



**PROJECT MANUAL**

Bidding Requirements, Contract Conditions  
of the Contract and Specifications

**LAYTON CITY PROJECT 22-04:**

**ANDY ADAMS PARK IMPROVEMENTS**

1713 E. 1000 N. Layton, Utah

Owner:

**Layton City Corporation**

465 North Wasatch Drive

Layton, Utah 84041

**Blu Line Designs**

Rob Donigan, PLA, ASLA

801-703-6383

May 11, 2023

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**SECTION 00 010  
INVITATION TO BIDDERS**

Sealed bids will be accepted until 1:30 p.m. May 31, 2023, in the office of Layton City Parks and Recreation, 465 N Wasatch Drive, Layton, UT 84041 at which time they will be opened for the following project:

**LAYTON CITY:**

**ANDY ADAMS PARK IMPROVEMENTS, Project 22-04**

1713 E. 1000 N. Layton, Utah

Bids will be received for site improvements of Andy Adams Park as delineated in the drawings. Major work items will include the following work: Demolition of an existing pavilion in preparation for the installation of a new large pre-fabricated pavilion including electrical; installation of Musco Lighting at the existing tennis/pickleball courts; install concrete pathways and staircase; relocate existing drinking fountain; and the installation of irrigation and landscaping improvements. Limit site work as shown in the drawings.

Project bidding documents are available at [www.questcdn.com](http://www.questcdn.com) (Quest project #8522535) or <https://qcpi.questcdn.com/cdn/posting/?group=3971843&provider=3971843>. Documents may be viewed online until prequalification requirements are met after which the documents may be downloaded for \$30.00. Please contact the Project Manager at 801-336-3926 if you have any questions.

Contractors shall submit the Contractor's Qualification Statement available at the questcdn.com website, under the Q & A section, to be reviewed by the OWNER prior to 12:00 p.m. May 24, 2023. Upon Layton City approval, contractors will be given a password to purchase and download the bid documents. Layton City reserves the right to approve or deny bidders based upon similar project experience. Contractor's Qualification Statements shall be emailed to [jgrandy@laytoncity.org](mailto:jgrandy@laytoncity.org) or received in writing by 12:00 p.m. on May 24, 2023 in the Layton City Parks and Recreation Department located at 465 North Wasatch Drive, Layton UT 84041.

Bidders will be required to furnish a 5% bid bond. Bids will be accepted until 1:30 p.m. May 31, 2023. At which time they will be opened and read aloud.

The documents required at bid opening are as follows:

- 1) Bid forms provided.
- 2) Cashier or certified check or bid bond made payable to Layton City in an amount equal to at least five percent (5%) of the total bid.
- 3) Copy of state license.
- 4) Anticipated schedule (include start and finish dates)

The successful bidder will be required to submit to Layton City a Labor and Materials Payment Bond and a Performance Bond both in the amount of 100% of the total amount of the bid prior to the execution of any contract documents.

Layton City reserves the right to accept or reject any or all bids or any part of any bid and to waive any informalities in any bid as its best interest appear. A decision on the rejection of any or all bids, or Notice of Award will be made within (45) calendar days after the bid opening.

Layton City Corporation

END OF SECTION 00 010

**SECTION 00 020  
INSTRUCTIONS TO BIDDERS**

**DEFINITIONS**

Addenda are written or graphic instructions issued by the Project Manager prior to the execution of the bid contracts, which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections. Addenda shall become part of the Contract Documents and shall be included in any bid proposal.

Bid is a complete and properly signed proposal to do the work, or designated portion thereof, for the sums stipulated therein, supported by data called for by the Bidding Documents, including the Addenda.

Unit Price, if required, is an amount stated in the bid (or Change Order) as a price per unit of measurement for materials and services.

Contractor is the bidder who enters into a prime contract with the City of Layton for the work described in the Contract Documents.

City, Owner, or Project Manager are terms synonymous with the City of Layton, Utah.

**BIDDING DOCUMENTS**

Complete sets of Bidding Documents shall be used in preparing bids; the Project Manager and the City of Layton assume no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, or omissions resulting from bids prepared from partial sets based upon assumed trade jurisdiction. The Project Manager will not issue partial sets of Drawings and Specifications. Bidding Documents will be issued to each bidder at [www.questcdn.com](http://www.questcdn.com) (Quest project #8522535) or <https://qcpi.questcdn.com/cdn/posting/?group=3971843&provider=3971843>.

**EXAMINATION OF DOCUMENTS AND SITE**

Each bidder, by making a bid, represents that s/he has read and understands the Bidding Documents and that s/he has visited the site to obtain first hand knowledge of existing local conditions under which the work is to be performed. Bidders will not be given extra payments for conditions which can be determined by examination of the Documents and the site. The submission of a bid shall be construed evidence that the bidder has made such examinations.

**WITHDRAWAL OF BIDS**

Any bidder may withdraw his/her bid, either personally or by written request, at any time prior to the scheduled time for opening of bids.

No bidder may withdraw his/her bid for a period of 45 days after the date set for the opening thereof, and all bids shall be subject to acceptance by Layton City during this period.

END OF SECTION 00 020

**SECTION 00 030**  
**ADDENDA AND MODIFICATIONS**

**Substitution of Products for Consideration During Bidding**

Reference in the Specifications or on the Drawings to any material, product, article, or piece of equipment by manufacturer's name, model, catalog number, or the like, shall not be construed as limiting competition unless otherwise noted.

Bidders shall base their bids upon the use of the products, manufacturers, or methods specifically specified herein. Any requests for changes or substitutions will be considered no later than seven (7) days prior to bid date, and only written approvals received prior to bid date are acceptable. Any other changes or substitutions without prior written review shall be subject to rejection and no Contract Amount adjustments shall be warranted.

If a bid is based upon the use of substituted items other than those specifically named in the Bid Documents, it shall be the responsibility of the Bidder submitting the proposal to fully satisfy the Project Manager and the Owner that the items meet the requirements of the Contract Documents. Substituted items (not receiving prior favorable review) incorporated into the work shall be removed as directed by the owner and/or the Project Manager and the new work shall be installed using specified items.

Requests for substitutions shall be directed, in writing, to:

Layton City Parks and Recreation  
JoEllen Grandy  
465 N Wasatch Drive  
Layton, UT 84041  
[jgrandy@laytoncity.org](mailto:jgrandy@laytoncity.org)

Accompany requests for substitutions with complete data substantiating compliance of proposed substitution with contract Documents, including product identification and description, reference standards, performance and test data, and samples, where applicable and an itemized comparison on the proposed substitution with products and methods specified with data relation to changes in construction contracts. Include accurate cost data on proposed substitution designation of any known detrimental aspects of substitution such as danger to installer or user, if applicable.

All requests for substitutions shall be made through the Project Manager. Contractor shall stamp and sign request certifying substituted item is equal to specified item. Any request for a substitution must include all costs associated with related work (i.e. Structural, Architectural, Mechanical, and Electrical). This would include any design fees and all costs associated with work required by others to complete the substitution.

By making request for substitution, the Contractor represents that:

1. The Contractor has personally investigated proposed product or method and determined that it is equal or superior in all respects to that specified.
2. The Contractor will provide the same guarantee for the substitution as for the product or method specified.

3. The Contractor will coordinate installation of accepted substitution into the work, making such changes as required for work to be completed in all respects.

**Interpretation or correction of Bidding Documents**

Bidders shall promptly notify the Project Manager of any ambiguity, inconsistency, or error which they may discover upon examination of the Bidding Documents or of the site and local conditions. Bidders requiring a clarification or interpretation of the Bidding Documents shall make a written request to reach the Project Manager no Later than seven (7) days prior to the bid date.

Any interpretation, correction, or change to the Bidding Documents will be made by Addendum. Interpretations, corrections, substitutions or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, and changes, especially any verbal directives given by the City Engineer office personnel, or the Owner's personnel.

**Addenda**

If any Bidder is in doubt as to the true meaning of any part of the Drawings and Specifications, the Bidder shall submit to the Project Manager a written request for interpretation or correction of the Contract Documents. Such request shall be made no later than seven (7) days prior to bid. Any written interpretation or correction will be made by written addendum. All oral communication with the Project Manager, staff and consultants, and the Owner shall have no force to alter the Contract Documents.

Each Bidder shall look for Addenda prior to submitting a bid. The bid shall acknowledge the receipt of any Addenda.

**Modifications**

After execution of the Agreement Between Construction Manager and Contractor, no modification may be made to the Contract except in writing by Supplemental Instruction of Change Order. Verbal directive shall have no force except it they are followed up in writing.

END OF SECTION 00 030





**SECTION 00 040  
BID FORM**

Project: Layton City Andy Adams Park Improvements, Project 22-04  
▪ Andy Adams Park Improvements – 1713 E. 1000 N. Layton, UT – Improvements

Submitted to: Layton City Corporation  
Parks and Recreation Department  
465 N Wasatch Drive  
Layton, UT 84041

PROPOSAL OF \_\_\_\_\_ (hereinafter called "BIDDER"), organized and existing under the laws of the STATE OF UTAH, doing business as \_\_\_\_\_,\*\*(Insert "a corporation", "a partnership", "an individual") To the city of Layton (hereinafter called "OWNER").

In compliance with your advertisement for bids, the undersigned Bidder proposes and agrees to enter into an agreement with the City to perform and furnish all work as specified or indicated for the construction of the LAYTON CITY ANDY ADAMS PARK IMPROVEMENTS, Project 22-04 – 1713 East 1000 North in strict accordance with the contract documents, within time set forth therein, and at the prices stated below.

By submission of this bid, the bidder, including all bidders in a joint bid, certifies that this bid has been arrived at independently, without consultation, communication or agreement as to any matter relating to this bid with any other bidder or competitor.

Bidder accepts all of the terms and conditions of Invitation to Bid and Instructions to Bidder, including without limitation those dealing with the disposition of Bid Security. This bid will remain subject to acceptance for forty-five (45) consecutive calendar days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements, within ten (10) days after the date of Owner's Notice of Award.

In submitting this Bid, Bidder represents that:

Bidder has examined and carefully studied the Bidding Documents and the following Addenda receipt of which is hereby acknowledged:

<u>Addenda Number</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____

Bidder has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance and furnishing of the Work.

Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.

Bidder acknowledges Layton City reserves the right to accept or reject any or all bids or any part of any bid and to waive any informalities in any bid as its best interest appear. A decision on the rejection of any or all bids or Notice of Award will be made within (45) calendar days after the bid opening.

Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

Bidder has given Project Manager written notice of all conflicts, errors, ambiguities or discrepancies that the Bidder has discovered in the Contract Documents and the written resolution thereof by Project Manager is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

This bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid. Bidder has not solicited or induced any person, firm or corporation to refrain from bidding. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

**BASE BID**

For all work shown on the Drawings and described in the Specifications. I/We agree to perform the work for the sum of:

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)  
(In case of discrepancy, written amount shall govern)

**ADDITIVE ALTERNATES:**

For your consideration, we further propose the following ALTERNATES as listed in the drawings.

**BID ALTERNATE #1:** None.

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)  
(In case of discrepancy, written amount shall govern)

**BASE BID: Unit Price Breakdown**

**PROJECT 22-04**

**Layton City Andy Adams Park Improvements, Project 22-04:**

Andy Adams Park Improvements – 1713 E. 1000 N.

<b>BASE BID</b>					
Item No.	Items Written in Words	Qty	Unit	Amount	
				Dollars	Cents
1	Mobilization / General Conditions	1	LS		
2	Construction Surveying and Staking	1	LS		
3	Traffic Control / Construction Fencing	1	LS		
4	Testing (Concrete / Compaction)	1	LS		
5	Erosion Control Elements and Protection	1	LS		
6	Clear and Grub Remaining Areas of Site	1	LS		
7	Earthwork and Grading	1	LS		
8	Roadbase	1	LS		
9	Concrete Paving	1	LS		
10	Concrete Staircase	1	LS		
11	Large Pavilion (See Note #1 Below)	1	LS		
12	Pavilion Electrical and Related Appurtenances	1	LS		
13	Musco Lighting and Related Appurtenances (See Note #2 Below)	1	LS		
14	Relocated Drinking Fountain	1	LS		
15	Landscape Irrigation System & Related Appurtenances	1	LS		
16	Fine Grading	1	LS		
17	Landscaping	1	LS		
<b>Andy Adams Park Improvements Total Base Bid:</b>					

\* **NOTE #1:** Pavilion as noted in plans is to be purchased by the City and installed by Contractor as noted in the plans.

\* **NOTE #2:** Musco Lighting as noted in plans is to be purchased by the City and installed by Contractor as noted in the plans.

Bidder guarantees to complete all other work within 120 calendar days after receipt of Notice to Proceed. Bidder accepts the provisions of the Agreement as to liquidated damages in the amount of \$250 per calendar day.

Bidder further proposes to (1) execute a contract with Layton City Corporation promptly after request from the Project Manager, (2) begin the work within seventy-two hours after notified to do so by the Project Manager, and (3) complete the work in accordance with the provisions of said contract.

The undersigned also propose to furnish Performance and Labor and Material Payment Bonds with the contract, signed by a surety company, in amounts equal to the amount of the contract conditioned to insure that the terms of the contract and the requirements of the specifications will be fully complied with.

The following is the name and place of business of the surety company which the bidder proposes will sign the attached bonds as surety if said surety is acceptable to the Project Manager.

If the bidder is a corporation, the following information must be given:

State Chartered under \_\_\_\_\_ Name \_\_\_\_\_

\_\_\_\_\_  
Name of President

\_\_\_\_\_  
Name of Secretary

\_\_\_\_\_  
Name of Treasurer

If the bidder is a partnership, the name of each partner must be listed below:

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

END OF SECTION 00 040

**SECTION 00 050  
BID BOND**

Know All Men by These Presents,

That \_\_\_\_\_ as Principal, and \_\_\_\_\_  
as \_\_\_\_\_, a corporation duly organized under the laws of the state of \_\_\_\_\_ and  
licensed to transact business in the State of Utah, as Surety, (hereinafter called the "surety") are held and  
firmly bound unto Layton City Corporation (hereinafter called "Project Manager") in the sum of:

\_\_\_\_\_ Dollars,  
(5% of the total amount of the bid)

for the payment sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators,  
successors, and assigns, jointly, and severally, firmly by these presents.

WHEREAS said Principal has submitted a bid to said Project Manager to perform all work required under  
the bidding schedule(s) of the Contract Documents entitled **Layton City Andy Adams Park  
Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah.**

NOW THEREFORE, if said Principal is awarded a contract by said Project Manager and, within the time  
and in a manner required in the Proposal enters into a written contract form attached to said Construction  
Documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond  
and Payment Bond with good and sufficient surety for the faithful performance of such contract and for  
the prompt payment of labor and materials furnished in the prosecution thereof, all within ten (10)  
calendar days after receipt of contract from said Project Manager, then this obligation shall be null and  
void, otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by said  
Project Manager and judgment is recovered, said Surety shall pay, in addition to the amount of this bond,  
all costs incurred by Said Project Manager in such suit, including a reasonable attorney's fee to be fixed  
by the Court.

SIGNED AND SEALED, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
(Principal) (Seal) (Surety)

By: \_\_\_\_\_ By: \_\_\_\_\_  
(Signature) (Signature)

(Seal and Notarial Acknowledgement of Surety)

**SECTION 00 060  
NOTICE OF AWARD**

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PROJECT Description: Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah.

You are hereby notified that your bid has been reviewed by City Council and has been accepted for items in the amount of \$\_\_\_\_\_.

You are required by the invitation for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Labor and Material Payment BOND and certificates of insurance within ten (10) calendar days from the date of this notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice said OWNER will be entitled to consider all your rights arising out of the OWNER'S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_  
Title: David R. Price, Parks & Recreation Director

**ACCEPTANCE OF NOTICE**

Receipt of the above NOTICE OF AWARD is hereby acknowledged

by: \_\_\_\_\_

this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

END OF SECTION 00 060

**SECTION 00 070**  
**AGREEMENT**

This AGREEMENT, made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between LAYTON CITY CORPORATION, hereinafter called "OWNER" and \_\_\_\_\_, doing business as a CORPORATION hereinafter called "CONTRACTOR".

"WITNESSETH" That for and in consideration of the payments and agreements hereinafter mentioned.

1. The CONTRACTOR will commence and complete the CONSTRUCTION OF: **Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah.**
2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.
3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within 10 calendar days after the date of the NOTICE TO PROCEED and will complete the work within 120 calendar days, unless the period for beginning or completion is extended otherwise by the CONTRACT DOCUMENTS. Bidder further agrees to pay as liquidated damages, the sum of two hundred fifty dollars (\$250) for each consecutive calendar day after the completion date unless the period for beginning or completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum shown in the bid schedule.
5. The term "CONTRACT DOCUMENTS" means and includes the following:
  - (A) INVITATION TO BIDDERS
  - (B) INSTRUCTIONS TO BIDDERS
  - (C) ADDENDA AND MODIFICATIONS
  - (D) BID FORM
  - (E) BID BOND
  - (F) NOTICE OF AWARD
  - (G) AGREEMENT
  - (H) LABOR AND MATERIAL PAYMENT BOND
  - (I) PERFORMANCE BOND
  - (J) NOTICE TO PROCEED
  - (K) CHANGE ORDER(S)
  - (L) GENERAL CONDITIONS AND SUPPLEMENTAL GENERAL CONDITIONS
  - (M) DRAWINGS
  - (N) SPECIFICATIONS
  - (O) ADDENDA

No. \_\_\_\_\_, dated \_\_\_\_\_, 20\_\_\_\_

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions and Contract Documents, such amounts as required by the CONTRACT DOCUMENTS.
7. These Agreements shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns. IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized official, this Agreement in four copies, each of which shall be deemed an original on the date first above written.

OWNER: LAYTON CITY CORPORATION

BY: \_\_\_\_\_

NAME: ALEX JENSEN

TITLE: CITY MANAGER

(SEAL)

ATTEST:

BY: \_\_\_\_\_

NAME: KIMBERLY S READ

TITLE: CITY RECORDER

CONTRACTOR:

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

(SEAL)

ATTEST:

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, who is the \_\_\_\_\_ of \_\_\_\_\_, and that the document was signed in behalf of said corporation, and \_\_\_\_\_ acknowledged to me that said corporation executed the same.

\_\_\_\_\_  
NOTARY PUBLIC

ATTEST:

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

END OF SECTION 00 070



**SECTION 00 080  
LABOR AND MATERIAL PAYMENT BOND**

KNOW ALL PERSONS BY THESE PRESENTS,

That \_\_\_\_\_ as principal, hereinafter called the contractor, and \_\_\_\_\_ a corporation organized under the laws of the State of \_\_\_\_\_, and licensed to transact business in the State of Utah as surety, hereinafter called Surety, are held firmly bound unto Layton City (hereinafter called "Owner" and/or "Project Manager") and N/A (hereinafter called the Construction Manager) in the amount of \_\_\_\_\_ dollars, for the payment of which sum will and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly, and severally, firmly by these presents.

WHEREAS, said Contractor has been awarded and is about to enter into the annexed contract (the "Contractor") to perform all work required under bidding schedule(s) \_\_\_\_\_ of \_\_\_\_\_ the **Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah** which contract is by this reference made part hereof.

NOW THEREFORE, if said Contractor, or subcontractor, failed to pay for any materials, equipment, or other supplies, or for rental of same, used in connection with the performance of work contracted to be done, or for amounts due under applicable State law for any work or labor thereon, said Surety will pay for the same in an amount not exceeding the sum specified above, and, in the event suit is brought upon this bond, reasonable attorneys fees. This bond and any persons, companies, or corporations entitled to file claims under applicable State Law.

PROVIDED, that any alterations in the work to be done or the materials to be furnished, or changes in the time of completion, which may be made pursuant to the terms of said contract, shall not in any way release said Contractor or said Surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either said Contractor or said Surety, and notice of such alterations or extensions of the contract is hereby waived by said Surety.

SIGNED AND SEALED, this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_(Seal)\_\_\_\_\_(Seal)

By: \_\_\_\_\_ By: \_\_\_\_\_  
(Signature) (Signature)

(Seal and Notarial Acknowledgement of Surety)

END OF SECTION 00 080



**SECTION 00 090  
PERFORMANCE BOND**

Know all persons by these presents,

That \_\_\_\_\_ as Contractor and \_\_\_\_\_ a corporation duly organized under the laws of the State of \_\_\_\_\_ and licensed to transact business in the State of Utah as Surety, hereinafter called the Surety, are held firmly bound unto Layton City (hereinafter called "Owner") in the sum of \_\_\_\_\_ dollars, and their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Said Contractor has been awarded and is about to enter into the annexed contract with said Owner to perform all work required under the bidding schedule(s) \_\_\_\_\_ of the Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah Contract is by reference made a part hereof and is hereinafter referred to as the "Contract".

NOW THEREFORE, if said Contractor shall perform all the requirements of said contract required to be performed on his part, at the times and in the manner specified therein, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

PROVIDED, that any alterations in the work to be done or the materials to be furnished, or changes in the time or completion, which may be made pursuant to the terms of said contractor, shall not in any way release said Contractor or said surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either said Contractor or said Surety and notice of such alterations or extension of the contract is waived by said Surety.

SIGNED AND SEALED, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
(Contractor)

\_\_\_\_\_  
(Surety)

By: \_\_\_\_\_  
(Signature)

By: \_\_\_\_\_  
(Signature)

(Seal and Notarial Acknowledgement of Surety)

END OF SECTION 00 090



**SECTION 00 100  
NOTICE TO PROCEED**

To: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROJECT Description: Site Development work for Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah**

You are hereby notified to commence WORK in accordance with the agreement dated \_\_\_\_\_, 20\_\_ on or before \_\_\_\_\_, 20\_\_, and you are to complete the WORK within \_\_\_\_\_ consecutive days thereafter. The date of completion of all work is therefore \_\_\_\_\_, 20\_\_.

You are further notified that if the work does not begin within ten (10) days following the Notice to proceed date, the City will consider the contract breached and proceed with legal action against the Contractor and the bonding company OR the City will access the liquidated damages for each day until the project begins.

By: \_\_\_\_\_

Title: \_\_\_\_\_

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by \_\_\_\_\_

This the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

By: \_\_\_\_\_

Title: \_\_\_\_\_

END OF SECTION 00 100



**SECTION 00 110  
CHANGE ORDER**

Order No. \_\_\_\_\_.

Date: \_\_\_\_\_.

Agreement Date: \_\_\_\_\_.

NAME OF PROJECT: Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North, Layton UT

OWNER: LAYTON CITY CORPORATION

CONTRACTOR: \_\_\_\_\_

The Following changes are hereby made to the CONTRACT DOCUMENTS

Justification: \_\_\_\_\_

Change to CONTRACT PRICE: \_\_\_\_\_

Original CONTRACT PRICE: \$ \_\_\_\_\_

Current CONTRACT PRICE adjusted by previous CHANGE ORDER: \$ \_\_\_\_\_

The CONTRACT PRICE due to this CHANGE ORDER will be (increased)(decreased) by:  
\$ \_\_\_\_\_

The new CONTRACT PRICE including this CHANGE ORDER will be: \$ \_\_\_\_\_

Change to CONTRACT TIME: \_\_\_\_\_

The CONTRACT TIME will be (increased)(decreased) by \_\_\_\_\_ calendar days.

The Date for completion of all work will be \_\_\_\_\_ (date)

Approvals Required:

Approved by: \_\_\_\_\_ (Contractor)

Approved by: \_\_\_\_\_ Engineer/Project Manager)

Approved by: \_\_\_\_\_ (Owner)

Approved by: \_\_\_\_\_

END OF SECTION 00 110









**Section 01 010  
SUMMARY OF WORK**

GENERAL – PART 1

1.1 SUMMARY

- A. Project Identification:  
Layton City Project:  
Layton City Andy Adams Park Improvements, Project 22-04 – 1713 East 1000 North Layton, Utah
- B. Project summary:  
• Major work items will include the following work: Demolition of an existing pavilion in preparation for the installation of a new large pre-fabricated pavilion including electrical; installation of Musco Lighting at the existing tennis/pickleball courts; install concrete pathways and staircase; relocate existing drinking fountain; and the installation of irrigation and landscaping improvements. Limit site work as shown in the drawings.
- C. Permits:  
Apply for, and obtain permits required for the work.
- D. Codes:  
Comply with applicable codes and regulations of authorities having jurisdiction. Submit copies of inspection reports, notices and similar communication to city.
- E. Dimensions:  
Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials.
- F. Existing Conditions:  
Notify City of existing conditions differing from those indicated on the drawings. Do not remove or alter structural components without prior written approval.
- G. Definition of terms used in specifications:  
1. Provide: Furnish and install, complete with all necessary accessories, ready for intended use. Pay for all related costs.
- H. Intent:  
Drawing and specifications are intended to provide the basis for proper completion of the work suitable for the intended use of the City. Anything not expressly set forth by which is reasonably implied or necessary for proper performance of the project shall be included.
- I. Writing style:  
Specifications are written in the imperative mode. Except for where specifically intended otherwise, the subject of all imperative statements is the Contractor. For example, 'Provide sod' means 'Contractor shall provide sod'.

END OF SECTION 01 010

**SECTION 01 025  
MEASUREMENT & PAYMENT**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To
  - 1. Administrative and procedural requirements governing Contractor's Application for Payment.
- B. Related Sections
  - 1. Section 01 300, Submittals – Contractor's Construction Schedule and Submittal Schedule

**1.2 SCHEDULE OF VALUES**

- A. Submit schedule of dollar values to Project Manager not less than 20 calendar days prior to first request for payment as a condition precedent to processing first payment. Coordinate preparation of Schedule of Values with preparation of Contractor's Construction Schedule. Correlate line items in Schedule of Values with other required administrative schedules and forms, including –
  - 1. Contractor's construction schedule.
  - 2. Payment Request forms.
  - 3. List of subcontractors and principle suppliers and fabricators.
  - 4. Schedule of allowances.
  - 5. Schedule of alternates.
  - 6. Schedule of submittals.
- B. Format and Content – Submit Schedule of Values on owner's standard payment request form. The break down shall include pro rata part of overhead and profit for each line item so sum of items will equal contract price. Breakdown shall correspond to items in construction schedule including work of Subcontractors.

**1.3 APPLICATION FOR PAYMENT**

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Project Manager and paid by Owner. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involves additional requirements specified below.
- B. At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the City a partial payment estimate filled out and signed by the Contractor covering the Work performed during the period covered by the partial payment estimate and supported by such data as the City may reasonably require.
  - 1. If payment is requested on the basis of materials and equipment not incorporated into the Work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the City, as will establish the City's title to the material and equipment and protect City's interest therein, including applicable insurance.
  - 2. The City will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing approval of payment, or return the partial payment estimate to the Contractor indicating in writing the City's reason for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment.

3. The City will within ten (10) days of presentation to the Owner of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate.
  4. The City shall **retain 5%** (five percent) [Utah Law UCA 13-8-5 (3) (a) @ July 1, 1999] of the amount of each payment until final completion and acceptance of all Work covered by the Contract Documents.
  5. When the Work is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below 5% (five percent) to only that amount to assure completion.
- C. Upon completion and acceptance of the Work, the City shall issue a certificate attached to the final payment request that the Work has been accepted by the City under the conditions of the Contract Documents. The entire balance found to be due to the Contractor, including the retained percentages, but except such sums as may be lawfully retained by the City, shall be paid to the Contractor within thirty (30) days of completion and acceptance of the Work.
- D. The Contractor will indemnify and hold the City or the City's agents and employees harmless from the claims growing out of the lawful demands of Subcontractors, laborers, workers, mechanics, materialism, and finisher (s) of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the Work.
- E. The Contractor shall, at the City's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so, the City may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims, until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the Contractor may be resumed, in accordance with the Contract documents. But in no event shall the provisions of this section be construed to impose any obligations upon the City, to either the Contractor, contractor's Surety, or the third party. In paying any unpaid bills of the Contractor, any payment so made by the City shall be considered as a payment made under the Contract Documents by the City to the Contractor and the City shall not be liable to the Contractor for any such payments made in good faith.
- F. Transmittal – Submit one executed original of each Payment request Form to Project Manager. Include waivers of lien and similar attachments, when required. Transmit each copy with transmittal form listing attachments, and recording appropriate information related to application in a manner acceptable to Project Manager.
- G. Initial Application For Payment – Administrative actions and submittals that shall precede or coincide with submittal of first Application for Payment include the following –
1. List of subcontractors and principle suppliers and fabricators.
  2. Schedule of Values.
  3. Contractor's Construction Schedule (preliminary in not final).
  4. Schedule of unit prices.
  5. Submittal Schedule (preliminary if not final).
  6. Copies of building permits.
  7. Copies of authorizations and licenses from governing authorities for performance of the Work.
  8. Initial progress report.
  9. Minutes of pre-construction meeting.
- H. Payment Request At Substantial Completion – Following issuance of Certificate of Substantial Completion, submit a Payment Request. Administrative actions and submittals that shall precede or coincide with this application include (if applicable) –
1. Occupancy permit and similar approvals.
  2. Meter readings.

3. Operation & Maintenance Manuals.
  4. Change over information related to Owner's occupancy, use, operation and maintenance.
  5. Final cleaning.
  6. Application for reduction of retainage, and consent of surety.
- I. Final Payment Request – Administrative actions and submittals that shall precede or coincide with Payment Request include the following (if applicable) –
1. Completion of Project closeout requirements.
  2. Completion of items specified for completion after Substantial Completion.
  3. Assurance that unsettled claims will be settled.
  4. Assurance that Work not and accepted will be completed without undue delay.
  5. Transmittal of required Project construction records to Owner.
  6. Proof that taxes, fees and similar obligations have been paid.
  7. Removal of temporary facilities and services.
  8. Removal of surplus materials, rubbish, and similar elements.

#### **1.4 ACCEPTANCE OF FINAL PAYMENT AS RELEASE**

- A. The acceptance by the Contractor of final payment shall be and shall operate as a release to the City of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically accepted by the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the City and others relating to or arising out of this Work.
- B. Any payment, however, final or otherwise, shall not release the Contractor or Contractor's Sureties from any obligations under the Contract Documents or the Performance Bond and Payment Bonds.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 025

**SECTION 01 035  
MODIFICATION PROCEDURES**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To
  - 1. Administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections
  - 1. Section 01 020, Allowances – Procedural requirements governing handling and processing allowances.
  - 2. Section 01 025, Measurement & Payment –
    - a. Administrative procedures governing application for payment.
    - b. Administrative requirements governing use of unit prices.
  - 3. Section 01 300, Submittals – Requirements for Contractor’s Construction Schedule.
  - 4. Section 01 600, Materials and Equipment – Administrative procedures for handling request for substitutions made after award of Contract.

**1.2 MINOR CHANGES IN THE WORK**

- A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to Contract Sum or Contract Time, will be issued by Project Manager as Owner’s Field Order.

**1.3 CHANGE ORDER PROPOSAL REQUEST**

- A. Owner-Initiated Proposal Requests
  - 1. Proposal changes in the Work will be issued by Project Manager, with a detailed description of proposed change and supplemental or revised Drawings and specifications. Proposal requests issued by Project Manager are for information only. Do not consider them instruction either to stop work in progress or to execute proposed change.
  - 2. Unless otherwise indicated in proposal request, within 7 calendar days of receipt of proposal request, submit to Project Manager for Owner’s review an estimate of costs as specifies in Conditions of the Contract.
- B. Contractor-Initiated Change Order Proposal Requests
  - 1. When Contractor identifies conditions that require modifications to Contract Documents, Contractor may propose changes by submitting request for change to Project Manager.
    - a. Outline reasons for change and effect of change on the Work. Provide complete description of proposed change including proposed modifications to Contract Documents. Indicate effect of proposed changes on Contract Sum and Contract Time.
    - b. Estimate costs broken down as specified in General conditions.
    - c. Comply with requirements in Section 01 600 if proposed change in the Work requires substitution of one product or system for product or system specified.
  - 2. Should Project Manager agree proposed modifications are necessary, Project Manager will issue a detailed description of proposed change and supplemental or revised Drawings and specifications. Proposal requests issued by Project Manager are for information only. Do not consider them instruction either to stop work in progress or to execute proposed change.
  - 3. Unless otherwise indicated in proposal request, within 7 calendar days of receipt of proposal request, submit final estimate of costs as specified in the Conditions of the Contract.

## **1.4 ALLOWANCES**

- A. Allowance adjustment – Base each Change Order Proposal Request for allowance cost adjustment solely on difference between actual purchase amount and allowance, multiplied by final measurement of work in place, with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  - 1. Include installation costs in purchase amount only where indicated as part of allowance.
  - 2. When requested, prepare explanations and documentation to substantiate margins claimed.
  - 3. Submit substantiation of change in scope of work claimed in Modification related to unit-cost allowances.
  - 4. Owner reserves the rights to establish actual quantity of work in place by independent quantity survey, measure, or count.
  
- B. Submit claims for increased costs because of change in scope or nature of allowance described in contract Documents, whether for purchase order amount or Contractor's handling, labor, installation, overhead, and profit, within 20 days of receipt of change order or construction change directive authorizing work to proceed. Claims submitted later than 20 days will be rejected.
  - 1. Change Order cost amount shall not include Contractor's or Subcontractor's indirect expense except when it is clearly demonstrated that either nature or scope of work required was changed from that which could have been foreseen from description of allowance and other information in Contract Documents.
  - 2. No change to Contractor's indirect expense is permitted for selection of higher or lower priced materials or system of same scope and nature as originally indicated.

## **1.5 CHANGE ORDER PROCEDURES**

- A. Upon Owner's approval of Change Order Proposal Request, Project Manager will issue a Change Order for signatures of Owner and Contractor, as provided in Conditions of the Contract.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 035



**SECTION 01 040  
COORDINATION**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To
  - 1. Administrative and supervisory requirements necessary for Project coordination including –
    - a. Coordinate.
    - b. Administrative and supervisory personnel.
    - c. General installation provisions.
    - d. Cleaning and Protection.
- B. Related Sections
  - 1. Section 01 200, Project Meetings – Progress meetings, coordination Meetings, and pre-installation conferences.
  - 2. Section 01 300, Submittals – Requirements for Contractor’s Construction Schedule.

**1.2 PROJECT COORDINATION**

- A. Coordinate construction activities included in Contract Documents to assure efficient and orderly installation of each part of the Work. Coordinate construction operations that are dependent upon each other for proper installation, connection and operation.
  - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in sequence required to obtain best results.
  - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports and attendance at meetings. Prepare similar memoranda for Owner and separate Contractors where coordination of their Work is required.
- C. Administrative Procedures – Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following –
  - 1. Preparation of schedules.
  - 2. Installation and removal of temporary facilities.
  - 3. Delivery and processing of submittals.
  - 4. Progress meetings.
  - 5. Project Close-out activities.
- D. Conservation – Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

**PART 2 PRODUCTS – Not Used**

**PART 3 EXECUTION**

**3.1 GENERAL INSTALLATION PROVISIONS**

- A. Inspection of Conditions – Require installer of each major component to inspect both substrate and conditions under which Work is to be performed. Notify Project Manager in writing of unsatisfactory conditions. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer’s Instructions – Comply with Manufacturer’s installation instructions and recommendations, to extent that those instructions and recommendations are more explicit and stringent the requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work, Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects – Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain best visual effect. Refer questionable choices to Project Manager for final decision.
- F. Recheck measurements and dimensions before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure best possible results. Isolate each part of completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize necessity of uncovering completed construction for that purpose.
- I. Mounting heights – Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry or local codes for particular application indicated. Refer questionable mounting height decisions to Project Manager for final decision.

### **3.2 CLEANING & PROTECTION**

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration until Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary throughout construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures – Supervise construction activities to ensure that no part of construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

END OF SECTION 01 040

**SECTION 01 090  
REFERENCES**

**PART 1 GENERAL**

**1.1 REFERENCE STANDARDS**

- A. Industry standards
1. Except where Contract Documents include more stringent requirements, applicable construction industry standards have same force and effect as if bound or copied directly into Contract Documents to extent referenced. Such standards are made a part of Contract Documents by reference.
  2. Comply with standard in effect as of date of Contract Documents, unless specific date is specified.
  3. Where compliance with two or more standards is specified, and standards may establish different or conflicting requirements for minimum quantities or levels, refer requirements that are different, but apparently equal, and uncertainties to Project Manager for final decision before proceeding. Quantity or quality levels shown or specified shall be at minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for context of requirements. Refer uncertainties to Project Manager for decision before proceeding.
  4. Each entity engaged in construction on Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with Contract Documents. Where copies of standards are needed for performance of a required construction activity, Contractor shall obtain copies directly from publication source.
  5. Trade association names and titles of general standards are frequently abbreviated. Following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean associated names. Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

AABC	American Air Balance Council, 1518 K St NW, Suite 503, Washington, DC 20005 (202) 737-0202
AAMA	American Architectural Manufacturers Assoc, 1540 K Street NW, Palantine, IL 60067 (708) 202-1350
AAN	American Association of Nurserymen, 1250 Eye St NW, Suite 500, Washington, DC 20005 (202) 789-2900
AASHTO	American Association of State Highway & Transportation Officials, 444 North Capitol St, Suite 249, Washington, DC 20001 (202) 624-5800
ACI	American Concrete Institute, P.O. Box 19150, 22400 West 7 Mile Rd, Detroit, MI 48219 (313) 532-2600
AGA	American Gas Assoc, 1515 Wilson Blvd, Arlington VA 22209 (703) 841-8400
AIA	American Institute Of Architects, 1735 New York Ave NW, Washington, DC 20006 (202) 626-7300
AISC	American Institute of Steel Construction, One East Wacker Drive, Suite 3100, Chicago, IL 60601-2001 (312) 670-2400
AISI	American Iron & Steel Institute, 1101 17 <sup>th</sup> St NW, Washington, DC 20036-4700 (202) 452-7100
AITC	American Institute of Timber Construction, 7012 South Revere Parkway #140, Englewood CO 80112 (303) 792-9559
AMCA	Air Movement & Control Assoc, 30 West University Dr, Arlington Heights, IL 60004 (312) 394-0150

ANSI	American National Standards Institute, 11 West 42 <sup>nd</sup> St, New York NY 10036 (212) 642-4900
APA	American Plywood Assoc, P.O. Box 11700 (98411, 7011 South 19 <sup>th</sup> St (98466), Tacoma, WA (206) 565-6600
ARI	Air Conditioning & Refrigeration Institute, 4301 Fairfax Drive, Suite 425, Arlington, VA 22203 (703)524-8800
ASHRAE	American Society of Heating, Refrigeration, & Air conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329 (404) 636-8400
ASME	American Society of Mechanical Engineers, 345 East 47 <sup>th</sup> St. New York, NY 10017 (212) 705-7722
ASTM	American Society for Testing & Materials, 1916 Race St, Philadelphia, PA 19103 (215) 299-5400
AWI	Architectural Woodwork Institute, 13924 Braddock Road, Suite 100, P O Box 1550, Centreville, VA 22020 (703) 222-1100
AWPA	American Wood Preservers' Assoc, P O Box 286, Woodstock MD 21163-0286 (410) 465-3169
AWS	American Welding Society, 550 LeJeune Road NW, P O Box 351040, Miami, FL 33135 (305) 443-9353
AWWA	American Water Works Assoc, 6666 West Quincy Ave, Denver, CO 80235 (303) 794-7711
BHMA	Builders' Hardware Manufacturers Assoc, 355 Lexington Ave, 17 <sup>th</sup> Floor, New York NY 10017 (212) 661-4261
BIA	Brick Institute of America, 11490 Commerce Park Drive, Suite 300, Reston VA 22091 (703) 620-0010
CRI	Carpet & Rug Institute, P O Box 2084, Dalton, GA 30722 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute, 933 Plum Grove Rd, Schaumburg, IL 60173 (312) 517-1200
DHI	Door & Hardware Institute, 14170 Newbrook Drive, Chantilly, VA 22021 (703) 222-2010
EIMA	EIFS Industry Manufacturers Association, 2759 State Road 580, Suite 112, Clearwater FL 34621 (813) 726-6477
FM	Factory Mutual Research Organization, 1151 Boston-Providence Turnpike, Norwood, MA 02062 (617) 762-4300
GA	Gypsum Association, 810 First Street NE, Suite 510 Washington, DC 20002 (202) 289-5440
IEEE	Institute of Electrical & Electronic Engineers, 345 East 47 <sup>th</sup> St, New York, NY 10017 (212) 705-7900
LPI	Lightning Protection Institute, 33365 North Arlington Heights Road, Arlington Heights, IL 60004 (800) 488-6864
MFMA	Maple Flooring Manufacturers' Assoc, 60 Revere Dr, Suite 500, Northbrook, IL 60062 (708) 480-9138
NAAMM	National Association of Architectural Metal Manufacturers, 600 South Federal St, Suite 400, Chicago, IL 60605 (312) 922-6222
NEC	National Electric Code (from NFPA)
NEMA	National Electrical Manufacturer's Association, 2101 'L' St, NW, Washington, DC 20037 (202) 457-8400
NFPA	National Fire Protection Assoc, One Batterymarch Park, P O Box 9101, Quincy, MA 02269-9101 (80) 344-3555
NFRC	National Fenestration Rating Council, 1300 Spring Street, Suite 120, Silver Spring, MD 20910 (301) 589-6372
NSF	National Sanitation Foundation, 3475 Plymouth Rd, P O Box 1468, Ann Arbor, MI 48106 (313) 769-8010
NWWDA	National Wood Window and Door Association, 1400 East Touhy Ave, #G54, Des Plaines, IL 60018 (213) 299-5200

PCA	Portland Cement Assoc, 5420 Old Orchard Road, Skokie, IL 60077 (312) 966-6200
PCI	Prestressed Concrete Institute, 175 West Jackson Blvd, Chicago, IL 60604 (312) 786-0300
PEI	Porcelain Enamel Institute, 102 Woodmont Boulevard, Suite 360, Nashville, TN 38205 (615) 385-0758
SDI	Steel Door Institute, 30200 Detroit Road, Cleveland OH 44145 (216) 899-0010
SIGMA	Sealed Insulating Glass Manufacturers Association, 401 North Michigan Avenue, Chicago IL 60611 (312) 644-6610
SJI	Steel Joist Institute, 1205 48 <sup>th</sup> Avenue North, Suite A, Myrtle Beach, SC 29577 (803) 449-0487
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, 4201 Lafayette Center Drive, Chantilly, VA 22116 (703) 803-2980
SPIB	Southern Pine Inspection Bureau, 4709 Scenic Highway, Pensacola, FL 32504 (904) 434-2611
TCA	Tile Council of America, P O Box 326, Princeton, NJ 08542 (609) 921-7050
TPI	Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI 53719 (608) 833-5900
UL	Underwriters Laboratories, 333 Pfingsten Rd, Northbrook, IL 60062 (708) 272-8800
WWPA	Western Wood Products Assoc, Yeon Building 522 SW 5 <sup>th</sup> Avenue, Portland OR 97204-2122 (503) 224-3930

- B. Federal Government agencies – Names and titles of federal government standard or specification producing agencies are often abbreviated. Following acronyms or abbreviations, as referenced in Contract Documents indicate names of standard or specification producing agencies of the federal government. . Names and addresses are subject to change and are believed to be, but are not assured to be, accurate and up to date as of date of Contract Documents.

CS	Commercial Standard (U>S> Department of Commerce), Government Printing Office, Washington, DC 20402 (202) 377-2000
DOT	Department of Transportation, 400 Seventh St SW, Washington, DC 20590 (202) 366-4000
EPA	Environmental Protection Agency, 401 'M' St SW, Washington, DC 20460 (202) 382-2090
FCC	Federal Communications Commission, 1919 'M' St NW, Washington, DC 20554 (202) 632-7000
FHA	Federal Housing Administration (U.S. Department of Housing and Urban Development), 451 Seventh ST SW, room 9158, Washington, DC 20201 (202) 708-1422
FS	Federal Specification (from GSA), Specification Unit (WFSIS), 7 <sup>th</sup> & D St SW, Washington, DC 20406 (202) 708-9205
GSA	General Services Administration, F St & 18 <sup>th</sup> St NW, Washington, DC 20405 (202) 472-1082
MIL	Military Standardization Documents (U.S. Department of Defense), Naval Publications & Forms Center, 5801 Tabor Ave, Philadelphia, PA 19120
OSHA	Occupational Safety & Heath Administration (U.S. Department of Labor), 200 Constitution Ave NW, Washington, DC 20410 (202) 219- 6091
PS	Product Standards of NBS (U.S. Department of Commerce), Government Printing Office, Washington, DC 20402 (202) 783-3238
USDA	U.S. Department of Agriculture, Independence Ave between 12 <sup>th</sup> and 14 <sup>th</sup> Sts SW, Washington, DC 20250 (202) 447-8732

**1.2 GOVERNING REGULATIONS/AUTHORITIES**

- A. Contact authorities having jurisdiction directly for information and decisions having bearing on the Work.
- B. Obtain copies of regulations required to be retained at Project site, available for reference by parties who have a reasonable need for such reference.

**1.3 SUBMITTALS**

- A. For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 090

**SECTION 01 100  
PROJECT PROCEDURES**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Provide coordination of Work
  - 1. Supervisory personnel.
  - 2. Pre-construction conference.
  - 3. Weekly On-Site Meetings.
  - 4. Other Meetings.
- B. Submit daily and special reports.
- C. Submit Progress Schedule, bar-chart type, updated monthly.
- D. Prepare submittal schedule; coordinate with progress schedule.
- E. Submit schedule of values.
- F. Submit schedule of required tests including payment and responsibility.
- G. Perform Construction Staking and Surveying:
  - 1. Laying out the work and verifying locations and elevations during construction.
- H. Submit and post lists of emergency telephone numbers and addresses for individuals to be contacted in case of emergency.
- I. Submit record drawings and specifications; to be maintained and annotated by Contractor as work progresses.
- J. Submit payment request procedures.
- K. Perform quality control during installation.
- L. Clean and protect work.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 100

**SECTION 01 200  
PROJECT MEETINGS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To
  - 1. Administrative and procedural requirements for project meetings including
  - 2. Pre- Construction Conferences.
  - 3. Pre-installation Conferences.
  - 4. Progress Meetings.
- B. Related Sections
  - 1. Section 01 300, Submittals – Construction Schedules

**1.2 PRE-CONSTRUCTION CONFERENCE**

- A. Schedule pre-construction conference and organizational meeting at Project site or other convenient location no later than 15 days after issuance of Notice To Proceed and prior to commencement of construction activities. Conduct meeting to review responsibilities and personnel assignments.
- B. Attendees – Owner, Project Manager, and their consultants, Contractor and Contractor’s Superintendent, major Subcontractors and other concerned parties shall each be represented at conferences by persons familiar with and authorized to conclude matters relating to the Work.
- C. Agenda – Discuss items of significance that could affect progress including such topics as
  - 1. Tentative construction schedule.
  - 2. Critical Work sequencing.
  - 3. Designation of responsible personnel.
  - 4. Procedures for processing interpretations and Modifications.
  - 5. Procedures for processing Payment Requests.
  - 6. Distribution of Contract Documents.
  - 7. Submittal of Product Data, Shop Drawings, Samples, Quality Assurance/Controls submittals.
  - 8. Preparation of record documents and O & M Manual.
  - 9. Use of the premises.
  - 10. Office, work, and storage areas.
  - 11. Equipment deliveries and priorities.
  - 12. Safety procedures.
  - 13. First Aid.
  - 14. Security.
  - 15. Housekeeping.
  - 16. Working hours.
  - 17. Resolving current problems.
  - 18. Further orientation as to requirements of Contract Documents.
  - 19. Project Manager’s responsibility to Owner for inspection.
  - 20. Working out general schedule of Project Manager’s inspection.

**1.3 PROGRESS MEETINGS**

- A. Project Manager will conduct progress meetings at project site at regularly scheduled intervals, at least once a month.



- B. Attendees – In addition to representatives of Owner and Project Manager, Contractor and each Subcontractor concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with Project and authorized to conclude matters relating to progress.
- C. Agenda
1. Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to current status of Project.
  2. Progress since last meeting will be reviewed. Where each activity is in relation to Contractor's Construction Schedule, whether on time ahead or behind schedule will be determined. How construction behind schedule is to be expedited will be determined and commitments secured from parties involved to do so. Schedule revisions required to ensure that current and subsequent activities will be completed within Contract Time will be discussed.
  3. Present and future needs of each entity present will be discussed, including such items as-
    - a. Interface requirements.
    - b. Time.
    - c. Sequences.
    - d. Deliveries.
    - e. Off-site fabrication problems.
    - f. Access.
    - g. Site utilization.
    - h. Temporary facilities and services.
    - i. Hours of Work.
    - j. Hazards and risks.
    - k. Housekeeping
    - l. Quality and Work standards.
    - m. Modifications.
    - n. Documentation of information for Payment Requests.
- D. Reporting
1. No later than 3 days after each progress meeting date, copies of minutes will be distributed to each party present and to other parties who should have been present. Included will be a brief summary, in narrative form, of progress since previous meeting and report.
  2. Contractor shall revise construction schedule after each progress meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

#### **1.4 PRE-INSTALLATION MEETINGS**

- A. Conduct pre-installation meeting at site prior to commencement of work specified in trade Sections requiring such a meeting. Attendees shall be Project Manager, Contractor, applicable Subcontractors, item or system suppliers/installers, Manufacturer's representatives, and others as specified or invited. These meetings shall be scheduled by the Contractor to be held in conjunction with Project Manager's regularly scheduled inspection visits, if possible.
1. Review progress of other construction activities and preparations for particular activities under consideration at each pre-installation meeting, including requirements for –
    - a. Reviewing and confirming requirements of Contract Documents including related Modifications.
    - b. Verify that completed work is ready for installation of items or systems.
    - c. Resolving conditions not in compliance with installation requirements.
    - d. Establishing installation and inspection schedule.
    - e. Coordinate between trades.
    - f. Other trades which affect work of trade Section.

- g. Other items specified in individual Sections.
  - h. Deliveries.
  - i. Product Data, Shop Drawings, Samples, Quality Assurance/Controls submittals.
  - j. Possible conflicts.
  - k. Compatibility problems.
  - l. Weather limitations.
  - m. Manufacturer's recommendations.
  - n. Compatibility of materials.
  - o. Temporary facilities.
  - p. Space and access limitations.
  - q. Governing regulations.
  - r. Safety.
  - s. Testing requirements.
  - t. Required performance results.
  - u. Recording requirements.
  - v. Protection.
- 2. Record significant discussions and agreements and disagreements of each meeting, along with approved schedule. Distribute record of meeting promptly to everyone concerned, including Owner and Project Manager.
  - 3. Do not proceed with work of affected Section of conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of work and reconvene conference within one week.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 200

**SECTION 01 300  
SUBMITTALS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Comply with project formats for submittals.
- B. Provide types of Submittals listed in individual sections and number copies required.
  - 1. Shop drawings, reviewed and annotated by Contractor – three (3) blackline prints.
  - 2. Product data – 3 copies
  - 3. Inspection and test reports – 3 copies
  - 4. Warranties – 3 copies
  - 5. Survey data – 3 copies
  - 6. Closeout submittals – 3 copies
- C. Provide required resubmittals if original submittals are not approved. Provide distribution of approved copies including modifications after submittals have been approved.
- D. Shop drawings shall be prepared specifically for this project. Shop drawings shall include dimensions and detail, including adjacent construction and related work. Note special coordination required. Note and deviation from requirements of the Contract Documents.
- E. Provide warranties as specified; warrantees shall not limit length of time for remedy of damages Owner may have by legal statute. Warrantees shall be signed by Contractor, Supplier or Installer responsible for performance of warranty.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 300

**SECTION 01 600  
PRODUCTS AND SUBSTITUTIONS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Provide products from one manufacturer for each type or kind as applicable. Provide secondary materials as recommended by manufacturers of primary materials.
- B. Provide products selected or equal which shall be reviewed by Project Manager prior to Bid. Products submitted for substitution shall be submitted with acceptable documentation, and include costs of substitution including related work.
- C. Conditions for substitution include:
  - 1. An 'or equal' phrase in the specifications.
  - 2. Specified material cannot be coordinated with other work.
  - 3. Specified material is not acceptable to authorities having jurisdiction.
- D. Substitutions shall be submitted prior to award of contract, unless otherwise acceptable. Review of shop drawings, product data, or samples does not constitute substitution acceptance unless clearly presented as a substitution at the time of submittal.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 600

**SECTION 01 700  
CONTRACT CLOSEOUT**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. The following a prerequisites to substantial completion. Provide the following:
  - 1. Punch List
  - 2. Supporting documentation.
  - 3. Warranties.
  - 4. Certifications.
  
- B. Provide the following prerequisites to final acceptance:
  - 1. Final Payment request with supporting affidavits.
  - 2. Completed punch list.
  
- C. Provide a marked-up set of drawings including changes which occurred during construction.
  
- D. Provide the following closeout procedures:
  - 1. Submission of record documents.
  - 2. Submission of maintenance manuals.
  - 3. Training and turnover to Owner's personnel.
  - 4. Final Cleaning and touch-up.

**PART 2 PRODUCTS** – Not used

**PART 3 EXECUTION** – Not used

END OF SECTION 01 700



**SECTION 01 800**  
**QUALITY CONTROL**

**PART 1– General**

**1.1 SUMMARY**

This Section specifies requirements for quality control services. Quality control services include inspections and test performed by independent agencies, governing authorities, as well as the Contractor.

- A. Testing Responsibilities: The Contractor shall provide inspections and tests specified or required by governing authorities. The Contractor shall engage and pay for services of an independent agency to perform inspections and test specified in the schedule attached herein.
- B. Retesting: The Contractor is responsible for retesting costs where results prove unsatisfactory and do not indicate compliance with Contract Documents, regardless of whether the original test was the Contractor’s responsibility.
  - 1. Cost of retesting construction revised or replace by the Contractor is the Contractor’s responsibility, where required tests were performed on original construction.
- C. Associated Services: The Contractor shall cooperate with agencies performing inspections or tests and provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include but are not limited to:
  - 1. Provide access to the Work and furnish incidental labor and facilities necessary to facilitate inspections and tests.
  - 2. Take representative samples of materials that require testing or assist the agency in taking samples.
  - 3. Provide facilities for storage and curing of samples, and deliver samples to testing laboratories.
  - 4. Provide a preliminary design mix proposed for use for material mixes that require control by the testing agency.
  - 5. Provide security and protection of samples and test equipment at the Project site.
- D. Duties of the Testing Agency: The agency engaged to perform inspections and testing of materials and construction shall cooperate with the Architect and Contractor in performance of its duties, and provide qualified personnel to perform inspections and tests.
  - 1. The agency shall notify Architect and Contractor promptly of deficiencies observed during performance of its services.
  - 2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
- E. Coordination: This Contractor and each agency engaged to perform inspections and tests shall coordinate the sequence of activities to avoid removing and replacing construction to accommodate inspections and tests.
  - 1. The Contractor is responsible for scheduling inspections, tests, taking samples and similar activities.
- F. Submittals: The testing agency shall submit a certified written report or each inspection and test to the Architect, in duplicate unless the Contractor is responsible for the service. If the Contractor is responsible, submit a certified written report of each inspection and test through the Contractor, in duplicate. Submit additional copies of each report to the governing authority, when the authority so directs.
- G. Report Date: Written reports of each inspection or test shall include, but no be limited to:
  - Date of Issue
  - Project title and number

Name, address and telephone number of testing agency  
Dates and locations of samples and test or inspections  
Names of individuals making the inspection or test  
Designation of the Work and test method  
Identification of product and Specification Section  
Complete inspection or test data  
Test results and an interpretation of test results  
Ambient conditions at the time of sample taking and testing  
Comments or professional opinion as to whether inspected or tested work complies with Contract Document requirements  
Name and signature of laboratory inspector  
Recommendations or retesting

- H. Qualifications for Service Agencies: Engage inspection and testing agencies which are prequalified as complying with “Recommended Requirements for Independent Laboratory Qualification” by the American Council of Independent Laboratories, and specialize in the types of inspections and tests to be performed. Each inspection and testing agency engaged shall be authorized to operate in the State in which the Project is located.
- I. Repair and Protection: Upon completion of inspection and testing repair damaged construction and restore substrates and finishes to eliminate deficiencies. Comply with requirements for “Cutting and Patching”. Protect construction exposed by or for quality control service activities and protect repaired construction. The Contractor is responsible for repair and protection regardless of the assignment of responsibility for inspection and testing.

## **PART 2 – SCHEDULE OF CONTRACTOR PROVIDED TESTING SERVICES**

- A. Earthwork: Allow testing service to inspect and approve each subgrade and fill layer before further backfill or construction work is performed. Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2167 (rubber balloon method), as applicable.
1. Field density tests may also be performed by the nuclear method in accordance with ASTM D 2922, providing that the calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. In conjunction with each density calibration check, check the calibration curves furnished with the moisture gages in accordance with STM D 3017.
  2. If field tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Project Architect.
- B. Footing Subgrade: For each strata of soil on which footings will be placed, perform at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata when acceptable to Project Architect.
- C. Paved Areas: Perform at least one field density test of subgrade for every 2,000 sq. ft. of paved area of slab, but in no case fewer than three tests. In each compacted fill layer, perform one field density test for every 2,000 sq. ft. of overlaying building slab or paved area, but in no case fewer than three tests.
- D. Asphalt Paving: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness.
- E. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
- |                 |                     |
|-----------------|---------------------|
| Base Course:    | 1/2”, plus or minus |
| Surface Course: | 1/4”, plus or minus |



- F. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surface will not be acceptable if exceeding the following tolerances for smoothness:
- |                         |       |
|-------------------------|-------|
| Base Course Surface:    | 1/4"  |
| Wearing Course Surface: | 3/16" |
- Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template; 1/4". Check surface areas at intervals as directed by Architect.
- G. Portland Cement Concrete (Paving & Structural): Sampling and testing for quality control during placement of concrete may include the following, as direct by Architect.
- H. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C94.
1. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
  2. Air Content: ASTM C 173, volumetric method for lightweight of normal weight concrete; ASTM D 231 pressure method for normal weight concrete; one for each day's pour of each type of air-entranced concrete.
  3. Compression Test Specimen: ASTM C 31; one set of 3 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
  4. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, one specimen tested at 28 days, and one specimen retained in reserve for later testing if required. When total quantity of a given class of concrete is less than 50 cu. yds, strength test may be waived by Architect, if, in the Architect's judgment, adequate evidence of satisfactory strength is provided. When strength of field-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

END OF SECTION 01 800



## GENERAL CONDITIONS

1. Definitions
2. Additional instructions and Detail Drawings
3. Schedules, Reports, Records
4. Drawings and Specifications
5. Shop Drawings
6. Materials, Services, Facilities
7. Inspection and Testing
8. Substitutions
9. Patents
10. Surveys, Permits, Regulations
11. Protection of work, Property,           Persons
12. Supervision by Contractor
13. Changes in the Work
14. Changes in the Contract Price
15. Time for Completion and Liquidated damages
16. Correction of Work
17. Subsurface Conditions
18. Suspension of Work, Termination and Delay
19. Payments to Contractor
20. Acceptance of Final Payment as       release
21. Insurance
22. Contract Security
23. Assignments
24. Indemnification
25. Separate Contracts
26. Subcontractors
27. Engineer's Authority
28. Land and Rights-of-way
29. Guaranty
30. Arbitration
31. Taxes

### 1. **DEFINITIONS**

1.1 Wherever used in the Contract documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof.

1.2 **ADDENDA** - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, Drawings and Specifications, by additions, deletions, clarifications or corrections.

1.3 **BID** - The offer or proposal of the Bidder submitted on the prescribed forms setting forth the prices for the Work to be performed.

1.4 **BIDDER** - Any person, firm or corporation submitting a Bid for the Work.

1.5 **BONDS** - Bid, Performance and Payment Bonds and other instruments of security, furnished by the Contractor and the Contractor's surety in accordance with the Contract Documents.

1.6 **CHANGE ORDER** - A written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the Contract Documents or authorizing an adjustment in the Contract Price or Contract time.

1.7 **CONTRACT DOCUMENTS** - The contract, including Advertisement for Bids, Information for bidders, Additional information for bidders, Bid Bond, Payment Bond, Performance Bond, Notice of Award, Notice to Proceed, Change Order, Drawings, Specifications, and Addenda.

1.8 **CONTRACT PRICE** - The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.9 **CONTRACT TIME** - The number of calendar days stated in the Contract Documents for the completion of the Work.

1.10 **CONTRACTOR** - The person, firm or corporation with whom the Owner has executed the agreement.

1.11 **DRAWINGS** - The part of the Contract Documents which show the characteristics and scope of the Work to be performed and which have been prepared by the Engineer.

1.12 **ENGINEER** - The person, firm or corporation named as such in the Contract Documents.

1.13 **FIELD ORDER** - A written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract time, issued by the Engineer to the Contractor during construction.

1.14 **NOTICE OF AWARD** - The written notice of the acceptance of the Bid from the Owner to the successful bidder.

1.15 NOTICE TO PROCEED - The written communication issued by the Owner to the Contractor authorizing the Contractor to proceed with the work and establishing the date of commencement of the work.

1.16 OWNER - Layton City Corporation, and Political subdivision of the State of Utah.

1.17 PROJECT - The undertaking to be performed as provided in the Contract Documents.

1.18 RESIDENT PROJECT REPRESENTATIVE - The authorized representative of the Owner who is assigned to the Project site or any part thereof.

1.19 SHOP DRAWINGS - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, subcontractor, manufacturer, supplier or distributor which illustrate how specific portions of the Work shall be fabricated or installed.

1.20 SPECIFICATIONS - A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, constructions systems, standards and workmanship.

1.21 SUBCONTRACTOR - An individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

1.22 SUBSTANTIAL COMPLETION - That date as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purpose for which it is intended.

1.23 SUPPLEMENTAL GENERAL CONDITIONS - Modifications to the General Conditions required by the Owner amending or expanding the General Conditions.

1.24 SUPPLIER - Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

1.25 WORK - All labor necessary to produce the construction required by the Contract documents, and all materials and equipment incorporated or to be incorporated in the project.

1.26 WRITTEN NOTICE - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at the last given address or delivered in

person to said party or an authorized representative on the Work.

## **2. ADDITIONAL INSTRUCTIONS AND DETAILS DRAWINGS**

2.1 The Contractor may be furnished additional instructions and detail drawings, by the Engineer, as necessary to carry out the Work required by the Contracts Documents.

2.2 The additional drawings and instructions thus supplied will become a part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

## **3. SCHEDULES, REPORTS AND RECORDS**

3.1 The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the Contract Documents for the Work to be performed.

3.2 Prior to the first partial payment estimate the Contractor shall submit construction progress schedules showing the order in which he proposes to carry on the Work, including dates at which he will start various parts of the Work, estimated date of completion of each part and as applicable:

3.2.1 The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of Shop Drawings, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The Contractor shall also submit a schedule of payments that he anticipates he will earn during the course of the Work.

## **4. DRAWINGS AND SPECIFICATIONS**

4.1 The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the Work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, ready for use, occupancy or operation by the Owner.

4.2 In case of conflict between the Drawings and the Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale

dimensions, and detailed drawings shall govern over general drawings.

4.3 Any discrepancies found between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately reported to the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after discovery of such discrepancies, inconsistencies or ambiguities shall be done at the Contractor's Risk.

## **5. SHOP DRAWINGS**

5.1 The Contractor shall provide Shop Drawings as may be necessary for the prosecution of the work as required by the Contract Documents. The engineer shall promptly review all shop drawings. The engineer's approval of any shop drawing shall not release the Contractor from responsibility for deviations from the Contract Documents. The approval of any shop drawing which substantially deviates from the requirement of the Contract Documents shall be evidenced by a Change Order.

5.2 When submitted for the Engineer's review, shop drawings shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents.

5.3 Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or submission has been approved by the Engineer. A copy of each approved Shop drawing and each approved sample shall be kept in good order by the contractor at the site and shall be available to the Engineer.

## **6. MATERIALS, SERVICES AND FACILITIES**

6.1 It is understood that, except as otherwise specially stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete and deliver the work within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

6.4 Materials, supplies and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer.

6.5 Materials, supplies or equipment to be incorporated into the work shall not be purchased by the Contractor or the Subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

## **7. INSPECTIONS AND TESTING**

7.1 All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents.

7.2 The Owner shall provide all inspections and testing services not required by the Contract Documents.

7.3 The Contractor shall provide at the Contractor's expense the testing and inspection services required by the Contract Documents.

7.4 If the Contractor Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested or approved, by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval.

7.5 Inspections, test or approvals by the engineer or others shall relieve the Contractor from obligations to perform the work in accordance with the requirements of the Contract Documents.

7.6 The Engineer and the Engineer's representatives will at all times have access to the Work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof.

7.7 If any work is covered contrary to the written instruction of the Engineer, it must, if requested by the

Engineer, be uncovered for observation and replaced at the Contractor's expense.

7.8 If the Engineer considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract time or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate Change Order shall be issued.

## **8. SUBSTITUTION**

8.1 Whenever a material, article or piece of equipment is identified on the Drawings or Specifications by reference to a brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents by reference to brand name or catalogue number and if, in the opinion of the Engineer, such material, article, or piece of equipment is of equal substance and function to that specified, the Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the Contract price and the Contract Documents shall be appropriately modified by Change Order. No Contract price increase will be allowed for substitutions recommended by the Contractor. The Contractor warrants that if substitutes are approved, no mayor changes in the function or general design of the Project will result. Incidental changes or extra component parts required to accommodate the substitute will be may by the Contractor without a change in the Contract Price or the Contract Time.

## **9. PATENTS**

9.1 The Contractor shall pay all applicable royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for any such loss when a particular process, design, or the product of a particular

manufacturer or manufacturers is specified, however if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Engineer.

## **10. SURVEYS, PERMITS, REGULATIONS**

10.1 The Owner shall furnish all boundary surveys and establish all base lines for locating the principal components parts of the work together with a suitable number of bench marks adjacent to the Work as shown in the Contract Documents. From the information provided by the Owner, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction such as slope staked, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

10.2 The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

10.3 Permit and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated in the Supplemental General Conditions. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in Section 13, Changes in the Work.

## **11. PROTECTION OF WORK, PROPERTY, AND PERSONS**

11.1 The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. The Contractor will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. The Contractor will notify owners of adjacent utilities when prosecution of Work may affect them. The contractor will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the Contract Documents or to the acts or omissions of the Owner or the Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

11.3 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, shall act to prevent threatened damage, injury or loss. The Contractor will give the Engineer prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved.

## **12. SUPERVISION BY THE CONTRACTOR**

12.1 The Contractor will supervise and direct the Work. The Contractor will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

## **13. CHANGES IN THE WORK**

13.1 The Owner may at any time, as the need arises, order changes within the scope of the Work without invalidating the Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the work, an equitable adjustment shall be authorized by Change Order.

13.2 The Engineer, also, may at any time, by issuing a Field Order, make changes in the details of the work. The contractor shall proceed with the performance of any changes in the Work so ordered by the Engineer unless the Contractor believes that such Field Order necessitates a change in Contract Price or Time, or both, in which event he shall give the Engineer written notice thereof within seven (7) days after the receipt of the ordered change. Thereafter the Contractor shall document the basis for the change in Contract Price or Time within thirty (30) days. The Contractor shall not execute such changes pending the receipt of an executed Change Order or further instructions from the Owner.

## **14. CHANGES IN CONTRACT PRICE**

14.1 The Contract Price may be changed only by a Change Order. The value of any Work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below:

- a. Unit price previously approved.
- b. An agreed lump sum.
- c. The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition there shall be added an amount to be agreed upon but not to exceed fifteen (15) percent of the actual cost of the Work to cover the cost of general overhead and profit.

## **15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES**

15.1 The date of beginning and the time for completion of the Work are essential conditions of the Contract Documents and the Work embraced shall be commenced on a date specified in the Notice to Proceed.

15.2 The Contractor will proceed with the Work at such rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

15.3 If the Contractor shall fail to complete the Work within the Contract Time, or extension of time granted by the Owner, then the Contractor will pay to the Owner the amount for liquidated damages as specified in the Bid for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents.

15.4 The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due to the following, and the Contractor has promptly given Written Notice of such delays to the Owner or Engineer.

15.4.1 To any preference, priority or allocation order duly issued by the Owner.

15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

15.4.3 To any delays of subcontractors occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

## **16. CORRECTION OF WORK**

16.1 The contractor shall promptly remove from the premises all Work rejected by the Engineer for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the Work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all work of other Contractors destroyed by such removal or replacement.

16.2 All removal and replacement Work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected Work within ten (10) days after receipt of Written Notice, the Owner may remove such Work and store the materials at the expense of the Contractor.

## **17. SUBSURFACE CONDITIONS**

17.1 The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the Owner by Written Notice of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the Contract documents: r

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

17.2 The Owner shall promptly investigate the conditions, and if conditions materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the Work, an equitable adjustment shall be made and the Contract Documents shall be modified by a Change Order. Any claim of the Contractor for adjustment hereunder shall not be allowed unless the Contractor has given the required Written Notice: provided that the Owner may, if the Owner determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

## **18. SUSPENSION OF WORK, TERMINATION AND DELAY**

18.1 The Owner may suspend the Work or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the Contractor, by Written Notice to the Contractor, which notice shall fix the date on which the Work shall resume. The Contractor will resume that Work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

18.2 If the Contractor is adjudged a bankrupt or insolvent, or makes a general assignment for the benefit of creditors, or if a trustee or receiver is appointed for the Contractor or for any of the Contractor's property, or if the Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if the Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if the Contractor repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment or if the Contractor disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the Work or if the Contractor disregards the authority of the Engineer, or if the Contractor otherwise violates any provision of the Contract Documents, then the Owner may, without prejudice to any other right or remedy and after giving the Contractor and the Contractor's surety a minimum of ten (10) days from delivery of a Written Notice, terminate the services of the Contractor and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and finish the work by whatever method deemed expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional service, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the Contractor WILL PAY THE DIFFERENCE TO THE OWNER.



Such costs incurred by the Owner will be determined by the Engineer and incorporated in a Change Order.

18.3 Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies by the Owner due the Contractor will not release the Contractor from compliance with the Contract Documents.

18.4 After ten (10) days from delivery of a Written Notice to the Contractor, the Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Contract. In such case, the Contractor shall be paid for all Work executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the Contractor, the Work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days after it is submitted, or the Owner fails to pay the Contractor substantially the sum approved by the Engineer or awarded by arbitrators within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) days from delivery of a Written Notice to the Owner, terminate the Contract and recover from the Owner payment for all Work executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until the Contractor has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

## **19. PAYMENTS TO CONTRACTOR**

19.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), The CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by, such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER's title to the material and equipment and protect any interest therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing any reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within ten (10) days of presentation of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The OWNER shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS. The OWNER at any time, however, after fifty (50) percent of the WORK has been completed, if he finds that satisfactory progress is being made, shall reduce retainage to five (5%) percent on the current and remaining estimates. When the WORK is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below five (5) percent to only that amount necessary to assure completion. On completion and acceptance of a part of the WORK on which the price is stated separately in the CONTRACT DOCUMENTS, payment may be made in full, including retained percentages, less authorized deductions.

19.2 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the

CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility, for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUB-CONTRACTORS, laborers, workmen, mechanics, materialmen, and furnisher of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the, nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, the Contractor's Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

## **20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE**

20.1 The acceptance by the contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically excepted by the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the Owner and others relating to or arising out of this Work. Any payment, however, final or otherwise, shall not release the Contractor or the Contractor's sureties from any obligations under the Contract Documents or the Performance Bond and Payment Bonds.

## **21. INSURANCE**

21.1 The Contractor shall purchase and maintain such insurance as will protect the Contractor, the Owner and the Engineer from claims set forth below which may arise out of or result from the Contractor's execution of the Work, whether such execution be by the Contractor or by any Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of any employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the Owner shall be filled with the Owner prior to commencement of the Work. These Certificates shall contain a provision that coverage afforded under the policies will not be cancelled unless at least fifteen (15) days prior Written Notice has been given to the Owner.

21.3 The Contractor shall procure and maintain, at the Contractor's own expense, during the Contract time, liability insurance as hereinafter specified;

21.3.1 Contractor's General Public Liability and Property Damage Insurance including vehicle coverage issued to the Contractor and protecting from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the Contract Documents, whether such operations are performed by the Contractor or by any Subcontractor, or anyone directly or indirectly employed by the Contractor or by a Subcontractor under him. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$2,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$2,000,000 aggregate for any such damage sustained by two or more persons in any one accident.

21.3.1.a The Contractor's General Public Liability and Property Damage Insurance shall include the Owner and the Engineer as additional insured during the Contract time and shall be provided at no expense to the Owner or Engineer.

21.3.2 The Contractor shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the Project to the full insurable value thereof for the benefit of the Owner, the Contractor, and Subcontractors as their interest may appear. This provision shall in no way release the Contractor or Contractor's surety from obligations under the Contract Documents to fully complete the Project.

21.4 The Contractor shall procure and maintain, at the Contractor's own expense, during the Contract Time, in accordance with the provisions of the laws of the State in which the work is performed, Workman's Compensation Insurance, including occupational disease provisions, for all of the Contractor's employees at the site of the Project and in case any work is sublet, the Contractor shall require such Subcontractor similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this contract at the site of the Project is not protected under Workmen's Compensation statute, the Contractor shall provide, and shall cause each Subcontractor to provide, adequate and suitable insurance for the protection of all employees not otherwise protected.

21.5 The Contractor shall secure, if applicable, "All Risk" type Builder's Risk Insurance for Work to be preformed. Unless specifically authorized by the Owner, the amount of such insurance shall not be less than the Contract Price totaled in the Bid. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the Contract Time, and until the Work is accepted by the Owner. The policy shall name as the insured the Contractor, the Engineer and the Owner.

## **22. CONTRACT SECURITY**

22.1 The Contractor shall within ten (10) days after the receipt of the Notice Of Award furnish the Owner with a Performance Bond and a Payment Bond in penal sums equal to the amount of the Contract Price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supply labor and materials in the prosecution of the Work provided by the Contract Documents, Such bonds shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the State in which the work is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these Bonds shall be borne by the Contractor. If ant any time a surety on any such Bond is declared a bankrupt or loses its right to do business in the state in which the Work is to be performed or is removed from the list of Surety Companies accepted on Federal Bonds, the Contractor shall within ten (10) days after notice from the Owner to do so, substitute an acceptable Bond (or Bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such Bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable Bond to the Owner.

## **23. SECTION DELETED**

## **24. INDEMNIFICATION**

24.1 The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use

resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation 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 workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, or the Engineer's agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications.

## **25. SEPARATE CONTRACTS**

25.1 The Owner reserves the right to let other contracts in connection with Project. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their Work, and shall properly connect and coordinate the Work with of all Contractors. If the proper execution or results of any part of the Contractor's Work depends upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such Work that render it unsuitable for such proper execution and results.

25.2 The Owner may perform additional Work related to the Project, or may let other contracts containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such Contracts (or the Owner, if performing the additional Work), reasonable opportunity for the introduction and storage of materials and equipment and the execution of Work and shall properly connect and coordinate the Work of all Contractors.

25.3 If the performance of additional Work by other Contractors or the Owner is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to the Contractor prior to starting any such additional Work. If the Contractor believes that the performance of such additional Work by the Owner or others involves an additional expense or requires an extension of the Contract Time, the Contractor may make a claim therefor as provided in Sections 14 and 15.

## **26. SUBCONTRACTING**

26.1 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.

26.2 The Contractor shall not award Work to Subcontractor(s), in excess of fifty (50%) percent of the Contract Price, without prior written approval of the Owner.

26.3 The Contractor shall be fully responsible to the Owner for the acts and omissions of the Subcontractors, and of persons either directly or indirectly employed by them, as well as for the acts and omissions of the Contractors direct employees.

26.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by terms of the Contract Document insofar as applicable to the Work of Subcontractors and to give the Contractor the same power as regards termination any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.

## **27. ENGINEER'S AUTHORITY**

27.1 The Engineer shall act as the Owner's representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and Work performed. He shall interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the Work is proceeding in accordance with the Contract Documents.

27.2 The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship and execution of the Work. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The Engineer shall promptly make decisions relative to interpretation of the Contract Documents.

## **28. LAND AND RIGHTS-OF-WAY**

28.1 Prior to issuance of Notice to Proceed, the Owner shall obtain all land and rights-of-way necessary for

carrying out and for the completion of the Work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed.

28.2 The Owner shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The Contractor shall provide at the Contractor's own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary facilities, or for storage of materials.

## **29. GUARANTY**

29.1 The Contractor shall guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the date of Substantial Completion. The Contractor warrants and guarantees for a period of one (1) year from the date of Substantial Completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other Work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The performance Bond shall remain in full force and effect through the guarantee period.

## **30. ARBITRATION**

30.1 All claims, disputes and other matters in question arising out of, or relating to the Contract Documents or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 20, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgement may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the demand for arbitration shall be filed in writing with the other party to the Contract Documents and with the American Arbitration Association. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

30.3 The Contractor will carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

## **31. TAXES**

31.1 The Contractor will pay all sales, consumer-use and other similar taxes required by the law of the place where the Work is performed.



## SUPPLEMENTAL GENERAL CONDITIONS

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1. **ENUMERATION OF DRAWINGS**

The drawings for this project are as follows:

<b>NAME</b>	<b>DRAWING NUMBER</b>
<b>ANDY ADAMS PARK IMPROVEMENTS</b>	<b>CONSTRUCTION BID SET</b>
<b>MUSCO LIGHTING PACKAGE</b>	
<b>ICON SHELTER SYSTEMS - PAVILION</b>	



2. **INSURANCE REQUIREMENTS FOR CONTRACTORS**

Contractors shall procure and maintain for the duration of the contract, insurance against claims for injuries to persons or damages to property which may arise from, or in connection with the performance of the work hereunder by the Contractor, and the Contractor's agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's bid or proposal.

A. **MINIMUM SCOPE OF INSURANCE**

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001, Ed. 01-96).
2. Insurance Services Office form number CA 0001 (Ed 06-92) covering Automobile Liability, code 1 "any auto."
3. Workers' Compensation insurance as required by the State of Utah including Employers Liability insurance.

B. **MINIMUM LIMITS OF INSURANCE**

Contractor shall maintain limits no less than:

1. General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, property damage, and contractual liability. The Commercial General Liability Insurance general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be three times the required occurrence limit.
2. Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury and property damage. "Any Auto" coverage is required.
3. The General Aggregate Limit shall be amended to apply separately to each of the Contractor's projects away from premises owned by or rented by the Contractor.
4. Worker's compensation and Employer's Liability: Worker's compensation limits as required by the State of Utah and Employer's Liability Limits of \$1,000,000 per accident.

C. **DEDUCTIBLES AND SELF-INSURED RETENTION**

Any deductibles or self-insured retention must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retention as respects the City, its officers, officials, employees, volunteers and agents; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

D. **NOTICE OF INCIDENT OR ACCIDENT**

Contractor shall agree to disclose to City all incidents or occurrences of accident, injury, and/or property damage covered by the insurance policy or policies.

