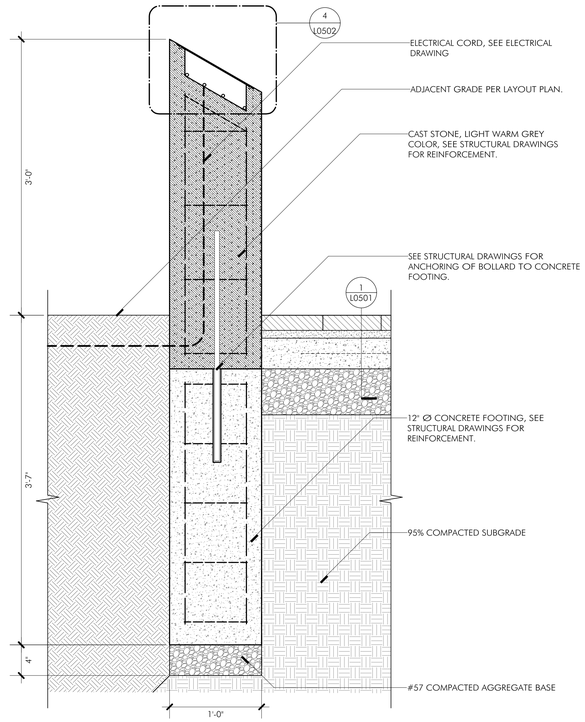
5 / L0502 BLUESTONE PAVING EXAMPLE
Scale: 3" = 1'-0"



4 / L0502 ENLARGEMENT OF CAST STONE BOLLARD TOP
Scale: 3" = 1'-0"

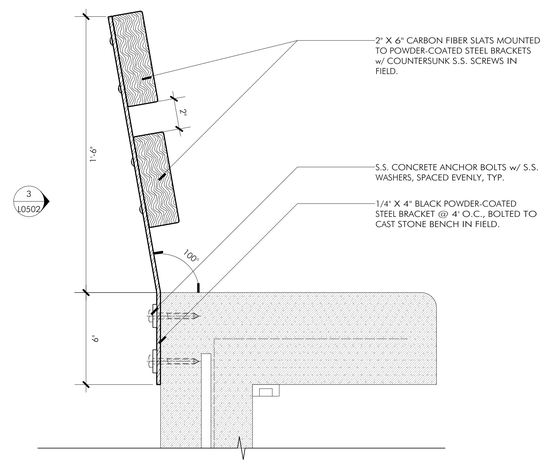


3 / L0502 BENCH BACK ELEVATION
Scale: 3" = 1'-0"



SHOP DRAWING REQUIRED

2 / L0502 CAST STONE BOLLARD @BLUESTONE PAVING
Scale: 1 1/2" = 1'-0"



1 / L0502 CARBON FIBER BENCH BACK
Scale: 3" = 1'-0"

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Checked By: **JF**

LANDSCAPE DETAILS

L0502

GENERAL

1. These notes highlight but do not replace the specifications contained in the Project.
2. The applicable building code is 2012 IBC.
3. Refer to the Design Loads and Factors table on sheet S002 for code required loads for the project.
4. Refer to the Special Inspections tables on sheet S001 for special inspection requirements for the project.
5. Contractor is solely responsible for means and methods during the course of the work. Do not damage or endanger the structural integrity of the Work.
6. Contractor shall be responsible for the proper and safe design of shoring systems for trenches and excavations.
7. Notify Architect in case of discrepancies between drawings and these notes before proceeding with the work.
8. Use architectural drawings and drawings of other trades in conjunction with the structural drawings to properly perform the work.
9. If conditions disclosed during excavation reveal unforeseen conditions, promptly request direction from Architect and Engineer before proceeding.
10. Contractor is responsible for coordinating between trades.
11. Do not scale drawings.
12. Field dimensions
    A. If structural drawings are used for laying out column centers, all dimensions shall first be verified with the architectural drawings. Layout shall be checked before work is begun.
13. Sections and details shown, while drawn for specific locations, are intended to establish the general types of details to be used throughout.
14. The Engineer's review of a submittal shall not relieve the Contractor of their responsibility to follow the intent of the contract drawings.

DELEGATED DESIGN ITEMS

1. Employ or retain a licensed professional engineer in the project jurisdiction to design and detail the following performance specified structural components:
    A. Concrete mix design
    B. Shoring / Scaffolding
    C. Temporary Excavation Support
    D. Carbon Fiber Trellis member and all connections
    E. Structured Poly carponate panel assembly.
2. See individual material sections for additional requirements.

SITE PREPARATION

1. Locate and mark all underground utility lines before starting work and call all local jurisdictions having authority.
2. Provide for the proper and safe design and installation of all sheeting and shoring excavation support systems. All sheeting and shoring systems shall be designed by a professional engineer engaged by the Contractor and registered in the state of the project. Submit signed and sealed shop drawings and calculations to the Engineer for review.
3. Permanent or abandoned timber lagging must be preservative treated prior to use to prevent insect infestation.
4. Submit plan for dewatering to the geotechnical engineer for review.
    A. Construct and maintain a series of ditches and sumps to remove ground water from the working area.
    B. Install a complete system of well points around the working area; this system to be kept in continuous operation during excavation and construction of foundations, slabs, walls and backfilling.
5. Discharge pumped water as directed by owner and in accordance with applicable federal, state & local regulations.
6. Preliminary grading shall be such that surface water is diverted away from the excavation.

FOUNDATIONS

1. Foundations are designed for an allowable bearing pressure of 1,500 psf based on a subsurface exploration by GEOServices, LLC and described in Report For Limited Geotechnical Exploration dated May 3, 2017. Contractor shall notify the Geotechnical Engineer for inspection before placing any Concrete Foundations.
2. Geotechnical engineer shall inspect and report on adequacy of bearing material.
3. Footings should be cast on the same day in which excavation for them is completed. If placing of concrete is delayed, footing bottom shall be trimmed to firm material immediately before casting.
4. Place concrete in dry excavations only. Note soil and water conditions as shown by borings and depths of footings as shown on foundation plans. Pending approval by the Owner, Contractor may elect to conduct further subsurface investigations at their own expense.
5. Labels:
    A. Elevation of top of footing shown thus TF +_____.
    B. Size of footings given on plans. See plans and sections for reinforcement.
6. Provide dowels if any equal in size and number to pedestal vertical reinforcing in top of footings.
7. Where pipes pass under wall footings, excavation below bottom of footing shall be backfilled with concrete when the footing is poured.
8. Where trench bottoms are dug below adjacent footing bottoms on a slope steeper than one vertical to two horizontal, the trench shall be backfilled with lean concrete to the point where the stated slope crosses the trench.
9. Footings shall be formed unless otherwise permitted by the Engineer.
10. Grade beam sides shall be formed; earthen sides are not permissible.
11. Provide continuous keyway and dowels in top of wall footing supporting concrete walls.
12. Refer to specifications and architectural drawings for waterproofing details and procedures. Provide water stop at all joints below grade.
13. Backfilling:
    A. Before backfilling walls, grout and/or concrete shall have attained design strength, and all slabs and beams that are necessary for the stability of the walls shall be in place.
    B. Backfill shall be carried up evenly on both sides of wall to lower grade.
    C. Backfill shall be placed in maximum of 8" loose lift thickness and compacted to 95% of Standard Proctor.
    D. Tests shall be performed for each lift at a rate of two tests per lift minimum and not less than one test per 100' of wall length.
14. Structural fill:
    A. Shall be placed in maximum of 8" loose lift thickness and compacted to 95% of Standard Proctor.
    B. On-site or imported granular fills including GW, GP, GM, SW, SP, ND, SM Classified in accordance with the Unified Soil Classification System (USCS) and within 2% of optimum moisture. Furthermore, the material to be utilized as structural fill should have a plasticity index (PI) less than 2, subject to final approval by the Geotechnical Engineer.
15. Fill under slabs on grade shall be compacted to 95% of Standard Proctor density.
16. Perimeter perforated foundation drain shall be installed where shown. Care must be exercised to avoid breaking perforated foundation drain tile when backfilling.

REINFORCED CONCRETE

1. Concrete construction shall follow requirements of ACI 301 "Specifications for Structural Concrete".
2. Cementitious Materials
    A. Ground Granulated Blast-Furnace Slag: Up to 25 percent by weight of Portland Cement.
3. Architectural exposed concrete:
    A. No Ground Granulated Blast-Furnace Slag allowed.
4. Cast-in-place architectural exposed concrete:
    A. Formed concrete that is exposed to view shall be Self-Consolidating Concrete (SCC) per ACI 237R-07.
    B. Slump Test: Flowability of SCC shall be measured using modified version of Slump Test ASTM C143
5. Detail, fabricate and place reinforcing and bar supports in accordance with the provisions set forth by the American Concrete Institute and the CRSI "Manual of Standard Practice."
6. Provide shop drawings showing full information for reinforcing placement. Develop all member elevations and sections with pertinent elevations given, to clearly indicate the position of the reinforcement and construction joints, without reproducing sections, plans, or elevations from the design drawings.
7. Provide reinforcing steel conforming to ASTM A615, Grade 60.
8. Length of reinforcing bars, if shown, does not include hooks.
9. Headed Reinforcing Bar Anchors shall conform to ACI 318 and ASTM A970. Install according to manufacturer's written instructions. Submit product information and ICC-ES Evaluation Report.
10. Reinforcing Bar Couplers shall develop 125% of the yield strength of the bar and conform to ACI 318. Submit product information and ICC-ES Evaluation Report.
11. Threaded dowel bar connections shall conform to ACI 318 and shall develop 125% of the yield strength of the bar in tension and compression. The mechanical connection shall be a forged and parallel threaded type coupler manufactured from ASTM A615 grade 60 deformed bar material, free of external welding and machining. All couplers shall be installed per the manufacturer's approved procedures. Submit product information and ICC-ES Evaluation Report.
12. Welded wire fabric shall conform to ASTM A1064.
13. Concrete properties: See schedule on sheet S004.
14. Clear cover for cast-in-place concrete reinforcing: See schedule on sheet S004. Reinforcement not shown on sections and plans is the same as that shown in similar sections and at similar locations.
15. Extend reinforcing through construction joints or provide dowels equal in size and number to bars in the doweled member. Develop or splice dowels on each side of cold joint according to the reinforcing development length tables on S004 and respective typical details.
16. Use stirrup and tie bending radii for all #3 through #5 bars.
17. Ties and stirrups:
    A. Provide pedestal ties as scheduled.
1. Slabs on Grade:
    A. Unless otherwise noted, slab on grade shall be reinforced with 6x6, W2.0 x W2.0 WWF, lapped 6" on all sides, set 11/2" below top of slab.
    B. Contractor shall submit a layout of proposed construction joints for review before making any pours.
    C. Construction joints in areas receiving terrazzo finish shall coincide with metal divider strips.
    D. Provide premolded joint filler where slab abuts vertical surface ex: columns, pedestals.
2. 2Allow concrete to dry as required by floor finish/adhesive manufacturer before installing finishes. Test slab for moisture content and/or moisture vapor evaporation rates per ASTM E 1907 to verify adequate dryness in accordance with the flooring manufacturer's preparation requirements. Refer to ACI 302.1R and NRMCA CIP 28 for further discussion.
3. Extent of depressed slab areas is shown on architectural plans.
4. See other drawings in this project for size and location of equipment pads, curbs, inserts, and embedded items.
5. Contractor shall notify Owner's inspection agency before placement of concrete to allow for inspection of reinforcing placement, clearance, stud quantities on steel beams, and to confirm debris has been removed from forms.
6. Refer to ACI 301 and special inspections table for testing requirements.

STRUCTURAL STEEL

1. Detail, fabricate, and erect structural steel in accordance with AISC 360 and AISC 303 "Code of Standard Practice".
2. Structural steel design is based on the Load and Resistance Factor Design (LRFD) methodology. All loads shown on drawings are unfactored (service) loads, unless noted otherwise.
3. The structural steel detailer shall develop all elevations, plans, and sections without reproducing same from the design drawings. Detailer shall adequately cross reference the structural drawings to the satisfaction of the engineer. All shop drawings shall be submitted for review and review comments incorporated prior to fabrication.
4. Materials shall conform to the following:

ASTM A36	Bars, rods, angles, channels and plates
ASTM A992	W shapes
ASTM A500,	Grade B Hollow Structural Sections
ASTM A325	High strength bolts
ASTM F1554	Grade 36Anchor Rods
AWS A5.1 E70XX	Welding electrodes
ASTM A108,	Grade 1010 to 1020 Shear Connectors (headed)
ASTM A36	All other structural shapes

1. Connections:
    A. Connections shall be standard AISC connections using 3/4" dia. high-strength bearing, type N, unless noted otherwise.
    B. Moment Connections: Type PR indicates partially restrained moment connection and type FR indicates fully restrained moment connection as defined by the AISC Specification for Structural Steel Buildings.
    C. All bolted moment and bracing connections shall be slip-critical joints. Faying surfaces in slip-critical joints shall be uncoated. If members are hot-dip galvanized in accordance with ASTM A123 faying surfaces shall be subsequently roughened by hand wire brushing.
    D. Minimum depth of shear connections shall be half the beam depth, two bolt minimum.
    E. All bolts, nuts, washers and related hardware for exterior and other galvanized steel construction shall be mechanically galvanized according to ASTM B695, Class 50.
    F. Provide minimum weld sizes in accordance with AISC 360 Specification for Structural Steel Buildings.
    G. Electrodes shall be suited to grade and weldability of base metal.
    H. Use AWS certified welders for structural welding.
    I. Remove galvanizing from steel in the area of field welding. Repair abraded surfaces and coat weld with zinc-rich coating.
2. Steel framing shall be properly guyed, aligned and plumbed within AISC tolerances before proceeding with final connections.
3. Provide 1/4" setting/leveling plates under all steel columns, unless otherwise noted.
4. Furnish anchor rods with leveling nuts when leveling plate is not utilized.
5. Base plates shall be shop welded to columns; larger plates may be shipped separately and field welded.
6. Provide a survey of in-place anchor bolt locations to the steel fabricator. Adjust anchor bolt holes accordingly before fabrication of column base plates and delivery to the site.
7. All cap plates shall match flange thickness of beam above (1/2" minimum thickness) for beams bearing on columns.
8. Punch or drill holes for architectural and mechanical details in shop.
9. Field cutting or burning of structural steel is prohibited.
10. Structural steel to be encased in concrete shall be unpainted.
11. See architectural drawings for additional steel not shown on structural drawings.
12. Cap all exterior tubular sections and pipes with 1/4" plates and galvanize. Seal weld to end of member. Fill all vent holes after galvanizing.
13. Galvanize exterior exposed steel in accordance with ASTM A123. Repair scratched or abraded galvanized surfaces with zinc-rich coating. After galvanizing, straighten members to meet AISC standard mill tolerances.
14. Galvanize all lintels, shelf angles, beams and plates (including their associated shims, bolts and accessories) in direct contact with the exterior wythe of masonry. Additional members/assemblies shall be galvanized where noted on the drawings.
15. Where plates, angles or other miscellaneous members require welding (either field or shop) or slip-critical connections, mask connection surfaces prior to shop priming and touch-up with primer after completing connection.
16. Provide adjustability in connections for members supporting the exterior masonry wythe. Permit the following adjustments from the connection work point to compensate for steel erection tolerances:
    1. Horizontal: 1/2" outward or inward
    2. Vertical: 1/2" upward or downward
17. See architectural drawings for identification of members to be classified as "Architecturally Exposed Structural Steel (AESS)".
18. Provide adjustable connections for all members designated as AESS to facilitate adjustment to achieve the specified tolerance.

POST-INSTALLED ANCHORS

1. Drill and install post-installed anchors according to manufacturer's printed installation instructions.
2. All post-installed anchors shall meet ICC-ES Compliance for each type of application.
3. Submit product information and ICC-ES Evaluation Report for each anchor.
4. All anchor designs are for installation in the following conditions, unless noted otherwise. Written approval must be received from Engineer prior to installation of adhesive anchors in alternate conditions.
    A. Dry concrete, unless noted otherwise.
    B. Concrete temperature at time of installation must be between 14° F and 104° F. See manufacturer's printed installation instruction for adhesive gel and cure times.
    C. Anchor holes to be hammer drilled.
    D. Anchor holes to be cleaned per manufacturer's printed installation instructions prior to adhesive injection.
5. All installers of post-installed anchors shall be ACI/CRSI Adhesive Anchor Installer Certified. Submit certificates for record.
6. All post-installed anchors in concrete shall be suited for use in seismic and cracked concrete applications.
7. Adhesive anchors in concrete shall be Hilti HIT RE500-SD, or approved equal.
8. Adhesive anchors in CMU grouted solid at the anchor shall be Hilti HY-70 or approved equal. Cells at the anchor and one course above and below the anchor shall be grouted solid.
9. Adhesive anchors in masonry and hollow CMU shall be Hilti HIT HY-70 with mesh sleeves, or approved equal.
10. Expansion anchors in concrete shall be Hilti KWIK Bolt TZ, or approved equal.
11. Expansion anchors in CMU grouted solid at the anchor shall be Hilti KWIK Bolt 3. Cells at the anchor and one course above and below the anchor shall be grouted solid.
12. Drop-in anchors for overhead attachment in hollow core planks shall be 3/8" nominal diameter Hilti HDI-P anchors, or approved equal.
13. Provide standard AISC holes in all steel members receiving post-installed anchors. If oversized holes are provided to ease installation of the anchors, a plate washer (1/4"x2"x2") with an AISC standard hole shall be installed and 1/8" fillet welded (all around) to the member.

SHORING/SCAFFOLDING

1. The contractor shall submit shoring/scaffolding shop drawings and calculations, prepared and sealed by a professional engineer licensed in the state of the project, for the following:
    A. Earthwork sheeting and shoring.
    B. Scaffolding.
2. Shoring and scaffolding shall comply with O.S.H.A. regulations.
3. The structural engineer of record (SER) will review shoring/scaffolding submittals only for loads transmitted to the building structure. Submittals shall clearly indicate the location and magnitude of all loads applied to the building or structure. The contractor is responsible for design and performance of the shoring/scaffold system.