E. OTHER INSURANCE PROVISIONS

The policies are to contain, or be endorsed to contain the following provisions:

1. Commercial General liability and Automobile Liability Coverage

- a. The City, its officers, officials, employees, volunteers and agents are to be covered as additional insured with respects to liability arising out of:
  - (i) Work or operations performed by or on behalf of the Contractor, including materials, parts or equipment furnished in connection with such work or operations;
  - (ii) The insured's general supervision of the Contractor or subcontractor;
  - (iii) Products and completed operations of the Contractor;
  - (iv) Premises owned, occupied or used by or on behalf of the Contractor;
  - (v) Automobiles owned, leased, hired or borrowed by or on behalf of the Contractor.

The coverage shall contain no special limitations on the scope of the protection afforded to the City, its officers, officials, employees or volunteers. Endorsement Form CG 20-09 (Ed. 03-97), Additional Insured – Owners, Lessees or Contractors (Form A) shall be used.

- b. The Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees and volunteers. Any insurance of self-insurance maintained by the City, its officers, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
- c. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City, its officers, officials, employees, volunteers or agents.
- d. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

2. Worker's Compensation and Employer's Liability Coverage

The insurer shall agree to waive all rights of subrogation against the City, its officers, officials, employees, volunteers and agents for losses arising from work performed by the Contractor for the City.

3. All Coverage

Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City.

F. ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers with a current A.M. Best & Company rating of no less than A: VII, or equivalent, to be acceptable to the City.

G. VERIFICATION OF COVERAGE

Contractor shall furnish the City with certificates of insurance and with original endorsements effecting coverage required by this clause. The endorsements should be on forms provided by the City or other than City forms or a separate owner's policy, provided these forms or policies are approved by the City and amended to conform with the City's requirements. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. Where by statute, the City's Insurance commissioner is to be substituted. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the rights to require complete, certified copies of all required insurance policies, with all endorsements, at any time.

H. SUBCONTRACTORS

Contractors shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

I. CONTRIBUTION NOT REQUIRED

As respects: (a) work performed by the Named Insured for or on behalf of the City; or (b) products sold by the Named Insured to the City; or (c) premises leased by the Named Insured from the City, the insurance afforded by this policy shall be primary insurance as respects the city, its elected or appointed officers, officials, employees, volunteer, or agents; or stand in an unbroken chain of coverage excess of the Names Insured's scheduled primary coverage. In either event, any other insurance maintained by the city, its elected or appointed officers, officials, employees, volunteers, or agents shall be in excess of this insurance and shall not contribute with it.

J. INSURANCE

- 1.0 The Contractor shall purchase and maintain such insurance as will protect the Contractor, the Owner, its officers, employees, volunteers, agents, and the Engineer from claims set forth below which may arise out of or result from the Contractor's execution of the work, whether such execution by the Contractor or by an Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:
- 1.1 Claims under worker's compensation, disability benefit and other employee benefit acts;
- 1.2 Claims for damages because of bodily injury, occupational sickness or death of the Contractor's employees;
- 1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- 1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person; and
- 1.5 Claims for damages because of injury to or destruction of tangible property including loss of use resulting therefrom.
2. Certificates of insurance, with attached endorsements, amendments, and/or additions reflecting levels, types and amounts of insurance, acceptable to the Owner shall be filed with the Owner

prior to commencement of the Work. The Owner expressly reserves the right to receive a copy of applicable insurance policy or policies, upon request. These Certificates and endorsements shall contain a provision that coverage afforded under the policies will not be canceled unless at least thirty (30) days prior Written Notice (certified mail) has been provided to the Owner.

- 2.1 All required insurance must be in effect prior to awarding this contract and during the entire duration of the contract term. Contractor shall not commence work under this contract until it has obtained the insurance required herein and further specified in the Supplemental Conditions.
3. The Contractor shall procure and maintain, at the Contractor's own expense, during the Contract time, liability insurance as hereinafter specified.
  - 3.1 Contractor's Commercial General Liability insurance, including vehicle coverage, issued to the Contractor and protecting the Contractor from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the Contract Documents, whether such operations be by the Contractor or by any Subcontractor under the Contractor, or anyone directly or indirectly employed by the Contractor or by a Subcontractor under the Contractor. Insurance coverage shall be "occurrence" based unless specifically waived by the Owner. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$1,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$1,000,000 aggregate for any such damage sustained by two or more persons in any one accident. Said amount of coverage shall be for this specific project. Any aggregation may require additional coverage.
    - 3.1.a The Contractor's Commercial General Liability Insurance shall include the Owner, its officers, officials, employees volunteers, agents and the Engineer as additional insured's during the Contract time and shall be provided at no additional expense. The insurance coverage for the additional insured's shall pay for all damages attributed to them and shall pay for the costs of defending any action filed hereunder when the additional insured's are made parties to that action.
    - 3.1.b Minimum liability levels may be increased in the Supplemental General Conditions section of the contract if activity has a severe loss potential. Total aggregate liability levels for personal injury including death, and all claims for destruction of property arising out of or in connection with any operations under the contract Documents, will be a multiple of the occurrence limit and must equal or exceed the aggregate level set in the Supplemental General Conditions section of the Contract.
  - 3.2 The Contractor shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the Project to the full insurable value thereof for the benefit of the Owner, the Contractor, and Subcontractors as their interest may appear. This provision shall in no way release the Contractor's surety from obligations under the Contract Documents to fully complete the Project. Otherwise each subcontractor shall each meet the insurance requirement as set forth in this agreement.
4. The Contractor shall procure and maintain, at Contractor's expense, during the Contract Time, in accordance with the provisions of the laws of the State in which the work is performed. Worker's Compensation Insurance, including occupational disease provisions, for all the Contractor's employees at the site of the Project and in the case of any work is sublet, the Contractor shall require such Subcontractor similarly to provide Worker's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of

employees engaged in hazardous work under this contract at the site of the Project is not protected under Worker's compensation statute, the Contractor shall provide, and shall cause each Subcontractor to provide, adequate and suitable insurance for the protection of employees not otherwise protected.

5. The Contractor shall secure, if applicable, "All Risk" type Builder's Risk Insurance for Work to be performed. Unless specifically authorized by the Owner, the amount of such insurance shall not be less than the Contract Price totaled in the Bid. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the Contract time, and until the Work is accepted by the Owner. The policy shall name as the insured the Contractor, the Engineer and the Owner.
6. The Contractor's policy or policy endorsement must state the Contractor's insurance is primary protection, and Owner's insurance will not be called upon to contribute to a loss that should otherwise be paid by the Contractor's insurer.
7. Contractor's insurer or insurance underwriter must have at minimum an A.M. Best & Company rating of "A.VII" or equivalent. Coverages shall be with insurance carriers licensed and admitted to do business in the State of Utah.
8. Contractor shall disclose all deductibles or self-insured retentions (SIR). At Owner's option, all deductibles and SIRs shall be covered by an endorsement eliminating them, or a bond shall be posted covering them and any defenses required thereby.

### **3. COORDINATION OF DRAWINGS AND SPECIFICATIONS**

Any part of the work which is not mentioned in these specifications, but is shown on the drawings, or any part not shown on the drawings but described in the specifications, shall be furnished and installed by the Contractor as if fully described in the specifications and shown on the drawings.

### **4. INCIDENTAL WORK**

All minor details of work and materials which are not shown on the drawings, as well as such items which are not specifically mentioned in the specifications, but are obviously necessary for the proper completion of the work, shall be considered as incidental, and as being a part of and included with the work for which prices are given in the proposal, and no extra compensation shall be allowed the Contractor for the performance thereof.

### **5. COMPETENT PERSONNEL AND EQUIPMENT TO BE EMPLOYED**

A. The Contractor shall employ suitable and competent mechanics for every kind of work. If any person employed by the Contractor is incompetent, disorderly or disobedient to the Engineer or the Engineer's inspectors, or rude or abusive to any of the general public the person shall be removed from the work and not again be employed upon the work without the consent of the Engineer.

B. The Contractor shall provide needed and approved equipment in good repair, to do any and all work specified and required as well as sufficient qualified workmen, as required and he shall prosecute the work diligently at all times and shall maintain the workspace in a clean and safe condition during the entire performance of this contract.

C. The Contractor shall and will perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this contract and said specifications and in accordance with the plans and drawings covered by this contract any and all supplemental plans and drawings, and in accordance with the directions of the Engineer as given from time to time during the progress of this work. The Contractor shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required.

D. The Contractor shall observe, comply with and be subject to all terms, conditions, requirements, and limitations of the contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the Owner.

**6. CODES AND STANDARDS**

A. All materials and workmanship shall comply with all applicable codes, specifications, local ordinances, industry standards and utility company regulations.

In case of difference between building codes, specifications, state laws, local ordinances, industry standards and utility company regulations and the contract documents, the most stringent shall govern. The Contractor shall promptly notify the Engineer in writing of any such differences. If extra compensation is claimed because of such differences it shall be negotiated and resolved before the work is done.

When applicable regulations, codes and standards have been revised or superseded, the revision, edition or expression in effect at date of advertisement for bids shall govern the work.

B. NON-COMPLIANCE. Should the Contractor perform any work that does not comply with the requirements of applicable building codes, state laws, local ordinances, industry standards, and utility company regulations, the Contractor shall bear all costs arising in correcting the deficiencies.

C. APPLICABLE CODES AND STANDARDS. Applicable codes and standards shall include all state laws, local ordinances, utility company regulations, and the applicable requirements of national and state-accepted codes and standards; including, but not limited to the following:

1. Building Codes
  - UBC - Uniform Building Code
  - UPC - Utah Plumbing Code
  - UOSHA - Utah Occupational Safety and Health Rules and Regulations - General Standard
2. Industry Standards, Codes and Specifications
  - AASHTO - American Association of State Highway and Transportation Officials
  - ACI - American Concrete Institute
  - AGA - American Gas Association
  - AISC - American Institute of Steel Construction
  - AISI - American Iron and Steel Institute
  - AMCA - Air Moving & Conditioning Association
  - ANSI - American National Standards Institute
  - ASHRAE - American Society of Heating, Refrigeration & Air Conditioning Engineers
  - ASME - American Society of Mechanical Engineers
  - ASTM - American Society of Testing and Materials
  - AWWA - American Water Works Association
  - AWS - American Welding Society
  - CRSI - Concrete Reinforcing Steel Institute
  - NBS - National Bureau of Standards
  - NEC - National Electrical Code
  - NEMA - National Electrical Manufacturers Association
  - NEPA - National Fire Protection Association
  - PCA - Portland Cement Association
  - SMACNA - Sheet Metal & Air Conditioning Contractors National Association
  - UL - Underwriters Laboratories, Inc.

7. **INSPECTION AND TESTS**

A. All work and materials, and the manufacture and preparation of such materials from the beginning of the construction until the final completion and acceptance of the herein proposed work shall be subject to the inspection and rejection of the Engineer or the Engineer's representative at such times as may suit the Engineer's convenience and no material shall be used until proper tests and approvals have been given. As soon as the materials have been inspected and tested, the Contractor shall immediately remove all rejected materials from the work, and to such a point distant therefrom as the Engineer may require. The Contractor shall furnish, at the Contractor's own expense, such labor as may be required to enable a thorough inspection and culling of all materials, as proposed to be used, in sufficient amounts as required to make proper tests.

B. The Contractor shall make application for an inspector at least twenty-four (24) hours before the Contractor's services are required.

C. All inferior or imperfect work or materials that may be discovered before the completion and acceptance of the herein proposed work shall be corrected immediately upon the order of the Engineer, notwithstanding that it may have been overlooked by the Engineer or the Engineer's representative, and it are hereby expressly agreed that the inspection by the Engineer shall not relieve the Contractor of the Engineer's liability to furnish materials and workmanship in accordance with the specifications.

D. The Contractor and the Contractor's Superintendent and foreman shall promptly obey and follow every order or direction which shall be given by the Engineer in accordance with the terms of the contract.

E. Inspectors shall at all times be free to perform their duties, and any intimidation of any inspector on the part of the Contractor or the Contractor's employees shall be sufficient reason, if the Engineer desires, to annul the contract or remove the employee.

F. No materials shall be used before being inspected and approved by the Engineer, but the failure or neglect on the part of said Engineer to condemn or reject inferior materials or work shall not be construed to imply an acceptance of the same should their inferiority become evident at any time prior to the final acceptance of the work.

G. The Engineer and Owner, by reserving the right to inspect the doing of any work shall not have control of the Contractor's workers, methods of doing the work, or safety of the work or workers, but such inspection shall be limited to the control necessary to assure that the final results will fully comply with the Engineer or the Owner shall in no way excuse the Contractor from fully complying with the contract documents, drawings and specifications.

H. Test shall be required to determine suitability of materials, equipment and workmanship.

The Contractor shall provide certificates showing that items of equipment and materials have been sampled, inspected and tested when the product is completed off the site.

The Owner shall provide for sampling and testing of materials and workmanship performed on the site.

As examples of the division of responsibility, the following table may be used as a guide.

<u>CONTRACTOR</u>	<u>OWNER</u>
Concrete aggregates	Concrete slump
Concrete water	Concrete strength
Concrete cement	Soil density
Reinforcing steel	Pipe alignment
Pipe-strength	Paint thickness
Pipe leakage	Soil gradation (local material)
Machinery	
Paint content	
Electrical materials	
Soil gradation (imported or offsite borrow)	

These examples shall serve as a guide to the division of responsibilities for sampling and testing, and shall govern unless specific responsibilities are given elsewhere in these specifications.

**8. SUBMITTAL OF SHOP DRAWINGS AND RELATED DATA**

A. Prior to fabrication and in ample time to permit satisfactory progress of the work, the Contractor shall submit shop drawings and related data covering equipment and fabricated materials to the Engineer for review. Submittal shall be in such detail as the Engineer may require for informing himself in regards to design, installation and operation of the items covered. Two copies shall be submitted for preliminary review, and six copies for final review.

B. Submittal not bearing Contractor's certification that he has reviewed, checked and approved the drawings and that they are in conformance with the requirements of the Contract Documents will not be reviewed by the Engineer.

C. Corrections or comments made on shop drawings during Engineer's review shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Engineer will check and review only for general conformance with the design concept of the project and general compliance with information given in the Contract Documents. The Contractor shall be responsible for: conforming and correlating a; quantities and dimensions; fabrication processes and techniques of construction; coordination of work with that of all other trades; and the safe and satisfactory performance of his work.

D. The Contractor shall require all suppliers of materials and equipment to include with their submittal a written statement that the materials and equipment being furnished are suitable and proper for intended installation, that the supplier has investigated the intended use, and that the items will satisfactorily perform an operate in the installation.

E. Drawings if minor manufactured items may not be required by the Engineer; however, the Contractor shall furnish to the Engineer tabulated lists of such items, showing manufacturer's catalog data, together with samples or general data, as may be required to permit determination as to their acceptability for incorporation in the work.

F. The Contractor, at the Contractor's own expense, shall make such changes in the fabrication and equipment drawings as may be found necessary by the Engineer to make the same conform to the Contract Documents. Prior to review and acceptance of such drawings by the Engineer, any work which the Contractor may do on that portion of the work is at the Contractor's own risk; the Owner will not be responsible for any expense incurred by the Contractor for changes to make work conform to the drawings as finally accepted.

G. The Contractor shall furnish complete operation, maintenance and lubrication instructions in triplicate covering all equipment, materials and supplies used in the work. Installation of equipment shall not begin until these instructions have been supplied to the Engineer.

**9. SELECTION OF MATERIAL**

A. Materials or equipment noted on the drawings and in specifications by the trade or manufacturer's name are so designated primarily to establish standards of quality, finish, appearance, ruggedness of construction, and performance. It is not the intent to limit the choice of materials and equipment to the specific product designated.

B. The Contractor will be allowed to submit requests to substitute equal items of equipment and material for those items which the Owner has not expressed a designated type and manufacturer in the award of the contract.

C. Such requests shall be made in writing, and shall be accompanied by complete data on which the Engineer may make determination on the merits of the proposed substitution. The written request shall state how the product proposed for substitution compares with or differs from designated product in composition, size, arrangement, performance, etc., and shall show conclusively that the proposed substitute is equal in all respects to that which is shown on the drawings or specified. If, in the opinion of the Engineer, the proposed product is equal to or better than the designated product, it may be approved for use, subject, however, to all applicable provisions of the specifications. Such opinions and approval must be in writing.



D. When the bidder is required to submit alternate bids on items of equipment as manufactured by three different manufacturers, he shall submit bids on equipment manufactured by at least two of the manufacturers listed and may submit a bid on equipment made by a third manufacturer selected by the Contractor. The final selection of equipment for the work will be based on quality, conformity to the specifications, efficiency, past experience, maintenance and cost. The Owner on recommendation of the Engineer will select the item and manufacturer and award the contract based on this selection.

E. Where alternate bids are required for equipment or materials manufactured from different materials or by different processes, the bidder shall submit bids on a minimum of three of the alternates except where less than three alternates are requested.

F. Selection will be based on the bid price of the alternate as well as an analysis of total contract cost, quality, efficiency maintenance and other features of the work which may be affected by the selection of that alternate.

G. The bidder shall submit bids on all alternates so that the Engineer can make a complete analysis of the bid.

H. All requirements of the specifications must be adhered to and all modifications shall be made in the article specified by trade name, type or model of manufacturer's equipment to make it conform to the specific requirement of the specifications.

I. Materials of a general description shall be the best of there several kinds, free from defects and adapted to the use for which provided.

J. The physical characteristics of all materials not particularly specified shall conform to the latest standards published by the American Society for Testing and Materials, or other recognized standards where applicable.

K. On all questions concerning acceptability of materials, classification of materials, execution of the work, and the determination of costs, the decision of the Engineer shall be final and binding upon all parties.

## 10. SURVEYS

A. General. The Engineer, at the Owner's expense, will establish alignment and grade data in the minimum amount described herein, as applicable to a given project, for execution of the work.

The Engineer's survey crews will not be available at all times for the work. The Contractor shall notify the Engineer at least 48 hours ahead of the time surveys will be required. The contractor shall keep the engineer advised on a current basis of construction survey requirements so that survey work may be coordinated with the Contractor's sequence of operations.

It is the intent of the Owner and the Engineer to check alignment and grade of the various parts of the project from time to time.

The contractor shall without additional costs, give such assistance and provide such ladders, lights or other equipment as may be required in establishing and checking lines and grades.

B. CONTRACTOR'S RESPONSIBILITY. Prior to commencement of work under this project, the subdivider shall establish lot corner stakes showing plan and elevation reference to curb and gutter, and sidewalks.

C. Location and Quantity of Alignment and Grade Data to be Provided by the Engineer. Additional stakes shall be provided by the engineer where the engineer determines that lot corner stakes established by the subdivider are insufficient to adequately define line and grade, such as at intersections, and beyond the limits of the subdivision. More particularly, alignment and grade data shall be provided to include the following:

(1) Sanitary Sewer / Storm drain lines. Offset and depth of cut measurements for sewer lines will be provided for laser instrument setting at manholes, 50-feet therefrom, at the midpoint of the span between manholes, and at the next manhole. If laser instruments are not used, see subparagraph "Contractor's Responsibility".

(2) Waterlines. Offsets to waterlines and appurtenances in subdivisions will be referenced from lot corner or curb and gutter stakes. For waterline extensions beyond subdivision boundaries, line stakes shall be provided at valves, bends, hydrants, specials and at not to exceed 100-feet.

(3) Curb & gutter / Sidewalk. Offsets to the curb & gutter will be provided at 25 foot intervals and at all radius points, change in grade and termination points.

D. Contractor's Responsibility.

(1) The Contractor shall transfer line and grade from the stakes or marks referred to above, to the work, and shall be responsible for the accuracy of the measurements from the stakes or marks to the work.

(2) Where laser instruments are not used to maintain alignment and grade stakes as required for proper execution of the work. These additional stakes shall be established from the control stakes provided by the Engineer. When the Engineer is requested to provide this additional staking for the Contractor, the Engineer shall be reimbursed and the extra cost shall be paid by the Contractor.

Also, where string line is used to maintain grade instead of laser equipment, the Contractor shall at all times have a minimum of 150-feet of string line stretched ahead of the work and 100-feet behind.

(3) The Contractor shall be responsible for the accuracy of all stakes for alignment and grade established by the Contractor.

(4) The Contractor shall be responsible for the protection of all control stakes established by the Engineer. The Engineer shall be reimbursed for re-establishing stakes or bench marks that have been disturbed or destroyed for any reason and the extra cost shall be paid by the Contractor.

(5) The Contractor shall not disturb any survey monuments found in the line of the work unless written authority to do so is given by the Engineer. Cost incurred by the Engineer in replacing monuments that have been disturbed by the Contractor without written approval shall be paid by the Contractor.

(6) Finish grade elevations for manholes, inlet and clean out boxes, fire hydrants, etc. will be transferred from property corners and curb elevations, or as directed by the Engineer.

**11. PROPERTY LIABLE TO DAMAGE**

A. The Contractor shall be liable for all damage, caused by the Contractor's own negligence to water, gas, steam or other pipes, ducts, cables, flumes, poles, or conduits, or other property owned by any person, corporation or the Owner. The Contractor shall repair or replace, as directed by and to the satisfaction of the Owner and Engineer, all water, sewer, irrigation, drainage or other pipes, flumes, conduits, hydrants, poles, or other property of the Owner or others which may be injured or damaged by reason of the negligence or carelessness of the Contractor or any of the Contractor's agents, servants, employees or subcontractors. If the Contractor shall fail or neglect to make such repairs or replacements within ten days after being notified by the Engineer so to do, then the Owner may make repairs or replacement of property so injured or damaged, and the cost of so doing may be deducted from any sum due or to become due the said Contractor under this contract. If the repairs are determined by the Engineer to be of an emergency nature, the Contractor shall not be allowed ten days to complete repairs or replacements but rather shall immediately make necessary repair or replacement.

B. The Contractor shall take all possible care to avoid grass or forest fires and shall assume responsibility for damage caused by any fire caused by the Contractor's construction operations.

C. When excavating in the vicinity of buried utilities, the Contractor shall take special precautions, including but not necessarily limited to using metal detectors and hand excavation to minimize damage to such utilities.

**12. MOVING PROPERTY OF PUBLIC UTILITY**

In case the Engineer, acting on application by the Contractor, determines that it is necessary to move the property of any public utility or franchise, the public utility or franchise will be notified by the Engineer to move the property within a specified reasonable time, and the Contractor shall not interfere with the property until after the expiration of the time specified, and then only as approved by the Engineer.

**13. DAMAGE TO UTILITIES**

The Contractor shall immediately notify the utility company, department or person involved and satisfactorily repair or replace any utility which is damaged or broken due to the execution of the work under this contract or arrange for the utility to perform the work. If the Contractor fails or neglects to make, or replacements immediately, then the Owner may make the necessary repairs and the cost of so doing will be deducted from the sum due or to become due the said Contractor under this contract.

**14. CLAIM FOR DAMAGE**

The Contractor shall not be entitled to any claim for damage on account of hindrance or delay from any cause whatever, but if occasioned by an act or omission on the part of the Owner, such hindrance or delay may entitle the Contractor to an extension of time in which to complete the work, which shall be determined by Owner, provided, that the Contractor shall give notice in writing of the cause of such delay. No extra time will be given for time elapsing before such notice is given.

**15. PROPERTY REMOVED UNDER THE CONTRACT TO REMAIN THE PROPERTY OF ITS OWNER**

All castings, grates, special fittings, hydrants, valves, valve boxes, pipe, poles, wire, building material, or other items removed during progress of the work, which in the Engineer's opinion have value to its Owner shall remain the property of its Owner and must be delivered to its Owner at such point on or near the site of the work as the Engineer may direct.

**16. SAFETY STANDARDS AND ACCIDENT PREVENTION**

A. With respect to all work performed under this contract the Contractor shall:

(1) Comply with the safety standards provisions of applicable laws, building and construction codes, the "Manual of Accident Prevention in Construction" published by the Associated General Contractors of America and State Safety Regulations, the General Safety Orders Covering Utah Industries as published by Industrial Commission of Utah, the OSHA standards as they apply, safety standards as required by the Department of Transportation and City or County Highway Department.

(2) The Contractor shall exercise every precaution at all times for the protection of persons (including employees) and property which shall include, as needed, the use of shoring, bracing, barricades, guards, night watchmen, red lighting and the elimination of hazardous conditions.

(3) The Contractor shall maintain at the Contractor's office or other well-known place at the job site, all articles necessary for giving first aid to the injured; and shall have an employee who has completed the American Red Cross Standard First Aid Course or its equivalent, and standing arrangements for the immediate removal to a hospital for a doctor's care of persons (including employees) who may be injured on the job site. On job sites on which less than 10 employees are working, a standard first aid kit equipped to serve 10 to 25 people, may be substituted for the above requirements. However, in no case, shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or doctor's care.

**17. OBSTRUCTION AND GUARDS**

A. The Contractor shall erect and maintain good and sufficient guards, barricades, light and signals at all unsafe places at or near the work, and shall in all cases maintain a safe passageway.

B. In the event the work under this contract may become hazardous to traffic or pedestrians, then the Contractor shall furnish, without added cost to the Owner, such flagmen as required to direct and control traffic during such emergencies and until such hazards have been corrected.

**18. CLEANING UP AND JOB SHUT-DOWN**

A. Immediately upon the completion of the work on each section of the work as determined by the Engineer, the Contractor shall, at the Contractor's own expense, clean up and remove all refuse materials of every kind resulting from the work, and upon failure to do so within twenty-four (24) hours after having been notified by the Engineer, the work may be done by the Owner and the cost thereof deducted from the amount of the Contractor's final payment. The Engineer will not make the final inspection until all of the work contemplated by the contract has been completed and the final cleaning up performed.

B. If in the judgment of the Engineer, it is necessary to close down the work due to inclement weather or due to circumstances arising during the progress of the work that may be construed to be dangerous or due to non-compliance with the specifications, the Contractor shall comply and stop all operations upon written notice from the engineer to do so and the work shall remain closed down until further orders in writing are given by said Engineer to the Contractor to proceed with the work of the project, and there shall be no claim against the Owner or Engineer for such action on the part of the Engineer.

C. If, for any reason whatsoever the work is closed down temporarily, then the Contractor shall clean up all of the finished work and shall provide protection as provided in Paragraph "Protection of Work During Shut-Down," and all other work under construction shall be cleaned up, material on hand shall be properly stored and made safe from damage or loss and to the satisfaction of the Engineer.

(1) The Contractor shall be responsible to see that the job is kept and maintained in a satisfactory condition during the entire time the work is closed down, roadways shall be made passable for local and emergency traffic at all times, and the Contractor shall be responsible for all materials, tools, and equipment entrusted to the Contractor's care from damage, or theft, and for its safety during the time the work is closed down, as well as throughout the entire performance of the work under this contract.

(2) Failure of the Contractor to comply with the above provisions during temporary shutdown of the work will be just cause for the Owner to do the required work, and the cost deducted from the final amount due the Contractor.

**19. PREFERENCE TO LOCALLY PRODUCED MATERIALS**

The Contractor agrees that preference shall be given to locally produced materials and that foreign made items or items made using foreign materials shall not be used unless no source for items made in the U.S.A. exists.

**20. EMERGENCIES**

Emergencies may arise during the progress of the work which may require special effort or require extra shifts or men to continue the work beyond normal working hours. The Contractor shall be prepared in case of such emergencies from whatever cause to do all necessary work promptly, and at no additional cost to the Owner.

**21. PROTECTION OF WORK DURING SHUT-DOWN**

The Contractor shall be responsible at all times during the construction period, or during the time the work is closed down for any reason, for the safety of all persons, materials, tools, equipment, etc. from theft, damage or injury to any of them or for damage done to the work that may be caused by the Contractor's neglect or the neglect of the Contractor's agents or employees, or by not keeping proper watch. The responsibility for the above, as well as providing competent watchmen at the job site, remains with the Contractor until such time as the work is completed, accepted by and turned over to the Owner for operation.

**22. EQUIPMENT AND MATERIALS**

All materials and equipment for installation shall be new and shall bear the manufacturer's name, trade name and the UL label, ASME stamp or other symbols of approval in every case where a standard has been established for the particular material. The equipment and material to be furnished under each Section of the specification shall be essentially the standard product of a manufacturer regularly engaged in the production of the required type of equipment or material, and shall be the manufacturer's latest approved design.

A. Equipment and Materials of the Same General Type. Equipment and materials of the same general type shall be of the same make throughout the work to provide uniform appearance, operation and maintenance.

B. Protection. Equipment shall be tightly covered and protected against dirt, water and chemical or mechanical injury or theft. At the completion of the work, fixtures, equipment and materials shall be cleaned and polished thoroughly and turned over to the Owner in a condition satisfactory to the Engineer. Damage or defects developing before acceptance of the work shall be made good at the Contractor's expense.

C. Dimensions. It shall be the responsibility of the Contractor to insure that items to be furnished fit the space available and shall make necessary field measurements to ascertain space requirements, including those for connections, and shall furnish and install such sizes and shapes of equipment that the final installation shall suit the true intent and meaning of the drawings and specifications.

### **23. SANITATION**

A. The Contractor shall be fully responsible for the conduct of workers and the workers of all Subcontractors on the project. The Contractor will see that proper sanitary facilities are available and that all workers are notified of the location of said facilities. Any worker committing any nuisance outside proper facilities will be cause for suspension of the whole work until the situation has been corrected to the complete satisfaction of the Engineer.

B. On projects where facilities are not readily available the Contractor shall provide and erect a chemical or marine type toilet at a point to be approved by the Engineer, for the use of Contractor's employees and other personnel on the construction. No use shall be made of dug hole privies. Following the period of necessity for such toilet, it shall be removed completely.

C. Chemical toilet shall be of the approved type. The Contractor shall furnish all materials for said toilet and erect same at the Contractor's sole cost and expense, and he shall maintain and remove the same upon completion of the need for its use wherever it is located.

### **24. COORDINATION OF WORK**

A. The Contractor shall review the drawings and specifications and shall report any discrepancies to the Engineer and get written instructions for changes necessary to avoid interference. Before installation, the Contractor shall make proper provision to avoid interference in a manner approved by the Engineer. All changes required in the work of the Contractor caused by the Contractor's neglect to do so shall be rectified by the Contractor at the Contractor's own expense.

B. If, through acts of neglect on the part of the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

### **25. QUANTITIES OF ESTIMATE**

Wherever the estimated quantities of work to be done and materials to be furnished under this contract are shown in any of the documents including the proposal, they are given for use in comparing bids and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this contract, and such increase or diminution shall in no way vitiate this contract, nor shall any such increase or diminution give cause for claims or liability for damages.

### **26. COMPLIANCE WITH LAWS AND REGULATIONS**

The Contractor shall comply, and require any subcontractors to comply, with the current provisions of Utah Code Ann. Sec. 34-30-1 et seq.; specifically but not limited to provisions of Utah law relating to hiring practices, payment for overtime, and preparation and preservation of payroll records.

Failure by the Contractor to comply with these requirements will be considered as a breach of this contract, in addition to other penalties provided by Utah law. If the provisions of Utah Code Ann. Sec. 34-30-1 are not complied with, this contract shall be void.

**27. PARTIAL PAYMENTS AND ESCROW ACCOUNTS**

A. Partial Payments. Payment of monthly partial payment estimates submitted by the Contractor as described in the GENERAL CONDITIONS must, in most instances, be approved by the Owner at a regularly scheduled monthly meeting. The payment submittal schedule for 2023 is as follows:

Submittal date	Payment date	Submittal date	Payment date
January 6	January 27	February 3	February 24
March 3	March 24	April 7	April 28
May 5	May 26	June 2	June 23
July 7	July 28	August 4	August 25
September 1	September 29	October 6	October 27
November 3	November 24	December 1	December 29

B. Retainage Escrow. The provisions of Article 19 of the GENERAL CONDITIONS with respect to retainage on partial payments are hereby modified for public projects. In order to comply with the Utah State law enacted in 1983 requiring escrow account in a manner acceptable to the Owner for the purpose of holding the Contractor's retainage. The Owner will issue two checks for each partial payment; one check to the Contractor for work completed less retainage, and the second check for retainage to the Escrow Account.

The Owner will make arrangements with the successful Bidder with respect to either the establishment of the Escrow Account or Waiver of the requirement by the Contractor, prior to giving "Notice to Proceed."

The Owner reserves the right to alter this procedure in any manner in accordance with the Utah State legislation governing escrow accounts.

C. Final Payment. As a condition for completion and final acceptance of the work by the Engineer and the Owner, the Contractor and the Contractor's surety shall certify that the final payment request submitted by the Contractor is correct and will constitute payment in full when paid, that the Contractor waives the right to make any additional claims, and that all work has been performed in accordance with the contract documents.

**28. PAYMENTS BY CONTRACTOR**

The Contractor shall pay (a) for all transportation and utility services not later than the 20th day of the calendar months following that in which services are rendered; (b) for all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the project, and the balance of the cost thereof, not later than the 30th day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used; and (c) to each of the subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by the Subcontractors to the extent of each Subcontractor's interest therein.

**29. "AS-CONSTRUCTED' DRAWINGS**

Before final acceptance, the Contractor shall provide the Engineer with a set of full size prints which have been marked to show the location of concealed portions of the project including: manholes, Y's, tees, laterals, clean outs on sewer pipelines;

manholes, valves, tees, crosses, elbows, meters and laterals on water pipelines; electric wire cable conduit location shall be properly plotted to scale and noted by station, offset and elevation.

These "As-Constructed" prints shall also show all elevations of buried or concealed features from the Engineer's datum as shown on the "Construction" drawings.

Contractor shall maintain these drawings on an up-to-date basis. The Engineer may call for "As-Constructed" drawings when a phase of the project is complete.

### **30. PRE-CONSTRUCTION CONFERENCE**

Within ten (10) days after notification of contract award, the successful bidder together with any known principal subcontractors, will be required to attend a pre-construction conference at a time and place designated by the Owner. Subcontractors shall include, but not be limited to, major items of work, such as heating, electrical, plumbing and so forth. The purpose of the pre-construction conference is to discuss, among other considerations, the responsibilities of the successful bidder and any Subcontractors.

### **31. GUARANTEE**

A. The Contractor shall warrant and guarantee that the improvements provided and every part thereof will remain in good condition for a period of one year after the date of completion and conditional acceptance by the Owner. The guarantee period for road surfaces, asphalt trails and street improvements such as curb and gutter and sidewalk shall be three years. The date of Conditional acceptance shall be the date of approval, by the Owner, of the final estimate for the work as prepared by the Engineer. The Contractor agrees to make all repairs and/or replacements, for all defects in workmanship, materials and equipment during the guarantee period, ordinary wear and tear and acts of God accepted, without additional charge or cost to the Owner.

The Contractor shall maintain all equipment until the date of conditional acceptance, at which time the Owner will assume normal maintenance. It shall be the Contractor's responsibility to instruct the Owner in all correct maintenance procedures for all items requiring maintenance.

The Contractor also agrees that the performance and payment bond hereto attached shall remain in force until the conditions of this guarantee are fulfilled.

B. The determination of the necessity for repairs above mentioned rests entirely with the Owner, whose decision shall be final and obligatory upon the Contractor. If the termination of the said period of one or three years shall fall within the months of November, December, January, February or March, said months shall not be included in the computation of the said period of one or three years, but said period shall be held and understood to terminate on the 15th day of April next thereafter, unless otherwise permitted by the Owner. It is hereby expressly understood and agreed that the Owner shall not finally accept the work before the date specified above, and then only in the case that all necessary repairs have been made according to standard methods approved by the Engineer.

### **32. PHOTOGRAPHS**

The contractor shall provide photographs of the work site including preconstruction photographs and periodic construction photographs. Submit a key plan of the construction area with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation. Submit unaltered, original, full-size images files within seven days of taking photographs. The digital camera shall have a minimum sensor resolution of 8 megapixels. Provide the following information for identification with each image description in file metadata tag: 1) Name of Project, 2) Name and contact information for photographer, 3) Date photograph was taken, and 4) Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction. All digital images shall be provided in JPG format, with minimum size of 8 megapixels. Preconstruction photographs shall be taken before commencement of demolition. Take photographs of project area, including existing items to remain during construction, from different vantage points. Periodic construction photographs shall be taken weekly, with timing each month adjusted to coincide with the cutoff date associated with each application for payment. Select vantage points to show status of construction and progress since last photographs were taken.

**33. MATERIALS FURNISHED BY THE OWNER**

The following items shall be furnished by the Owner:  
Pavilion and Musco Lighting Equipment.

**34. BUILDING PERMITS**

Contractor to obtain any necessary permits



**SECTION 01 5639  
TEMPORARY TREE AND PLANT PROTECTION**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
  - 1. Section 311000 "Site Clearing" for removing existing trees and shrubs.

**1.2 DEFINITIONS**

- A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at a height 6 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.
- B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape or the average of the smallest and largest diameters at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.
- C. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and as indicated on Drawings.
- D. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.
- E. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

**1.2 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
    - a. City responsibilities.
    - b. Contractor responsibilities.
    - c. Coordination of Work and equipment movement with the locations of protection zones.
    - d. Trenching by hand or with air spade within protection zones.
    - e. Field quality control.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples: For each type of the following:
  - 1. Organic Mulch: Sealed plastic bags labeled with composition of materials by percentage

- of weight and source of mulch.
  - 2. Protection-Zone Fencing: Materials Samples.
  - 3. Protection-Zone Signage: Full-size Samples.
- C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

## **1.5 INFORMATIONAL SUBMITTALS**

- A. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

## **1.6 FIELD CONDITIONS**

- A. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Moving or parking vehicles or equipment.
  - 3. Foot traffic.
  - 4. Erection of sheds or structures.
  - 5. Impoundment of water.
  - 6. Excavation or other digging unless otherwise indicated.
  - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS**

- A. Backfill Soil: Stockpiled soil mixed with planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
  - 1. Mixture: Well-blended mix of two parts stockpiled soil to one part planting soil.
  - 2. Planting Soil: Planting soil as specified in Section 329115 "Soil Preparation (Performance Specification)."
- B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
  - 1. Type: Soil pep mulch.
- C. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements:
  - 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch (50-mm) maximum opening in pattern and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches (2400 mm) apart. High-visibility orange color.

- a. Height: 48 inches.
  - 2. Gates: Swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones.
- D. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering.

### **PART 3 – EXECUTION**

#### **3.1 EXAMINATION**

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

#### **3.2 PREPARATION**

- A. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- B. Tree-Protection Zones: Maintain existing ground plane surface material (i.e. turfgrass or organic mulch) under trees indicated to be preserved on Drawings. If ground plane surface is to be modified in any way, install organic mulch inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
  - 1. Apply 3-inch (50-mm) uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches of tree trunks.

#### **3.3 PROTECTION ZONES**

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones in a manner that will prevent people from easily entering protected areas except by entrance gates.
  - 1. Construction Zone Fencing: Install to comply with manufacturer's written instructions and as specified in this section.
  - 2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Owner and Landscape Architect. Avoid damage to existing tree roots when installing posts.
  - 3. Access Gates: Install one access gate per tree, or grouping of trees, to be preserved.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Owner and Landscape Architect.
- C. Maintain protection zones free of weeds and trash.
- D. Maintain protection-zone fencing and signage in good condition as acceptable to Owner and Landscape Architect and remove when construction operations are complete and equipment has been removed from the site.

#### **3.4 EXCAVATION**

- A. General: Excavate at the edges of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving" unless otherwise indicated.
- B. Trenching within Protection Zones: Where utility trenches are required within protection zones,

excavate under or around tree roots by hand or with air spade, or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

- C. Do not allow exposed roots to dry out before placing permanent backfill.

### **3.5 ROOT PRUNING**

- A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:
  - 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
  - 2. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil backfill.
  - 3. Cover exposed roots with burlap and water regularly.
  - 4. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."
- B. Root Pruning at Edge of Protection Zone: Prune tree roots by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

### **3.6 CROWN PRUNING**

- A. Prune branches that are affected by temporary and permanent construction. Prune branches as directed by Owner and/or Landscape Architect.
  - 1. Prune to remove only injured, broken, dying, or dead branches unless otherwise indicated. Do not prune for shape unless otherwise indicated by Owner and/or Landscape Architect.
  - 2. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
  - 3. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
- B. Cut branches with sharp pruning instruments; do not break or chop.
- C. Do not paint or apply sealants to wounds.
- D. Chip removed branches and dispose of off-site.

### **3.7 REGRADING**

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- C. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.

- D. All regrading within tree protection zones shall be coordinated with Owner and Landscape Architect prior to any work being performed. No exceptions.

### **3.8 REPAIR AND REPLACEMENT**

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Owner and Landscape Architect.
  - 1. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions, if required.
  - 2. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Owner and Landscape Architect.
- B. Excess Mulch: Rake mulched area within protection zones, being careful not to injure roots. Rake to loosen and remove mulch that exceeds a 2-inch uniform thickness to remain.

### **3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 01 5639

**SECTION 02 4119  
SELECTIVE SITE AND STRUCTURE DEMOLITION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Demolition and removal of selected site elements.
  - 2. Salvage of existing items to be reused or recycled.
- B. Related Sections include the following:
  - 1. Division 01 Section "Summary" for use of premises, and phasing, and Owner-occupancy requirements.
  - 2. Division 01 Section "Photographic Documentation" for preconstruction photographs taken before selective demolition operations.
  - 3. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
  - 4. Division 01 Section "Cutting and Patching" for cutting and patching procedures.
  - 5. Division 01 Section "Construction Waste Management and Disposal" for disposal of demolished materials.
  - 6. Division 02 Section "Structure Demolition" for demolition of entire buildings, structures, and site improvements.
  - 7. Division 31 Section "Site Clearing" for site clearing and removal of above- and belowgrade improvements.

**1.3 DEFINITIONS**

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

**1.4 MATERIALS OWNERSHIP**

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.
  - 1. Coordinate with Owner who will establish special procedures for removal and salvage.

## 1.5 SUBMITTALS

- A. Qualification Data: For demolition firm.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's other tenants' on-site operations are uninterrupted.
  - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
  - 4. Locations of proposed dust and noise control, temporary partitions and means of egress, including for other tenants affected by selective demolition operations.
  - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
  - 6. Means of protection for items to remain and items in path of waste removal from building.
- C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- D. Pre-demolition Photographs or Videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Comply with Division 01 Section "Photographic Documentation." Submit before Work begins.
- E. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
  - 1. Comply with submittal requirements in Division 01 Section "Construction Waste Management and Disposal."

## 1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- E. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
  - 1. Inspect and discuss condition of construction to be selectively demolished.
  - 2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

4. Review areas where existing construction is to remain and requires protection.
5. Review shoring plans and methods of shoring placement.

## **1.7 PROJECT CONDITIONS**

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  1. Before selective demolition, Owner will remove the items to be salvaged by the owner. Coordinate other items with the architect.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  1. Hazardous materials will be removed by Owner before start of the Work or have been removed by Owner under a separate contract.
  2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.

## **1.8 WARRANTY**

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes, and templates.



1. Comply with requirements specified in Division 01 Section "Photographic Documentation."
  2. Before selective demolition make permanent record of measurements, materials, and construction details required to make exact reproduction.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

### **3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  2. Arrange to shut off indicated utilities with utility companies.
  3. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems.
  4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
    - a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

### **3.3 PREPARATION**

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes

to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

### **3.4 SELECTIVE DEMOLITION, GENERAL**

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  5. Maintain adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."
- B. Removed and Salvaged Items:
1. Clean salvaged items.
  2. Pack or crate items after cleaning. Identify contents of containers.
  3. Store items in a secure area until delivery to Owner.
  4. Transport items to Owner's storage area on-site.
  5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
  2. Pack or crate items after cleaning and repairing. Identify contents of containers.
  3. Protect items from damage during transport and storage.
  4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their

original locations after selective demolition operations are complete.

### **3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS**

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

### **3.6 DISPOSAL OF DEMOLISHED MATERIALS**

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
  - 4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

### **3.7 CLEANING**

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

### **3.8 SELECTIVE DEMOLITION SCHEDULE**

- A. Coordinate with architect's plans.

END OF SECTION 02 4119

**SECTION 31 0700  
GENERAL SITE CONSTRUCTION REQUIREMENTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited to
  - 1. General procedures and requirements for Site Work.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION**

**3.1 PREPARATION**

- A. Site Verification Of Conditions
  - 1. 48 hours minimum prior to performing any work on site, contact Blue Stakes to arrange for utility location services.
  - 2. Perform minor, investigative excavations to verify location of various existing underground facilities at sufficient locations to assure that no conflict with the proposed work exists and sufficient clearance is available to avoid damage to existing facilities.
  - 3. Perform investigative excavating 5 days minimum in advance of performing any excavation or underground work.
  - 4. Upon discovery of conflicts or problems with existing facilities, notify Architect by phone or fax within 24 hours. Follow telephone or fax notification with letter and diagrams indicating conflict or problem and sufficient measurements and details to evaluate problem.
  - 5. Notify Owner of utilities a minimum of 48 hours prior to an work taking place.

**3.2 PREPARATION**

- A. Protection
  - 1. Spillage -
    - a. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.
    - b. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.
  - 2. Dust Control -
    - a. Take precautions necessary to prevent dust nuisance, both on-site and adjacent to public and private properties.
    - b. Correct or repair damage caused by dust.
  - 3. Erosion Control -
    - a. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on-site or offsite drainage systems.
    - b. Develop, install, and maintain an erosion control plan if required by law.
    - c. Repair and correct damage caused by erosion.

4. Protect site from fire caused by welding, cutting, smoking, or other sources of ignition.
- B. If specified precautions are not taken or corrections and repairs made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of the Work.
  - C. Fees
    1. Contractor shall be responsible for all off site street cut fees, encroachment permit fees, and bonding associated with the construction of the proposed facility.

### **3.3 REPAIR / RESTORATION**

- A. Adjust existing covers, boxes, and vaults to grade.
- B. Replace broken or damaged covers, boxes, and vaults.
- C. Independently confirm size, location, and number of covers, boxes, and vaults which require adjustment.

### **3.4 FIELD QUALITY CONTROL**

- A. Notify Architect 48 hours prior to performing excavation or fill work.
- B. If work has been interrupted by weather, scheduling, or other reason, notify Architect 24 hours minimum prior to intended resumption of grading or compacting.
- C. Owner reserves right to require additional testing to re-affirm suitability of completed work including compacted soils which have been exposed to adverse weather conditions.

END OF SECTION 31 0700

**SECTION 31 1000  
SITE CLEARING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Removing concrete, asphalt and fencing as indicated on demolition plan.
  - 2. Removing above- and below-grade site improvements.
  - 3. Temporary erosion and sedimentation control measures.
- B. Related Sections include the following:
  - 1. Division 01 Section "Temporary Facilities and Controls" for temporary utilities, temporary construction and support facilities, temporary security, protection facilities, and temporary erosion and sedimentation control procedures.
  - 2. Division 02 Section "Structure Demolition" for demolition of structures, and site improvements.
  - 3. Division 31 Section "Earth Moving" for soil materials, excavating, backfilling, and site grading.

**1.3 MATERIAL OWNERSHIP**

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

**1.4 SUBMITTALS**

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings, according to Division 01 Section "Project Record Documents," identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

**1.5 QUALITY ASSURANCE**

- A. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

**1.6 PROJECT CONDITIONS**

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
1. Do not proceed with work on adjoining property until directed by Architect.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Utility Locator Service: Contractor is to notify and pay for utility locator service for area where Project is located before site clearing.
- E. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

## **PART 2 - PRODUCTS**

### **2.1 SOIL MATERIALS**

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 Section "Earth Moving."
1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Protect existing site improvements to remain from damage during construction.
1. Restore damaged improvements to their original condition, as acceptable to Owner.

### **3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction, sediment and erosion control Drawings, a sediment and erosion control plan, specific to the site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed

during removal.

### **3.3 UTILITIES**

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
  - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
  - 1. Arrange with utility companies to shut off indicated utilities.
  - 2. Owner will arrange to shut off indicated utilities when requested by Contractor.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
- D. Excavate for and remove underground utilities indicated to be removed.
- E. Removal of underground utilities is included in Division 21, Division 22, Division 26, Division 27, and Division 28 Sections covering site utilities.

### **3.4 SITE IMPROVEMENTS**

- A. Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction. Refer to project plans for improvements to be abandoned in place.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
  - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Sawcut faces vertically.
  - 2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

### **3.5 DISPOSAL**

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
  - 1. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 31 1000



**SECTION 31 2000  
EARTH MOVING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to the Geotechnical Report titled for additional grading requirements. There is not a current geotechnical report available.

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Preparing sub-grades for retaining walls, stairs and landscaping.
  - 2. Excavating and backfilling trenches for buried electrical utilities and pits for buried utility structures.
- B. Related Sections include the following:
  - 1. Division 01 Section Construction Progress Documentation and Photographic Documentation for recording pre-excavation and earthwork progress.
  - 2. Division 01 Section "Temporary Facilities and Controls" for temporary controls, utilities, and support facilities.
  - 3. Divisions 26 and 27 Sections for installing underground electrical utilities and buried electrical structures.
  - 4. Division 31 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, grubbing, stripping and stockpiling topsoil, and removal of above-grade and below-grade improvements and utilities.
  - 5. Division 32 Section for finish grading, including placing retaining walls and concrete for stairs and mow strip.
  - 6. Division 33 Section for installing underground utilities.

**1.3 UNIT PRICES**

- A. Unit prices for earthwork are included in Division 01 Section "Unit Prices."
- B. Quantity allowances for earthwork are included in Division 01 Section "Allowances."

**1.4 DEFINITIONS**

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
  - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Course placed between the subbase course and hot-mix asphalt paving and post tension concrete tennis courts..
- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: 1-1/2-inch minus washed gravel or crushed stone course around perforated collector pipe.
- F. Drain Rock: Clean washed gravel, 3/4-inch minis placed on top of geofabric, PVC liner and compacted road base and under crusher course. This part of drainage layer that removes water from “future” artificial turf.
- G. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
  - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices and changes in the work.
  - 2. Bulk Excavation: Excavation more than 10-feet in width and more than 30-feet in length.
  - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- H. Fill: Soil materials used to raise existing grades.
- I. Structures: Slabs, curbs, and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- J. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- K. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- L. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
  - 1. Each type of plastic warning tape.
  - 2. Controlled low-strength material, including design mixture.
- B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
  - 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
  - 2. Laboratory compaction curve according to ASTM D698 or ASTM D1557 for each on-site and borrow soil material proposed for fill and backfill.
- C. Blasting Plan: Not Allowed

- D. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

## **1.6 QUALITY ASSURANCE**

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- B. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

## **1.7 PROJECT CONDITIONS**

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.
  - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Architect's written permission.
  - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

## **PART 2 - PRODUCTS**

### **2.1 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3, or a combination of these groups; free of rock or gravel larger than 3-inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. Native rock crushed to meet the above requirements and free from significant porosity may also be used as satisfactory soils.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 or A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- E. Aggregate Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed concrete and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-inch sieve and not more than 15 percent passing a

No. 200 sieve. Sand Equivalent of no less than 35.

- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve. (Cannot be straight sand).
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 3/4-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Course (around perforated pipe): Narrowly graded mixture of washed or crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

## 2.2 CONTROLLED LOW-STRENGTH MATERIAL

- A. Controlled Low-Strength Material: Low-density, self-compacting, flowable concrete material as follows:
  - 1. Portland Cement: ASTM C 150, Type II.
  - 2. Fly Ash: ASTM C 618, Class C or F.
  - 3. Normal-Weight Aggregate: ASTM C 33, 3/4-inch to 3/8-inch nominal maximum aggregate size.
  - 4. Foaming Agent: ASTM C 869.
  - 5. Water: ASTM C 94/C 94M.
  - 6. Air-Entraining Admixture: ASTM C 260.
- B. Produce low-density, controlled low-strength material with the following physical properties:
  - 1. As-Cast Unit Weight: 30 to 36 lb/cu. ft. at point of placement, when tested according to ASTM C 138/C 138M.
  - 2. Compressive Strength: 80 psi, when tested according to ASTM C 495.

## 2.3 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
- B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows when required by utility purveyor:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.

## PART 3 - EXECUTION

### **3.1 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Site Clearing," during earthwork operations.
- D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

### **3.2 DEWATERING**

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

### **3.3 EXPLOSIVES – Not Allowed**

### **3.4 EXCAVATION, GENERAL**

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
  - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
    - a. 24 inches outside of concrete forms other than at footings.
    - b. 12 inches outside of concrete forms at footings.
    - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
    - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
    - e. 6 inches beneath bottom of concrete slabs on grade.
    - f. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

### **3.5 EXCAVATION FOR STRUCTURES**

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  - 2. Excavation for Underground Basins, Vaults or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

### **3.6 EXCAVATION FOR WALKS AND PAVEMENTS**

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### **3.7 EXCAVATION FOR UTILITY TRENCHES**

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
  - 1. Excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
  - 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
  - 1. For pipes and conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
  - 2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
  - 3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

### **3.8 SUBGRADE INSPECTION**

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons or vehicle with similar unit axel weight.
  3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices and changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### **3.9 UNAUTHORIZED EXCAVATION**

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

### **3.10 STORAGE OF SOIL MATERIALS**

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
1. Stockpile soil materials away from edge of excavations.

### **3.11 BACKFILL**

- A. Place and compact backfill in excavations promptly, but not before completing the following:
1. Construction below finish grade including, where applicable subdrainage.
  2. Surveying locations of underground utilities for Record Documents.
  3. Testing and inspecting underground utilities.
  4. Removing concrete formwork.
  5. Removing trash and debris.
  6. Removing temporary shoring and bracing, and sheeting.
  7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

### **3.12 UTILITY TRENCH BACKFILL**

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

- C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."
- D. Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 12 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.
- F. Place and compact initial backfill of subbase material or satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.
  - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches over the utility pipe or conduit.
- G. Backfill voids with satisfactory soil while installing and removing shoring and bracing.
- H. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- I. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.
- J. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

### **3.13 SOIL FILL**

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under walks and pavements, use satisfactory soil material.
  - 2. Under steps and ramps, use engineered fill.
  - 3. Under footings and foundations, use engineered fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

### **3.14 SOIL MOISTURE CONTROL**

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### **3.15 COMPACTION OF SOIL BACKFILLS AND FILLS**



- A. Place backfill and fill soil materials in layers not more than 12-inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Reduce loose depths as needed to achieve required compactions.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698 or ASTM D 1557:
  - 1. Paved Areas: Compact top 12" of subgrade and each layer of backfill or fill material at 95% maximum dry density for cohesive material or 92% relative dry density for cohesionless material. Scarify and moisture condition to within 2% of optimum moisture and recompact subgrade.
  - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
  - 3. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent if in landscaping areas or 95 percent if under structures, pavements, or walks.

### **3.16 GRADING**

- A. General: Uniformly laser grade areas within contract limits under this section, including adjacent transition areas, free of irregular surface changes. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  - 1. Walks: Plus or minus 1 inch
  - 2. Pavements: Plus or minus 1/2 inch
- C. Finish surfaces free from irregular surface changes, and as follows:
  - 1. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1/4" above or below required subgrade elevation.
  - 2. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/4" above or below required subgrade elevation. Provide final grades within a tolerance of 1/4" when tested with a 10' straightedge.
  - 3. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

### **3.17 SUBBASE AND BASE COURSES**

- A. Place subbase and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase and base course under pavements and walks

as follows:

1. Place base course material over subbase course under hot-mix asphalt pavement and post tension concrete..
2. Shape subbase and base course to required crown elevations and cross-slope grades.
3. Place subbase and base course 6 inches or less in compacted thickness in a single layer.
4. Place subbase and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
5. Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698 or ASTM D 1557.

### **3.18 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
  1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than 3 tests.
  2. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 2 tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

### **3.19 PROTECTION**

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### **3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.
- B. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
  - 1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 2000

**SECTION 31 5000**  
**EXCAVATION SUPPORT AND PROTECTION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes temporary excavation support and protection systems.
- B. Related Sections:
  - 1. Division 01 Section "Construction Progress Documentation and Photographic Documentation" for recording preexisting conditions and excavation support and protection system progress.
  - 2. Division 01 Section "Temporary Facilities and Controls" for temporary utilities and support facilities.
  - 3. Division 31 Section "Dewatering" for dewatering system for excavations.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and of resisting soil and hydrostatic pressure and superimposed and construction loads, as needed.
  - 1. Delegated Design: Design excavation support and protection system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
  - 2. Prevent surface water from entering excavations by grading, dikes, or other means.
  - 3. Install excavation support and protection systems without damaging existing buildings, structures, and site improvements adjacent to excavation.
  - 4. Monitor vibrations, settlements, and movements.

**1.4 SUBMITTALS**

- A. Shop Drawings: For excavation support and protection system.
- B. Delegated-Design Submittal: For excavation support and protection system indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Coordinate first paragraph below with qualification requirements in Division 01 Section "Quality Requirements" Qualification Data: For qualified professional engineer.
- D. Other Informational Submittals:
  - 1. Photographs or Videotape: Show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by the

- absence of, the installation of, or the performance of excavation support and protection systems. Submit before Work begins.
2. Record Drawings: Identifying and locating capped utilities and other subsurface structural, electrical, or mechanical conditions.
    - a. Note locations and capping depth of wells and well points.

## **1.5 QUALITY ASSURANCE**

- A. Preinstallation Conference: Conduct conference at Project site.
  1. Review methods and procedures related to excavation support and protection system including, but not limited to, the following:
    - a. Existing utilities and subsurface conditions.
    - b. Proposed excavations.
    - c. Proposed equipment.
    - d. Monitoring of excavation support and protection system.
    - e. Working area location and stability.
    - f. Coordination with waterproofing.
    - g. Abandonment or removal of excavation support and protection system.

## **1.6 PROJECT CONDITIONS**

- A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:
  1. Notify Architect no fewer than two days in advance of proposed interruption of utility.
  2. Do not proceed with interruption of utility without Architect's, Construction Manager's, and Owner's written permission.
- B. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.
  1. During installation of excavation support and protection systems, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Architect if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: Provide materials that are either new or in serviceable condition.
- B. Cast-in-Place Concrete: ACI 301, of compressive strength required for application.
- C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- D. Tiebacks: Steel bars, ASTM A 722/A 722M.

- E. Tiebacks: Steel strand, ASTM A 416/A 416M.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
  - 1. Shore, support, and protect utilities encountered.
- B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- C. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces are not impeded.
- D. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.
- E. Promptly repair damages to adjacent facilities caused by installing excavation support and protection systems.

### **3.2 REMOVAL AND REPAIRS**

- A. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.
  - 1. Remove excavation support and protection systems to a minimum depth of 48 inches below overlaying construction and abandon remainder.
  - 2. Fill voids immediately with approved backfill compacted to density specified in Division 31 Section "Earth Moving."
  - 3. Repair or replace, as approved by Architect, adjacent work damaged or displaced by removing excavation support and protection systems.
- B. Leave excavation support and protection systems permanently in place.

END OF SECTION 31 5000

**SECTION 02 700**  
**CURB AND GUTTER, SIDEWALKS, DRIVEWAYS AND WATERWAYS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To
  - 1. Furnish all materials, equipment, miscellaneous tools, and labor to construct concrete curb and gutter, sidewalks, driveways and waterways as shown on the drawings, as described herein and as directed by the City.

**PART 2 PRODUCTS**

**2.1 COMPONENTS**

- A. Concrete - The concrete used in the construction of these structures shall be as specified in Section 03, using 1-inch maximum aggregate.
- B. Reinforcement - Reinforcement shall be as shown on the drawings, and as specified in Section 03 210.
- C. Joint Filler - Expansion joint filler shall be pre-molded bituminous impregnated fiber type, 1/2-inch thick, conforming to AASHTO Designation M-153 or AASHTO Designation M-213.

**PART 3 EXECUTION**

**3.1 INSTALLATION**

- A. Concrete work shall be constructed and located as shown on the drawings and as described herein and as directed by the City.
- B. Excavation and Backfill - Excavation and backfill for these structures shall be in accordance with applicable portions of Section 02 220.
  - 1. Where the subgrade material is unsatisfactory it shall be removed as directed by the City and replaced with "Borrow for Bedding".
  - 2. The Contractor as directed by the City shall dispose of all excavated material in excess of that required for backfill.
- C. Curb and Gutter
  - 1. Description - This item shall consist of constructing monolithic concrete curb and gutter, both straight and radius sections conforming to the typical sections, line and grade shown on the drawings; and at the indicated locations, and as directed by the City, on a thoroughly compacted sub-base. The base shall be compacted as specified in Section 02 220.
  - 2. Joints, Finishing, and Ruling - Curb and gutter shall be constructed in sections ten (10) feet in length, except as otherwise provided, and each section shall be made in one continuous pour. The different sections shall be separated from each other by a metal "half plate" not less than one-eighth (1/8) inch thick and cut to the true cross sectional dimension of curb and gutter. The plate shall not extend into the bottom 4 1/2" of the curb and gutter.
    - a. The plates shall not be removed until after the concrete has taken its initial set. An expansion joint, filled with pre-molded joint filler 1/2-inch thick, shall be provided every 40 feet, and where new paving joins existing paving.
    - b. Where length of the block or portion thereof, where curb and gutter is not divisible by 10 then the final section or sections shall be of such length as the City may direct. A joint shall always be installed between the regular section and the warped section at the ends of culverts.

- c. The gutter shall be trowel finished. A tool shall be used for compression of the coarse aggregate about 3/8-inch into the concrete, thereby leaving the mortar of the concrete on the surface for towel finishing.
- d. The face of the curb shall be given a smooth finish, true to line. Forms shall be stoutly constructed so as to permit spading of the concrete and still remain true to line and grade. The face form shall be removed as soon as the concrete has taken its initial set and the curb face shall be smooth trowel finished.
- e. After finishing, the curb and gutter shall be ruled. The ruling shall be brought directly over the joint made by the plate.
  - 3. Radius Sections - Curb and gutter radius sections shall be constructed where shown on the drawings and as directed by the City. The back of curb radius shall be as designated on the drawings and as directed by the City. The construction of radius sections shall be as specified herein.

D. Sidewalks

- 1. Description - This item shall consist of the construction of Portland cement concrete sidewalks, on a compacted base at the locations, to the line and grade and in conformity with the typical sections shown on the drawings, in conformity with these specifications and as directed by the City.
- 2. The base shall be compacted as specified in Section 02 220.
- 3. Construction - The sidewalks shall be constructed in one course of the thickness shown on the drawings. Forms shall be set true to line and grade and braced properly to resist movement during pouring operation. Forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping and vibration without deflection from the prescribed lines. The surfaces of all forms to be in contact with the concrete shall be clean, rigid, tight, and smooth.
- 4. Joints, Ruling, and Finishing - Expansion joints, filled with pre-molded joint filler one-half inch thick shall be provided at approximately 40-foot intervals. Expansion joints shall also be placed where new paving joins existing paving, and at other places as indicated on the drawings.
- 5. Groove approximately one-quarter inch wide with neatly tooled edges and extending to at least one-quarter the depth of the slabs, shall be provided at intervals not exceeding five (5) feet. The top surface of the sidewalks shall receive a wood-float and broom finish. All longitudinal edges shall be neatly finished with an edging tool.

E. Concrete Waterways

- 1. Description - This item shall consist of the construction of Portland cement concrete waterway five feet wide on compacted base, at the locations, to the line and grade, and in conformity with the typical sections shown on the drawings; in accordance with these specifications, and as directed by the City.
- 2. Compacted base and earthwork shall be as specified in Section 02 220.
- 3. Construction - The waterways shall be constructed in one course of the thickness shown on the drawings and shall be reinforced with five #5 reinforcing bars installed as shown. Forms shall be set true to line and grade and braced properly to resist movement during pouring operation. Forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping and vibration without deflection from the prescribed lines. The surfaces of all forms to be in contact with the concrete shall be clean, rigid, tight and smooth.
- 4. Joints, Ruling and Finishing - Construction joints, formed with metal plates cut to the cross-section shown on the drawing, shall be made at approximately 10-foot intervals. Waterways shall be smooth trowel finished as specified for curb and gutter and warped to match the flow lines of the gutters as shown on the drawings and as directed by the City.

F. Driveways



1. Description - This item shall consist of the construction of driveways with driveway paving and round corner curbs, or curb-cut type driveways, to the width shown on the drawings, in conformity with the typical details shown; in accordance with these specifications and as directed by the City. Driveways shall be constructed on thoroughly compacted base; compacted as specified in Section 02 220.
2. Construction –
  - a. Where driveways with round corner curbs are to be constructed, the entire area between the back of the gutter and the sidewalk line and to the width directed shall be paved in one course with concrete of the thickness shown. A curb conforming to that shown on the drawings shall be on each side of the driveway pavement. The radius of the back of curb shall be as shown.
  - b. Forms shall be as described under "Sidewalks". Driveway pavement shall be rough float finished. Driveway curbs shall be finished in the manner described under "Curb and Gutter".
  - c. Where curb-cut type driveways are to be constructed, the curb of the curb & gutter shall be cut down to the limits shown on the drawings or as directed, and driveway pavement shall be placed between back of curb and the sidewalk line, or the surface of the sidewalk shall be warped if adjacent to back of curb, for the width and configuration as shown on the drawings and as described herein and as directed by the City.

### **3.2 REPAIRS AND MAINTENANCE**

- A. All repairs of curb and gutter, sidewalks, waterways, and driveways required to be made by the Contractor during the guarantee period shall be made with mixtures similar and equal to, and laid in the manner of those described in these specifications.
- B. In addition to the proper maintenance of the pavement and other structures built under this contract during the period of guarantee, the Contractor shall, at the Contractor's own expense, just before the expiration of the guarantee period, make such repairs as may be necessary to produce pavements which shall:
  1. Conform substantially in contour to the pavements as first laid.
  2. Be free from cracks or depressions showing disintegration of the concrete mixture of the concrete pavement.
  3. Be free from all surface settlements holding water or other settlements showing a variation of three-eighths (3/8) inch or more from the edge of a four-foot straight edge.
  4. Whenever the repairs necessary to be made prior to expiration of the guarantee period in accordance with this section shall amount to more than fifty (50) percent of the surface of curb & gutter and sidewalk of any one block, the entire curb & gutter and sidewalk on that block shall be taken up and re-laid in accordance with these specifications.
  5. If more than fifty (50) percent of any driveway or waterway requires repairs, the entire structure shall be taken up, as directed by the City, and re-constructed in accordance with these specifications.

END OF SECTION 02 700

**SECTION 32 1313  
CONCRETE PAVING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. This Section includes exterior cement concrete pavement for the following:
  - 1. Stairs.
  - 2. Mow strips
  - 3. Walkways.
  - 4. Tactile Walkway surfaces
- B. Related Sections include the following:
  - 1. Division 03 Section "Cast-in-Place Concrete" for general building applications of concrete.
  - 2. Division 31 Section "Earth Moving" for subgrade preparation, grading, and subbase course.
  - 3. Division 32 Section "Concrete Paving Joint Sealants" for joint sealants of joints in concrete pavement and at isolation joints of concrete pavement with adjacent construction.

**1.3 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

**1.4 SUBMITTALS**

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Samples: 10-lb sample of exposed aggregate.
- D. Qualification Data: For manufacturer and testing agency.
- E. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
  - 1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.
- F. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:

1. Cementitious materials.
  2. Steel reinforcement and reinforcement accessories.
  3. Fiber reinforcement.
  4. Admixtures.
  5. Curing compounds.
  6. Applied finish materials.
  7. Bonding agent or epoxy adhesive.
  8. Joint fillers.
- G. Field quality-control test reports.
- H. Minutes of preinstallation conference.

### **1.5 QUALITY ASSURANCE**

- A. **Manufacturer Qualifications:** Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. **Testing Agency Qualifications:** An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
- C. **ACI Publications:** Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.
- D. **Concrete Testing Service:** Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- E. **Preinstallation Conference:** Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
1. Before submitting design mixtures, review concrete pavement mixture design and examine procedures for ensuring quality of concrete materials and concrete pavement construction practices. Require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:
    - a. Contractor's superintendent.
    - b. Independent testing agency responsible for concrete design mixtures.
    - c. Ready-mix concrete producer.
    - d. Concrete pavement subcontractor.

### **1.6 PROJECT CONDITIONS**

- A. **Traffic Control:** Maintain access for vehicular and pedestrian traffic as required for other construction activities.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
  - 2. Products: Subject to compliance with requirements, provide one of the products specified.
  - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
  - 4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

### **2.2 FORMS**

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
  - 1. Use flexible or curved forms for curves with a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

### **2.3 STEEL REINFORCEMENT (NO REINFORCEMENT USED FOR FLATWORK)**

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- D. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
- E. Plain Steel Wire: ASTM A 82.
- F. Deformed-Steel Wire: ASTM A 496.
- G. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
- H. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- I. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- J. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing,

supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric polymer-coated wire bar supports.

## 2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:
  1. Portland Cement and as specified in Division 3 except that for exterior concrete, the minimum compressive strength is 5000 psi at 28 days.
- B. Normal-Weight Aggregates: ASTM C 33, coarse aggregate, uniformly graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar pavement applications and service conditions using similar aggregates and cementitious materials.
  1. Maximum Coarse-Aggregate Size: 1 inch nominal.
  2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:
  1. Aggregate Sizes: 3/4 to 1 inch nominal.
  2. Aggregate Source, Shape, and Color and as required by the architect.
- D. Water: ASTM C 94/C 94M.
- E. Air-Entraining Admixture: ASTM C 260.
- F. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
  1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlappolyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
1. Products:
    - a. Axim Concrete Technologies; Cimfilm.
    - b. Burke by Edeco; BurkeFilm.
    - c. ChemMasters; Spray-Film.
    - d. Conspec Marketing & Manufacturing Co., Inc.; Aquafilm.
    - e. Dayton Superior Corporation; Sure Film.
    - f. Euclid Chemical Company (The); Eucobar.
    - g. Kaufman Products, Inc.; Vapor Aid.
    - h. Lambert Corporation; Lambco Skin.
    - i. L&M Construction Chemicals, Inc.; E-Con.
    - j. MBT Protection and Repair, ChemRex Inc.; Confilm.
    - k. Meadows, W. R., Inc.; Sealtight Evapre.
    - l. Metalcrete Industries; Waterhold.
    - m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
    - n. Sika Corporation, Inc.; SikaFilm.
    - o. Symons Corporation; Finishing Aid.
    - p. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.
- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
1. Products:
    - a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
    - b. Burke by Edoko; Aqua Resin Cure.
    - c. ChemMasters; Safe-Cure Clear.
    - d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
    - e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
    - f. Euclid Chemical Company (The); Kurez DR VOX.
    - g. Kaufman Products, Inc.; Thinfilm 420.
    - h. Lambert Corporation; Aqua Kure-Clear.
    - i. L&M Construction Chemicals, Inc.; L&M Cure R.
    - j. Meadows, W. R., Inc.; 1100 Clear.
    - k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
    - l. Symons Corporation; Resi-Chem Clear.
    - m. Tamms Industries Inc.; Horncure WB 30.
    - n. Unitex; Hydro Cure 309.
    - o. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.
- F. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.
1. Products:
    - a. Anti-Hydro International, Inc.; AH Curing Compound #2 WP WB.
    - b. Burke by Edoko; Resin Emulsion White.
    - c. ChemMasters; Safe-Cure 2000.

- d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
- e. Dayton Superior Corporation; Day-Chem White Pigmented Cure (J-10-W).
- f. Euclid Chemical Company (The); Kurez VOX White Pigmented.
- g. Kaufman Products, Inc.; Thinfilm 450.
- h. Lambert Corporation; Aqua Kure-White.
- i. L&M Construction Chemicals, Inc.; L&M Cure R-2.
- j. Meadows, W. R., Inc.; 1200-White.
- k. Symons Corporation; Resi-Chem White.
- l. Tamms Industries, Inc.; Horncure 200-W.
- m. Unitex; Hydro White.
- n. Vexcon Chemicals, Inc.; Certi-Vex Enviocure White 100.

## 2.6 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Color stain: Match Architect's sample or as selected by Architect from manufacturer's full range of stains.
- C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.
- D. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- E. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements, and as follows:
  - 1. Types I and II, non-load bearing and types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- F. Chemical Surface Retarder: Water-soluble, liquid-set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch.
  - 1. Products:
    - a. Burke by Edeco; True Etch Surface Retarder.
    - b. ChemMasters; Exposee.
    - c. Conspec Marketing & Manufacturing Co., Inc.; Delay S.
    - d. Euclid Chemical Company (The); Surface Retarder S.
    - e. Kaufman Products, Inc.; Expose.
    - f. Metalcrete Industries; Surfard.
    - g. Nox-Crete Products Group, Kinsman Corporation; Crete-Nox TA.
    - h. Scofield, L. M. Company; Lithotex.
    - i. Sika Corporation, Inc.; Rugasol-S.
    - j. Vexcon Chemicals, Inc.; Certi-Vex Envioset.
- G. Pigmented Mineral Dry-Shake Hardener: Factory-packaged dry combination of portland cement, graded quartz aggregate, color pigments, and plasticizing admixture. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.

1. Products:
  - a. Conspec Marketing & Manufacturing Co., Inc.; Conshake 600 Colortone.
  - b. Dayton Superior Corporation; Quartz Tuff.
  - c. Euclid Chemical Company (The); Surfex.
  - d. Lambert Corporation; Colorhard.
  - e. L&M Construction Chemicals, Inc.; Quartz Plate FF.
  - f. MBT Protection and Repair, ChemRex Inc.; Mastercron.
  - g. Metalcrete Industries; Floor Quartz.
  - h. Scofield, L. M. Company; Lithochrome Color Hardener.
  - i. Symons Corporation; Hard Top.
2. Color: Match Architect's sample or as selected by Architect from manufacturer's full range.

## 2.7 PAVEMENT MARKINGS

- A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with FS TT-P-115, Type I or II or AASHTO M 248, Type N or F.
  1. Color: White, Yellow, Blue. See Section 321216 for color locations.
- B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.
  1. Color: White, Yellow, Blue. See Section 321216 for color locations.
- C. Glass Beads: AASHTO M 247, Type 1.

## 2.8 DETECTABLE WARNING TILES

- A. Cast-in-Place Detectable Warning Tiles: Accessible truncated-dome detectable warning tiles configured for setting flush in new concrete walkway surfaces, with slipresistant surface treatment on domes and field of tile.
- B. Manufacturers :  
Cast Iron Panels as manufactured by  
Duralast EJCo  
Neenah Foundry  
US Foundry
  1. Color: Natural.
  2. Shapes and Sizes:
    - a. Rectangular panel, 24 by 24 inches, 24 by 30 inches and 24 by 36 inches . to suit conditions
  3. Dome Spacing and Configuration: Manufacturer's standard compliant spacing
  4. Mounting:
    - a. Permanently embedded detectable warning tile

## 2.9 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.



1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
1. Compressive Strength (28 Days): 5000 psi
  2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45
  3. Select slump limit from options in subparagraph below or revise to suit Project.
  4. Slump Limit: 4 inches, plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normalweight concrete at point of placement having an air content as follows:
1. Air Content: 5-8 percent nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing admixture, high-range, water-reducing admixture, high-range, water-reducing and retarding admixture, plasticizing, and retarding admixture in concrete, as required, for placement and workability.
  2. Specify admixtures as part of submittal. Verify that admixtures proposed do not adversely effect stained concrete and will not modify colors of stain.
  3. Coordinate acceptability of admixtures with architect.
- F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
1. Fly Ash or Pozzolan: 25 percent.
  2. Ground Granulated Blast-Furnace Slag: 50 percent.
  3. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- G. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd. where specified and approved in mix submittal.
- H. Color Stain: Add stain to concrete per manufacturers recommendations and to meet color required by architect and owner on areas of stained concrete.

## **2.10 CONCRETE MIXING**

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For concrete mixes of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - 2. For concrete mixes larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
  - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.
  - 1. Completely proof-roll subbase in one direction. Limit vehicle speed to 3 mph.
  - 2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons or similar axle weight vehicle.
  - 3. Subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch require correction according to requirements in Division 31 Section "Earth Moving."
- C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

### **3.2 PREPARATION**

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

### **3.3 EDGE FORMS AND SCREED CONSTRUCTION**

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### **3.4 STEEL REINFORCEMENT**

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

### 3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
  - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
  - 1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
  - 2. Provide tie bars at sides of pavement strips where indicated.
  - 3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  - 4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
  - 5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
  - 1. Locate expansion joints at intervals of 50 feet, unless otherwise indicated.
  - 2. Extend joint fillers full width and depth of joint.
  - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
  - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  - 6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into

areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
  2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
  3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.
- E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

### **3.6 CONCRETE PLACEMENT**

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site.
- F. Do not add water to fresh concrete after testing.
- G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
  1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- I. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.

1. Remove and replace concrete that has been placed for more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.
- J. Screed pavement surfaces with a straightedge and strike off.
- K. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- L. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.
- M. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.
1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.
- N. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.
- O. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
  2. Do not use frozen materials or materials containing ice or snow.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
- P. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
  - 1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
  - 2. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
  - 3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiffbristled broom, perpendicular to line of traffic.
  - 4. Coordinate with architect the locations of each type of finish.

### 3.8 SPECIAL FINISHES

- A. Pigmented Mineral Dry-Shake Hardener Finish: After initial floating, apply dryshake materials to pavement surface according to manufacturer's written instructions and as follows:
  - 1. Uniformly spread dry-shake hardener at a rate of 100 lb/100 sq. ft. unless greater amount is recommended by manufacturer to match pavement color required.
  - 2. Uniformly distribute approximately two-thirds of dry-shake hardener over pavement surface with mechanical spreader, allow to absorb moisture, and embed by power floating. Follow power floating with a second dryshake hardener application, uniformly distributing remainder of material at right angles to first application to ensure uniform color, and embed by power floating.
  - 3. After final floating, apply a hand-trowel finish followed by a broom finish to concrete.
  - 4. Cure concrete with curing compound recommended by dry-shake hardener manufacturer. Apply curing compound immediately after final finishing.

### 3.9 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
  - 1. Moist 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 lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### **3.10 PAVEMENT TOLERANCES**

- A. Comply with tolerances of ACI 117 and as follows:
  - 1. Elevation: 1/4 inch.
  - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
  - 3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/4 inch.
  - 4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
  - 5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
  - 6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
  - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
  - 8. Joint Spacing: 3 inches.
  - 9. Contraction Joint Depth: Plus 1/4 inch, no minus.
  - 10. Joint Width: Plus 1/8 inch, no minus.

### **3.11 PAVEMENT MARKING**

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow concrete pavement to cure for 14 days and be dry before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

1. Spread glass beads uniformly into wet pavement markings at a rate of 6 lb/gal.

### 3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or 5000 sq. ft. or fraction thereof of each concrete mix placed each day.
    - a. When frequency of testing will provide fewer than five compressive strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
  4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
    - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.



- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### **3.13 REPAIRS AND PROTECTION**

- A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 1313

**SECTION 32 1373  
CONCRETE PAVING JOINT SEALANTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Expansion and contraction joints within cement concrete pavement.
  - 2. Joints between cement concrete and asphalt pavement.
- B. Related Sections include the following:
  - 1. Division 07 Section "Joint Sealants" for sealing nontraffic and traffic joints in locations not specified in this Section.
  - 2. Division 32 Section "Asphalt Paving" for constructing joints between concrete and asphalt pavement.
  - 3. Division 32 Section "Concrete Paving" for constructing joints in concrete pavement.

**1.3 SUBMITTALS**

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Verification: For each type and color of joint sealant required. Install joint-sealant samples in 1/2-inch wide joints formed between two 6-inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- D. Qualification Data: For installer and testing agency.
- E. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
  - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

**1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for

testing indicated below, samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  2. Submit not fewer than six (6) pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
  3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
  4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
  5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.
- D. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing of current sealant products within a 36-month period preceding the commencement of the Work.
1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 for testing indicated, as documented according to ASTM E 548.

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

### **1.6 PROJECT CONDITIONS**

- A. Do not proceed with installation of joint sealants under the following conditions:
  1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer.
  2. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40 deg F.
  3. When joint substrates are wet or covered with frost.
  4. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  5. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

### **2.2 MATERIALS, GENERAL**

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

### 2.3 COLD-APPLIED JOINT SEALANTS

- A. Multi-component Jet-Fuel-Resistant Sealant for Concrete: Pourable, chemically curing elastomeric formulation complying with the following requirements for formulation and with ASTM C 920 for type, grade, class, and uses indicated:
  - 1. Urethane Formulation: Type M; Grade P; Class 12-1/2; Uses T, M, and, as applicable to joint substrates indicated, O.
    - a. Available Products:
      - 1) Pecora Corporation; Urexpam NR-300.
      - 2) Engineer approved equal.
  - 2. Coal-Tar-Modified Polymer Formulation: Type M; Grade P; Class 25; Uses T and, as applicable to joint substrates indicated, O.
    - a. Available Products:
      - 1) Meadows, W. R., Inc.; Sealtight Gardox.
      - 2) Engineer Approved Equal.
  - 3. Bitumen-Modified Urethane Formulation: Type M; Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.
    - a. Available Products:
      - 1) Tremco Sealant/Waterproofing Division; Vulkem 202.
      - 2) Engineer approved Equal.
- B. Single-Component Jet-Fuel-Resistant Urethane Sealant for Concrete: Single-component, pourable, coal-tar-modified, urethane formulation complying with ASTM C 920 for Type S; Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.
  - 1. Available Products:
    - a. Sonneborn, Div. of ChemRex, Inc.; Sonomeric 1.
    - b. Engineer Approved Equal.
- C. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.
  - 1. Available Products:
    - a. Crafcoc Inc.; RoadSaver Silicone.
    - b. Dow Corning Corporation; 888.
    - c. Engineer Approved Equal.
- D. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutralcuring,

self-leveling silicone sealant complying with ASTM D 5893 for Type SL.

1. Available Products:
  - a. Crafcoc Inc.; RoadSaver Silicone SL.
  - b. Dow Corning Corporation; 890-SL.
  - c. Engineer Approved Equal.
- E. Multi-component Low-Modulus Sealant for Concrete and Asphalt: Proprietary formulation consisting of reactive petropolymer and activator components producing a pourable, selfleveling sealant.
  1. Available Products:
    - a. Meadows, W. R., Inc.; Sof-Seal.
    - b. Engineer Approved Equal.

## 2.4 HOT-APPLIED JOINT SEALANTS

- A. Jet-Fuel-Resistant Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3569.
  1. Available Products:
    - a. Crafcoc Inc.; Superseal 444/777.
    - b. Meadows, W. R., Inc.; Poly-Jet 3569.
    - c. Engineer Approved Equal.
- B. Jet-Fuel-Resistant Sealant for Concrete and Tar Concrete: Single-component formulation complying with ASTM D 3581.
  1. Available Products:
    - a. Crafcoc Inc.; Superseal 1614A.
    - b. Meadows, W. R., Inc.; Poly-Jet 1614.
    - c. Meadows, W. R., Inc.; Poly-Jet 3406.
    - d. Meadows, W. R., Inc.; Poly-Jet 3569.
    - e. Engineer Approved Equal.
- C. Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3406.
  1. Available Products:
    - a. Crafcoc Inc.; Superseal 444/777.
    - b. Meadows, W. R., Inc.; Poly-Jet 3406.
    - c. Engineer Approved Equal.
- D. Sealant for Concrete and Asphalt: Single-component formulation complying with ASTM D 3405.
  1. Available Products:
    - a. Koch Materials Company; Product No. 9005.
    - b. Koch Materials Company; Product No. 9030.
    - c. Meadows, W. R., Inc.; Sealtight Hi-Spec.
    - d. Engineer Approved Equal.

## **2.5 JOINT-SEALANT BACKER MATERIALS**

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
- D. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

## **2.6 PRIMERS**

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting jointsealant performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by jointsealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

### **3.3 INSTALLATION OF JOINT SEALANTS**

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of backer materials.

2. Do not stretch, twist, puncture, or tear backer materials.
  3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
  2. Completely fill recesses provided for each joint configuration.
  3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealants from surfaces adjacent to joint.
  2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.
- G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

### **3.4 CLEANING**

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

### **3.5 PROTECTION**

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION 32 1373

**SECTION 32 9115**  
**SOIL PREPARATION (PERFORMANCE SPECIFICATION)**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes planting soils specified according to performance requirements of the mixes.
- B. Related Requirements:
  - 1. Section 311000 "Site Clearing" for topsoil stripping and stockpiling.
  - 2. Section 329200 "Turf and Grasses" additional planting soil and fertilization.
  - 3. Section 329300 "Plants" for placing planting soil for plantings.
  - 4. Section 015639 "Temporary Tree and Plant Protection" for protection of existing trees to remain.

**1.2 DEFINITIONS**

- A. AAPFCO: Association of American Plant Food Control Officials.
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- C. CEC: Cation exchange capacity.
- D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- F. Imported Soil: Soil that is transported to Project site for use.
- G. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.
- H. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- I. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
- K. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- K. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- L. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.



- M. SSSA: Soil Science Society of America.
- N. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- O. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- P. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- Q. USCC: U.S. Composting Council.

### **1.3 PREINSTALLATION MEETINGS**

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

### **1.4 ACTION SUBMITTALS**

- A. Test Results: On laboratory letterhead, submit soil analysis test results for each source of onsite soil or imported planting soil. Submit results for each source prior to adding amendments and include laboratory recommendations for bringing soils into compliance with the requirements of this section. Also submit results for each source after adding amendments to confirm compliance with requirements of this section.
- B. Product Data: For each type of product.
- C. Soil Source: For imported soils, submit a report stating the location of the source and an account of recent use.
- D. Samples: For each bulk-supplied material in sealed containers labeled with content, source, and date obtained; providing an accurate representation of composition, color, and texture.

### **1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in the types of tests to be performed.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. The full topsoil volume required to meet the project need shall be provided as part of the contract, regardless of whether on-site or imported soils are used.

### **2.2 PLANTING SOILS SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS**

- A. Planting-Soil Type: Existing, on-site surface soil, with the duff layer, if any, retained and stockpiled on-site; or imported, naturally formed soil from off-site sources; modified to produce viable planting soil. Using preconstruction soil analyses and materials specified in other articles of this Section, amend soils to become planting soil complying with the following requirements:
  - 1. Chemical Characteristics:

- a. pH 5.5 to 8.0.
  - b. Soluble Salts: less than 3.0 dS/m.
  - c. Sodium Absorption Ratio (SAR): less than 6.0.
  - d. Organic Matter: not less than 5 percent.
- 2. Physical Characteristics: Gradation as defined by USDA triangle of physical characteristics as measured by hydrometer.
  - a. Sand: 15 to 60 percent.
  - b. Silt: 10 to 60 percent.
  - c. Clay: 5 to 30 percent.
- 3. Fragment Size Distribution: Soil shall not contain more than 2 percent by dry weight of rocks measuring over 3/32 inch in largest size.
- 4. Materials to be Removed:
  - a. Unacceptable Materials: Concrete, slurry, concrete layers or chunks, cement, plaster building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
  - b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 5 percent by dry weight of the soil.
  - c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 1 inches in any dimension.
- 5. Soil Amendments: Incorporate soil amendments listed below as recommended in the results of the soils analysis report.

### **2.3 INORGANIC SOIL AMENDMENTS**

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.
- E. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

### **2.4 ORGANIC SOIL AMENDMENTS**

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
  - 1. Feedstock: Limited to leaves.
  - 2. Reaction: pH of 5.5 to 8.
  - 3. Soluble-Salt Concentration: Less than 4 dS/m.

4. Moisture Content: 35 to 55 percent by weight.
  5. Organic-Matter Content: 30 to 40 percent of dry weight.
  6. Particle Size: Minimum of 98 percent passing through a 1-inch sieve.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
  - C. Muck Peat: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, a pH of 6 to 7.5, a soluble-salt content measured by electrical conductivity of maximum 5 dS/m, having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.
  - D. Wood Derivatives: Shredded and composted, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
  - E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

## **2.5 FERTILIZERS**

- A. Superphosphate: Commercial, phosphate mixture, soluble.
- B. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.
- C. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

## **PART 3 - EXECUTION**

### **3.1 GENERAL**

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- C. Planting soil shall be placed at a depth of 6 inches in areas to receive turfgrass sod and a depth of 12 inches in all shrub, perennial, and groundcover planting beds.
- D. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

### **3.2 PREPARATION OF ON-SITE OR IMPORTED SOILS**

- A. General: Do not blend amendments if on-site or imported soils are frozen, muddy, or excessively wet.
- B. Cleaning: Remove all unacceptable, unsuitable, and large materials defined in "Part 2-

Products”.

- C. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- D. Amending: Add amendments to on-site or imported soils as recommended in soil analysis results. Thoroughly blend amendments throughout to produce the required planting soil.
  - 1. If required, mix lime and sulfur with dry soil before mixing fertilizer.
  - 2. As required, mix fertilizer with planting soil no more than seven days before planting.
  - 3. 3 PLACING AMENDED PLANTING SOIL OVER EXPOSED SUBGRADE
- A. General: Do not till exposed subgrade or apply planting soil if subgrade or soils area frozen, muddy, or excessively wet.
- B. Excavation: If rough grade elevations do not allow for required planting soil depth, excavate additional subgrade soils from designated planter areas and lawn areas to meet the depth required for each area, and legally dispose of excavated soil off Owner’s Property at no additional cost to the owner. Do not reduce the planting soil depth required for planter areas and lawn areas to meet adjacent finish elevations.
- C. Subgrade Preparation: Till excavated subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
- D. Placing Planting Soil: Spread amended soil to the total depth required for the planting area, but not less than required to meet finish grades after natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
- E. Lifts: Apply amended planting soil in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests:
  - 1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each 1000 sq. ft. of in-place soil or part thereof.
  - 2. Performance Testing: For each amended planting-soil type, demonstrating compliance with specified performance requirements.
- C. Soil will be considered defective if it does not pass tests.
- D. Label each sample and test report with the date, location keyed to a site plan or other location system, and sampling depth.

### 3.5 PROTECTION AND CLEANING

- A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting

operations:

1. Storage of construction materials, debris, or excavated material.
  2. Parking vehicles or equipment.
  3. Vehicle traffic.
  4. Foot traffic.
  5. Erection of sheds or structures.
  6. Impoundment of water.
  7. Excavation or other digging unless otherwise indicated.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
- C. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by the Landscape Architect and replace contaminated planting soil with new planting soil.

END OF SECTION 32 9115

**SECTION 32 9200  
TURF, GRASSES AND WILDFLOWERS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Seeding.
  - 2. Sodding

**1.2 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- F. Substantial Completion: The point in time when the Work is sufficiently complete, in accordance with the Contract Documents, that the Owner can occupy or use the Work for its intended purpose.

**1.3 PREINSTALLATION MEETINGS**

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

**1.4 INFORMATIONAL SUBMITTALS**

- A. Certification of Turf, Grass and Wildflower Seed: From seed vendor for each turfgrass sod, grass and wildflower seed mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
  - 1. Certification of each seed mixture for grass and wildflowers. Include identification of source and name and telephone number of supplier.
- B. Product Certificates: For fertilizers, from manufacturer.
- C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

## **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful grass and wildflower seeding.
  - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 2. Pesticide Applicator: State licensed, commercial.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. Bulk Materials:
  - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  - 3. Accompany each delivery of bulk materials with appropriate certificates.

## **1.7 FIELD CONDITIONS**

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial establishment periods to provide required maintenance from date of planting completion.
  - 1. Spring Planting: on or near 15 March.
  - 2. Fall Planting: on or near 15 October.
  - 3. Days considered for the establishment period must be conducive to the growth and establishment of the sod and not non-growing seasonal months.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

## **1.9 CLEANUP**

- A. Upon completion of all seeding operations, the portion of the project site used for a work or storage area by the CONTRACTOR shall be cleaned of all debris, superfluous materials, and equipment. All such materials and equipment shall be entirely removed from the project site.
- B. All walks or pavement shall be swept or washed clean upon completion of the WORK of this Section.

## **PART 2 - PRODUCTS**

### **2.1 TURF, GRASS AND WILDFLOWER SEED**

- A. Grass and Wildflower Seed:
  - 1. Fresh, clean and dry seed species as indicated on Landscape Plan, "REVEGETATION SEED MIX".
- B. The grass seed mixture shall meet the minimum tested requirements of ANA. The grass seed mix shall be the current year's crop, guaranteed by the supplier as follows:
  - 80% Germination Rate
  - 72% Purity and 80% pure live seed
  - No more than 2% inert matter
  - No noxious weeds and no weed seed
- C. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- D. Turfgrass Species: Sod of grass species as follows:
  - 1. Full Sun: *Poa pratensis* 'Kentucky Bluegrass' or as specified on plans

### **2.2 FERTILIZERS AND SOIL AMENDMENTS**

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
  - 1. Composition: **1 lb/1000 sq. ft.** (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
  - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
  - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

### **2.3 MULCH**

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.



- C. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- D. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

## **2.4 TOPSOIL**

- A. All topsoil to be free of any subsoil earth clods, sods and stones over 1 inch in any dimension, sticks, toots, weeds, litter and other deleterious material. Topsoil shall be uniform in quality and texture and contain organic matter and mineral elements necessary for sustaining healthy plant growth. Contractor shall strip, stockpile and screen a sufficient amount of existing and amended topsoil to place 4-inch thick to all seed areas.

## **2.5 PESTICIDES**

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
  - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
  - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Project Manager and replace with new planting soil.

### **3.2 PREPARATION**

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### **3.3 SEED AREA PREPARATION**

- A. All areas of fill, i.e., trenches, mounds, etc., shall be compacted and settled as specified in the Grading and excavation of sprinkler irrigation sections of this project before any topsoil is placed on areas to be seeded.
- B. Any existing topsoil used in seed areas shall be loosened and pulverized to a depth of four (4) inches and all stones over one (1) inch in any dimension, sticks, roots, rubbish, or other extraneous matter, shall be removed from the premises. The surface will be fine graded so that when settled, the surface is free from depressions or ridges and will conform to the required grades indicated. The surface shall be smooth, loose, and of uniformly fine texture at the time of installation.
- C. Any areas containing new topsoil shall be rolled by a hand roller on small areas. After rolling at a weight of 150-200 pounds per linear foot of roller, the bed shall again be graded to the specified grade with a smooth surface. Large areas shall be final graded by passing a land plane in three different directions over the entire area to be planted.
- D. The Contractor shall prepare no more ground than can be seeded in a twenty-four (24) hour period. Seed shall be placed within 24 hours of ground preparation. The ground shall be re-prepared if weather or traffic has compromised the friability of the prepared area.
- E. No seeding shall be done immediately after a rain storm or if a prepared surface has been compacted without first loosening the surface to a smooth, loose, uniformly fine texture just prior to sodding.
- F. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- G. The specified fertilizer shall be applied and incorporated into the upper four (4) inches of topsoil.
- H. Before planting, obtain Project Manger's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### **3.4 PREPARATION FOR EROSION-CONTROL MATERIALS**

- A. Prepare area as specified in "Preparation" Article.
- B. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

### **3.5 SEEDING**

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h).
  - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
  - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
  - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate as indicated on Landscape Plan.
- C. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.

- D. Protect seeded areas with erosion-control mats as required; install and anchor according to manufacturer's written instructions.
- E. Protect seeded areas from hot, dry weather or drying winds by applying mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch (4.8 mm), and roll surface smooth.

### 3.6 SEEDED AREA MAINTENANCE

- A. Maintain and establish seeded area by watering, weeding, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and remulch. Provide materials and installation the same as those used in the original installation.
  - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials damaged or lost in areas of subsidence.
  - 2. Apply treatments as required to keep revegetated area and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering:
  - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.
  - 2. Water revegetated area with fine spray at a minimum rate of **1/2 inch** (13 mm) per week for four weeks after planting unless rainfall precipitation is adequate.

### 3.10 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329115 "Soil Preparation (Performance Specification)."
- B. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### 3.2 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
  - 1. Lay sod across slopes exceeding 1:3.
  - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting,

water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

### **3.3 TURF MAINTENANCE**

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
- B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings.

### **3.4 SATISFACTORY TURF**

- A. Turf installations shall meet the following criteria as determined by the Landscape Architect:
  - 1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, evencolored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities, and which blends naturally with undisturbed adjacent turf areas.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

### **3.7 PESTICIDE APPLICATION**

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Project Manager before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

### **3.8 CLEANUP AND PROTECTION**

- A. Promptly remove soil and debris created by seeding work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove non-degradable erosion-control measures after grass establishment period.

### **3.9 FINAL INSPECTION**

- A. Inspection of work of seeded areas will be made at conclusion of maintenance.

- B. Within 10 days of the end of the establishment period written notice requesting an inspection shall be submitted to the Landscape Architect by the Contractor. All areas designated for seed shall be covered with a reasonable stand of grass acceptable to the Landscape Architect. All areas found not to be acceptable shall be re-seeded in accordance with the above re-seeding specifications. Such areas shall be maintained and guaranteed as stated above.
- C. Final acceptance of the WORK prior to guarantee period of the contract will be accepted upon written approval by the Landscape Architect, on the satisfactory completion of all work, including maintenance, but exclusive of the replacement of plant material.
- D. Any delay in the completion of any item of work in the seeding operation which extends the seeding into more than one season shall extend the maintenance in accordance with the date of completion.
- E. The CONTRACTOR shall re-seed as soon as weather conditions permit, all bare areas or areas where the stand of grass is thin or not healthy.
- F. All work done under this contract shall be left in good order to the satisfaction of the OWNER and the Landscape Architect and the CONTRACTOR shall, without additional expense to the OWNER.

#### **FINAL ACCEPTANCE**

- A. Maintenance by the Contractor shall cease upon his receipt of written notice from the Landscape Architect and or Owner indicating final acceptance of the grass seed mix areas.

END OF SECTION 32 9200



**SECTION 32 84 23**  
**UNDERGROUND IRRIGATION SYSTEMS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including Supplemental General Conditions and Special Provisions, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes the following:
1. Trenching and stockpiling excavation materials and refilling trenches.
  2. Installation of complete irrigation system including but not limited to point of connection, meter, filters, piping, valves, fittings, emitters, controllers, and wiring and final adjustments to insure complete coverage.
  3. Water connections.
  4. Clean up, inspection, and approval.
  5. Testing.
- B. Related Sections include the following:
1. Section 32 92 00 Turf and Grasses
  2. Section 32 93 00 Exterior Plants

**1.3 DEFINITIONS**

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.
- C. Mainline: The system of pipes that carry water from the Point of Connection (POC) to the valves.
- D. Lateral Lines: The system of pipes that carry the water from the valves to the sprinkler heads or emitters.
- E. Point of Connection (POC): The point at which the Contractor will tie into the water supply.

- F. Water Supply: Culinary or secondary piping and components furnished and installed by others to provide irrigation water to the Project.

#### 1.4 SUBMITTALS

- A. Product Data: Manufacturer's cut sheets for each type of product indicated.
- B. As-Built Drawings: Red-lined plan layout and details illustrating mainline and lateral lines location, size, and assembly. Include type and coverage of heads, type of valves, controllers, fittings and accessories.
- C. Operation and Maintenance Data:
  - 1. Instructions covering full operation, care, and maintenance of system and controls and manufacturer's printed literature on operation and of system. Include winterizing, controller program worksheet, and annual service and scheduling calendar based on local site specific conditions.
  - 2. Instruct maintenance personnel in proper adjustment of sprinkler heads and use of special tools for adjustments.
  - 3. Provide one controller chart for each automatic controller installed.
    - a. Show area covered by each controller on print of "as-built" system.
    - b. Identify area of coverage of each remote control valve, using a distinctively different color, drawing over the entire area of coverage.
    - c. Hermetically seal charts between two layers of 20 mm thick plastic.
    - d. Complete charts and review prior to final review of irrigation system.
- D. Keys:
  - 1. Quick Coupler Key: Quick Coupler Key with Swivel Head for operation of quick couplers.
  - 2. Stop and Waste Valve Key: "T" handle, rigid steel, 5 ft long minimum, key end to fit the stop and waste valve nut.
  - 3. Gate Valve Key: "T" handle, rigid steel, 5 ft long minimum, key end to fit the isolation valve square nut.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, unload, store, and handle materials, packaging, bundling, and products in dry, weatherproof, waterproof condition in manner to prevent damage, breakage, deterioration, intrusion, ignition and vandalism. Deliver in original unopened packaging containers prominently displaying manufacturer name, volume, quantity, contents, instructions and conformance to local, state and federal law. Remove and replace cracked, broken or contaminated items or elements



prematurely exposed to moisture, inclement weather, temperature extremes, fire and/or jobsite damage.

B. Storage:

1. Protect materials from damage and prolonged exposure to sunlight. Materials shall be stored in areas designated by the Owner.

C. Handling:

1. Materials: Except for bulk deliveries, materials shall not be dropped or dumped from vehicles. All material shall be handled by Contractor with care to avoid breakage or damage. Damaged materials attributed to the Contractor shall be replaced with new material at the Contractor's expense.
2. Handling of PVC Pipe - Exercise care in handling, loading and storing of PVC pipe. Transport all PVC pipe in a vehicle that allows length of pipe to lie flat so as not to subject it to undue bending or concentrated external loads. Discard all sections of pipe that have been dented or damaged and, if installed, replace with new piping at the Contractor's expense.

## 1.6 SCHEDULING

- A. The Contractor shall familiarize himself with all hazards and utilities prior to work commencement. Install sleeving prior to installation of concrete, paving or other permanent site elements. Irrigation system Point of Connection components, backflow prevention or filtration, and pressure regulation devices shall be installed and operational prior to all downstream components. All main lines shall be thoroughly flushed of all debris prior to installation of Remote Control Valves. All lateral lines shall be thoroughly flushed of all debris prior to installation of any sprinkler heads. Irrigation Contractor shall be required to submit detailed Construction Schedule to Owner prior to commencement. Schedule shall be updated weekly.
- B. Contractor shall schedule and organize work to minimize impact on project usage during public hours. Contractor shall confine work efforts to areas or zones which he can reasonably fence or protect, rather than spreading out trenching or other tasks across large areas of the site. Contractor shall schedule his work to reduce or eliminate open trenches at the end of each work day.
- C. Weather Limitations: Proceed with irrigation installation only when existing and forecasted weather conditions permit.

## PART 2 - PRODUCTS

## 2.1 PIPES AND FITTINGS

### A. Types of Pipes:

1. Supply Line – from Point of Connection through backflow preventer or filter – galvanized pipe as detailed.
2. Mainline 3” or smaller – downstream of POC – Schedule 40 PVC.
3. Mainline 4” or larger – downstream of POC - Class 200 PVC
4. Lateral – Schedule 40 PVC.
5. Drip Tubing – Rain Bird XT-700 (where required).
6. Inline Drip – Per plans (where required).
7. Emitter Tubing – Per plans (where required).

### B. Pipe

1. Plastic Pipe Schedule 40 and Class 200 PVC – Identify all pipes with following indelible markings:
  - a. Manufacturer’s name.
  - b. Nominal pipe size.
  - c. Schedule of class.
  - d. Pressure rating psi.
  - e. National Sanitation Foundation (NSF) seal of approval.
  - f. Date of extrusion.
2. Drip Tubing – Manufactured of flexible polyvinyl chloride compound conforming to ASTM D1248, Type 1, Class C, Category 4, P14 and ASTM D3350 for PE 122111C.

### C. Types of Fittings:

1. Mainline Fittings smaller than 3” – Schedule 80 PVC.
2. Mainline Fittings 3” or larger – Harco ductile iron (restrain per manufacturer’s recommendations).
3. Lateral Fittings – Schedule 40 PVC.
4. Drip Fittings – Barbed insert type fittings

## 2.2 VALVES

- A. Stop & Waste Valve – Per Plans.
- B. Mainline Isolation Valve – Per Plans.
- C. Master Valve – Per Plans.
- D. Manifold Isolation Valve – Per Plans.
- E. Remote Control Valve(s) – Per Plans.

- F. Manual Drain Valve – Per Plans.
- 2.3 BACKFLOW PREVENTER (where required)
- A. Backflow Preventer – Per Plans.
  - B. Install in Insulated Aluminum VIT StrongBox Enclosure.
- 2.4 AUTOMATIC FILTER (where required)
- A. Automatic Flushing Filter – Per Plans
  - B. Install in Insulated Aluminum VIT StrongBox Enclosure
- 2.5 AUTOMATIC CONTROLLER
- A. Irrigation Controller with Flow Sensing – Per Plans.
- 2.6 DRIPLINE
- A. Per Plans.
- 2.7 DRIP FLUSH VALVE
- A. Netafim TLFV-1.
- 2.8 VALVE BOX
- A. Install control valves in manifolds/boxes per drawings.
  - B. Use round valve box for quick coupler. All boxes and lids in lawn and bark mulch beds shall be **GREEN** in color. All boxes and lids in rock mulch beds shall be **TAN** in color.
- 2.9 WIRE
- A. Wire runs shall be 14 AWG color coded wire for direct burial.
    - 1. Wires shall be colored as follows:
      - a. Common wires shall be white in color.
      - b. Hot wires shall be red in color.
      - c. Spare wires shall be yellow in color.

2. Use 12 AWG wire for control wire runs exceeding 3,000 feet or common wire runs exceeding 1,500.
3. Contractor shall run 1 dedicated spare wire 'homerun' from controller to terminus of EACH wire leg.
4. All wire splices shall be located in a valve box.
5. All wire connections shall be 3M DBR/Y.

#### 2.10 QUICK COUPLER

- A. Rainbird 44-LRC

#### 2.11 WASHED AGGREGATE

- A. 1-1/2" maximum with 100 percent retained on a No. 4 sieve.

#### 2.12 JOINT AND SOLVENT CEMENT

- A. Primer: Weld-On P-70 Primer
- B. PVC Solvent Cement: Weld-On 711 Low VOC Cement

#### 2.13 TEFLON TAPE

- A. Use quality grade, domestically made 0.004 inch ( $\pm 0.001$ ) on threaded joints.

#### 2.14 SLEEVES

- A. Class 200 PVC.
- B. Install one pipe per sleeve. Sleeve diameter shall be two (2) times larger than pipe installed in sleeve. Minimum 4" for all sleeves.
- C. Install wiring in separate sleeve from irrigation pipe.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas to receive irrigation to ensure areas are ready and properly prepared. Complete demolition and grading operations, with the exception of final grading, and receive approval by Owner before staking or installation of any irrigation system begins.

### 3.2 EXCAVATION

- A. Stake pipe and equipment locations as follows:
1. Mark routing of pressure supply line and flag remote control valves for first few zones. Contact Owner's Representative a minimum of 48 hours in advance and request review of staking. Owner's Representative will review staking and direct changes if required.
  2. If Project has significant topography, free-form planting beds, or other amenities that could require alteration of irrigation equipment layout as deemed necessary by Owner, do not install irrigation equipment in these areas until Owner's Representative has reviewed equipment staking.
  3. Trenching - Dig trenches straight and support pipe continuously on bottom of trench. Clean trench bottom and smooth by removing all rock and organic debris. Remove rocks larger than 1-1/2" in any direction from bottom of trench.
    - a. Clearances:
      - 1) Piping Smaller than 3 Inches - Minimum width of 7 inches for trenches.
      - 2) Line Clearance - Provide not less than 6 inches of clearance between each line.
    - b. Pipe and Wire Depth:
      - 1) Mainline Piping – 18 inches from top of pipe.
      - 2) Lateral Piping – 12 inches from top of pipe.
      - 3) Control Wiring – Side of mainline piping (in conduit).
- B. Excavate trenches for sprinkler system pipe to provide 18 inches of cover over mainlines and 12 inches over lateral lines.
1. Do not damage roots where trenching is required in proximity to trees that are to remain.
- C. Appropriately cover, protect, and mark trenches along pedestrian routes that are left open overnight.

### 3.3 INSTALLATION

- A. General: Plans are diagrammatic. Proceed with installation in accordance with the following:
1. Install stop and waste valve and other equipment required by local authorities according to Utah Laws and Regulations to make system complete.
  2. Install main line, automatic control valves, lateral lines, fittings, and heads/drip line as specified.

3. Thoroughly flush main lines before installing automatic control valves, and laterals before installing sprinklers. Flush supply lines thoroughly before installing backflow preventers or other regulating devices.
- B. Piping: Assemble all mainline and lateral lines in accordance with manufacturer's recommendations.
1. Install PVC pipe in dry weather above 40 degrees F as specified by manufacturer's recommendations. Allow joints to cure a minimum of 8 hours before testing.
  2. Snake pipe in trench as much as possible to allow for expansion and contraction. When pipe laying is not in progress, or at end of each day, close pipe ends with tight plug or cap. Perform work in accordance with good practices prevailing in irrigation industry.
- C. Sleeving:
1. Contractor to directionally bore sleeves per as needed.
  2. Coordinate location of all sleeving prior to installation.
  3. For sleeving under roadways install sleeving below the depth of the aggregate sub-base.
  4. Install sleeving under asphalt paving and concrete walks to accommodate piping and wiring. Compact backfill around sleeves to prevent settling.
- D. Control Valves:
1. Install at plan locations and according to detail. Use Schedule 80 PVC pipe for nipples on valve header, length as necessary. Install valves, one maximum per box, plastic valve box and provide 12 inches of expansion loop slack wire at all connections inside valve box.
- E. Quick Coupling Valves: Install using 1 inch Schedule 80 PVC nipples and street ells as detailed. Locations as indicated on plans.
- F. Valve Access Boxes:
1. Install over all automatic control valves, manual control valves, pressure regulators or zone shutoff valves and sized to provide adequate room for maintenance.
  2. Install valve boxes 1" above finish grade and place parallel or perpendicular to adjacent curbs, sidewalks, or driveways.
  3. Imprint a valve control number on each valve box cover that corresponds to the valve controller clock. Imprint the valve box number a minimum of one inch high in a permanent and legible manner.
  4. Place washed aggregate in sump as shown on plans.
- G. Automatic Controller:
1. Mount the panel enclosure so the operator can conveniently make adjustments.

2. Properly ground controller in accordance with Utah Laws and Regulations and per manufacturer's requirements. Make all control wire connections to automatic controllers. Coordinate controller installation with electrical work.
  3. Provide a laminated copy of the irrigation plan indicating valve station numbers and field locations and attach it inside the controller.
  4. Program the controller to provide the appropriate amount of water for each station.
  5. Supply the Owner with manufacturer's warranties and operating instructions for the controller.
  6. Connect remote control valves to controller in numerical sequence as shown on Drawings.
- H. Solvent Weld PVC Pipe - Lay pipe and make all plastic to plastic joints in accordance with solvent manufacturer's recommendations.
- I. Drip Laterals:
1. Install all drip laterals per the plans before installation of mulch.
  2. Install drip line blowout stubs at all dead ends of emitter laterals.
- J. Control Wiring:
1. Low Voltage Wiring:
    - a. Bury control wiring between controller and electric valves in mainline trenches, strung as close as possible to main pipe lines with such wires to be consistently located below and to one side of pipe, or in separate trenches.
    - b. Install wiring in 1" conduit.
    - c. Provide an expansion loop at sleeve crossings for future phases and at every electric control valve location (in valve box). Expansion loop to have a minimum 3' spare wire.
    - d. Make control wire connections and splices with 3M direct bury splice connectors, or approved equal.
    - e. Install all control wire splices not occurring at control valve in a separate splice valve box.
    - f. See additional wire information in Supplemental 2-Wire Irrigation Notes included on plans.
- K. Dripline - Install all surface emitters as detailed and stake with acceptable tubing stakes.
- L. Valves - Install where shown on Drawings as detailed.

### 3.4 TESTING

- A. Notify the Owner a minimum of 48 hours in advance of pressure testing the main line.
- B. Hydrostatic pressure test all supply and pressure irrigation lines by maintaining full supply line water pressure for three consecutive hours before backfilling and after air pockets have been vented from the lines.
- C. Test connections for leaks prior to backfilling and repair all leaks. Lateral lines may be tested in sections to expedite backfilling work.

### 3.5 BACKFILL OPERATION

- A. Bed all pipe a minimum of 2 inches, surrounding the pipe with native material excavated from the trench and passing through a ½ inch sieve.
- B. Prevent soil, rocks, or debris from entering pipes or sleeves.
- C. Compact backfilled trenches thoroughly to prevent settling damage to grades or plant materials. Repair irrigation system and plants at no additional cost to Owner.
- D. Do not begin backfilling operations until required system tests have been completed. Leave trenches slightly mounded to allow for settlement after backfilling is completed. Finish grade trenches prior to walk-through of system by Owner.
  - 1. Materials - Excavated material is generally considered satisfactory for backfill purposes. Remove from backfill material all rubbish, organic matter, and stone larger than 2 inches in maximum dimension. Do not mix subsoil with topsoil. Haul away all material not suitable for backfill. If excavated material is unacceptable or not sufficient to meet backfill, compaction and final grade requirements Contractor is responsible for providing suitable backfill.
  - 2. Do not leave trenches open for a period of more than 48 hours. Protect open excavations in accordance with OSHA regulations.

### 3.6 IRRIGATION INSTALLATION INSPECTION

- A. Examine areas and conditions under which Work of this Section is to be performed. Do not proceed with inspection walk-through until unsatisfactory conditions have been corrected.
- B. Completely install entire system and ensure proper operation prior to scheduling of walk-through.



- C. Notify Owner a minimum of 48 hours prior to walk-through.
  - D. Remotely operate each zone in for Owner's Representative at time of walk-through.
  - E. Contractor to generate a list of items to be corrected.
  - F. Furnish materials and perform Work required to correct all inadequacies at no additional cost to Owner.
  - G. During walk-through, expose all drip emitters outlets for observation by Owner's Representative to demonstrate that they are performing and installed as designed. Schedule separate walk-through if necessary.
  - H. Adjusting
    - 1. Upon completion of installation, "fine-tune" entire system to provide optimum and efficient coverage. Adjustments to be performed prior at no additional cost to Owner.
    - 2. Immediately correct areas that do not conform to designated operation requirements due to unauthorized changes or poor installation practices at no additional cost to the Owner.
- 3.7 CLEANUP
- A. Promptly remove soil and debris created by any work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

**END OF SECTION**

**SECTION 32 93 01  
EXTERIOR PLANTS**

**LAYTON STANDARD SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Supplemental General Conditions and Special Provisions, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Trees.
  - 2. Shrubs.
  - 3. Ground cover.
  - 4. Plants.
  - 5. Mulch.
  - 6. Boulder.
- B. Related Sections include the following:
  - 1. Section 32 84 00 Underground Irrigation Systems
  - 2. Section 02912 Topsoil
  - 3. Section 02922 Seed, Turf Seed, and Turf Sod

1.3 DEFINITIONS

- A. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1.
- B. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.

- C. Finish Grade: Elevation of finished surface of planting soil.
- D. Planting Soil: Native soil or surface soil modified to become topsoil; mixed with soil amendments.
- E. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each of the following:
  - 1. 1 lb of rock mulch for each color and texture of mulch required, in labeled plastic bags.
- C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:
  - 1. Manufacturer's certified analysis for standard products.
  - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- D. Qualification Data: For landscape Installer.
- E. Material Test Reports: For existing surface soil and imported materials.
- F. Planting Schedule: Indicating anticipated planting dates for exterior plants.
- G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods upon substantial completion and prior to final acceptance and beginning of maintenance contract.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
  - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to

conduct the testing indicated and that specializes in types of tests to be performed.

- C. Organic Compost Material and Native Soil Analysis: Furnish test analysis of each by a qualified soil-testing laboratory or supplier stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of both items above.
  - 1. Report suitability of native soil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory amended soil if different from what is called for in these specifications.
- D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
  - 1. Selection of exterior plants purchased may be made by the City who will tag plants at their place of growth before they are prepared for transplanting.
- E. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
- F. Observation: The City's Representative may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. The City retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
  - 1. Notify the City's representative of sources of planting materials 30 days in advance of delivery to site.
- G. Preinstallation Conference: Conduct conference at Project site as requested by the City.

## 1.6 COORDINATION

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance

from date of installation through final acceptance and beginning of maintenance contract.

- B. No planting shall take place if ground is muddy, standing water is present, frozen or snow covered.
  - 1. Spring Planting: April 15- June 15
  - 2. Fall Planting: August 15- October 15
  - 3. It should be noted that these are considered to be ideal planting periods, however, installer will be permitted to plant year round as long as none of the above conditions exist and that precautions are taken to avoid any negative effects on plantings due to any adverse seasonal weather or climate conditions that may exist.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
- D. Coordination with Sodded/Seeded Areas: Plant trees and shrubs after finish grades are established and before sodding/seeding areas, unless otherwise acceptable to the City.
  - 1. When planting trees and shrubs after sodded/seeded areas, protect these areas and promptly repair damage caused by planting operations.

#### 1.7 WARRANTY

- A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.
  - 1. Warranty Period for Trees and Shrubs: One year from date of Final Acceptance.
  - 2. Warranty Period for Ground Cover and Perennial Plants: One year from date of Final Acceptance.
  - 3. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
  - 4. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
  - 5. A limit of one replacement of each exterior plant will be required, except for losses or replacements due to failure to comply with requirements.

**PART 2 - PRODUCTS****2.1 TREE AND SHRUB MATERIAL**

- A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to the City's representative, with a proportionate increase in size of roots or balls.
- C. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.
- D. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- E. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

**2.2 DECIDUOUS AND ORNAMENTAL TREES**

- A. Deciduous Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.
  - 1. Provide balled and burlapped trees.
  - 2. Branching Height: One-third to one-half of tree height.
- B. Ornamental Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:
  - 1. Stem Form: Single stem and Multistem, clump, with two or more main stems according to the natural form of species and type.
  - 2. Provide balled and burlapped trees.

**2.3 DECIDUOUS SHRUBS**

- A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape, and height of shrub.
  - 1. Provide container-grown shrubs.

#### 2.4 CONIFEROUS EVERGREENS

- A. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.
- B. Form and Size: Specimen-quality, exceptionally heavy, tightly knit, symmetrically shaped coniferous evergreens and the following grade:
  - 1. Heavy Grade
  - 2. Provide balled and burlapped trees.

#### 2.5 BROADLEAF EVERGREENS

- A. Form and Size: Normal-quality, well-balanced, broadleaf evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.
  - 1. Provide container-grown shrubs.

#### 2.6 GROUND COVER and 1 GAL. SHRUBS/ GRASSES

- A. Ground Cover: Provide ground cover of species indicated on the plans, established and well rooted in pots or similar containers, and complying with ANSI Z60.1.

#### 2.7 SEASONAL PLANTS

- A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of size, species and variety shown or listed.
- B. Vines: Provide vines of species indicated complying with requirements in ANSI Z60.1 as follows:
  - 1. Two-year plants with heavy, well-branched tops, with not less than 3 runners 18 inches or more in length, and with a vigorous well-developed root system.
  - 2. Provide field-grown vines. Vines grown in pots or other containers of adequate size and acclimated to outside conditions will also be acceptable.

#### 2.8 ORGANIC SOIL AMENDMENTS

- A. Planting soil backfill for trees, shrubs, perennials and grasses to be 30% native soil, 30% imported loamy topsoil, 20% coarse sand, and 20% peat moss or organic mulch.

## 2.9 FERTILIZER

- A. Slow-Release Fertilizer: Trees, Shrubs, Groundcovers- Granular or pelleted fertilizer Biosol Mix 7-2-3 consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Apply at rate of 44lbs./ 1000 SF for groundcover and perennial areas, and 12 oz./ tree pit, 4oz./ 5 gal shrub pit: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
  - 2. Composition: 7-2-3 Nitrogen, phosphorous, and potassium or in amounts recommended in soil reports from a qualified soil-testing agency.

## 2.10 MULCHES

- A. Rock Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
  - 1. Type: Crushed angular rock.
  - 2. Size Range: Screen size 4" to 6".
  - 3. Color: As selected by Owner.

## 2.11 LANDSCAPE BOULDERS

- A. Boulder: Hard, durable stone, washed free of loam, sand, clay and other foreign substances, of the following type, size range, and color:
  - 1. Type: Browns Canyon Quartzitic Sandstone boulder provided from Mountain Valley Stone or approved equal.
  - 2. Landscape Boulder Size Range: 3'-5' each way. Sizes shall vary.
  - 3. Color: Buff as acceptable by Owner. Majority of boulders shall have natural varnish.

## 2.12 STAKES AND GUYS

- A. Upright and Guy Stakes: 2" dia. Lodgepole pine stakes.
- B. Guy and Tie: Chainlock or approved equal tree ties (1" width). Nail or staple to stake to hold vertically. Loop each tie around tree loosely to provide 1" slack on trunk for growth.



**2.13 MISCELLANEOUS PRODUCTS**

- A. Anti-dessicant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

**2.14 PLANTING SOIL MIX- TREE, SHRUB, PERENNIAL, AND GRASS PLANT BACKFILL**

- A. Planting Soil Mix: Mix installed topsoil and native soil with the following in the specified quantities:
  - 1. 30% native soil, 30% imported topsoil, 20% coarse clean sand, and 20% peat moss or organic mulch.
  - 2. Weight of Slow-Release Biosol Mix 7-2-3 Fertilizer per 1000 Sq. Ft. of groundcover/ perennial areas: 44 lbs.
  - 3. Weight of Slow-Release Biosol Mix 7-2-3 Fertilizer in tree pits: 12 oz.
  - 4. Weight of Slow-Release Biosol Mix 7-2-3 Fertilizer in shrub pits: 4 oz.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple exterior plantings. Stake locations, outline areas, adjust locations when requested, and obtain City Representative's acceptance of layout before planting. Make minor adjustments as required.
- D. Lay out exterior plants at locations directed by the City's representative. Stake locations of individual trees and shrubs and outline areas for multiple plantings.
- E. Grower shall apply anti-desiccant to all trees and shrubs using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
  - 1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

**3.3 PLANTING BED ESTABLISHMENT**

- A. Loosen subgrade of planting beds to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
  - 1. Install 12" of premium topsoil in planting beds.
- B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

- C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

#### 3.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver exterior plants freshly dug.
- B. Do not prune trees and shrubs before delivery, except as approved by the City's representative. Protect bark, branches, and root systems from sunscald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
- C. Handle planting stock by root ball.
- D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.
- E.
  - 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material. Do not set root ball on concrete or lean trunks or canopy against fence or wall.
  - 2. Do not remove container-grown stock from containers before time of planting.
  - 3. Water root systems of exterior plants stored on-site with a fine-mist spray; temporary irrigation system or manually with hose. Water as often as necessary to maintain root systems in a moist condition.

#### 3.5 TREE AND SHRUB EXCAVATION

- A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
  - 1. Excavate approximately two times as wide as ball diameter for balled and burlapped and container-grown stock.
- B. Native soil above 36" depth removed from excavations may be used in planting backfill. Subsoil below 36" depth removed from excavations may not be used in planting backfill.

- C. Obstructions: Notify the City's representative if unexpected rock or any other obstructions detrimental to trees or shrubs are encountered in excavations.
  - 1. Hardpan Layer: Drill 6-inch- diameter holes into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.
- D. Drainage: Notify the City's representative if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

### 3.6 TREE AND SHRUB PLANTING

- A. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball 2" inches above adjacent finish grades. Trees shall be planted such that trunk flare is visible at the top of the rootball. Do not cover the top of the root ball with soil.
  - 1. Remove all wire, entire wire basket, nylon ties, twine, rope and 2/3 burlap from root ball. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 2. Place planting soil around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
  - 3. Backfill tree pits within plaza with Utelite Tree Pit Backfill Planting Mix.
- B. Set container-grown stock plumb and in center of pit or trench with top of root ball 1 inch above adjacent finish grades.
  - 1. Carefully remove root ball from container without damaging root ball or plant.
  - 2. Place planting soil around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
- C. Shredded Wood Mulching: Apply 4-inch average thickness of organic mulch after planting for trees in sod areas, providing a min. 18 inch radius collar of mulch. Do not place mulch within 3 inches of trunks or stems.

### 3.7 GROUND COVER AND PERENNIAL PLANTING

- A. Set out and space ground cover and plants as indicated.
- B. Dig holes large enough to allow spreading of roots, and backfill with planting soil.
- C. Work planting soil around roots to eliminate air pockets.
- D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

### 3.8 TREE AND SHRUB PRUNING

- A. Prune, thin, and shape trees and shrubs as directed by the City's representative.
- B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by the City, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.

### 3.9 GUYING AND STAKING

- A. Guy all trees according to planting detail on plans.
- B. Guy and stake all deciduous and evergreen trees.
- C. For deciduous trees; use a minimum of 2 stakes for trees, 2 ½" cal. and smaller, and a minimum of 3 stakes for trees greater than 2 ½" cal. Stakes shall be of a length required to penetrate a min. of 48" above grade; for evergreen, use a minimum of 3 stakes (up to 5 stakes may be required for 14' ht. And larger evergreens). Stakes shall be of a length required to penetrate a minimum of 24" below grade and to extend a maximum of 6" above grade.
- D. Set all stakes and space to avoid any penetration of the rootball or any portion thereof.
- E. Remove entire wire basket on each rootball along with any other twine around trunk and packaging materials, etc.

- F. Support trees @ each guywire with two strands twisted galvanized wire and 2" nylon tree straps at contact points with tree trunks. Allow enough slack to avoid rigid restraint of tree. Continuous treestraps shall be of appropriate length so that grommets are 4"-6" away from the tree trunk. Treestraps shall not be linked together to achieve the required length.
- G. No poly PVC or garden hose and wire shall be accepted as a guying method.

### 3.10 PLANTING BED MULCHING

- A. Mulch backfilled surfaces of planting beds and other areas indicated.
  - 1. Rock Mulch: Apply 6-inch average thickness of rock mulch and finish level with adjacent finish grades. Do not place mulch against plant stems.

### 3.11 MAINTENANCE

- A. Trees and Shrubs: Maintain by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required keeping trees and shrubs free of insects and disease.
- B. Ground Cover and Perennial Plants: Maintain by watering, weeding, fertilizing, and other operations as required to establish healthy, viable plantings.

### 3.12 ANTI-DESSICANT SPRAY

- A. Apply 2 applications of anti-dessicant spray for all evergreen trees and shrubs.

### 3.13 CLEANUP AND PROTECTION

- A. During exterior planting, keep adjacent pavings and construction clean and work area in an orderly condition.
- B. Protect exterior plants from any damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

### 3.14 DISPOSAL

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

**END OF SECTION**

**SECTION 32 40 01  
SITE FURNISHINGS**

**LAYTON STANDARD SPECIFICATIONS ARE HEREBY AMENDED TO INCLUDE THE  
FOLLOWING:**

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

The work under this Section shall consist of furnishing all labor, materials and incidentals to install the following site furnishings complete in place and ready for intended use in accordance with the manufacturer's specifications, these specifications and the project plans. All site furnishings listed below are to be "or approved equal" unless otherwise noted. Exact models and suppliers represent the desired quality, look, and character of the individual elements included in this specification.

- A. 32'x53' Rectangular Pavilion (supplied by Owner, installed by Contractor)

**1.2 SUBMITTALS**

- A. Submit full product data and technical information on all furnishings to be installed.



**PART 2 - PRODUCTS**

## 2.1 GENERAL

The materials specifications are based on the proprietary products in order to establish a standard of quality and installation procedures. Other manufacturers meeting or exceeding the quality standards of the specified product may be submitted for approval unless otherwise noted. All shop drawings, material samples, and color samples shall be submitted for review and approval.

- A. Icon Shelter Systems 32'x53' Rectangular Pavilion – Model #RG32x53M-P4.
  - 1. Supplied by City, installed by Contractor.
  - 2. Colors: As Selected by Owner.

**PART 3- EXECUTION****3.1 INSTALLATION**

- A. Install all components at locations shown on Drawings properly aligned and spaced, plumbed vertically, complete and ready for use.
- B. Install all components in accordance with manufacturer's instructions.
- C. If the manufacturer recommends anchoring or footing details, submit copies of the details to the City for review and approval prior to construction.

**3.2 SELECTED MANUFACTURERS**

- A. Icon Shelter Systems  
1455 Lincoln Avenue  
Holland, MI 49423  
Phone: (800) 748-0985  
Contact: Big T Recreation | Taft Egan, (801) 808-5006

**END OF SECTION**

## SECTION 1

### MEASUREMENT AND PAYMENT DIVISION

General and supplemental general conditions. Applicable provisions of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS apply to and are made a part of this Division.

Measurement and Payment: Measurement shall be made in the units or lump sums shown on the bid schedule. Payment shall be made at the unit price or lump sum price bid in the bid schedule for the items described below, which shall be payment in full for all costs of furnishing labor, tools, equipment, materials, testing, and etc., to complete the items of work as specified and as shown on the drawing(s).

## **LAYTON CITY ANDY ADAMS PARK IMPROVEMENTS - PROJECT 22-04**

### ANDY ADAMS PARK IMPROVEMENTS

#### CONSTRUCTION SURVEYING & STAKING...

**(Base Bid Item 2)**

Measurement shall be lump sum of construction surveying and staking required to prepare the site for accurate construction and completion of the project.

Payment shall be at the lump sum price bid and shall include all costs and materials required to accomplish the surveying and staking.

#### TRAFFIC CONTROL / CONSTRUCTION FENCING...

**(Base Bid Item 3)**

Measurement shall be lump sum of traffic control and construction fencing required to manage the safety of the site and surroundings during the duration of the construction project.

Payment shall be at the lump sum price bid and shall include all costs and materials required to accomplish the traffic control and construction fencing.

#### TESTING...

**(Base Bid Item 4)**

Measurement shall be lump sum of testing required to ensure the concrete passes strength and resilience of built structures constructed.

Payment shall be at the lump sum price bid and shall include all costs and materials required to accomplish the testing.

#### EROSION CONTROL...

**(Base Bid Item 5)**

Measurement shall be lump sum of erosion control required to prepare the site for the project.

Payment shall be at the lump sum price bid and shall include all costs and materials required to control erosion including the tasks of placing straw wattles near storm drains, and furnishing all labor, equipment, materials and tools needed to implement the erosion control.

DEMOLITION/SITE CLEARING & SITE GRADING...

**(Base Bid Item 6)**

Measurement shall be per lump sum of site clearing and site grading required to prepare the site for rough grading.

Payment shall be at the lump sum price bid and shall include all costs and materials required to site grade in preparation for rough grading including the tasks of clearing, grubbing and removal; providing necessary subgrade preparation including shaping and compaction; restoring any damaged property items resulting from site grading including sod, fences, sprinkling systems, asphalt, sidewalk, landscaping, and associated property items; and removing and legally disposing all waste materials.

EARTHWORK & GRADING...

**(Base Bid Item 7)**

Measurement shall be lump sum of rough grading required to prepare the site for road base and asphalt (or concrete).

Payment shall be at the lump sum price bid and shall include all costs and materials required to rough grade the site in preparation for installing road base and asphalt (or concrete) including the tasks of clearing, grubbing and removal; providing necessary subgrade preparation including shaping and compaction; restoring any damaged property items resulting from rough grading including sod, fences, sprinkling systems, asphalt, sidewalk, landscaping, and associated property items; and removing and legally disposing all waste materials.

FURNISH AND INSTALL 6" DEPTH ROADBASE....

**(Base Bid Item 8)**

Measurement shall be per ton of gravel roadbase installed on the project. The weight factor for gravel roadbase shall be assumed not to exceed 136 pounds per cubic foot. Copies of original weight tickets with summary sheet showing the job description are required for measurement verification. All tickets must identify the project name, project number and section, and intended use (street construction) of the roadbase material.

Payment shall be at the unit price bid. If the weight described in the measurement section above exceeds the assumed amount, the bid price will be adjusted using the following formula: (Quantity delivered\*136/proctor weight\*unit bid=payment amount). The bid price shall include all costs to furnish, place, shape, grade, compact, and test the gravel roadbase (6 inches below trails, sidewalks and curb & gutter); provide dust control and associated work items. Payment also includes the placement, shaping, grading, compaction and testing of the material at the curb & gutter, trail, and sidewalk locations.

FURNISH AND INSTALL 4" DEPTH CONCRETE....

**(Base Bid Item 9)**

Measurement shall be made per square feet of concrete. Public Works Inspector must verify measurement in the field or no compensation will be given.

Payment shall be at the unit price bid and shall include all costs and materials required to restore damaged property items resulting from construction including sod, fences, sprinkling systems, asphalt, sidewalk, landscaping, and associated property items; remove and legally dispose of all waste material; furnish and install the 4-inch thick (or 6-inch thick) concrete on the 6-inch thick roadbase (or 10" roadbase respectively) provide subgrade preparation including shaping and compaction; provide forming, concrete, finishing, expansion materials, and curing compound; provide watchmen to protect the concrete from vandalism; restore damaged property items resulting from construction including sod, fences, sprinkling systems, asphalt, sidewalk, landscaping, and associated property items; remove and

legally dispose of all waste material. Payment also includes costs to form and construct the thickened sidewalk for the support in all areas requiring the supported sidewalk as indicated on the drawings.

CONCRETE STAIRCASE...

**(Base Bid Item 10)**

Measurement shall be lump sum to prepare the site for the staircase as shown on plans.

Payment shall be made at the lump sum price bid and shall include all costs, materials, and labor to prepare the site for the staircase; over-excavation; shape, compact, prepare and place the material as indicated on the drawings.

PAVILION...

**(Base Bid Item 11)**

Measurement shall be lump sum to prepare the site for the pavilion as shown on plans.

Payment shall be made at the lump sum price bid and shall include all costs, materials, and labor to prepare the site for the pavilion; over-excavation; shape, compact, prepare and place the material as indicated on the drawings.

PAVILION ELECTRICAL...

**(Base Bid Item 12)**

Measurement shall be lump sum to install the electrical as shown on plans.

Payment shall be made at the lump sum price bid and shall include all costs, materials, and labor to furnish and install the material; over-excavation; shape, compact, prepare and place the material as indicated on the drawings.

MUSCO LIGHTING INSTALLATION...

**(Base Bid Item 13)**

Measurement shall be lump sum to install the Musco lighting and related appurtenances as shown on plans.

Payment shall be made at the lump sum price bid and shall include all costs, materials, and labor to install the Musco lighting; over-excavation; shape, compact, prepare and place the material as indicated on the drawings.

RELOCATED DRINKING FOUNTAIN...

**(Base Bid Item 14)**

Measurement shall be lump sum to relocate the existing drinking fountain and install as shown on plans.

Payment shall be made at the lump sum price bid and shall include all costs, materials, and labor to relocate and install the material; over-excavation; shape, compact, prepare and place the material as indicated on the drawings.

FURNISH AND INSTALL LANDSCAPE IRRIGATION...

**(Base Bid Items 15)**

Measurement shall be lump sum to furnish and install the landscape irrigation as specified in the drawings.

Payment shall be at the lump sum price bid and shall include all materials, costs, and labor to furnish and install all landscape irrigation specified in the drawings. Payment includes furnishing and installing all pipes, fittings, valves, backflow preventers, automatic controllers, pedestals, sprinkler heads, plastic nozzles, drip tubings, filters, valve boxes, and/or all other associated items to install the sprinkling system. Payment also includes flushing the main lines before installing automatic control valves, laterals before installing sprinklers, and supply lines before installing backflow preventers or other regulating devices. Payment includes all materials and costs associated with connecting the sprinkler system to the electrical system (or battery controller).

Payment also includes restoration of damaged property items resulting from construction including fences, sprinkling systems, asphalt, sidewalk, landscaping, and associated property items; and removal and legal disposal of all waste material.

#### FURNISH AND INSTALL LANDSCAPING...

**(Base Bid Items 16-17)**

Measurement shall be per lump sum to furnish and install landscaping as specified in the drawings.

Payment shall be at the lump sum price bid and shall include all materials, costs, and labor to furnish and install all landscaping specified in the drawings. Payment includes furnishing and installing all pipes, fittings, valves, backflow preventers, automatic controllers, pedestals, sprinkler heads, plastic nozzles, drip tubings, filters, valve boxes, and/or all other associated items to install the sprinkling system. Payment also includes flushing the main lines before installing automatic control valves, laterals before installing sprinklers, and supply lines before installing backflow preventers or other regulating devices. Payment includes all materials and costs associated with connecting the sprinkler system to the electrical system.

Payment shall also include all costs, materials and labor to furnish and install all sod, and/or seeds, as specified in the drawings. Payment includes restoration of damaged property items resulting from construction including fences, sprinkling systems, asphalt, sidewalk, landscaping, and associated property items; and removal and legal disposal of all waste material.

**1. ENUMERATION OF DRAWINGS**

The drawings for this project are as follows:

**NAME**

Chapel Park Improvements  
Musco Lighting Package  
Icon Shelter Systems: Pavilion

**DRAWING NUMBER**

CONSTRUCTION BID SET

**STANDARD DRAWINGS**

# Andy Adams Park Improvements

1713 E 1000 N, Layton, UT 84041





# sheet index

- 1 | L000 - Cover sheet
- 2 | L001 - Project notes & sheet index
- 3 | LD101 - Demo plan
- 4 | LS101 - Overall site plan
- 5 | LS501 - Site plan details
- 6-8 | C001 - C200 - Civil plans
- 9-16 | EE001 - ES602 - Electrical plans
- 17 | LP101 - Overall landscape plan
- 18 | LP501 - Landscape notes & details
- 19 | LI101 - Overall irrigation plan
- 20-21 | LI501 - LI502 - Irrigation notes and details

# project team

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 Layton, UT 84041  
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**LANDSCAPE ARCHITECT**  
 blu line designs  
 8719 S. Sandy Parkway  
 Sandy, Utah 84070  
 P: 801.703.6383 CONTACT: Rob Donigan  
 F: E-MAIL: rob@blulinedesigns.com



**SURVEY/ CIVIL**  
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 P: 801.643.0527 CONTACT: Cam Preston  
 F: E-MAIL: cp Preston@ensigneng.com

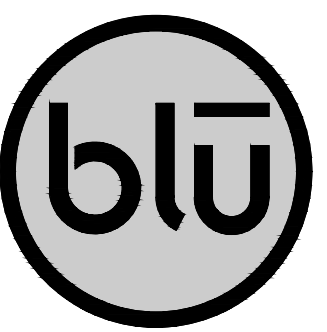


**ELECTRICAL ENGINEER**  
 Spectrum Engineers  
 324 S. State St., Suite 400  
 Salt Lake City, UT 84111  
 P: 801.328.5151 CONTACT: Spencer Little  
 F: 801.328.5155 E-MAIL: spencer.little@speceng.com



# General Notes

1. ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE LATEST AMERICAN PUBLIC WORKS ASSOCIATION (APWA) AND LAYTON CITY STANDARDS, SPECIFICATIONS, AND DETAILS. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THESE ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
2. EXISTING UTILITIES, EASEMENTS, AND STRUCTURES SHOWN ON THE DRAWINGS ARE IN ACCORDANCE WITH AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, TYPE, AND STRUCTURES TO BE ENCOUNTERED ON THE PROJECT PRIOR TO ANY EXCAVATION AND CONSTRUCTION IN THE VICINITY OF THE EXISTING UTILITIES AND STRUCTURES.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITS, LICENSES, AND APPROVALS REQUIRED TO LEGALLY AND RESPONSIBLY COMPLETE THE WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL, DISPOSAL, OR RELOCATION OF ALL OBSTRUCTIONS AND DEBRIS WITHIN THE DELINEATED CONSTRUCTION AREA PRIOR TO STARTING NEW CONSTRUCTION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ANY DEBRIS RESULTING FROM NEW CONSTRUCTION.
5. DAMAGE TO ANY EXISTING IMPROVEMENTS OR TO ANY PORTION OF THE PROJECT'S SURROUNDING AREA DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE TO ADJUST THE TOPS OF ALL EXISTING MANHOLES, CATCH BASINS, INLETS, COVERS, AND SIMILAR STRUCTURES TO FINISH GRADE.
7. THE CONTRACTOR SHALL CALL BLUE STAKES AT 1-800-662-4111 FOR UNDERGROUND UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION.
8. THE PROJECT SHALL NOT BE CONSIDERED COMPLETE UNTIL ALL CURBS, PAVEMENT, AND SIDEWALKS HAVE BEEN SWEEPED CLEAN OF ALL DIRT AND DEBRIS.
9. CONTRACTOR SHALL ROUGH GRADE TO WITHIN +/- A TENTH OF A FOOT FROM FINISH GRADE.
10. ALL SPOT ELEVATIONS ARE FINISH GRADE UNLESS OTHERWISE NOTED.
11. ALL CLARIFICATIONS OF DISCREPANCIES BETWEEN THE DRAWINGS AND THE SITE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING OF WORK.
12. CROSS SLOPES ON ALL NEW HARDSCAPE AND PAVEMENT SHALL NOT EXCEED 2% UNLESS OTHERWISE SHOWN.
13. ALL AREAS WITHIN AND AFFECTED BY THIS PROJECT SHALL HAVE POSITIVE DRAINAGE. POSITIVE DRAINAGE SHALL BE PROVIDED TO DIRECT STORMWATER AWAY FROM ALL STRUCTURES.
14. CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID DAMAGE TO EXISTING FEATURES AND FACILITIES SCHEDULED TO REMAIN AS PART OF THE FINISHED CONSTRUCTION. REPAIR, REPLACEMENT, AND/OR REMOVAL AS DETERMINED BY OWNER SHALL BE AT THE CONTRACTOR'S EXPENSE.
15. CONTRACTOR SHALL PROVIDE AND MAINTAIN A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY LAYTON CITY AND THE STATE OF UTAH.



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 LAYTON CITY  
 437 N WASATCH DR, LAYTON,  
 UT 84041

CONTACT:  
 JOELLEN GRANDY  
 801-336-3926

# project location



project area



project site (n)

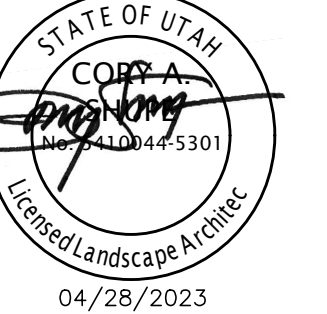
ANDY ADAMS PARK IMPROVEMENTS

1713 E 1000 N  
 LAYTON, UT 84041

REVISIONS

NO.	DATE	DESCRIPTION

Stamp



Designed By: TH  
 Drawn By: TH  
 Date: 04/28/2023  
 Checked By: RD  
 Project No: 22-200

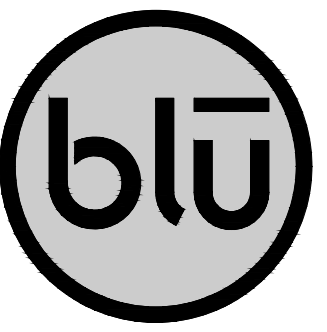
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PROJECT  
 NOTES &  
 SHEET  
 INDEX

Drawing number

L001

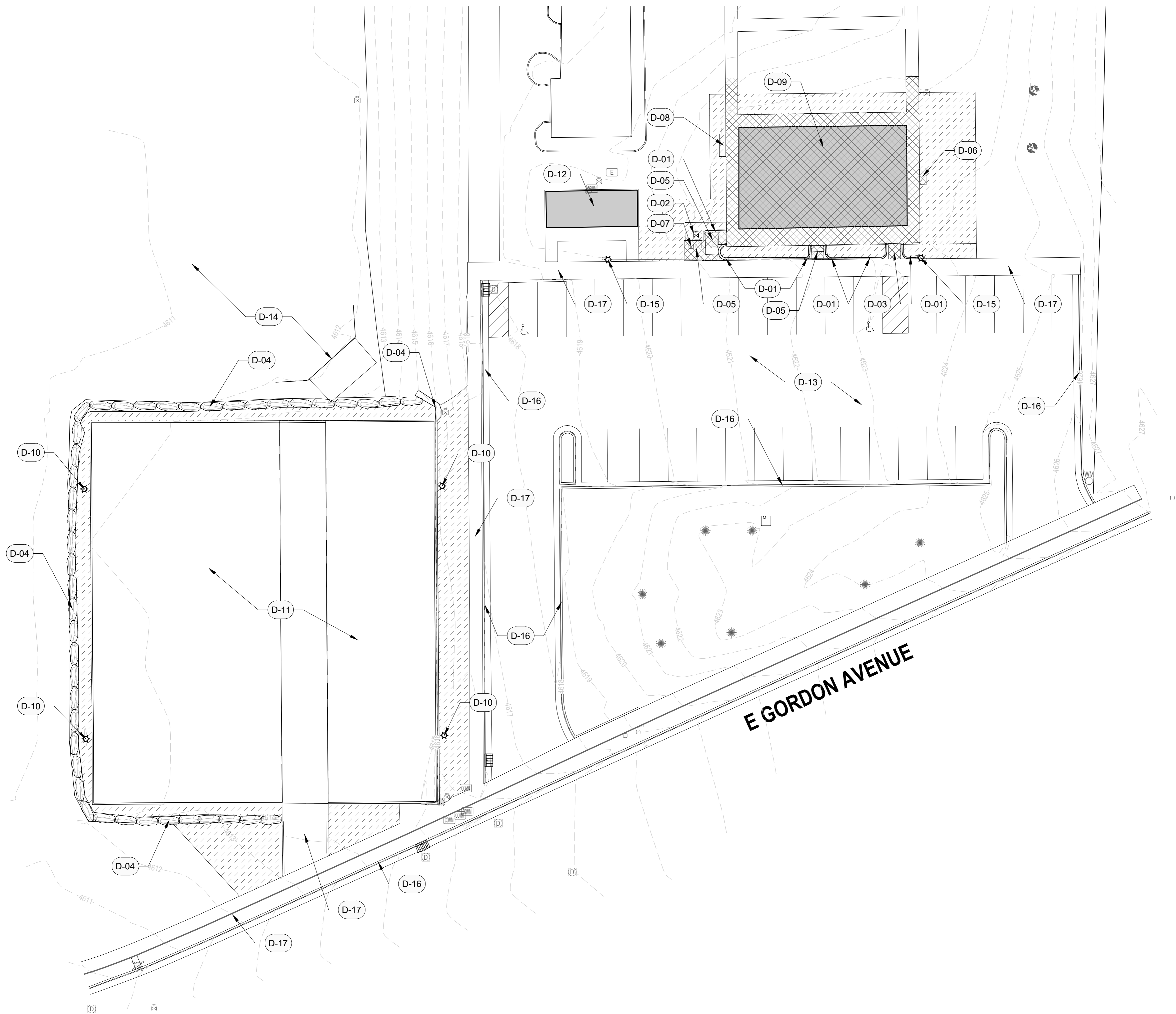
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**REFERENCE NOTES SCHEDULE**

SYMBOL	DEMO DESCRIPTION
(D-01)	EXIST KEYSTONE WALL SECTION TO BE REMOVED AND SALVAGED
(D-02)	EXIST WATER VALVE TO BE RELOCATED
(D-03)	EXIST CONCRETE RAMP TO BE REMOVED
(D-04)	EXIST BOULDER RETAINING WALL TO BE REMOVED AND REINSTALLED. REINFORCE WITH NEW BOULDERS.
(D-05)	EXIST CONCRETE STAIRCASE TO BE REMOVED
(D-06)	EXIST BARBEQUE AND PAD TO BE REMOVED
(D-07)	EXIST DRINKING FOUNTAIN TO BE RELOCATED
(D-08)	EXIST BENCH TO BE REMOVED
(D-09)	EXIST PAVILION TO BE REMOVED
(D-10)	EXIST LIGHTS AND POLES TO BE REMOVED
(D-11)	EXIST COURTS AND FENCING TO REMAIN AND BE PROTECTED
(D-12)	EXIST RESTROOM TO REMAIN AND BE PROTECTED
(D-13)	EXIST PARKING LOT TO REMAIN AND BE PROTECTED
(D-14)	EXIST BALL FIELD AND FENCING TO BE PRESERVED AND PROTECTED.
(D-15)	EXIST LIGHTS AND POLES TO BE PRESERVED AND PROTECTED.
(D-16)	EXIST CURB AND GUTTER TO BE PRESERVED AND PROTECTED
(D-17)	EXIST SIDEWALK TO BE PRESERVED AND PROTECTED

SYMBOL	DEMO DESCRIPTION
[Hatched Box]	AREA TO BE CLEARED AND GRUBBED.
[Cross-hatched Box]	HARDSCAPE TO BE SAWCUT AND REMOVED.

**GENERAL NOTES:**

1. ALL WORK TO COMPLY WITH LAYTON CITY STANDARDS AND SPECIFICATIONS.
2. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS. LOCATIONS MAY NOT HAVE BEEN VERIFIED IN THE FIELD AND NOT GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND LOCATION OF THE UTILITIES SHOWN ON THESE PLANS OR INDICATED IN THE FIELD BY LOCATING SERVICES. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF THE CONTRACTOR'S FAILURE TO VERIFY THE LOCATIONS OF EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED IN THE CONTRACT. THE CONTRACTOR IS TO VERIFY ALL CONNECTION POINTS WITH THE EXISTING UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE EXISTING UTILITIES AND UTILITY STRUCTURES THAT SHALL REMAIN. IF CONFLICTS WITH EXISTING UTILITIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT/ENGINEER PRIOR TO CONSTRUCTION TO DETERMINE IF ANY FIELD ADJUSTMENTS SHOULD BE MADE.
3. ALL SURFACE IMPROVEMENTS DISTURBED BY CONSTRUCTION SHALL BE RESTORED OR REPLACED, INCLUDING TREES AND DECORATIVE SHRUBS, SOD, FENCES, WALLS AND STRUCTURES, WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN ON THE CONTRACT DOCUMENTS.
4. ALL CONSTRUCTION SIGNAGE, BARRICADES, TRAFFIC CONTROL DEVICES, ECT. SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D. THE CONTRACTOR WILL MAINTAIN SUCH SO THAT THEY ARE PROPERLY PLACED AND VISIBLE AT ALL TIMES.
5. SIDEWALKS AND CURBS DESIGNATED TO BE DEMOLISHED SHALL BE DEMOLISHED TO THE NEAREST EXPANSION JOINT, MATCHING THESE PLANS AS CLOSELY AS POSSIBLE.
6. THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.
7. ALL DETERIORATED, DAMAGED OR MISSING SURFACE IMPROVEMENTS (I.E. CURB, GUTTER, SIDEWALKS, LANDSCAPING, PARKSTRIP IMPROVEMENTS, ASPHALT PATCHING, ETC.) SURROUNDING THE PERIMETER OF THE DEVELOPMENT AND ON-SITE, SHALL BE REPLACED OR INSTALLED.
8. ALL TREES TO REMAIN UNLESS NOTED OTHERWISE. ALL TREES TO REMAIN SHALL BE PROTECTED. CONTRACTOR SHALL INSTALL PROTECTIVE FENCING AROUND THE DRIPLINE OF ALL TREES TO REMAIN WITHIN CONSTRUCTION AREAS. VERIFY IN FIELD WITH OWNER.
9. CONTRACTOR SHALL CONFIRM IN FIELD KEYSTONE BLOCK TO BE REMOVED AND SALVAGE WITH OWNER PRIOR TO BEGINNING WORK.