STANDARD ABBREVIATIONS:

ABV	Above
ADDL	Additional
ADH	Adhesive
ADJ	Adjacent, Adjustment
AESS	Architecturally Exposed Structural Steel
AFF	Above Finished Floor
AGG	Aggregate
ALT	Alternate
ANCH	Anchor
APRX	Approximate
AR	Anchor Rod
ARCH	Architect(ural)
BOT, B	Bottom
B/	Bottom of
B-B	Back-to-Back
BAL	Balance
BEL	Below
BF	Braced Frame
BLDG	Building
BLK(G)	Block(ing)
BM	Beam
BP	Base Plate
BR	Brace(ing)
BRDG	Bridging
BRG	Bearing
BRK	Brick
BRKT	Bracket
BS	Both Sides
BSMT	Basement
BT	Bent
BTWN	Between
BYD	Beyond
CAIS	Caisson
CANT.	Cantilever
CAP.	Capacity
C-C	Center-to-Center
CE	Concrete Encased
CHAM	Chamfer
CI	Cast Iron
CIP	Cast In Place
CJ	Control/Contraction Joint
CL	Centerline
CLG	Ceiling
CLR	Clear
CM	Construction Manager
CMU	Concrete Masonry Unit
COL	Column
COMB.	Combined
COMP	Composite
CONC	Concrete
COND	Condition
CONN	Connection
CONST	Construction
CONT	Continuous
CONTR	Contractor
COORD	Coordinate
COV	Cover
CP	Cap Plate
CSK	Countersunk
CTR	Center(ed)
CY	Cubic Yard
DBL	Double
DEMO	Demolition/Demolish
DEPR	Depress(ed)/Depression
DET(S)	Detail(s)
DEV	Develop/Development
DIA, Ø	Diameter
DIAG	Diagonal
DIM(S).	Dimension(s)
DIR	Direction
DK	Deck
DL	Dead Load
DN	Down
do.	Ditto
DP	Deep
DWG(S)	Drawing(s)
DWL	Dowel
(E)	Existing
EA	Each
EF	Each Face
EJ	Expansion Joint
EL	Elevation
ELEC	Electrical
ELEV	Elevator
EMBED	Embedment/Embedded
ENGR	Engineer
EOD	Edge Of Deck
EOS	Edge Of Slab
EQ	Equal
EQP	Equipment
ES	Each Side
EXCAV	Excavate/Excavation
EXP	Expansion
EXT	Exterior
EW	Each Way
F/	Face of
FAB	Fabricate
FDN	Foundation
FIN.	Finish(ed)
FL	Floor
FLG	Flange
FP	Fireproofing
FRMG	Framing
FRP	Fiber-Reinforced Polymer
FS	Far Side
FT	Feet
FTG	Footing
FUT	Future
GA	Gage
GALV	Galvanize(d)
GC	General Contractor
GR	Grade
GYP	Gypsum
HDR	Header
HEF	Horizontal Each Face
HGR	Hanger
HI.	High
HIF	Horizontal Inside Face
HK	Hook(ed)
HOF	Horizontal Outside Face
HORIZ	Horizontal
HP	High Point
HSB	High Strength Bolt
HT	Height
H&V	Horizontal & Vertical
HVAC	Heating, Ventilating, & Air Conditioning
I.D.	Inside Diameter
I.F.	Inside Face
INFO	Information
INSTL	Install/Installation
INSUL	Insulation
INT	Interior
JST(S)	Joist(s)
JT	Joint
k	Kip (thousand pounds)
KB	Knee Brace
LB, #	Pound
LDGR	Ledger (board)
LEN	Length
LG	Long
LL	Live Load
LLBB	Long Legs Back to Back
LLH	Long-Leg Horizontal
LLV	Long-Leg Vertical
LOCN	Location
LONGIT	Longitudinal
LP	Low Point
LSL	Long-Slotted Hole, Laminated Strand Lumber
LVL	Laminated Veneer Lumber
LW	Long Way
LWC	Light Weight Concrete
M	Moment
MAS	Masonry
MATL	Material
MAX	Maximum
MECH	Mechanical
MFR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
MO	Masonry Opening
MONO	Monolithic
MTL	Metal
NIC	Not In Contract
NO.	Number
NOM	Nominal
NS	Near Side
NTS	Not To Scale
NWC	Normal Weight Concrete
OC	On Centers
OD	Outside Diameter
O.F.	Outside Face
O-O	Out-to-Out
OPG	Opening
OPP	Opposite
OSB	Oriented Strand Board
OSL	Outstanding Leg, Oriented Strand Lumber
OVS	Oversized-Hole
PAF	Powder Actuated Fastener
PC	Precast Concrete, Piece
PCF	Pounds per Cubic Foot
PED	Pedestal
PERP	Perpendicular
PREFAB	Prefabricate(d)
PL	Plate
PLF	Pounds per Lineal Foot
PLYWD	Plywood
PMF	Premolded Filler
PROJ	Project(ion)
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PSL	Parallel Strand Lumber
PT	Preservative-Treated, Post-Tensioned
PVC	Polyvinyl Chloride
QTY	Quantity
R	Radius
RCMU	Reinforced Concrete Masonry Unit
RD	Roof Drain
RDK	Roof Deck
REF	Reference
REINF	Reinforce(d)/ Reinforcement
REQ(D)	Require(d)
RET	Retaining
REV	Revise(d)/Revision
RO	Rough Opening
RQMT(S)	Requirement(s)
RXN	Reaction
SC	Slip-Critical (connection)
SCHED	Schedule
SECT	Section
SF	Square Foot
SHRG	Shoring
SHTHG	Sheathing
SIM	Similar
SL	Slope(d)
SLBB	Short Legs Back to Back
SLV	Sleeve
SOD	Slab On Deck
SOG	Slab On Grade
SPA	Space(s)/Spacing
SPEC(S)	Specification(s)
SQ	Square
SS	Stainless Steel
SSL	Short-Slotted Hole
STD	Standard
STIFF	Stiffener
STIR.	Stirrup
STL	Steel
STRUC	Structural
SUPT	Support
SW	Short Way
SYM	Symmetrical
T	Top
T/	Top of
T&B	Top and Bottom
TC	Terra Cotta
TEMP	Temporary, Temperature
T&G	Tongue and Groove
THD	Thread(ed)
THK	Thick(ness)
TYP	Typical
UNO	Unless Noted Otherwise
U-P	Underpinning
V	Shear
VAR	Varies
VB	Vapor Barrier
VEF	Vertical Each Face
VERT	Vertical
VIF	Vertical Inside Face, Verify In Field
VOF	Vertical Outside Face
VR	Vapor Retarder
w/	With
w/o	Without
WD	Wood
WI	Wrought Iron
WP	Work Point, Waterproofing
WT	Weight
WWF	Welded Wire Fabric
XS	Extra Strong
XXS	Double Extra Strong
±	Exist Dim or El (VIF)

SHEET LIST	
SHEET NUMBER	DRAWING TITLE
S000	GENERAL NOTES - STRUCTURE
S001	SPECIAL INSPECTIONS
S002	DESIGN LOADS & SCHEDULES
S003	SPECIFICATIONS FOR CAST IN PLACE
S100	FOUNDATION PLAN
S101	ARBOUR PLAN
S102	ROOF PLAN & ELEVATIONS
S201	TYPICAL DETAILS
S301	SECTIONS & DETAILS
S302	CARBON FIBER TRELLIS PROFILES

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PROJECT INFORMATION

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GENERAL NOTES - STRUCTURE

S000

SPECIAL INSPECTIONS PROGRAM - CONCRETE

VERIFICATION AND INSPECTION		CONTINUOUS	PERIODIC	2012 IBC REFERENCE SECTION	REFERENCE STANDARD	COMMENTS
GENERAL	INSPECTION OF FABRICATORS		X	1704.2.5		SEE NOTE 2.
INSPECTION OF REINFORCING STEEL & PLACEMENT			X	1908.4	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-3	
WELDING OF REINFORCING STEEL	VERIFICATION OF WELDABILITY OF REINFORCING STEEL OTHER THAN ASTM A706		X		AWS D1.4 ACI 318: 26.6.4	
	REINFORCING STEEL RESISTING FLEXURAL & AXIAL FORCES IN INTERMEDIATE & SPECIAL MOMENT RESISTING FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS OF CONCRETE & SHEAR REINFORCEMENT	X			AWS D1.4 ACI 318: 26.6.4	
	SHEAR REINFORCEMENT	X			AWS D1.4 ACI 318: 26.6.4	
	OTHER REINFORCING STEEL		X		AWS D1.4 ACI 318: 26.6.4	
INSPECTION OF ANCHORS CAST IN CONCRETE			X		ACI 318: 17.8.2	
VERIFYING USE OF REQUIRED DESIGN MIX			X	1904.1,1904.2, 1908.2, 1908.3	ACI 318: Ch. 19, 26.4.4	
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE		X		1908.10	ASTM C 172 ASTM C 31 ACI 318: 26.5.2, 26.12	
INSPECTION OF CONCRETE & SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES		X		1908.6, 1908.7, 1908.8	ACI 318: 26.5.2	
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE & TECHNIQUES			X	1908.9	ACI 318: 26.5.3-5.5	
VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POSTTENSIONED CONCRETE & PRIOR TO REMOVAL OF SHORES & FORMS FROM BEAMS & STRUCTURAL SLABS			X		ACI 318: 26.10.2, 26.11.2	
INSPECT FORMWORK FOR SHAPE, LOCATION & DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED			X		ACI 318: 26.11.1	

SPECIAL INSPECTIONS PROGRAM - STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL

VERIFICATION AND INSPECTION		CONTINUOUS	PERIODIC	2012 IBC REFERENCE SECTION	REFERENCE STANDARD	COMMENTS
GENERAL	INSPECTION OF FABRICATORS		X	1704.2.5		SEE NOTE 2.
MATERIAL VERIFICATION OF COLD-FORMED STEEL DECK	IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS		X		APPLICABLE ASTM STANDARDS	
	MANUFACTURER'S CERTIFIED TEST REPORTS		X			
WELDING OF ANCHORS & SHEAR STUDS			X		AWS D1.1, SECT 7	do
WELDING OF STAINLESS STEEL			X		AWS D1.6	do
WELDING OF REINFORCING STEEL -PERFORM ADDITIONAL INSPECTIONS IN ACCORDANCE WITH SPECIAL INSPECTIONS PROGRAM - CONCRETE					AWS D1.4 ACI 318: 3.5.2	

STRUCTURAL TESTING & INSPECTION PROGRAM NOTES:

1. THE INTENTION OF THIS TABLE IS TO IDENTIFY THE CONSTRUCTION REQUIRING SPECIAL INSPECTION AS REQUIRED BY THE 2012 INTERNATIONAL BUILDING CODE (IBC). OWNER SHALL ENGAGE INDEPENDENT SPECIAL INSPECTION AGENCY. CONTRACTOR TO NOTIFY SPECIAL INSPECTOR OF PROGRESS OF CONSTRUCTION AND PROVIDE ACCESS TO THE SITE TO COMPLETE INSPECTIONS. EACH SPECIAL INSPECTOR IS RESPONSIBLE FOR JOB SPECIFIC ITEMS AS DEFINED IN CHAPTER 17 OF THE IBC (AND IN ACCORDANCE WITH THE SPECIFICATIONS).
2. INSPECTIONS OF FABRICATORS IS NOT REQUIRED IF THE FABRICATOR IS APPROVED IN ACCORDANCE TO IBC SECTION 1704.2.5 AND CERTIFIES COMPLIANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
3. THE ITEMS CHECKED WITH AN "X" SHALL BE INSPECTED IN ACCORDANCE WITH IBC CHAPTER 17 BY A CERTIFIED SPECIAL INSPECTOR FROM AN ESTABLISHED TESTING AGENCY. FOR MATERIAL SAMPLING AND TESTING REQUIREMENTS, REFER TO THE MATERIAL SAMPLING AND TESTING SECTION OF THE PROJECT SPECIFICATIONS AND THE GENERAL NOTES. THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE ENGINEER, CONTRACTOR AND BUILDING OFFICIAL. ANY CONSTRUCTION WHICH FAILS TO MEET THE PROJECT SPECIFICATIONS AND IBC REQUIREMENTS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION AND THE ENGINEER IF UNCORRECTED. SPECIAL INSPECTION TESTING REQUIREMENTS APPLY EQUALLY TO ALL BIDDER DESIGNED COMPONENTS.
4. FREQUENCY OF INSPECTIONS
   A. CONTINUOUS SPECIAL INSPECTION MEANS THAT THE SPECIAL INSPECTOR SHALL BE ON SITE AT ALL TIMES OBSERVING THE WORK REQUIRING SPECIAL INSPECTION. FOR STRUCTURAL STEEL, INSPECTION TASK MUST BE COMPLETED FOR EACH MEMBER OR CONNECTION.
   B. PERIODIC SPECIAL INSPECTION MEANS THAT THE SPECIAL INSPECTOR IS ON THE SITE AT THE TIME INTERVALS NECESSARY TO CONFIRM THAT ALL WORK REQUIRING SPECIAL INSPECTIONS IS IN COMPLIANCE. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
5. STRUCURAL STEEL SPECIAL INSPECTIONS
   A. QUALITY CONTROL (QC) SHALL BE PROVIDED BY THE FABRICATOR AND ERECTOR. QUALITY ASSURANCE (QA) SHALL BE PROVIDED BY THE TESTING AGENCY
   B. "O" INDICATES OBSERVATIONS TO BE PERFORMED ON A RANDOM BASIS. "P" INDICATES TASKS TO BE PERFOMED FOR EACH WELDED JOINT OR MEMBER.
6. ALL WELDS SHALL BE VISUALLY INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR. ALL PROVISIONS OF AWS D1.1/D1.1M "STRUCTURAL WELDING CODE - STEEL" SHALL APPLY TO STEEL CONSTRUCTION. NON-DESTRUCTIVE TESTING OF WELDED JOINTS SHALL BE IN ACCORDANCE WITH AISC 360 SECTION N5.

SPECIAL INSPECTIONS PROGRAM - STRUCTURAL STEEL (AISC 360 CHAPTER N)

VERIFICATION AND INSPECTION		QC	QA	2012 IBC REFERENCE SECTION	AISC 360 REFERENCE	COMMENTS
GENERAL	INSPECTION OF FABRICATORS		P	1704.2.5		SEE NOTE 2.
	DOCUMENT ACCEPTANCE OR REJECTION OF INSPECTED ITEMS	P	P		TABLES N5.4-3, N5.6-3, N6.1	WELDED ELEMENTS, BOLTED ELEMENTS, AND STEEL ELEMENTS IN COMPOSITE CONSTRUCTION
PLACEMENT OF ANCHOR RODS, AND OTHER EMBEDMENTS, SUPPLEMENTING STRUCTURAL STEEL	VERIFY DIAMETER, GRADE, TYPE AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM		P		SECTION N5.7	
	VERIFY EXTENT OR DEPTH OF EMBEDMENT INTO CONCRETE PRIOR TO CONCRETE PLACEMENT		P		SECTION N5.7	
INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE w/CONSTRUCTION DOCUMENTS	DETAILS SUCH AS BRACING & STIFFENING	P			SECTION N5.7	
	MEMBER LOCATIONS	P			SECTION N5.7	
	APPLICATION OF JOINT DETAILS AT EACH CONNECTION	P			SECTION N5.4	
PRIOR TO WELDING	WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE	P	P		TABLE N5.4-1	
	MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	P	P		TABLE N5.4-1	
	MATERIAL IDENTIFICATION (TYPE/GRADE)	O	O		TABLE N5.4-1	
	FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) - JOINT PREPARATION - DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) - CLEANLINESS (CONDITION OF STEEL SURFACES) - TACKING (TACK WELD QUALITY AND LOCATION) - BACKING TYPE AND FIT (IF APPLICABLE)	O	O		TABLE N5.4-1	
	CONFIGURATION AND FINISH OF ACCESS HOLES	O	O		TABLE N5.4-1	
	FIT-UP OF FILLET WELDS - DIMENSIONS (ALIGNMENT, GAPS AT ROOT) - CLEANLINESS (CONDITION OF STEEL SURFACES) - TACKING (TACK WELD QUALITY AND LOCATION)	O	O		TABLE N5.4-1	
	CHECK WELDING EQUIPMENT	O			TABLE N5.4-1	
DURING WELDING	USE OF QUALIFIED WELDERS	O	O		TABLE N5.4-2	INSPECTOR TO OBTAIN COPY OF WELDER CERTIFICATIONS PRIOR TO START OF WORK
	CONTROL AND HANDLING OF WELDING CONSUMABLES - PACKAGING - EXPOSURE CONTROL	O	O		TABLE N5.4-2	
	NO WELDING OVER CRACKED TACK WELDS	O	O		TABLE N5.4-2	
	ENVIRONMENTAL CONDITIONS - WIND SPEED WITHIN LIMITS - PRECIPITATION AND TEMPERATURE	O	O		TABLE N5.4-2	
	WPS FOLLOWED - SETTINGS ON WELDING EQUIPMENT - TRAVEL SPEED - SELECTED WELDING MATERIALS - SHIELDING GAS TYPE/FLOW RATE - PREHEAT APPLIED - INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.) - PROPER POSITION (F, V, H, OH)	O	O		TABLE N5.4-2	
	WELDING TECHNIQUES - INTERPASS AND FINAL CLEANING - EACH PASS WITHIN PROFILE LIMITATIONS - EACH PASS MEETS QUALITY REQUIREMENTS	O	O		TABLE N5.4-2	
AFTER WELDING	WELDS CLEANED	O	O		TABLE N5.4-3	
	SIZE, LENGTH AND LOCATION OF WELDS	P	P		TABLE N5.4-3	
	WELDS MEET VISUAL ACCEPTANCE CRITERIA - CRACK PROHIBITION - WELD/BASE-METAL FUSION - CRATER CROSS SECTION - WELD PROFILES - WELD SIZE - UNDERCUT - POROSITY	P	P		TABLE N5.4-3	
	ARC STRIKES	P	P		TABLE N5.4-3	
	k-AREA INSPECTION AT DOUBLER PLATES, CONTINUITY PLATES, OR STIFFENER PLATES	P	P		TABLE N5.4-3	
	BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	P	P		TABLE N5.4-3	
	REPAIR ACTIVITIES	P	P		TABLE N5.4-3	
PRIOR TO BOLTING	MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	O	P		TABLE N5.6-1	
	FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	O	O		TABLE N5.6-1	
	PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	O	O		TABLE N5.6-1	
	PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	O	O		TABLE N5.6-1	
	CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	O	O		TABLE N5.6-1	
	PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	P	O		TABLE N5.6-1	
	PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	O	O		TABLE N5.6-1	
DURING BOLTING	FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	O	O		TABLE N5.6-2	
	JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	O	O		TABLE N5.6-2	
	FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	O	O		TABLE N5.6-2	
	FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	O	O		TABLE N5.6-2	

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SPECIAL INSPECTIONS

S001

REINFORCING DEVELOPMENT LENGTHS (INCHES)

BEAMS, FOOTINGS, & SLABS ≤ 13" DEEP AND VERTICAL BARS IN WALLS

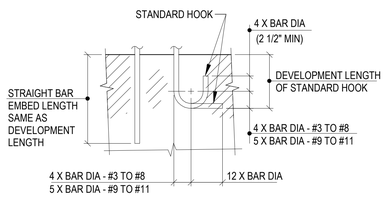
BAR SIZE	CONDITION	4000 psi CONCRETE
#3	DEV. LENGTH	15
	CLASS B SPLICE	19
#4	DEV. LENGTH	19
	CLASS B SPLICE	25
#5	DEV. LENGTH	24
	CLASS B SPLICE	31
#6	DEV. LENGTH	29
	CLASS B SPLICE	37
#7	DEV. LENGTH	42
	CLASS B SPLICE	54
#8	DEV. LENGTH	48
	CLASS B SPLICE	62
#9	DEV. LENGTH	54
	CLASS B SPLICE	70
#10	DEV. LENGTH	61
	CLASS B SPLICE	79
#11	DEV. LENGTH	67
	CLASS B SPLICE	87

DEVELOPMENT LENGTH NOTES:

1. SCHEDULE IS BASED ON GRADE 60, UNCOATED REINFORCING IN NORMAL WEIGHT CONCRETE.
2. CONCRETE STRENGTH INDICATED IS 28-DAY COMPRESSIVE STRENGTH.
3. ALL LAP SPLICES SHALL BE CLASS B, UNLESS NOTED OTHERWISE.
4. CLASS A SPLICE IS THE SAME AS DEVELOPMENT LENGTH.
5. WHEN BARS OF DIFFERENT SIZE ARE SPLICED, SPLICE LENGTH SHALL BE THE LARGER OF EITHER DEVELOPMENT LENGTH OF THE LARGER BAR OR SPLICE LENGTH OF THE SMALLER BAR.
6. FOR HOOKED DOWELS IN FOOTINGS MEETING REQUIREMENTS OF ACI 318 12.5.3.a, THE HOOK LENGTH CAN BE 0.7 x TABLE VALUE.
7. TOP BAR DESIGNATES HORIZONTAL BAR PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW THE BAR.