**ANDY ADAMS PARK IMPROVEMENTS**

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REVISIONS

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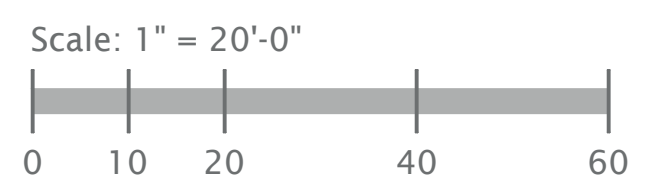
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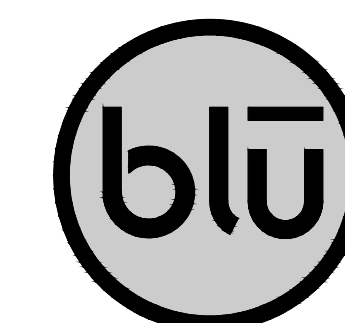
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Drawing number

**LD101**

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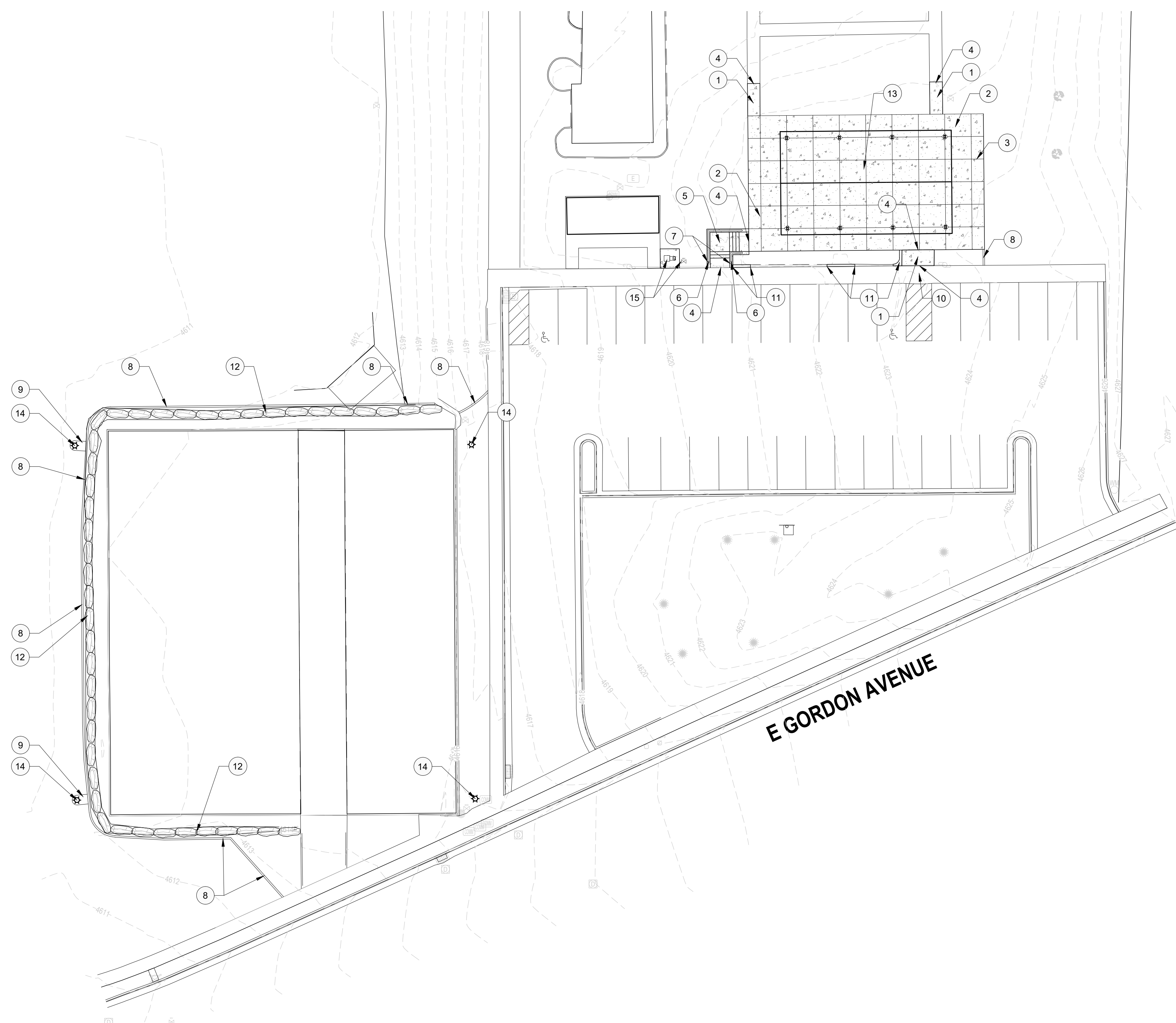




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CONTACT:  
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REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION	DETAIL
1	CONCRETE SIDEWALK	1/LS501
2	CONCRETE PAVILION PAD	1/LS501
3	SCORE JOINT	1/LS501
4	EXPANSION JOINT	
5	CONCRETE STAIRCASE	4/LS501
6	HAND RAIL	5/LS501
7	CHEEK WALL	7/LS501
8	CONCRETE EDGER	2/LS501
9	CONCRETE APRON AROUND BASE OF LIGHT POLES	1/LS501
10	ADA RAMP	
11	KEYSTONE BLOCK WALL. FILL IN RETURNS WITH SALVAGED BLOCKS AS EXISTING WALL.	
12	REBUILT BOULDER RETAINING WALL	3/LS501
13	PAVILION - PROVIDED BY OWNER, INSTALLED BY CONTRACTOR	
14	NEW MUSCO SPORTS LIGHTING - PROVIDED BY OWNER, INSTALLED BY CONTRACTOR	
15	RELOCATED DRINKING FOUNTAIN AND WATER VALVE. ON CONCRETE PAD	

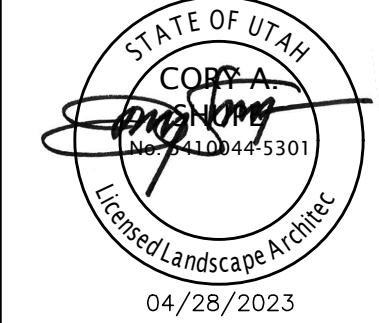
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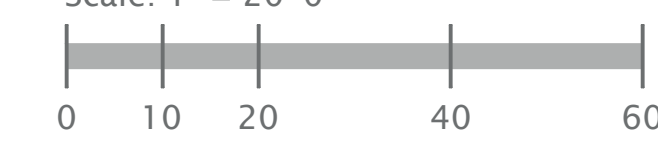
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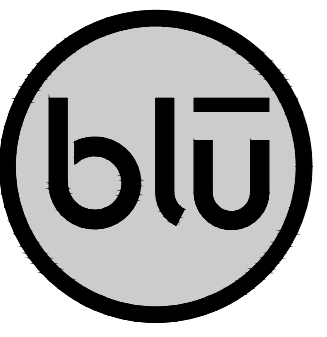
Drawing number

**LS101**

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Scale: 1" = 20'-0"





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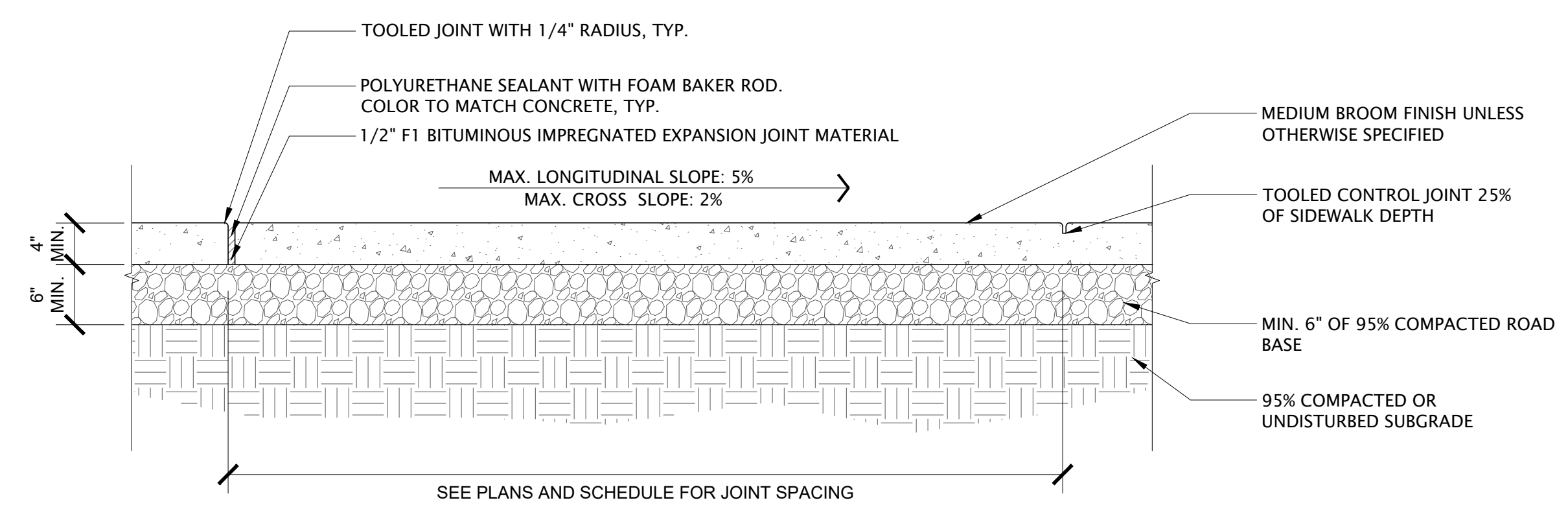
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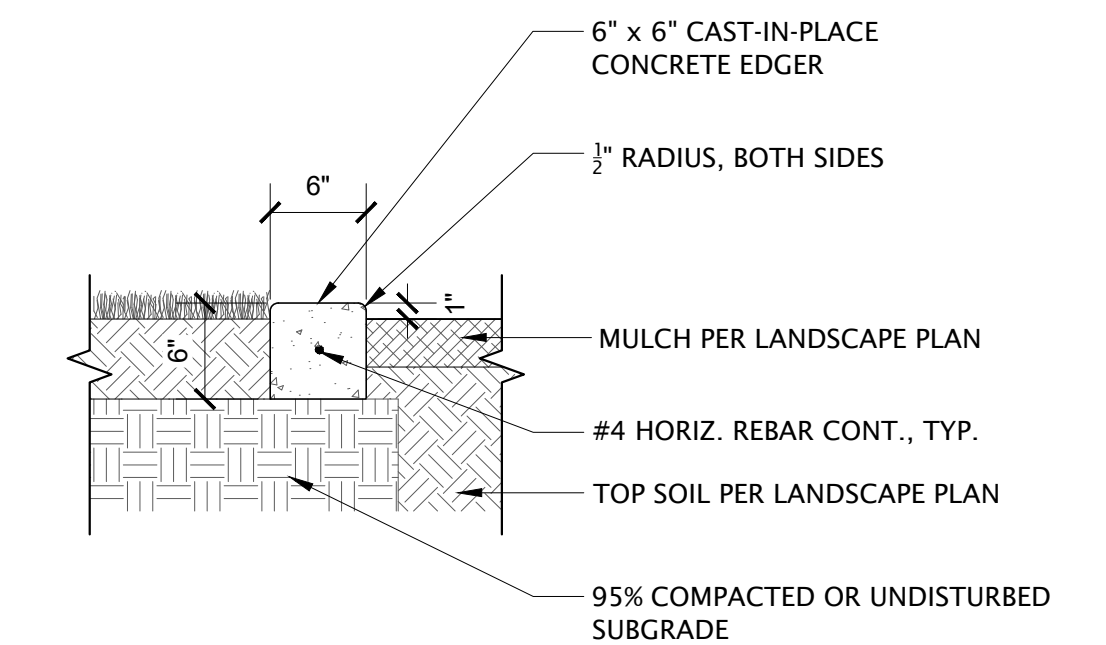
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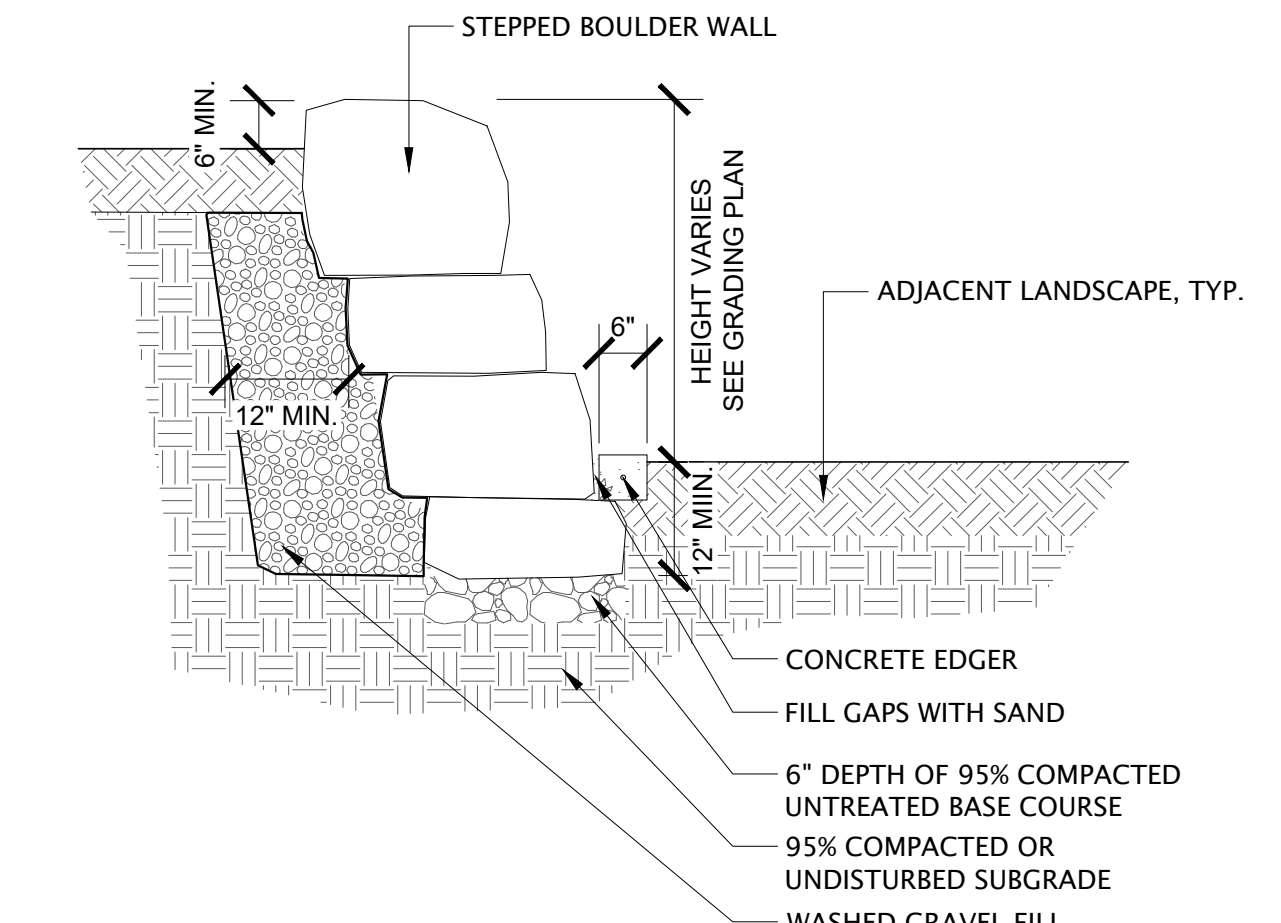


- NOTES:
1. JOINT SPACING TO BE AS SHOWN IN SCHEDULE UNLESS OTHERWISE INDICATED ON PLANS.
  2. MAX. SLOPES TO BE PER DETAIL UNLESS OTHERWISE SHOWN ON PLAN.
  3. IF CONCRETE IS TO BE POURED NEXT TO A CURB, #4 REBAR TO BE DOWELED 3" INTO CURB AND 4" INTO ADJACENT CONCRETE. REBAR TO BE DOWELED A MINIMUM OF 2" FROM TOP OF CONCRETE AND CURB 24" O.C.
  4. INSTALL EXPANSION JOINTS ALONG SIDEWALK WHERE EXISTING CONCRETE/ASPHALT ABUTS UP NEXT TO NEW CONCRETE.
  5. SCORE JOINTS UNDER PAVILION SHALL BE SAWCUT.

JOINT SPACING SCHEDULE		
WALK WIDTH	EXPANSION JT.	CONTROL JT.
10'	50' O.C.	10' O.C.
8'	50' O.C.	8' O.C.
6'	50' O.C.	6' O.C.
5'	50' O.C.	5' O.C.



- NOTES:
1. EDGER TO BE FLUSH WITH ADJACENT WALK, PATH, PAVEMENT OR CURB.
  2. ALL LAYOUT AND FORM WORK TO BE APPROVED BY OWNER PRIOR TO PLACING CONCRETE.
  3. CONCRETE TO MEET ALL CITY SPECIFICATIONS.
  4. PLACE EXPANSION JOINTS @ 30' O.C., CONTROL JOINTS @ 10' O.C. UNLESS OTHERWISE SHOWN ON PLAN.
  5. ALL CURVES IN EDGER TO BE TANGENT TO EACH OTHER AND STRAIGHT SECTIONS OF CURB.
  6. CONCRETE EDGER TO BE FORMED AND CAST IN PLACE, NOT PRE-CAST OR EXTRUDED.

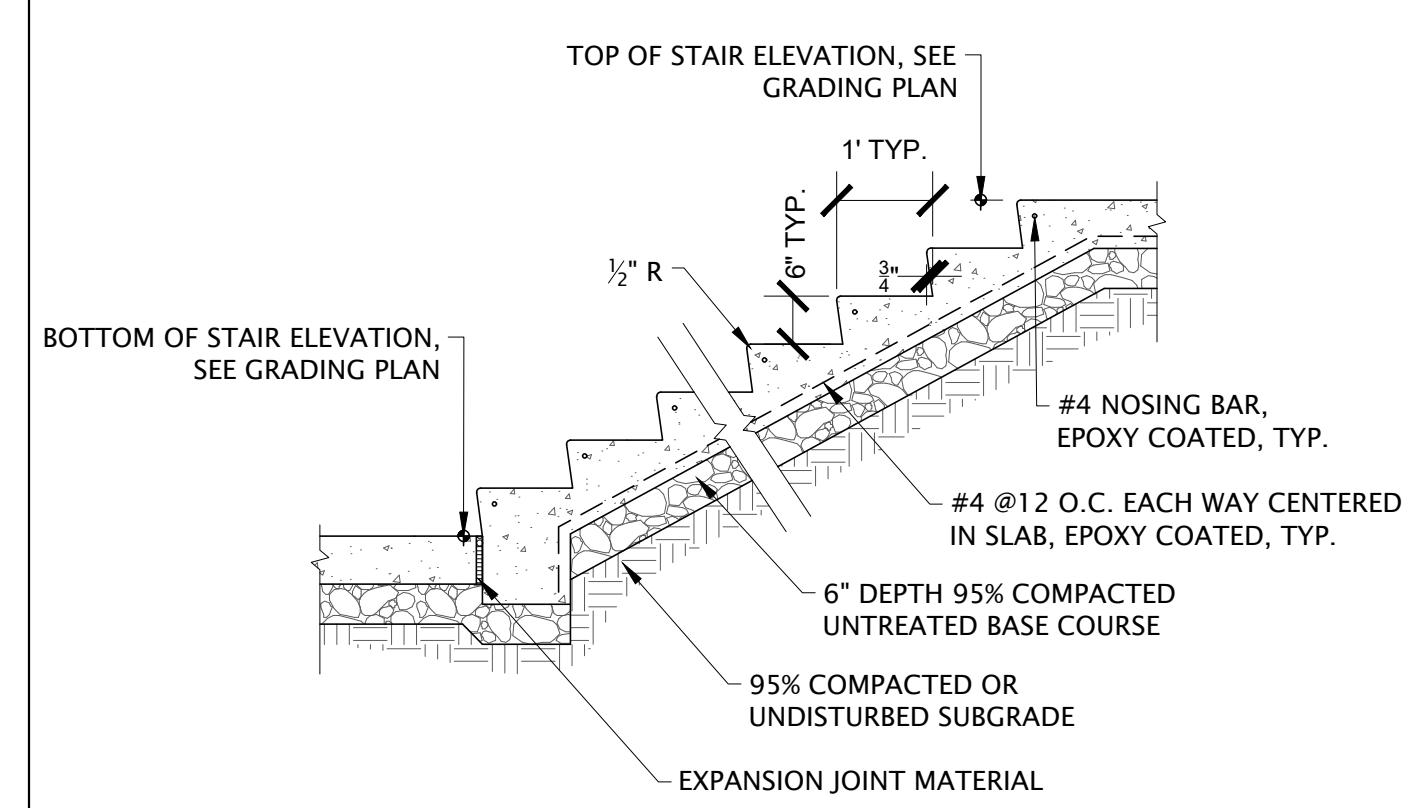


- NOTES:
1. WALL HEIGHTS VARIES, SEE GRADING PLAN.
  2. BOULDER MATERIAL TO BE SALVAGED ON-SITE BOULDERS. ADDITIONAL BOULDERS MUST MATCH THE EXISTING BOULDERS. OWNER TO APPROVE BEFORE INSTALLATION.
  3. CONTRACTOR SHALL PROVIDE STAMPED STRUCTURAL DETAILS FOR WALLS EXCEEDING 4' IN HEIGHT. CONTRACTOR IS REQUIRED TO OBTAIN A SEPARATE ROCK WALL PERMIT THROUGH BUILDING DEPARTMENT FOR ALL WALLS EXCEEDING 4' IN HEIGHT

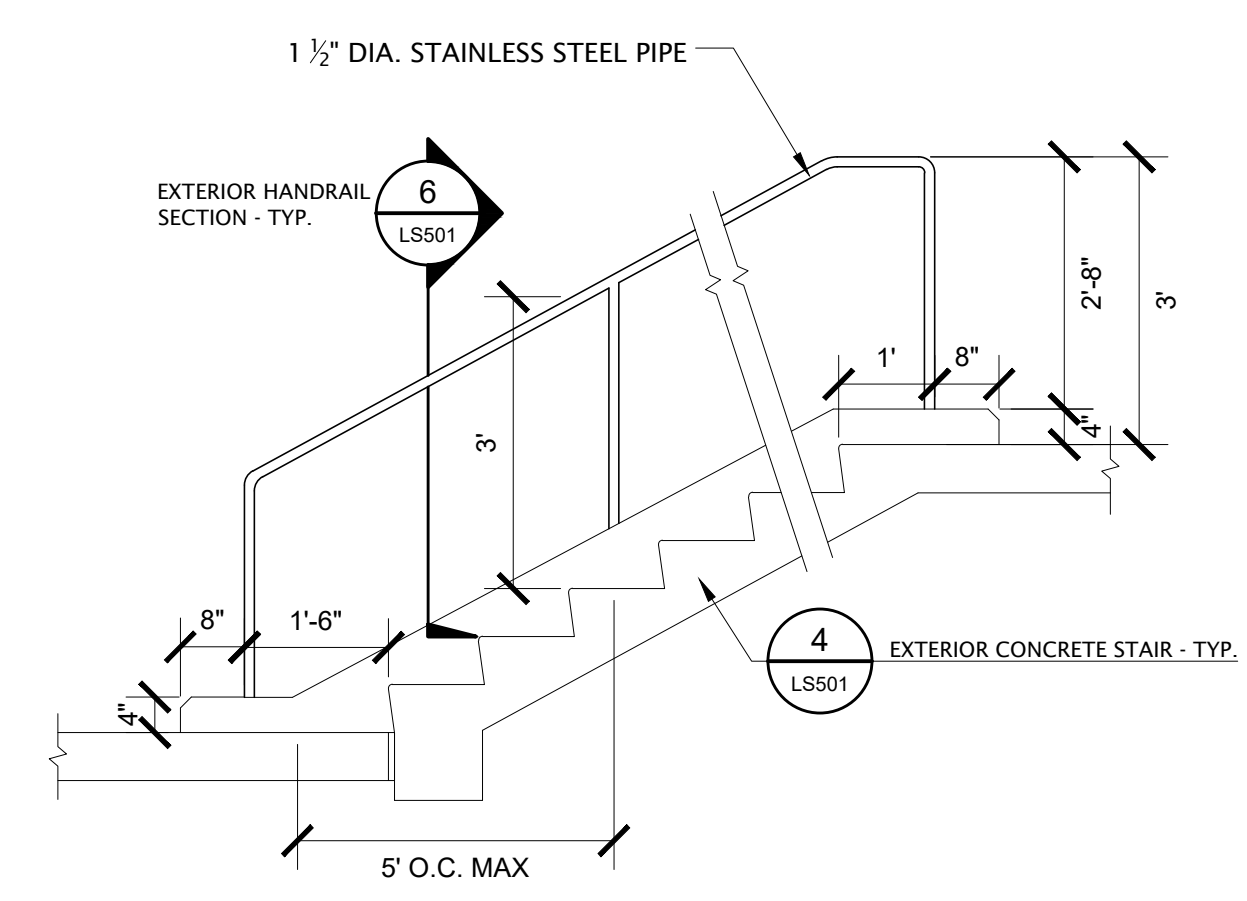
1 CONCRETE SIDEWALK/PLAZA WITH TOOLED JOINTS  
NOT TO SCALE

2 6" CONCRETE EDGER  
NOT TO SCALE

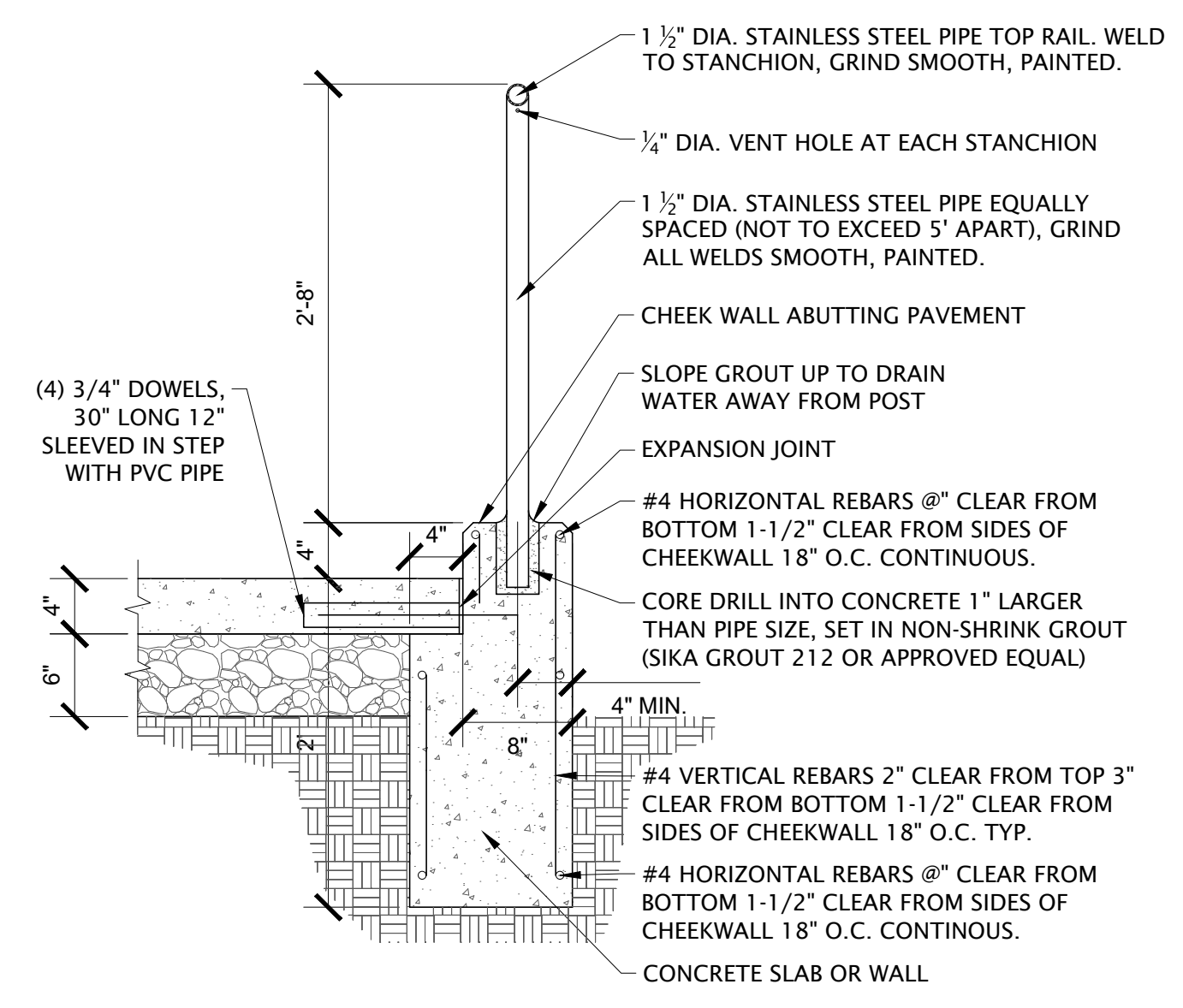
3 BOULDER RETAINING WALL - TYP.  
NTS P-22-200-49



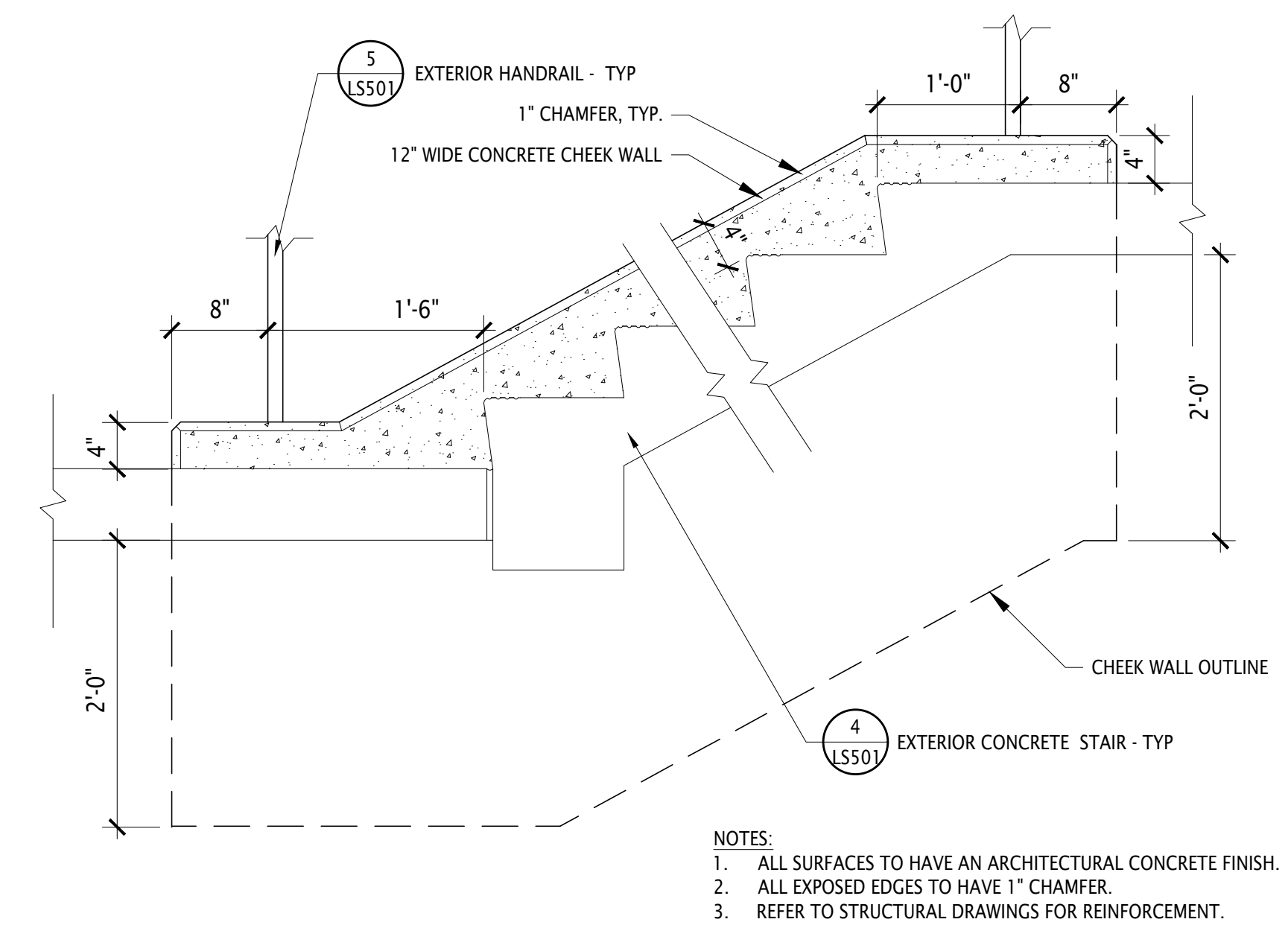
4 EXTERIOR CONCRETE STAIR - TYP.  
NTS P-22-200-27



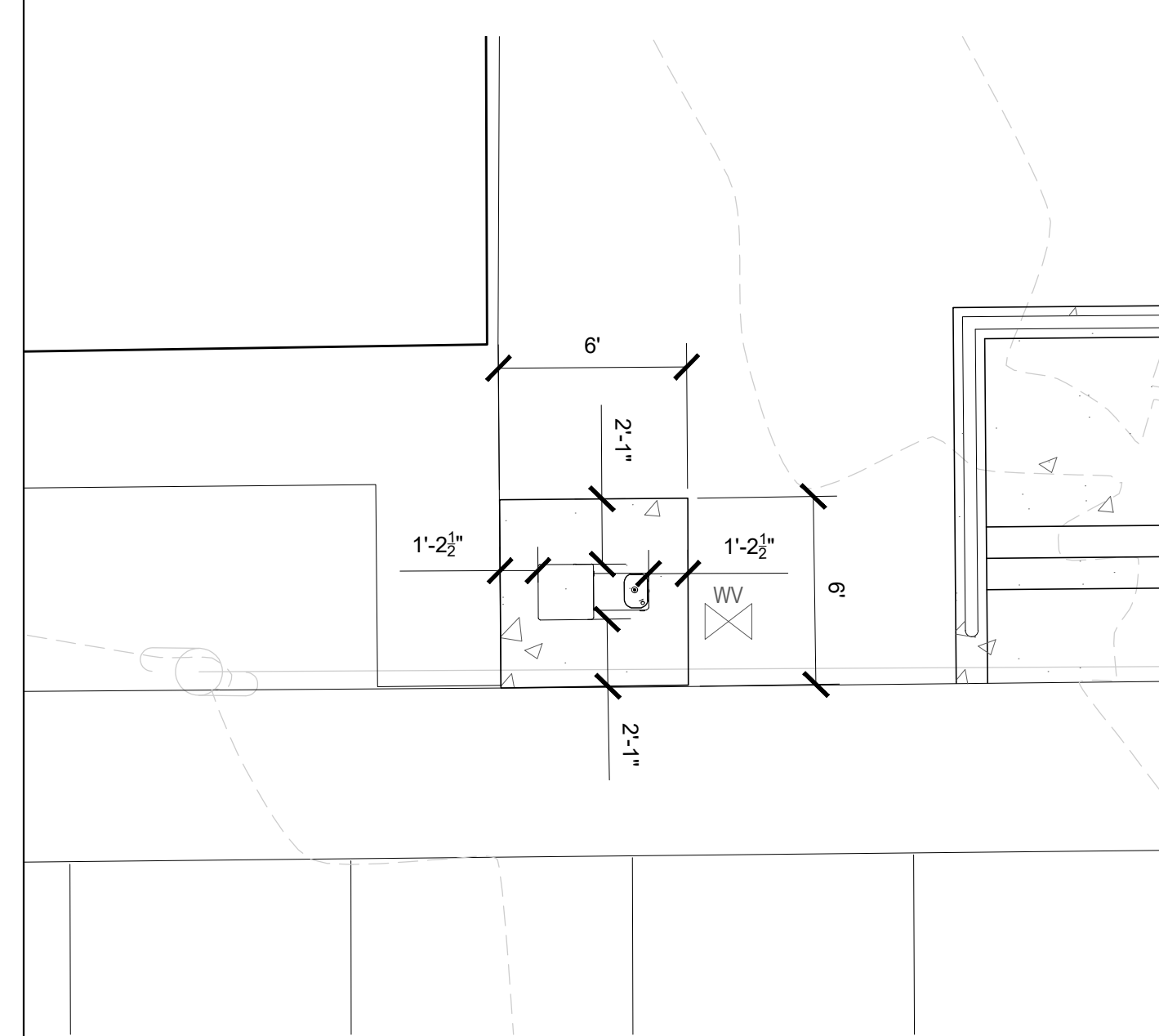
5 EXTERIOR HANDRAIL - TYP.  
NTS P-22-200-25



6 EXTERIOR HANDRAIL SECTION - TYP.  
NTS P-22-200-24



7 CONCRETE CHEEK WALL - TYP.  
NOT TO SCALE P-22-200-17

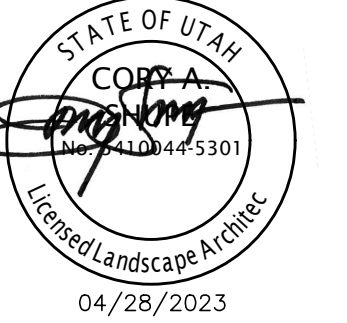


8 DRINKING FOUNTAIN PAD ENLARGEMENT  
SCALE: 1"=5'-0"

REVISIONS

NO.	DATE	DESCRIPTION

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Designed By: TH  
 Drawn By: TH  
 Date: 04/28/2023  
 Checked By: RD  
 Project No: 22-200

Drawing Title

SITE PLAN  
DETAILS

Drawing number

LS501

BID SET

**GENERAL NOTES**

- ALL CONSTRUCTION MUST STRICTLY FOLLOW THE STANDARDS AND SPECIFICATIONS SET FORTH BY: THE DESIGN ENGINEER, LOCAL AGENCY JURISDICTION, APWA (CURRENT EDITION), AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.). THE ORDER LISTED ABOVE IS ARRANGED BY SENIORITY. THE LATEST EDITION OF ALL STANDARDS AND SPECIFICATIONS MUST BE ADHERED TO. IF A CONSTRUCTION PRACTICE IS NOT SPECIFIED BY ANY OF THE LISTED SOURCES, CONTRACTOR MUST CONTACT DESIGN ENGINEER FOR DIRECTION.
- CONTRACTOR TO STRICTLY FOLLOW THE MOST CURRENT COPY OF THE SOILS REPORT FOR THIS PROJECT. ALL GRADING INCLUDING BUT NOT LIMITED TO CUT, FILL, COMPACTION, ASPHALT SECTION, SUBBASE, TRENCH EXCAVATION/BACKFILL, SITE GRUBBING, AND FOOTINGS MUST BE COORDINATED DIRECTLY WITH SOILS REPORT.
- CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING, AND BRING UP ANY QUESTIONS BEFORE SUBMITTING BID.
- CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE CITY, STATE, OR COUNTY REGULATIONS FOR WORKING IN THE PUBLIC WAY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL ACCORDING TO GOVERNING AGENCY STANDARDS. WET DROWN DRY MATERIALS AND RUBBISH TO PREVENT BLOWING.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT SURFACE IMPROVEMENTS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY SETTLEMENT OF OR DAMAGE TO EXISTING UTILITIES.
- THE CONTRACTOR IS RESPONSIBLE TO FURNISH ALL MATERIALS TO COMPLETE THE PROJECT.
- ALL EXPOSED SURFACES WILL HAVE A TEXTURED FINISH, RUBBED, OR BROOMED. ANY "PLASTERING" OF NEW CONCRETE WILL BE DONE WHILE IT IS STILL "GREEN".
- PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
- THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE. CONTRACTOR SHALL START INSTALLATION AT LOW POINT OF ALL NEW GRAVITY UTILITY LINES.
- ALL DIMENSIONS, GRADES, AND UTILITY DESIGN SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST. PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO THE DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS, IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
- NO CHANGE IN DESIGN LOCATION OR GRADE WILL BE MADE BY THE CONTRACTOR WITHOUT THE WRITTEN APPROVAL OF THE PROJECT ENGINEER.
- NATURAL VEGETATION AND SOIL COVER SHALL NOT BE DISTURBED PRIOR TO ACTUAL CONSTRUCTION OF A REQUIRED FACILITY OR IMPROVEMENT. MASS CLEARING OF THE SITE IN ANTICIPATION OF CONSTRUCTION SHALL BE AVOIDED.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, MAINTAINING, OR RESTORING ALL MONUMENTS AND MONUMENT REFERENCE MARKS WITHIN THE PROJECT SITE. CONTACT THE CITY OR COUNTY SURVEYOR FOR MONUMENT LOCATIONS AND CONSTRUCTION DETAILS.
- EXISTING UTILITY INFORMATION SHOWN IS FOR INFORMATIONAL PURPOSES ONLY. IT IS DERIVED FROM ON-SITE SURVEY AND/OR UTILITY MAPPING PROVIDED TO THE ENGINEER, AND THEREFORE UTILITIES MAY NOT BE LOCATED CORRECTLY, EITHER HORIZONTALLY OR VERTICALLY, AND MAY NOT BE ALL INCLUSIVE. CONTRACTOR IS REQUIRED TO FOLLOW THE PROCEDURE OUTLINED BELOW:
  - CONTRACTOR IS REQUIRED TO LOCATE AND POT-HOLE ALL EXISTING UTILITY LINES (BOTH HORIZONTALLY AND VERTICALLY) THAT AFFECT THE PROJECT CONSTRUCTION, EITHER ON-SITE OR OFF-SITE, AND DETERMINE IF THERE ARE ANY CONFLICTS WITH THE DESIGN OF THE SITE AS SHOWN ON THE APPROVED PLANS PRIOR TO ANY CONSTRUCTION. IF IT IS DETERMINED THAT CONFLICTS EXIST BETWEEN EXISTING UTILITIES AND DESIGN UTILITIES (OR ANOTHER ASPECT OF PROPOSED CONSTRUCTION) THE ENGINEER MUST BE NOTIFIED IMMEDIATELY TO CORRECT THE CONFLICTS BEFORE ANY WORK CAN BEGIN. IF THE CONTRACTOR FAILS TO FOLLOW THIS ABSOLUTE REQUIREMENT AND CONFLICTS ARISE DURING CONSTRUCTION THE CONTRACTOR WILL BEAR THE SOLE RESPONSIBILITY TO FIX THE CONFLICTS.
  - CONTRACTOR IS REQUIRED TO VERIFY THAT PROPER COVER AND PROTECTION OF EXISTING UTILITY LINES IS MAINTAINED OR ATTAINED WITHIN THE DESIGN ONCE VERIFICATION OF THE EXISTING UTILITIES IS COMPLETED AS OUTLINED IN 16.1 ABOVE. IN ADDITION TO 16.1 AND 16.2 ABOVE THE CONTRACTOR WILL VERIFY DEPTHS OF UTILITIES IN THE FIELD BY "POT-HOLING" A MINIMUM OF 300 FEET AHEAD OF PROPOSED PIPELINE CONSTRUCTION TO AVOID POTENTIAL CONFLICTS WITH DESIGNED PIPELINE ALIGNMENT AND GRADE AND EXISTING UTILITIES.
  - IF A CONFLICT ARISES BETWEEN EXISTING UTILITIES AND DESIGN UTILITIES (OR ANOTHER ASPECT OF PROPOSED CONSTRUCTION) AS DETERMINED UNDER 16.1, 16.2 OR 16.3 THE CONTRACTOR WILL NOTIFY THE ENGINEER IMMEDIATELY TO RESOLVE THE CONFLICT.
  - IF A CONFLICT ARISES BETWEEN EXISTING UTILITIES AND DESIGN UTILITIES (OR ANOTHER ASPECT OF PROPOSED CONSTRUCTION) RESULTING FROM THE CONTRACTOR'S NEGLIGENCE TO IDENTIFY AND/OR "POT-HOLE" EXISTING UTILITIES AS REQUIRED IN 16.1, 16.2 AND 16.3 ABOVE, THE CONTRACTOR WILL BE REQUIRED TO RESOLVE THE CONFLICT WITHOUT ADDITIONAL COST OR CLAIM TO THE OWNER OR ENGINEER.
- ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.
- CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION.
- AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES.
- CONTRACTOR SHALL, AT THE TIME OF BIDDING AND THROUGHOUT THE PERIOD OF THE CONTRACT, BE LICENSED IN THE STATE OF UTAH AND SHALL BE BONDABLE FOR AN AMOUNT REQUIRED BY THE OWNER.
- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT. ALL TESTING SHALL CONFORM TO THE REGULATORY AGENCY'S STANDARD SPECIFICATIONS. ALL RE-TESTING AND/OR RE-INSPECTION SHALL BE PAID FOR BY THE CONTRACTOR.
- IF EXISTING IMPROVEMENTS NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE. COST OF REPLACING OR REPAIRING EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT. THERE WILL BE NO EXTRA COST DUE TO THE CONTRACTOR FOR REPLACING OR REPAIRING EXISTING IMPROVEMENTS.
- WHENEVER EXISTING FACILITIES ARE REMOVED, DAMAGED, BROKEN, OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS OR SPECIFICATIONS, SAID FACILITIES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH MATERIALS EQUAL TO OR BETTER THAN THE MATERIALS USED IN THE ORIGINAL EXISTING FACILITIES. THE FINISHED PRODUCT SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER, THE ENGINEER, AND THE RESPECTIVE REGULATORY AGENCY.
- CONTRACTOR SHALL MAINTAIN A NEATLY MARKED SET OF FULL-SIZE RECORD DRAWINGS SHOWING THE FINAL LOCATION AND LAYOUT OF ALL STRUCTURES AND OTHER FACILITIES. RECORD DRAWINGS SHALL REFLECT CHANGE ORDERS, ACCOMMODATIONS, AND ADJUSTMENTS TO ALL IMPROVEMENTS CONSTRUCTED. WHERE NECESSARY, SUPPLEMENTAL DRAWINGS SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR. PRIOR TO ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL DELIVER TO THE ENGINEER ONE SET OF NEATLY MARKED RECORD DRAWINGS SHOWING THE INFORMATION REQUIRED ABOVE. RECORD DRAWINGS SHALL BE REVIEWED AND THE COMPLETE RECORD DRAWING SET SHALL BE CURRENT WITH ALL CHANGES AND DEVIATIONS REDLINED AS A PRECONDITION TO THE FINAL PROGRESS PAYMENT APPROVAL AND/OR FINAL ACCEPTANCE.
- WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.
- ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL GATES AND FENCES FROM DAMAGE.
- ALL EXISTING TREES ARE TO REMAIN UNLESS OTHERWISE NOTED ON PLANS. PROTECT ALL TREES FROM DAMAGE.
- ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE GOVERNING AGENCY PRIOR TO THE PLACEMENT.
- CONTRACTORS ARE RESPONSIBLE FOR ALL OSHA REQUIREMENTS ON THE PROJECT SITE.
- A UPDES (UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM) PERMIT IS REQUIRED FOR ALL CONSTRUCTION ACTIVITIES 1 ACRE OR MORE AS WELL AS A STORM WATER POLLUTION PREVENTION PLAN.

**UTILITY NOTES**

- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS, CITY AND STATE REQUIREMENTS AND THE MOST RECENT EDITIONS OF THE FOLLOWING: THE INTERNATIONAL PLUMBING CODE, UTAH DRINKING WATER REGULATIONS, APWA MANUAL OF STANDARD PLANS AND SPECIFICATIONS. THE CONTRACTOR IS REQUIRED TO ADHERE TO ALL OF THE ABOVE-MENTIONED DOCUMENTS UNLESS OTHERWISE NOTED AND APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL COORDINATE LOCATION OF NEW "DRY UTILITIES" WITH THE APPROPRIATE UTILITY COMPANY, INCLUDING BUT NOT LIMITED TO: TELEPHONE & INTERNET SERVICE, GAS SERVICE, CABLE, AND POWER.
- EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS BASED ON ON-SITE SURVEY. PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE, IN THE FIELD, THEIR MAIN AND SERVICE LINES. THE CONTRACTOR SHALL NOTIFY BLUE STAKES AT 1-800-662-4111 48 HOURS IN ADVANCE OF PERFORMING ANY EXCAVATION WORK. THE CONTRACTOR SHALL RECORD THE BLUE STAKES ORDER NUMBER AND FURNISH ORDER NUMBER TO OWNER AND ENGINEER PRIOR TO ANY EXCAVATION. IT WILL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO DIRECTLY CONTACT ANY OTHER UTILITY COMPANIES THAT ARE NOT MEMBERS OF BLUE STAKES. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF THIS CONTRACT. ANY REPAIRS NECESSARY TO DAMAGED UTILITIES SHALL BE PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES INSTALLING NEW STRUCTURES, UTILITIES AND SERVICE TO THE PROJECT.
- CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES. EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT CONTRACTOR'S EXPENSE.
- TRENCH BACKFILL MATERIAL AND COMPACTION TESTS ARE TO BE TAKEN PER APWA STANDARD SPECIFICATIONS (CURRENT EDITION), SECTION 33 05 20 - BACKFILLING TRENCHES, OR AS REQUIRED BY THE GEOTECHNICAL REPORT IF NATIVE MATERIALS ARE USED. NO NATIVE MATERIALS ARE ALLOWED IN THE PIPE ZONE. THE MAXIMUM LIFT FOR BACKFILLING EXCAVATIONS IS DETERMINED BY THE GEOTECHNICAL RECOMMENDATIONS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFORMING TO LOCAL AND FEDERAL CODES GOVERNING SHORING AND BRACING OF EXCAVATIONS AND TRENCHES AND FOR THE PROTECTION OF WORKERS.
- THE CONTRACTOR IS REQUIRED TO KEEP ALL CONSTRUCTION ACTIVITIES WITHIN THE APPROVED PROJECT LIMITS. THIS INCLUDES, BUT IS NOT LIMITED TO: VEHICLE AND EQUIPMENT STAGING, MATERIAL STORAGE AND LIMITS OF TRENCH EXCAVATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN PERMISSION AND/OR EASEMENTS FROM THE APPROPRIATE GOVERNING ENTITY (AND/OR INDIVIDUAL PROPERTY OWNER(S) FOR WORK OR STAGING OUTSIDE OF THE PROJECT LIMITS.
- THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE, CAUSED BY ANY CONDITION INCLUDING SETTLEMENT, TO EXISTING UTILITIES FROM WORK PERFORMED AT OR NEAR EXISTING UTILITIES. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO PROTECT ALL EXISTING PUBLIC AND PRIVATE ROADWAY AND UTILITY FACILITIES. DAMAGE TO EXISTING FACILITIES CAUSED BY THE CONTRACTOR MUST BE REPAIRED BY THE CONTRACTOR AT HIS/HER EXPENSE TO THE SATISFACTION OF THE OWNER OF SAID FACILITIES.
- ALL WATER LINE AND SEWER LINE INSTALLATION AND TESTING TO BE IN ACCORDANCE WITH LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
- ALL MANHOLES, HYDRANTS, VALVES, CLEANOUT BOXES, CATCH BASINS, METERS, ETC. MUST BE RAISED OR LOWERED TO FINAL GRADE PER APWA (CURRENT EDITION) STANDARDS AND INSPECTOR REQUIREMENTS. CONCRETE COLLARS MUST BE CONSTRUCTED ON ALL MANHOLES, CLEANOUT BOXES, CATCH BASINS, AND VALVES PER APWA STANDARDS. ALL MANHOLE, CATCH BASIN, OR CLEANOUT BOX CONNECTIONS MUST BE MADE WITH THE PIPE CUT FLUSH WITH THE INSIDE OF THE BOX AND GROUTED OR SEALED.
- CONTRACTOR SHALL NOT ALLOW ANY GROUNDWATER OR DEBRIS TO ENTER THE NEW OR EXISTING PIPE DURING CONSTRUCTION.
- SILT AND DEBRIS ARE TO BE CLEANED OUT OF ALL STORM DRAIN BOXES. CATCH BASINS ARE TO BE MAINTAINED IN A CLEANED CONDITION AS NEEDED UNTIL AFTER THE FINAL BOND RELEASE INSPECTION.
- CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES TO ALLOW ACCESS.
- EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED. THE TRENCH WALL SHALL BE SO BRACED THAT THE WORKMEN MAY WORK SAFELY AND EFFICIENTLY. ALL TRENCHES SHALL BE DRAINED SO THE PIPE LAYING MAY TAKE PLACE IN DEWATERED CONDITIONS.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN AT ALL TIMES AMPLE MEANS AND DEVICES WITH WHICH TO REMOVE PROMPTLY AND TO PROPERLY DISPOSE OF ALL WATER ENTERING THE TRENCH EXCAVATION.
- ALL SEWER LINES AND SEWER SERVICES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET, EDGE TO EDGE, FROM THE WATER LINES. IF A 10' SEPARATION CAN NOT BE MAINTAINED, CONSTRUCT PER GOVERNING AGENCY'S MINIMUM SEPARATION STANDARDS.
- CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE ANGLE POINTS AND TEES.
- ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.
- CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.

**TRAFFIC CONTROL AND SAFETY NOTES**

- TRAFFIC CONTROL AND STRIPING TO CONFORM TO THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
- BARRICADING AND DETOURING SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE CURRENT M.U.T.C.D.
- NO STREET SHALL BE CLOSED TO TRAFFIC WITHOUT WRITTEN PERMISSION FROM THE APPROPRIATE AGENCY, EXCEPT WHEN DIRECTED BY LAW ENFORCEMENT OR FIRE OFFICIALS.
- THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROVIDE FOR SMOOTH TRAFFIC FLOW AND SAFETY. ACCESS SHALL BE MAINTAINED FOR ALL PROPERTIES ADJACENT TO THE WORK.
- DETOURING OPERATIONS FOR A PERIOD OF SIX CONSECUTIVE CALENDAR DAYS, OR MORE, REQUIRE THE INSTALLATION OF TEMPORARY STREET STRIPING AND REMOVAL OF INTERFERING STRIPING BY SANDBLASTING. THE DETOURING STRIPING PLAN OR CONSTRUCTION TRAFFIC CONTROL PLAN MUST BE SUBMITTED TO THE GOVERNING AGENCY FOR REVIEW AND APPROVAL.
- ALL TRAFFIC CONTROL DEVICES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE END OF THE WORK TO THE SATISFACTION OF THE GOVERNING AGENCY.
- TRAFFIC CONTROL DEVICES (TCDs) SHALL REMAIN VISIBLE AND OPERATIONAL AT ALL TIMES.
- ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HEREUNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
- THE CONTRACTOR SHALL PROVIDE BARRICADES, SIGNS, FLASHERS, OTHER EQUIPMENT AND FLAG PERSONS NECESSARY TO INSURE THE SAFETY OF WORKERS AND VISITORS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTAH TRANSIT AUTHORITY (UTA) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.

**DEMOLITION NOTES**

- EXISTING UTILITY INFORMATION SHOWN IS FOR INFORMATIONAL PURPOSES ONLY. IT IS DERIVED FROM ON-SITE SURVEY AND MAY NOT BE LOCATED CORRECTLY AND IS NOT ALL INCLUSIVE. CONTRACTOR SHALL FIELD LOCATE ALL UTILITIES WITHIN THE PROJECT LIMITS BEFORE BEGINNING DEMOLITION/CONSTRUCTION.
- THERE MAY BE BURIED UTILITIES WITHIN THE LIMITS OF DISTURBANCE THAT ARE NOT SHOWN ON THE PLANS DUE TO LACK OF MAPPING OR RECORD INFORMATION. CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN UNEXPECTED UTILITIES ARE DISCOVERED.
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LOCATING AND PROTECTING FROM DAMAGE ALL EXISTING UTILITIES AND IMPROVEMENTS WHETHER OR NOT SHOWN ON THESE PLANS. THE FACILITIES AND IMPROVEMENTS ARE BELIEVED TO BE CORRECTLY SHOWN BUT THE CONTRACTOR IS REQUIRED TO SATISFY HIMSELF AS TO THE COMPLETENESS AND ACCURACY OF THE LOCATIONS. ANY CONTRACTOR PERFORMING WORK ON THIS PROJECT SHALL FAMILIARIZE HIMSELF WITH THE SITE AND SHALL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES RESULTING DIRECTLY, OR INDIRECTLY, FROM HIS OPERATIONS, WHETHER OR NOT SAID FACILITIES ARE SHOWN ON THESE PLANS.

**GRADING AND DRAINAGE NOTES**

- SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL RELATED ADDENDUMS.
- THE CONTRACTOR SHALL STRIP AND CLEAR THE TOPSOIL, MAJOR ROOTS AND ORGANIC MATERIAL FROM ALL PROPOSED BUILDING AND PAVEMENT AREAS PRIOR TO SITE GRADING. (THE TOPSOIL MAY BE STOCKPILED FOR LATER USE IN LANDSCAPED AREAS.)
- THE CONTRACTOR SHALL REMOVE ALL ORGANIC MATERIAL AND OTHER DELETERIOUS MATERIALS PRIOR TO PLACING GRADING FILL OR BASE COURSE. THE AREA SHOULD BE PROOF-ROLLED TO IDENTIFY ANY SOFT AREAS. WHERE SOFT AREAS ARE ENCOUNTERED, THE CONTRACTOR SHALL REMOVE THE SOIL AND REPLACE WITH COMPACTED FILL.
- ALL DEBRIS PILES AND BERMS SHOULD BE REMOVED AND HAULED AWAY FROM SITE OR USED AS GENERAL FILL IN LANDSCAPED AREAS.
- THE CONTRACTOR SHALL CONSTRUCT THE BUILDING PAD TO THESE DESIGN PLANS AS PART OF THE SITE GRADING CONTRACT, AND STRICTLY ADHERE TO THE SITE PREPARATION AND GRADING REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.
- THE CONTRACTOR SHALL GRADE THE PROJECT SITE TO PROVIDE A SMOOTH TRANSITION BETWEEN NEW AND EXISTING ASPHALT, CURB AND GUTTER, AND ADJOINING SITE IMPROVEMENTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE AND DEBRIS ON ADJACENT STREETS WHEN EQUIPMENT IS TRAVELING THOSE STREETS.
- THE CONTRACTOR SHALL BE FAMILIAR WITH ALL CONDITIONS AND RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT AND TAKE ALL NECESSARY PRECAUTIONS AND RECOMMENDED PROCEDURES TO ASSURE SOUND GRADING PRACTICES.
- THE CONTRACTOR SHALL TAKE APPROPRIATE GRADING MEASURES TO DIRECT STORM SURFACE RUNOFF TOWARDS CATCH BASINS.
- THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON ON-SITE SURVEY. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES, AND SLOPES SHOWN.
- THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
- THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT. ALL CONTRACTOR ACTIVITIES 1 ACRE OR MORE IN SIZE ARE REQUIRED TO PROVIDE A STORM WATER POLLUTION PREVENTION PLAN.
- ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
- THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER FROM GOVERNING AGENCY.
- THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS, AND ALL OTHER PUBLIC RIGHT-OF-WAYS IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY-OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC, SHALL BE MAINTAINED IN A CLEAN, SAFE, AND USABLE CONDITION.

**ABBREVIATIONS**

APWA	AMERICAN PUBLIC WORKS ASSOCIATION
AR	ACCESSIBLE ROUTE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
BOS	BOTTOM OF STEP
BVC	BEGIN VERTICAL CURVE
C	CURVE
CB	CATCH BASIN
CF	CURB FACE OR CUBIC FEET
CL	CENTER LINE
CO	CLEAN OUT
COMM	COMMUNICATION
CONC	CONCRETE
CONT	CONTINUOUS
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
ELEC	ELECTRICAL
ELEV	ELEVATION
EOA	EDGE OF ASPHALT
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EXIST	EXISTING
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE OR FLANGE
GB	GRADE BREAK
GF	GARAGE FLOOR
GV	GATE VALVE
HC	HANDICAP
HP	HIGH POINT
IRR	IRRIGATION
K	RATE OF VERTICAL CURVATURE
LD	LAND DRAIN
LF	LINEAR FEET
LP	LOW POINT
MEX	MATCH EXISTING
MH	MANHOLE
MJ	MECHANICAL JOINT
NG	NATURAL GROUND
NIC	NOT IN CONTRACT
NO	NUMBER
OC	ON CENTER
OCEW	ON CENTER EACH WAY
OHP	OVERHEAD POWER
PC	POINT OF CURVATURE OR PRESSURE CLASS
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
PRC	POINT OF REVERSE CURVATURE
PRO	PROPOSED
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RADIUS
RD	ROOF DRAIN
ROW	RIGHT OF WAY
S	SLOPE
SAN SWR	SANITARY SEWER
SD	STORM DRAIN
SEC	SECONDARY
SS	SANITARY SEWER
STA	STATION
SW	SECONDARY WATER LINE
TBC	TOP BACK OF CURB
TOG	TOP OF GRATE
TOA	TOP OF ASPHALT
TOC	TOP OF CONCRETE
TOF	TOP OF FOUNDATION
TOW	TOP OF WALL
TOS	TOP OF STEP
TYP	TYPICAL
VC	VERTICAL CURVE
WV	WALL INDICATOR VALVE
W	WATER LINE

NOTE: MAY CONTAIN ABBREVIATIONS THAT ARE NOT USED IN THIS PLAN SET.

**LEGEND**

	SECTION CORNER		EXISTING EDGE OF ASPHALT
	EXISTING MONUMENT		PROPOSED EDGE OF ASPHALT
	PROPOSED MONUMENT		EXISTING STRIPING
	EXISTING REBAR AND CAP		PROPOSED STRIPING
	SET ENSIGN REBAR AND CAP		EXISTING FENCE
	EXISTING WATER METER		PROPOSED FENCE
	PROPOSED WATER METER		EXISTING FLOW LINE
	EXISTING WATER MANHOLE		PROPOSED FLOW LINE
	PROPOSED WATER MANHOLE		GRADE BREAK
	EXISTING WATER BOX		EXISTING STORM DRAIN LINE
	EXISTING WATER VALVE		PROPOSED STORM DRAIN LINE
	PROPOSED WATER VALVE		ROOF DRAIN LINE
	EXISTING FIRE HYDRANT		CATCHMENTS
	PROPOSED FIRE HYDRANT		HIGHWATER LINE
	PROPOSED FIRE DEPARTMENT CONNECTION		EXISTING SANITARY SEWER
	EXISTING SECONDARY WATER VALVE		PROPOSED SANITARY SEWER LINE
	PROPOSED SECONDARY WATER VALVE		PROPOSED SAN. SWR. SERVICE LINE
	EXISTING IRRIGATION BOX		EXISTING LAND DRAIN LINE
	EXISTING IRRIGATION VALVE		PROPOSED LAND DRAIN LINE
	PROPOSED IRRIGATION VALVE		PROPOSED LAND DRAIN SERVICE LINE
	EXISTING SANITARY SEWER MANHOLE		EXISTING CULINARY WATER LINE
	PROPOSED SANITARY SEWER MANHOLE		PROPOSED CULINARY WATER LINE
	EXISTING SANITARY CLEAN OUT		PROPOSED CULINARY WATER SERVICE LINE
	EXISTING STORM DRAIN CLEAN OUT BOX		EXISTING SECONDARY WATER LINE
	PROPOSED STORM DRAIN CLEAN OUT BOX		PROPOSED SECONDARY WATER LINE
	EXISTING STORM DRAIN INLET BOX		PROPOSED SEC. WATER SERVICE LINE
	EXISTING STORM DRAIN CATCH BASIN		EXISTING IRRIGATION LINE
	PROPOSED STORM DRAIN CATCH BASIN		PROPOSED IRRIGATION LINE
	EXISTING STORM DRAIN COMBO BOX		EXISTING OVERHEAD POWER LINE
	PROPOSED STORM DRAIN COMBO BOX		EXISTING ELECTRICAL LINE
	EXISTING STORM DRAIN CLEAN OUT		EXISTING GAS LINE
	EXISTING STORM DRAIN CULVERT		EXISTING TELEPHONE LINE
	PROPOSED STORM DRAIN CULVERT		ACCESSIBLE ROUTE
	PROPOSED STORM DRAIN CULVERT		SAW CUT LINE
	TEMPORARY SAG INLET PROTECTION		STRAW WATTLE
	TEMPORARY IN-LINE INLET PROTECTION		TEMPORARY BERM
	ROOF DRAIN		TEMPORARY SILT FENCE
	EXISTING ELECTRICAL MANHOLE		LIMITS OF DISTURBANCE
	EXISTING ELECTRICAL BOX		EXISTING WALL
	EXISTING TRANSFORMER		PROPOSED WALL
	EXISTING UTILITY POLE		EXISTING LIGHT
	EXISTING LIGHT		PROPOSED LIGHT
	EXISTING GAS METER		BUILDABLE AREA WITHIN SETBACKS
	EXISTING GAS MANHOLE		PUBLIC DRAINAGE EASEMENT
	EXISTING GAS VALVE		EXISTING ASPHALT TO BE REMOVED
	EXISTING TELEPHONE MANHOLE		PROPOSED ASPHALT
	EXISTING TELEPHONE BOX		EXISTING CURB AND GUTTER
	EXISTING TRAFFIC SIGNAL BOX		PROPOSED CURB AND GUTTER
	EXISTING CABLE BOX		PROPOSED REVERSE PAN CURB AND GUTTER
	EXISTING BOLLARD		TRANSITION TO REVERSE PAN CURB
	PROPOSED BOLLARD		CONCRETE TO BE REMOVED
	EXISTING SIGN		EXISTING CONCRETE
	PROPOSED SIGN		PROPOSED CONCRETE
	EXISTING SPOT ELEVATION		BUILDING TO BE REMOVED
	PROPOSED SPOT ELEVATION		EXISTING BUILDING
	EXISTING FLOW DIRECTION		PROPOSED BUILDING
	EXISTING TREE		
	DENSE VEGETATION		

NOTE: MAY CONTAIN SYMBOLS THAT ARE NOT USED IN THIS PLAN SET.



blu line designs  
planning | landscape architecture | design

8719 S. Sandy Parkway  
Sandy, UT 84070  
p 801.913.7994

OWNER:  
LAYTON CITY  
437 N WASHINGTON DR, LAYTON,  
UT 84041

CONTACT:  
JOELLEN GRANDY  
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THE STANDARD IN ENGINEERING  
LAYTON  
919 North 400 West  
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Phone: 801.547.1100

Ensign Project # 11967

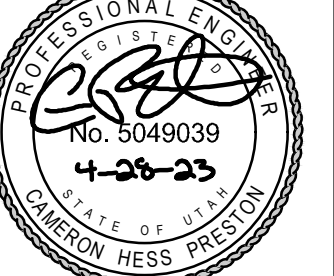
WWW.ENSGNENG.COM

ANDY ADAMS PARK  
IMPROVEMENTS  
1713 EAST 1000 NORTH, LAYTON, UT 84040

**REVISIONS**

NO.	DATE	DESCRIPTION

Stamp



Designed By: M. ELMER  
Drawn By: C. WRIGHT  
Date: 5/1/23  
Checked By: C. PRESTON  
Project No: 22-200

Drawing Title

GENERAL NOTES

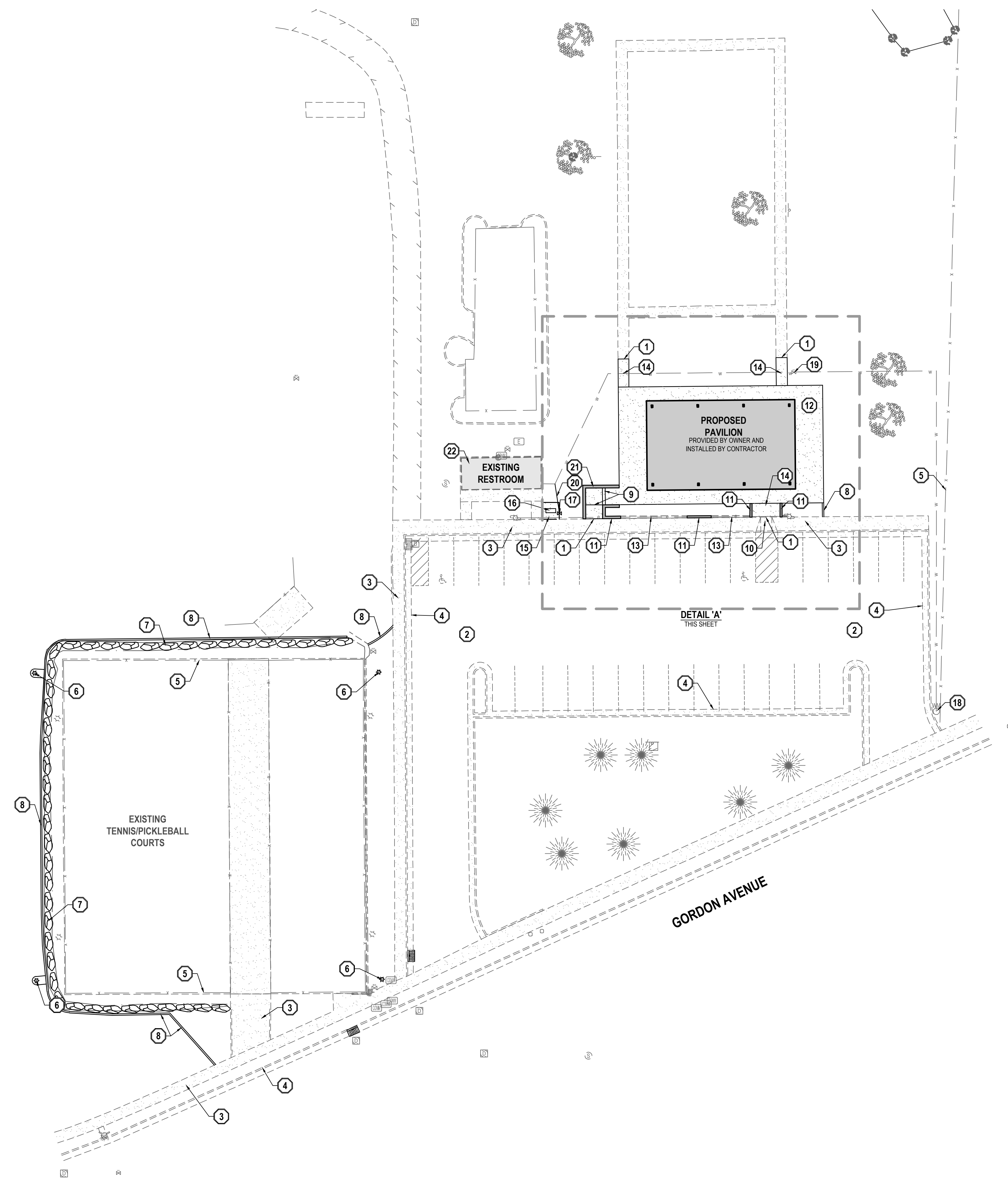
Drawing number

C-001

BID SET

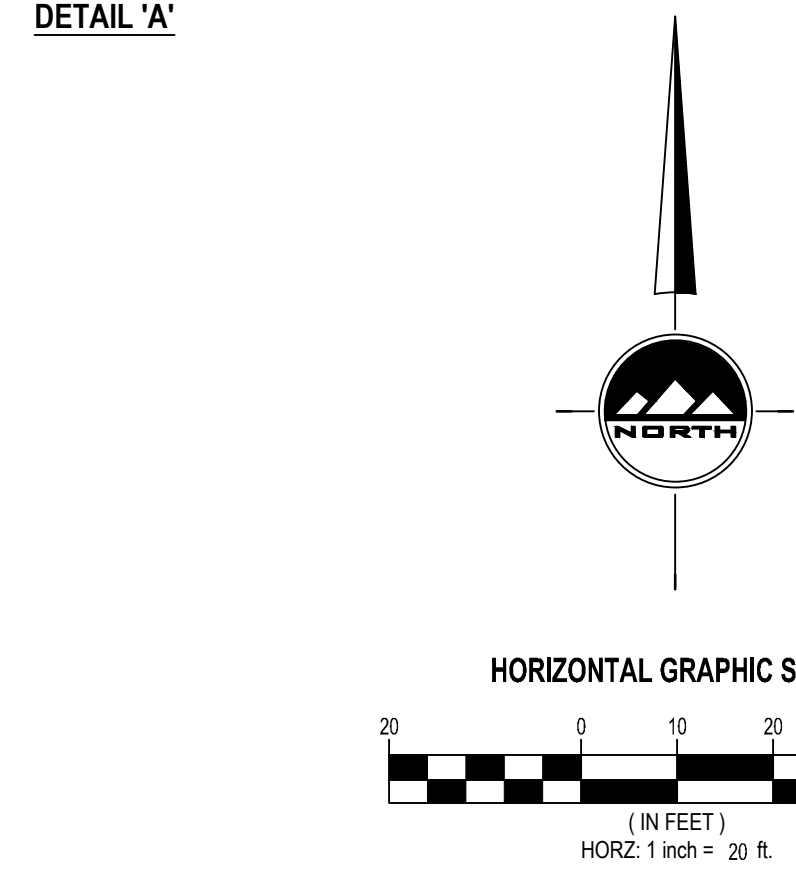
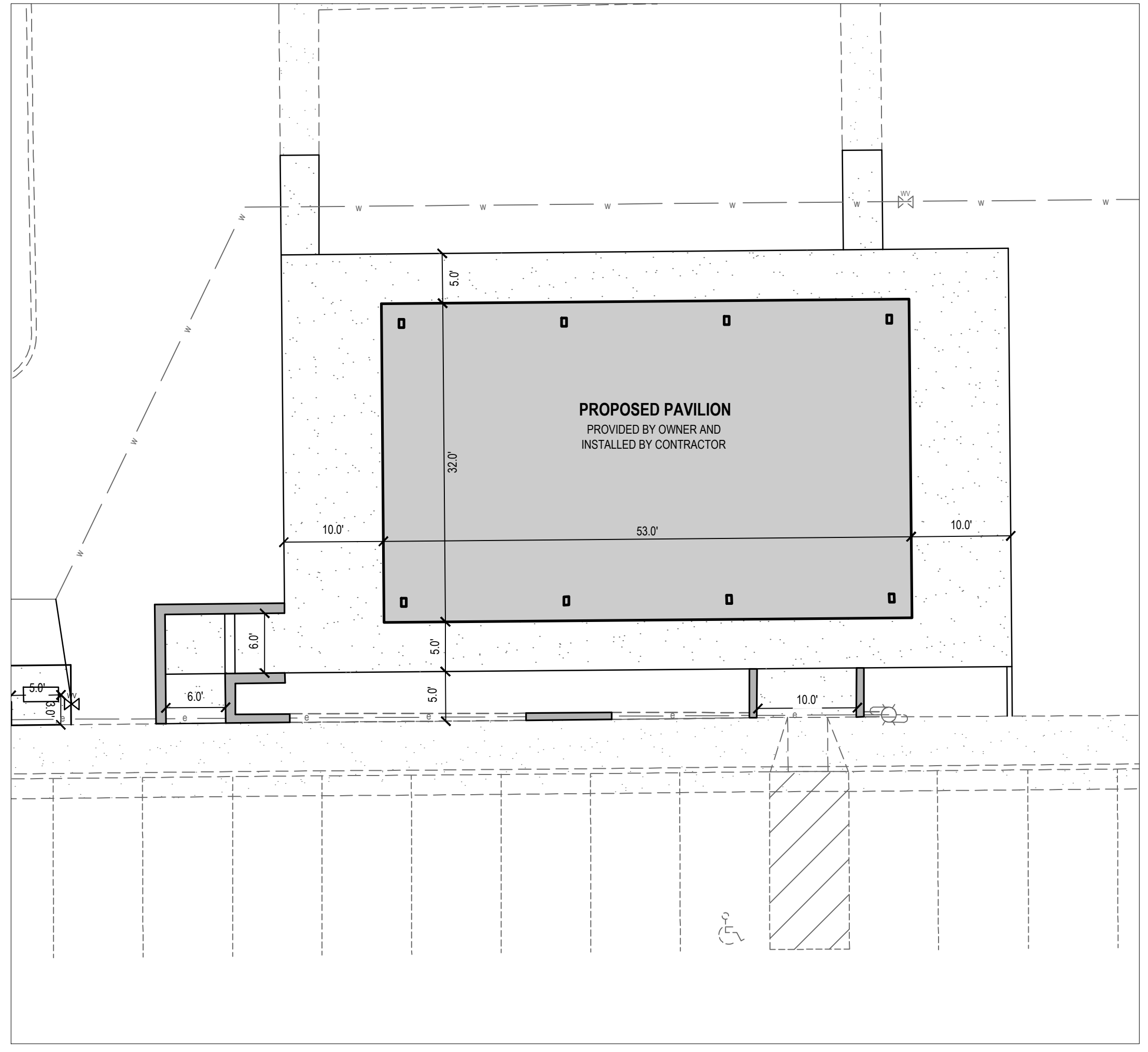
**811**  
CALL BLUESTAKES  
@ 811 AT LEAST 48 HOURS  
PRIOR TO THE  
COMMENCEMENT OF ANY  
CONSTRUCTION.  
Know what's below.  
Call before you dig.

**BENCHMARK**  
BENCHMARK IS A 12" NAIL ABOUT 10.5 FEET  
NORTHWEST OF THE NORTHWEST CORNER  
OF THE PARKING LOT.  
ELEV. = 4617.74



- SCOPE OF WORK:**  
PROVIDE, INSTALL AND/OR CONSTRUCT THE FOLLOWING PER THE SPECIFICATIONS GIVEN OR REFERENCED, THE DETAILS NOTED, AND/OR AS SHOWN ON THE CONSTRUCTION DRAWINGS:
- 1 MATCH EXISTING IMPROVEMENTS
  - 2 EXIST ASPHALT
  - 3 EXIST SIDEWALK
  - 4 EXIST 30" CURB AND GUTTER
  - 5 EXIST FENCE
  - 6 INSTALL SPORT LIGHT PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR
  - 7 REBUILD ROCK RETAINING WALL
  - 8 CONCRETE LANDSCAPE CURB
  - 9 INSTALL STAIRS PER DETAIL 2 LSS01
  - 10 EXIST ADA RAMP
  - 11 SALVAGED BLOCK WALL FOR REUSE
  - 12 NEW CONCRETE PAVILLION PAD
  - 13 EXIST RETAINING WALL
  - 14 INSTALL CONCRETE SIDEWALK PER DETAIL 1A LSS01
  - 15 INSTALL CONCRETE PAD FOR WATER FOUNTAIN 3'X5'
  - 16 RELOCATE EXISTING WATER FOUNTAIN
  - 17 RELOCATE EXISTING WATER VALVE
  - 18 PRESERVE AND PROTECT EXIST 1-1/2" CULINARY WATER METER
  - 19 PRESERVE AND PROTECT EXIST 1-1/2" CULINARY WATER LINE
  - 20 INSTALL 1/2" HDPE CTS-00 SDR-9 POLY CULINARY WATER SERVICE LATERAL TO DRINKING FOUNTAIN
  - 21 INSTALL CONCRETE CHEEK WALL (SEE DETAIL 7 LSS01)
  - 22 PRESERVE AND PROTECT EXISTING RESTROOM

- GENERAL NOTES**
1. ALL WORK TO COMPLY WITH THE GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
  2. ALL IMPROVEMENTS MUST COMPLY WITH ADA STANDARDS AND RECOMMENDATIONS.
  3. SEE LANDSCAPE/ARCHITECTURAL PLANS FOR CONCRETE MATERIAL, COLOR, FINISH, AND SCORE PATTERNS THROUGHOUT SITE.
  4. ALL PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D. (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES).
  5. ALL SURFACE IMPROVEMENTS DISTURBED BY CONSTRUCTION SHALL BE RESTORED OR REPLACED, INCLUDING TREES AND DECORATIVE SHRUBS, SOD, FENCES, WALLS AND STRUCTURES, WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN ON THE CONTRACT DOCUMENTS.
  6. NOTIFY ENGINEER OF ANY DISCREPANCIES IN DESIGN OR STAKING BEFORE PLACING CONCRETE OR ASPHALT.
  7. THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.
  8. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS. LOCATIONS MAY NOT HAVE BEEN VERIFIED IN THE FIELD AND NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND LOCATION OF THE UTILITIES SHOWN ON THESE PLANS OR INDICATED IN THE FIELD BY LOCATING SERVICES. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF THE CONTRACTOR'S FAILURE TO VERIFY THE LOCATIONS OF EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED IN THE CONTRACT. THE CONTRACTOR IS TO VERIFY ALL CONNECTION POINTS WITH THE EXISTING UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE EXISTING UTILITIES AND UTILITY STRUCTURES THAT ARE TO REMAIN. IF CONFLICTS WITH EXISTING UTILITIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION TO DETERMINE IF ANY FIELD ADJUSTMENTS SHOULD BE MADE.
  9. DEFLECT OR LOOP ALL WATERLINES TO AVOID CONFLICTS WITH OTHER UTILITIES PER GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
  10. PROJECT SHALL COMPLY WITH ALL UTAH DIVISION OF DRINKING WATER RULES AND REGULATIONS INCLUDING, BUT NOT LIMITED TO, THOSE PERTAINING TO BACKFLOW PROTECTION AND CROSS CONNECTION PREVENTION.
  11. THE CONTRACTOR IS TO COORDINATE ALL UTILITIES WITH MECHANICAL/PLUMBING PLANS.
  12. NOTIFY ENGINEER OF ANY DISCREPANCIES IN DESIGN OR STAKING BEFORE PLACING UTILITY STRUCTURES OR PIPES.
  13. THE CONTRACTOR SHALL ADJUST TO GRADE ALL EXISTING UTILITIES AS NEEDED PER LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
  14. THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.



**blu line designs**  
planning | landscape architecture | design  
8719 S. Sandy Parkway  
Sandy, UT 84070  
p 801.913.7994

OWNER:  
LAYTON CITY  
437 N WASATCH DR. LAYTON,  
UT 84041

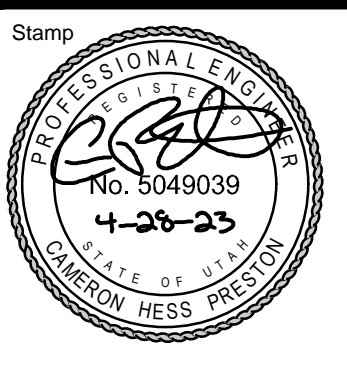
CONTACT:  
JOELLEN GRANDY  
801-336-3926



THE STANDARD IN ENGINEERING  
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919 North 400 West  
Layton, UT 84041  
Phone: 801.547.1100  
Ensign Project # 11967  
[WWW.ENSGNENG.COM](http://WWW.ENSGNENG.COM)

**ANDY ADAMS PARK  
IMPROVEMENTS**  
1713 EAST 1000 NORTH, LAYTON, UT 84040

REVISIONS	



Designed By: M. ELMER  
Drawn By: C. WRIGHT  
Date: 5/1/23  
Checked By: C. PRESTON  
Project No: 22-200

Drawing Title  
**SITE AND  
UTILITY PLAN**

Drawing number  
**C-100**

BID SET

**811**  
Know what's below.  
Call before you dig.

CALL BLUESTAKES  
@ 811 AT LEAST 48 HOURS  
PRIOR TO THE  
COMMENCEMENT OF ANY  
CONSTRUCTION.

**BENCHMARK**

BENCHMARK IS A 12" NAIL ABOUT 10.5 FEET  
NORTHWEST OF THE NORTHWEST CORNER  
OF THE PARKING LOT.  
ELEV. = 4617.74

- GENERAL NOTES**
1. ALL WORK TO COMPLY WITH THE GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
  2. ALL IMPROVEMENTS MUST COMPLY WITH ADA STANDARDS AND RECOMMENDATIONS.
  3. ALL WORK SHALL COMPLY WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER POSSIBLY INCLUDING, BUT NOT LIMITED TO, REMOVAL OF UNCONSOLIDATED FILL, ORGANICS, AND DEBRIS, PLACEMENT OF SUBSURFACE DRAIN LINES AND GEOTEXTILE, AND OVEREXCAVATION OF UNSUITABLE BEARING MATERIALS AND PLACEMENT OF ACCEPTABLE FILL MATERIAL.
  4. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING SOIL CONDITIONS.
  5. LANDSCAPED AREAS REQUIRE SUBGRADE TO BE MAINTAINED AT A SPECIFIC ELEVATION BELOW FINISHED GRADE AND REQUIRE SUBGRADE TO BE PROPERLY PREPARED AND SCARIFIED. SEE LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.
  6. SLOPE ALL LANDSCAPED AREAS AWAY FROM BUILDING FOUNDATIONS TOWARD CURB AND GUTTER OR STORM DRAIN INLETS.
  7. EXISTING UNDERGROUND UTILITIES AND IMPROVEMENTS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS BASED UPON RECORD INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS. LOCATIONS MAY NOT HAVE BEEN VERIFIED IN THE FIELD AND NO GUARANTEE IS MADE AS TO THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EXISTENCE AND LOCATION OF THE UTILITIES SHOWN ON THESE PLANS OR INDICATED IN THE FIELD BY LOCATING SERVICES. ANY ADDITIONAL COSTS INCURRED AS A RESULT OF THE CONTRACTOR'S FAILURE TO VERIFY THE LOCATIONS OF EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION IN THEIR VICINITY SHALL BE BORNE BY THE CONTRACTOR AND ASSUMED INCLUDED IN THE CONTRACT. THE CONTRACTOR IS TO VERIFY ALL CONNECTION POINTS WITH THE EXISTING UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE EXISTING UTILITIES AND UTILITY STRUCTURES THAT ARE TO REMAIN. IF CONFLICTS WITH EXISTING UTILITIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION TO DETERMINE IF ANY FIELD ADJUSTMENTS SHOULD BE MADE.
  8. ALL STORM DRAIN INFRASTRUCTURE TO BE INSTALLED PER GOVERNING AGENCY OR APWA STANDARD PLANS AND SPECIFICATIONS.
  9. ENSURE MINIMUM COVER OVER ALL STORM DRAIN PIPES PER MANUFACTURER'S RECOMMENDATIONS. NOTIFY ENGINEER IF MINIMUM COVER CANNOT BE ATTAINED.
  10. ALL FACILITIES WITH DOWNSPOUTS/ROOF DRAINS SHALL BE CONNECTED TO THE STORM DRAIN SYSTEM. SEE PLUMBING PLANS FOR DOWNSPOUT/ROOF DRAIN LOCATIONS AND SIZES. ALL ROOF DRAINS TO HAVE MINIMUM 1% SLOPE.
  11. THE CONTRACTOR SHALL ADJUST TO GRADE ALL EXISTING UTILITIES AS NEEDED PER LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
  12. NOTIFY ENGINEER OF ANY DISCREPANCIES IN DESIGN OR STAKING BEFORE PLACING CONCRETE, ASPHALT, OR STORM DRAIN STRUCTURES OR PIPES.
  13. THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.