BEAMS, FOOTINGS, & SLABS > 13" DEEP AND HORIZONTAL BARS IN WALLS

BAR SIZE	CONDITION	4000 psi CONCRETE	
		TOP BARS	OTHER BARS
#3	DEV. LENGTH	19	15
	CLASS B SPLICE	24	19
#4	DEV. LENGTH	25	19
	CLASS B SPLICE	32	25
#5	DEV. LENGTH	31	24
	CLASS B SPLICE	40	31
#6	DEV. LENGTH	37	29
	CLASS B SPLICE	48	37
#7	DEV. LENGTH	54	42
	CLASS B SPLICE	70	54
#8	DEV. LENGTH	62	47
	CLASS B SPLICE	80	62
#9	DEV. LENGTH	70	54
	CLASS B SPLICE	91	70
#10	DEV. LENGTH	79	60
	CLASS B SPLICE	102	79
#11	DEV. LENGTH	87	67
	CLASS B SPLICE	113	87



VERTICAL COMPRESSION BARS IN COLUMNS

BAR SIZE	CONDITION	CONCRETE STRENGTH
		4000 psi
#4	DEV. LENGTH	10
	LAP SPLICE	13
#5	DEV. LENGTH	12
	LAP SPLICE	16
#6	DEV. LENGTH	15
	LAP SPLICE	19
#7	DEV. LENGTH	17
	LAP SPLICE	22
#8	DEV. LENGTH	19
	LAP SPLICE	25
#9	DEV. LENGTH	22
	LAP SPLICE	28
#10	DEV. LENGTH	24
	LAP SPLICE	32
#11	DEV. LENGTH	27
	LAP SPLICE	35

DEVELOPMENT LENGTH OF STANDARD HOOK

BAR SIZE	CONCRETE STRENGTH
	4000 psi
#3	7
#4	10
#5	12
#6	15
#7	17
#8	19
#9	22
#10	24
#11	27

CAST-IN-PLACE CONCRETE PROPERTIES SCHEDULE

TYPE	28 DAY COMPRESSIVE STRENGTH	MAXIMUM W/C RATIO	*AIR CONTENT (±1%)	NOMINAL AGGREGATE SIZE (ASTM C33 GRADING
BELL SUPPORT CONCRETE FRAME	4,000 psi	0.45	4%	1/4" - 3/8"
SITE SLABS	4,000 psi	0.45	6%	1" (#57)
SITE WALLS & FOUNDATIONS	4,000 psi	0.45	6%	1 1/2" (#467)

* AIR-ENTRAIN CONCRETE SUBJECTED TO FREEZE-THAW ENVIRONMENTS.
DO NOT ALLOW AIR CONTENT OF TROWELED FINISHED FLOORS TO EXCEED 3%.

CAST-IN-PLACE CONCRETE CLEAR COVER FOR REINFORCING

TYPE	COVER
FOOTINGS	3"
WALLS:	-
INTERIOR FACE	3/4"
FACE PERMANENTLY EXPOSED TO EARTH OR WEATHER	2"
EXTERIOR SLAB	1 1/2"

DESIGN LOADS AND FACTORS

DESIGN CODE: INTERNATIONAL BUILDING CODE 2012 ED

LIVE LOAD DATA		SNOW LOAD DATA		WIND LOAD DATA		EARTHQUAKE DESIGN DATA	
FLOOR OR ROOF AREA	LL (psf)	ROOF AREA	LOAD (psf)	FACTOR	VALUE	FACTOR	VALUE
SLAB ON GRADE	100	GROUND SNOW LOAD (Pg)	10	ULTIMATE WIND SPEED (Vult) (MPH)	115	RISK CATEGORY	II
ROOF	20	FLAT ROOF SNOW LOAD (Pf)	7.6	NOMINAL WIND SPEED (Vasd) (MPH)	90	SEISMIC IMPORTANCE FACTOR (Ie)	1.00
				RISK CATEGORY	II	MAPPED SPECTRAL RESPONSE ACCELERATION 0.2 SEC (Ss)	0.371g
				WIND EXPOSURE	C	MAPPED SPECTRAL RESPONSE ACCELERATION 1.0 SEC (S1)	0.121g
		FACTOR	VALUE	WIND PRESSURE (PSF)	26	SITE CLASS	D
		SNOW EXPOSURE (Ce)	0.9			DESIGN SPECTRAL RESPONSE ACCELERATION 0.2 SEC (Sds)	0.372G
		SNOW LOAD IMPORTANCE (Is)	1.00			DESIGN SPECTRAL RESPONSE ACCELERATION 1.0 SEC (Sd1)	0.187g
		THERMAL FACTOR (Ct)	1.2	COMPONENTS AND CLADDING WIND PRESSURE (PSF)	*VARIES	SEISMIC DESIGN CATEGORY	C
				* CALCULATED PRESSURES TO BE DETERMINED BY COMPONENT AND CLADDING PROVIDER.			
						ANALYSIS PROCEDURE - EQUIVALENT LATERAL FORCE	
ALLOWABLE SOIL BEARING PRESSURE (PSF)	1500					BASIC SEISMIC-FORCE-RESISTING SYSTEM	MASS CANTILEVER NON BUILDING STRUCTURE
LATERAL SOIL LOAD (pcf)	250						Cs= 0.03 R= 3
UNIFIED SOIL CLASSIFICATION	ASTM D 2487					DESIGN FACTORED BASE SHEAR (kips)	

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DESIGN LOADS & SCHEDULES

S002

Specifications for Cast in place concrete and Cast Stone

Cast in Place banding.
Cast in place curbing.
Cast-stone benches.
Cast-stone bollards.

SUBMITTALS

For cast-stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

Shop Drawings: Show fabrication and installation details for cast-stone units.

Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

Samples for Initial Selection: For colored mortar.

Samples for Verification:

For each color and texture of cast stone required

For colored mortar, make Samples using same sand and mortar ingredients to be used on Project

Make Samples from materials to be used for units used on Project

MOCKUPS:

Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects.

For Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

CAST-STONE MATERIALS

A. General: Comply with ASTM C 1364.

B. Portland Cement: ASTM C 150/C 150M, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C 114. Provide natural color or white cement as required to produce cast-stone color indicated.

C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C 33/C 33M; gradation and colors as needed to produce required cast-stone textures and colors.

D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C 33/C 33M, gradation and colors as needed to produce required cast-stone textures and colors.

E. Colors and Textures: As selected by Architect from Supplier's full range. Provide cast stone with fine-grained texture and buff color resembling smooth-finished Indiana limestone.

F. Colors and Textures: Provide units with fine-grained texture and buff light warm grey color resembling smooth-finished Indiana limestone.

G. Admixtures: Use only admixtures specified or approved in writing by Architect.

H. Reinforcement: Deformed steel bars complying with ASTM A 615/A 615M, Grade 60 (Grade 420). Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches (38 mm) of cast-stone material.
   1. Epoxy Coating: ASTM A 775/A 775M.
   2. Galvanized Coating: ASTM A 767/A 767M.

I. Embedded Anchors and Other Inserts: Fabricated from [stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666, Type 304 steel complying with ASTM A 36/A 36M and hot-dip galvanized to comply with ASTM A 123/A 123M

SECTION 033300 - ARCHITECTURAL CONCRETE

A. Section includes cast-in-place architectural concrete, including form facings, reinforcement and accessories, concrete materials, concrete mixture design, placement procedures, and finishes.

1.2 DEFINITIONS

A. Cast-in-Place Architectural Concrete: Formed concrete that is exposed to view on surfaces of completed structure or building and that requires special concrete materials, formwork, placement, or finishes to obtain specified architectural appearance.

1.3 ACTION SUBMITTALS

A. Formwork Shop Drawings: Show formwork construction, including form-facing joints, rustications, construction and contraction joints, form joint-sealant details, form tie locations and patterns, inserts and embedments, cutouts, cleanout panels, and other items that visually affect cast-in-place architectural concrete.

B. Samples for Verification: Architectural concrete Samples, cast vertically, approximately 18 by 18 by 2 inches (450 by 450 by 50 mm), of finishes, colors, and textures to match design reference sample. Include Sample sets showing the full range of variations expected in these characteristics.

1.4 QUALITY ASSURANCE

A. Mockups: Before casting architectural concrete, build mockups to verify selections made under Sample submittals and to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

   1. cated or, if not indicated, as directed by Architect.
   2. Build mockups of typical exterior cast-in-place architectural concrete as shown on Drawings.
   3. Demonstrate curing, cleaning, and protecting of cast-in-place architectural concrete, finishes, and contraction joints, as applicable.
   4. In presence of Architect, damage part of the exposed-face surface for each finish, color, and texture, and demonstrate materials and techniques proposed for repair of tie holes and surface blemishes to match adjacent undamaged surfaces.
   5. Obtain Architect's approval of mockups before casting architectural concrete.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. Form-Facing Panels for As-Cast Finishes: Steel- and glass-fiber-reinforced plastic, or other approved nonabsorptive panel materials that provide continuous, true, and smooth architectural concrete surfaces. Furnish in largest practicable sizes to minimize number of joints Refer to drawings for joints and ties placement. Provide cast in place concrete with fine-grained texture and buff Light warm grey color color resembling smooth-finished Indiana limestone.

B. Rustication Strips: Metal, dressed wood, or rigid plastic, or with sides beveled and back kerfed; nonstaining; in longest practicable lengths.

C. Chamfer Strips: Metal, rigid plastic, elastomeric rubber, or dressed wood, 3/4 by 3/4 inch (19 by 19 mm), minimum; nonstaining; in longest practicable lengths.

D. Form Joint Tape: Compressible foam tape; pressure sensitive; AAMA 800; minimum 1/4 inch (6 mm) thick.

E. Form Joint Sealant: Elastomeric sealant complying with ASTM C 920, Type M or Type S, Grade NS, that adheres to form joint substrates.

F. Sealer: Penetrating, clear, polyurethane wood form sealer formulated to reduce absorption of bleed water and prevent migration of set-retarding chemicals from wood.

G. Form-Release Agent: Commercially formulated, colorless form-release agent that will not bond with, stain, or adversely affect architectural concrete surfaces and will not impair subsequent treatments of those surfaces.
   1. Furnish internally disconnecting ties that will leave no metal closer than 1-1/2 inches (38 mm), after exposing aggregate, from the architectural concrete surface.

2.2 STEEL REINFORCEMENT AND ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire fabric in place; manufactured according to CRSI's "Manual of Standard Practice." Where legs of wire bar supports contact forms, use CRSI Class 2, stainless-steel bar supports.

2.3 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from source from single manufacturer

B. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
   1. Color: Provide cast stone with fine-grained texture and buff color resembling smooth-finished Indiana limestone. concrete supplier to submit choice of color to the architect for review and approval.

C. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

D. In addition to ACI 303.1 limits on form-facing panel deflection, limit cast-in-place architectural concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
   1. Class A, 1/8 inch (3 mm)

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-in-place surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood rustications, keyways, reglets, recesses, and the like, for easy removal.
   1. Seal form joints and penetrations at form ties with form joint tape or form joint sealant to prevent cement paste leakage.
   2. Do not use rust-stained steel form-facing material..

F. Exterior corners and edges of cast-in-place architectural concrete shall be rounded as indicated

G. Coat contact surfaces of wood rustications and chamfer strips with sealer before placing reinforcement, anchoring devices, and embedded items.

H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

I. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

2.4 REINFORCEMENT AND INSERT INSTALLATION

A. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

2.5 REMOVING AND REUSING FORMS

B. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
   1. Schedule form removal to maintain surface appearance that matches approved [mockups].

2.6 JOINTS

C. Construction Joints: Install construction joints true to line, with faces perpendicular to surface plane of cast-in-place architectural concrete, so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

2.7 FINISHES, GENERAL

D. Architectural Concrete Finish: Match Architect's design reference sample, identified and described as indicated, to satisfaction of Architect.

2.8 AS-CAST FORMED FINISHES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections exceeding specified limits on formed-surface irregularities. Repair and patch tie holes and defects.

2.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 (ACI 301M) for hot-weather protection during curing.

B. Begin curing cast-in-place architectural concrete immediately after [removing forms from] concrete. Cure according to ACI 308.1, by one or a combination of the following methods that will not mottle, discolor, or stain concrete:

   2. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.
      c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2.10 FIELD QUALITY CONTROL

2.11 REPAIR, PROTECTION, AND CLEANING

A. Repair and cure damaged finished surfaces of cast-in-place architectural concrete when approved by Architect. Match repairs to color, texture, and uniformity of surrounding surfaces and to repairs on approved mockups.

   1. Remove and replace cast-in-place architectural concrete that cannot be repaired and cured to Architect's approval.

B. Protect corners, edges, and surfaces of cast-in-place architectural concrete from damage; use guards and barricades.

C. Protect cast-in-place architectural concrete from staining, laitance, and contamination during remainder of construction period.

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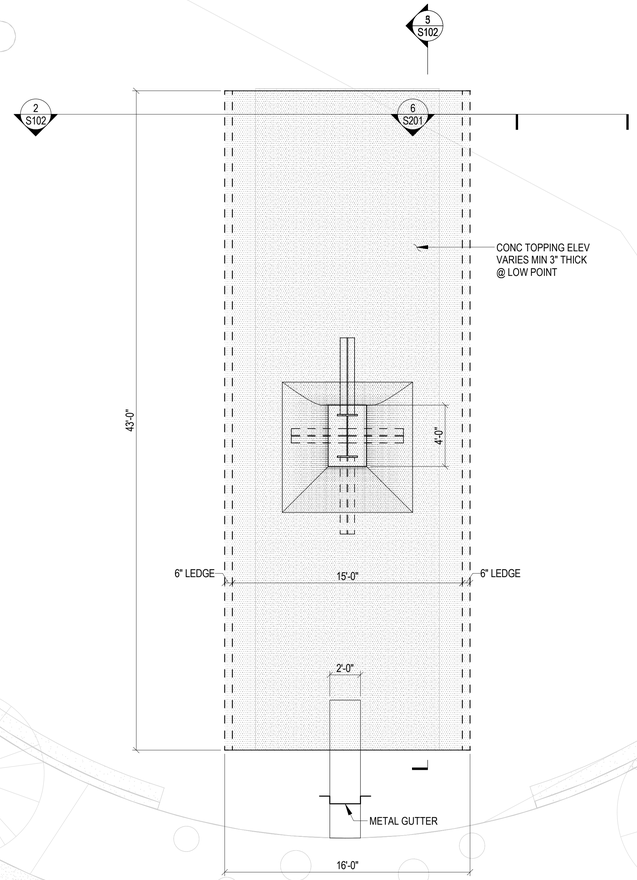
Checked By: PS

SPECIFICATIONS FOR CAST IN PLACE

S003

MATCH LINE

MATCH LINE



N

1
S100
PLAN - FOUNDATION

4' 0 4' 8'

SCALE AT FULL SIZE 1/4" = 1'-0"

NOTE: CONTRACTOR TO ENGAGE A CERTIFIED PROFESSIONAL ENGINEER TO THE GRADE ELEVATIONS AS SHOWN ON LANDSCAPING DRAWINGTO FIELD VERFY THE GRADE ELEVATIONS AS SHOWN ON LANDSCAPING DRAWING.

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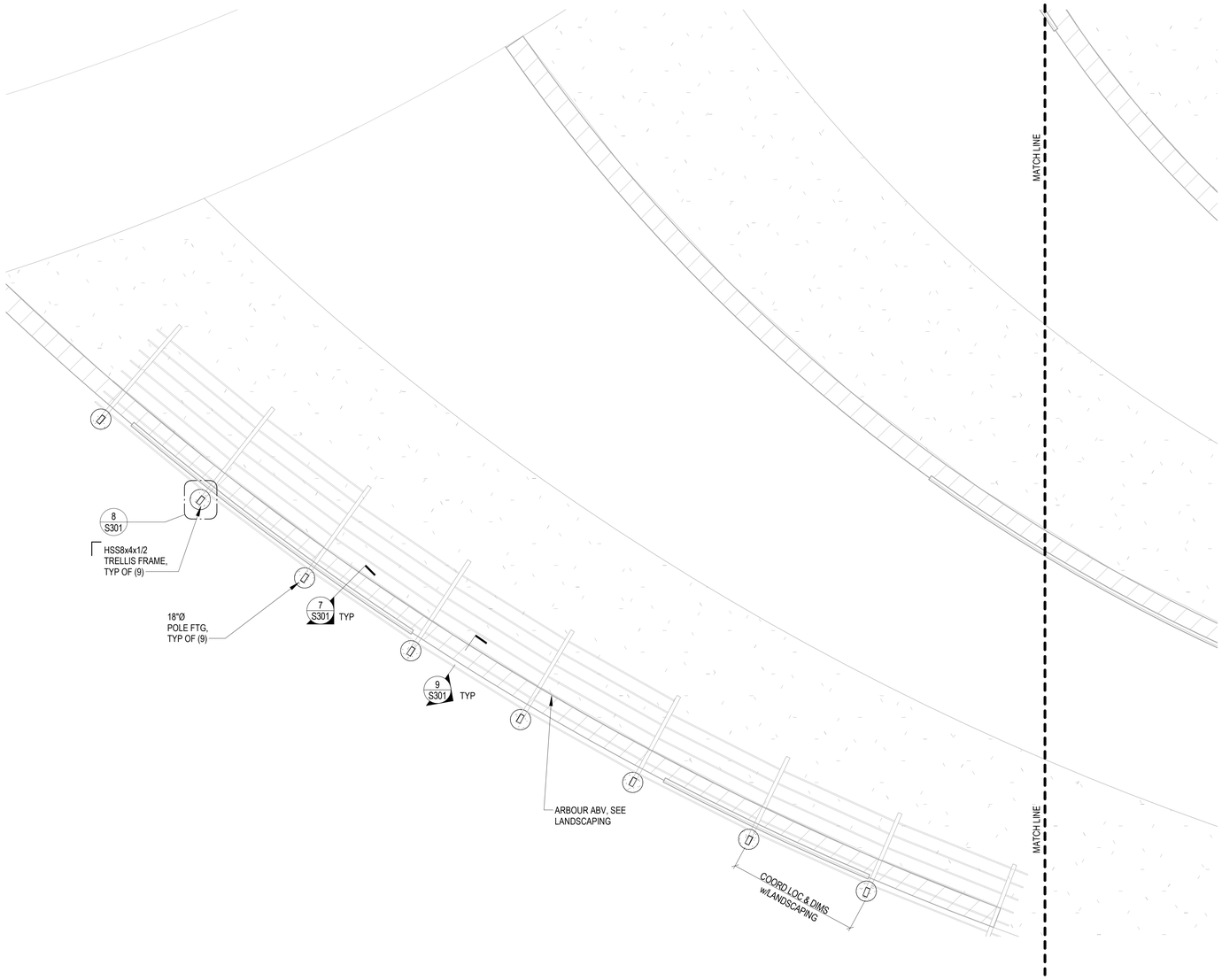
FOUNDATION PLAN

S100



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1 / S101 PLAN - ARBOUR FOUNDATION & SUPPORT FRAME

4' 0 4' 8'

SCALE AT FULL SIZE 1/4" = 1'-0"

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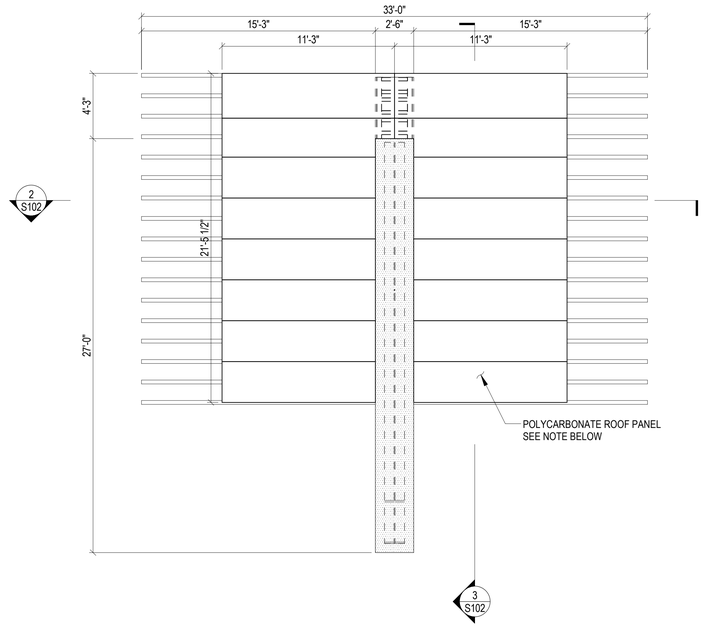
ARBOUR PLAN

S101



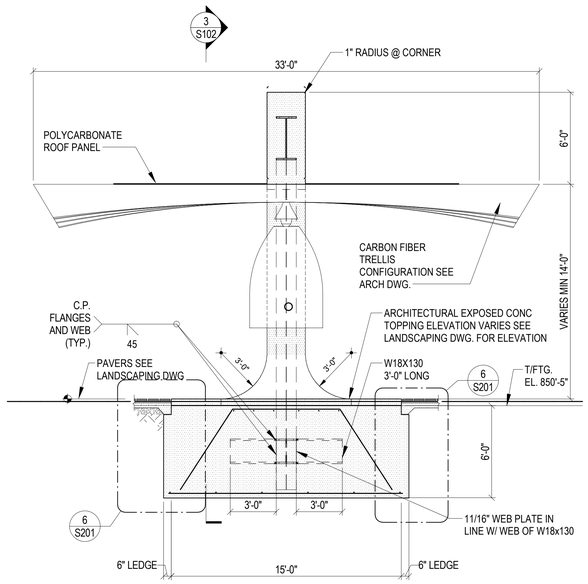
POLYCARBONATE-PANEL NOTES:

1. THE POLYCARBONATE-PANEL SHOP DRAWINGS SHALL BE PREPARED UNDER SUPERVISION OF THE QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TENNESSEE.
2. CONTRACTOR TO SUBMIT SIGNED AND SEALED SHOP DRAWINGS FOR REVIEW AND RECORDS

N

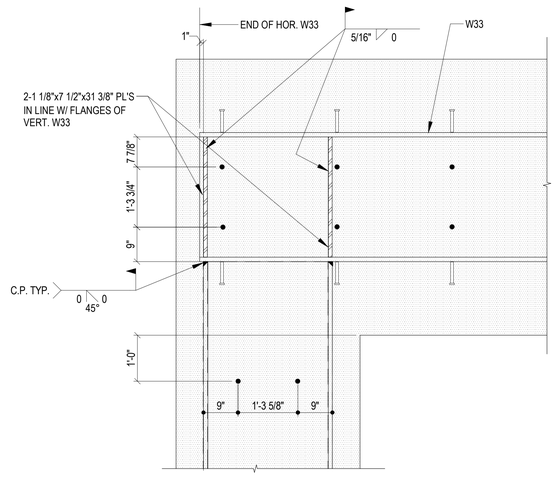
1 S102 PLAN - TOP OF CONCRETE STRUCTURE

SCALE AT FULL SIZE 1/4" = 1'-0"



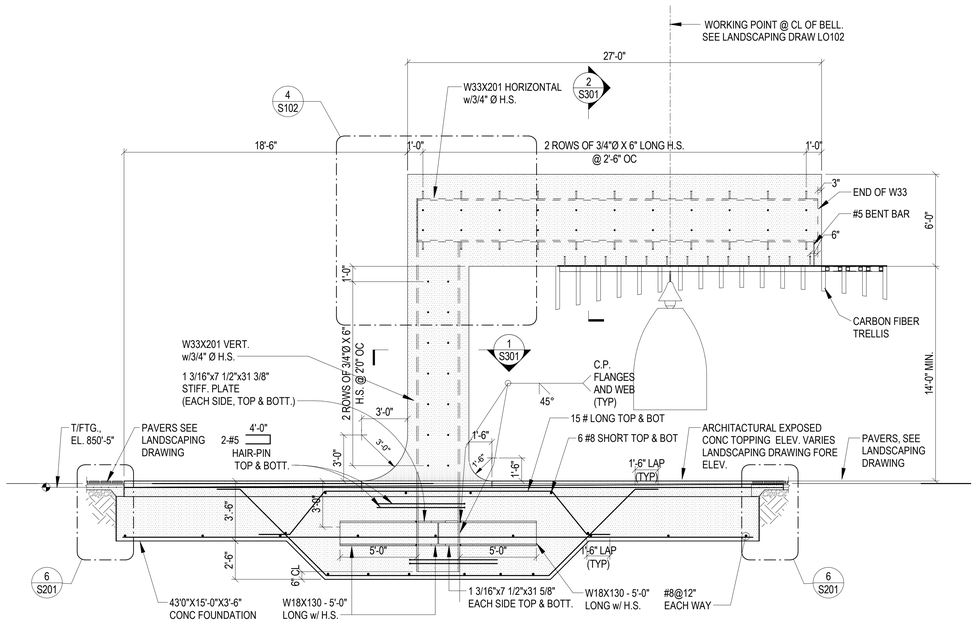
2 S102 SECTION - FRONT ELEVATION AT THICKENED FOUNDATION

SCALE AT FULL SIZE 1/4" = 1'-0"



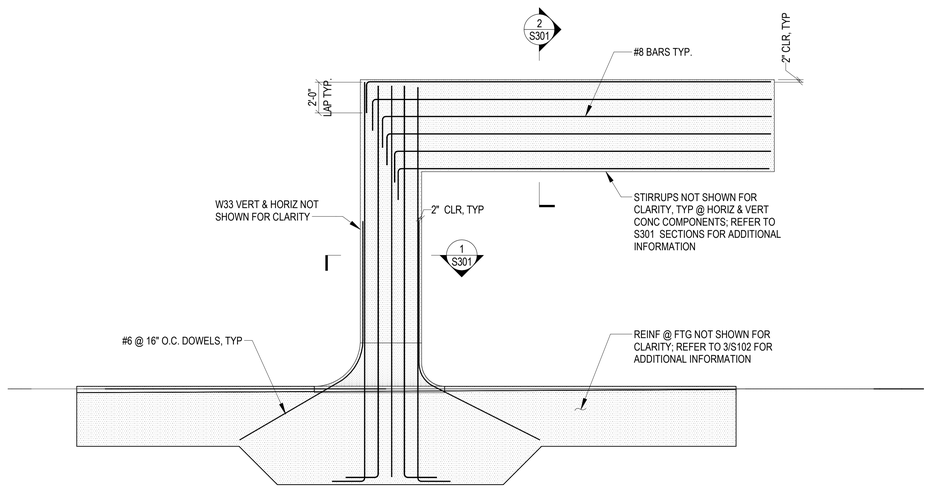
4 S102 SECTION - W33 JOINT CONNECTION

SCALE AT FULL SIZE 3/4" = 1'-0"



3 S102 SECTION - SIDE ELEVATION

SCALE AT FULL SIZE 1/4" = 1'-0"



NOTE: REFER TO SECTIONS 1 & 2/S301 AND 3/S102 FOR ADDITONAL INFORMATION.

5 S102 SECTION - CONCRETE REINFORCEMENT

SCALE AT FULL SIZE 1/4" = 1'-0"

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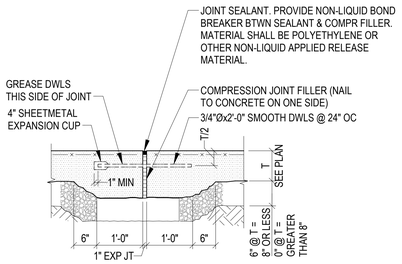
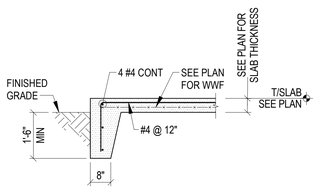
ROOF PLAN & ELEVATIONS

S102



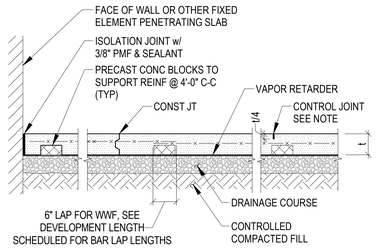
1 S201 DETAIL - EXPANSION JOINT @ SLAB ON GRADE

SCALE AT FULL SIZE 3/4" = 1'-0"



2 S201 DETAIL - TYPICAL TURNED DOWN SLAB

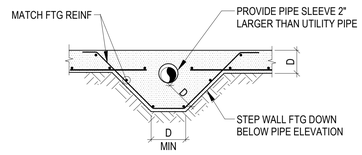
SCALE AT FULL SIZE 1/2" = 1'-0"



NOTES:
1. CONTROL JOINT SPACING MAX OF 36xt.
2. t = SLAB THICKNESS, SEEPLAN.

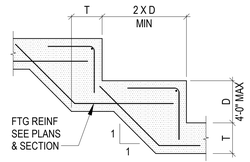
3 S201 DETAIL - TYPICAL SLAB ON GRADE DETAIL

SCALE AT FULL SIZE 3/4" = 1'-0"



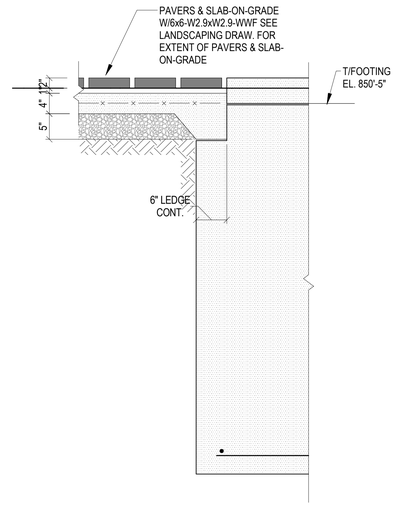
4 S201 SECTION- UTILITY PIPE THRU WALL FOOTING

SCALE AT FULL SIZE 3/4" = 1'-0"



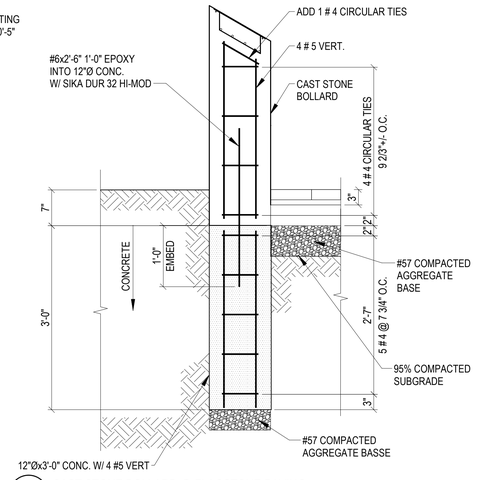
5 S201 SECTION - STEPPED WALL FOOTING

SCALE AT FULL SIZE 1/2" = 1'-0"



6 S201 TYP. CONC, LEDGE @ LEDGE OF FOUNDATION

SCALE AT FULL SIZE 1" = 1'-0"



7 S201 CAST STONE BOLLARD @ FLAGSTONE PAVING

SCALE AT FULL SIZE 1" = 1'-0"

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REGISTRATION

PROJECT INFORMATION

PROJECT NUMBER 201653

ISSUE RECORD

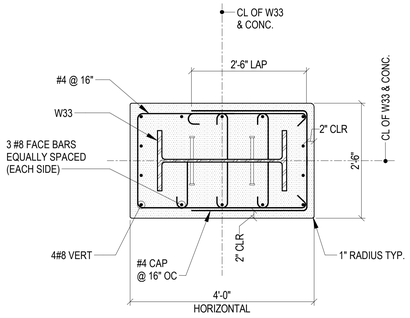
MARK	DATE	DESCRIPTION
1	07-5-2017	ISSUED FOR PRICING

DRAWING INFORMATION

Drawing Scale: As indicated
Drawn By: KP
Checked By: PS

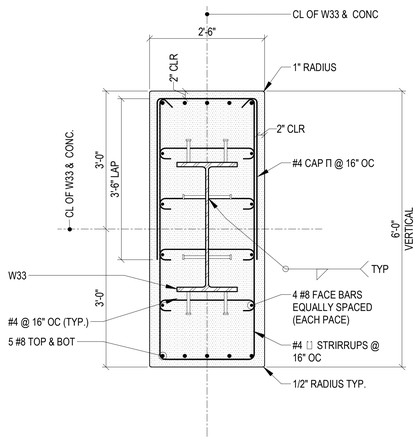
TYPICAL DETAILS

S201



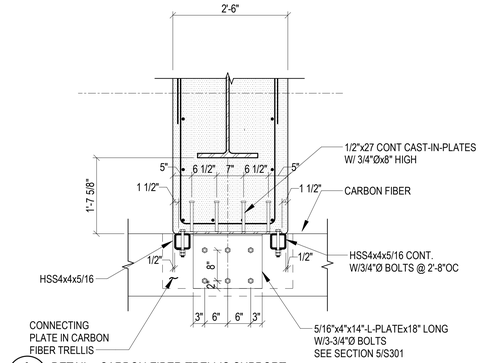
1 S301 SECTION

SCALE AT FULL SIZE 3/4" = 1'-0"



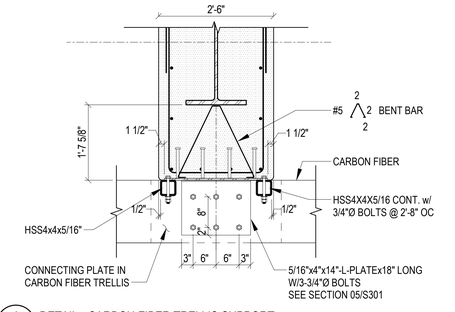
2 S301 SECTION

SCALE AT FULL SIZE 3/4" = 1'-0"



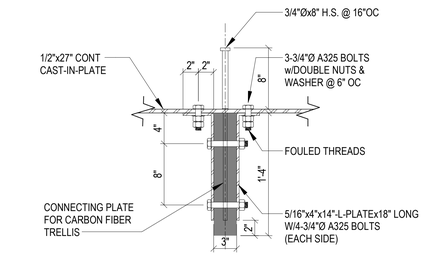
3 S301 DETAIL - CARBON FIBER TRELLIS SUPPORT

SCALE AT FULL SIZE 3/4" = 1'-0"



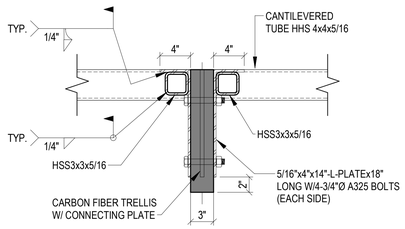
4 S301 DETAIL - CARBON FIBER TRELLIS SUPPORT

SCALE AT FULL SIZE 3/4" = 1'-0"



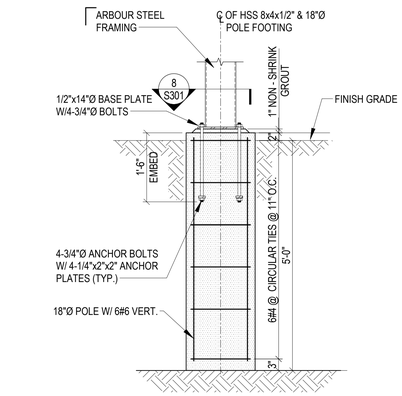
5 S301 SECTION - TRELLIS-TO-CAST IN PLATE

SCALE AT FULL SIZE 1 1/2" = 1'-0"



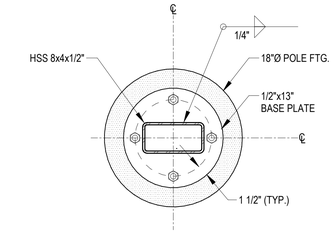
6 S301 SECTION - TRELLIS-TO-CANTILEVERED TUBE

SCALE AT FULL SIZE 1 1/2" = 1'-0"



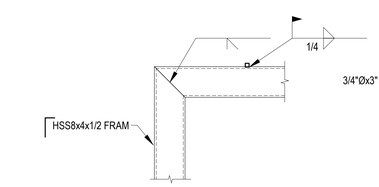
7 S301 SECTION - ARBOUR BASE PLATE DETAIL

SCALE AT FULL SIZE 3/4" = 1'-0"



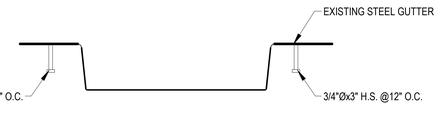
8 S301 PLAN DETAIL - ARBOUR BASE PLATE DETAIL

SCALE AT FULL SIZE 1 1/2" = 1'-0"



9 S301 SECTION - JOINT AT ARBOUR STEEL FRAME

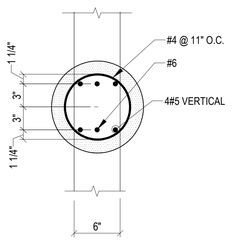
SCALE AT FULL SIZE 3/4" = 1'-0"



1. REMOVE RUST AND THOUROUGHT CLEAN EXISTING STEEL GUTTER, REPAINT EXISTING EXPOSED SURFACE WITH GALVANIZE PAINT.
2. INSTALL HEADER STUDS WHERE GUTTER EMBEDED IN NEW CONCRETE ONLY.
3. SEE ARCH. DRAWING FOR EXACT GUTTER LOCATION.