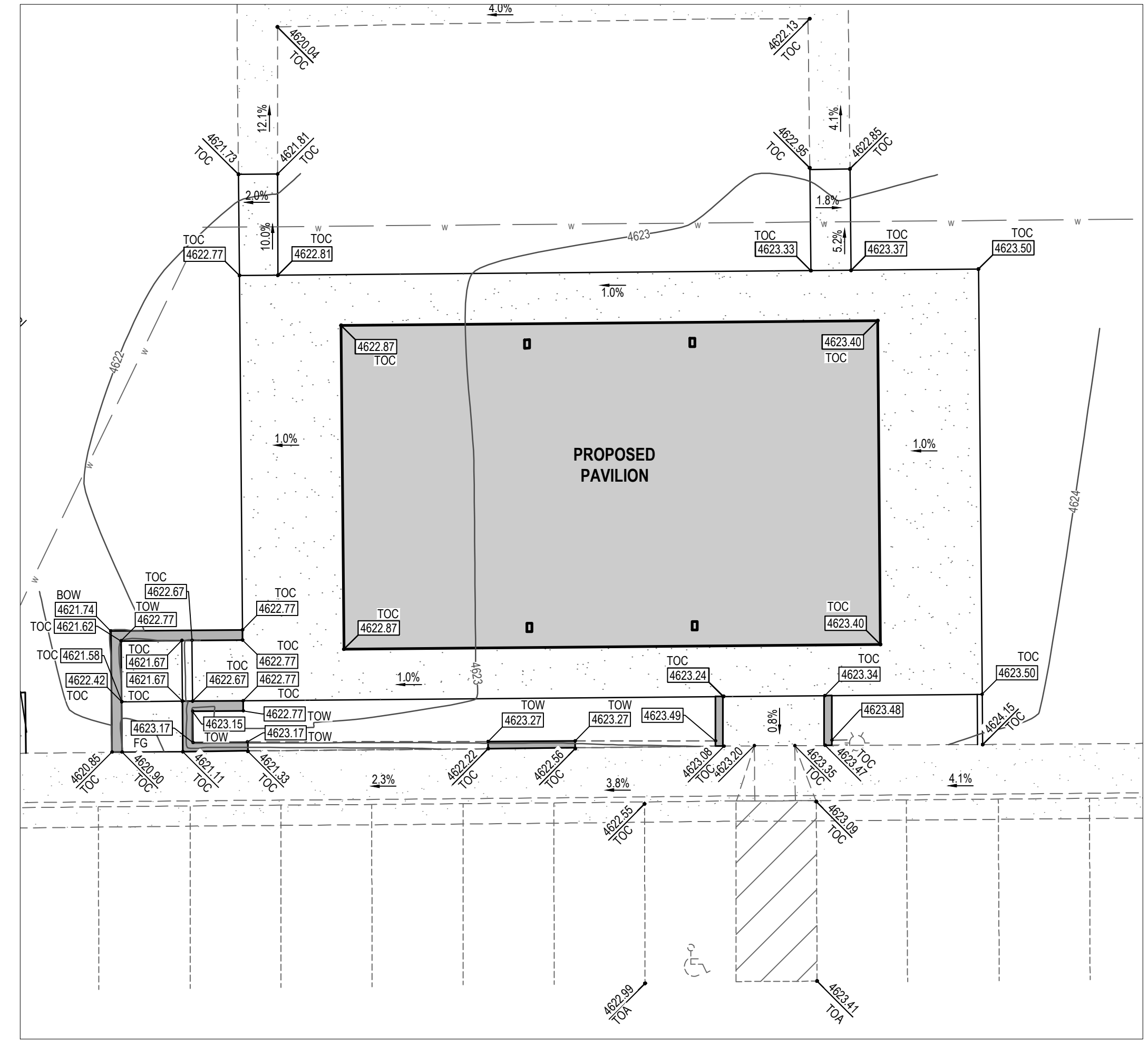
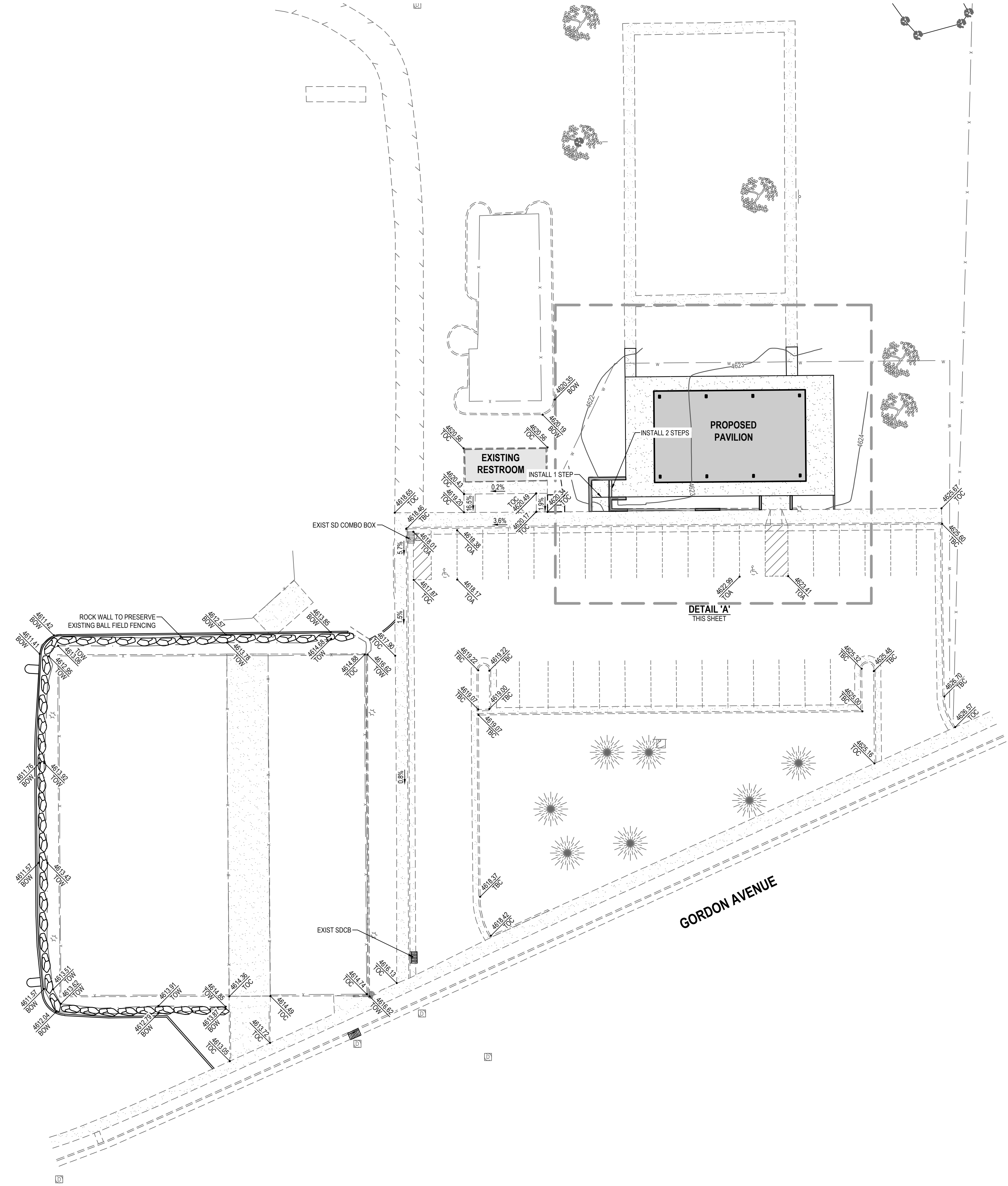
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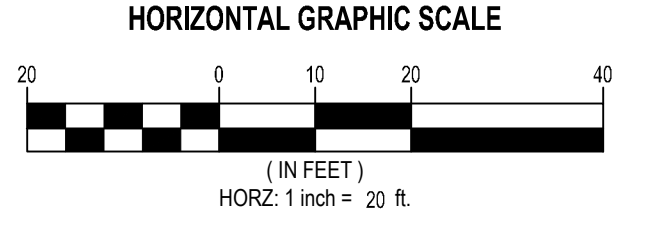
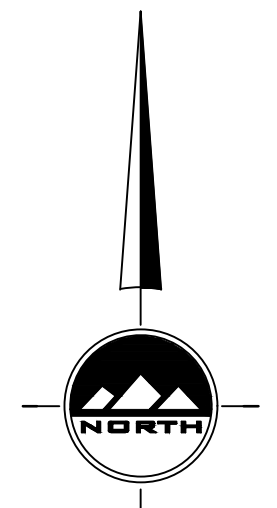
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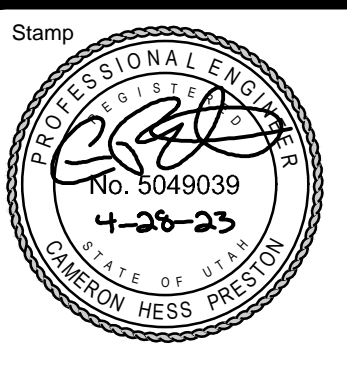
DETAIL 'A'



**ANDY ADAMS PARK  
IMPROVEMENTS**  
1713 EAST 1000 NORTH, LAYTON, UT 84040

REVISIONS

NO.	DATE	DESCRIPTION



Designed By: M. ELMER  
Drawn By: C. WRIGHT  
Date: 5/1/23  
Checked By: C. PRESTON  
Project No: 22-200

Drawing Title  
**GRADING AND DRAINAGE PLAN**

Drawing number  
**C-200**

BID SET

## DEFERRED SUBMITTALS

Delegated Deferred Design Submittals to be provided by Contractor

### OVERCURRENT PROTECTIVE DEVICE STUDY AND ARC-FLASH STUDY REPORT & LABELING

Provide the following items listed below and comply with additional requirements as provided. See specifications.

- Coordination-study input data, including completed computer program input data sheets.
- Study and equipment evaluation reports.
- Overcurrent protective device coordination study report, signed, dated, and sealed by a qualified professional engineer. Overcurrent protection shall coordinate to 0.3 seconds on normal power and to 0.1 seconds on emergency power.
- Arc-flash study input data, including completed computer program input data sheets.
- Arc-flash study report, signed, dated, and sealed by a qualified professional engineer.
  - Submit study report for action prior to receiving final approval of the distribution equipment submittals. If formal completion of studies will cause delay in equipment manufacturing, obtain approval from Architect for preliminary submittal of sufficient study data to ensure that the selection of devices and associated characteristics is satisfactory.

### SEISMIC CONTROL FOR ELECTRICAL SYSTEMS

Provide the following items listed below and comply with additional requirements as provided. See specifications.

- A. Product Data: For each type of product.
- Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component used.
    - Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an agency acceptable to authorities having jurisdiction.
    - Annotate to indicate application of each product submitted and compliance with requirements.
  - Delegated-Design Submittal: For each seismic-restraint device.
    - Include design calculations and details for selecting seismic restraints complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
    - Design Calculations: Calculate static and dynamic loading caused by equipment weight, operation, and seismic and wind forces required to select seismic and wind restraints and for designing vibration isolation bases.
      - Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.
    - Seismic-Restraint Details:
      - Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
      - Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
      - Coordinate seismic-restraint and vibration isolation details with wind-restraint details required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.
      - Preapproval and Evaluation Documentation: By an agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

C. Deferred Submittals for the Authority Having Jurisdiction (AHJ) shall be as required by IBC 106.3.4.2.

1. Deferred submittals of seismic restraint of nonstructural components must be submitted to the AHJ a minimum of two weeks prior to the planned installation in order to allow for plan review and forwarding to inspectors. In the event that the submittal is deficient additional time may become necessary.

2. No deferred submittal element shall be installed until AHJ approval has been received.

3. If seismic restraints of nonstructural components are installed prior to receiving AHJ approval they shall not be covered or concealed until plan review and inspection approval. Further, installers are proceeding at their own risk until plan review and inspection approval occurs.

4. Deferred Submittals are required for:
- Electrical distribution equipment (switchboards, panelboards, transformers, ATS, MCC's etc.).
  - Generators, batteries, UPS.
  - Conduit racks.
  - Cable trays.
  - Lighting fixtures.
  - Control Panels

## GENERAL LABELING SCHEME

FIRST DIGIT - BUILDING LEVEL (1 OR 2)

SECOND DIGIT - PANEL TYPE

M - MECHANICAL (120/208/277/380/480V)  
L or LCP - LIGHTING (120/208/277/480V)  
P - PLUG LOADS (120/208V)  
G - GENERAL LOADS (120/280V)  
E - EMERGENCY (277/480V)  
S - STANDBY (SPECIFIED ON PANEL)  
U - UPS (SPECIFIED ON PANEL)

THIRD DIGIT - BUILDING AREA (A, B, C, D, ECT.)

FOURTH DIGIT - SEQUENCE # (1,2,3...)

## ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT BE USED.

1P	SINGLE POLE	I/O	INPUT/ OUTPUT
1PH	SINGLE-PHASE	IG	ISOLATED GROUND
1WAY	ONE-WAY	IMC	INTERMEDIATE METAL CONDUIT
2/C	TWO-CONDUCTOR	IN/IS	INSULATED/ ISOLATED
2WAY	TWO-WAY	IR	INFRARED
3/C	THREE-CONDUCTOR	J-BOX	JUNCTION BOX
3WAY	THREE-WAY	KV	KILOVOLT
4OUT	QUADRUPE RECEPTACLE OUTLET	KVA	KILOVOLT AMPERE
4PDT	FOUR-POLE DOUBLE THROW	KVAR	KILOVOLT AMPERE REACTIVE
4PST	FOUR-POLE SINGLE THROW	KW	KILOWATT
4W	FOUR-WIRE	KWh	KILOWATT HOUR
4WAY	FOUR-WAY	LED	LIGHT EMITTING DIODE
A	ABOVE COUNTER	LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
AC	ARMORED CABLE	LFNC	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT
ADA	AMERICANS WITH DISABILITIES ACT	LPS	LOW PRESSURE SODIUM
ADJ	ADJACENT	LRA	LOCKED ROTOR AMPS
AFF	ABOVE FINISHED FLOOR	LTG	LIGHTING
AFG	ABOVE FINISHED GRADE	LV	LOW VOLTAGE
AIC	AMPERE INTERRUPTING CAPACITY	MATV	MASTER ANTENNA TELEVISION SYSTEM
ALUM	ALUMINUM	MAX	MAXIMUM
AMP	AMPERE	MC	METAL CLAD
ANN	ANNUNCIATOR	MCA	MINIMUM CIRCUIT AMPS
AP	ACCESS POINT (WIRELESS DATA)	MCB	MAIN CIRCUIT BREAKER
AR	AS REQUIRED	MCC	MOTOR CONTROL CENTER
ASC	AMPS SHORT CIRCUIT	MCP	MOTOR CIRCUIT PROTECTION
ATS	AUTOMATIC TRANSFER SWITCH	MDP	MAIN DISTRIBUTION PANEL
AV	AUDIO VISUAL	MG	MOTOR GENERATOR
AWG	AMERICAN WIRE GAGE	MH	MANHOLE
BB	BUCK-BOOST	MIN	MINIMUM
XFMR	TRANSFORMER	MLO	MAIN LUGS ONLY
C	CEILING MOUNTED	MCCP	MAXIMUM OVERCURRENT PROTECTION
CATV	COMMUNITY ANTENNA TELEVISION	NA	NOT APPLICABLE
CB	CIRCUIT BREAKER	NC	NORMALLY CLOSED
CCBA	CUSTOM COLOR AS SELECTED BY ARCHITECT	NEC	NATIONAL ELECTRICAL CODE
CCTV	CLOSED CIRCUIT TELEVISION	NEMA	NATIOANL ELECTRICAL MANUFACTURERS ASSOCIATION
CF/CI	CONTRACTOR FURNISHED/ CONTRACTOR INSTALLED	NFC	NATIONAL FIRE CODE
CF/OI	CONTRACTOR FURNISHED/ OWNER INSTALLED	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CFBA	CUSTOM FINISH AS SELECTED BY ARCHITECT	NIC	NOT IN CONTRACT
CKT	CIRCUIT	NL	NIGHT LIGHT
CM	CONSTRUCTION MANAGER	NO	NORMALLY OPEN
CND	CONDUIT	NTS	NOT TO SCALE
CO	CONVENIENCE OUTLET	OC	ON CENTER
COR	CONTRACTING OFFICER'S REPRESENTATIVE	OCP	OVER CURRENT PROTECTION
CP	CONTROL PANEL	OF/CI	OWNER FURNISHED/ CONTRACTOR INSTALLED
CT	CURRENT TRANSFORMER	OF/OI	OWNER FURNISHED/ OWNER INSTALLED
CTV	CABLE TELEVISION	OFF	OBTAIN FROM PLANS
CU	COPPER	OH DR	OVERHEAD (COILING) DOOR
dba	UNIT OF SOUND LEVEL	OL	OVERLOAD
DPDT	DOUBLE POLE, DOUBLE THROW	PB	PUSHBUTTON
DS	DISCONNECT SWITCH	PF	POWER FACTOR
EA	EACH	PH	PHASE
EM	EMERGENCY	PNL	PANEL
EMT	ELECTRICAL METALLIC TUBING	PT	POTENTIAL TRANSFORMER
ENT	ELECTRIC NONMETALLIC TUBING	PTZ	PAN/TILT/ZOOM
EPO	EMERGENCY POWER OFF	QTY	QUANTITY
EQUIP	EQUIPMENT	R	REMOVE
EX	EXISTING	RCP	REFLECTED CEILING PLAN
F	FURNITURE MOUNTED	RMC	RIGID METAL CONDUIT
FA	FIRE ALARM	RNC	RIGID NONMETAL CONDUIT
FCP	FIRE ALARM CONTROL PANEL	RPM	REVOLUTIONS PER MINUTE
FLA	FULL LOAD AMPS	RR	REMOVE AND RELOCATE
FMC	FLEXIBLE METAL CONDUIT	S/S	START/STOP
FOB	FREIGHT ON BOARD	SCA	SHORT CIRCUIT AMPS
FVNR	FULL VOLTAGE NON-REVERSING	SCBA	STANDARD COLOR AS SELECTED BY ARCHITECT
FVR	FULL VOLTAGE REVERSING	SF	SQUARE FOOT (FEET)
G	GROUND	SFBA	STANDARD FINISH AS SELECTED BY ARCHITECT
GEN	GENERATOR	SPDT	SINGLE POLE, DOUBLE THROW
GFCI	GROUND FAULT INTERRUPTER	SPEC	SPECIFICATION
GFP	GROUND FAULT PROTECTION	SPST	SINGLE POLE, SINGLE THROW
HD	HEAVY DUTY	ST	SINGLE THROW
HID	HIGH INTENSITY DISCHARGE	SWBD	SWITCHBOARD
HOA	HAND-OFF-AUTOMATIC	SWGR	SWITCHGEAR
HP	HORSE POWER	TL	TWIST LOCK
HPF	HIGH POWER FACTOR	TP	TELEPHONE POLE
HPS	HIGH PRESSURE SODIUM	TP	TWISTED PAIR
HV	HIGH VOLTAGE	TTB	TELEPHONE TERMINAL BOARD
HZ	HERTZ	TV	TELEVISION
		TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
		TYP	TYPICAL
		UF	UNDERFLOOR
		UGND	UNDERGROUND
		UPS	UNINTERRUPTIBLE POWER SUPPLY
		V	VOLTS
		VA	VOLT AMPERE
		VFC/VF	VARIABLE FREQUENCY
		D	MOTOR CONTROLLER
		W	WITH
		W/O	WITHOUT
		WP	WEATHERPROOF
		XFMR	TRANSFORMER

## DEFINITIONS

NOTE: ALL DEFINITIONS MAY NOT BE USED.

INDICATED: THE TERM "INDICATED" REFERS TO GRAPHIC REPRESENTATIONS, NOTES, OR SCHEDULES ON THE DRAWINGS, OTHER PARAGRAPHS OR SCHEDULES IN THE SPECIFICATIONS, AND SIMILAR REQUIREMENTS IN THE CONTRACT DOCUMENTS. WHERE TERMS SUCH AS "SHOWN", "NOTED", "SCHEDULED", AND "SPECIFIED" ARE USED, IT IS TO HELP THE READER LOCATE THE REFERENCE. NO LIMITATION ON LOCATION IS INTENDED.

DIRECTED: TERMS SUCH AS "DIRECTED", "REQUESTED", "AUTHORIZED", "SELECTED", "APPROVED", "REQUIRED", AND "PERMITTED" MEAN "DIRECTED BY THE ENGINEER", "REQUESTED BY THE ENGINEER", AND SIMILAR PHRASES.

APPROVED: THE TERM "APPROVED", WHERE USED IN CONJUNCTION WITH THE ENGINEER'S ACTION ON THE CONTRACTOR'S SUBMITTALS, APPLICATIONS, AND REQUESTS, IS LIMITED TO THE ENGINEER'S DUTIES AND RESPONSIBILITIES AS STATED IN GENERAL AND SUPPLEMENTARY CONDITIONS.

FURNISH: THE TERM "FURNISH" IS USED TO MEAN "SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS."

INSTALL: THE TERM "INSTALL" IS USED TO DESCRIBE OPERATIONS AT PROJECT SITE INCLUDING THE ACTUAL "UNLOADING, UNPACKING, ASSEMBLY, ERECTION, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS."

PROVIDE: THE TERM "PROVIDE" MEANS "TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE."

INSTALLER: AN "INSTALLER" IS THE CONTRACTOR OR AN ENTITY ENGAGED BY THE CONTRACTOR, EITHER AS AN EMPLOYEE, SUBCONTRACTOR, OR SUB-SUBCONTRACTOR, FOR PERFORMANCE OF A PARTICULAR CONSTRUCTION ACTIVITY, INCLUDING INSTALLATION, ERECTION, APPLICATION, AND SIMILAR OPERATIONS. INSTALLERS ARE REQUIRED TO BE EXPERIENCED IN THE OPERATIONS THEY ARE ENGAGED TO PERFORM.

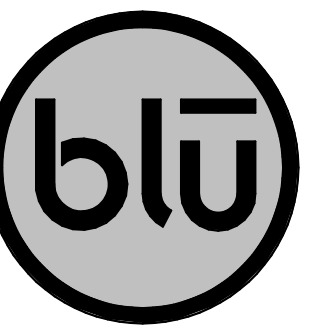
TECHNOLOGY SYSTEMS: THE TERM "TECHNOLOGY SYSTEMS" IS USED TO DESCRIBE ALL LOW VOLTAGE SYSTEMS GENERALLY REFERRED TO AS "SPECIAL SYSTEMS". THESE SYSTEMS INCLUDE BUT ARE NOT NECESSARILY LIMITED TO ALL SYSTEMS WHICH UTILIZE VOLTAGES OF LESS THAN 71 VOLTS SUCH AS SOUND SYSTEMS, VIDEO SYSTEMS, TV SYSTEMS, SECURITY SYSTEMS, VOICE AND DATA CABLING SYSTEMS, ETC. ...

## GENERAL ELECTRICAL NOTES

- CLARIFICATION METHODS: AT THE TIME OF BIDDING, BIDDERS SHALL FAMILIARIZE THEMSELVES WITH THE DRAWINGS AND SPECIFICATIONS. ANY QUESTIONS, MISUNDERSTANDINGS, CONFLICTS, DELETIONS, DISCONTINUED PRODUCTS, CATALOG NUMBER DISCREPANCIES, DISCREPANCIES BETWEEN THE EQUIPMENT SUPPLIED AND THE INTENT OR FUNCTION OF THE EQUIPMENT, ETC. SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER IN WRITING FOR CLARIFICATION PRIOR TO ISSUANCE OF THE FINAL ADDENDUM AND BIDDING OF THE PROJECT. WHERE DISCREPANCIES OR MULTIPLE INTERPRETATIONS OCCUR, THE MOST STRINGENT (WHICH IS GENERALLY RECOGNIZED AS THE MOST COSTLY) THAT MEETS THE INTENT OF THE DOCUMENTS SHALL BE ENFORCED.
- OWNER FURNISHED ITEMS: THE OWNER WILL FURNISH MATERIAL AND EQUIPMENT AS INDICATED IN THE CONTRACT DOCUMENTS TO BE INCORPORATED INTO THE WORK. THESE ITEMS ARE ASSIGNED TO THE INSTALLER AND COSTS FOR RECEIVING, HANDLING, STORAGE, IF REQUIRED, AND INSTALLATION ARE INCLUDED IN THE CONTRACT SUM.
  - THE INSTALLER'S RESPONSIBILITIES ARE THE SAME AS IF THE INSTALLER FURNISHED THE MATERIALS OR EQUIPMENT.
  - THE OWNER WILL ARRANGE AND PAY FOR DELIVERY OF OWNER FURNISHED ITEMS FREIGHT ON BOARD JOB SITE AND THE INSTALLER WILL INSPECT DELIVERIES FOR DAMAGE. IF OWNER FURNISHED ITEMS ARE DAMAGED, DEFECTIVE OR MISSING, DOCUMENT DAMAGED ITEMS WITH THE TRANSPORT COMPANY AND THE OWNER WILL ARRANGE FOR REPLACEMENT. THE OWNER WILL ALSO ARRANGE FOR MANUFACTURER'S FIELD SERVICES, AND THE DELIVERY OF MANUFACTURER'S WARRANTIES AND BONDS TO THE INSTALLER.
  - THE INSTALLER IS RESPONSIBLE FOR DESIGNATING THE DELIVERY DATES OF OWNER FURNISHED ITEMS AND FOR RECEIVING, UNLOADING AND HANDLING OWNER FURNISHED ITEMS AT THE SITE. THE INSTALLER IS RESPONSIBLE FOR PROTECTING OWNER FURNISHED ITEMS FROM DAMAGE, INCLUDING DAMAGE FROM EXPOSURE TO THE ELEMENTS, AND TO REPAIR OR REPLACE ITEMS DAMAGED AS A RESULT OF HIS OPERATIONS.
- EXPOSED STRUCTURE AREAS (INCLUDING MECHANICAL, ELECTRICAL, AND COMMUNICATION SPACES): INSTALL RACEWAYS BETWEEN DECK AND STRUCTURE WHEREVER POSSIBLE IN EXPOSED STRUCTURE CEILING AREAS. ROUTE RACEWAYS IN CONCEALED AREAS WHEREVER POSSIBLE. REFER ALL CONDITIONS WHERE RACEWAYS MUST BE INSTALLED WHICH CANNOT COMPLY WITH THESE REQUIREMENTS TO THE ARCHITECT.
- SUBMITTALS: PROVIDE ORIGINAL ELECTRONIC PDF FORMAT, BOUND, BOOKMARKED (EACH SECTION AND PRODUCT), AND HIGHLIGHTED. JOB NAME AND SUBCONTRACTOR SHALL BE ON THE FRONT COVER. PREPARE INDEX OF EQUIPMENT SUBMITTED IN EACH TAB.
- REFLECTED CEILING PLANS: COORDINATE THE LOCATION OF LIGHT FIXTURES WITH THE ARCHITECTURAL REFLECTED CEILING PLANS. REFER ALL DISCREPANCIES TO THE ARCHITECT AND ENGINEER.
- ALL WORK SHALL BE DONE ACCORDING TO THE CURRENT NATIONAL ELECTRIC CODE (NEC), IBC, NFPA, AND IFC. COMPLIANCE AND FINAL APPROVAL IS SUBJECT TO THE ON SITE FIELD INSPECTION OF THE AHJ.
- TAKE OFF QUANTITIES SHOWN IN SCHEDULE(S) ARE FOR REFERENCE ONLY. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OF THE DEVICES, FIXTURES, EQUIPMENT, RACEWAYS, CONDUCTORS, CABLING, ETC. SHOWN AND SPECIFIED IN THE CONTRACT DOCUMENTS INCLUDING THE EXTRA MATERIAL SPECIFIED.

## ELECTRICAL SHEET INDEX

EE001	ELEC COVER SHEET
EE002	MOUNTING DETAILS & SYMBOLS LEGEND
ES101	ELECTRICAL SITE PLAN
ES102	ENLARGED ELECTRICAL SITE PLANS
ES401	MUSCO LIGHTING SHEETS
ES505	SITE JUNCTION BOX DETAILS
ES601	ONE-LINE DIAGRAM
ES602	EXTERIOR LIGHTING FIXTURE SCHEDULE



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REVISIONS

NO.	DATE	DESCRIPTION

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Designed By: JUN  
Drawn By: JUN  
Date: 04/28/2023  
Checked By: SCL  
Project No: 230018

Drawing Title

ELEC COVER SHEET

Drawing number

EE001

**NOTE TO CONTRACTORS:**  
**THIS SHEET SET IS CONTRACTUALLY REQUIRED TO BE PRINTED IN COLOR. THERE ARE DIFFERENTIATING FEATURES THAT ARE DESIGNATED THROUGHOUT BY THEIR COLOR. FAILURE TO PRINT THIS SHEET SET IN COLOR MAY RESULT IN A MISINTERPRETATION OF THE DRAWINGS.**

BID SET



### WIRING LEGEND

	12AWG WIRE SIZE TYPICAL
	14AWG WIRE SIZE TYPICAL
	SWITCHED LEG FOR LTG CKT WIRE SIZE BY BRANCH CIRCUIT
	VOICE/DATA CABLE CAT6 TYPICAL
	WIRE SIZE SPECIFIED BY CALLOUT TAG
	CONDUCTOR & CONDUIT INDICATOR REFER TO EQUIPMENT SCHEDULE OF ASSOCIATED EQUIPMENT/DEVICE

### SYMBOLS LEGEND

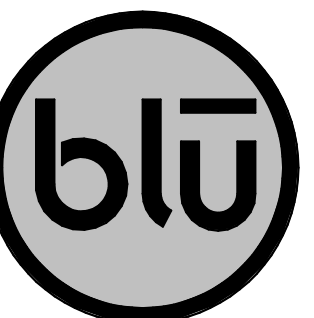
SYMBOL	DESCRIPTION
<b>ELECTRICAL POWER AND DISTRIBUTION</b>	
	TRANSFER SWITCH (ONE-LINE DIAGRAM).
	DIGITAL MULTIMETER (ONE-LINE DIAGRAM).
	SERVICE ENTRANCE SURGE PROTECTION (ONE-LINE DIAGRAM).
	GENERATOR, POWER (ONE-LINE DIAGRAM).
	METER.
	DISCONNECT SWITCH, FUSED.
	STARTER, COMBINATION WITH DISCONNECT SWITCH.
	PUSHBUTTON.
	PANELBOARD CABINET, FLUSH MOUNTED.
	PANELBOARD CABINET, SURFACE MOUNTED, 1 SECTION.
	PANELBOARD CABINET, SURFACE MOUNTED, 2 SECTION.
	DISTRIBUTION PANEL OR SWITCHBOARD.
	SWITCH, TOGGLE MOTOR STARTER WITH OVERLOAD PROTECTION.
	TRANSFORMER: NUMBER INDICATES KVA.
<b>LIGHTING (REFER TO FIXTURE SCHEDULE FOR SYMBOLS)</b>	
	FIXTURE ID:(D420) INDICATES FIXTURE TYPE AS SCHEDULED *1C1* INDICATES ROOM/DIMMING CONTROLLER CIRCUITING *z1* INDICATES ZONE CIRCUITING.
	FIXTURE ID:(D420) INDICATES FIXTURE TYPE AS SCHEDULED *1C1e* INDICATES ROOM/DIMMING CONTROLLER CIRCUITING *z1* INDICATES ZONE CIRCUITING. EMERGENCY WITH BATTERY PACK, CONNECTED TO GENERATOR AS INDICATED
<b>SITE ELECTRICAL AND COMMUNICATIONS UTILITIES</b>	
	ELECTRIC LINE: THIN LINE. 1Ø = SINGLE PHASE, 2Ø = 2-PHASE, 3Ø = 3-PHASE, O = OVERHEAD, U = UNDERGROUND, P = PRIMARY, S = SECONDARY
	LIGHTNING ARRESTOR.
	UTILITY POLE.
	UTILITY, DISTRIBUTION SWITCH OR SWITCHING STATION.
	UTILITY, PRIMARY ELECTRICAL GROUND SLEEVE.
	UTILITY SERVICES, MANHOLE.
	UTILITY, COMMUNICATIONS MANHOLE.
	UTILITY, ELECTRICAL MANHOLE.
	UTILITY, TELEPHONE MANHOLE.
	PRECAST CONCRETE, MANHOLE, TRANSFORMER VAULT.
	PRECAST CONCRETE, TRANSFORMER PAD.
	SUBSTATION.
	TRANSFORMER.

### SYMBOLS LEGEND

SYMBOL	DESCRIPTION
<b>REFERENCE AND LINE SYMBOLS</b>	
	DETAIL INDICATOR: A5 INDICATES DETAIL NUMBER, E-501 INDICATES DRAWING SHEET WHERE DETAIL IS SHOWN.
	ELEVATION OR SECTION INDICATOR, EXTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
	ELEVATION OR SECTION INDICATOR, INTERIOR: A5 INDICATES ELEVATION OR SECTION NUMBER, E-201 INDICATES DRAWING SHEET WHERE ELEVATION OR SECTION IS SHOWN.
	ROOM IDENTIFIER WITH ROOM NAME AND NUMBER.
	KEYNOTE INDICATOR.
	REVISION INDICATOR.
	MECHANICAL EQUIPMENT INDICATOR. "X-X" INDICATES EQUIPMENT MARK SHOWN ON EQUIPMENT SCHEDULE. "XMDP" IDENTIFIES PANEL EQUIPMENT IS CIRCUITED TO. REFER TO EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
	BREAK, STRAIGHT: TO BREAK PARTS OF DRAWING
	BREAK, ROUND
	NEW LINE: MEDIUM LINE.
	HIDDEN FEATURES LINE: HIDDEN, THIN LINE
	EXISTING TO REMAIN LINE: THIN LINE.
	DEMOLITION LINE: DASHED, MEDIUM LINE
	CONTRACT LIMIT LINE: DASHDOT, WIDE LINE.
	KITCHEN EQUIPMENT INDICATOR. "X-X" INDICATES EQUIPMENT MARK SHOWN ON EQUIPMENT SCHEDULE. "XKP" IDENTIFIES PANEL EQUIPMENT IS CIRCUITED TO. REFER TO EQUIPMENT SCHEDULE FOR ADDITIONAL INFORMATION.
<b>WIRING METHODS</b>	
	WIRING.
	WIRING TURNED UP OR TOWARDS OBSERVER.
	WIRING TURNED DOWN OR AWAY FROM OBSERVER.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE ELECTRICAL SPECIFICATIONS.
	BRANCH CIRCUIT HOME RUN TO PANELBOARD: NUMBER OF ARROWS INDICATES NUMBER OF CIRCUITS. LETTER AND NUMBER NOTATIONS IDENTIFY PANEL AND CIRCUIT NUMBERS. NUMBER IN BOX REFERS TO THE CONDUCTOR AND CONDUIT SCHEDULE. FOR BRANCH WIRING USE #12 CONDUCTORS, EXCEPT #10 CONDUCTORS SHALL BE INSTALLED IF DISTANCES EXCEED THOSE SPECIFIED IN THE ELECTRICAL SPECIFICATIONS.
	LOW VOLTAGE WIRING: DIVIDE, MEDIUM LINE.
	CONDUIT STUB. DIMENSION RECORD DRAWINGS AND MARK.
	CONDUCTOR & CONDUIT ("CC") SCHEDULE INDICATOR. REFER TO ONE-LINE DIAGRAM.
	CONDUCTOR RUN IDENTIFICATION.
	JUNCTION BOX.
	PULL BOX.
	EARTH GROUND (ONE-LINE DIAGRAM).
	JUNCTION BOX, CEILING.
	CONDUCTOR & CONDUIT INDICATOR. REFER TO EQUIPMENT SCHEDULE OF ASSOCIATED EQUIPMENT/DEVICE.

### SYMBOLS LEGEND

SYMBOL	DESCRIPTION
<b>WIRING DEVICES</b>	
	RECEPTACLE, DUPLEX: NEMA 5-20R.
	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, WET LABEL, "WEATHERPROOF IN USE": NEMA 5-20R.
	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER: NEMA 5-20R.
	RECEPTACLE, DUPLEX WITH GROUND FAULT CIRCUIT INTERRUPTER, WEATHERPROOF: NEMA 5-20R.
<b>ELECTRICAL POWER AND DISTRIBUTION</b>	
	FUSE WITH RATING (ONE-LINE DIAGRAM).
	DISCONNECT, FUSED (ONE-LINE DIAGRAM).
	DISCONNECT, NONFUSED (ONE-LINE DIAGRAM).
	OVERLOAD RELAY (ONE-LINE DIAGRAM).
	STARTER (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, MOLDED CASE (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, MOLDED CASE WITH SHUNT TRIP (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, MOTOR CIRCUIT PROTECTION (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, SOLID STATE (ONE-LINE DIAGRAM).
	CIRCUIT BREAKER, SOLID STATE WITH GROUND FAULT PROTECTION (ONE-LINE DIAGRAM).
	TRANSFORMER (ONE-LINE DIAGRAM).
	PANELBOARD WITH MAIN LUGS ONLY. BUS SIZE AND PHASE AS SHOWN (ONE-LINE DIAGRAM).
	PANELBOARD WITH MAIN CIRCUIT BREAKER. SIZE AND PHASE AS SHOWN (ONE-LINE DIAGRAM).
	PANELBOARD WITH MAIN AND SUB FEED CIRCUIT BREAKER (ONE-LINE DIAGRAM).
	PANELBOARD WITH MAIN LUGS ONLY AND SURGE PROTECTION WITH CIRCUIT BREAKER (ONE-LINE DIAGRAM).
<b>CCTV</b>	
	FUTURE 'UTOPIA' SECURITY CAMERA



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#### REVISIONS

NO.	DATE	DESCRIPTION

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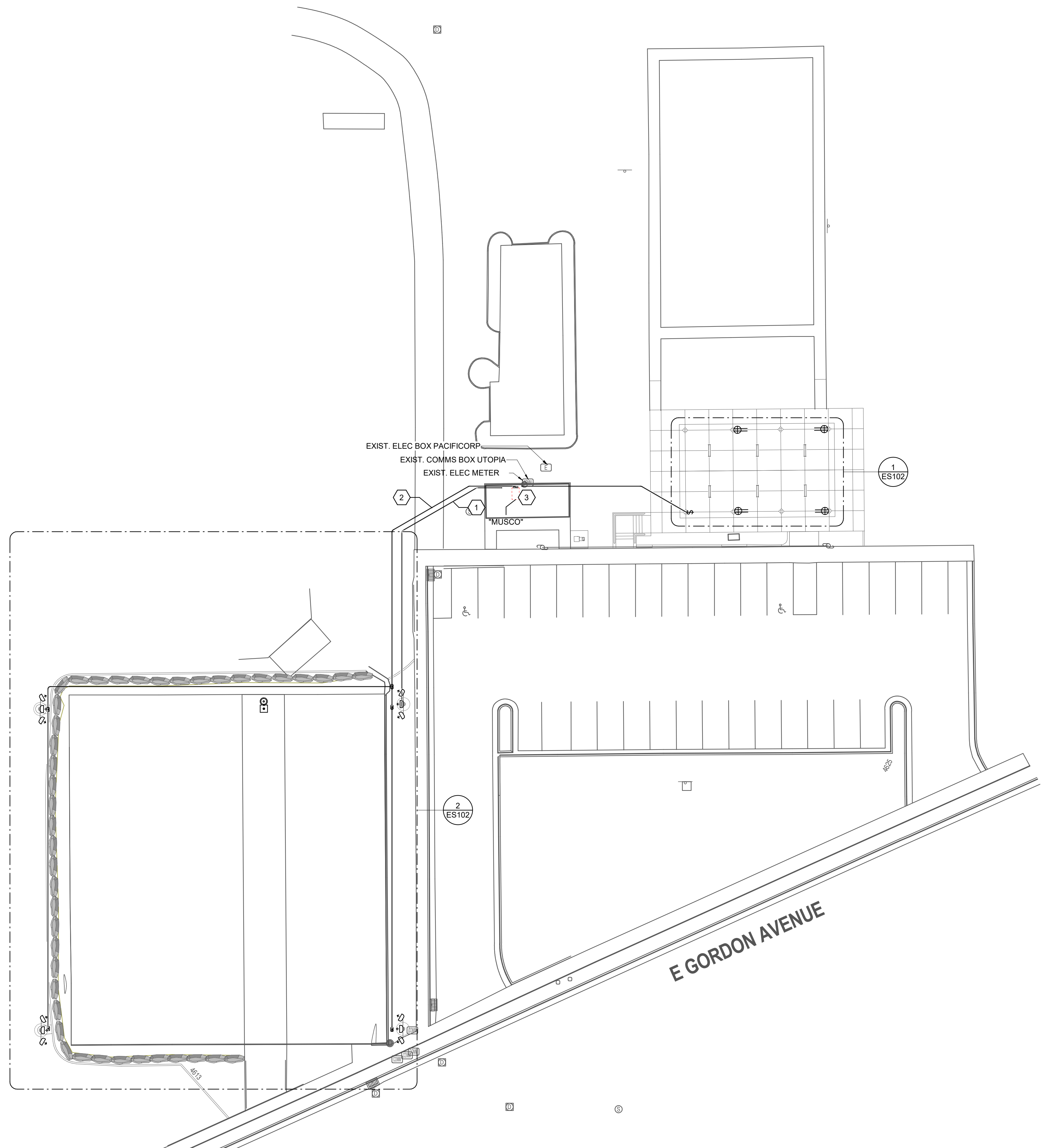
Drawing Title

MOUNTING  
DETAILS &  
SYMBOLS  
LEGEND

Drawing number

EE002

BID SET



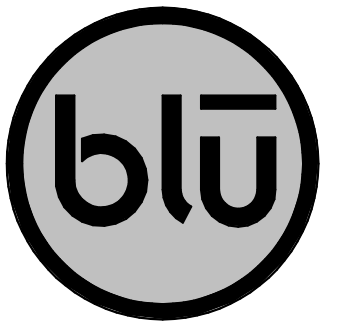
**1 ELECTRICAL SITE PLAN**  
SCALE: 1" = 20'-0"

**GENERAL SHEET NOTES**

- 1 THE ELECTRICAL CONTRACTOR SHALL MEET WITH AND COORDINATE WITH ALL SERVICE PROVIDERS (POWER, COMMUNICATION, CABLE/SATELLITE, ETC.) TO THE FACILITY ON SITE PRIOR TO ANY WORK BEING PERFORMED. CONFIRM WITH EACH SERVICE PROVIDER EXACT LOCATIONS EQUIPMENT AND ROUTING. COMPLY WITH ALL SERVICE PROVIDER'S CURRENT STANDARDS AND REQUIREMENTS. PROVIDE THE REQUIRED EQUIPMENT, RACEWAYS, BOXES, CABLE, ETC. AS REQUIRED BY THE SERVICE PROVIDER WEATHER SHOWN ON THE DRAWINGS OR NOT.
- 2 FOR ALL LIGHT FIXTURES, POLE LIGHTS, AND ALL OTHER ELECTRICAL DEVICES THE CONTRACTOR SHALL COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS WITH ARCHITECT, OWNER, ENGINEER, AND ALL OF THE CONTRACT DOCUMENTS PRIOR TO ROUGH IN AND TRENCHING.
- 3 CONTRACTOR IS RESPONSIBLE FOR ALL TRENCHING, BACKFILL, AND COMPACTION ASSOCIATED TO ALL ELECTRICAL UNDERGROUND RACEWAYS AND CABLES. COORDINATE WITH ARCHITECTURAL AND CIVIL DRAWINGS. SEE UNDERGROUND RACEWAY DETAILS FOR REQUIREMENTS FOR EACH TRENCH.
- 4 CONTRACTOR SHALL INSTALL POLE MOUNTED LIGHTS IN STRAIGHT LINES, SQUARE, AND PLUMB. COORDINATE WITH ARCHITECT AND CIVIL DRAWINGS.
- 5 THE ELECTRICAL CONTRACTOR SHALL HAVE ANY AND ALL CONCRETE POLE BASES AND SLABS REVIEWED BY A STRUCTURAL ENGINEER AND SHALL MODIFY DESIGN PER STRUCTURAL ENGINEER'S AND OR AHJ'S RECOMMENDATIONS.
- 6 THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CONCRETE/ASPHALT CUTTING AND REPLACEMENT OF CONCRETE/ASPHALT TO MATCH EXISTING ASSOCIATED WITH UNDERGROUND RACEWAYS PROVIDED AS PART OF THIS PROJECT.
- 7 REFER TO PLANS FOR CONSTRAINTS ON PHYSICAL DIMENSIONS AND CLEARANCE REQUIREMENTS OF EQUIPMENT. PROVIDE EQUIPMENT DIMENSIONS THAT FALL WITHIN THE CONSTRAINTS OF EACH SPECIFIC LOCATION.
- 8 PROVIDE SERVICE RATED EQUIPMENT AT EACH SERVICE ENTRANCE.
- 9 SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. VERIFY OR RE-CALCULATE THE AVAILABLE FAULT CURRENT AT THE SERVICE WHERE MODIFICATIONS TO THE ELECTRICAL INSTALLATION OCCUR. PLEASE INCLUDE NOTES IN THE ELECTRICAL DRAWINGS OR SUPPLY CALCULATIONS WHERE APPLICABLE. SEE NEC 110.24.(B)
- 10 ALL CONDUIT FOR ELECTRICAL FIXTURES IN PAVILION TO BE INSTALLED PAVILION STRUCTURE. NO CONDUIT SHOULD BE ABLE TO BE SEEN FROM THE OUTSIDE OF THE BUILDING

**SHEET KEYNOTES**

- 1 PROVIDE 1.5" CONDUIT FOR TELECOMMUNICATION LINES TO FUTURE SECURITY CAMERAS. STUB CONDUIT UP INTO EXISTING BUILDING. COORDINATE EXACT LOCATION OF STUB UP TO SECURITY EQUIPMENT WITH ARCHITECT PRIOR TO ROUGH-IN.
- 2 PROVIDE 1.5" CONDUIT TO UNDERGROUND JUNCTION BOX FOR 'MUSCO' LIGHTING. CONDUIT TO STUB UP WITHIN EXISTING RESTROOM TO NEW 'MUSCO' CONTROL PANEL. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.
- 3 'MUSCO' LIGHTING CONTROL PANEL TO BE INSTALLED IN EXISTING RESTROOM BUILDING. LIGHTING CONTROL PANEL TO BE CONNECTED TO EXISTING PANEL WITH NEW 60A/3PH CIRCUIT BREAKER. AS WELL AS A 20A/1PH CIRCUIT BREAKER FOR CONTROL POWER. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.



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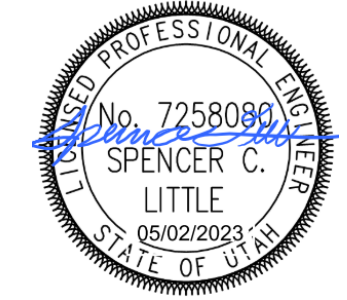


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REVISIONS	
NO.	DESCRIPTION

Stamp



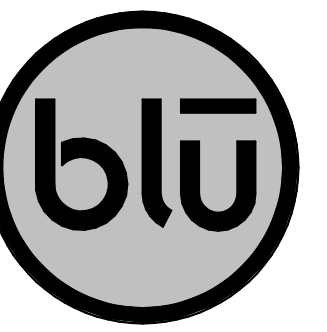
Designed By: JUN  
Drawn By: JUN  
Date: 04/26/2023  
Checked By: SCL  
Project No: 230018

Drawing Title  
**ELECTRICAL  
SITE PLAN**

Drawing number

**ES101**

BID SET



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- 10 ALL CONDUIT FOR ELECTRICAL FIXTURES IN PAVILION TO BE INSTALLED PAVILION STRUCTURE. NO CONDUIT SHOULD BE ABLE TO BE SEEN FROM THE OUTSIDE OF THE BUILDING

### SHEET KEYNOTES

- 1 NEW 'MUSCO' SPORT LIGHTING TO REPLACE EXISTING COURT LIGHTING. NEW LIGHT POLE BASE TO BE INSTALLED ALONG WITH NEW LIGHT FIXTURES. REFER TO 'MUSCO' DESIGN SHEETS ON PAGE (ES401) FOR POLE INFORMATION. COORDINATE EXACT LOCATION WITH 'MUSCO' DESIGN SHEETS PRIOR TO ROUGH-IN.
- 2 LIGHT FIXTURES TO BE MOUNTED TO THE PAVILION STRUCTURE. CONDUIT FOR LIGHT FIXTURES TO BE INSTALLED INSIDE PAVILION STRUCTURE. NO CONDUIT TO BE SEEN FROM OUTSIDE.
- 3 PROVIDE ON/OFF WEATHER PROOF TIMER SWITCH (AMERICAN FIRE GLASS AFG-SITS-TS30, OR APPROVED EQUAL) TO CONTROL POWER TO PAVILION OUTLETS AND LIGHTING. COORDINATE EXACT REQUIREMENTS WITH OWNER PRIOR TO ROUGH-IN.
- 4 PROVIDE CONDUIT FROM EXISTING UTOPIA COMMUNICATIONS LINE TO NEW SECURITY CAMERA ON LIGHT POLE. COORDINATE EXACT LOCATION AND REQUIREMENTS OF THE CAMERA WITH OWNER AND INSTALLER PRIOR TO ROUGH-IN.
- 5 GFCI OUTLET TO BE FLUSH MOUNT INSTALLED ON PAVILION POLES. CONDUITS TO RUN UNDERGROUND AND UP INTO COLUMN. NO EXPOSED ELECTRICAL CONDUIT.
- 6 POWER CIRCUIT TO NEW 20A CIRCUIT BREAKER IN EXISTING POWER PANEL LOCATED IN EXISTING RESTROOM.
- 7 PROVIDE (5) #10 CONDUCTORS FOR OVERRIDE SWITCH AND STROBE BACK TO 'MUSCO' PANEL.
- 8 PROVIDE JUNCTION BOXES AT BASE OF 'MUSCO' LIGHT POLES. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH LIGHTING INSTALLER PRIOR TO ROUGH-IN.

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#### REVISIONS

NO.	DATE	DESCRIPTION

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Designed By: JUN  
Drawn By: JUN  
Date: 04/26/2023  
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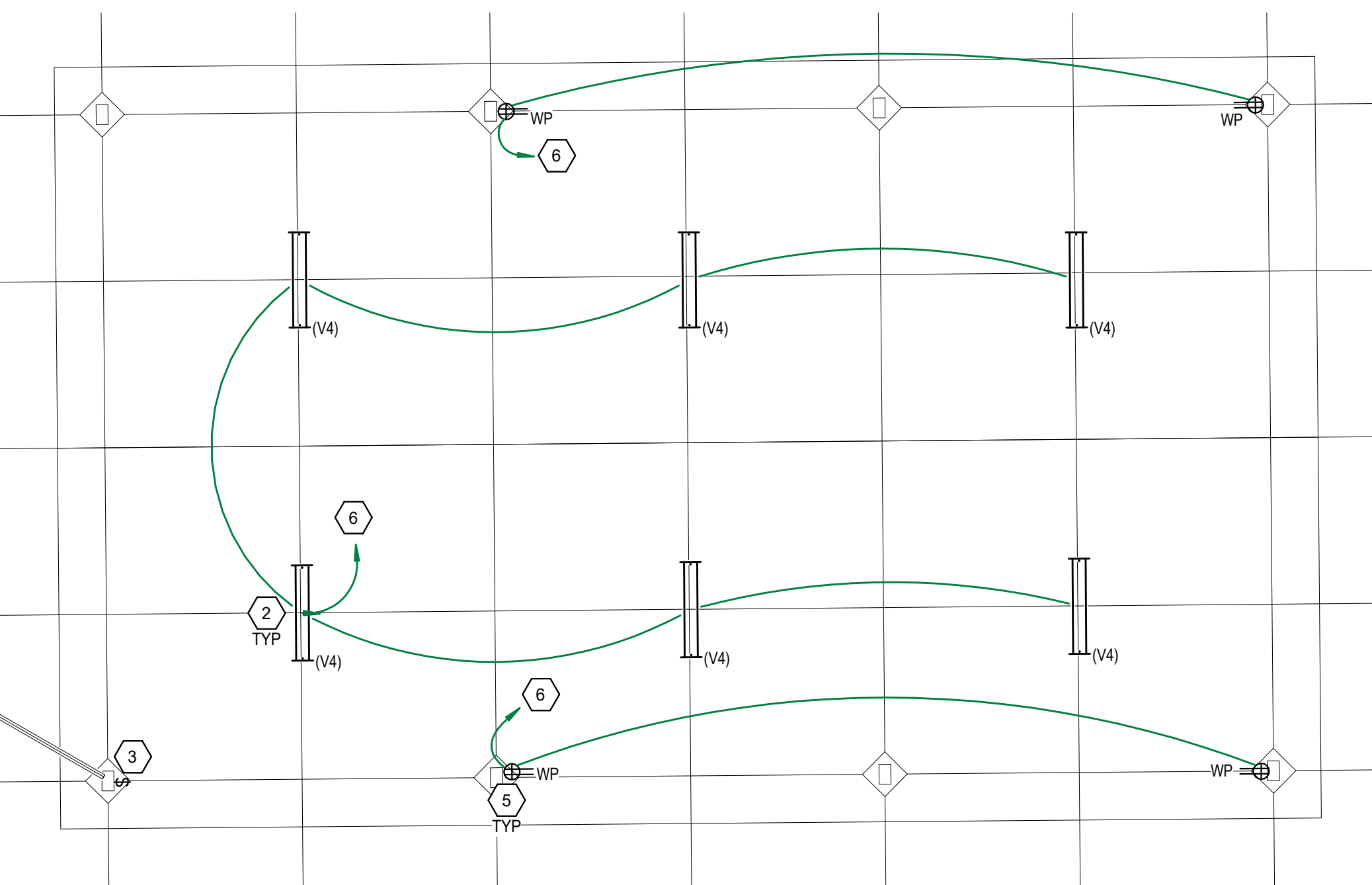
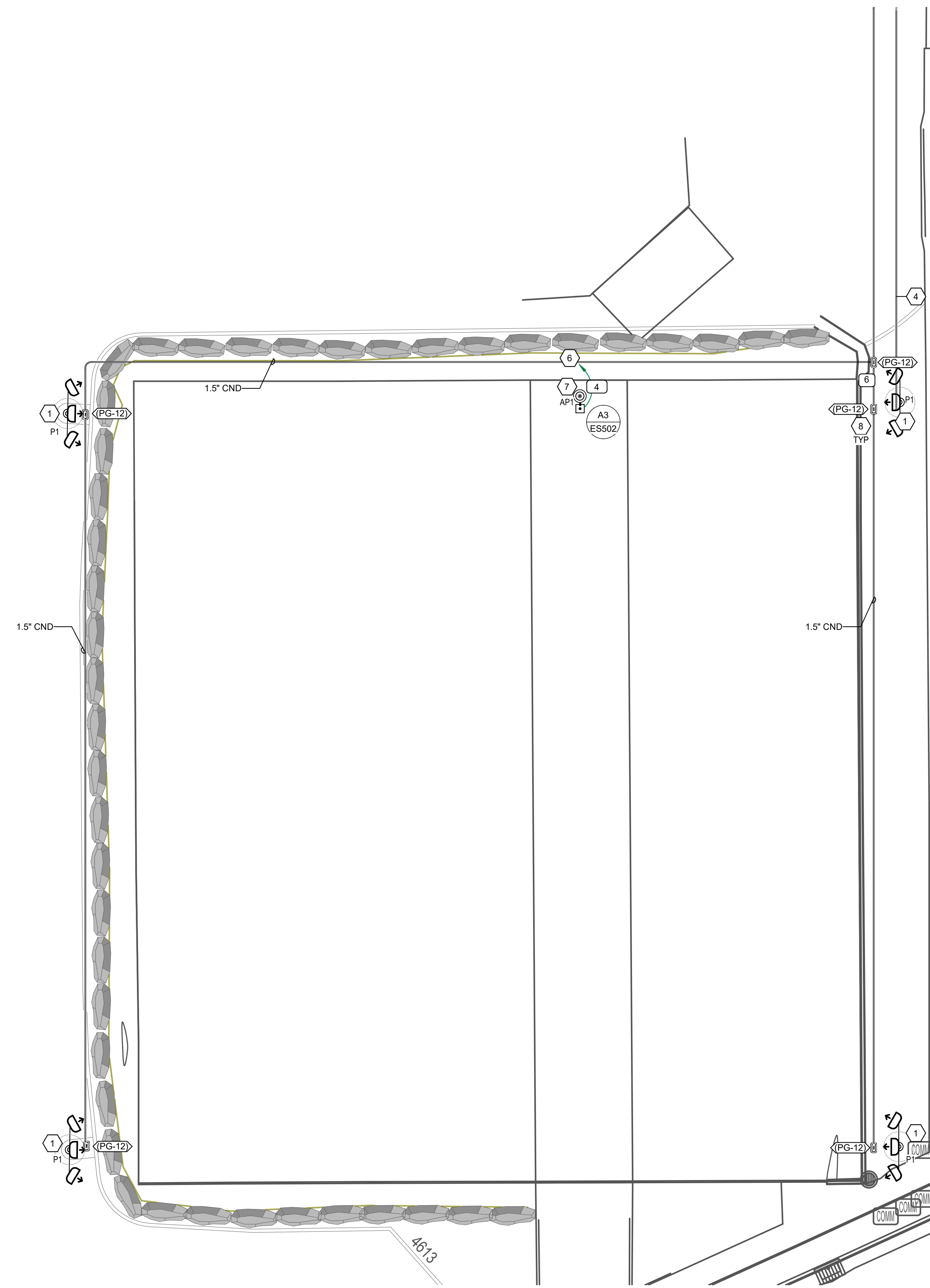
Drawing Title

ENLARGED  
ELECTRICAL  
SITE PLANS

Drawing number

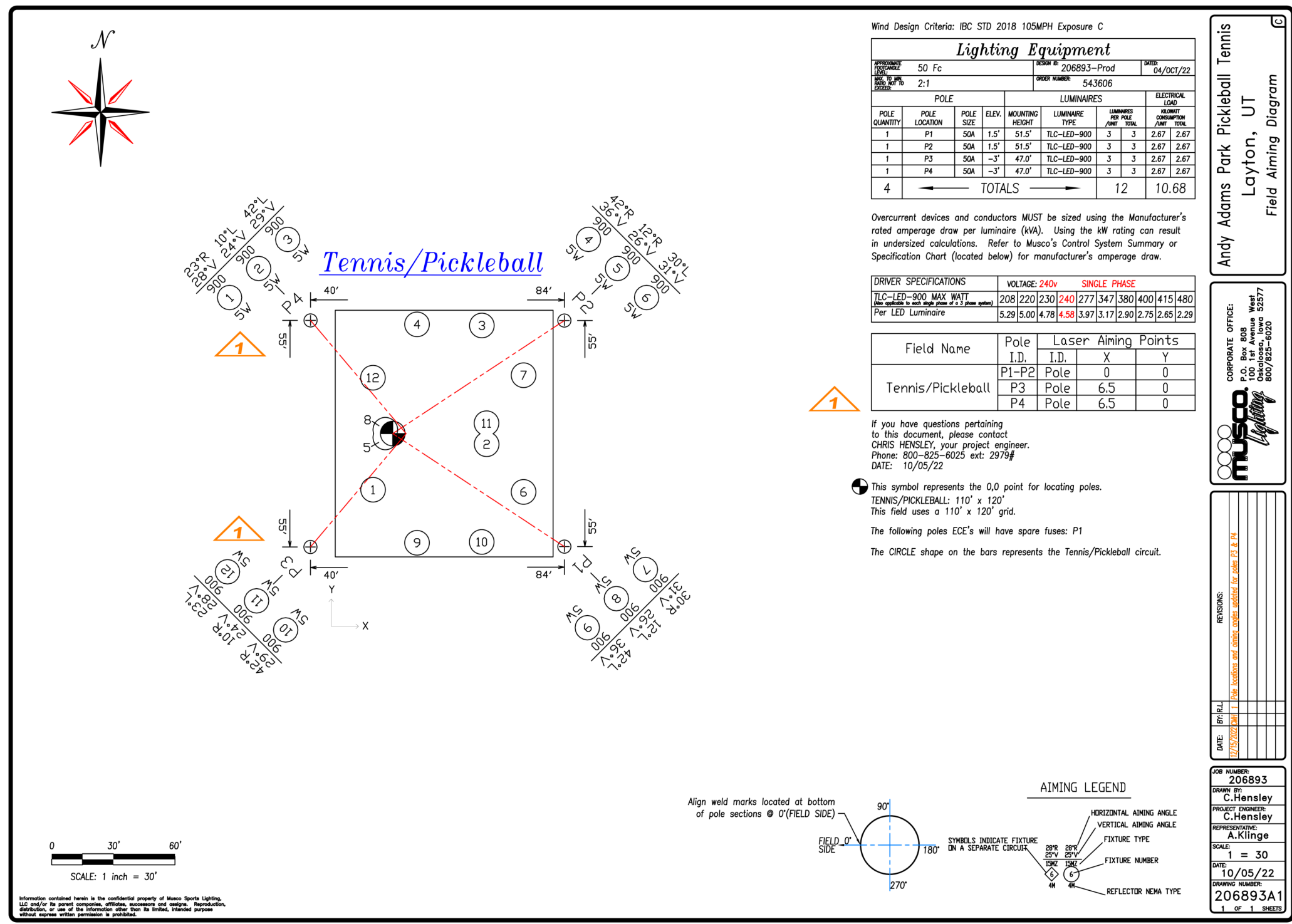
ES102

BID SET



1 ENLARGED PAVILION ELECTRICAL SITE PLAN  
SCALE: 3/16" = 1'-0"

2 ENLARGED TENNIS & PICKLEBALL COURT ELECTRICAL SITE PLAN  
SCALE: 1" = 10'-0"



### Control System Summary

#### Project Specific Notes:

Andy Adams Pickleball Service - 240V/1P, LED C&M, Powerline comm

Poles P1-P4 are daisy chained on a single contactor

This service includes a pushbutton/strobe assembly for Tennis/Pickleball

#### Materials Checklist

##### Contractor/Customer Supplied:

- A dedicated control circuit must be supplied per distribution panel location
  - If the control voltage is NOT available, a control transformer is required
- Electrical distribution panel to provide overcurrent protection for circuits
  - HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- Wiring
  - See chart on page 2 for wiring requirements
  - Equipment grounding conductor and splices must be insulated (per circuit)
  - Lightning ground protection (per pole), if not Musco supplied
- Electrical conduit wireway system
  - Entrance hubs rated NEMA 4, must be die-cast zinc, PVC, or copper-free die-cast aluminum
- Mounting hardware for cabinets
- Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present)
- Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation.

Note: Activation may take up to 1 1/2 hours.

#### Project Information

Project #: 206893  
 Project Name: Andy Adams Park Pickleball Tennis  
 Date: 10/14/22  
 Project Engineer: Chris Hensley  
 Sales Representative: Aaron Klinge  
 Control System Type: Control-Link™ Control and Monitoring System  
 Communication Type: PowerLine-ST  
 Scan: 206893-Prod  
 Document ID: 206893P1V3-1014154052  
 Distribution Panel Location or ID: Andy Adams Pickleball Tennis  
 Total # of Distribution Panel Locations for Project: 1  
 Design Voltage/Phase: 240/60/1  
 Control Voltage: 120

#### Equipment Listing

DESCRIPTION	QTY	SIZE (AMPS)
1. Control and Monitoring Cabinet	1	24 X 48
Total Contactors	1	60 AMP
Total Off/On/Auto Switches:	1	

#### IMPORTANT NOTES

- Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
- In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
- One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are 100% rated for the published continuous load. All contactors are 3 pole.
- If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
- A single control circuit must be supplied per control system.
- Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart. Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements.

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### Control System Summary

Andy Adams Park Pickleball Tennis / 206893 - 206893-Prod  
 Andy Adams Pickleball Tennis - Page 3 of 4

#### SWITCHING SCHEDULE

Field/Zone Description	Zones
Tennis/Pickleball	1

#### CONTROL POWER CONSUMPTION

VA loading of Musco Supplied Equipment	INRUSH: 245.0	SEALED: 26.0
----------------------------------------	---------------	--------------

#### CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
P1,P2,P3,P4	Tennis/Pickleball	12	12	55.0	60	C1	1

Full Load Amps based on amps per driver.

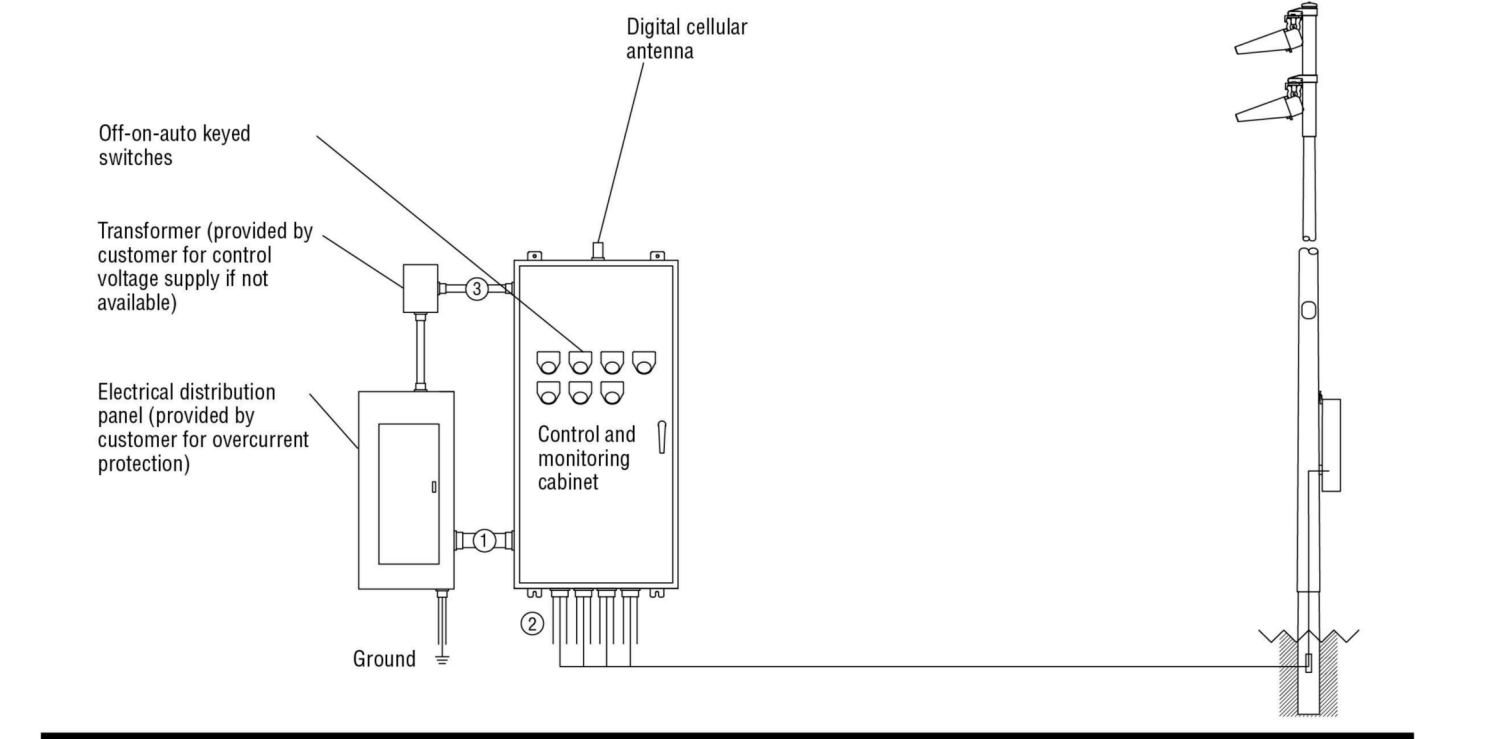
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### Control System Summary

Andy Adams Park Pickleball Tennis / 206893 - 206893-Prod  
 Andy Adams Pickleball Tennis - Page 2 of 4

#### Control-Link. Control and Monitoring System



Conduit ID	Description	# of Wires	Wire (AWG)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
2	Load power to lighting circuits, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated, 20A)	3	12	*C	N/A	No	C-E

- \* Notes:
- A. See voltage and phasing per the notes on cover page.
  - B. Calculate per load and voltage drop.
  - C. All conduit diameters should be per code unless otherwise specified to allow for connector size.
  - D. Equipment grounding conductor and any splices must be insulated.
  - E. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.
- IMPORTANT: Control wires (3) must be in separate conduit from line and load power wires (1, 2).