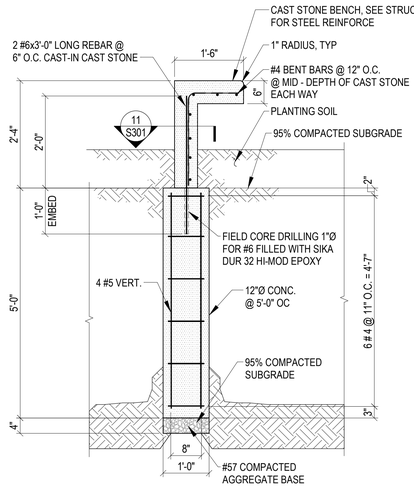
10 S301 DETAIL - EXISTING GUTTER WITH HEADED STUD

SCALE AT FULL SIZE 1 1/2" = 1'-0"



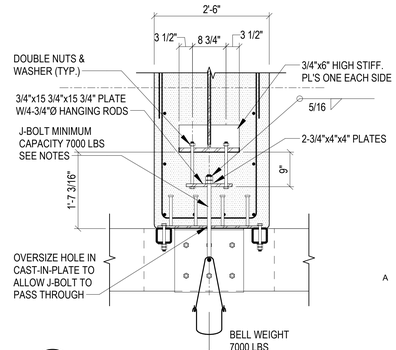
11 S301 PLAN DETAIL - CAST STONE - TO FOUNDATION

SCALE AT FULL SIZE 1 1/2" = 1'-0"



12 S301 DETAIL - TYP. BENCH SUPPORT

SCALE AT FULL SIZE 3/4" = 1'-0"



13 S301 TYP. BELL SUPPORT DETAIL

SCALE AT FULL SIZE 3/4" = 1'-0"

NOTE:
COTRACTOR TO SUBMIT A SIGNED AND SEALED COPY OF J-BOLT FOR RECORD.

SNOW LOAD = 10 PSF
WIND LOAD (UPLIFT) = 10 PSF

33'-0".

SUGGESTED CARBON FIBER TRELLIS LOADING DIAGRAM

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PROJECT INFORMATION

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ISSUE RECORD

MARK	DATE	DESCRIPTION
1	07-5-2017	ISSUED FOR PRICING

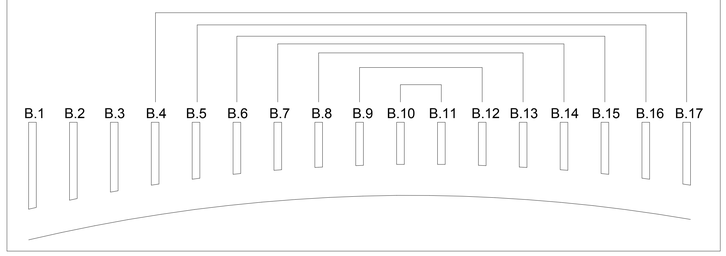
DRAWING INFORMATION

Drawing Scale: As indicated
Drawn By: KP
Checked By: PS

SECTIONS & DETAILS

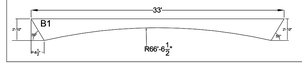
S301

SIDE VIEW



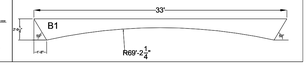
B1

BACK VIEW



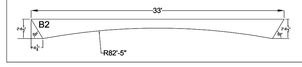
SIDE VIEW

FRONT VIEW



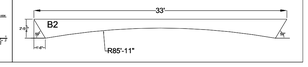
B2

BACK VIEW



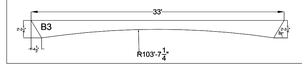
SIDE VIEW

FRONT VIEW



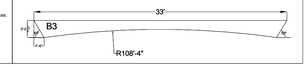
B3

BACK VIEW



SIDE VIEW

FRONT VIEW



B4 / B17

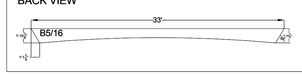
BACK VIEW

SIDE VIEW

FRONT VIEW

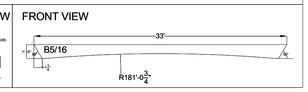
B5 / B16

BACK VIEW



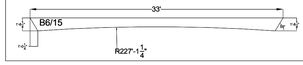
SIDE VIEW

FRONT VIEW



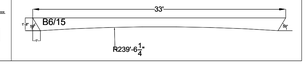
B6 / B15

BACK VIEW



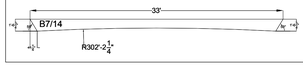
SIDE VIEW

FRONT VIEW



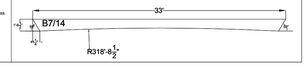
B7 / B14

BACK VIEW



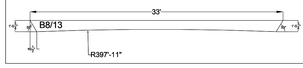
SIDE VIEW

FRONT VIEW



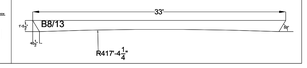
B8 / B13

BACK VIEW



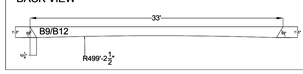
SIDE VIEW

FRONT VIEW



B9 / B12

BACK VIEW

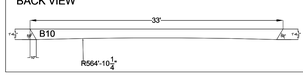


SIDE VIEW

FRONT VIEW

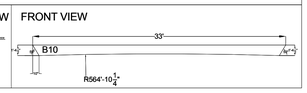
B10 / B11

BACK VIEW



SIDE VIEW

FRONT VIEW



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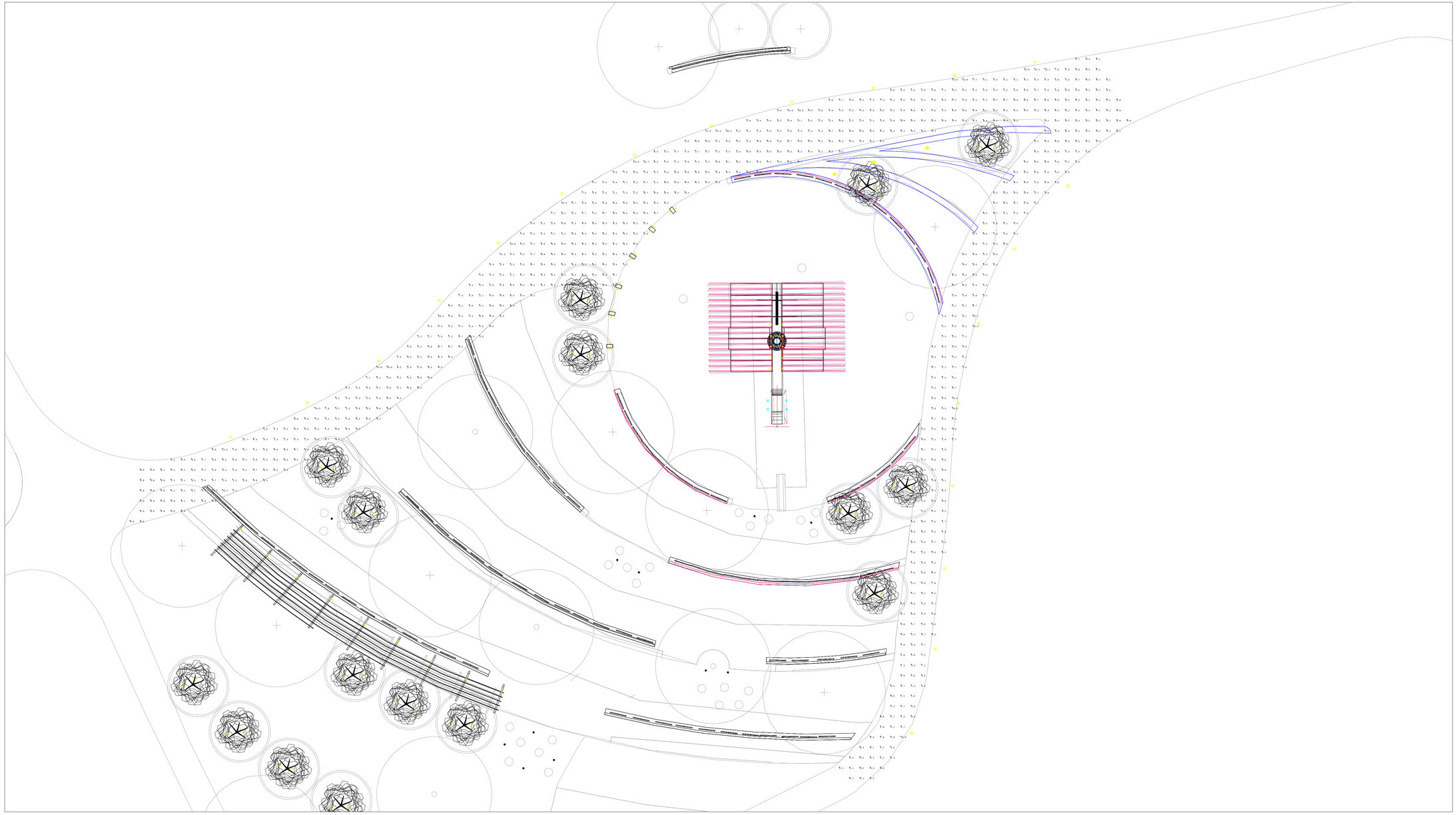
DRAWING INFORMATION

Drawing Scale: As indicated
Drawn By: KP
Checked By: PS

CARBON FIBER TRELLIS PROFILES

S302



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Pathway	Illuminance	Fc	2.25	70.5	0.0	N.A.	N.A.

Luminaire Schedule		
Symbol	Qty	Label
	53	77018
	20	88659
	6	33579
	5	77146-0deg
	4	33590
	3	77089
	12	88675
	104	44312

BEGA

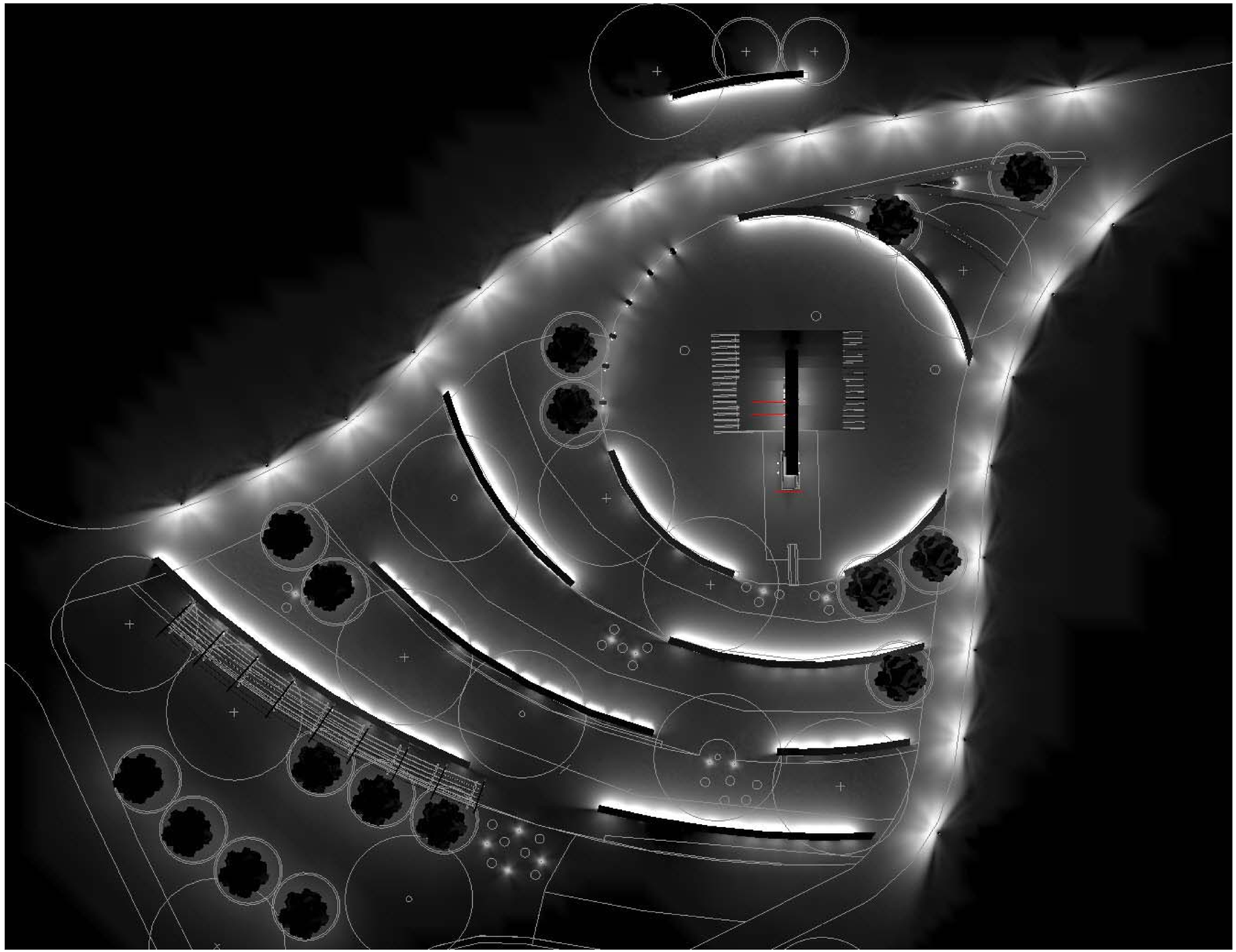
Illuminance Calculations Disclaimer:
Illuminance calculations are for lighting design aid purposes only. While all reasonable efforts have been made to ensure the accuracy of the calculations, it should be noted that all results directly rely on the point by point calculation software used. Illuminance values displayed may vary by as much as 20 percent depending on the light loss and ballast factors and the calculation program used. Field results may differ from computer calculations due to factors including, but not limited to, line voltage variations, lamp and ballast performance, and actual field conditions such as surface finishes, surface shape, and interreflectance factors. BEGA shall not be responsible or liable for the accuracy of the calculations performed and the results of the final light levels.

#	Date	Comments

Revisions

Drawn By: Rachel Antoniak
Date:5/25/2017
Rep Agency: Factory Sales Agency
For: Jon Miller
Scale: Not to Scale

Friendship Bell



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Pathway	Illuminance	Fc	2.25	70.5	0.0	N.A.	N.A.

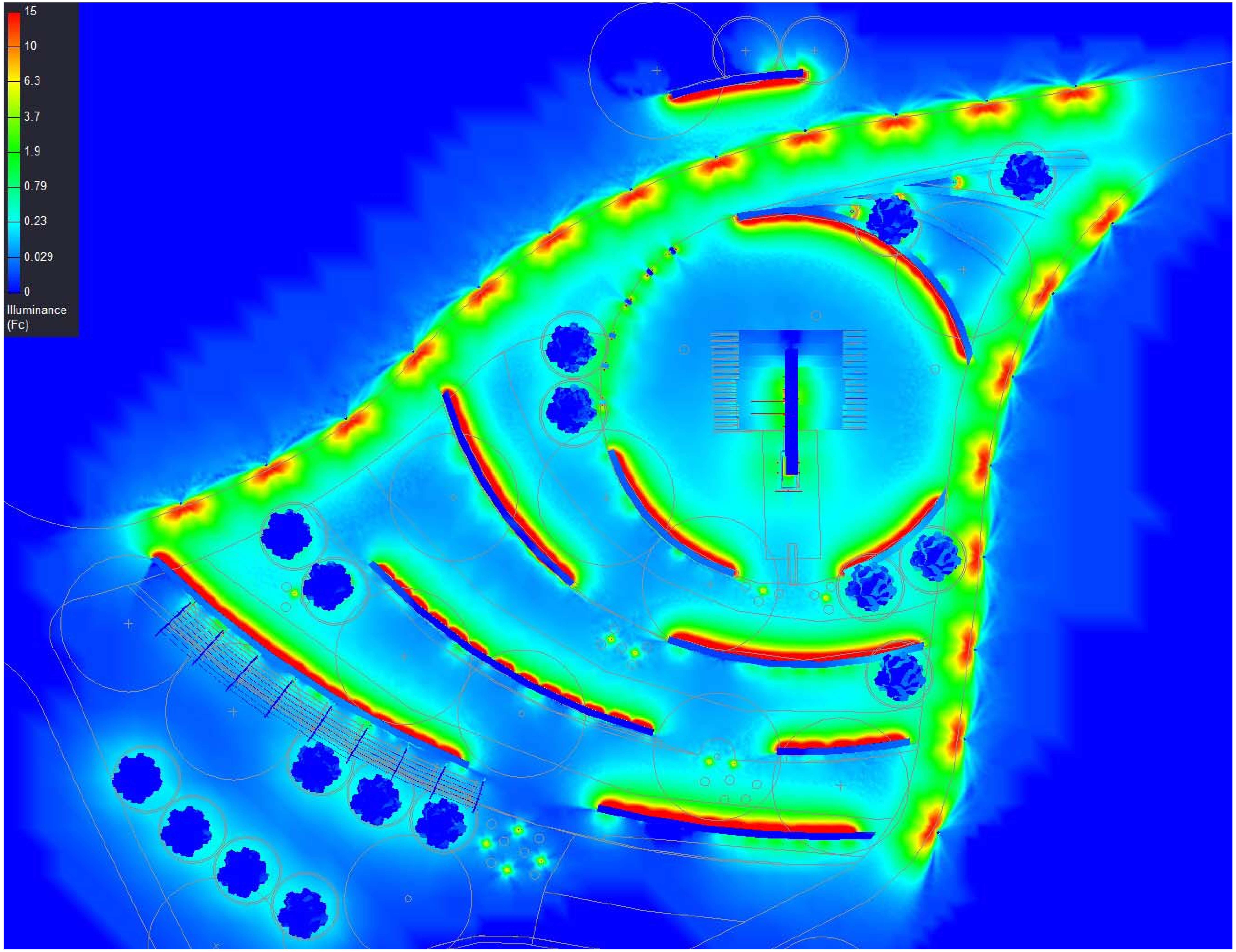
Illuminance Calculations Disclaimer:
Illuminance calculations are for lighting design aid purposes only. While all reasonable efforts have been made to ensure the accuracy of the calculations, it should be noted that all results directly rely on the point by point calculation software used. The results obtained are estimates only and may vary by 10 percent depending on the light loss and ballast factors and the calculation program used. Field results may differ from computer calculations due to variations in reflectance factors, line voltage variations, lamp and ballast performance, and actual field conditions such as surface finishes, surface shape, and obstructions. BEGA assumes no responsibility and liability for the accuracy of the calculations performed and the results of the final light levels.

BEGA

Revisions			
	#	Date	Comments

Drawn By: Rachel Antoniak
Date:5/25/2017
Rep Agency: Factory Sales Agency
For: Jon Miller
Scale: Not to Scale

Friendship Bell



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Pathway	Illuminance	Fc	2.25	70.5	0.0	N.A.	N.A.

BEGA

#	Date	Comments

Revisions

Drawn By: Rachel Antoniak
Date:5/25/2017
Rep Agency: Factory Sales Agency
For: Jon Miller
Scale: Not to Scale

Friendship Bell

GEOServices, LLC-Geotechnical and Materials Engineers

May 3, 2017

Barge Waggoner Sumner & Cannon, Inc.
520 West Summit Hill Drive
Suite 102
Knoxville, Tennessee 37902

ATTENTION: Mr. Casey Tyree, P.E.
casey.tyree@bwsc.net

Subject: **REPORT FOR LIMITED GEOTECHNICAL EXPLORATION**
Friendship Bell Project
Oak Ridge, Tennessee
GEOServices Job No. 21-17271

Dear Mr. Tyree:

GEOServices, LLC is pleased to be submitting the results of the limited geotechnical exploration performed for the subject project. The geotechnical exploration was performed in accordance with our Proposal Number 11-17078, dated February 28, 2017, and as authorized by you. The following letter presents our findings and recommendations. Should you have any questions regarding this letter, or if we can be of any further assistance, please contact us at your convenience.

Background and Project Information

The project site is located at the existing AK Bissell Park in Oak Ridge, Tennessee. More specifically, the project site is located approximately 800 feet east/southeast from the intersection of Orau Way and Oak Ridge Turnpike (see attached Figure 1). Project information was provided by you in the form of an aerial image and a rough rendition of the proposed moment from a newspaper article (Oak Ridger, date unknown). Based on the provided information, it is our understanding that the proposed construction will consist of a new monument to support the Friendship Bell.

It is our understanding that the proposed monument will be supported on a mat foundation with a plan dimension of approximately 35 feet by 10 feet with a applied bearing load of less than 2,000 pounds per square foot (psf). Based on the provided topographic information (USGS), the project

site is generally level. At this time, final grades have not been determined. However, we understand that the grading for the project will be minimal and that the proposed mat foundation will bear a minimum of 3.5 feet beneath the existing ground surface. Therefore, we anticipate maximum earthwork cuts and fills of less than 5 feet will be required to reach planned grades.

The project site is currently used as an open grassed space in the existing AK Bissell Park. Ground cover consists of short grass, isolated trees, and asphalt paved walkways. The project site is bordered by an Unnamed Tributary of East Fork Poplar Creek to the west and south and by the AK Bissell Park on all remaining sides.

Field Exploration

The existing subsurface conditions were explored with four (4) soil test borings. The locations and depths were selected and marked in the field by GEOServices personnel. The borings locations were located by using the provided site plan and a handheld GPS unit. Drilling was on April 25, 2017. The borings were advanced using 3.25-inch inside diameter hollow stem augers (HSA) with a CME-550 ATV mounted drill rig. The approximate locations of the test borings performed on site are referenced in Figure 2. Detailed logs for soil test borings can be found in Appendix A of this report.

Within each boring, SPT and split-spoon sampling were performed continiously. The drill crew worked in accordance with ASTM D 6151 (hollow stem auger drilling). Standard Penetration Tests and split-spoon sampling were performed in accordance with ASTM D 1586.

In split–spoon sampling, a standard 2-inch O.D. split-spoon sampler is driven into the bottom of the boring with a 140 pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the last 12 inches of the standard 18 inches of total penetration is recorded as the Standard Penetration Resistance (N-value). N-values are recorded on the boring logs at the testing depth, and provide an indication of strength of cohesive materials.

After completion of the field drilling and sampling phase of this project, the soil samples were returned to our laboratory where they were visually classified in general accordance with the Unified Soil Classification System (USCS – ASTM D 2487) by a GEOServices geotechnical professional.

GEOLOGIC CONDITIONS

The project site, as most of East Tennessee, lies in the Appalachian Valley and Ridge Physiographic Province. The Province is characterized by elongated, northeasterly-trending ridges formed on highly resistant sandstones and shales. Between ridges, broad valleys and rolling hills are formed primarily on less resistant limestones, dolomites and shales.

Published geologic information indicates that the project site is underlain by bedrock from the Reedsville Shale formation of the Upper Part of the Chickamauga Group. This formation is primarily composed of greenish-gray calcareous shale with medium-grained, fossiliferous limestone. Bedrock from this formation typically weathers to produce a thin, shaly residual soil with areas of thick clay from limestone units.

Since the bedrock underlying the site consists of carbonate rock, the site is susceptible to the typical carbonate hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes. Carbonate rock, while appearing very hard and resistant, is soluble in slightly acidic water. This characteristic, plus differential weathering of the bedrock mass, is responsible for the hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging. In East Tennessee, sinkholes occur primarily due to differential weathering of the bedrock and "flushing" or "raveling" of overburden soils into the cavities in the bedrock. The loss of solids creates a cavity or "dome" in the overburden. Growth of the dome over time or excavation over the dome can create a condition in which rapid, local subsidence or collapse of the roof of the dome occurs.

A certain degree of risk with respect to sinkhole formation and subsidence should be considered with any site located within geologic areas underlain by potentially soluble rock units. Based on our limited investigation, we did not encounter some surficial signs of karst solutioning (existing closed

contours) on site. In addition, closed depressions, which denote past sinkhole activity, were observed on the United States Geological Survey (USGS – Windrock Quadrangle, TN) approximately 1000 feet south of the site.

Based on this information, it is our opinion that the risk of sinkhole development at this site is no greater than at other sites located within similar geologic settings which have been developed successfully. However, the owner must be willing to accept a slight risk of sinkhole development at this site. The risk of sinkhole development can be reduced by following the recommendations provided herein.

Site geology may also have been influenced by water-deposited (alluvial) materials within the flood plain of the nearby unnamed Tributary to East Fork Poplar Creek. These alluvial materials are usually soft and compressible, having never been consolidated by pressures in excess of their present overburden. Alluvial material composed of gray and brown clay was encountered underlying existing fill material at this site.

Soil Stratigraphy

Surface

A surficial layer of topsoil ranging from approximately 4 to 7 inches in thickness was encountered in each of the four borings conducted. It should be noted that boring B-4 encountered auger refusal directly below the topsoil layer. No soil samples were collected in boring B-4.

Alluvial Soil

Beneath the existing surficial topsoil layers encountered in boring B-3, alluvial soils were encountered to a depth of 3 feet beneath the existing ground surface. Alluvial soils are defined as any material that has been transported and placed by water. The alluvial soil encountered generally consisted of dark brown and brown fat clay (CH) with an organic odor. Although SPT testing was not performed in the alluvial soils, visual observations of the alluvial soils indicated soft consistencies. The SPT N-values used to evaluate the consistency of the alluvial soil was 10

blows per foot (bpf) of penetration, indicating a relative soil consistency of stiff. Limited moisture content testing of a selected alluvial soil sample indicated a moisture content of about 25 percent. Organic content testing of a selected sample indicated an organic content of about 7 percent, by weight.

Residual Soil

Beneath the alluvial soils encountered in boring B-3, and beneath the surficial topsoil layers encountered in two borings (B-1 and B-2), residual soil was encountered to depths ranging from 2.5 to 7 feet beneath the existing ground surface. Residual soils are formed from the in-place weathering of the underlying parent bedrock. The residual soils generally consisted of tan, dark brown, and reddish brown fat clay (CH) and lean clay (CL) with varying amounts of rock fragments and organic odor. The SPT N-values used to evaluate the consistency of the residual soil ranged from 6 bpf to 50 blows with no penetration, indicating a relative soil consistency ranging from firm to very hard. The very stiff, or greater, consistency soils (SPT N-values exceeding 15 bpf) were generally encountered nearing auger refusal and were likely inflated by the auger refusal materials. Therefore, the consistency of the residual soil was generally very firm to stiff.

Limited moisture content testing of selected samples of the residual soils indicated moisture contents ranging from about 20 to 29 percent. Atterberg limits testing on selected samples of residual soil indicated liquid limits (LL) ranging from 43 to 52 percent and plasticity indices (PI) ranging 26 to 30 percent. The residual soil tested is classified as fat clay (CH) and lean clay (CL) in accordance with the Unified Soil Classification System (USCS). Organic content testing of selected samples of the residual material indicated organic contents ranging from about 5 to 9 percent, by weight.

Auger Refusal

Auger refusal conditions were encountered in each of the borings conducted at depths ranging from 1.0 to 7.0 feet beneath the existing ground surface. Auger refusal is a designation applied to any material that cannot be penetrated by the power auger. Auger refusal may indicate dense gravel or cobble layers, boulders, rock fill, rock ledges or pinnacles, or the top of continuous bedrock. Rock coring was not included in our scope of services. Therefore, the character and continuity of

auger refusal material was not determined. However, based on our experience with the subsurface conditions in this geologic setting, it is our opinion that auger refusal likely corresponds to ledges, pinnacles, and/or the top of continuous bedrock.

Ground Water

Subsurface water was encountered in one boring (B-3) at completion of drilling at a depth of 6 feet beneath the existing ground surface. However, subsurface water levels may fluctuate due to seasonal changes in precipitation amounts. Areas of perched water may exist in the overburden and/or near the contact with bedrock. The contractor should determine the actual subsurface water level at the time of construction.

Site Assessment

The results of the subsurface exploration indicate that the site is generally underlain by isolated alluvial soils overlying residual soils and shallow bedrock. The existing soils encountered were generally stiff, or better, in consistency with isolated firm material encountered in the upper 2 feet of one boring (B-2). In addition, the project site is has been utilized for multiple uses in the past (athletic fields and driving range). Therefore, the possibility exists that areas of buried debris or other unsuitable material could be encountered upon site grading. If encountered, these materials should be removed and disposed of in accordance with state and local regulations.

As previously mentioned, auger refusal materials were encountered at depths ranging from 1 to 7 feet beneath the existing ground surface. Based on the provided mat thickness information (i.e. minimum thickness of 3.5 feet), it is likely that bedrock will be encountered during construction. The combination of bearing conditions (i.e., soil and rock) can cause differential foundation settlement which can result in unsatisfactory long-term performance of the monument. To provide uniform support conditions, it may be necessary to undercut any foundation excavations where bedrock is encountered to a depth of at least 1 foot beneath the anticipated foundation bearing elevation. If the proposed mat is supported predominantly on rock, an additional undercut is likely not required. However, in the event that mat will be supported partially on compressible soils and partially on incompressible bedrock, an undercut may be prudent. The

undercut areas should be replaced with compacted dense graded aggregate to reduce the potential for differential stress caused by point loading. We recommend that GEOServices be retained during foundation construction to evaluate bearing conditions

Furthermore, organic content testing of the on-site soils indicated organic content ranging from about 5 to 9 percent, by weight. Generally, soils with organic contents exceeding 8 percent, by weight, are not suitable for use as structural soil fill, as the organic materials have the potential to decay and consolidate when surcharge loading is applied. However, given the relative strength of the proposed mat reinforcement, it is our opinion that the proposed structure can be supported on material with higher organic contents than typically desirable. Therefore, GEOServices recommends that any highly organic soils encountered be removed upon stripping on a case-by-case basis when earthwork commences. We recommend GEOServices be retained to observe the undercutting process to ensure that adequate, but not excessive, material is undercut from the site. This is only applicable in the proposed mat foundation. Given the proposed mat bearing depth of 3.5 feet beneath existing grade, it is likely that any unsuitable organic material will be removed via grading.

As for the remaining areas of proposed construction, we recommend the subgrade soils be evaluated via proofrolling. Any area judged unstable during proofrolling should consist of a limited undercutting and replacement with properly compacted soil fill. The extent and quantity of unsuitable soils will likely depend on the construction schedule and weather. If construction is anticipated to commence in the dryer months (June to August) remediation of the near-surface soils will likely be reduced.

Given the recommendations in this report are followed, the existing bedrock and/or stable subgrade should provide adequate support for the proposed monument’s mat foundation.

SITE PREPARATION RECOMMENDATIONS

Subgrade

All vegetation, topsoil, organic soils (as required), loose rock fragments greater than 6 inches, and other debris should be removed from the proposed construction areas. After completion of stripping operations and any required excavations to reach planned subgrade elevation, we recommend that the subgrade be proofrolled with a fully-loaded, tandem-axle dump truck or other pneumatic-tired construction equipment of similar weight. The geotechnical engineer or his representative should observe proofrolling. Areas judged to perform unsatisfactorily by the engineer should be undercut and replaced with structural soil fill or remediated at the geotechnical engineer's recommendation. Areas to receive structural soil fill should also be proofrolled prior to the placement of any fill.

Structural Soil Fill

Material considered suitable for use as structural fill should be clean soil free of organics, trash, and other deleterious material, containing no rock fragments greater than 6 inches in any one dimension. Preferably, structural soil fill material should have a standard Proctor maximum dry density of 90 pcf or greater and a plasticity index (PI) of 35 percent or less. All material to be used as structural fill should be tested by the geotechnical engineer to confirm that it meets the project requirements before being placed.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 98 percent of the soil's maximum dry density per the standard Proctor method (ASTM D 698) and within the range of minus (-) 2 percent to plus (+) 3 percent of the optimum moisture content. Each lift should be tested by geotechnical personnel to confirm that the contractors' method is capable of achieving the project requirements before placing any subsequent lifts. Any areas which have become soft or frozen should be removed before additional structural fill is placed.

Dense-Graded Aggregate Fill

Dense-graded aggregate fill may be required in areas where subgrade remediation is required or where shallow bedrock is encountered. The crushed stone used for this section should be Type A, Class A, and Grading E in accordance with Section 903.05 of the Tennessee Department of Transportation specifications. The crushed stone fill should be placed in loose, horizontal lifts not exceeding 10 inches in loose thickness. Each lift should be compacted to at least 98 percent of maximum dry density per the standard Proctor method (ASTM D 698). Each lift should be compacted, tested by geotechnical personnel and approved before placing any subsequent lifts.

FOUNDATION RECOMMENDATIONS

Shallow Mat Foundation

Foundations for the proposed construction are anticipated to bear on limestone bedrock and/or stable existing material. We recommend a maximum allowable bearing capacity of 1,500 pounds per square foot (psf) be utilized, though based on the provided mat geometry we anticipate the proposed mat will require a bearing pressure of less than 1,000 psf. Foundation subgrade observations should be performed by a GEOServices geotechnical engineer, or his qualified representative, so that the recommendations provided in this letter are consistent with the site conditions encountered. A dynamic cone penetrometer (DCP) is commonly utilized to provide information that is compared to the data obtained in the geotechnical exploration. Where unacceptable materials are encountered, the material should be excavated to stiff, suitable soils or remediated at the geotechnical engineer's direction. Typical remedial measures consist of undercutting, overexcavation, or combinations thereof.

CONSTRUCTION CONSIDERATIONS

Foundation Construction

Foundation excavations should be opened, the subgrade evaluated, remedial work performed, and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in

terms of maintaining dry footing trenches) and after construction. Soil backfill should be placed in accordance with the recommendations for structural fill presented herein.

Excavation Safety

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually solely responsible for site safety. This information is provided only as a service and under no circumstances should GEOS be assumed to be responsible for construction site safety.

Drainage and Surface Water Concerns

Water should not be allowed to collect in the foundation excavation, or on prepared subgrades of the construction area either during or after construction. Undercut areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the mat. The grades should be sloped away from the monument and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill of the monument.

Sinkhole Risk Reduction and Corrective Actions

Based on our experience, corrective actions can also be performed to reduce the potential for sinkhole development at this site. These corrective actions would decrease but not eliminate the potential for sinkhole development. Much can be accomplished to decrease the potential of future sinkhole activity by proper grade selection and positive site drainage.

In general, the portions of a site that are excavated to achieve the desired grades will have a higher risk of sinkhole development than the areas that are filled, because of the exposure of relic fractures in the soil to rainfall and runoff. On the other hand, those portions of a site that receive a modest amount of fill (or that have been filled in the past) will have a decreased risk of sinkhole development caused by rainfall or runoff because the placement of a cohesive soil fill over these areas effectively caps the area with a relatively impervious “blanket” of remolded soil.

Therefore, the recommendations that follow incorporate a modest remedial treatment program designed to make the surface of the soil in excavated areas less permeable.

Although it is our opinion that the risk of ground subsidence associated with sinkhole formation cannot be eliminated, we have found that several measures are useful in site design and development to reduce this potential risk. These measures include:

- Maintaining positive site drainage to route surface waters well away from structural areas both during construction and for the life of the structure.
- The scarification and re-compaction of the upper 6 to 10 inches of soil in earthwork cut areas.
- Verifying that subsurface piping beneath structures is carefully constructed and pressure tested prior to its placement in service.
- The use of pavement or lined ditches, particularly in cut areas, to collect and transport surface water to areas away from structures.

Considerations when building within a sinkhole prone area are to provide positive surface drainage away from any proposed construction area both during and after construction. Backfill in utility trenches of other excavations should consist of compacted, well-graded material such as dense graded aggregate or compacted on site soils. The use of an open graded stone such as No. 57 stone is not recommended unless the stone backfill is provided an exit path and not allowed to pond. If sinkhole conditions are observed, the type of corrective action is most appropriately determined by GEOServices on a case-by-case basis.

LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only, and no environmental assessment efforts have been performed. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the observations pits will not become

evident until construction. We recommend that GEOServices be retained to observe the project construction in the field. GEOServices cannot accept responsibility for conditions which deviate from those described in this report if not retained to perform construction observation and testing. If variations appear evident, then we will re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and conclusions modified or verified in writing. Also, if the scope of the project should change significantly from that described herein, these recommendations may need to be re-evaluated.

CLOSURE

We appreciate the opportunity to provide these services. If you have any questions please feel free to contact us at your convenience.

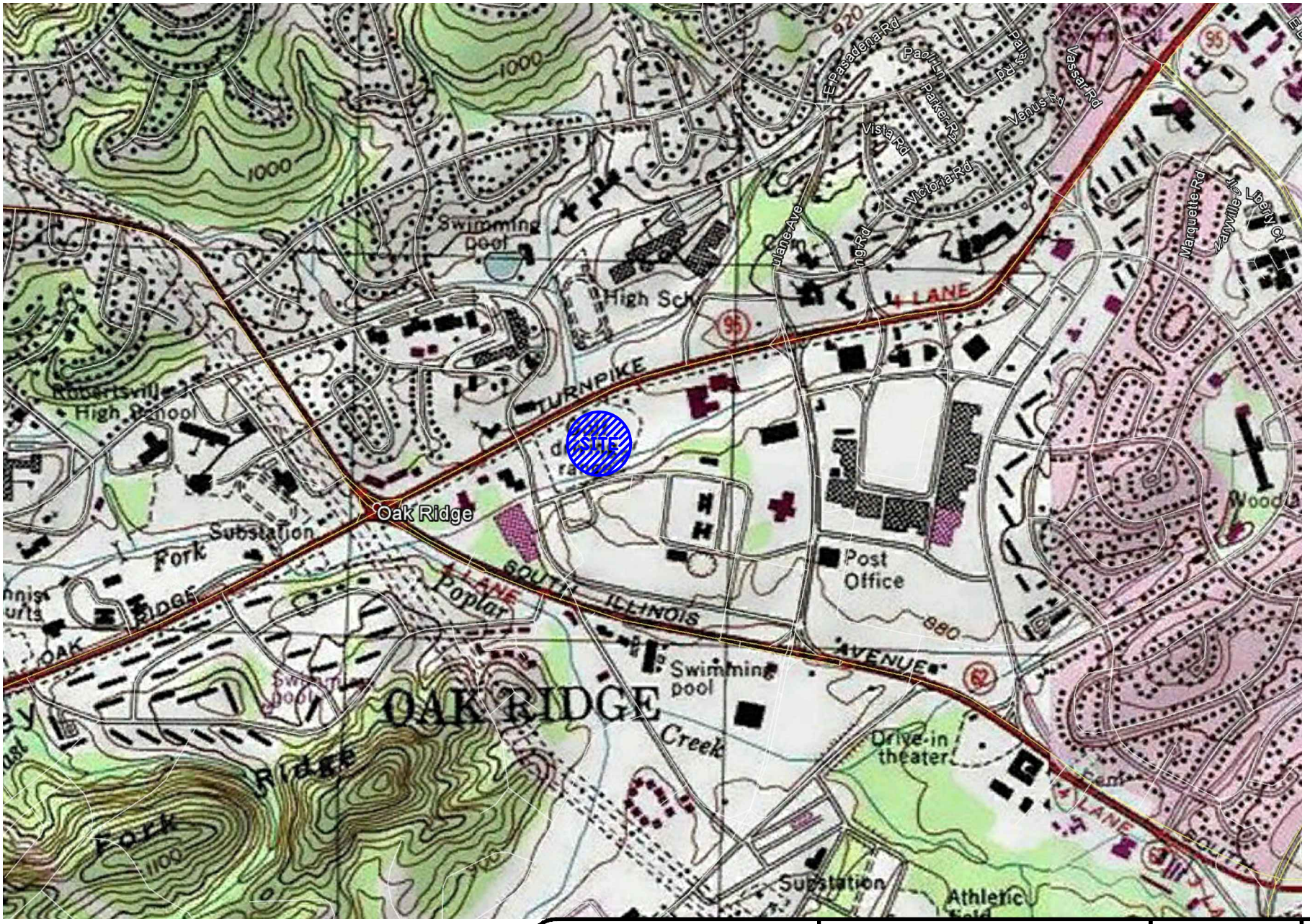
Sincerely,
GEOSERVICES, LLC

Matt T. Bible, E.I.T.
Staff Professional

W. Ros Kingery III, P.E.
Vice President
TN 111,645

Attachments: Figures and Boring Logs

ATTACHMENTS



NOTES:

1.) BASE MAP: USGS QUADRANGLE (WINDROCK, TENNESSEE)

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
2561 Willow Point Way
Knoxville, Tennessee 37931
Office: 865-539-8242
Fax: 865-539-8252

SITE VICINITY MAP

FRIENDSHIP BELL PARK

OAK RIDGE, TENNESSEE

DRAWN BY:	MTB
APPROVED BY:	MTB
SCALE:	N.T.S.
JOB NO.:	21-17271
DATE:	5-3-2017

FIGURE 1

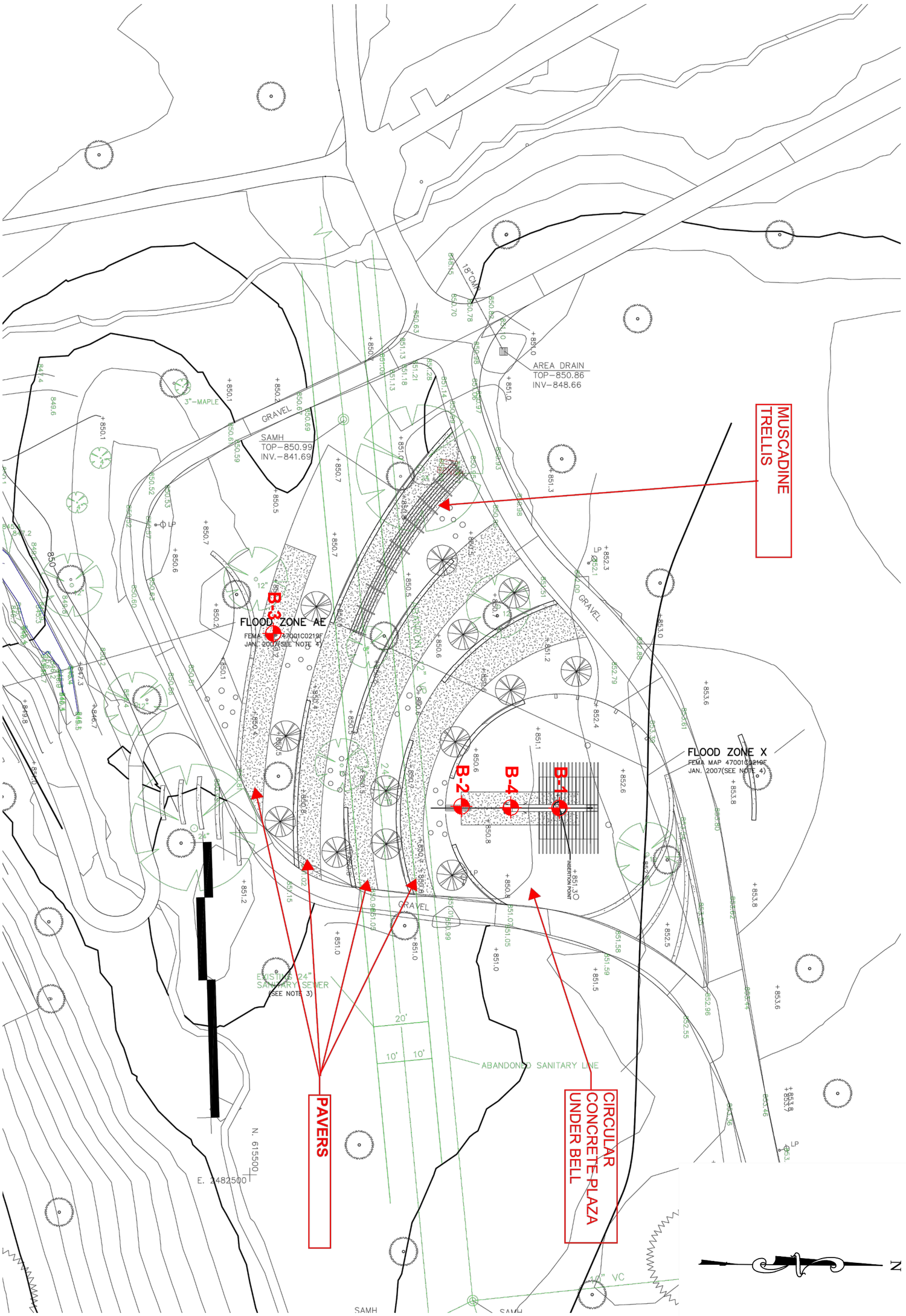


FIGURE 2

GEOS Services, LLC-Geotechnical and Materials Engineers
2561 Willow Point Way
Knoxville, Tennessee 37931
Office: 865-539-8242
Fax: 865-539-8252

DRAWN BY:	MTB
APPROVED BY:	WRK
SCALE:	N.T.S.
JOB NO.:	21-17271
DATE:	5-3-2017

BORING LOCATION PLAN

FRIENDSHIP BELL PARK

OAK RIDGE, TENNESSEE

NOTES:

1.) BORING LOCATIONS ARE SHOWN IN GENERAL ARRANGMENT ONLY.
2.) DO NOT USE BORING LOCATIONS FOR DETERMINATIONS OF DISTANCES OR QUANTITIES.
3.) BASE MAP PROVIDED BY: Barge Waggoner Sumner and Cannon, Inc.
LOCATION OF SOIL TEST BORING

GEOServices, LLC-Geotechnical and Materials Engineers

Friendship Bell Project
Oak Ridge, Tennessee
GEOServices Project # 21-17271

LOG OF BORING B-1
SHEET 1 OF 1

DRILLER Chris Stillwell
ON-SITE REP.

BORING NO. / LOCATION B-1
DRY ON COMPLETION ? Yes

DATE April 25, 2017
REFUSAL: Yes
SAMPLED 3.0 FT. 0.9 M
TOP OF ROCK
BEGAN CORING
FOOTAGE CORED (LF)
BOTTOM OF HOLE DEPTH 3.0 FT.

SURFACE ELEV. FT.
DEPTH 3.0 FT. ELEV. FT.
DEPTH 3.0 FT. ELEV. FT.
DEPTH FT. ELEV. FT.
FT.
ELEV. FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH Dry FT.
ELEV. FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. FT.
AFTER 24 HRS. DEPTH TNP FT.
ELEV. FT.

BORING ADVANCED BY:
POWER AUGERING X
PROPOSED FINISHED FLOOR ELEVATION: FT.

STRATUM DEPTH FT.	STRATUM DEPTH ELEV.	SAMPLE DEPTH FROM FT.	SAMPLE DEPTH TO FT.	SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS N-Value	FIELD RESULTS Qu	LABORATORY RESULTS LL	LABORATORY RESULTS PI	LABORATORY RESULTS %M	STRATUM DESCRIPTION
											Topsoil (7 Inches)
		0.0	2.0	1	SS	10		43	26	28.8	Lean CLAY (CL) - with rock fragment and organic odor - slightly moist - stiff (RESIDUUM)
2.5	-2.5										
		2.0	2.3	2	SS	50/3"					Limestone - some clay - moist
											Auger Refusal at 3.0 Feet
5.0	-5.0										
7.5	-7.5										
10.0	-10.0										
12.5	-12.5										
15.0	-15.0										
17.5	-17.5										
20.0	-20.0										

REMARKS: Organic content testing of SS #1 indicated an organic content of 8.9 percent, by weight

GEOServices, LLC-Geotechnical and Materials Engineers

Friendship Bell Project
Oak Ridge, Tennessee
GEOServices Project # 21-17271

LOG OF BORING B-2
SHEET 1 OF 1

DRILLER Chris Stillwell
ON-SITE REP.

BORING NO. / LOCATION B-2
DRY ON COMPLETION ? Yes

DATE April 25, 2017
SURFACE ELEV. ____ FT.
REFUSAL: Yes DEPTH 2.5 FT. ELEV. ____ FT.
SAMPLED 2.5 FT. 0.8 M
TOP OF ROCK DEPTH 2.5 FT. ELEV. ____ FT.
BEGAN CORING DEPTH ____ FT. ELEV. ____ FT.
FOOTAGE CORED (LF) ____ FT.
BOTTOM OF HOLE DEPTH 2.5 FT. ELEV. ____ FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH Dry FT.
ELEV. ____ FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. ____ FT.
AFTER 24 HRS. DEPTH TNP FT.
ELEV. ____ FT.

BORING ADVANCED BY: . POWER AUGERING X
PROPOSED FINISHED FLOOR ELEVATION: ____ FT.

STRATUM DEPTH FT.	STRATUM DEPTH ELEV.	SAMPLE DEPTH FROM FT.	SAMPLE DEPTH TO FT.	SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS N-Value	FIELD RESULTS Qu	LABORATORY RESULTS LL	LABORATORY RESULTS PI	LABORATORY RESULTS %M	STRATUM DESCRIPTION
											Topsoil (7 Inches)
		0.0	2.0	1	SS	6		52	30	23.8	Fat CLAY (CH) - with rock fragments - tan and dark brown - moist - firm (RESIDUUM)
2.5	-2.5										
		2.0	2.0	2	SS	50/0					
											Auger Refusal at 2.5 Feet
5.0	-5.0										
7.5	-7.5										
10.0	-10.0										
12.5	-12.5										
15.0	-15.0										
17.5	-17.5										
20.0	-20.0										

REMARKS: Organic content testing of SS #1 indicated an organic content of 5.8 percent, by weight

GEOServices, LLC-Geotechnical and Materials Engineers

Friendship Bell Project
Oak Ridge, Tennessee
GEOServices Project # 21-17271

LOG OF BORING B-3
SHEET 1 OF 1

DRILLER Chris Stillwell
ON-SITE REP.

BORING NO. / LOCATION B-3
DRY ON COMPLETION ? No

DATE April 25, 2017
SURFACE ELEV. ____ FT.
REFUSAL: Yes DEPTH 7.0 FT. ELEV. ____ FT.
SAMPLED 7.0 FT. 2.1 M
TOP OF ROCK DEPTH 7.0 FT. ELEV. ____ FT.
BEGAN CORING DEPTH ____ FT. ELEV. ____ FT.
FOOTAGE CORED (LF) ____ FT.
BOTTOM OF HOLE DEPTH 7.0 FT. ELEV. ____ FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH 6.0 FT.
ELEV. ____ FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. ____ FT.
AFTER 24 HRS. DEPTH TNP FT.
ELEV. ____ FT.

BORING ADVANCED BY: . POWER AUGERING X
PROPOSED FINISHED FLOOR ELEVATION: ____ FT.

STRATUM DEPTH FT.	STRATUM DEPTH ELEV.	SAMPLE DEPTH FROM FT.	SAMPLE DEPTH TO FT.	SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS N-Value	FIELD RESULTS Qu	LABORATORY RESULTS LL	LABORATORY RESULTS PI	LABORATORY RESULTS %M	STRATUM DESCRIPTION
											Topsoil (4 Inches)
		0.0	2.0	1	SS	10				25.0	Fat CLAY (CH) - with organic odor - dark brown and gray - moist - stiff (ALLUVIUM)
2.5	-2.5										
		2.0	4.0	2	SS	13				24.1	
5.0	-5.0										Fat CLAY (CH) - gray and reddish brown - moist - stiff (RESIDUUM)
		4.0	6.0	3	SS	12				23.1	
7.5	-7.5										Auger Refusal at 7.0 Feet
		6.0	6.4	4	SS	50/5"				20.2	
10.0	-10.0										
12.5	-12.5										
15.0	-15.0										
17.5	-17.5										
20.0	-20.0										

REMARKS: Organic content testing of SS #1 and 2 indicated organic contents of 6.7 and 5.0 percent, by weight

GEOServices, LLC-Geotechnical and Materials Engineers

Friendship Bell Project
Oak Ridge, Tennessee
GEOServices Project # 21-17271

LOG OF BORING B-4
SHEET 1 OF 1

DRILLER Chris Stillwell
ON-SITE REP.

BORING NO. / LOCATION B-4
DRY ON COMPLETION ? Yes

DATE April 25, 2017
SURFACE ELEV. ____ FT.
REFUSAL: Yes DEPTH 1.0 FT. ELEV. ____ FT.
SAMPLED 1.0 FT. 0.3 M
TOP OF ROCK DEPTH 1.0 FT. ELEV. ____ FT.
BEGAN CORING DEPTH ____ FT. ELEV. ____ FT.
FOOTAGE CORED (LF) ____ FT.
BOTTOM OF HOLE DEPTH 1.0 FT. ELEV. ____ FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH Dry FT.
ELEV. ____ FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. ____ FT.
AFTER 24 HRS. DEPTH TNP FT.
ELEV. ____ FT.

BORING ADVANCED BY: . POWER AUGERING X
PROPOSED FINISHED FLOOR ELEVATION: ____ FT.

STRATUM DEPTH FT.	STRATUM DEPTH ELEV.	SAMPLE DEPTH FROM FT.	SAMPLE DEPTH TO FT.	SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS N-Value	FIELD RESULTS Qu	LABORATORY RESULTS LL	LABORATORY RESULTS PI	LABORATORY RESULTS %M	STRATUM DESCRIPTION
											Topsoil (7 Inches)
											Auger Refusal at 1 Foot
2.5	-2.5										
5.0	-5.0										
7.5	-7.5										
10.0	-10.0										
12.5	-12.5										
15.0	-15.0										
17.5	-17.5										
20.0	-20.0										

REMARKS: ____

GEOServices, LLC-Geotechnical and Materials Engineers

Friendship Bell Project

GEOServices Project No. 21-17271

May 2, 2017

SOIL DATA SUMMARY

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type	Percent Organic Content
				LL	PL	PI		
B-1	1	0.0-2.0'	28.8%	43	17	26	CL	8.9
B-2	1	0.0-2.0'	23.8%	52	22	30	CH	5.8
B-3	1	0.0-2.0'	25.0%					6.7
	2	2.0-4.0'	24.1%					5.0
	3	4.0-6.0'	23.1%					
	4	6.0-8.0	20.2%					

Date: May 25, 2017

Factory Sales Agency
3939B Papermill Drive
Knoxville TN 37909
Phone: (865) 546-1434
Fax: (865) 974-9391

Job Name
International Friendship Bell
FSK17-76085
Oak Ridge TN

Bid Date
May 2, 2017

Submittal Date
May 2, 2017

Transmittal

Factory Sales Agency
3939B Papermill Drive
Knoxville TN 37909
Phone: (865) 546-1434
From: Jon Miller

Project **International Friendship Bell**
Quote# FSK17-76085
Location Oak Ridge TN
Contact:

ATTACHED WE ARE SENDING YOU 1 COPY OF THE FOLLOWING ITEM:

☐ Drawings ☐ Specifications Other:
☐ Prints ☐ Information
☐ Plans ☐ Submittals

THESE ARE TRANSMITTED FOR:

☐ Prior Approval ☐ Resubmittal for Approval ☐ Record
☐ Approval ☐ Corrections Bids due on:
☐ Approval as Submitted ☐ Your Use Other:
☐ Approval as Noted ☐ Review and Comment

Type	MFG	Part
SYM UP-LIGHT	Bega Lighting	77 018
REMOTE DRIVERS	Bega Lighting	19 591
40" BOLLARD	Bega Lighting	88 659
CANTILEVER WALL U	Bega Lighting	33 579
STRUCTURE IN-GRA	Bega Lighting	77 146
CANTILEVER WALL U	Bega Lighting	33 590
WISHBONE ACCENT	Bega Lighting	77 089
PAVER STONE ACCE	Bega Lighting	88 675
REMOTE DRIVERS	Bega Lighting	19 591
OUTDOOR LED STRI	WAC LIGHTING	LED-TO2430-1-WT
LED STRIP DRIVER	WAC LIGHTING	EN-O24100-RB2-T

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 77 018 Notes:	**Type:** **SYM UP-LIGHT** FSK17-76085

Small scale in-grade luminaires
STAINLESS STEEL for LEDs

Housing: Constructed of one-piece cast stainless steel.

Enclosure: Tempered clear safety glass, machined to be flush with the stainless steel faceplate. Faceplate is secured by four (4) captive flat head stainless steel screws and is machined to fit flush to mounting surface. Pure anodized aluminum reflector. One piece molded U-channel, high temperature silicone rubber gasket for weather tight operation.

Electrical: 4.3W LED luminaire on a 24V DC circuit, 5.8 total system watts. Remote 24V DC driver required. Standard LED color temperature is 4000K with an 85 CRI. Available in 3000K (85 CRI); add suffix K3 to order. Pre-wired with ten (10) feet of 12 AWG wire and waterproof cable gland entry into housing.

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: Machined #4 brushed stainless steel. Custom colors are not available.

Note: A foundation must be supplied by the customer. These luminaires are designed to bear pressure loads up to 4400 lbs. from vehicles with pneumatic tires. The luminaires must not be used for traffic lanes where they are subject to horizontal pressure from vehicles braking, accelerating and changing direction.

CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP68 10m

Weight: 3.1 lbs.

Luminaire Lumens: 296
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:

Symmetrical floodlight · **clear** safety glass

round	Lamp	β	A	B	C
77 018*	4.2 W LED	23°	4 5/8	3 1/8	3 7/8

β = Beam angle *Remote driver required

BEGA-US 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 FAX (805) 566-9474 www.bega-us.com

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 77 018 Notes:	**Type:** **SYM UP-LIGHT** FSK17-76085

Submitted On: May 2, 2017

Index Page

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 19 591 Notes:	**Type:** **REMOTE DRIVERS** FSK17-76085

19591 LED Remote Driver 50 Watts, Dimmable

Enclosure: UL rated NEMA “3R” rain tight steel box, finished grey. Enclosure must be mounted per NEC and local requirements. Provided with two knockout conduit entries in the bottom; suitable for ½", ¾", or 1" conduit.

Electrical: LED driver rated for 50 W maximum load, 0.9 PF; suitable for 24 V DC LED luminaires. Universal input voltage 120 V-277 V, 0-10 V DC dimming, 50/60 HZ, -20° C minimum start temperature. UL recognized class 2.

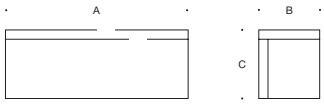
Note: The maximum wire distance before EMI (Electromagnetic Interference) can become a factor is 32 feet for long runs, to minimize EMI effects, the use of twisted shielded pair wires and Ferrite Coils at the beginning and end of the secondary line is suggested.

UL listed, suitable for wet locations.

Maximum Wire Length for Voltage Drop:

#12 AWG: 234 ft.
#14 AWG: 147 ft.