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### Control System Summary

Andy Adams Park Pickleball Tennis / 206893 - 206893-Prod  
 Andy Adams Pickleball Tennis - Page 4 of 4

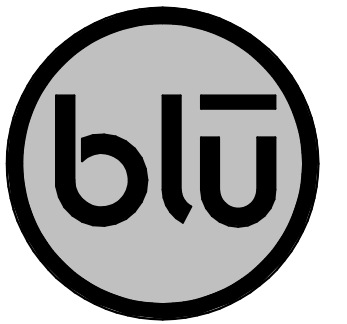
#### PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole P1,P2,P3,P4	54.96		

#### ZONE SCHEDULE

ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	CIRCUIT DESCRIPTION	
			POLE ID	CONTACTOR ID
Zone 1	1	Tennis/Pickleball	P1 P2 P3 P4	C1 C1 C1 C1

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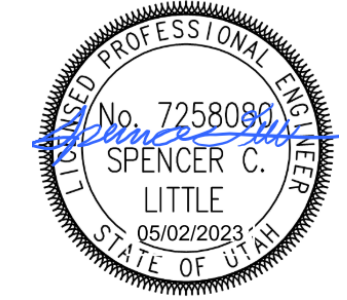
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#### REVISIONS

NO.	DATE	DESCRIPTION

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Designed By: JUN  
 Drawn By: JUN  
 Date: 04/26/2023  
 Checked By: SCL  
 Project No: Z30018

Drawing Title  
**MUSCO LIGHTING SHEETS**

Drawing number

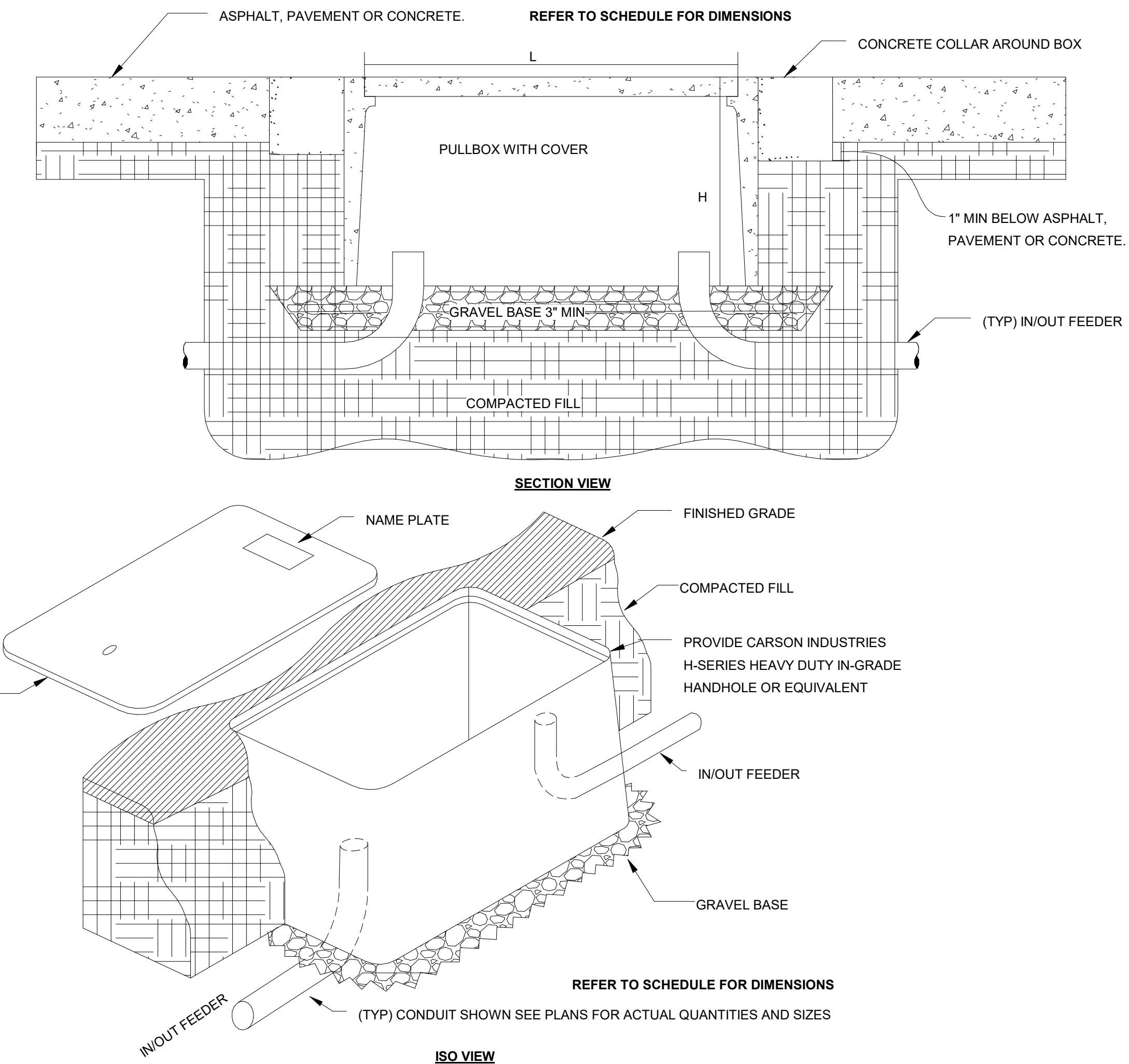
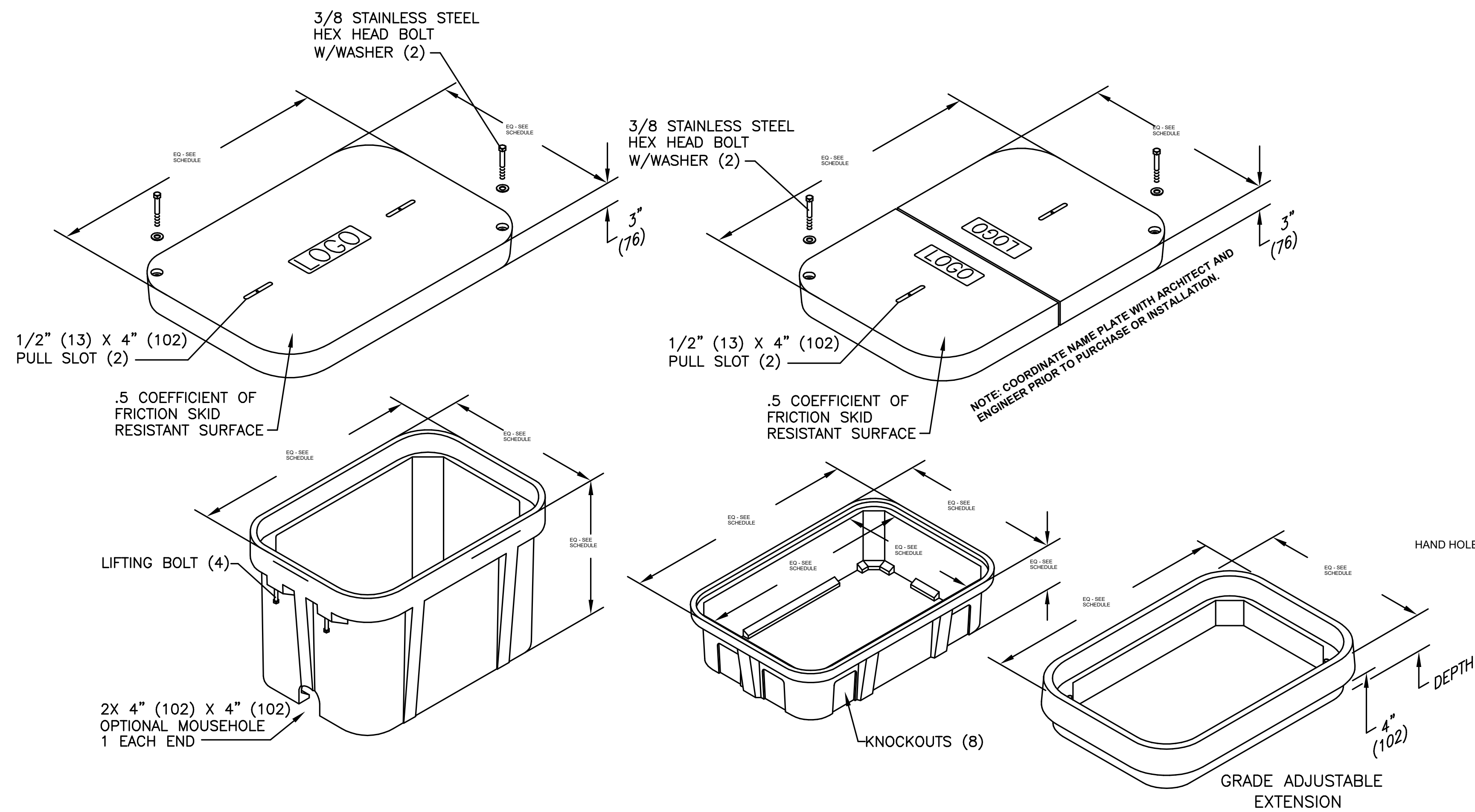
ES401

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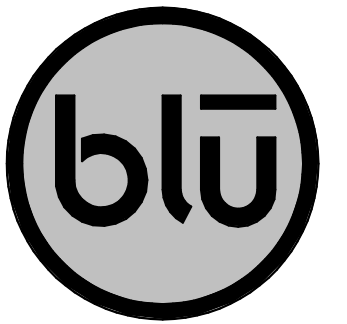
APPLICATION TIERS	TYPE	DESCRIPTION	BOX OPTIONS	DESCRIPTION	COVER OPTIONS	DESCRIPTION	SYMBOLS LEGEND				FIXTURE STYLES		
LIGHT DUTY	VERTICAL	PEDESTRIAN TRAFFIC ONLY.	BA	BOX WITH OPEN BOTTOM	CA	BOLT DOWN COVER	PG-34	PG-22	PG-23	PG-22	STYLE NAME	DESCRIPTION	IMAGES
TIER 5	VERTICAL	SIDEWALK APPLICATIONS WITH A SAFETY FACTOR FOR OCCASIONAL ACCIDENTAL VEHICULAR TRAFFIC.	BB	BOX WITH MOUSE HOLES	WA	STANDARD WITH NO BOLTS							
TIER 8	LATERAL		VERTICAL	BC	DIVIDED BOX	LR	CAST IRON 6 4-1/2" X 7-1/2" LID					PC	STRAIGHT SIDES ALLOW FOR EASY ADJUSTMENT OF BOX SHOULD THE GRADE LEVEL CHANGE. ALL PC BOXES ARE STACKABLE AND ARE AVAILABLE WITH GASKETING.
TIER 15	VERTICAL	DRIEVEWAY, PARKING LOT, AND OFF ROAD APPLICATIONS SUBJECT TO OCCASIONAL NON-DELIBERATE VEHICULAR TRAFFIC.	BG	GASKETED BOX WITH OPEN BOTTOM	LP	CAST IRON 6"X12" LID	<b>NOTES:</b> 1. CONTRACTOR SHALL PROVIDE A SUBMITTAL ON ALL UNDERGROUND ENCLOSURES FOR THIS PROJECT. 2. ALL ENCLOSURES SHALL BE UL LISTED 3. CONTRACTOR SHALL COORDINATE THE TIER RATING WITH CIVIL ENGINEER AND ARCHITECT IN THE SUBMITTAL PROCESS. 4. CONTRACTOR SHALL ADJUST THE SIZE OF THE ENCLOSURE AS REQUIRED FOR INSTALLATION. SUBMIT AN RFI OR PROVIDE SOME OTHER DOCUMENTATION SO THAT THE DESIGN TEAM AND OWNER UNDERSTAND THIS MODIFICATION PRIOR TO MOVING FORWARD WITH ADJUSTED SIZE OF ENCLOSURE. 5. PROVIDE BASIS OF DESIGN (BOD) ENCLOSURE OR PRE-APPROVED EQUAL.				PX	PX STYLES ARE EXCELLENT FOR SERVICE BOX ASSEMBLIES AND OFFER FLARED DESIGN TO PREVENT FROST HEAVE. PX BOXES ARE ALSO NESTABLE FOR COMPACT STORAGE.	
TIER 22	LATERAL		LATERAL	DA	BOX WITH SOLID BOTTOM	LQ					CAST IRON 9"X12" LID	PT	THE FLARED DESIGN PREVENTS FROST HEAVE AND COVERS ARE INTERCHANGEABLE WITH MANY PRECAST CONCRETE PARTS. PT BOXES ARE ALSO NESTABLE FOR COMPACT STORAGE.
	VERTICAL	DRIEVEWAY, PARKING LOT, AND OFF ROAD APPLICATIONS SUBJECT TO OCCASIONAL NON-DELIBERATE VEHICULAR TRAFFIC.	DG	GASKETED BOX WITH SOLID BOTTOM	LK	POLYMER CONCRETE 6"X9" DROP-IN LID					PD	THESE ENCLOSURES FEATURE A 1 DEGREE FLARE FOR MAXIMUM STRENGTH. FLARED DESIGN OPTIMIZES INTERNAL VOLUME AND MINIMIZES FROST HEAVE.	
	VERTICAL	DRIEVEWAY, PARKING LOT, AND OFF ROAD APPLICATIONS SUBJECT TO OCCASIONAL NON-DELIBERATE VEHICULAR TRAFFIC.	EA	EXTENSION	LS	THROUGH SLOT (NO METER LID)							
	LATERAL	DRIEVEWAY, PARKING LOT, AND OFF ROAD APPLICATIONS SUBJECT TO OCCASIONAL NON-DELIBERATE VEHICULAR TRAFFIC.	RA	SOLID BASE EXTENSION	O2	OPENS UNDER 90°							
					OO	USED WITH DROP-IN LID							

### UNDER GROUND ENCLOSURE SCHEDULE

ID	IMAGE	BOX DESCRIPTION	LENGTH	WIDTH	DEPTH	ABOVE GRADE HEIGHT	BASIS OF DESIGN MANUFACTURE PART NO.	BOX OPTIONS	COVER LOGO	COVER OPTIONS	STYLE	TRAFFIC TIER NO.
(PG-12)		UNDERGROUND ENCLOSURE; PRECAST POLYMER CONCRETE WITH REINFORCED WITH FIBER GLASS. PROVIDE WITH BOLT ON COVER.	0' - 11"	1' - 6"	1' - 6"	INSTALL FLUSH WITH GRADE	QUAZITE (PG1324-18)	BA - BOX WITH OPEN BOTTOM	"ELECTRICAL"	WITH TWO BOLTS AND A SINGLE LOGO	PG	TIER 15



**A1** TYPICAL UNDERGROUND JUNCTION BOX DETAIL  
SCALE: NTS



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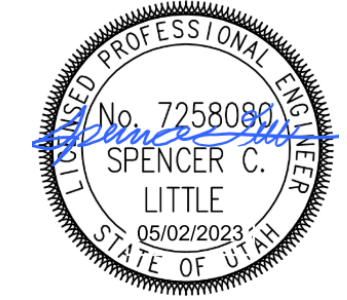


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Drawn By: JUN  
Date: 04/26/2023  
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Project No: 230018

Drawing Title  
**SITE JUNCTION BOX DETAILS**

Drawing number

**ES505**

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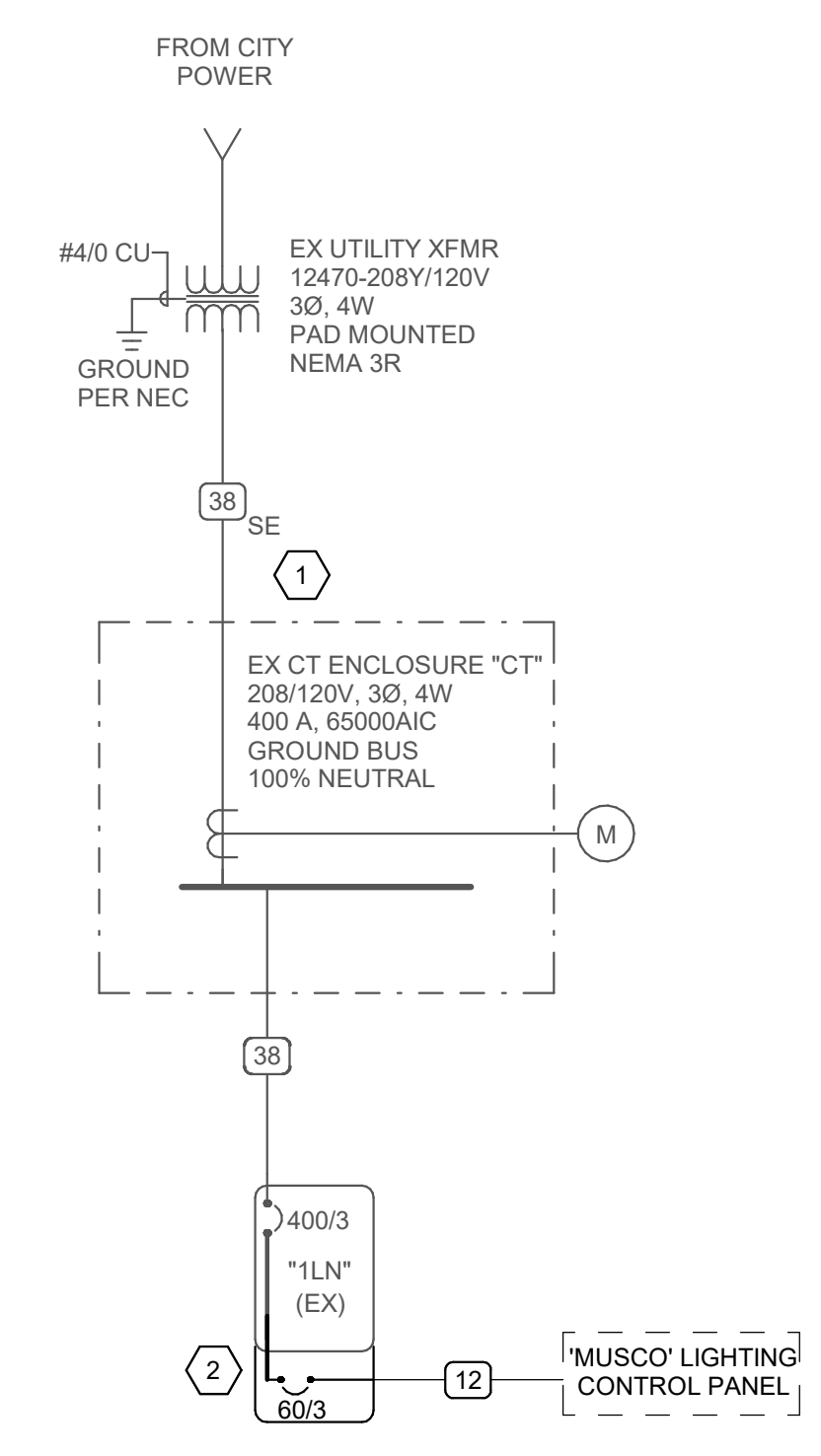
# COPPER CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER (E.G.) 5  
 SUBSCRIPT (NOTE 5) IG

SYM	AMP	HH AMPS	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CONDUCTOR G	IG/HH	SE	NOTES
1	20	-	.75	2	12	12	12	8	2
2	20	-	.75	3	12	12	12	8	2,3
3	20	24	.75	4	12	12	12	8	2,3
4	30	-	.75	2	10	10	10	8	2
5	30	-	.75	3	10	10	10	8	2
6	30	32	.75	4	10	10	10	8	2
7	40	-	1	2	8	10	8	6	2
8	40	-	1	3	8	10	8	6	2
9	40	44	1	4	8	10	8	6	2
10	55	-	1	2	6	10	8	4	2
11	55	-	1	3	6	10	8	4	2
12	55	60	1.25	4	6	10	8	4	2
13	70	-	1	2	4	8	4	2	2
14	70	-	1.25	3	4	8	4	2	2
15	70	76	1.25	4	4	8	4	2	2
16	85	-	1.25	2	3	8	3	2	2
17	85	-	1.25	3	3	8	3	2	2
18	85	92	1.25	4	3	8	3	2	2
19	95	-	1.25	3	2	8	2	2	2
20	95	104	1.50	4	2	8	2	2	2
21	130	-	1.50	3	1	6	2	2	2
22	130	116	1.50	4	1	6	2	2	2
23	150	-	2	3	1/0	6	2	1/0	2
24	150	136	2	4	1/0	6	2	1/0	2
25	175	-	2	3	2/0	6	2	2/0	2
26	175	156	2	4	2/0	6	2	2/0	2
27	200	-	2	3	3/0	6	2	2/0	2
28	200	180	2.50	4	3/0	6	2	2/0	2
29	230	-	2.50	3	4/0	4	2	2/0	2
30	230	208	2.50	4	4/0	4	2	2/0	2
31	255	-	2.50	3	250	4	1	2/0	2
32	255	232	2.50	4	250	4	1	2/0	2
33	310	-	3	3	350	3	1/0	3/0	2
34	310	280	3	4	350	3	1/0	3/0	2
35	380	-	3.50	3	500	3	3/0	3/0	2
36	380	344	4	4	500	3	3/0	3/0	2
37	400	-	2 EA 2	3	3/0	3	3/0	3/0	2
38	400	360	2 EA 2.50	4	3/0	3	3/0	3/0	2
39	510	-	2 EA 2.50	3	250	1	4/0	3/0	2
40	510	464	2 EA 3	4	250	1	4/0	3/0	2
41	620	-	2 EA 3	3	350	1/0	4/0	3/0	2,4
42	620	560	2 EA 3	4	350	1/0	4/0	3/0	2,4
43	760	-	2 EA 3.50	3	500	1/0	4/0	3/0	2,4
44	760	688	2 EA 4	4	500	1/0	4/0	3/0	2,4
45	855	-	3 EA 3	3	300	2/0	4/0	3/0	2,4
46	855	768	3 EA 3	4	300	2/0	4/0	3/0	2,4
47	1000	-	3 EA 3.50	3	400	2/0	4/0	3/0	4
48	1000	912	3 EA 3.50	4	400	2/0	4/0	3/0	4
49	1140	-	3 EA 4	3	500	3/0	4/0	3/0	4
50	1140	1032	3 EA 4	4	500	3/0	4/0	3/0	4
51	1240	-	4 EA 3	3	350	3/0	4/0	3/0	4
52	1240	1120	4 EA 3	4	350	3/0	4/0	3/0	4
53	1675	1520	5 EA 4	4	400	4/0	4/0	4/0	4
54	2010	1824	6 EA 4	4	400	250	250	250	4
55	2660	2408	7 EA 4	4	500	350	350	350	4
56	3040	2752	8 EA 4	4	500	500	500	500	4
57	4180	3784	11 EA 4	4	500	500	500	500	4
58	-	-	5 EA 4	-	-	-	-	-	6
59	-	-	5	-	-	-	-	-	6
60	-	-	10 EA 4	-	-	-	-	-	6

### CONDUIT AND CONDUCTOR SCHEDULE NOTES

- CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THIN UNLESS OTHERWISE NOTED.
- PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
- PROVIDE #10 NEUTRALS FOR MULTIWIRED BRANCH CIRCUITS SERVING COMPUTERS.
- GROUND (G) CONDUCTOR MAY BE DELETED ON SERVICE ENTRANCE CONDUCTORS.
- SYMBOL SUBSCRIPTS:
  - \*2N\*: INCLUDE TWO NEUTRAL CONDUCTORS, SIZED AS SCHEDULED FOR PHASED AND NEUTRAL CONDUCTORS.
  - \*FG\*: FULL SIZE GROUND, SIZE EQUIPMENT GROUNDING CONDUCTOR TO BE SAME SIZE AS THE PHASE CONDUCTORS.
  - \*HH\*: NEUTRAL CURRENTS EXIST DUE TO HIGH HARMONIC "NONLINEAR" LOADS. CURRENT CARRYING CONDUCTORS DERATED ACCORDINGLY. PROVIDE THE IG/HH SIZE FOR THE EQUIPMENT GROUNDING CONDUCTOR.
  - \*IG\*: INCLUDE IG (INSULATED/ISOLATED GROUND CONDUCTOR) SCHEDULED ALONG WITH THE GROUND OF EQUIPMENT GROUND CONDUCTOR.
  - \*SE\*: SUBSTITUTE "SE" CONDUCTOR FOR "G" CONDUCTOR SHOWN, WHICH IS SIZED FOR THE GROUNDING OF THE SECONDARY OF THE SEPARATELY DERIVED SYSTEM.
- RAVEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.



**1 ONE LINE DIAGRAM**  
 SCALE: NTS

# GENERAL SHEET NOTES

- CONTRACTOR IS RESPONSIBLE FOR ALL LINE VOLTAGE AS PART OF THIS PROJECT. PROVIDE LINE VOLTAGE REQUIRED TO ALL SYSTEMS PROVIDED AS PART OF THIS PROJECT. COORDINATE WITH ALL OTHER DISCIPLINES AND DRAWINGS.
- CONTRACTOR IS RESPONSIBLE FOR ALL DEVICES, GEAR, CABLE, CONDUCTORS, TERMINATIONS, OVERCURRENT PROTECTION DEVICES, AND HEAD END EQUIPMENT AS PART OF THIS PROJECT.
- PROVIDE ELECTRICAL CONNECTION TO MOTORIZED DOORS WITH ALL POWER AND CONTROL WIRING PER MANUFACTURERS WRITTEN INSTRUCTIONS. COORDINATE OPERATION OF DOORS WITH SECURITY, FIRE, AND SMOKE CONTROL SEQUENCES OF OPERATION.
- ELECTRICAL CONDUIT CONNECTIONS MADE TO EXPOSED JUNCTION BOXES ON UNITS SHOULD BE MADE ON THE BOTTOM OF THE BOX. INSTALLATION SHOULD COMPLY WITH LOCAL CODE REQUIREMENTS. THE INSTALLATION SHOULD BE MADE WATERTIGHT.
- WHERE AN EXTERNAL ELECTRICAL JUNCTION BOX IS NOT USED, WATERTIGHT FITTINGS SHOULD BE USED AT THE PANEL JOINT. IF ELECTRICAL CONDUIT PASSES THROUGH A HOLE IN THE PANEL, THAT JOINT SHOULD BE MADE WATERTIGHT.
- INSTALLATION SHALL BE IN ACCORDANCE WITH THE NEC "NATIONAL ELECTRICAL CODE."
- PROVIDE GFCI, HEAVY-DUTY, WEATHER RESISTANT OUTLET WITHIN 25' OF ALL EQUIPMENT. FIELD VERIFY EXISTING CONDITIONS AND PROVIDE ADDITIONAL DEVICE(S) AND CIRCUITING AS REQUIRED.
- ALL EXTERIOR OUTLETS SHALL BE CONTROLLED WITH RELAY TO TRUN POWER ON AND OFF FOR RESERVED FUNCTIONS.

# SHEET KEYNOTES

- EXISTING ONE-LINE FOR REFERENCE ONLY. ENGINEER TO VERIFY ON SITE.
- PROVIDE NEW CIRCUIT BREAKER IN EXISTING ELECTRICAL PANEL. COORDINATE EXISTING SPACES AND PANEL LOAD PRIOR TO ROUGH-IN.



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Designed By: JUN  
 Drawn By: JUN  
 Date: 04/26/2023  
 Checked By: SCL  
 Project No: 230018

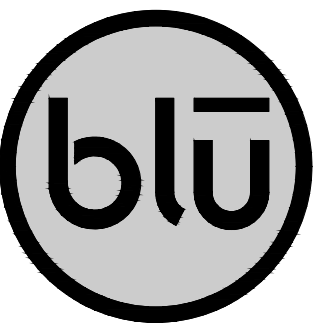
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**ONE-LINE DIAGRAM**

Drawing number

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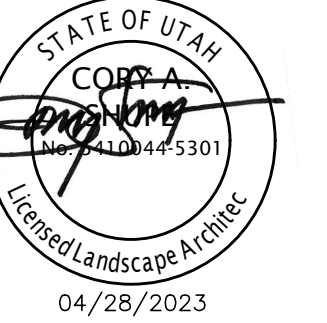
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04/28/2023

Designed By: TH  
 Drawn By: TH  
 Date: 04/28/2023  
 Checked By: RD  
 Project No: 22-200

Drawing Title  
**LANDSCAPE PLAN**

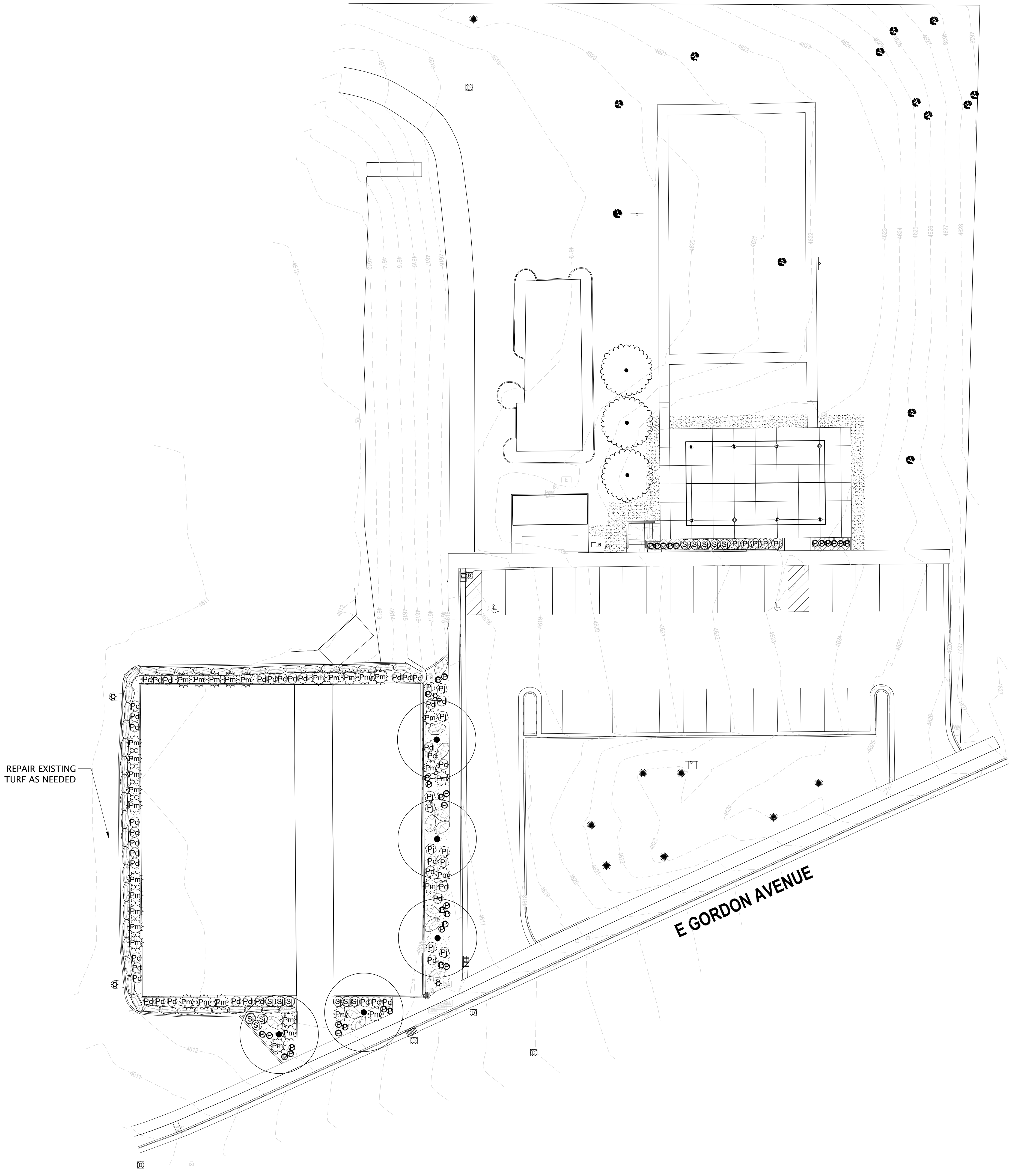
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**PLANT SCHEDULE**

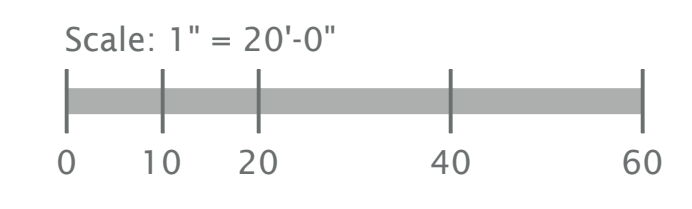
TREES	BOTANICAL / COMMON NAME
	CARPINUS BETULUS 'FASTIGIATA' / PYRAMIDAL EUROPEAN HORNBEAM
DECIDUOUS TREES	BOTANICAL / COMMON NAME
	PYRUS CALLERYANA 'CHANTICLEER' / CHANTICLEER GALLERY PEAR
SHRUBS	BOTANICAL / COMMON NAME
	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY' / LITTLE DEVIL™ DWARF NINEBARK
	PINUS MUGO 'PUMILIO' / DWARF MUGO PINE
	POTENTILLA FRUTICOSA 'JACKMANII' / JACKMAN'S BUSH CINQUEFOIL
	SPIRAEA BETULIFOLIA 'COURISPI01' PP27933 PINK SPARKLER™ / PINK SPARKLER™ BIRCH LEAF SPIRAEA
ORNAMENTAL GRASSES	BOTANICAL / COMMON NAME
	PENNISETUM ALOPECUROIDES 'HAMELN' / HAMELN DWARF FOUNTAIN GRASS
GROUND COVERS	BOTANICAL / COMMON NAME
	PLANTING BED - 4" SOIL PEP
	PLANTING BED - CRUSHED ANGULAR ROCK 4"-6" / OWNER TO SELECT COLOR
	POA PRATENSIS / KENTUCKY BLUEGRASS CONTRACTOR TO REPAIR SOD AS NEEDED.

**REFERENCE NOTES SCHEDULE**

SYMBOL	DESCRIPTION	QTY
	BLONDE "BROWNS CANYON" BOULDERS 3' - 5' DIAMETER: 1/3 @ 3' DIAMETER, 1/3 @ 4' DIAMETER AND 1/3 @ 5' DIAMETER. ALL BOULDER PLACEMENTS TO BE APPROVED BY OWNER.	12



BID SET






## LANDSCAPE NOTES:

- ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE LATEST AMERICAN PUBLIC WORKS ASSOCIATION (APWA) AND LAYTON STANDARDS, SPECIFICATIONS, AND DETAILS.
- ALL PLANT MATERIAL SHALL BE GROWN IN CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THIS WORK AND SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK, ANSI Z60.1 UNLESS OTHERWISE NOTED. PROVIDE TREES OF NORMAL GROWTH AND UNIFORM HEIGHTS, ACCORDING TO SPECIES, WITH STRAIGHT TRUNKS AND WELL DEVELOPED LEADERS, LATERALS, AND ROOTS.
- THE CONTRACTOR SHALL CALL BLUE STAKES AT 1-800-662-4111 FOR UNDERGROUND UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION OR EXCAVATION.
- EXISTING UTILITIES, EASEMENTS, AND STRUCTURES SHOWN ON THE DRAWINGS ARE IN ACCORDANCE WITH AVAILABLE RECORDS. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE, TYPE, AND STRUCTURES TO BE ENCOUNTERED ON THE PROJECT PRIOR TO ANY EXCAVATION AND CONSTRUCTION IN THE VICINITY OF THE EXISTING UTILITIES AND STRUCTURES.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITS, LICENSES, AND APPROVALS REQUIRED TO LEGALLY AND RESPONSIBLY COMPLETE THE WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL, DISPOSAL, OR RELOCATION OF ALL OBSTRUCTIONS AND DEBRIS WITHIN THE DELINEATED CONSTRUCTION AREA PRIOR TO STARTING NEW CONSTRUCTION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ANY DEBRIS RESULTING FROM NEW CONSTRUCTION.
- CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID DAMAGE TO EXISTING FEATURES AND FACILITIES SCHEDULED TO REMAIN AS PART OF THE FINISHED CONSTRUCTION. REPAIR, REPLACEMENT, AND/OR REMOVAL AS DETERMINED BY OWNER SHALL BE AT THE CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL ROUGH GRADE TO WITHIN +/- A TENTH OF A FOOT FROM FINISH GRADE. ALL TURF GRASS AREAS SHALL BE GRADED 6" BELOW PROPOSED FINISH GRADE. SHRUB BEDS SHALL BE GRADED 16" BELOW PROPOSED FINISH GRADE.
- ALL COMPACTED AREAS DEVELOPED THROUGH CONSTRUCTION WITHIN PROPOSED LANDSCAPE AREAS SHALL BE SCARIFIED AND LOOSENED TO A DEPTH OF 12" PRIOR TO LANDSCAPE AND IRRIGATION WORK BEGINNING.
- CONTRACTOR SHALL INSTALL A MIN. OF 4 INCHES OF PREMIUM OR AMENDED TOPSOIL FOR ALL TURF GRASS AREAS. INSTALL 12 INCHES OF PREMIUM OR AMENDED TOPSOIL IN ALL MANICURED SHRUB BEDS. ALL PLANTING PITS SHALL RECEIVE PLANTING BACKFILL MIX PER SPECIFICATIONS.
- CONTRACTOR SHALL INSTALL A MIN. OF 4 INCHES OF ROCK MULCH IN ALL SHRUB BEDS. APPLY PRE-EMERGENT TO ALL PLANTING BEDS BEFORE INSTALLING MULCH.
- NO PLANT SPECIES SUBSTITUTIONS WILL BE MADE WITHOUT APPROVAL OF OWNER.
- ALL PLANT LAYOUT SHALL BE VERIFIED AND APPROVED IN FIELD BY OWNER PRIOR TO PLANTING. FAILURE TO RECEIVE APPROVAL MAY RESULT IN RE-WORK BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- ALL AREAS WITHIN AND AFFECTED BY THIS PROJECT SHALL HAVE POSITIVE DRAINAGE. POSITIVE DRAINAGE SHALL BE PROVIDED TO DIRECT STORMWATER AWAY FROM ALL STRUCTURES.
- ALL CLARIFICATIONS OF DISCREPANCIES BETWEEN THE DRAWINGS AND THE SITE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO BEGINNING OF WORK.
- CONTRACTOR SHALL PROVIDE A ONE YEAR WARRANTY ON ALL PLANT MATERIAL FROM THE DATE OF FINAL ACCEPTANCE.

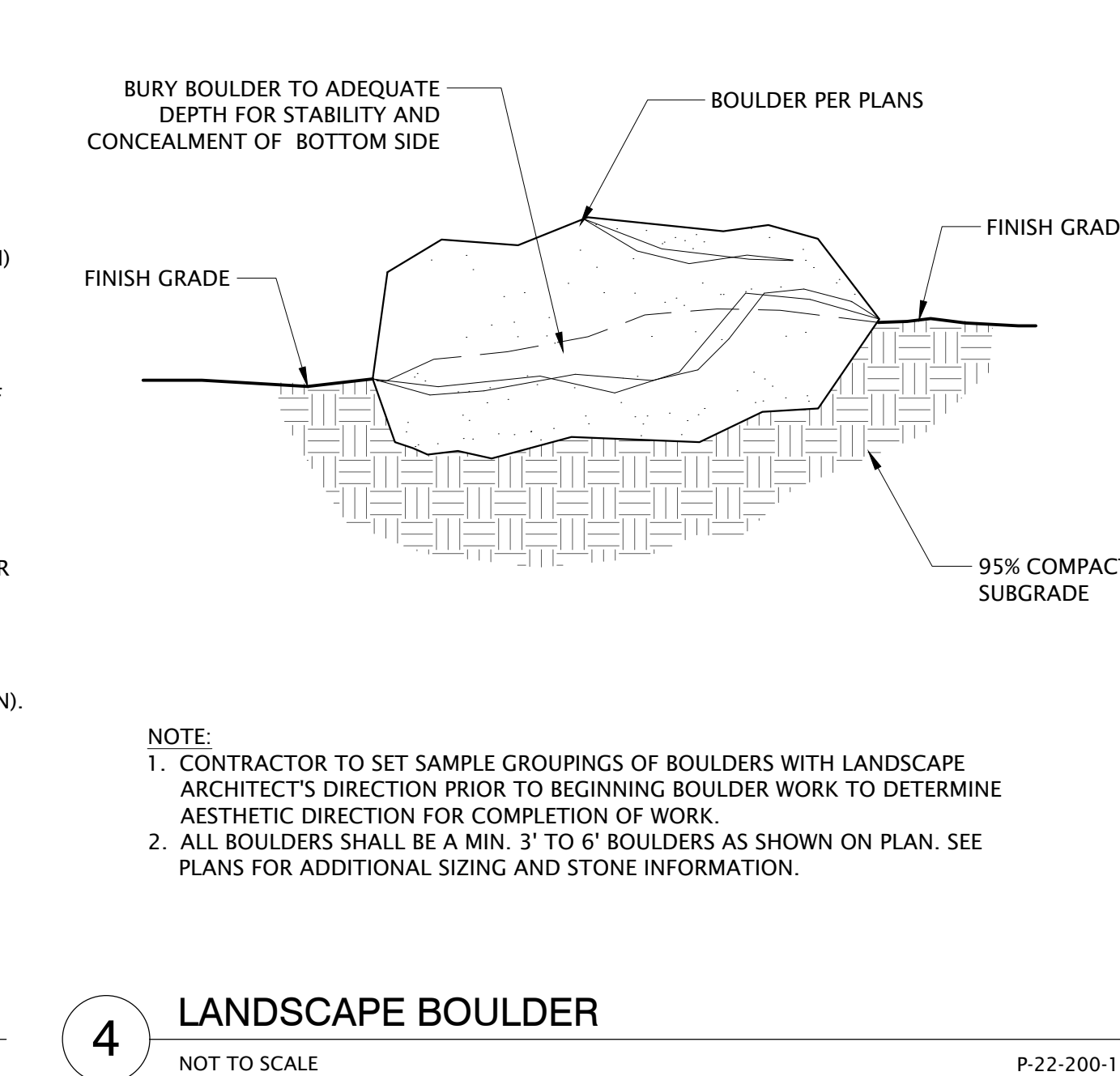
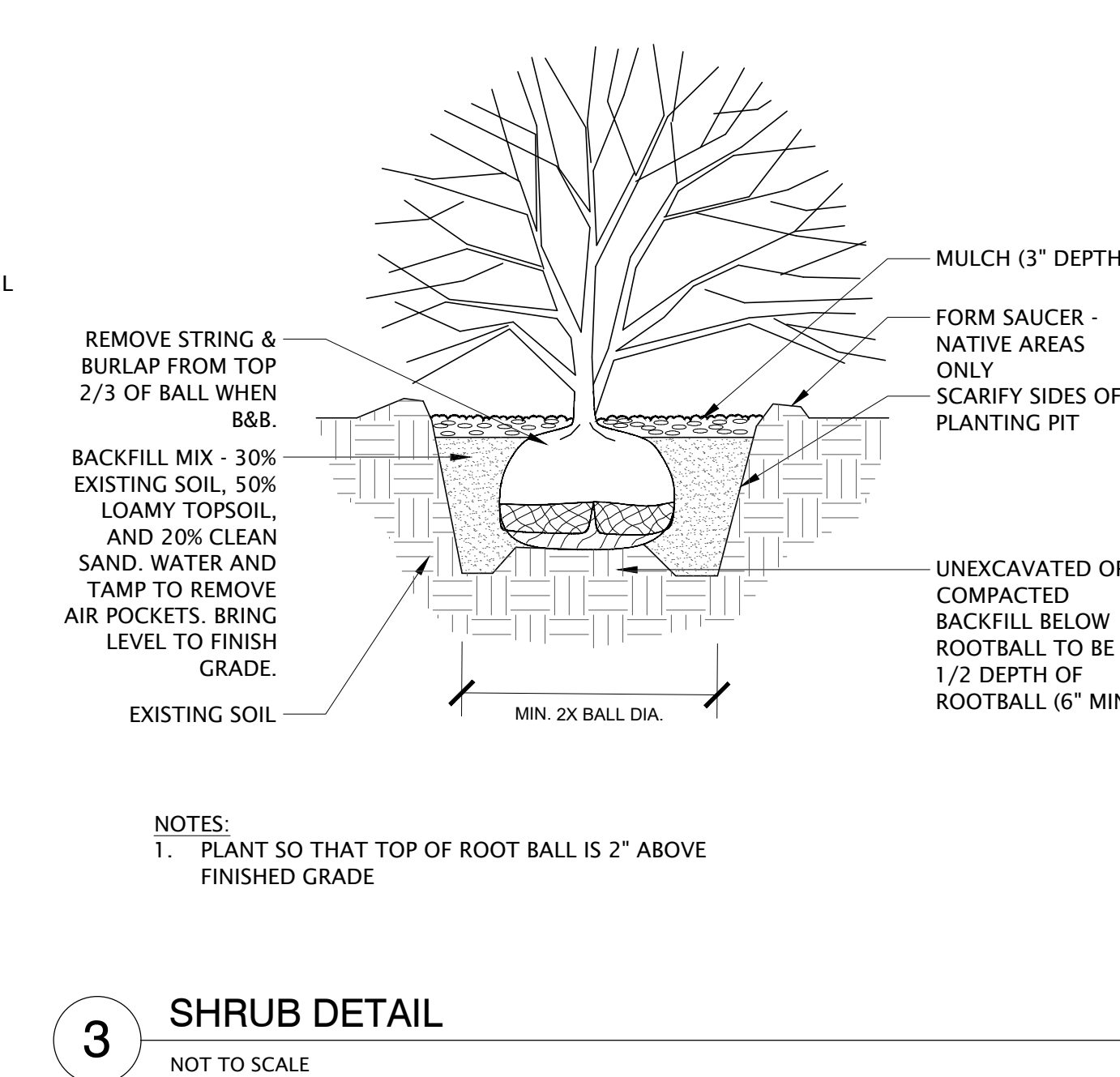
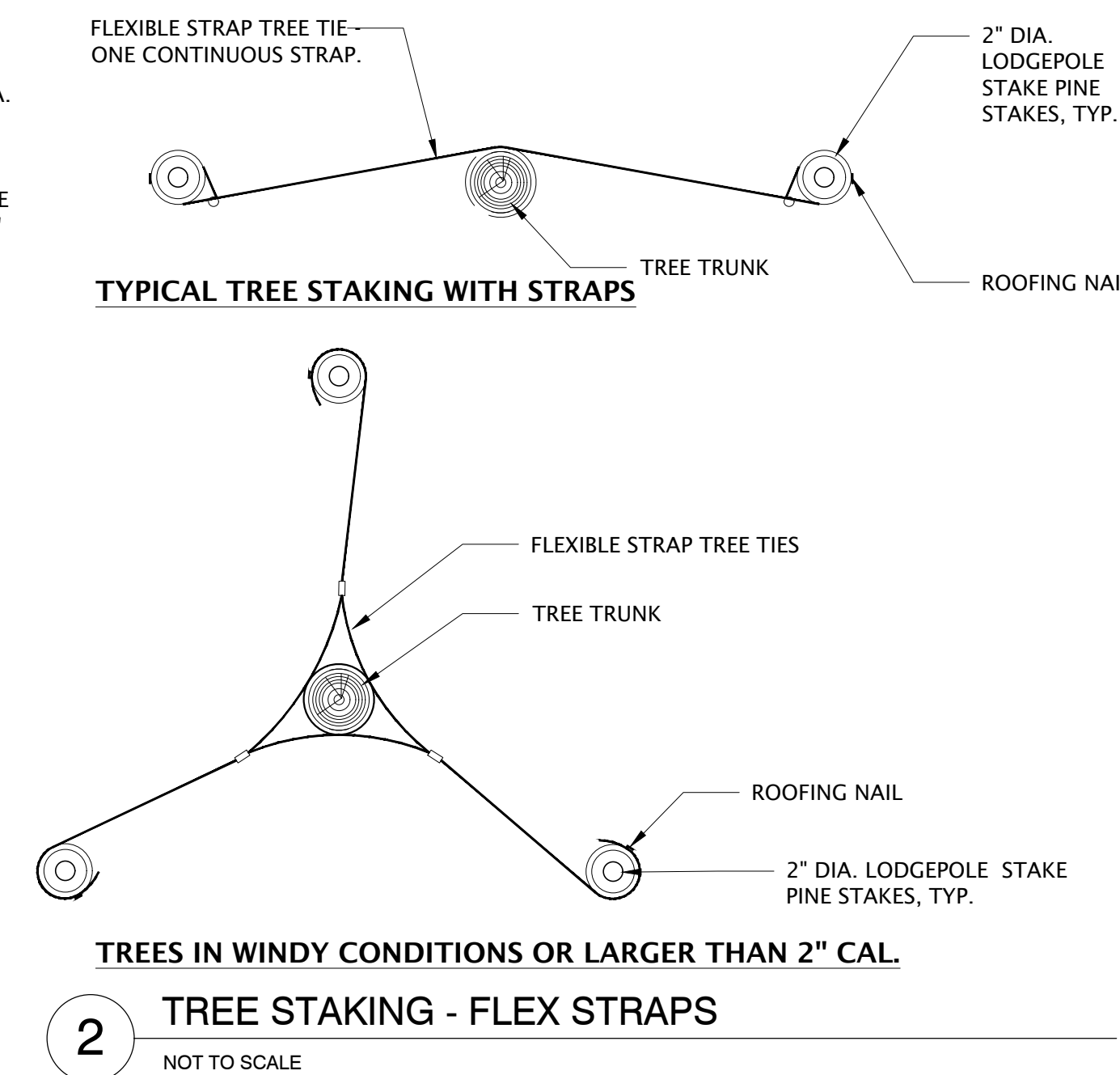
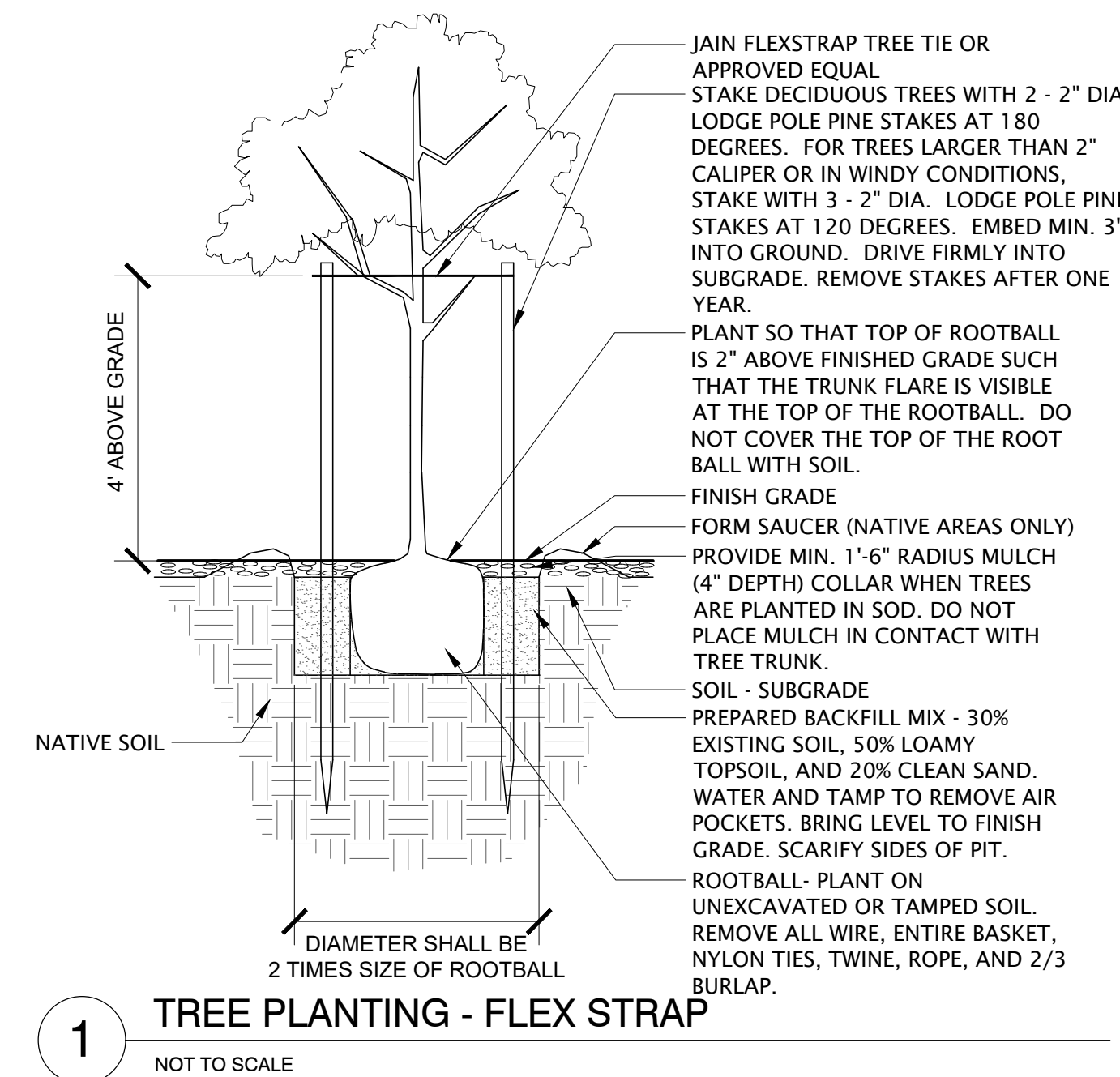
## PLANT SCHEDULE

TREES	BOTANICAL / COMMON NAME	CONT	CAL	QTY
	CARPINUS BETULUS 'FASTIGIATA' / PYRAMIDAL EUROPEAN HORNBEAM	B&B	2 1/2" CAL	5
DECIDUOUS TREES	BOTANICAL / COMMON NAME	CONT	CAL	QTY
	PYRUS CALLERYANA 'CHANTICLEER' / CHANTICLEER CALLERY PEAR	B&B	2 1/2" CAL	3
SHRUBS	BOTANICAL / COMMON NAME	CONT	HYDROZONE	QTY
	PHYSOCARPUS OPULIFOLIUS 'DONNA MAY' / LITTLE DEVIL™ DWARF NINEBARK	5 GAL		41
	PINUS MUGO 'PUMILIO' / DWARF MUGO PINE	5 GAL		33
	POTENTILLA FRUTICOSA 'JACKMANII' / JACKMAN'S BUSH CINQUEFOIL	5 GAL		15
	SPIRAEA BETULIFOLIA 'COURISPI01' PP27933 PINK SPARKLER™ / PINK SPARKLER™ BIRCH LEAF SPIRAEA	5 GAL		14
ORNAMENTAL GRASSES	BOTANICAL / COMMON NAME	CONT	HYDROZONE	QTY
	PENNISETUM ALOPECUROIDES 'HAMELN' / HAMELN DWARF FOUNTAIN GRASS	1 GAL		36
GROUND COVERS	BOTANICAL / COMMON NAME	CONT	SPACING	
	PLANTING BED - 4" SOIL PEP	BED		282 SF
	PLANTING BED - CRUSHED ANGULAR ROCK 4"-6" / OWNER TO SELECT COLOR	BED		2,788 SF
	POA PRATENSIS / KENTUCKY BLUEGRASS CONTRACTOR TO REPAIR SOD AS NEEDED.	SOD		1,026 SF

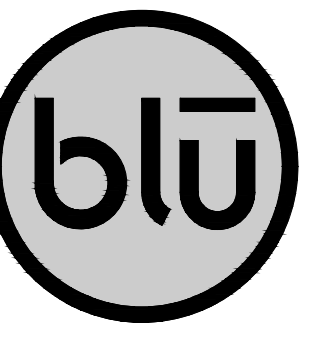
## REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION	QTY
	BLONDE "BROWNS CANYON" BOULDERS 3" - 5" DIAMETER; 1/3 @ 3" DIAMETER, 1/3 @ 4" DIAMETER AND 1/3 @ 5" DIAMETER. ALL BOULDER PLACEMENTS TO BE APPROVED BY OWNER.	12

\* ALL SHOWN QUANTITIES ARE PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR IS RESPONSIBLE TO CONDUCT INDEPENDENT TAKEOFFS TO ESTABLISH QUANTITIES. PLAN SYMBOL QUANTITIES OVERRIDE QUANTITIES SHOWN IN SCHEDULE.



P-22-200-18

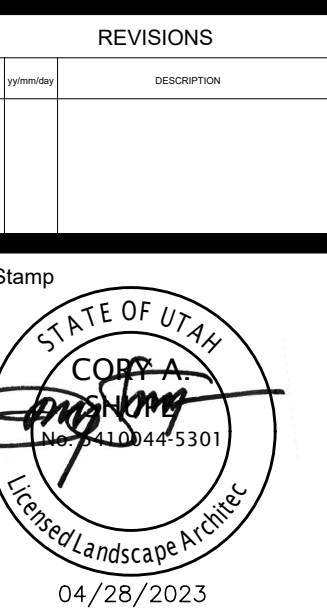


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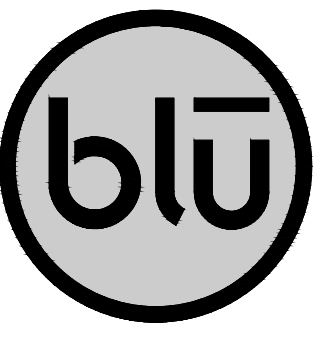


Designed By: TH  
Drawn By: TH  
Date: 04/28/2023  
Checked By: RD  
Project No: 22-200

Drawing Title  
LANDSCAPE PLAN NOTES,  
SCHEDULE, &  
DETAILS  
Drawing number

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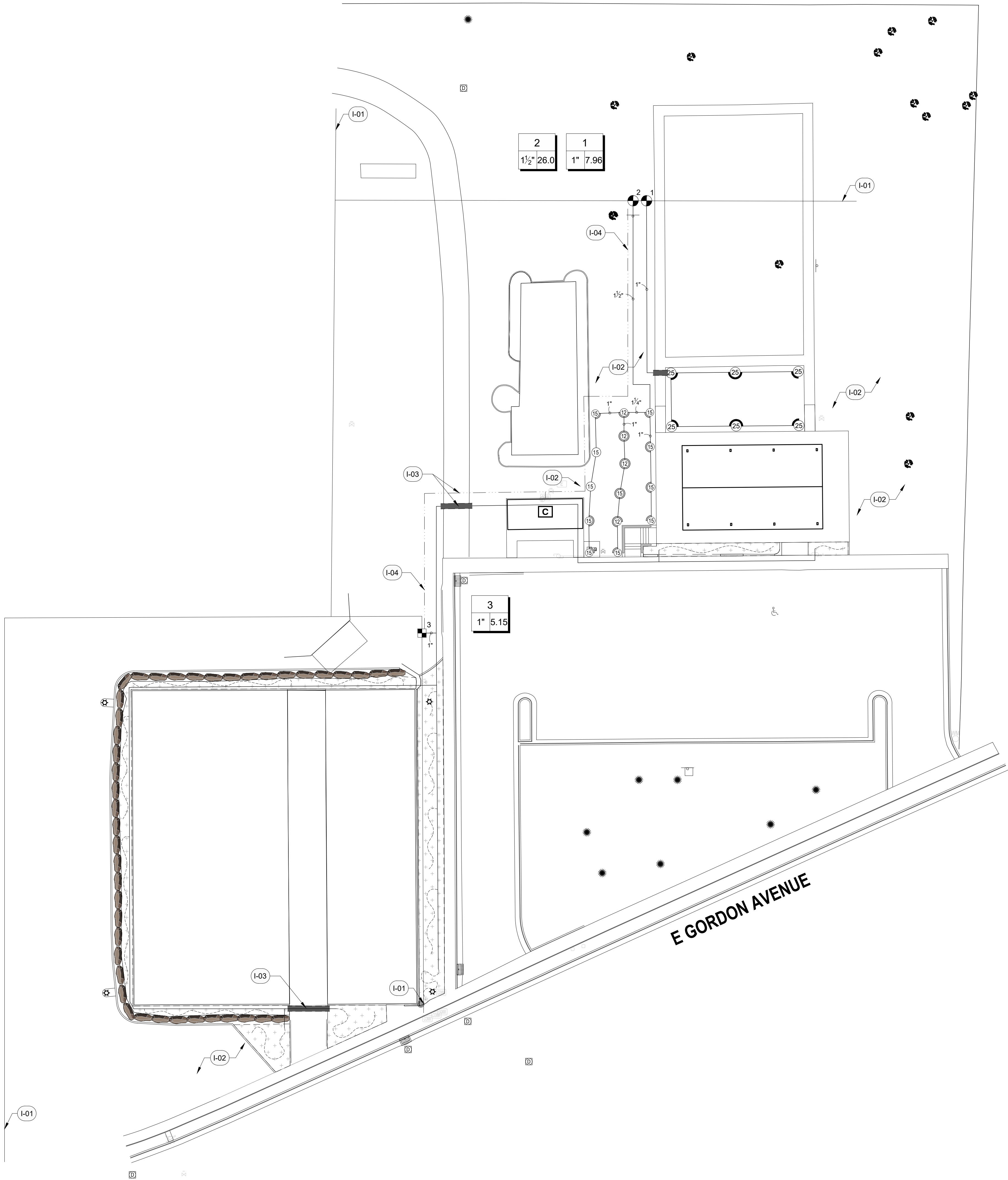
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REFERENCE NOTES SCHEDULE

SYMBOL	IRRIGATION DESCRIPTION
I-01	EXISTING MAINLINE, CONNECT NEW VALVES
I-02	MODIFY EXISTING IRRIGATION TO ACCOMODATE NEW LANDSCAPE IMPROVEMENTS. CONTRACTOR TO COORDINATE WITH OWNER FOR FIELD VERIFICATION OF EXISTING LATERALS. UTILIZE BEST MANAGEMENT PRACTICES TO MAINTAIN HEAD-TO-HEAD COVERAGE AND MAXIMIZE DISTRIBUTION UNIFORMITY.
I-03	BORE UNDER EXISTING PATH.
I-04	RUN NEW WIRES FROM EXISTING CONTROLLER TO NEW VALVES.

IRRIGATION\_SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION
Q T H TQ F	RAIN BIRD 1806-U-SAM-PRS U12 SERIES TURF SPRAY 6IN. POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2IN. NPT FEMALE THREADED INLET. WITH SEAL-A-MATIC CHECK VALVE, AND PRESSURE REGULATING.
Q T H TQ F	RAIN BIRD 1806-U-SAM-PRS U15 SERIES TURF SPRAY 6IN. POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2IN. NPT FEMALE THREADED INLET. WITH SEAL-A-MATIC CHECK VALVE, AND PRESSURE REGULATING.
8 10HE-VAN 12 15HE-VAN	RAIN BIRD 1806-U-SAM-PRS HE-VAN SERIES TURF SPRAY 6IN. POP-UP SPRINKLER WITH CO-MOLDED WIPER SEAL. 1/2IN. NPT FEMALE THREADED INLET. WITH SEAL-A-MATIC CHECK VALVE, AND PRESSURE REGULATING.
25	RAIN BIRD 5006-PL-PC-SAM-R-MPR 25
■	RAIN BIRD XCZ-100-PRB-COM WIDE FLOW DRIP CONTROL KIT FOR COMMERCIAL APPLICATIONS. 1IN. BALL VALVE WITH 1IN. PESB VALVE AND 1IN. PRESSURE REGULATING 40PSI QUICK-CHECK BASKET FILTER. 0.3 GPM-20 GPM
+	AREA TO RECEIVE DRIP EMITTERS RAIN BIRD XBCV-PC SINGLE OUTLET, PRESSURE COMPENSATING DRIP EMITTERS. FLOW RATES OF 0.5 GPH=BLUE, 1.0 GPH=BLACK, AND 2.0 GPH=RED. COMES WITH A SELF-PIERCING BARB INLET X BARB OUTLET. WITH CHECK VALVE Emitter Notes: 20PC emitters (1 assigned to each 1 Gal plant) 20PC emitters (2 assigned to each 5 Gal plant) 20PC emitters (6 assigned to each 2" Cal. plant) 20PC emitters (6 assigned to each B & B, 2"Cal plant)
■	RAIN BIRD PESB 1IN., 1-1/2IN., 2IN. PLASTIC INDUSTRIAL VALVES. LOW FLOW OPERATING CAPABILITY. GLOBE CONFIGURATION. WITH SCRUBBER TECHNOLOGY FOR RELIABLE PERFORMANCE IN DIRTY WATER IRRIGATION APPLICATIONS.
C	EXISTING CONTROLLER EXTERIOR ACCES TO CONTROLLER ON NORTH SIDE OF BUILDING.
—	IRRIGATION LATERAL LINE: PVC SCHEDULE 40
—	PIPE SLEEVE: PVC SCHEDULE 40
~	DRIP DISTRIBUTION TUBING - RAIN BIRD XT-700 (MAXIMUM FLOW 4 GPM (240 GPH), MAXIMUM LENGTH 100')
Valve Callout	Valve Number Valve Flow Valve Size



BID SET

REVISIONS	
NO.	DESCRIPTION

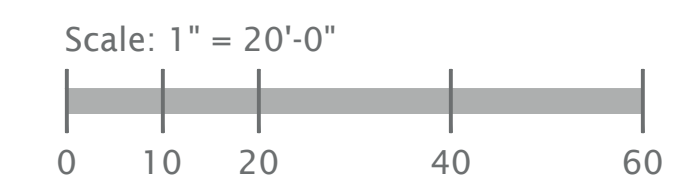
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 STATE OF UTAH  
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 LICENSED LANDSCAPE ARCHITECT  
 04/28/2023

Designed By: TH  
 Drawn By: TH  
 Date: 04/28/2023  
 Checked By: RD  
 Project No: 22-200

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 IRRIGATION PLAN

Drawing number

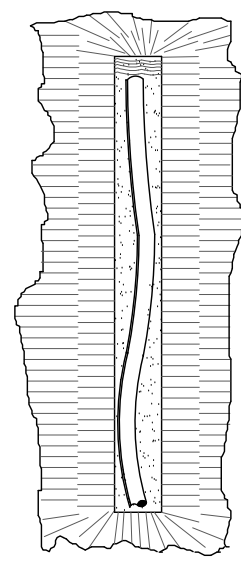
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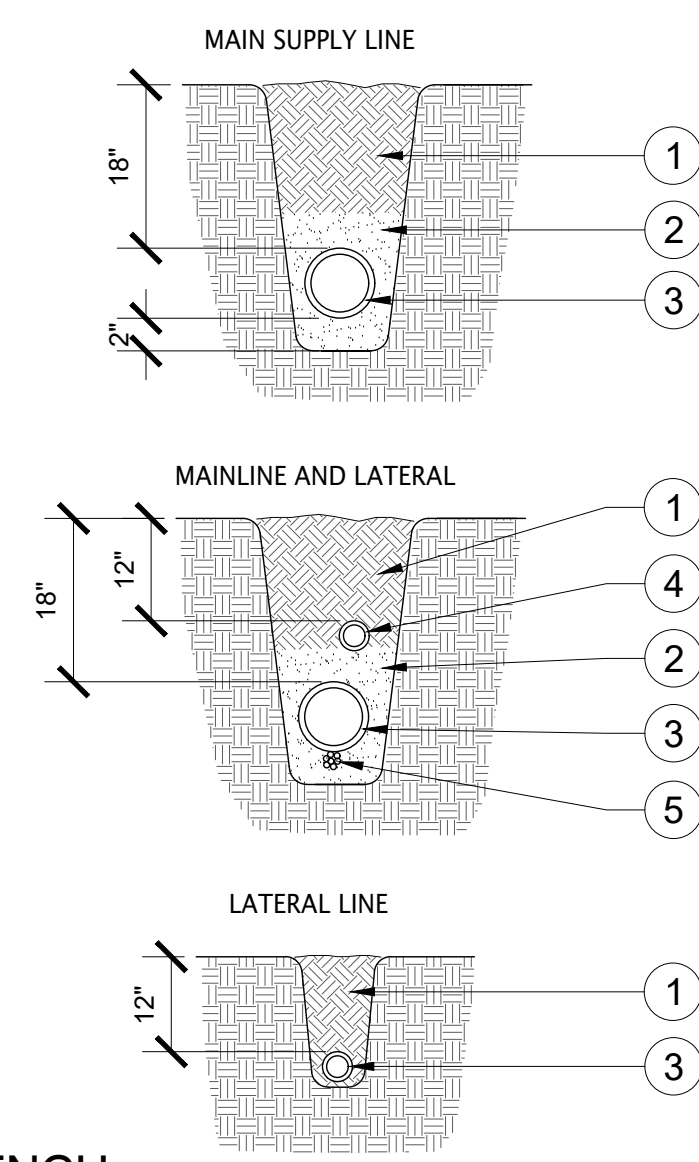
**IRRIGATION NOTES**

- THIS DRAWING IS DIAGRAMMATIC AND IS INTENDED TO CONVEY THE GENERAL LAYOUT OF IRRIGATION SYSTEM COMPONENTS. ALL IRRIGATION EQUIPMENT SHALL BE INSTALLED IN PLANTING AREAS WHEREVER POSSIBLE. LOCATE MAINLINE AND VALVES NEAR WALKS WHERE FEASIBLE.
- THE CONTRACTOR SHALL VERIFY THE AVAILABLE WATER PRESSURE AT THE SITE PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES BETWEEN THE WATER PRESSURE SHOWN ON THE DRAWINGS AND ACTUAL PRESSURE READINGS AT THE POINT OF CONNECTION TO THE LANDSCAPE ARCHITECT. WATER PRESSURE AT THE POINT OF CONNECTION IS EXPECTED TO BE A MINIMUM OF 75 PSI. IN THE EVENT THAT PRESSURE DIFFERENCES ARE NOT REPORTED PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FAMILIARIZE HIMSELF WITH ALL STRUCTURES, SITE IMPROVEMENTS, WALKS, UTILITIES, AND GRADE CHANGES. COORDINATE LAYOUT OF THE IRRIGATION SYSTEM WITH OTHER TRADES SO THAT CONSTRUCTION CAN CONTINUE IN A NORMAL SEQUENCE OF EVENTS. ADJUSTMENTS MAY BE NECESSARY TO MAINTAIN FULL COVERAGE DEPENDING ON ACTUAL SITE CONDITIONS. ANY SIGNIFICANT CHANGES WILL REQUIRE WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO PLACEMENT. ALL MODIFICATIONS SHALL BE RECORDED ON 'AS-BUILT' DRAWINGS.
- DO NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM WHEN IT IS APPARENT IN THE FIELD THAT UNKNOWN OBSTRUCTIONS OR GRADING DIFFERENCES MAY NOT HAVE BEEN CONSIDERED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. IN THE EVENT THAT THIS NOTIFICATION IS NOT PERFORMED, CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
- CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT SITE CONDITIONS AND EXISTING IRRIGATION SYSTEM (IF ANY). IN THE EVENT THAT THE CONTRACTOR DAMAGES, DISPLACES OR OTHERWISE CAUSES OTHER TRADES WORK TO BE REINSTALLED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ORIGINAL CONDITION AT HIS OWN EXPENSE.
- THE CONTRACTOR SHALL FLUSH AND ADJUST ALL SPRINKLER HEADS AND VALVES FOR OPTIMUM PERFORMANCE. INSTALL HEADS WITH THE APPROPRIATE ARC AND RADIUS FOR THE AREA TO BE COVERED. ADJUST NOZZLES TO ELIMINATE OVERSPRAY ONTO WALKS, BUILDINGS, ETC.
- IRRIGATION CONTROLLER(S) SHALL BE GROUNDED PER ESTABLISHED ASIC GUIDELINES.
- IRRIGATION CONTROL WIRES SHALL BE COLOR CODED WIRE FOR DIRECT BURIAL. COMMON, HOT, & SPARE WIRES SHALL BE 14 AWG (WHITE, RED & YELLOW RESPECTIVELY). FOR CONTROL WIRE RUNS EXCEEDING 3000 FEET OR COMMON WIRE RUNS EXCEEDING 1500 FEET, USE 12 AWG WIRE. CONTRACTOR SHALL RUN 1 DEDICATED SPARE WIRE 'HOMERUN' FROM CONTROLLER TO TERMINUS OF EACH WIRE LEG. WHERE REQUIRED, COMMUNICATION WIRE TO FLOW SENSOR SHALL BE PAIGE ELECTRIC PE-39-3 CABLE. ALL WIRE SPLICES TO BE LOCATED IN VALVE BOX. ALL WIRE CONNECTIONS SHALL BE 3M DBRY.
- ALL MAINLINES, LATERAL LINES, AND CONTROL WIRES UNDER PAVING SHALL BE INSTALLED IN SEPARATE SLEEVES.
- ALL MAINLINE AND LATERAL LINE PIPE SHALL BE SCHEDULE 40 PVC THROUGH 3" PIPE. 4" TO 6" PIPE SHALL BE CLASS 200 PVC. ALL LATERAL LINE FITTINGS SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. ALL MAINLINE FITTINGS UNDER 3" SHALL BE SCHEDULE 80 PVC. MAINLINE FITTINGS 3" AND LARGER SHALL BE HARCO DUCTILE IRON, RESTRAIN PER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL USE WELD-ON P-70 PRIMER AND 711 LOW VOC CEMENT FOR ALL SOLVENT WELDED JOINTS.
- ALL LINES SHALL SLOPE TO DRAIN. ADD MANUAL DRAINS AT ALL MAINLINE LOW POINTS AS NECESSARY FOR COMPLETE DRAINAGE OF THE ENTIRE SYSTEM. INDICATE ALL DRAIN LOCATIONS ON 'AS-BUILT' DRAWINGS.
- ALL VALVE BOXES AND LIDS IN ROCK MULCH AREAS ARE TO BE TAN IN COLOR. VALVE BOXES AND LIDS IN BARK MULCH AND LAWN AREAS ARE TO BE STANDARD GREEN. ALIGN VALVE BOXES PARALLEL WITH EDGE OF PAVEMENT/PLANTING BEDS. WHERE FEASIBLE, LOCATE THE EDGE OF VALVE BOX 12"-18" FROM EDGE OF PAVEMENT.
- ALL SPRINKLER HEADS SHALL BE SET PERPENDICULAR TO FINISH GRADE. HEADS SHALL BE LOCATED 1" AWAY FROM AND 1/4" BELOW ADJACENT CURBS, WALLS, WALKS, AND MOWSTRIPS.
- DRIP DISTRIBUTION TUBING TO BE BURIED BELOW MULCH AND STAKED AT MIN. 6" O.C. DRIP FITTINGS SHALL BE BARBED INSERT TYPE FITTINGS, COMPRESSION TYPE FITTINGS WILL NOT BE ACCEPTED. EMITTERS SHALL BE LOCATED ON UPHILL SIDE OF PLANTS. INSTALL DRIP FLUSH VALVE AT LOW POINT OF EACH DRIP ZONE AND AT THE END DRIP LINES.
- GUARANTEE: ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF ACCEPTANCE AGAINST ALL DEFECTS IN MATERIAL, EQUIPMENT, AND WORKMANSHIP. GUARANTEE SHALL COVER REPAIR OF DAMAGE TO ANY PART OF THE PREMISES RESULTING FROM LEAKS OR OTHER DEFECTS IN MATERIAL, EQUIPMENT, OR WORKMANSHIP TO THE SATISFACTION OF THE OWNER. REPAIRS, IF REQUIRED, SHALL BE DONE PROMPTLY AND AT NO ADDITIONAL COST TO THE OWNER.
- SEE DETAILS FOR ADDITIONAL INFORMATION. ALL IRRIGATION EQUIPMENT NOT OTHERWISE DETAILED SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.

**PLAN VIEW**



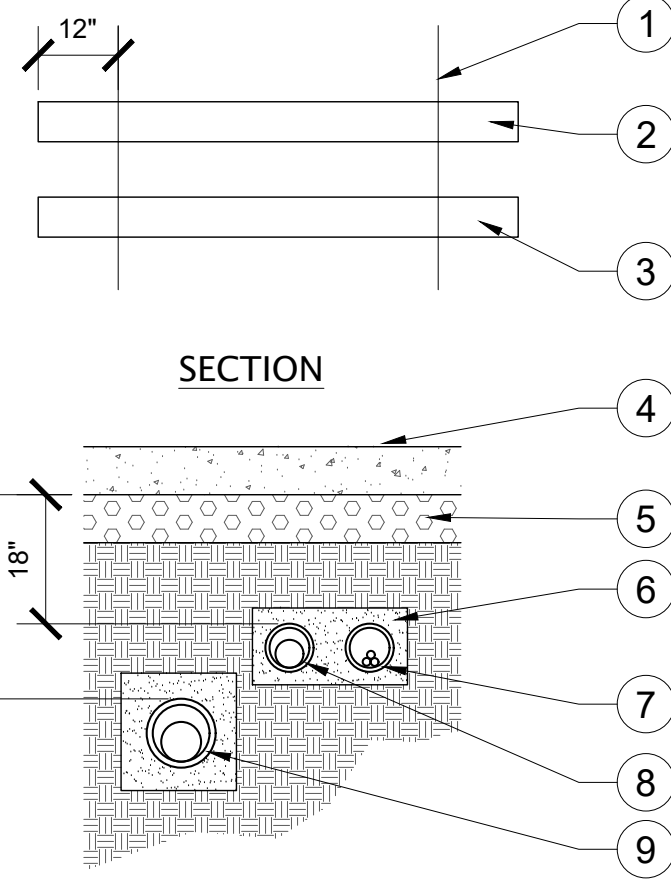
**SECTIONS**



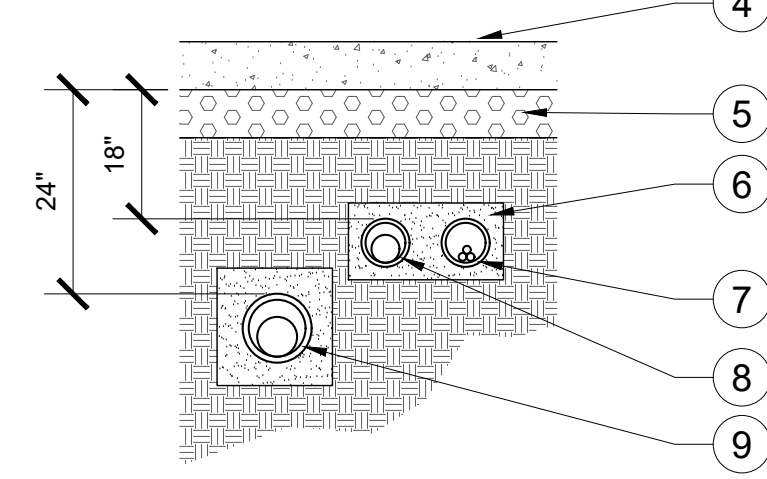
- DEBRIS FREE FILL
- DEBRIS FREE SAND, 2" ABOVE AND BELOW MAINLINE.
- MAINLINE
- LATERAL LINE
- TUBING OR WIRING TO BE TAPED TO MAINLINE EVERY 10'-0"

- NOTES:
- TAPE AND BUNDLE TUBING OR WIRING AT 10' INTERVALS
  - ALL 120 VOLT WIRING IN CONDUIT TO BE INSTALLED AS PER LOCAL CODES
  - ALL PVC PIPING TO BE SNAKED IN TRENCHES AS SHOWN
  - ALL TRENCH WIDTHS 8" MINIMUM

**PLAN VIEW**



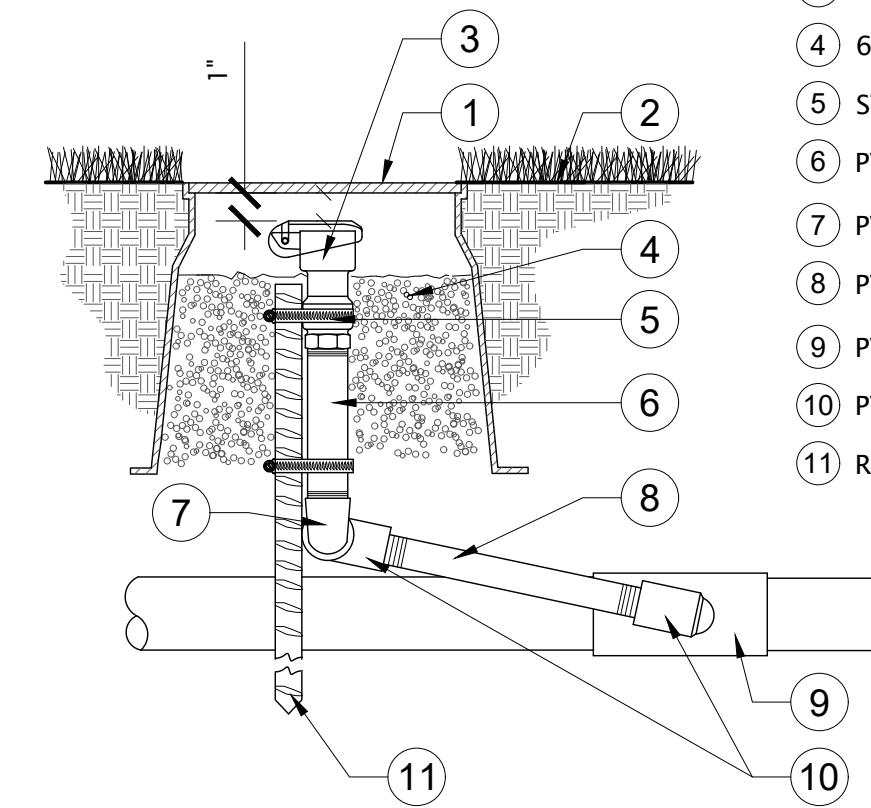
**SECTION**



- PAVING SURFACE EDGE
- SLEEVE, TYP.
- EXTEND ALL SLEEVING MIN. OF 12" BEYOND EDGE OF PAVING, TYP.
- PAVING SURFACE
- COMPACTED BASE
- SURROUND SLEEVE WITH 3" OF DEBRIS-FREE SAND.
- IRRIGATION WIRES SLEEVE
- LATERAL SLEEVING
- MAIN LINE SLEEVE

- NOTES:
- SEE NOTES (IRRIGATION LEGEND) FOR SLEEVE SIZING.
  - 4" MIN. CLEARANCE IN ANY DIRECTION BETWEEN LATERALS, MAINLINE, OR SLEEVING.

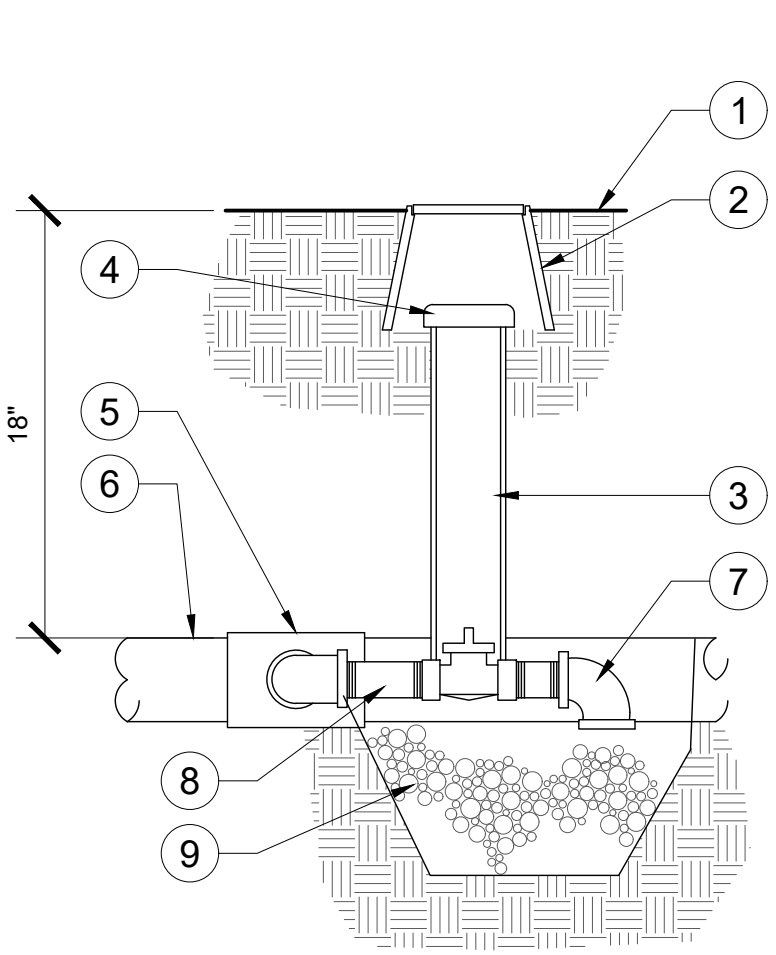
- ROUND VALVE BOX: EXTENSION LENGTH AS REQ'D.
- FINISH GRADE
- QUICK COUPLING VALVE
- 6" DEEP PEA GRAVEL
- STAINLESS STEEL GEAR CLAMPS (1 OF 2)
- PVC. SCH. 80 NIPPLE (6" LENGTH)
- PVC. SCH. 80 STREET EL
- PVC. SCH. 80 NIPPLE (8" LENGTH)
- PVC. SCH. 80 TEE
- PVC. SCH. 80 ELL
- REBAR STAKE (24" LENGTH)



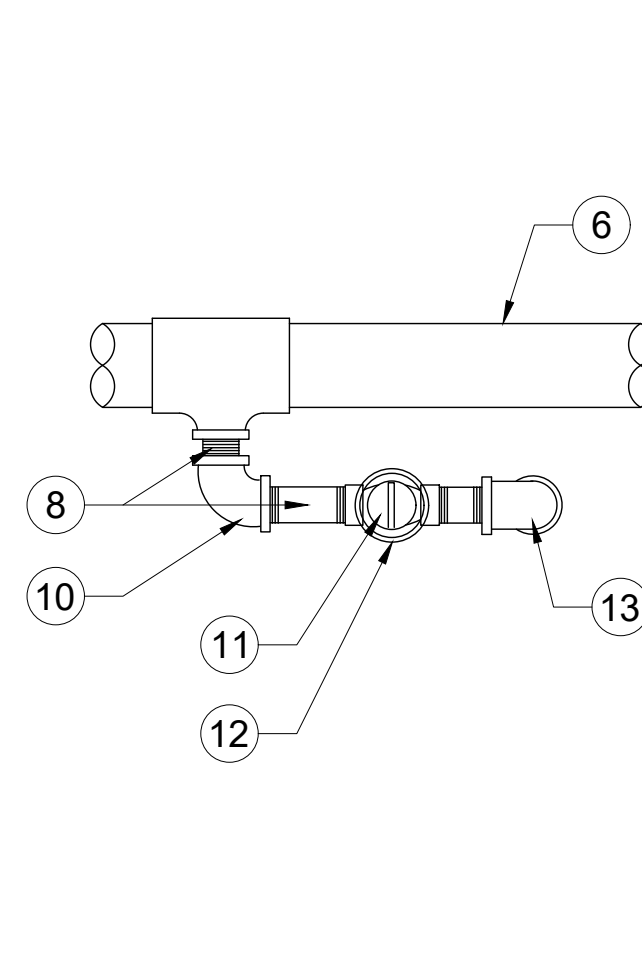
**1 PIPE TRENCH**  
NOT TO SCALE

**2 PIPE SLEEVE**  
NOT TO SCALE

**3 QUICK COUPLER**  
NOT TO SCALE

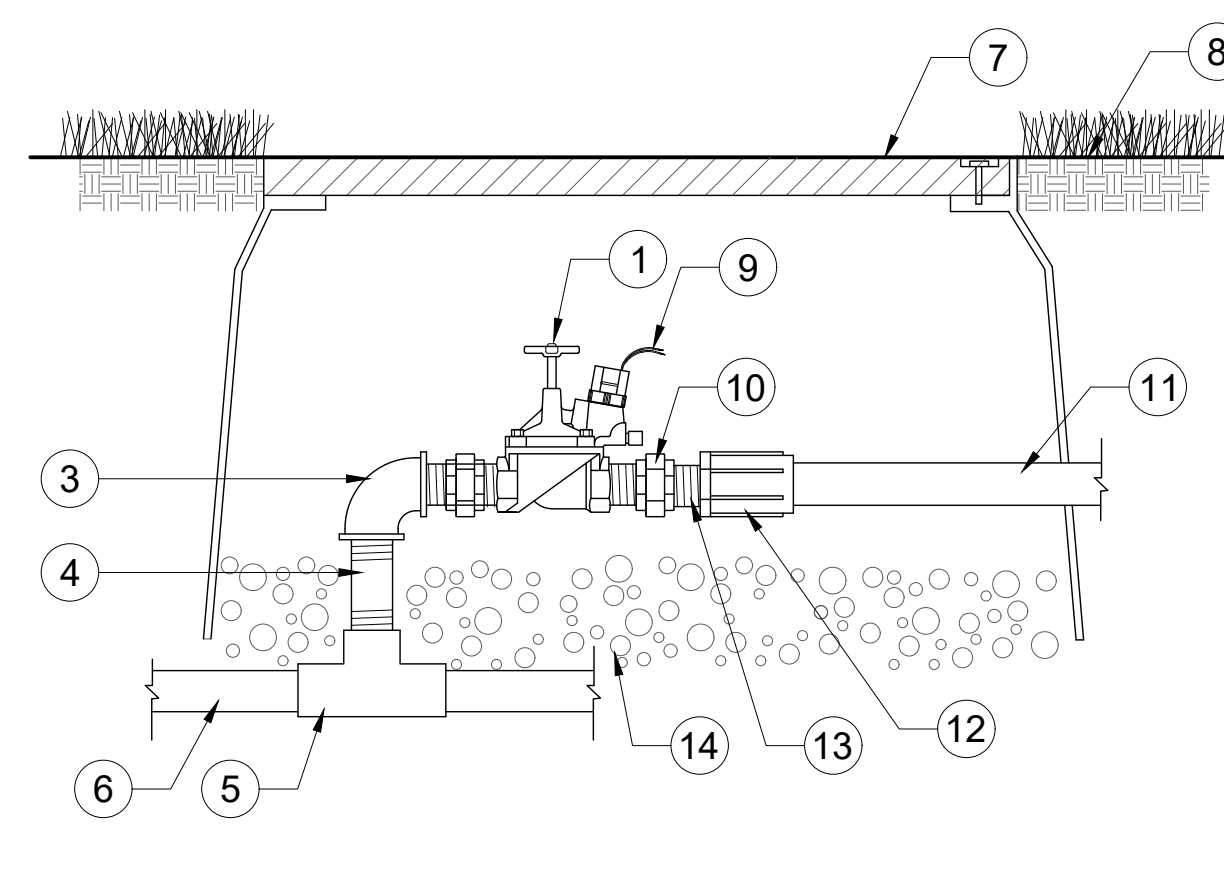


**SIDE VIEW**



**TOP VIEW**

- FINISH GRADE
- ROUND VALVE BOX
- 2" CLASS 200 PVC SLEEVE
- CAP
- TEE IN MAIN LINE
- MAIN LINE
- MARLEX STREET ELL
- 3/4" SCH. 80 PVC THREADED NIPPLE AND ELBOW
- 1 CU. FT. PEA GRAVEL SUMP
- 3/4" ELBOW
- MANUAL DRAIN
- 2" CLASS 200 PVC SLEEVE
- MARLEX STREET ELL

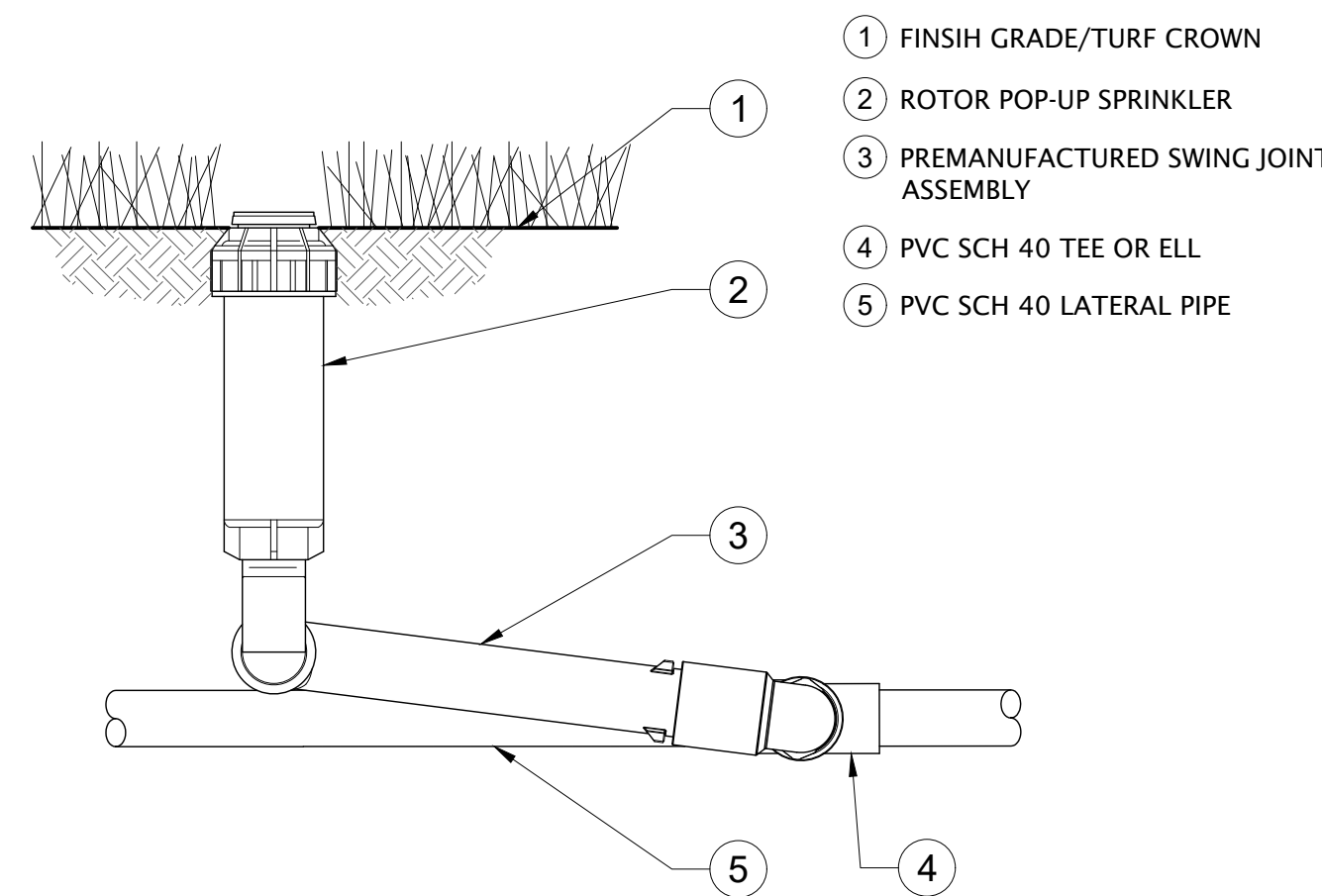


- NOTES:
- ALL IRRIGATION CONTROL WIRE SPLICES ARE TO BE MADE USING 3M DBRY SPLICE.
  - ALL VALVE BOXES AND LIDS IN ROCK MULCH AREAS ARE TO BE TAN IN COLOR. VALVE BOXES AND LIDS IN BARK MULCH AND LAWN AREAS TO BE STANDARD GREEN.

- AUTOMATIC CONTROL VALVE SEE LEGEND SHEET FOR TYPE.
- SCH. 80 PVC THREADED NIPPLE
- SCH. 80 PVC THREADED ELL
- SCH. 80 PVC THREADED NIPPLE
- PVC MAINLINE TEE (SXSXT)
- MAINLINE (SIZE AS NOTED ON THE PLAN)
- VALVE BOX, SIZE AS REQUIRED
- FINISH GRADE
- SLACK WIRE AT ALL CONNECTIONS PROVIDE 12" OF EXPANSION LOOP INSIDE VALVE BOX.
- SCHEDULE 80 ACTION UNION (BOTH SIDES)
- LATERAL LINE TO HEADS
- PVC ADAPTOR TYP.
- SCHEDULE 80 PVC CLOSE NIPPLE ON BOTH SIDES OF UNION
- GRAVEL LAYER (12" MIN. DEPTH)

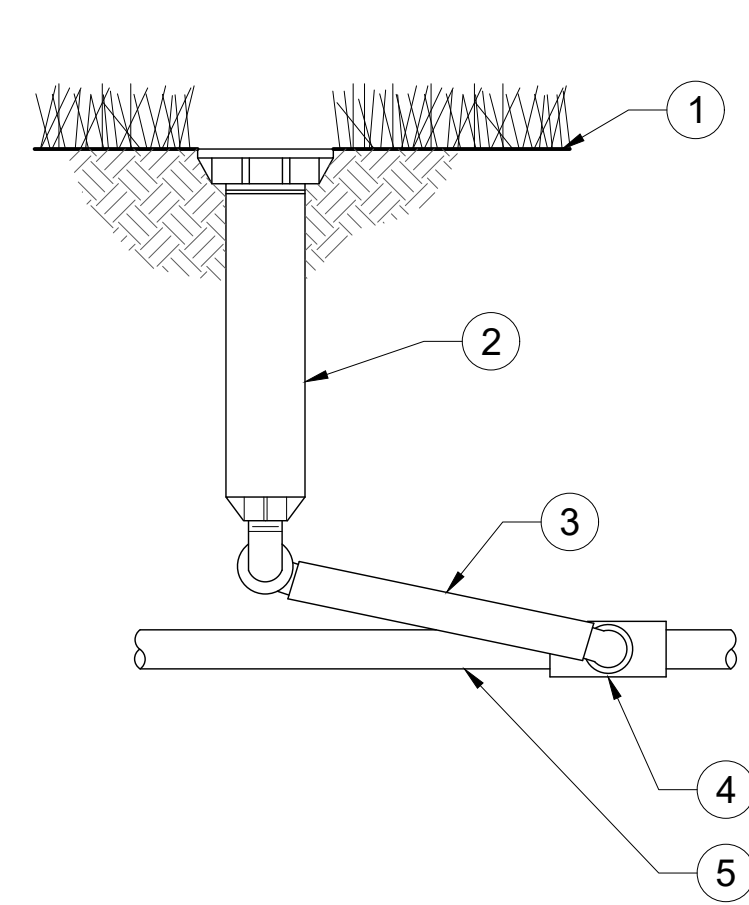
**4 MANUAL DRAIN VALVE**  
NOT TO SCALE

**5 IRRIGATION CONTROL VALVE**  
NOT TO SCALE



- FINISH GRADE/TURF CROWN
- ROTOR POP-UP SPRINKLER
- PREMANUFACTURED SWING JOINT ASSEMBLY
- PVC SCH 40 TEE OR ELL
- PVC SCH 40 LATERAL PIPE

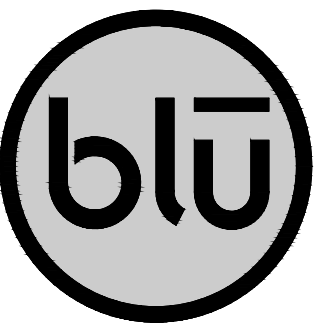
- NOTES:
- SWING JOINT ASSEMBLY: TWO SPIRAL BARB ELBOWS, SBE-050, 12-24" SWING PIPE, AND ONE 1/2" MARLEX STREET ELBOW.
  - USE NOZZLE SPECIFIED ON PLAN.



- NOTES:
- SWING JOINT ASSEMBLY: TWO SPIRAL BARB ELBOWS, 12-24" SWING PIPE, AND ONE 1/2" MARLEX STREET ELBOW.
  - USE FIXED SPRAY NOZZLES WHENEVER POSSIBLE.

**6 POP UP ROTOR**  
NOT TO SCALE

**7 POP-UP SPRAY/ROTARY**  
NOT TO SCALE



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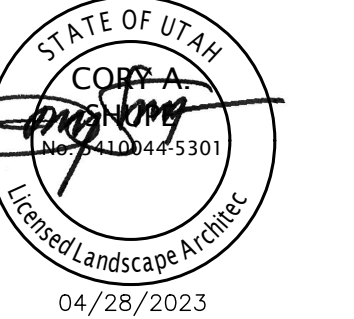
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**REVISIONS**

NO.	DATE	DESCRIPTION

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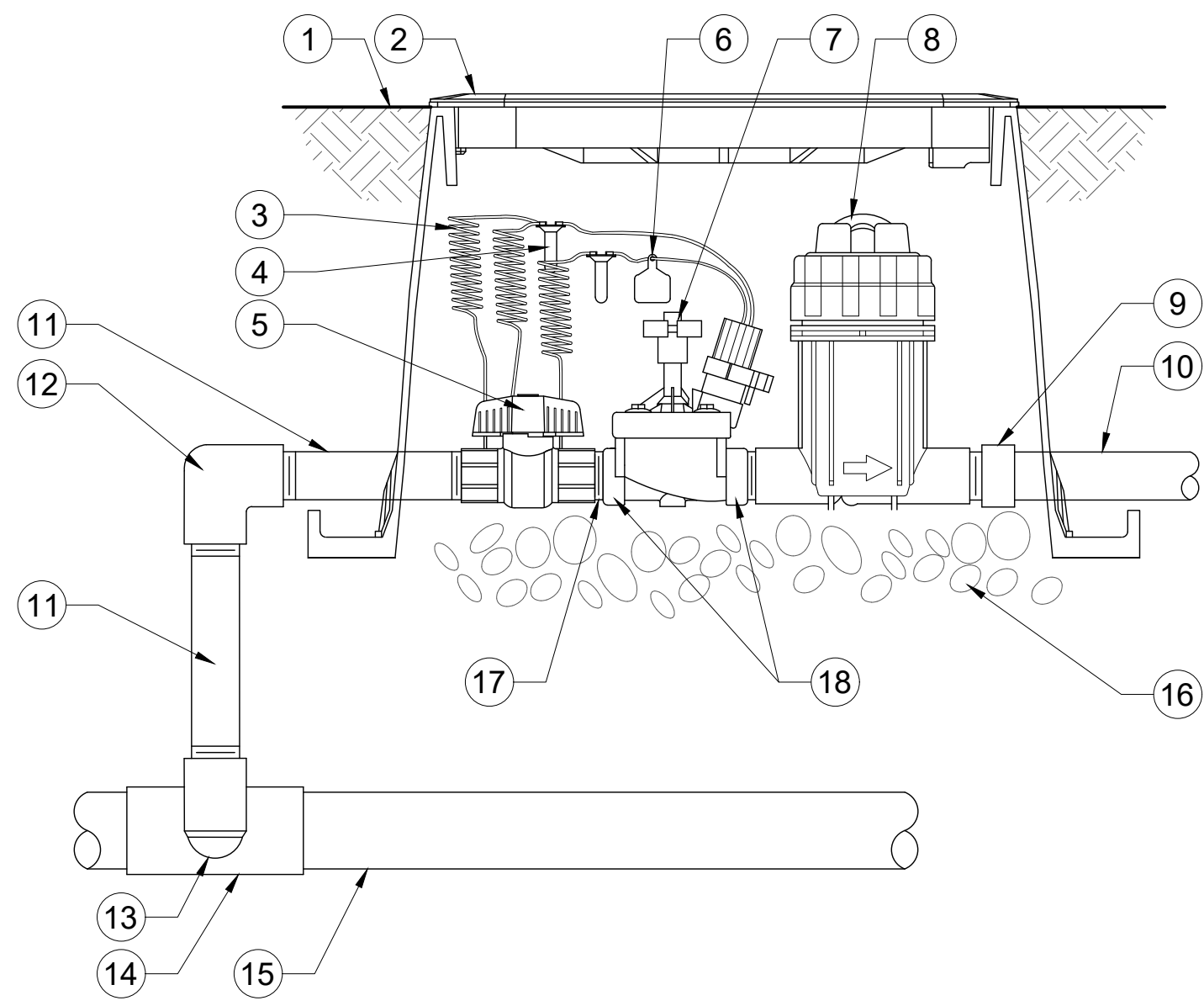
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PLAN NOTES,  
SCHEDULE, &  
DETAILS

Drawing number

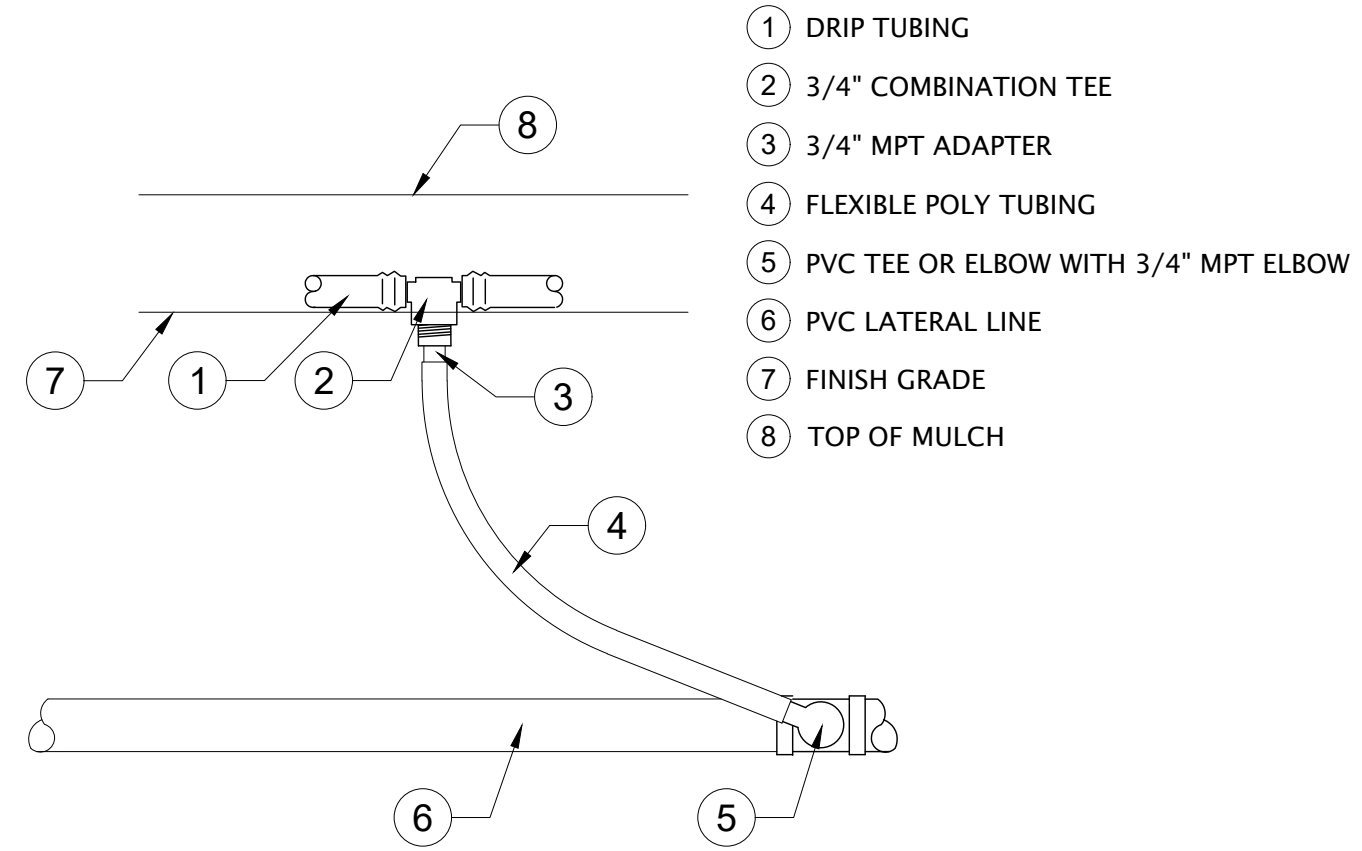
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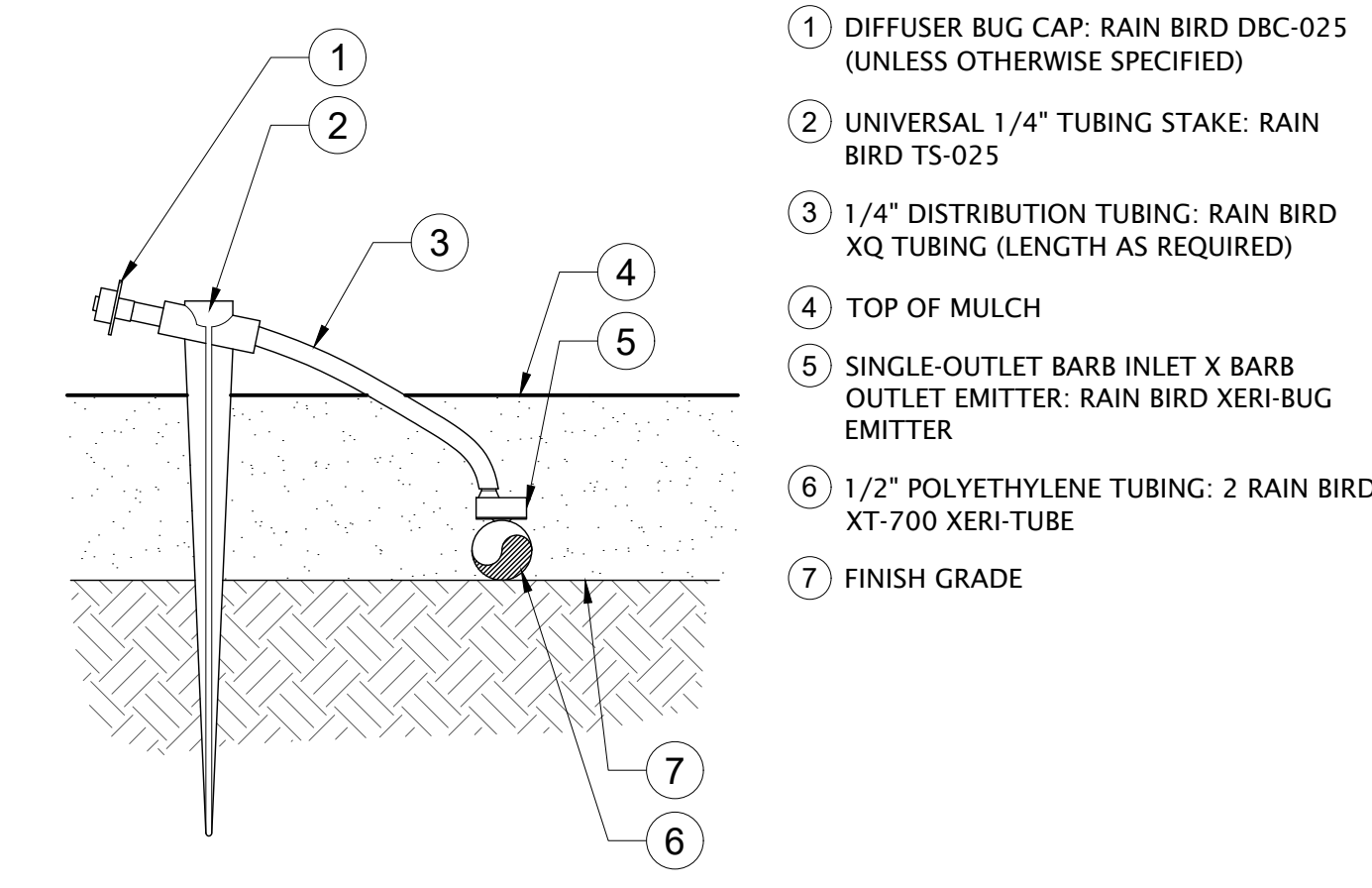
**1 DRIP CONTROL ZONE KIT (RAINBIRD)**  
NOT TO SCALE

- 1 FINISH GRADE/TOP OF MULCH
- 2 VALVE BOX WITH COVER: RAIN BIRD VB-STD
- 3 30-INCH LINEAR LENGTH OF WIRE, COILED
- 4 WATERPROOF CONNECTION: RAIN BIRD DB SERIES
- 5 1 INCH BALL VALVE (INCLUDED IN XCZ-PRB-100 KIT)
- 6 ID TAG
- 7 REMOTE CONTROL VALVE: RAIN BIRD PESB (INCLUDED IN XCZ-100-PRB-COM KIT)
- 8 PRESSURE REGULATING QUICK CHECK BASKET FILTER: RAIN BIRD PRB-QKCHK-100 (INCLUDED IN XCZ-100-PRB-COM KIT)
- 9 PVC SCH 40 FEMALE ADAPTOR
- 10 LATERAL PIPE
- 11 PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
- 12 PVC SCH 40 ELL
- 13 PVC SCH 80 NIPPLE (2-INCH LENGTH, HIDDEN) AND PVC SCH 40 ELL
- 14 PVC SCH 40 TEE OR ELL
- 15 MAINLINE PIPE
- 16 3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
- 17 PVC SCH 80 NIPPLE, CLOSE (INCLUDED IN XCZ KIT)
- 18 ACTION MANIFOLD FITTINGS, (2 EA.) BUTTRESS NIPPLE 18011-X SPIGOT/SLIP ADAPTOR 18012-X



- NOTES:
1. INSTALL A MINIMUM OF ONE PVC TO DRIP TUBING CONNECTION FOR EVERY 5 GPM OF FLOW.
  2. CONSULT MANUFACTURER'S RECOMMENDATIONS FOR MAXIMUM RUN LENGTH.

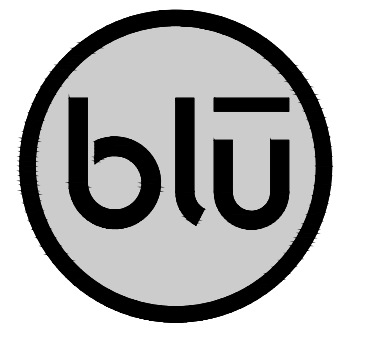
**2 PVC TO DRIP TUBING CONNECTION**  
NOT TO SCALE



- NOTES:
1. USE RAIN BIRD XERIMAN TOOL XM-TOOL TO INSERT EMITTER DIRECTLY INTO 1/2" POLYETHYLENE TUBING.

**3 DRIP EMITTER**  
NOT TO SCALE

- 1 DIFFUSER BUG CAP: RAIN BIRD DBC-025 (UNLESS OTHERWISE SPECIFIED)
- 2 UNIVERSAL 1/4" TUBING STAKE: RAIN BIRD TS-025
- 3 1/4" DISTRIBUTION TUBING: RAIN BIRD XQ TUBING (LENGTH AS REQUIRED)
- 4 TOP OF MULCH
- 5 SINGLE-OUTLET BARB INLET X BARB OUTLET EMITTER: RAIN BIRD XERI-BUG EMITTER
- 6 1/2" POLYETHYLENE TUBING: 2 RAIN BIRD XT-700 XERI-TUBE
- 7 FINISH GRADE



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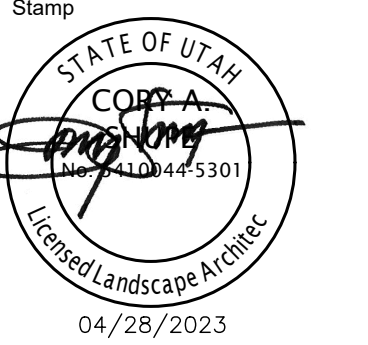
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REVISIONS	
NO.	DESCRIPTION

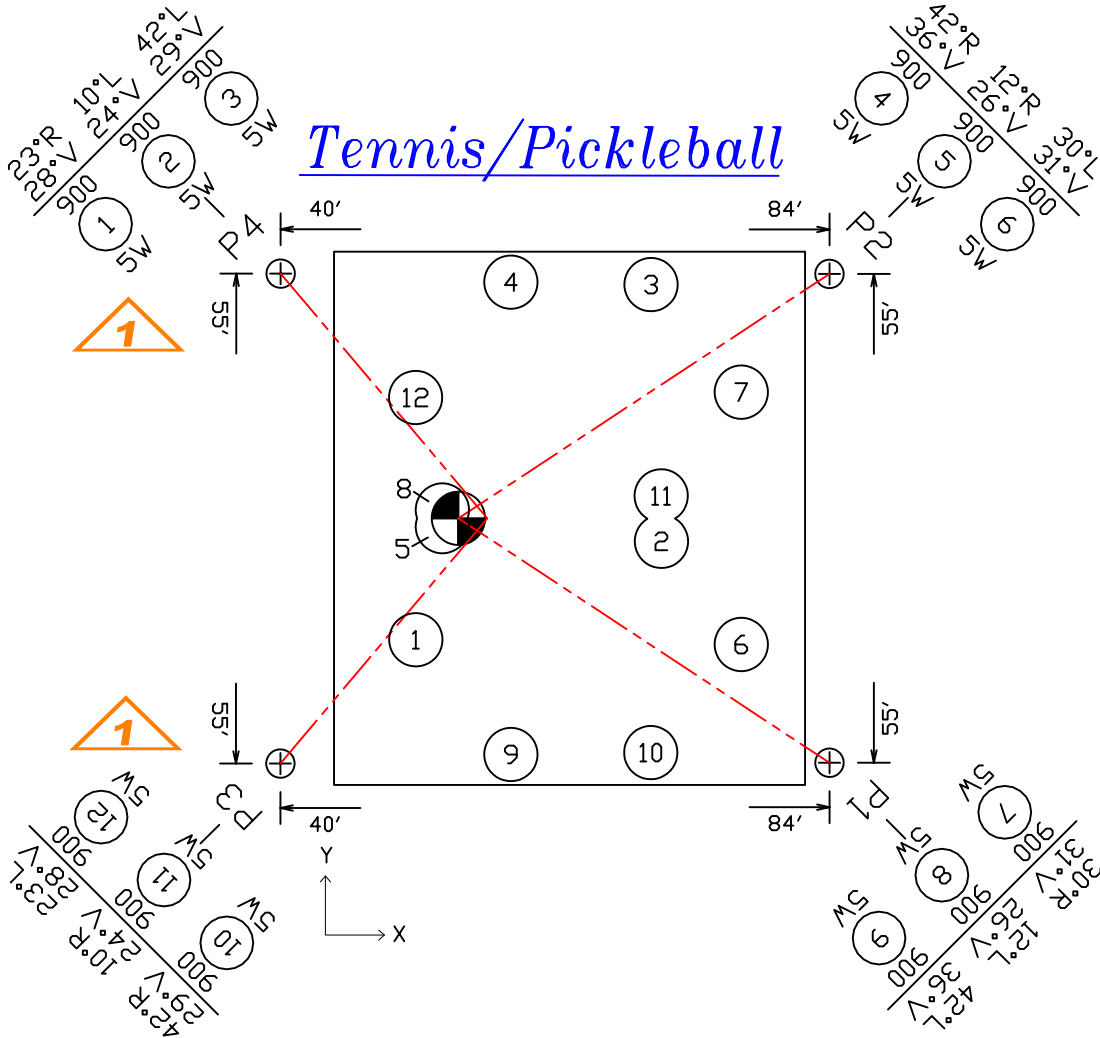
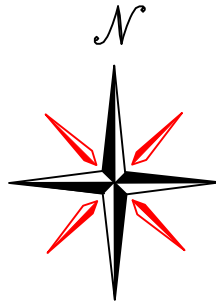


Designed By: TH  
Drawn By: TH  
Date: 04/28/2023  
Checked By: RD  
Project No: 22-200

Drawing Title  
**IRRIGATION  
DETAILS**

Drawing number  
**LI502**

BID SET



Wind Design Criteria: IBC STD 2018 105MPH Exposure C

Lighting Equipment							
APPROXIMATE FOOTCANDLE LEVEL:		DESIGN ID: 206893-Prod		DATED: 04/OCT/22			
MAX. TO MIN. RATIO NOT TO EXCEED:		ORDER NUMBER: 543606					
POLE				LUMINAIRES		ELECTRICAL LOAD	
POLE QUANTITY	POLE LOCATION	POLE SIZE	ELEV.	MOUNTING HEIGHT	LUMINAIRE TYPE	LUMINAIRES PER POLE /UNIT TOTAL	KILOWATT CONSUMPTION /UNIT TOTAL
1	P1	50A	1.5'	51.5'	TLC-LED-900	3 3	2.67 2.67
1	P2	50A	1.5'	51.5'	TLC-LED-900	3 3	2.67 2.67
1	P3	50A	-3'	47.0'	TLC-LED-900	3 3	2.67 2.67
1	P4	50A	-3'	47.0'	TLC-LED-900	3 3	2.67 2.67
4	← TOTALS →					12	10.68

Overcurrent devices and conductors MUST be sized using the Manufacturer's rated amperage draw per luminaire (kVA). Using the kW rating can result in undersized calculations. Refer to Musco's Control System Summary or Specification Chart (located below) for manufacturer's amperage draw.

DRIVER SPECIFICATIONS	VOLTAGE: 240v SINGLE PHASE									
TLC-LED-900 MAX WATT <small>(Also applicable to each single phase of a 3 phase system)</small>	208	220	230	240	277	347	380	400	415	480
Per LED Luminaire	5.29	5.00	4.78	4.58	3.97	3.17	2.90	2.75	2.65	2.29

Field Name	Pole I.D.	Laser Aiming Points		
		I.D.	X	Y
Tennis/Pickleball	P1-P2	Pole	0	0
	P3	Pole	6.5	0
	P4	Pole	6.5	0

If you have questions pertaining to this document, please contact CHRIS HENSLEY, your project engineer. Phone: 800-825-6025 ext: 2979# DATE: 10/05/22

This symbol represents the 0,0 point for locating poles.

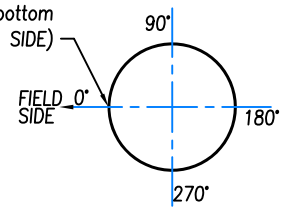
TENNIS/PICKLEBALL: 110' x 120'  
This field uses a 110' x 120' grid.

The following poles ECE's will have spare fuses: P1

The CIRCLE shape on the bars represents the Tennis/Pickleball circuit.



Align weld marks located at bottom of pole sections @ 0'(FIELD SIDE)



AIMING LEGEND

- HORIZONTAL AIMING ANGLE
- VERTICAL AIMING ANGLE
- FIXTURE TYPE
- FIXTURE NUMBER
- REFLECTOR NEMA TYPE

Andy Adams Park Pickleball Tennis  
Layton, UT  
Field Aiming Diagram

CORPORATE OFFICE:  
P.O. Box 808  
100 1st Avenue West  
Oskaloosa, Iowa 52577  
800/825-6020

REVISIONS:	BY: R.L.	DATE:
1 Pole locations and aiming angles updated for poles P3 & P4		12/15/2022

JOB NUMBER: 206893  
DRAWN BY: C.Hensley  
PROJECT ENGINEER: C.Hensley  
REPRESENTATIVE: A.Klinge  
SCALE: 1 = 30  
DATE: 10/05/22  
DRAWING NUMBER: 206893A1  
1 OF 1 SHEETS

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# Control System Summary

## Project Specific Notes:

Andy Adams Pickleball Service - 240V/1P, LED C&M, Powerline comm

Poles P1-P4 are daisy chained onto a single contactor

This service includes a pushbutton/strobe assembly for Tennis/Pickleball

## Project Information

Project #: 206893  
 Project Name: Andy Adams Park Pickleball Tennis  
 Date: 10/14/22  
 Project Engineer: Chris Hensley  
 Sales Representative: Aaron Klinge  
 Control System Type: Control-Link™ Control and Monitoring System  
 Communication Type: PowerLine-ST  
 Scan: 206893-Prod  
 Document ID: 206893P1V3-1014154052  
 Distribution Panel Location or ID: Andy Adams Pickleball Tennis  
 Total # of Distribution Panel Locations for Project: 1  
 Design Voltage/Hertz/Phase: 240/60/1  
 Control Voltage: 120

## Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1.Control and Monitoring Cabinet	24 X 48
	<b>QTY</b>
Total Contactors	1
Total Off/On/Auto Switches:	1
	<b>SIZE (AMPS)</b>
	60 AMP

## Materials Checklist

### Contractor/Customer Supplied:

- A dedicated control circuit must be supplied per distribution panel location
  - If the control voltage is NOT available, a control transformer is required
- Electrical distribution panel to provide overcurrent protection for circuits
  - HID rated or D-curve circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- Wiring
  - See chart on page 2 for wiring requirements
  - Equipment grounding conductor and splices must be insulated (per circuit)
  - Lightning ground protection (per pole), if not Musco supplied
- Electrical conduit wireway system
  - Entrance hubs rated NEMA 4, must be die-cast zinc, PVC, or copper-free die-cast aluminum
- Mounting hardware for cabinets
- Breaker lock-on device to prevent unauthorized power interruption to control power and powerline connection (if present)
- Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central™ operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation.

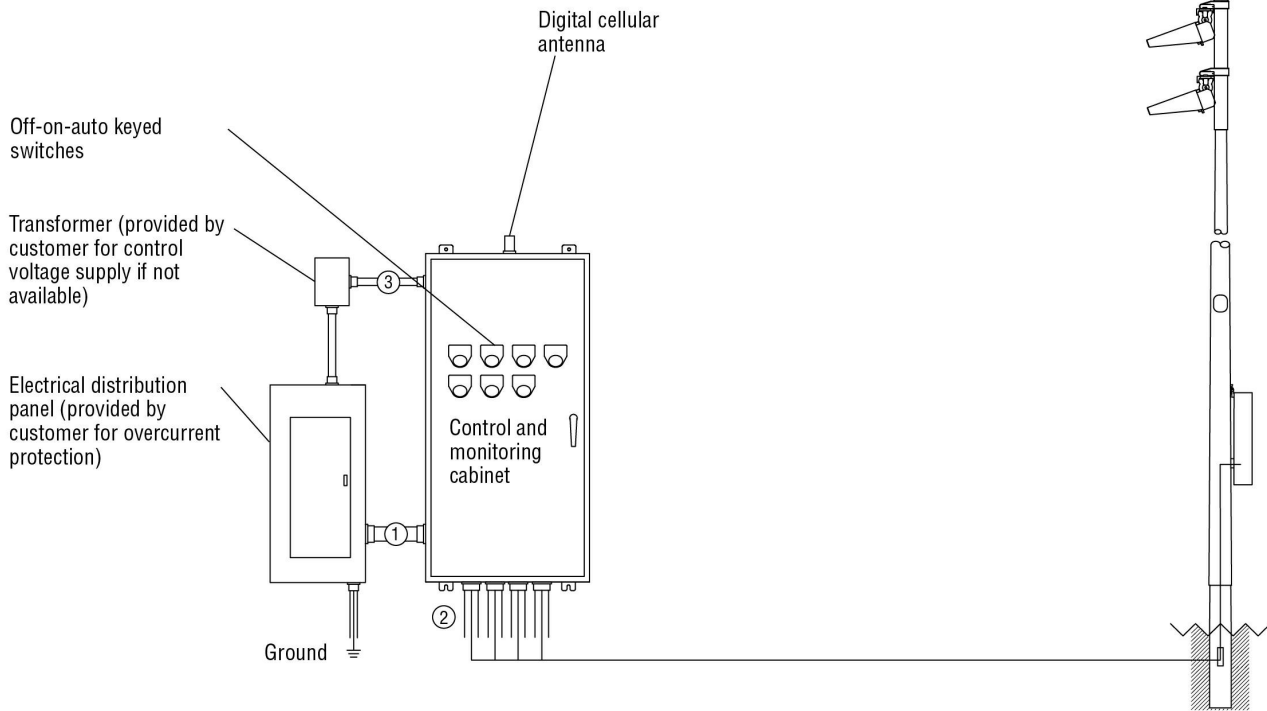
Note: Activation may take up to 1 1/2 hours.

## IMPORTANT NOTES

1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

*NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements.*

## Control-Link. Control and Monitoring System



Conduit ID	Description	# of Wires	Wire (AWG)	Conduit (in)	Max. Wire Length (ft)	MUSCO Supplied	Notes
1	Line power to contactors, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
2	Load power to lighting circuits, and equipment grounding conductor	*A	*B	*C	N/A	No	A-E
3	Control power (dedicated, 20A)	3	12	*C	N/A	No	C,E

\* Notes:

- A. See voltage and phasing per the notes on cover page.
- B. Calculate per load and voltage drop.
- C. All conduit diameters should be per code unless otherwise specified to allow for connector size.
- D. Equipment grounding conductor and any splices must be insulated.
- E. Refer to control and monitoring system installation instructions for more details on equipment information and the installation requirements.

R60-100-00\_B

IMPORTANT: Control wires (3) must be in separate conduit from line and load power wires (1, 2).



# Control System Summary

Andy Adams Park Pickleball Tennis / 206893 - 206893-Prod  
 Andy Adams Pickleball Tennis - Page 3 of 4

## SWITCHING SCHEDULE

Field/Zone Description	Zones
Tennis/Pickleball	1

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 245.0
	SEALED: 26.0

## CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	# OF DRIVERS	*FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
P1,P2,P3,P4	Tennis/Pickleball	12	12	55.0	60	C1	1

\*Full Load Amps based on amps per driver.





# Control System Summary

Andy Adams Park Pickleball Tennis / 206893 - 206893-Prod  
 Andy Adams Pickleball Tennis - Page 4 of 4

## PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole P1,P2,P3,P4	54.96		

## ZONE SCHEDULE

ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	CIRCUIT DESCRIPTION	
			POLE ID	CONTACTOR ID
Zone 1	1	Tennis/Pickleball	P1	C1
			P2	C1
			P3	C1
			P4	C1

# Andy Adams Park Pickleball Tennis

Layton, UT

## Lighting System

Pole / Fixture Summary						
Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
P1-P4	50'	50'	3	TLC-LED-900	2.67 kW	A
<b>4</b>			<b>12</b>		<b>10.68 kW</b>	

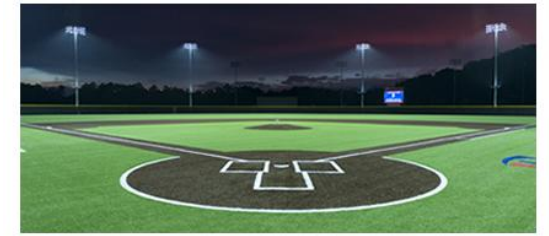
Circuit Summary			
Circuit	Description	Load	Fixture Qty
A	Tennis	10.68 kW	12

Fixture Type Summary							
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-900	LED 5700K - 75 CRI	890W	89,600	>120,000	>120,000	>120,000	12

## Light Level Summary

Calculation Grid Summary								
Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Tennis/Pickleball Spill	Horizontal Illuminance	0	0	0	0.00		A	12
Tennis/Pickleball Spill	Max Candela Metric	2.71	0	13.3	0.00		A	12
Tennis/Pickleball Spill	Max Vertical Illuminance Metric	0	0	0	0.00		A	12
Tennis/Pickleball	Horizontal Illuminance	55.1	36	64	1.75	1.53	A	12

## From Hometown to Professional



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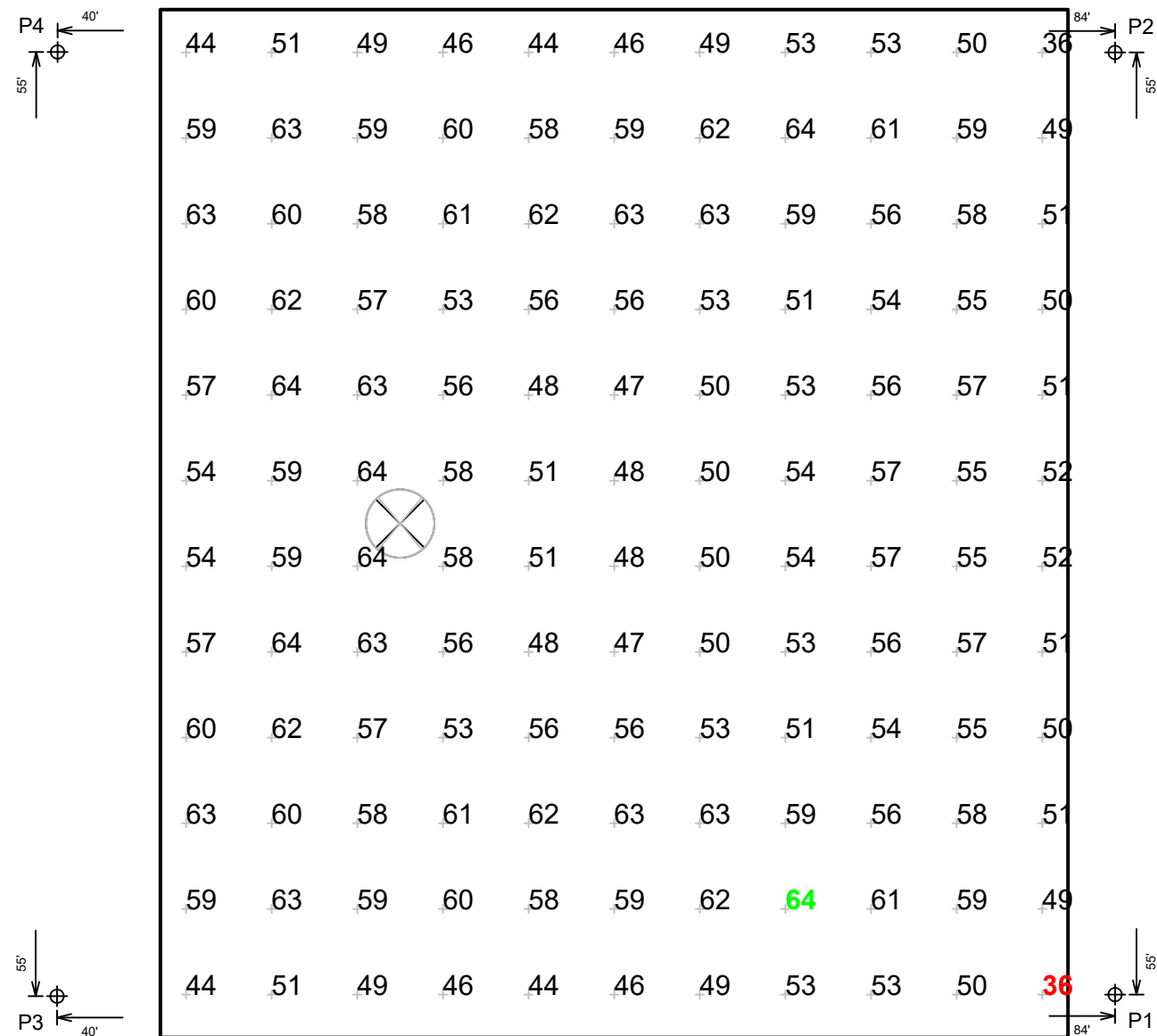
EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	P1-P2	50'	1.5'	51.5'	TLC-LED-900	3	3	0
2	P3-P4	50'	-3'	47'	TLC-LED-900	3	3	0
4	TOTALS					12	12	0

## Andy Adams Park Pickleball Tennis

Layton, UT

GRID SUMMARY	
Name:	Tennis/Pickleball
Size:	106' x 120'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY	
MAINTAINED HORIZONTAL FOOTCANDLES	
Entire Grid	
Guaranteed Average:	50
Scan Average:	55.14
Maximum:	64
Minimum:	36
Avg / Min:	1.51
Guaranteed Max / Min:	2
Max / Min:	1.75
UG (adjacent pts):	1.38
CU:	0.70
No. of Points:	132
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	12
Total Load:	10.68 kW

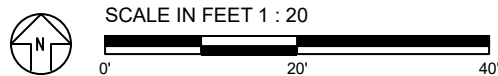


**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

**Field Measurements:** Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

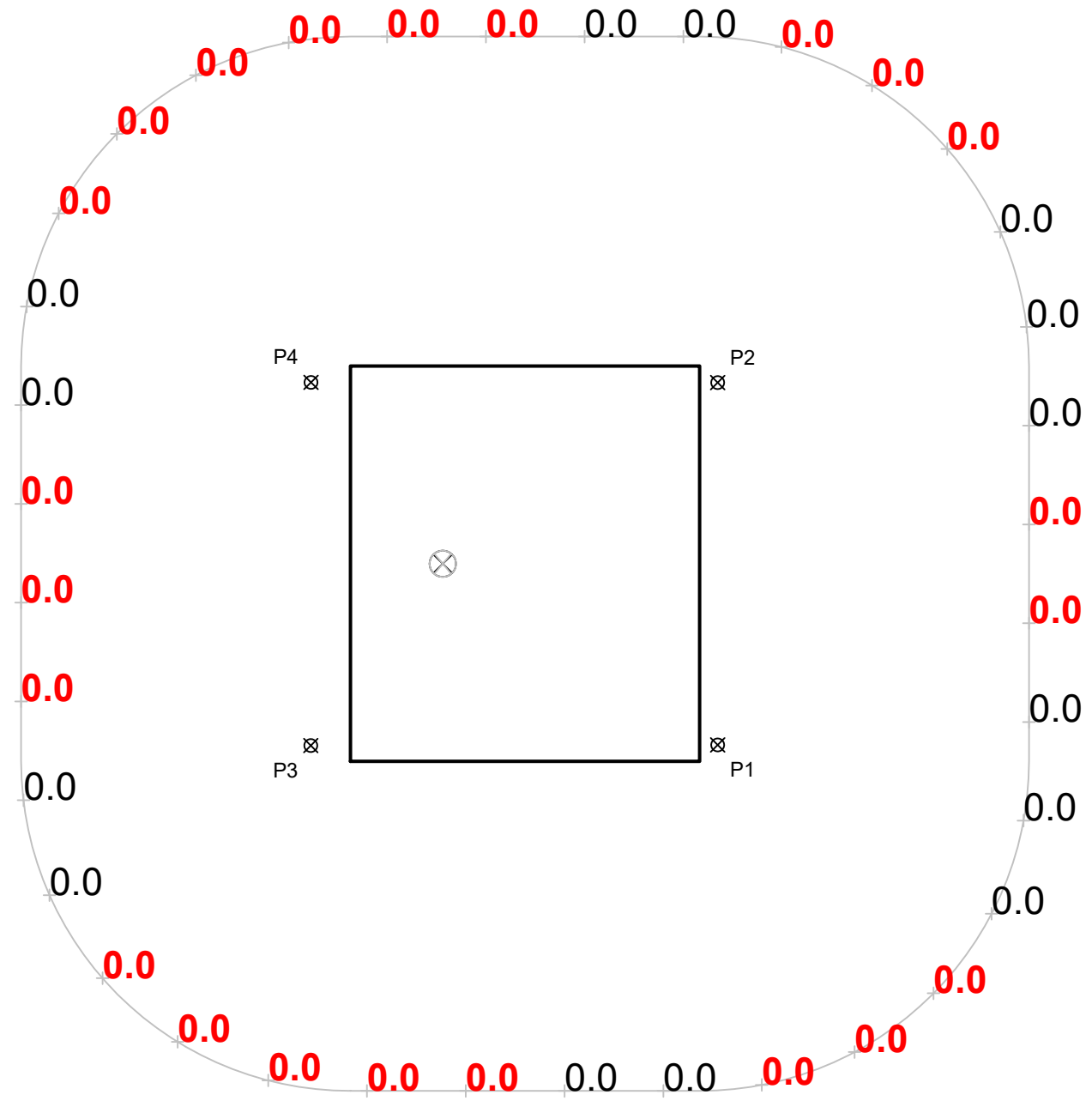


Pole location(s) Ⓢ dimensions are relative to 0,0 reference point(s) ⊗



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EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	P1-P2	50'	1.5'	51.5'	TLC-LED-900	3	3	0
2	P3-P4	50'	-3'	47'	TLC-LED-900	3	3	0
4	TOTALS					12	12	0



## Andy Adams Park Pickleball Tennis

Layton, UT

GRID SUMMARY	
Name:	Tennis/Pickleball Spill
Spacing:	30.0'
Height:	3.0' above grade

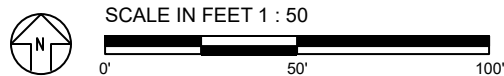
ILLUMINATION SUMMARY	
HORIZONTAL FOOTCANDLES	
Entire Grid	
Scan Average:	0.0000
Maximum:	0.00
Minimum:	0.00
No. of Points:	36
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	12
Total Load:	10.68 kW

**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document.

**Field Measurements:** Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

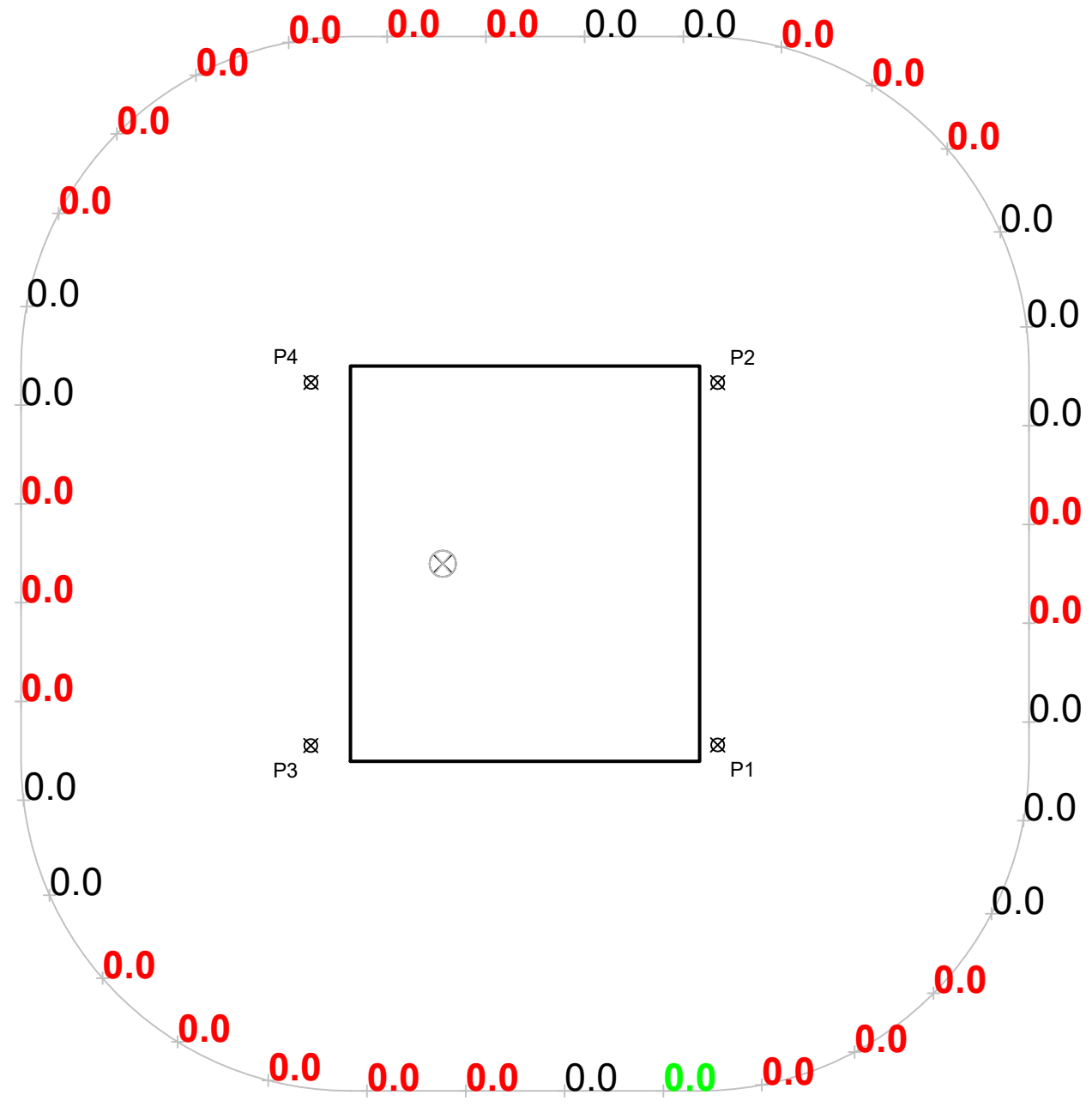


Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗



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EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	P1-P2	50'	1.5'	51.5'	TLC-LED-900	3	3	0
2	P3-P4	50'	-3'	47'	TLC-LED-900	3	3	0
4	TOTALS					12	12	0



## Andy Adams Park Pickleball Tennis

Layton, UT

GRID SUMMARY	
Name:	Tennis/Pickleball Spill
Spacing:	30.0'
Height:	3.0' above grade

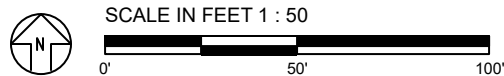
ILLUMINATION SUMMARY	
MAX VERTICAL FOOTCANDLES	
Entire Grid	
Scan Average:	0.0001
Maximum:	0.00
Minimum:	0.00
No. of Points:	36
LUMINAIRE INFORMATION	
Applied Circuits:	A
No. of Luminaires:	12
Total Load:	10.68 kW

**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document.

**Field Measurements:** Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

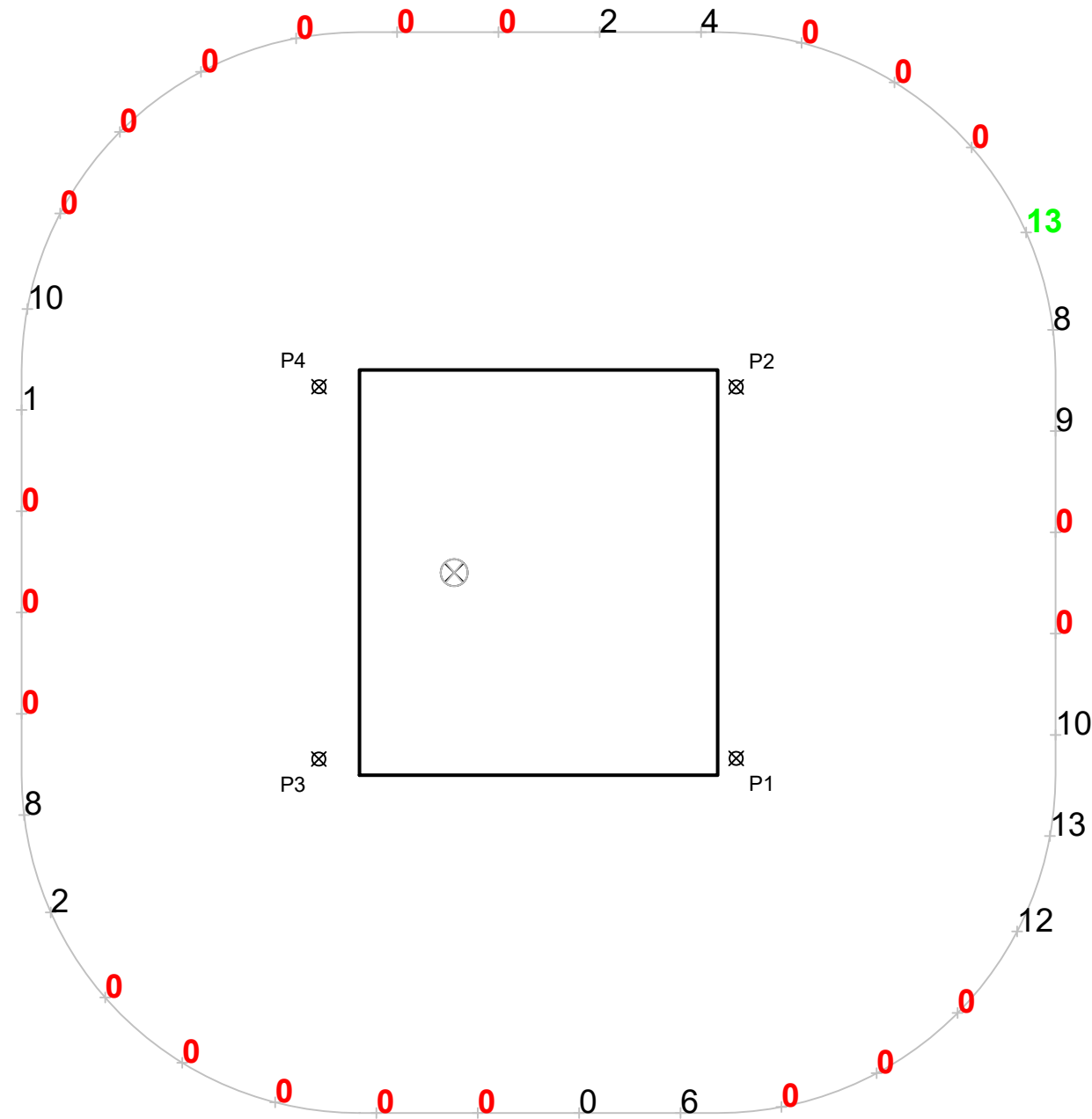


Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗



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EQUIPMENT LIST FOR AREAS SHOWN								
Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	P1-P2	50'	1.5'	51.5'	TLC-LED-900	3	3	0
2	P3-P4	50'	-3'	47'	TLC-LED-900	3	3	0
4	TOTALS					12	12	0



## Andy Adams Park Pickleball Tennis

Layton, UT

GRID SUMMARY	
Name:	Tennis/Pickleball Spill
Spacing:	30.0'
Height:	3.0' above grade

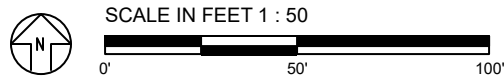
ILLUMINATION SUMMARY	
CANDELA (PER FIXTURE)	
Entire Grid	
Scan Average:	2.7114
Maximum:	13.26
Minimum:	0.00
No. of Points:	36
LUMINAIRE INFORMATION	
Applied Circuits:	A
<b>No. of Luminaires:</b>	<b>12</b>
Total Load:	10.68 kW

**Guaranteed Performance:** The ILLUMINATION described above is guaranteed per your Musco Warranty document.

**Field Measurements:** Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



ENGINEERED DESIGN By: C.Hensley · File #206893-Prod-R1 · 15-Dec-22

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗



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**ILLUMINATION SUMMARY**

# Andy Adams Park Pickleball Tennis

Layton, UT

**EQUIPMENT LAYOUT**

**INCLUDES:**  
· Tennis/Pickleball

**Electrical System Requirements:** Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

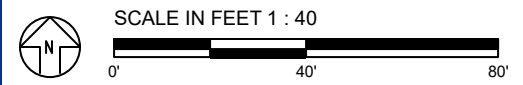
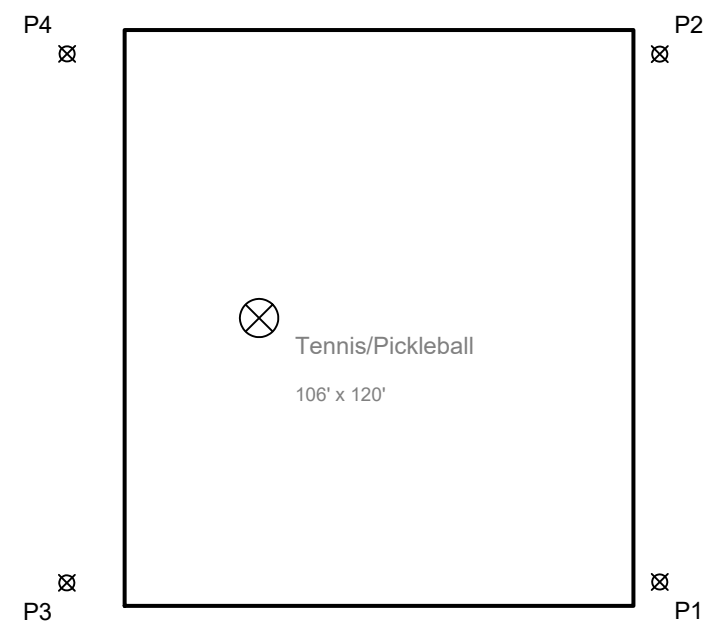
**Installation Requirements:** Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

**EQUIPMENT LIST FOR AREAS SHOWN**

QTY	Pole			Luminaires		QTY / POLE
	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	
2	P1-P2	50'	1.5'	51.5'	TLC-LED-900	3
2	P3-P4	50'	-3'	47'	TLC-LED-900	3
4	TOTALS					12

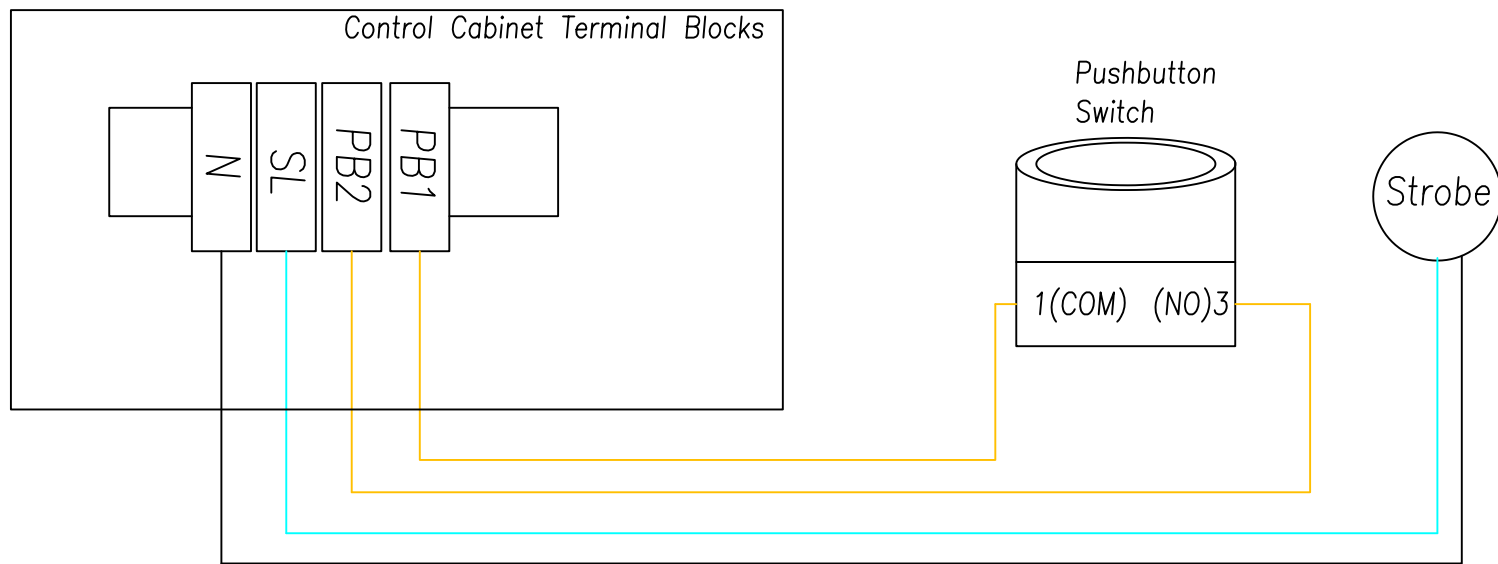
**SINGLE LUMINAIRE AMPERAGE DRAW CHART**

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
Single Phase Voltage							
TLC-LED-900	5.3	5.0	4.6	4.0	3.2	2.9	2.3



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗



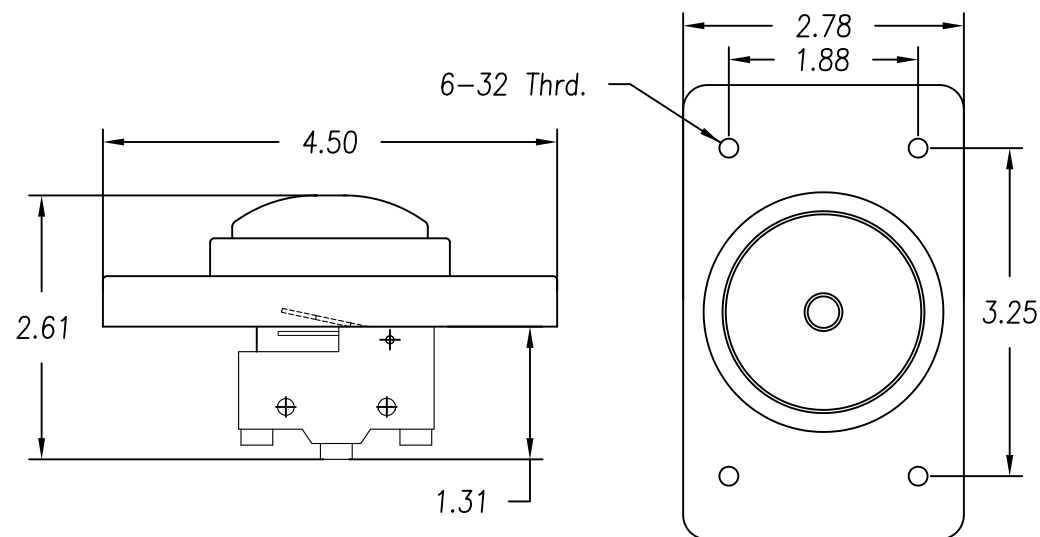


SEQUENCE OF OPERATION (Control-Link):

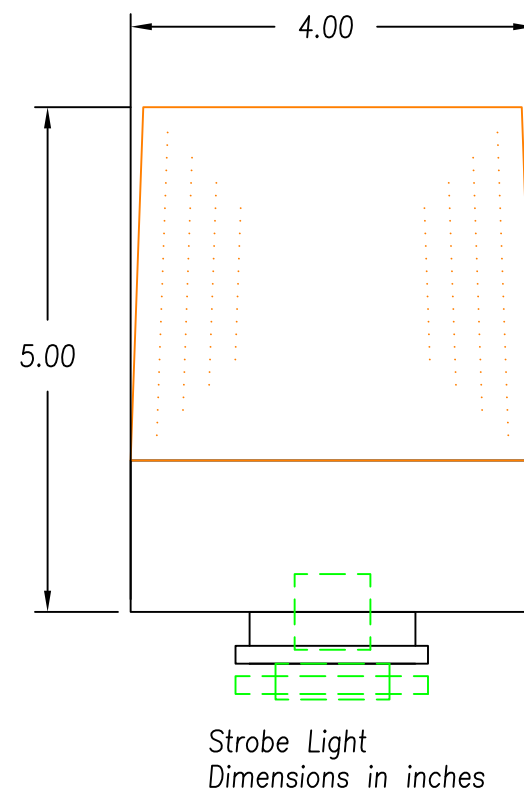
1. The OOA needs to be in the AUTO position. A schedule begins and the REC closes the I/O relay which sends control power to the pushbutton.
2. The pushbutton is pressed to turn on the lights. The contactors pull in, which also activates the holding circuit. The lights remain ON for the preset amount of time dictated by the timer dial T1 (Bottom Dial).
3. The timer times out and performs 2 functions.
  - 3.1. Power from the timer is sent to the strobe as a warning that the lights will extinguish in 'X' amount of time (dictated by dial T2 (Top Dial)),
  - 3.2. The timer activates a count down for the circuit to turn off.
4. If the pushbutton is pressed again, before the strobe turns off, the lights will remain ON for another cycle.
5. If the pushbutton is NOT pressed again the strobe and lights will extinguish.

Contractor Wiring

- 2 wires for the pushbutton (12 AWG)
- 2 wires for the strobe light (12 AWG)



Pushbutton  
Dimensions in inches  
Color: Black bezel and gray housing.  
Silver actuator  
Material: Machined SS actuator.  
Machined AL bezel  
Malleable iron housing  
Contact Current Rating: 15A (125VAC)  
Internal Ground Screw  
Torx Cover Screws (T-10)

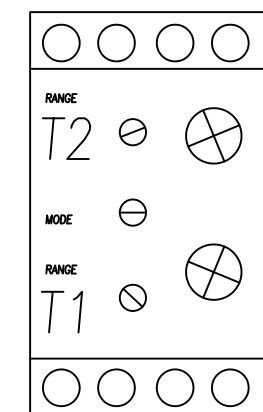


Color: Amber  
Flash Rate/Minute: 90  
Candlepower Peak: 1,000,000  
Effective Candlepower: 300



TIMER SETTINGS:

- Mode: A
- T2 (Time setting for Strobe Light)
  - Range: 1M (6 sec to 6 min)
  - Turn dial to 5 (5 min)
- T1 (Playing Time)
  - Range: 1H (6 min to 6 hr)
  - Turn dial to 1 (1 Hr)



Player Activated Strobe  
Oskaloosa, IA  
SB Rec Pushbutton Strobe Cutsheet

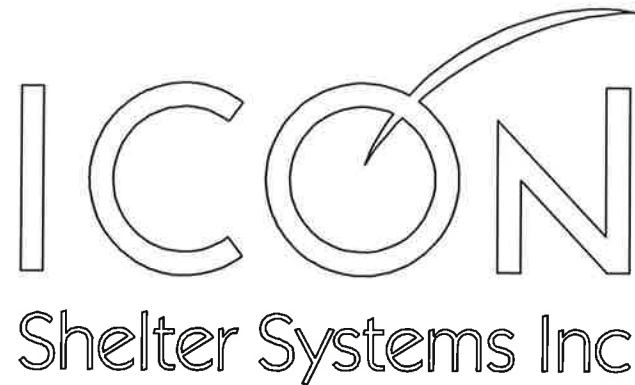
CORPORATE OFFICE:  
P.O. Box 808  
100 1st Avenue West  
Oskaloosa, Iowa 52577  
800/825-6020

**MUSCO**  
Lighting

DATE:	BY: R.L.	REVISIONS:
3/18/10	PRH A	Added Pushbutton Info

JOB NUMBER:
DRAWN BY: P. Hector
CHECK BY:
REPRESENTATIVE:
SCALE: NS
DATE: 6/1/09
DRAWING NUMBER:
OF SHEETS





**JOB NUMBER: 7907**  
**JOB NAME: ANDY ADAMS**  
**JOB LOCATION: LAYTON, UT 84041**

REVISION: A  
 A- INITIAL SUBMITTAL REVISION (DTH 3/22/2023)

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 HOLLAND MI, 49423  
 616.396.0919  
 800.748.0985  
 616.396.0944 FX

**COVER SHEET**

**TABLE OF CONTENTS**

- 1.0 COVER SHEET
- 2.0 ELEVATION
- 3.0 ANCHOR BOLT LAYOUT
- 4.0-4.2 FRAME LAYOUT
- 5.0-5.1 FRAME CONNECTIONS
- 6.0 ROOF LAYOUT
- R1.0-R1.4 ROOF DETAILS

**DESIGN LOADS**

CODE: 2018 INTERNATIONAL BUILDING CODE  
 TOTAL DEAD: 14.25 P.S.F.  
 FRAME DEAD: 11.25 P.S.F.  
 ROOF DEAD: 1.20 P.S.F.  
 COLLATERAL DEAD: 1.80 P.S.F.  
 ROOF LIVE LOAD: 20.00 P.S.F.  
 GROUND SNOW LOAD: 43.00 P.S.F.  
 ROOF SNOW LOAD: 36.12 P.S.F.  
 WIND SPEED: 115.00 M.P.H.  
 EXPOSURE: C  
 SEISMIC USE GROUP: I  
 SEISMIC SITE CLASS: D  
 SEISMIC DESIGN CATEGORY: D  
 SEISMIC ANALYSIS: SIMPLIFIED

**NOTES**

**MATERIALS**  
 TUBE STEEL (HSS HOLLOW STRUCTURAL SECTION) (ASTM DESIGNATION) A-500 GRADE B/C  
 WIDE FLANGE SECTIONS A-992  
 STRUCTURAL STEEL PLATE A-36, A-572 GRADE 50  
 ROOF PANELS (STEEL) A-792  
 ANCHOR BOLTS F1554 GRADE 55  
 CONNECTION BOLTS F3125 GRADE A325

ALL WELDING CONFORMS TO THE LATEST EDITION OF AWS D1.1 OR D1.3 AS REQUIRED. ALL WELDING IS PERFORMED BY AWS CERTIFIED WELDERS. THERE IS NO FIELD WELDING REQUIRED, U.N.O.

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO THE MATERIALS SUPPLIED BY ICON SHELTER SYSTEMS INC. AND IS NOT INTENDED AS THE SEAL OF THE ENGINEER OF RECORD FOR THE ENTIRE PROJECT.

DUE TO STANDARDIZED FABRICATION PARTS SHOWN MAY BE UPGRADED. REFER TO THE SHIPPING BILL OF MATERIALS FOR POSSIBLE SUBSTITUTIONS.

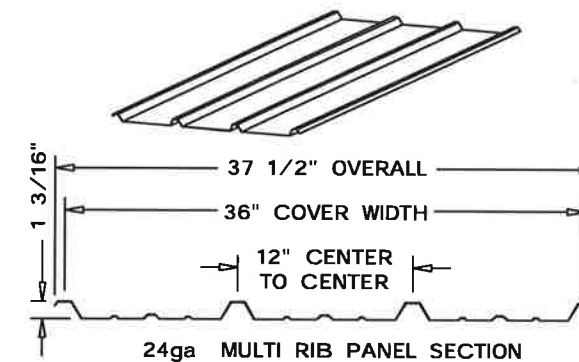
ICON SHELTER SYSTEMS INC. RECOMMENDS THAT THE PRIMARY FRAMING INSTALLER AND THE ROOF INSTALLER HAVE A MINIMUM OF FIVE (5) YEARS OF DOCUMENTED EXPERIENCE INSTALLING THIS TYPE OF PRODUCT.

**HIGH STRENGTH BOLTING**  
 ALL HIGH STRENGTH BOLTS ARE F3125 GRADE A325 BOLTS WITH HEAVY HEX NUTS. THE BOLTS ARE TO BE INSTALLED UTILIZING THE "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS" (8/1/2014) AS PREPARED BY RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) FOR THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC). THE BOLTS SHALL BE INSTALLED AS SNUG TIGHTENED WHICH IS DEFINED AS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE PLIES INTO FIRM CONTACT, WHICH IS THE CONDITION WHEN THE PLANES OF CONTACT BETWEEN TWO PLIES ARE SOLIDLY SEATED AGAINST EACH OTHER, BUT NOT NECESSARILY IN CONTINUOUS CONTACT WITH UTILIZATION OF THE SNUG TIGHTENING METHOD, NO WASHERS ARE REQUIRED.  
 ALL CONNECTIONS ARE BEARING TYPE CONNECTIONS UNLESS NOTED OTHERWISE.

IT IS THE RESPONSIBILITY OF THE INSTALLER TO INSURE PROPER TIGHTNESS.

PROPER ERECTION OF THE FRAMING MEMBERS REQUIRES THE MAIN COLUMNS TO BE PLUMB & SQUARE. COLUMNS, RAFTER, AND TIE BEAM CONNECTIONS MUST BE TIGHTENED BEFORE INSTALLING THE PURLINS. PURLINS MUST BE PARALLEL TO THE TIE BEAMS AND EAVE BEAMS.

**ROOF**



**FABRICATOR APPROVALS**  
 CLARK COUNTY STEEL FABRICATOR NUMBER: 707  
 CITY OF LOS ANGES FABRICATOR NUMBER: FB03254

Professional Engineer Seal for David S. Dayton, III, State of Utah, No. 365248, dated 9/19/23.