Type:
BEGA Product #:
Project:
Voltage:
Modified:



		A	B	C
19591	50 W Remote driver	12	4	4

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Submitted by Factory Sales Agency			
	**Job Name:** International Friendship Bell	**Catalog Number:** 19 591 Notes:	**Type:** **REMOTE DRIVERS** FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 88 659 Notes:	**Type:** **40" BOLLARD** FSK17-76085

Bollards for light directed downwards

Post construction: One piece extruded aluminum with a one piece die-cast aluminum top housing and a base internally welded into an assembly. Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

Lamp enclosure: One piece die-cast aluminum top housing removable for relamping, secured by two captive stainless steel screws threaded into stainless steel inserts. Clear tempered safety glass. Reflector made from pure anodized aluminum. Fully gasketed using a molded silicone high temperature gasket. Fully shielded to comply with LEED Zones 1 and higher

Electrical: 13W LED luminaire, 15.3 total system watts, -25° C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. The LED and driver are mounted on a removable plate for easy replacement. Standard LED color temperature is 3000K with a >80 CRI. Available in 4000K (>80 CRI); add suffix K4 to order.

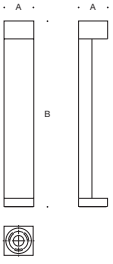
Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

Anchor base: Heavy cast aluminum, slotted for precise alignment. Mounts to BEGA 79817 anchorage kit. Bollards are secured to the post with one (1) stainless steel set screw.

UL listed for US and Canadian Standards, suitable for wet locations. Protection class: IP65.

Luminaire Lumens: 729
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:



	Lamp	A	B	C	Anchorage
88659	13W LED	6⅜	39⅜	6⅜	**79817**

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Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 88 659 Notes:	**Type:** **40" BOLLARD** FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 33 579 Notes:	**Type:** CANTILEVER WALL UPLIGHT FSK17-76085

Wall luminaires with directed light in one direction

Housing: One Piece, die cast aluminum housing with a one piece, die cast aluminum mounting plate. The mounting plate is supplied with a flat plate that mounts directly to a recessed single gang wiring box. Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

Enclosure: Clear tempered glass diffuser. Provided reflector made of pure anodized aluminum. Housing is secured to the mounting plate with two (2) mechanically captive, stainless steel set screws.

Electrical: 3.2W LED luminaire, 4.6 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.

Note: Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

CSA certified to U.S. and Canadian standards, suitable for wet locations. Protection class IP64

Weight: 1.5 lbs.

Luminaire Lumens: 115
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:

	Lamp	β	A	B	C
33 579	ADA 3.2 W LED	20°	3	5 ⅛	3¾

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Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 33 579 Notes:	**Type:** **CANTILEVER WALL UPLIGHT** FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 77 146 Notes:	**Type:** STRUCTURE IN-GRADE UPLIGH FSK17-76085

Drive-over in-grade floodlights for high pressure loads - adjustable

Outer housing: Constructed of high gauge, high tensile strength stainless steel.

Enclosure: Housing constructed of heavy gauge, high tensile strength stainless steel. Trim ring is heave gauge, machined stainless steel secured to housing with captive, stainless steel fasteners threaded into stainless steel inserts. Tempered clear safety glass is 1/2" thick and machined flush to trim ring. Reflector is pure anodized aluminum with integrated ring louver. Weather tight operation achieved through the use of a molded, high temperature silicone gasket.

Electrical: 9.7W LED luminaire, 11.5 total system watts, -30°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimmng. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 4000K with a >80 CRI. Available in 3000K (>80 CRI); add suffix K3 to order. Pre-wired with nine (9) feet of waterproof cable, cable clamp, and waterproof cable gland entry into housing. A separate waterproof wiring box for supply power must be provided (by others).
Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: Machined #4 stainless steel. Custom colors are not available.

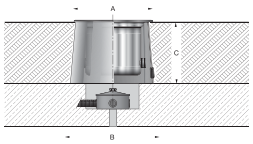
Temperature caution: The column 'T' in this chart indicates the temperature in degrees Celcius which is reached on the center of the glass surface during operation. Surface temperatures are for exterior applications, for interior applications add 10° C to the temperatures shown.
Note: These luminaires are designed to bear pressure loads up to 4400 lbs. from vehicles with pneumatic tires. The luminaires must not be used for traffic lanes where they are subject to horizontal pressure from vehicles braking, accelerating and changing direction.

CSA certified to U.S. and Canadian standards for wet locations. Protection class IP68.

Weight: 6.8 lbs.

Luminaire Lumens: 456

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:



Adjustable floodlights · **clear** safety glass

	Lamp	β	T	A	B	C
77 146	9.7 W LED	19°	30°	8	10⅝	7½

Accessories: **10 043** **10 014**

Diffuser lenses: wide beam, flat beam — β=Beam angle

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Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 77 146 Notes:	**Type:** STRUCTURE IN-GRADE UPLIGH FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 33 590 Notes:	**Type:** CANTILEVER WALL UP/DN LIGH FSK17-76085

Wall luminaires for light in two directions

Housing: One Piece, die cast aluminum housing with a one piece, die cast aluminum mounting plate. The mounting plate is supplied with a flat plate that mounts directly to a recessed single gang wiring box. Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

Enclosure: Clear tempered glass diffusers, the top diffuser with a machined step to provide a flush finish with the cast housing. Two reflectors provided are anodized aluminum. Housing is secured to the mounting plate with a single, mechanically captive, stainless steel set screw.

Electrical: 6.4 W LED luminaire, 8.3 total system watts, -25°C start temperature. Integral 120 V through 277 V electronic LED driver, 0-10 V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with a > 80 CRI. Available in 4000K (> 80 CRI); add suffix K4 to order.
Note: Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

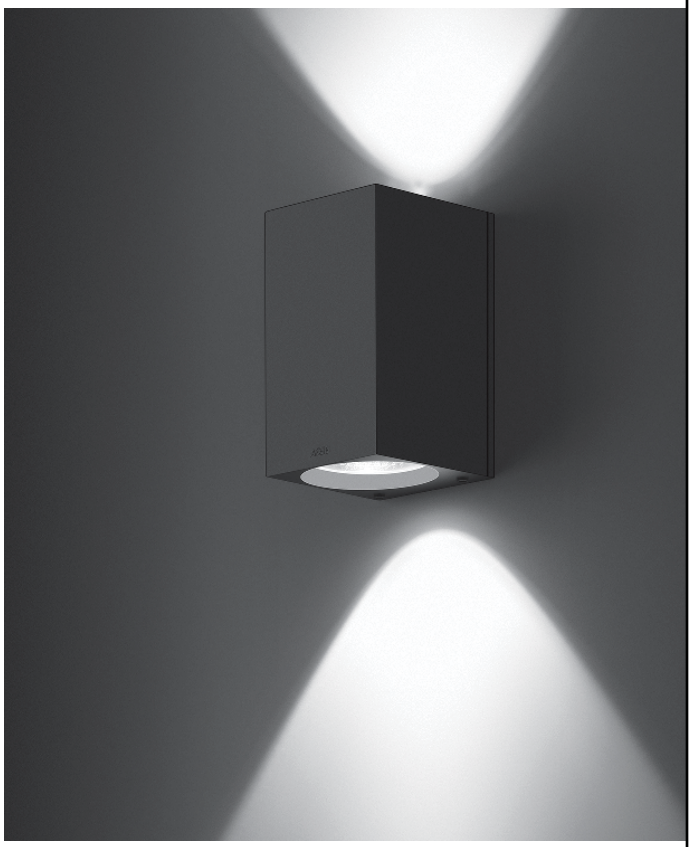
Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in four standard BEGA colors: Black (BLK); White (WHT); Bronze (BRZ); Silver (SLV). To specify, add appropriate suffix to catalog number. Custom colors supplied on special order.

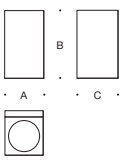
CSA certified to U.S. and Canadian standards for wet locations. Protection class IP64

Weight: 1.5 lbs.

Luminaire Lumens: 229
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:





		Lamp	A	B	C
33590	ADA	6.4 W LED	3	5⅛	3¾

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Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 33 590 Notes:	**Type:** CANTILEVER WALL UP/DN LIGH FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 77 089 Notes:	**Type:** **WISHBONE ACCENT** FSK17-76085

Drive-over surface-mounted luminaires to illuminate ground surfaces

Outer Housing: Constructed of high tensile strength, copper free die-cast aluminum alloy with two (2) light openings. Slotted, stainless steel base plate allows top casting to rotate to any orientation. Die castings are marine grade, copper free (≤ 0.3% copper content) A360.0 aluminum alloy.

Enclosure: One piece heavy duty die cast aluminum body with clear borosilicate lens. Reflector of pure anodized aluminum. All aluminum used in the construction is marine grade and copper free. All fasteners are stainless steel. Two (2) molded, one piece, high temperature silicone gaskets on top and bottom of the lens.

Electrical: 6.7W LED luminaire, 9.3 total system watts, -40°C start temperature. Integral 120V through 277V electronic LED driver, 0-10V dimming. LED module(s) are available from factory for easy replacement. Standard LED color temperature is 3000K with an 85 CRI. Available in 4000K (85 CRI); add suffix K4 to order.

Note: LEDs supplied with luminaire. Due to the dynamic nature of LED technology, LED luminaire data on this sheet is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Mounting: Luminaire mounts directly to ground-mounted weathertight wiring box, by BEGA. Slotted holes in stainless steel luminaire base plate allow for up to 50° of base plate rotation. BEGA wiring box suitable for 1/2“ side or bottom conduit entry.

Note: The luminaires must not be installed in traffic lanes where they are subject to horizontal pressure from vehicles braking, accelerating and changing direction. A foundation must be supplied by the contractor designed to bear the static pressure loads from vehicles with pneumatic tires. The luminaires are designed to withstand a static load of 2,200 lbs.

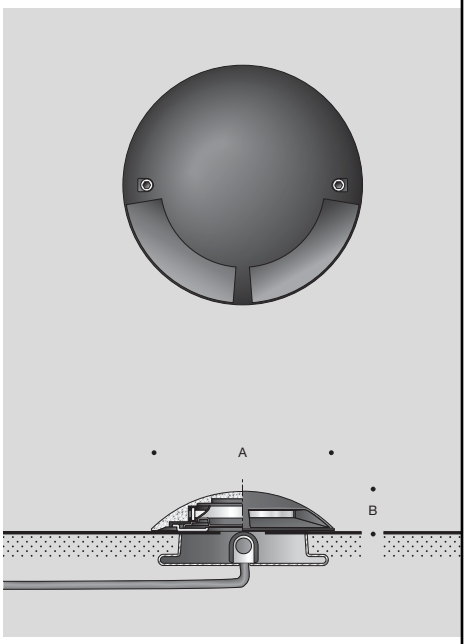
Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in standard BEGA Black (BLK). Custom colors not available.

CSA certified to U.S. and Canadian standards for wet locations. Protection class IP67

Weight: 6.4 lbs.

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:

The ground-mounted luminaires mount directly to BEGA in-ground wiring box.



180° port

	Lamps	A	B
77 089	6.7W LED	10½	2¼

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Submitted by Factory Sales Agency			
	Job Name: International Friendship Bell	**Catalog Number:** 77 089 Notes:	**Type:** **WISHBONE ACCENT** FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 88 675 Notes:	**Type:** PAVER STONE ACCENT FSK17-76085

Drive-over in-grade luminaires to illuminate ground surfaces

Housing: Constructed of .125" thick machined stainless steel welded to a stainless steel bottom mounting plate. Trim/Clamping ring is heavy, machined bronze.

Enclosure: Top enclosure is constructed of copper free die-cast aluminum alloy secured by two (2) captive socket head stainless steel screws. Clear, borosilicate focusing lens with molded one piece, high temperature silicone rubber gasket. Symmetrical reflector and internal lamp shield are included.

Electrical: 4.5 W LED luminaire on a 24 V DC circuit, 6 total system watts. Remote 24 V DC driver required. Standard LED color temperature is 3000K with a >80 CRI. Available in 4000K (>80 CRI); add suffix K4 to order. Inner housing pre-wired with ten (10) feet of 12 AWG wire and waterproof cable gland entry into housing. A separate weatherproof single gang wiring box for power supply must be proved (by contractor).

Note: Due to the dynamic nature of LED technology, LED luminaire data in this catalog is subject to change at the discretion of BEGA-US. For the most current technical data, please refer to www.bega-us.com.

Finish: All BEGA standard finishes are polyester powder coat with minimum 3 mil thickness. Available in standard BEGA Black (BLK). Custom colors not available.

UL listed for US and Canadian Standards, suitable for wet locations and vehicle drive over. Protection class: IP67.

Note: A foundation and proper drainage must be supplied by the contractor. These luminaires are designed to bear pressure loads up to 2,200 lbs. from vehicles with pneumatic tires. The luminaires must not be used for traffic lanes where they are subject to horizontal pressure from vehicles braking, accelerating and changing direction.

Weight: 3.0 lbs.

Luminaire Lumens: 19
Tested in accordance with LM-79-08

Type:
BEGA Product:
Project:
Voltage:
Color:
Options:
Modified:

Four 60° light sectors

	Lamp	T	A	B	C	D
88 675*	4.5 W LED	30°	4 3/4	3 1/2	3 3/4	1 1/8

*Remote driver required

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Submitted by Factory Sales Agency			
	**Job Name:** International Friendship Bell	**Catalog Number:** 88 675 Notes:	**Type:** **PAVER STONE ACCENT** FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** 19 591 Notes:	**Type:** **REMOTE DRIVERS** FSK17-76085

19591 LED Remote Driver 50 Watts, Dimmable

Enclosure: UL rated NEMA “3R” rain tight steel box, finished grey. Enclosure must be mounted per NEC and local requirements. Provided with two knockout conduit entries in the bottom; suitable for ½", ¾", or 1" conduit.

Electrical: LED driver rated for 50 W maximum load, 0.9 PF; suitable for 24 V DC LED luminaires. Universal input voltage 120 V-277 V, 0-10 V DC dimming, 50/60 HZ, -20° C minimum start temperature. UL recognized class 2.

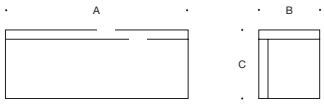
Note: The maximum wire distance before EMI (Electromagnetic Interference) can become a factor is 32 feet for long runs, to minimize EMI effects, the use of twisted shielded pair wires and Ferrite Coils at the beginning and end of the secondary line is suggested.

UL listed, suitable for wet locations.

Maximum Wire Length for Voltage Drop:

#12 AWG: 234 ft.
#14 AWG: 147 ft.

Type:
BEGA Product #:
Project:
Voltage:
Modified:



		A	B	C
19591	50 W Remote driver	12	4	4

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Submitted by Factory Sales Agency			
	**Job Name:** International Friendship Bell	**Catalog Number:** 19 591 Notes:	**Type:** **REMOTE DRIVERS** FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** LED-TO2430-1-WT Notes:	**Type:** OUTDOOR LED STRIP (BENCHE FSK17-76085

InvisiLED® Pro Outdoor

24V Outdoor LED Tape Light

WAC LIGHTING
Responsible Lighting®

Fixture Type:

Catalog Number:

Project:

Location:

PRODUCT DESCRIPTION

Pro Outdoor is great for any and all outdoor accent lighting applications. Double insulated silicon encasement and distinct electrical and mechanical junctions make for a superior watertight custom system.

FEATURES

- IP-68 rated, allows for submersion up to five feet
- Power supply is UL and CUL listed
- Wet location listed
- Ultra thin profile at ⅛"
- Diodes spaced evenly at 1" on center
- Minimum run length of 1'
- May be field cut every 6" and at the end of a run
- Unique tape section connections ensure even LED spacing and no dark spots
- Four mounting options provided for different surfaces
- 80,000 hour rated life
- 5 year WAC Lighting product warranty

SPECIFICATIONS

Construction: Flexible, silicone cased tape light. Indicating marks on back for field cutting.

Power Supply: Remote electronic Class 2 transformers with 24V AC/DC 96W output.

Light Source: 12 LEDs per foot

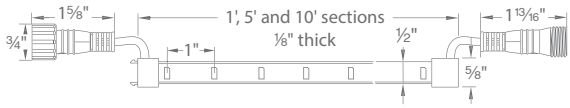
Dimming: May be dimmed with electronic low voltage (ELV) dimmer.

Operating Temp: -40°F to 122°F (-40°C to 50°C), relative humidity 95%.

Standards: UL & CUL listed for wet locations.

ORDER NUMBER – TAPE SECTION

Model	Color Temp	CRI	Watts/ft	Lumens/ft	Length	Color
LED-TO2427 **LED-TO2430** **LED-TO2435**	*2700K* *3000K* *3500K*	*90*	*3.5*	*220*	**1** *1 foot* **5** *5 feet* **10** *10 feet*	**WT**



LED-TO24___-___-WT

Example: **LED-TO2435-10-WT**

waclighting.com
Phone (800) 526.2588
Fax (800) 526.2585

Headquarters/Eastern Distribution Center
44 Harbor Park Drive
Port Washington, NY 11050

Central Distribution Center
1600 Distribution Ct
Lithia Springs, GA 30122

Western Distribution Center
1750 Archibald Avenue
Ontario, CA 91760

Submitted by Factory Sales Agency			
	Job Name: International Friendship Bell	**Catalog Number:** LED-TO2430-1-WT Notes:	**Type:** OUTDOOR LED STRIP (BENCHE FSK17-76085

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** EN-O24100-RB2-T Notes:	**Type:** **LED STRIP DRIVER** FSK17-76085

InvisiLED® Pro Outdoor

Power Supplies and Accessories

WAC LIGHTING
Responsible Lighting®

Class 2 Power Supply (Required)

Type		Model	Input	Output	Max Run	Dim	
Remote Damp Location		**EN-OD24100-RB2-T**	*120VAC*	*24VAC / 96W*	*30 feet*	*ELV*	*Includes a 6 foot lead wire* *Minimum load of 1W*
Remote Wet Location		**EN-O24100-RB2-T**	*120 - 277VAC*	*24VDC / 96W*	*30 feet*	*No*	*Class 2 rated* *Includes a 6 foot lead wire* *Minimum load of 1W*

Accessories

Clear Channel		**LED-TO24-CH5**	*5 feet*	*Rigid, non-flexible channel for mounting to a straight, solid surface.*
Mounting Clip 1		**LED-TO24-C1**	*10 pcs*	*For installation on non-flat surfaces where there is no edge contact. 2 clips per ft are recommended for straight runs.*
Mounting Clip 2		**LED-TO24-C2**	*10 pcs*	*For installation on non-flat surfaces, allows for contact on one edge. 2 clips per ft are recommended for straight runs.*
Mounting Clip 3		**LED-TO24-C3**	*10 pcs*	*For installation on non-flat surfaces, allows for contact on both edges. 2 clips per ft are recommended for straight runs.*
Joiner Cable		**LED-TO24-IC6** **LED-TO24-IC12** **LED-TO24-IC72** **LED-TO24-IC120**	*6 in* *12 in* *72 in* *120 in*	*Extends distance between Power Supply and Master Controller.*
3-Way "Y" Connector		**LED-TO24-Y**		*Connects tape sections*
4-Way "X" Connector		**LED-TO24-X**		*Connects tape sections*
End cap		**LED-TO24-EC**		*Use to terminate every run to protect against contaminants. Seal cut end with silicone after adding end cap.*

Submitted by Factory Sales Agency			
fsa LIGHTING	**Job Name:** International Friendship Bell	**Catalog Number:** EN-O24100-RB2-T Notes:	**Type:** **LED STRIP DRIVER** FSK17-76085