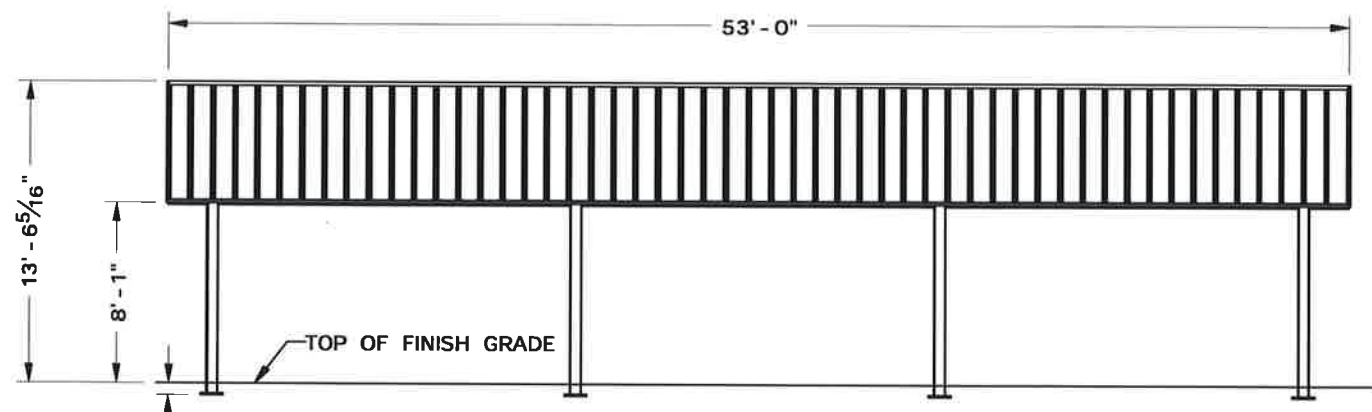
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DATE:	3/22/2023
JOB NO.:	7907
REVISION:	A
BUILDING TYPE:	RG32X53M - P4
PROJECT NAME:	ANDY ADAMS LAYTON, UT 84041

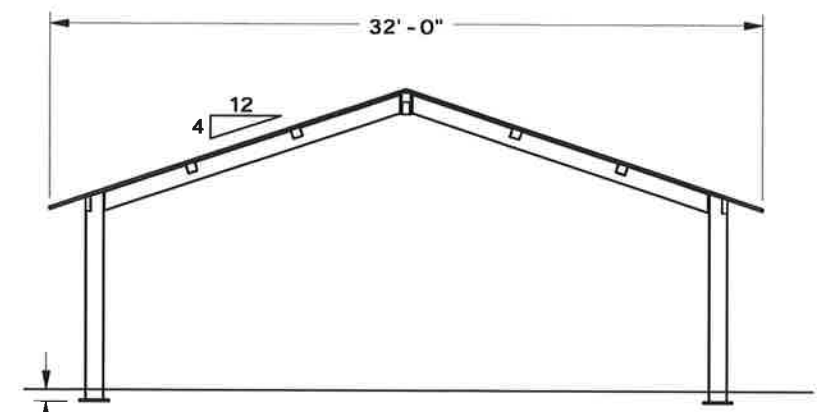
SHEET  
**1.0**

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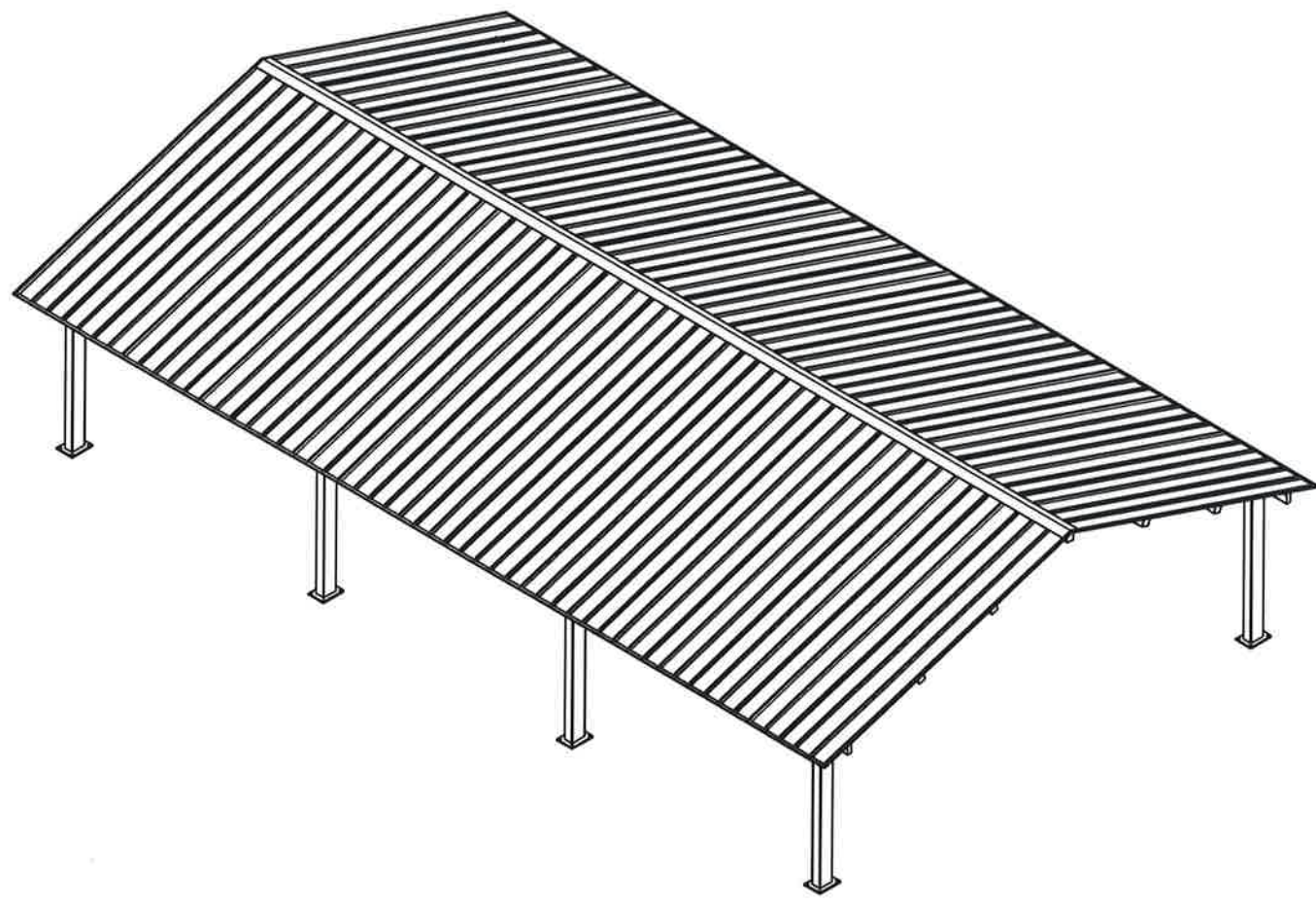
**ELEVATION**



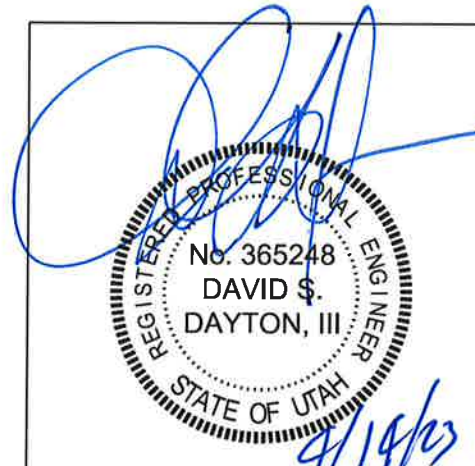
**FRONT VIEW**



**SIDE VIEW**



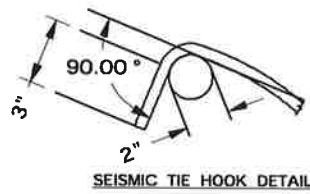
**ISOMETRIC VIEW**



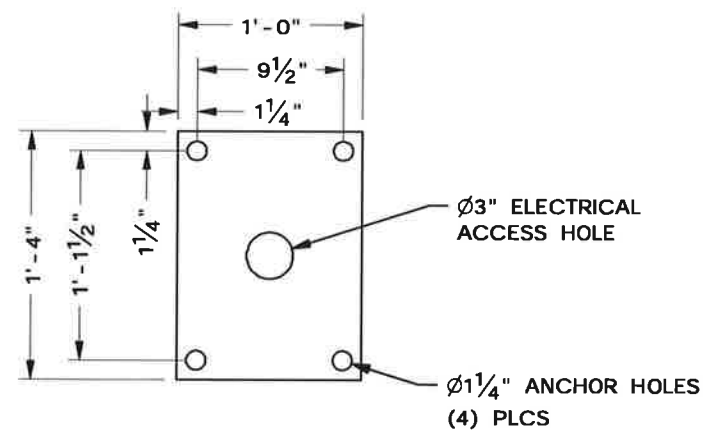
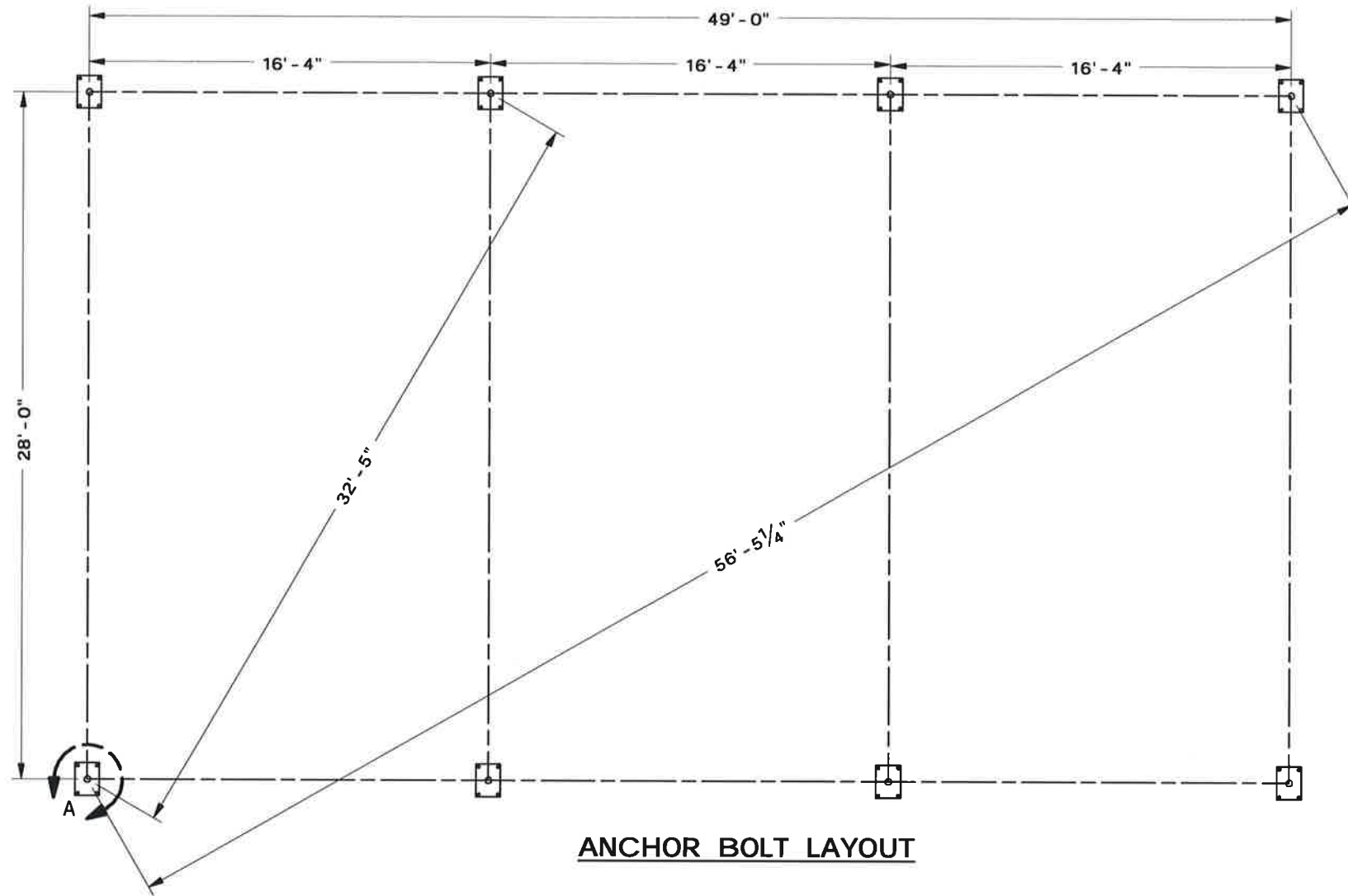
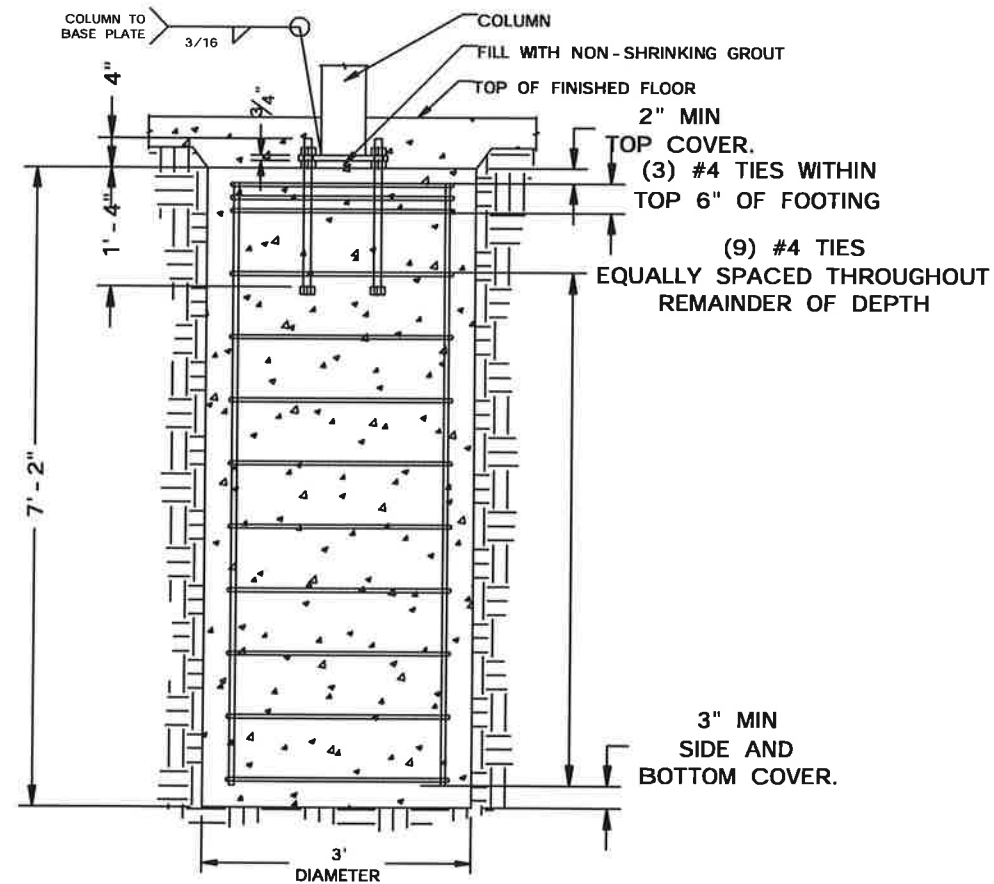
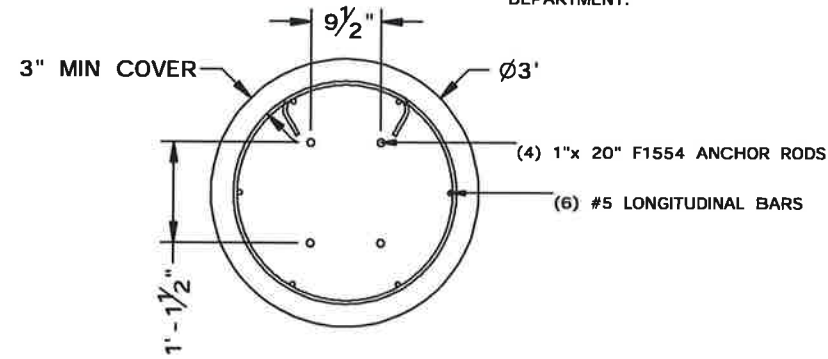
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SHEET  
**2.0**



CONCRETE STRENGTH  $F'_c = 3500$  PSI  
 REBAR GRADE  $F_y = 60$  KSI  
 SLAB IS REQUIRED. IF NO SLAB IS TO BE  
 INSTALLED, CONTACT THE ICON ENGINEERING  
 DEPARTMENT.



DETAIL A  
 BASE PLATE MATERIAL  
 3/4" THICK GR50

REGISTERED PROFESSIONAL ENGINEER  
 No. 365248  
 DAVID S. DAYTON, III  
 STATE OF UTAH  
 8/19/23

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**ANCHOR BOLT LAYOUT**

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PROJECT NAME:	ANDY ADAMS LAYTON, UT 84041

SHEET  
**3.0**

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# FRAME LAYOUT

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3/22/2023

JOB NO.:

7907

REVISION:

A

BUILDING TYPE:

RG32X53M - P4

PROJECT NAME:

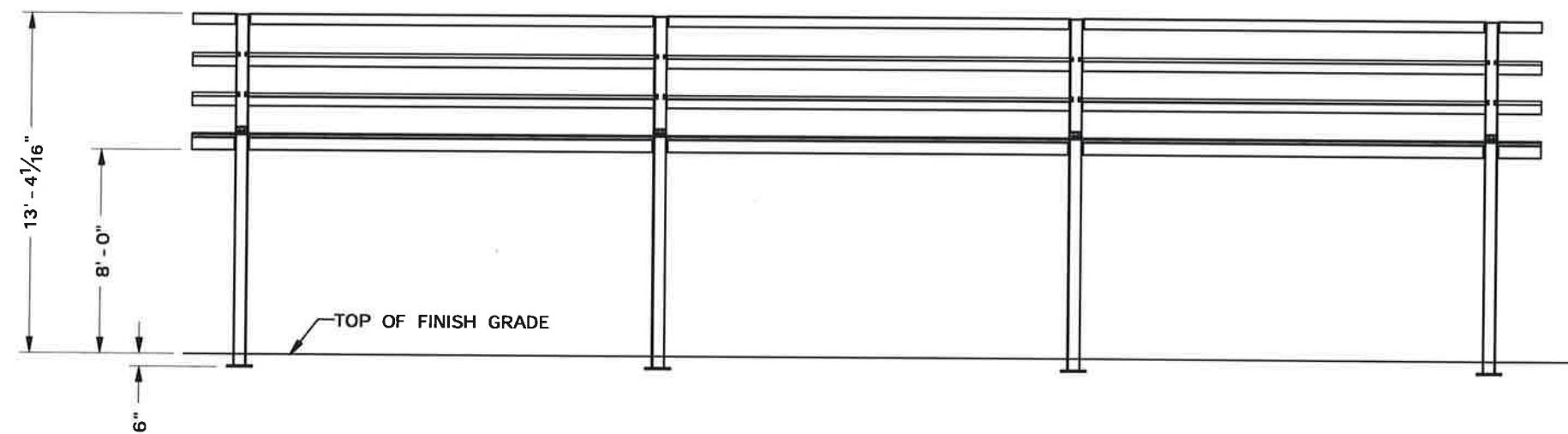
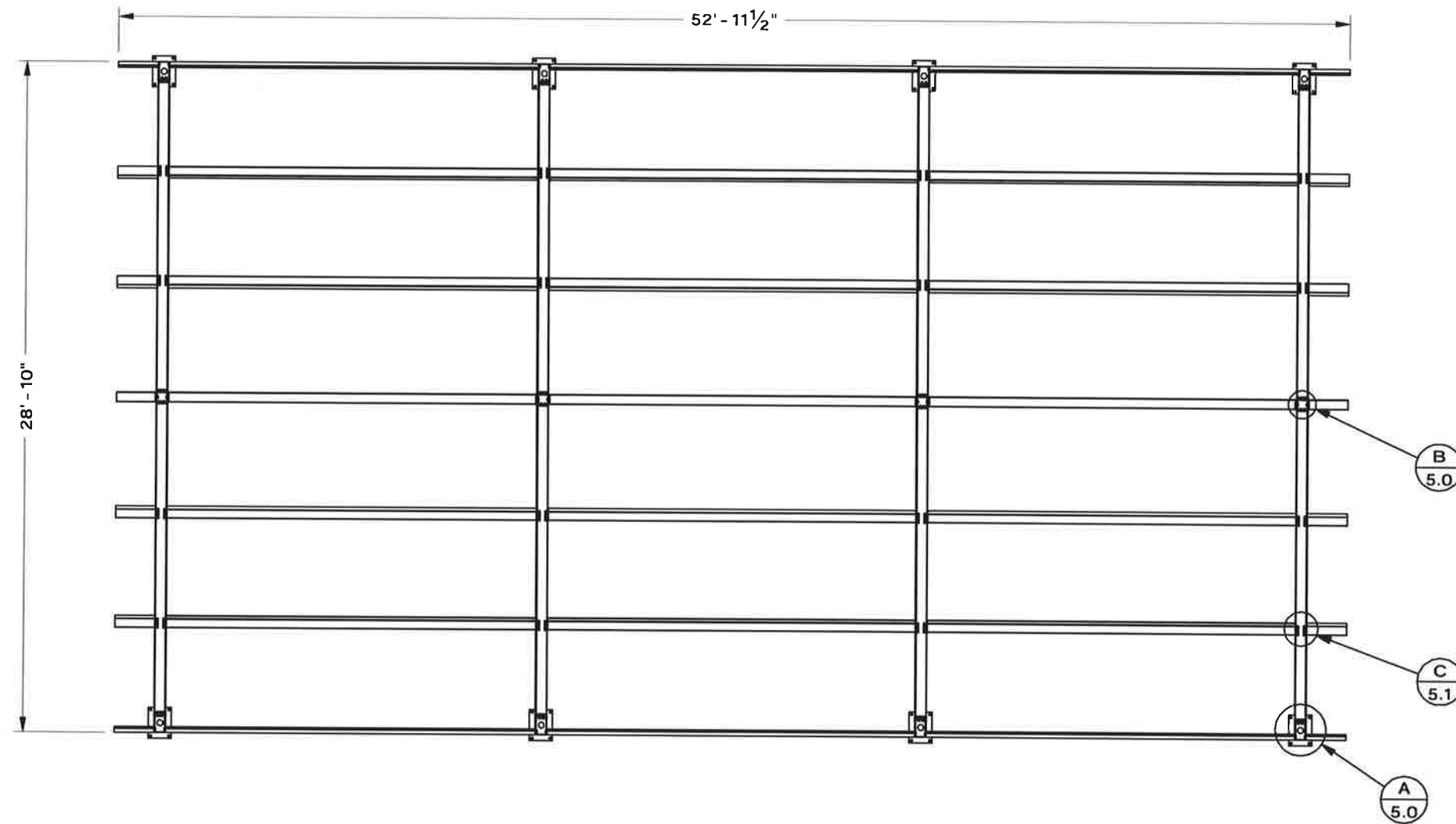
ANDY ADAMS

LAYTON, UT 84041

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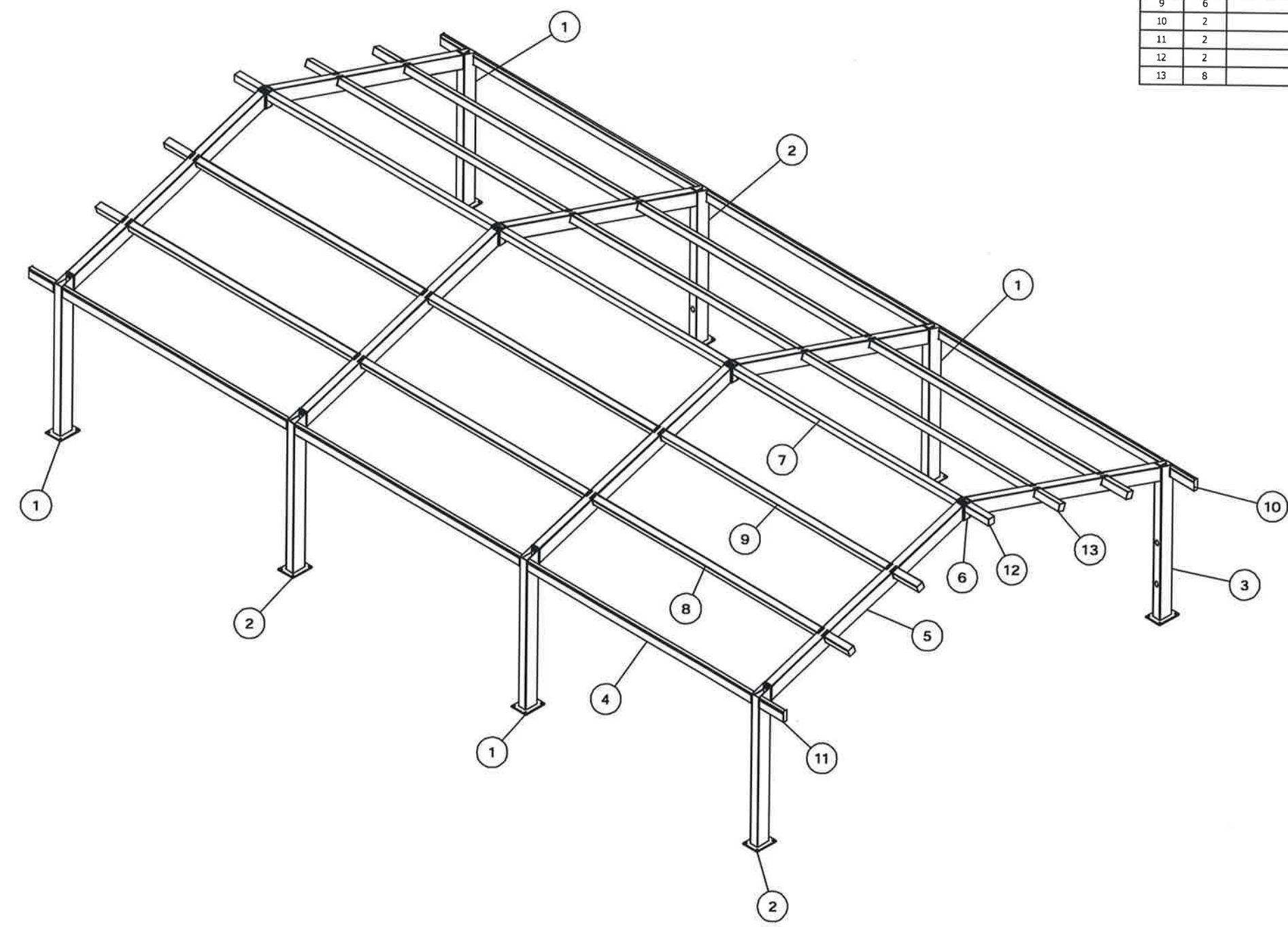


REGISTERED PROFESSIONAL ENGINEER  
No. 365248  
DAVID S. DAYTON, III  
STATE OF UTAH  
4/19/23

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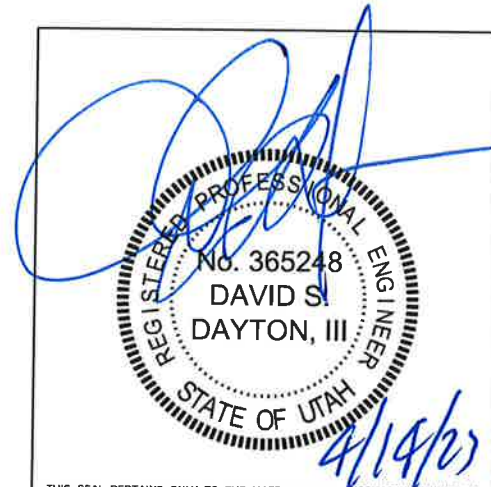
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	LENGTH	UNIT WEIGHT
1	4		COLUMN 1	HSS10X6X0.1875		232 lbmass
2	3		COLUMN 2	HSS10X6X0.1875		231 lbmass
3	1		COLUMN 3	HSS10X6X0.1875		231 lbmass
4	6		TIE BEAM	HSS6X3X0.125		145 lbmass
5	8		RAFTER	HSS10X6X0.1875		297 lbmass
6	4		CONNECTOR	HSS6X6X0.500		32 lbmass
7	3		RIDGE BEAM	HSS5X5X0.125		137 lbmass
8	6		PURLIN 1	HSS5X5X0.1875		191 lbmass
9	6		PURLIN 2	HSS5X5X0.1875		191 lbmass
10	2		TIE BEAM TAIL 1	HSS6X3X0.125		19 lbmass
11	2		TIE BEAM TAIL 2	HSS6X3X0.125		19 lbmass
12	2		RIDGE BEAM TAIL	HSS5X5X0.125		19 lbmass
13	8		PURLIN TAIL	HSS5X5X0.125		15 lbmass

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**FRAME LAYOUT**

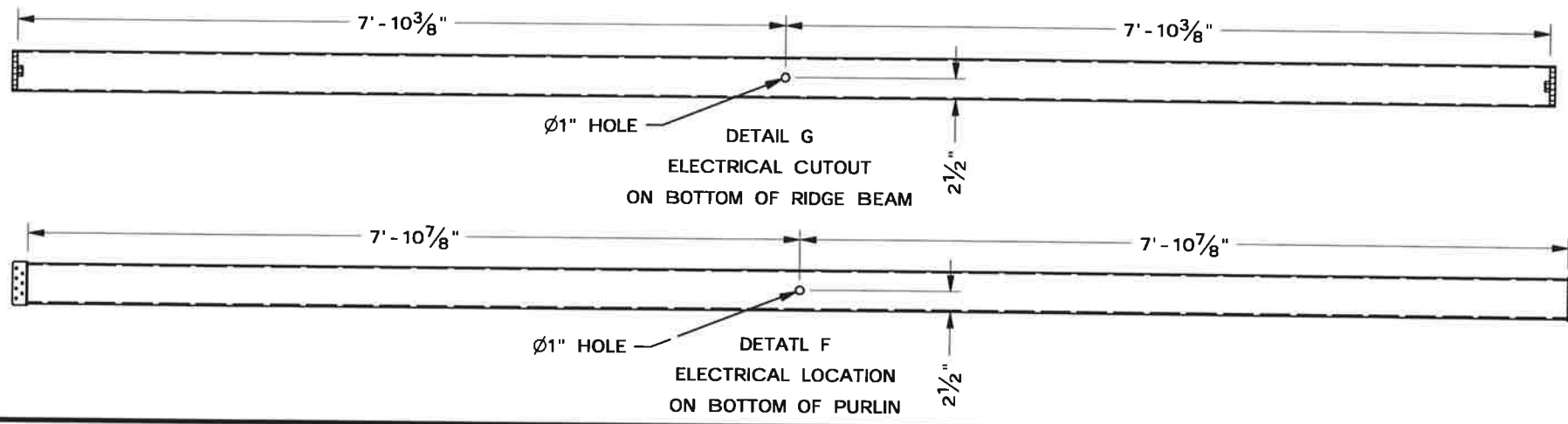
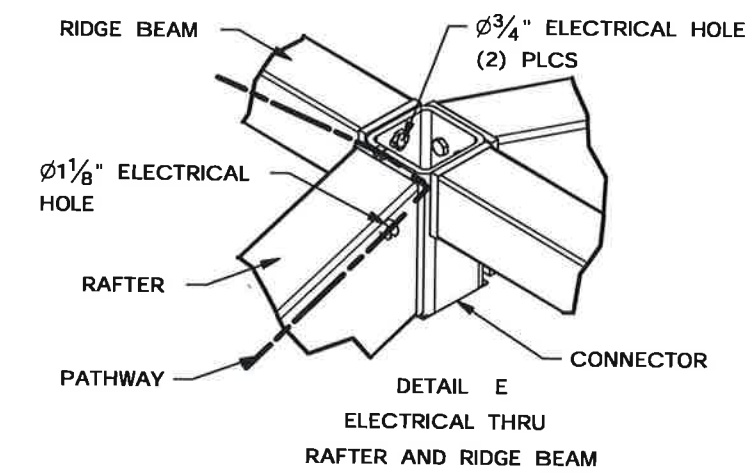
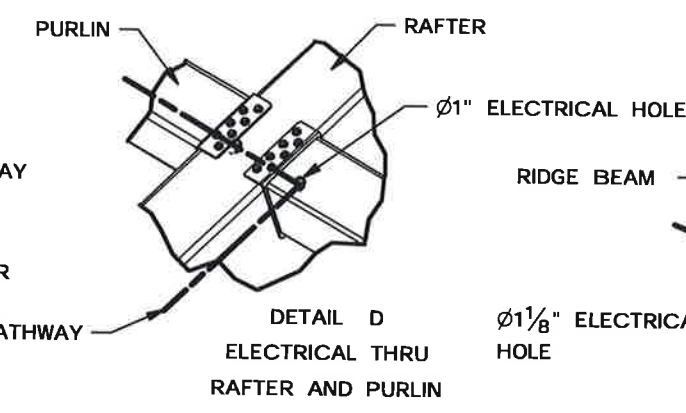
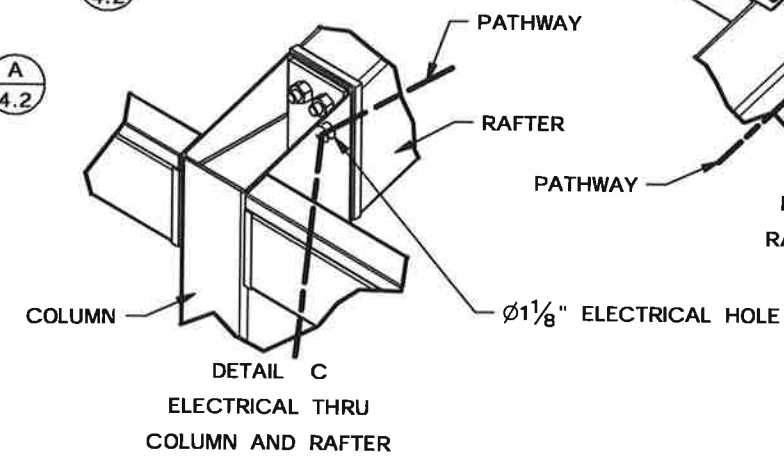
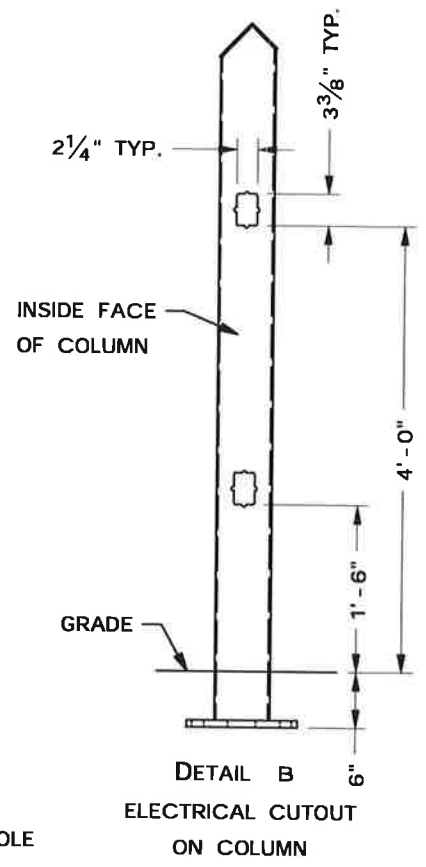
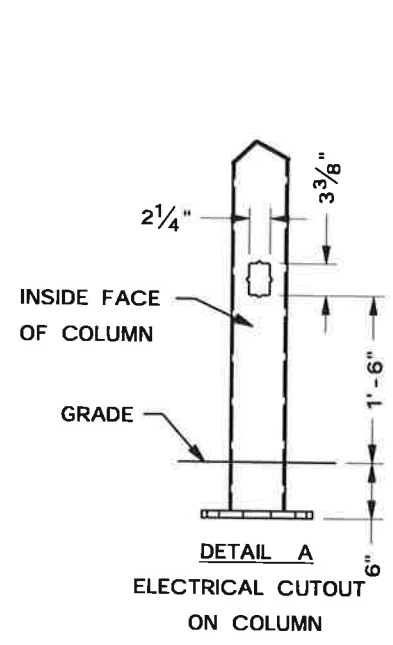
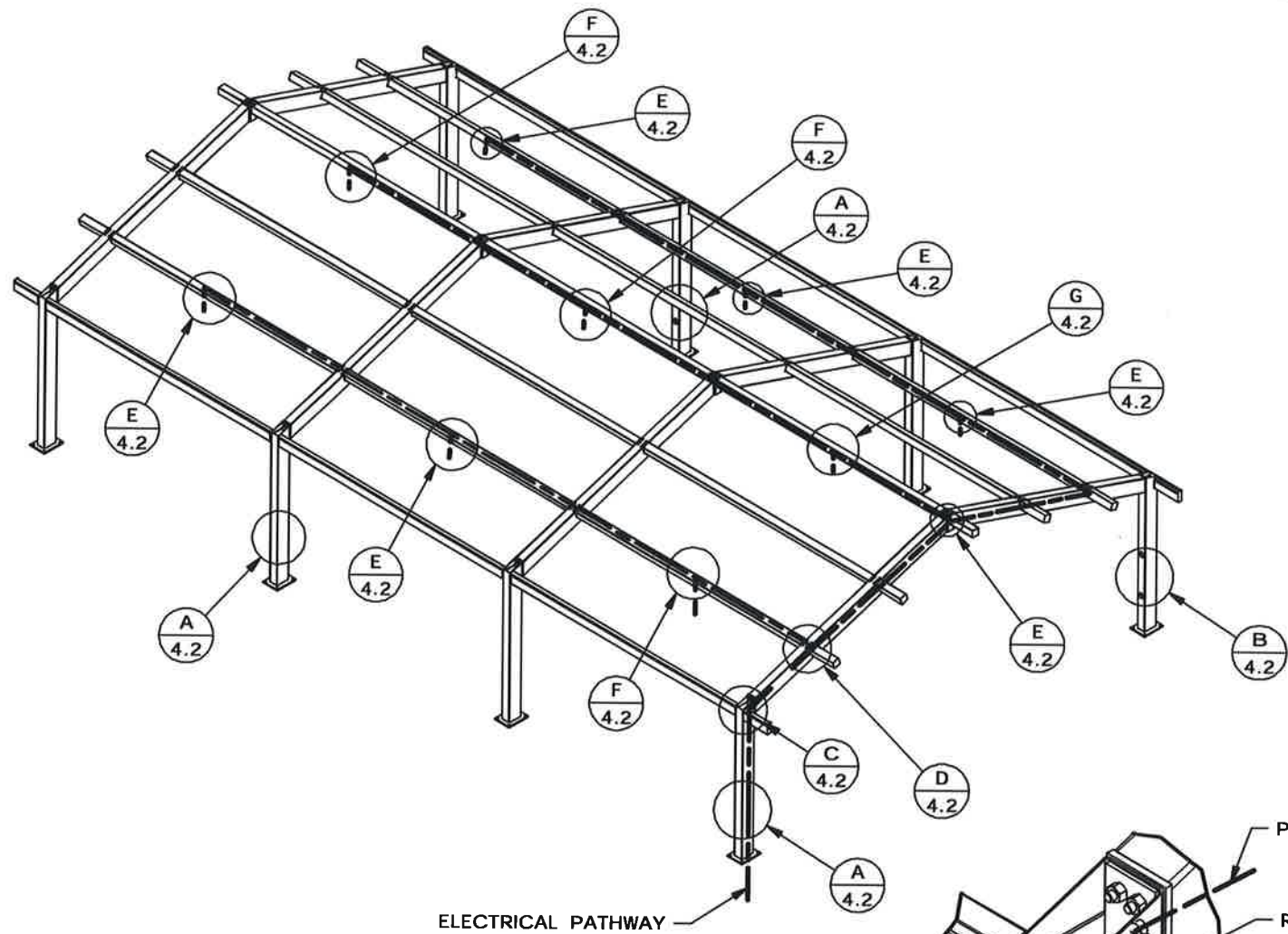
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DATE:  
3/22/2023  
JOB NO.:  
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REVISION:  
A  
BUILDING TYPE:  
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PROJECT NAME:  
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LAYTON, UT 84041



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**4.1**

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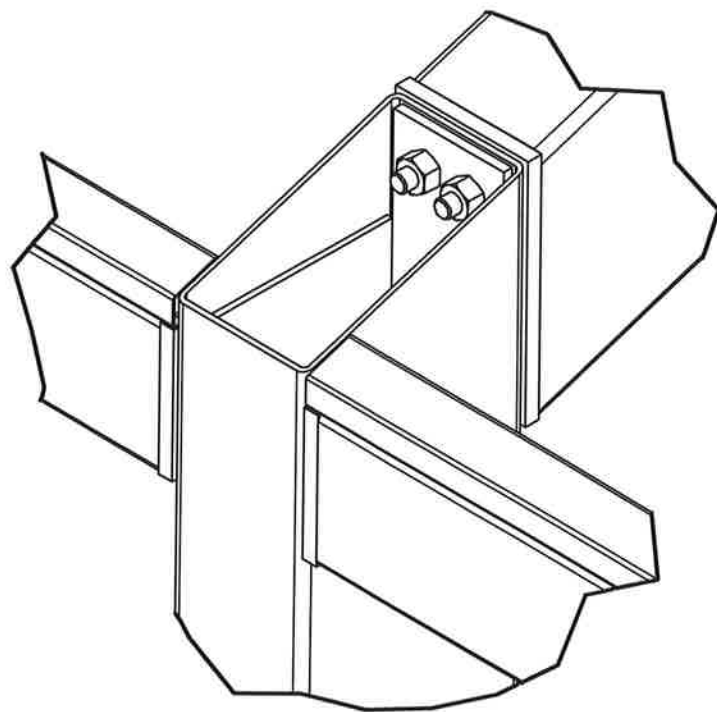
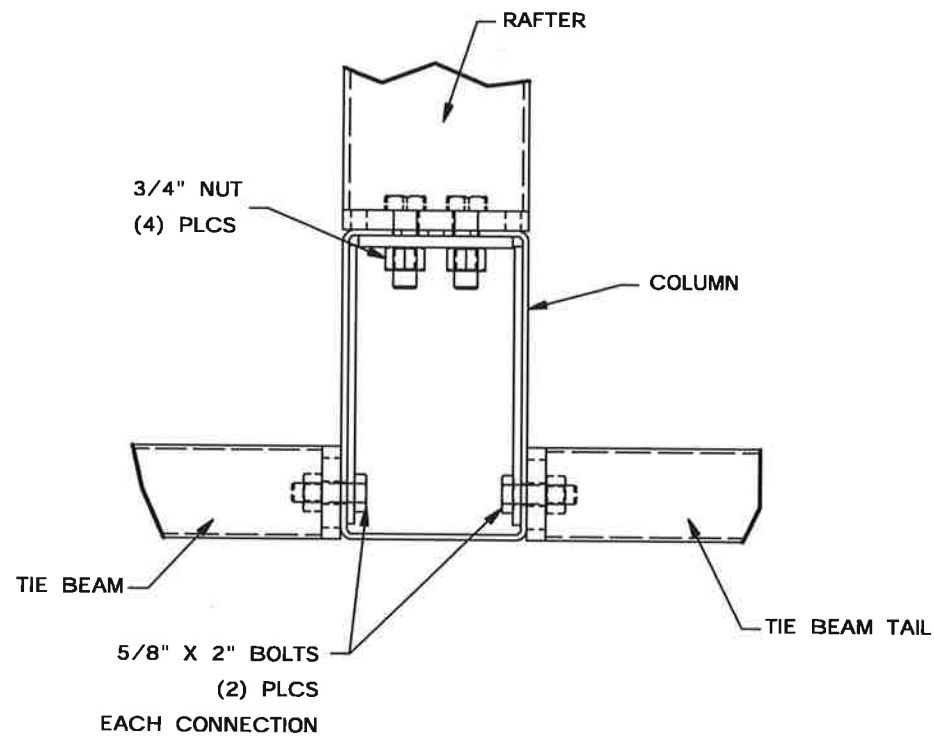
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BUILDING TYPE:	RG32X53M - P4
PROJECT NAME:	ANDY ADAMS LAYTON, UT 84041

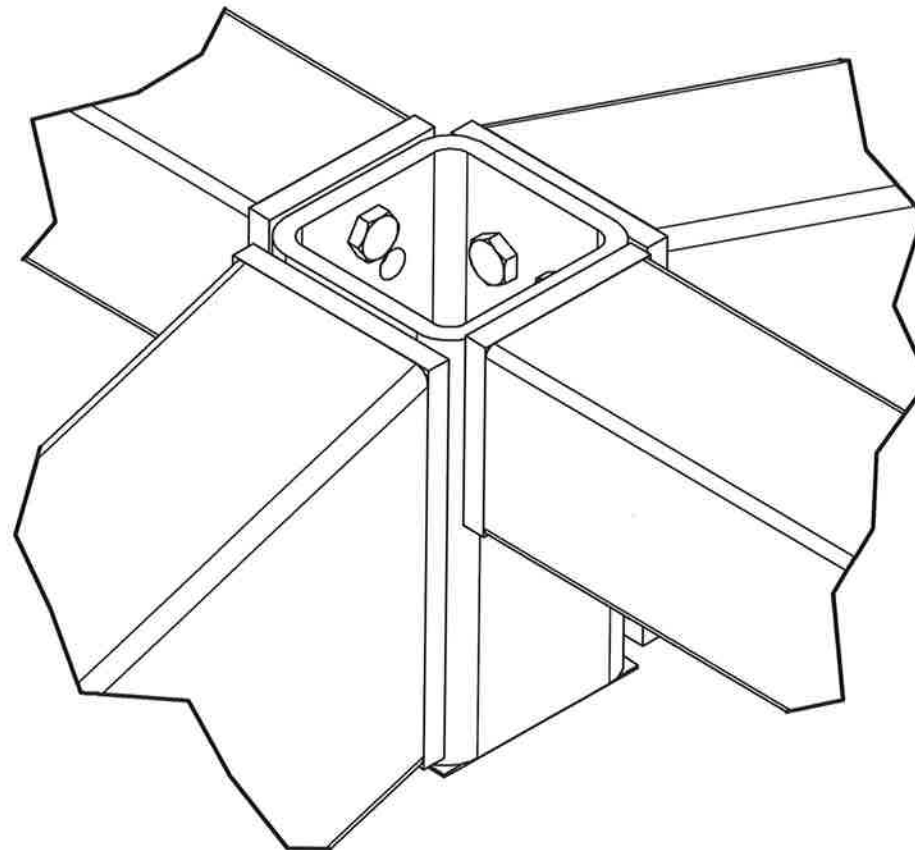
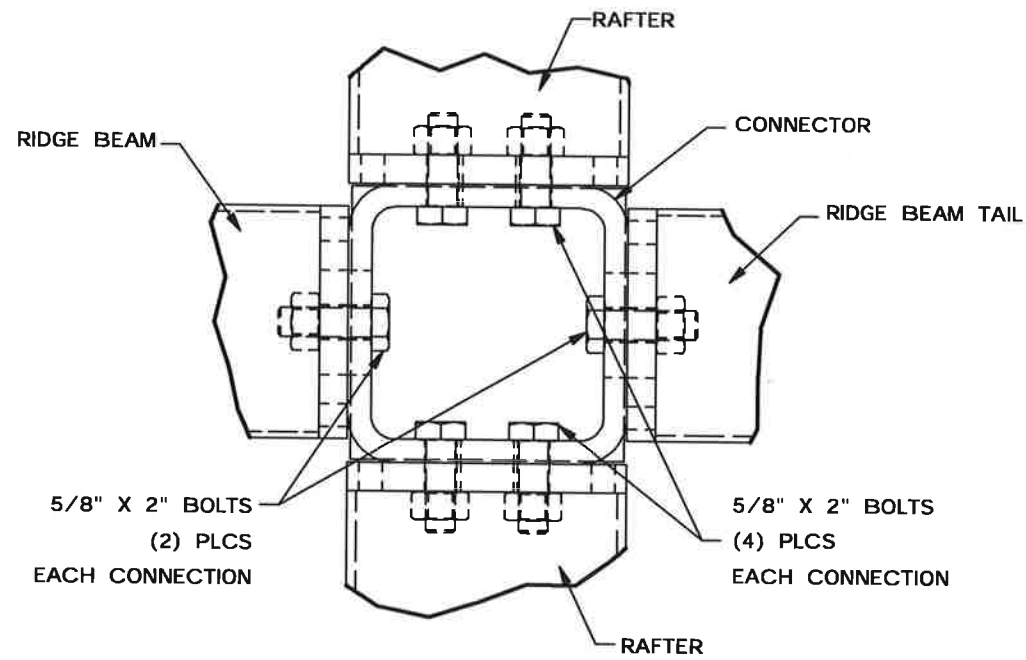
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**4.2**

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RAFTER AND TIE BEAM CONNECTION  
@ COLUMN

DETAIL A



**NOTE:** INSTALL CONNECTOR  
W/OPEN SIDE UP

RAFTER AND RIDGE BEAM CONNECTION  
@ CONNECTOR

DETAIL B

**NOTE TO INSTALLERS:**  
WITH FACTORY POWDERCOATED  
SHELTERS, PAINT EXPOSED  
FASTENERS OF COMPRESSION RINGS,  
ORNAMENTATION, KNIFE PLATES, ETC.  
WITH PROVIDED TOUCH UP PAINT TO  
PREVENT RUSTING OF FASTENERS

**PAINT EXPOSED FASTENERS**

*(Handwritten Signature)*  
REGISTERED PROFESSIONAL ENGINEER  
No. 365248  
DAVID S.  
DAYTON, III  
STATE OF UTAH  
4/19/23

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**FRAME CONNECTIONS**

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BUILDING TYPE:

RG32X53M - P4

PROJECT NAME:

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LAYTON, UT 84041

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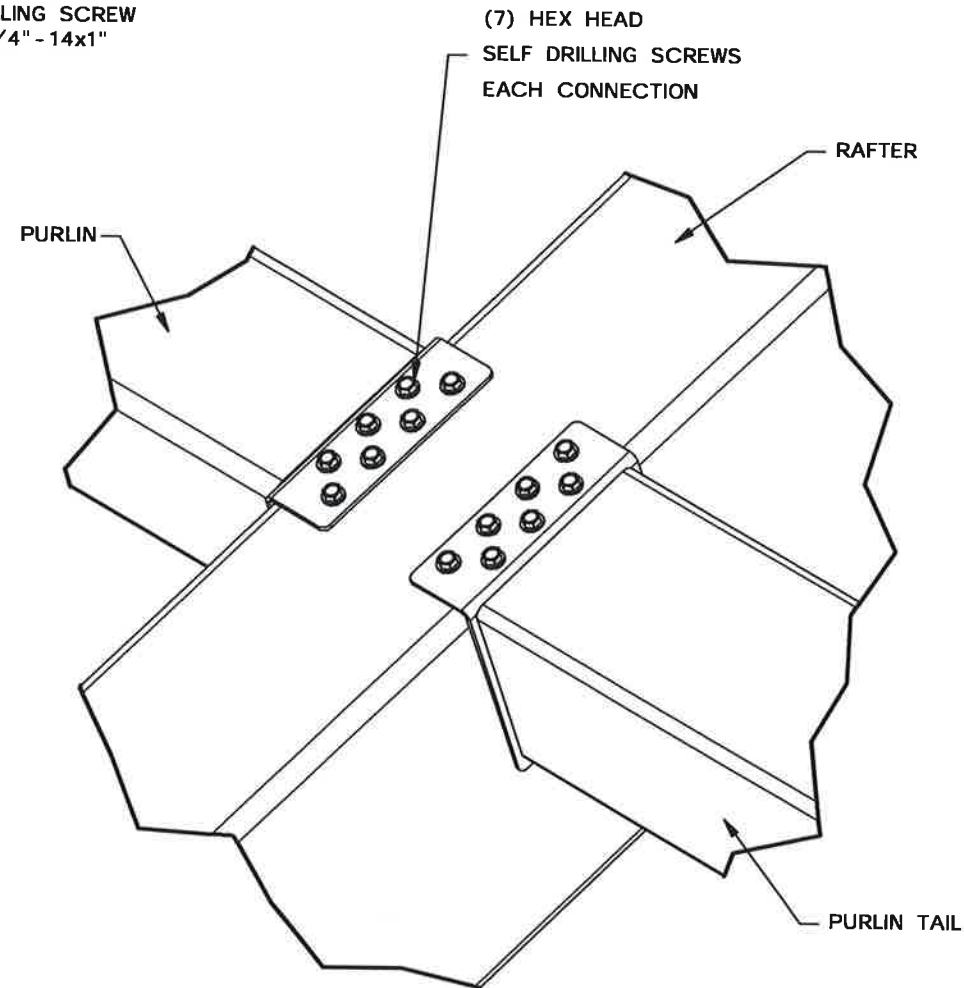
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HEX HEAD SELF DRILLING SCREW  
1/4" - 14x1"



1). SLIDE PURLIN INTO PLACE BETWEEN RAFTERS

2). FASTEN PURLIN W/ (7) HEX HEAD SCREWS ON EACH END

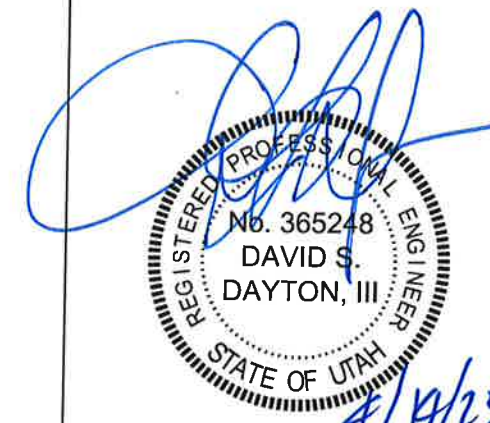
PURLIN CONNECTION  
@ RAFTER

DETAIL C

FRAME CONNECTIONS

**NOTE TO INSTALLERS:**  
WITH FACTORY POWDERCOATED SHELTERS, PAINT EXPOSED FASTENERS OF COMPRESSION RINGS, ORNAMENTATION, KNIFE PLATES, ETC. WITH PROVIDED TOUCH UP PAINT TO PREVENT RUSTING OF FASTENERS

PAINT EXPOSED FASTENERS



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BUILDING TYPE:

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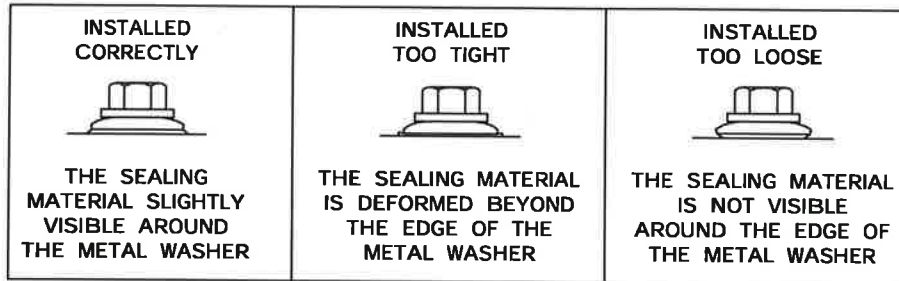
ANDY ADAMS

LAYTON, UT 84041

SHEET

5.1





THE DETAILS SHOWN ARE SUGGESTIONS OR GUIDELINES ON HOW TO ERECT THE METAL ROOFING SYSTEM. THE INFORMATION SHOWN IS ACCURATE, BUT IT IS NOT INTENDED TO COVER ALL INSTANCES, BUILDING REQUIREMENTS, DESIGNS OR CODES. CHANGES TO THE DETAILS MAY BE REQUIRED DUE TO FIELD CONDITIONS.

THE ERECTOR SHOULD THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL INSTALLATION INSTRUCTION MATERIAL BEFORE STARTING WORK.

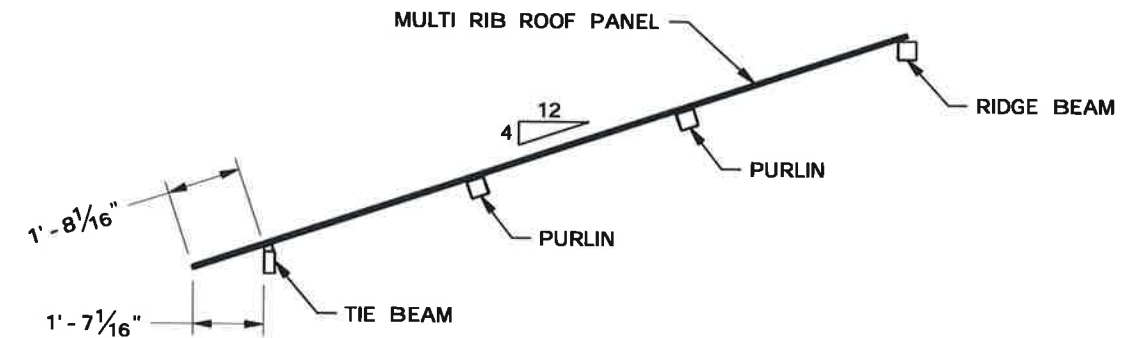
THE PANELS SHOULD BE INSTALLED PLUMB, STRAIGHT, AND ACCURATELY TO THE ADJACENT WORK.

ERECTORS SHALL BE RESPONSIBLE TO ENSURE THAT THE DETAILS MEET PARTICULAR BUILDING REQUIREMENTS AND TO ASSURE ADEQUATE WATER TIGHTNESS.

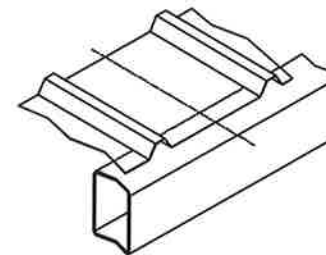
FOR THE BEST APPEARANCE ALL TRIM AND FLASHING SHALL BE INSTALLED TRUE, AND IN PROPER ALIGNMENT, WITH ALL EXPOSED FASTENERS EQUALLY SPACED.

SOME FIELD CUTTING AND/OR FITTING OF PANELS, TRIM AND FLASHING IS TO BE EXPECTED BY THE ERECTOR. MINOR FIELD CORRECTIONS ARE PART OF NORMAL ERECTION WORK.

THE INSTALLATION SHALL BE PERFORMED BY EXPERIENCED METAL CRAFTSMEN AND WORKMANSHIP SHALL MEET THE BEST INDUSTRY STANDARDS.



**MULTI RIB ROOF SECTION**

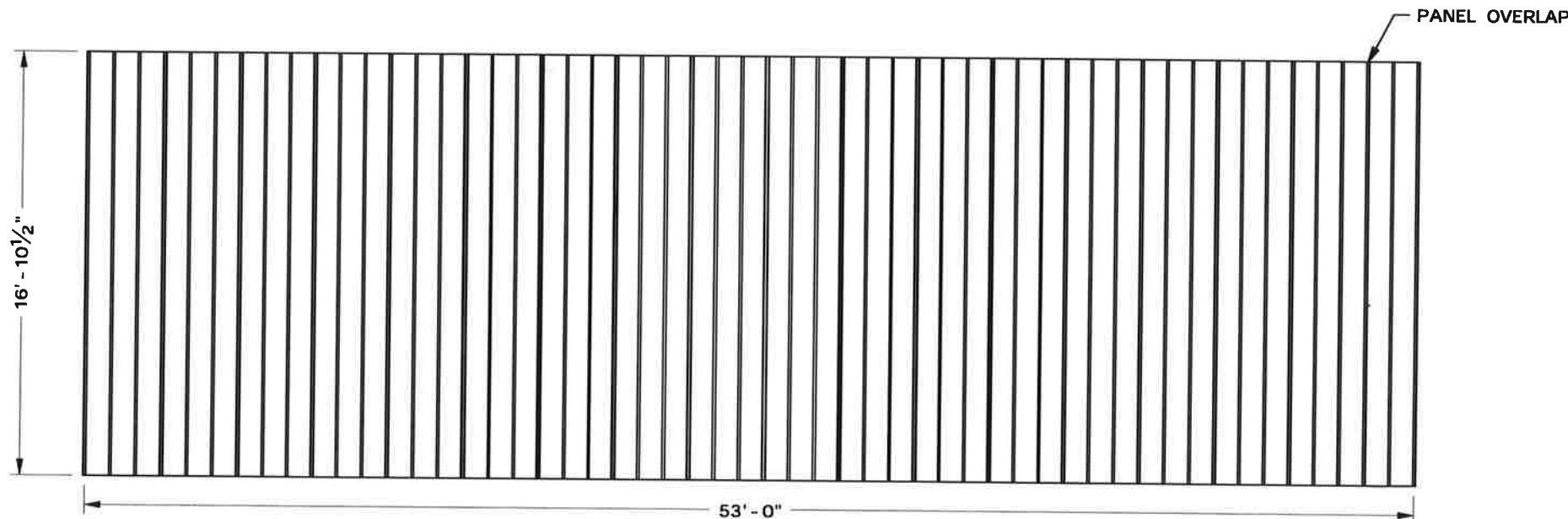


**STEPS FOR PROPER PANEL INSTALLATION:**

1. MARK THE CENTER OF THE TIE BEAM AND COMPRESSION RING (OR PURLIN ON MULTI TIER BUILDINGS).
2. FIND ONE OF THE LONGEST PANELS.
3. CENTER THAT PANEL ALONG THE CENTER LINE OF THE FRAME.  
(SEE ROOF LAYOUT FOR THE CORRECT RIB TO CENTER)
4. INSTALL REMAINING PANELS WORKING OUT TOWARDS THE CORNERS.
5. INSTALL ALL ROOF SECTIONS USING THIS METHOD.

**ATTENTION INSTALLERS :**  
METAL SHAVINGS LEFT ON ROOF WILL QUICKLY RUST AND STAIN THE ROOF FINISH!

DRILLING OR INSTALLING ROOF FASTENERS WILL CAUSE METAL SHAVINGS. THESE SHAVINGS MUST BE CAREFULLY REMOVED AT THE END OF EACH DAY BY EITHER SWEEPING OR BRUSHING THE INSTALLED ROOF.



**MULTI RIB ROOF LAYOUT**

REGISTERED PROFESSIONAL ENGINEER  
No. 365248  
DAVID S. DAYTON, III  
STATE OF UTAH

4/14/23

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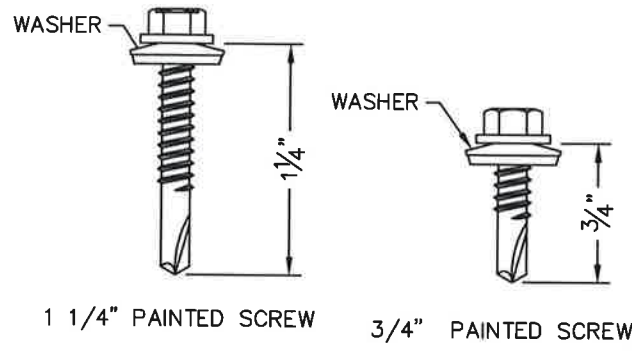
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**ROOF LAYOUT**

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DATE:	3/22/2023
JOB NO.:	7907
REVISION:	A
BUILDING TYPE:	RG32X53M - P4
PROJECT NAME:	ANDY ADAMS LAYTON, UT 84041






SHEET  
**6.0**

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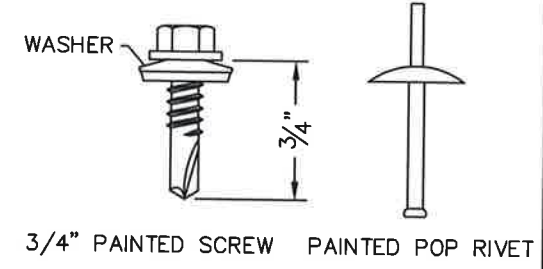


NOTE: STITCH OR LAP SCREWS ARE NOT REQUIRED ALONG THE RIB

ORDER OF INSTALLATION

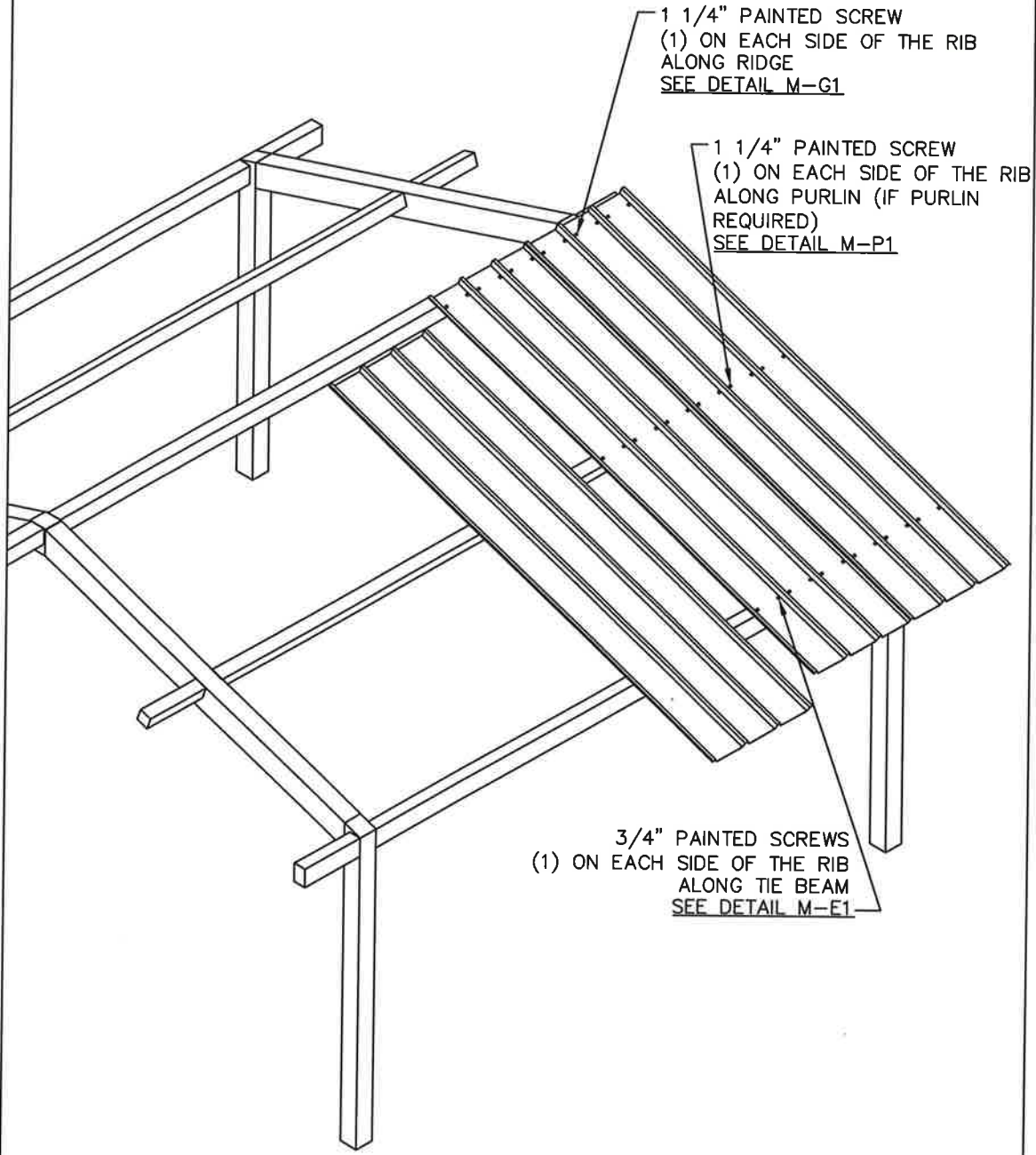
-  PANEL END CAP 10' LONG  
SEE DETAIL M-G1
-  EAVE TRIM 10' LONG  
W/ WEEP HOLES  
SEE DETAIL M-E1
-  RAKE TRIM 10' LONG  
W/O WEEP HOLES  
SEE DETAIL M-R1
-  RIDGE CAP 10' LONG  
SEE DETAIL M-G1
-  EAVE CORNER TRIM 8" LONG  
(2) PER CORNER  
SEE DETAIL M-R1, M-M2

FASTENERS



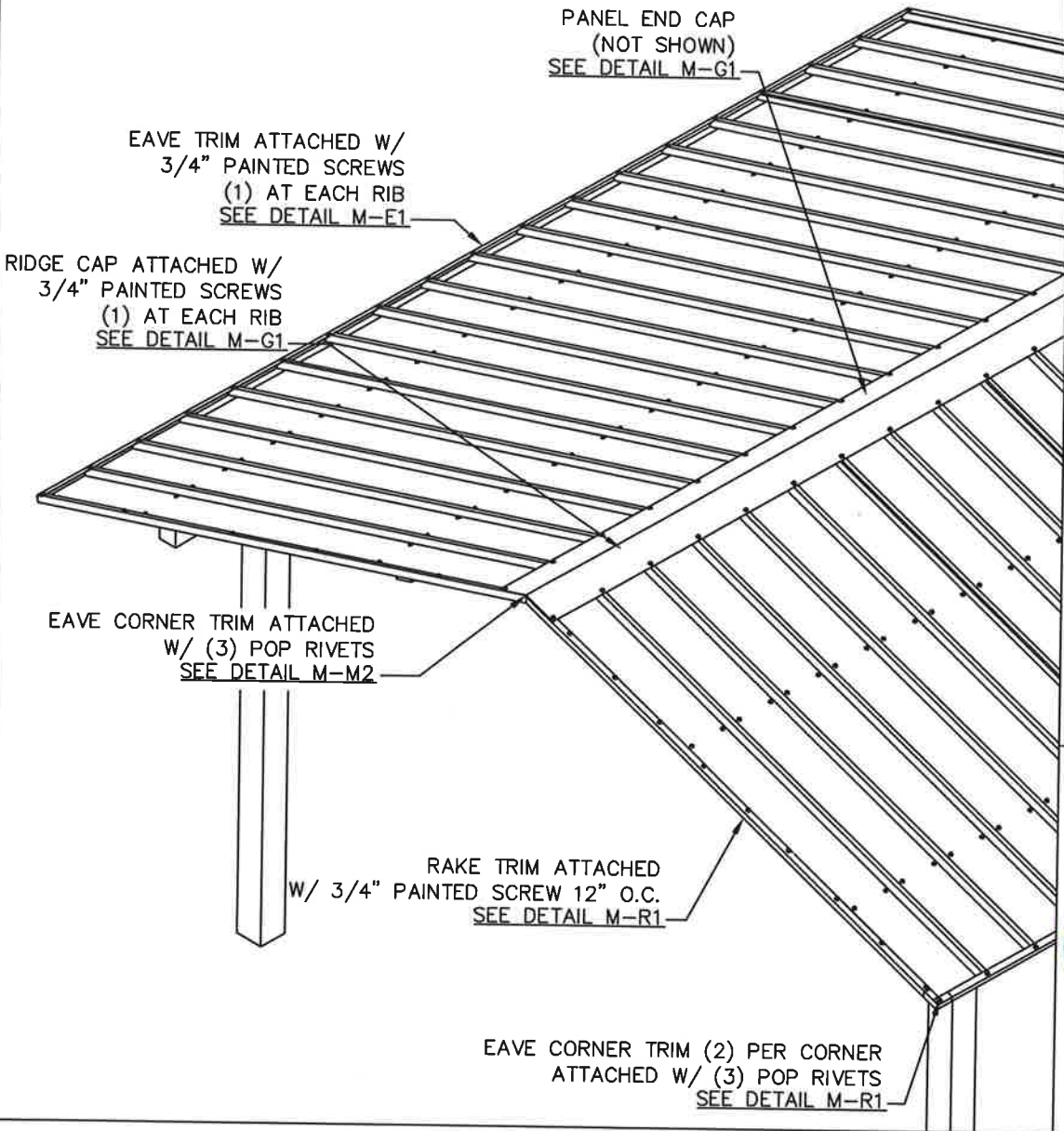
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ROOF DETAILS



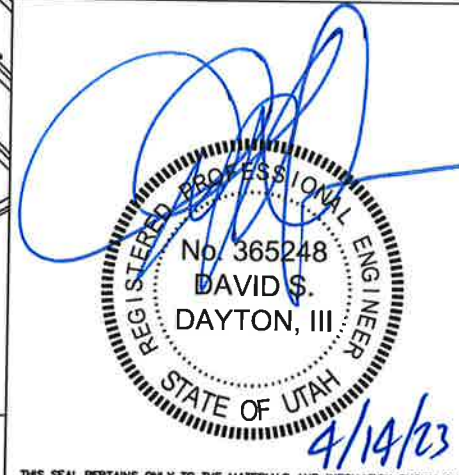
METAL ROOF PANEL LAYOUT

ROOF



TRIM INSTALLATION

TRIM



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DRAWN BY:	DTH
DATE:	3/22/2023
JOB NO.:	7907
REVISION:	A
BUILDING TYPE:	RG32X53M-P4
PROJECT NAME:	ANDY ADAMS LAYTON, UT 84041

SHEET  
R1.0

PRINTED ON: 3/23/2023

DWG: Jobs\7907\RI~000004 - 7907.dwg

ROOF DETAILS

DRAWN BY:

DTH

DATE:

3/22/2023

JOB NO.:

7907

REVISION:

A

BUILDING TYPE:

RG32X53M-P4

PROJECT NAME:

ANDY ADAMS  
 LAYTON, UT 84041

SHEET

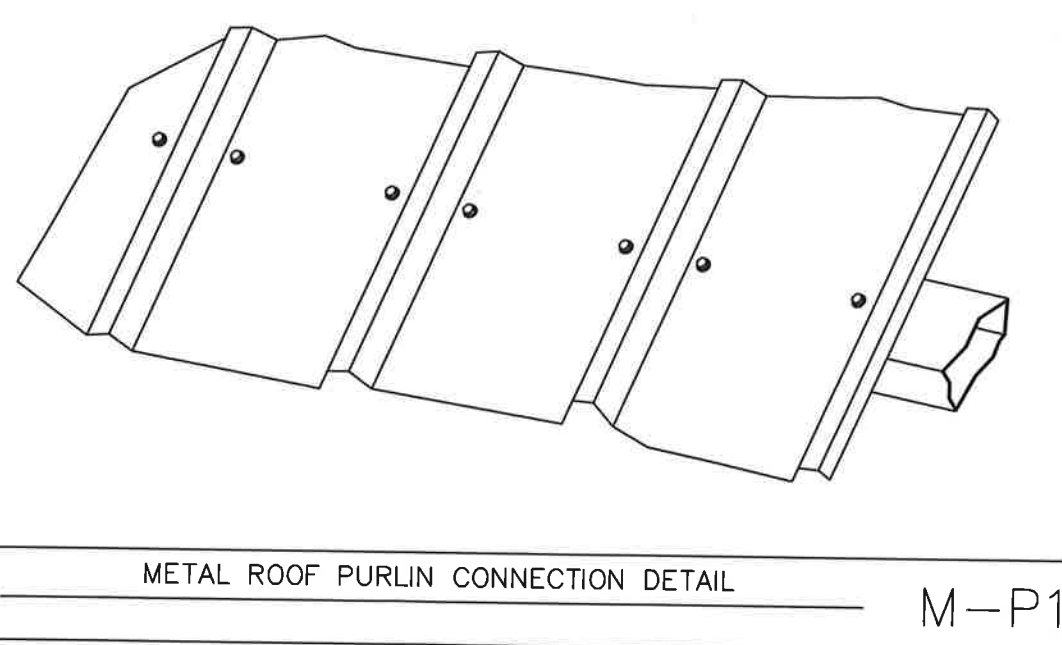
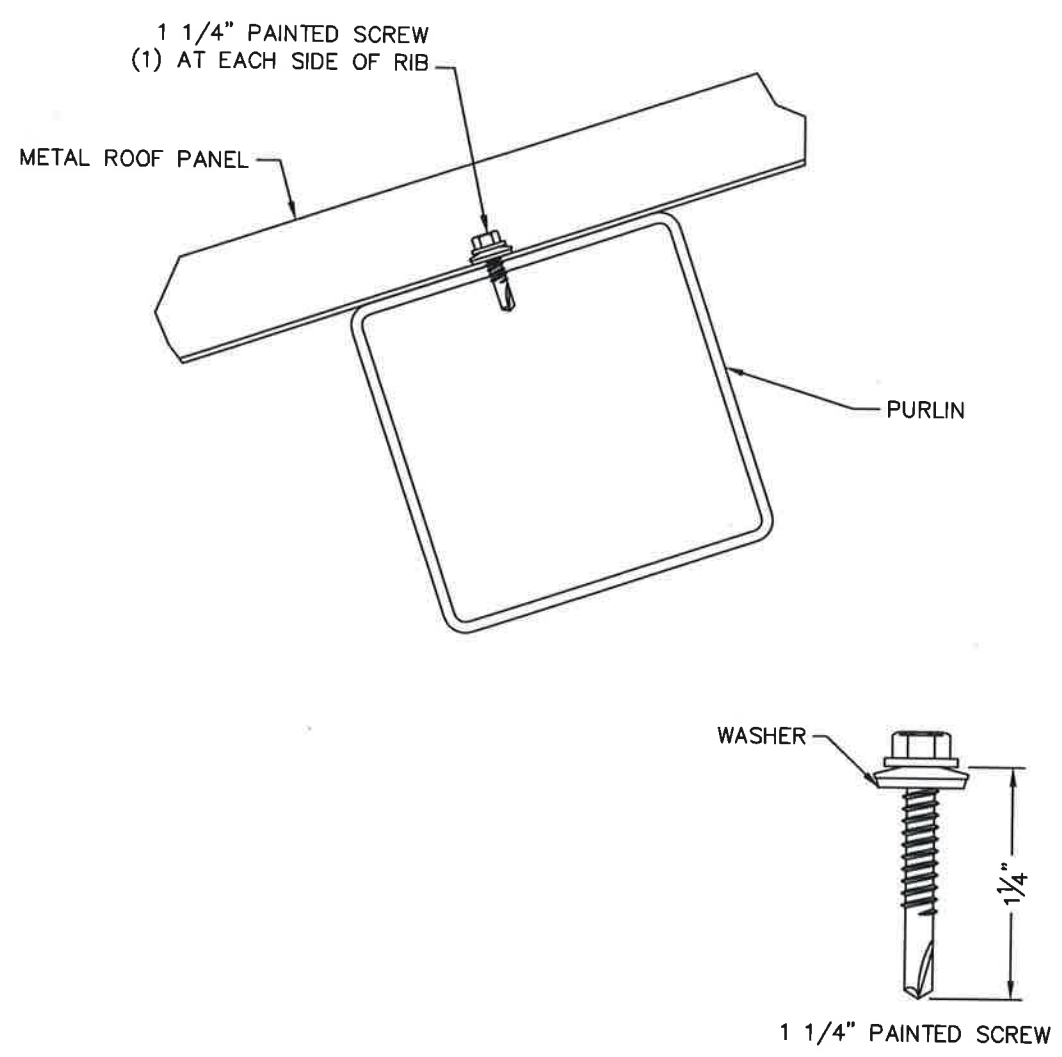
R1.1

*David S. Adams*  
 REGISTERED PROFESSIONAL ENGINEER  
 No. 365248  
 DAVID S.  
 DAYTON, III  
 STATE OF UTAH  
 4/14/23

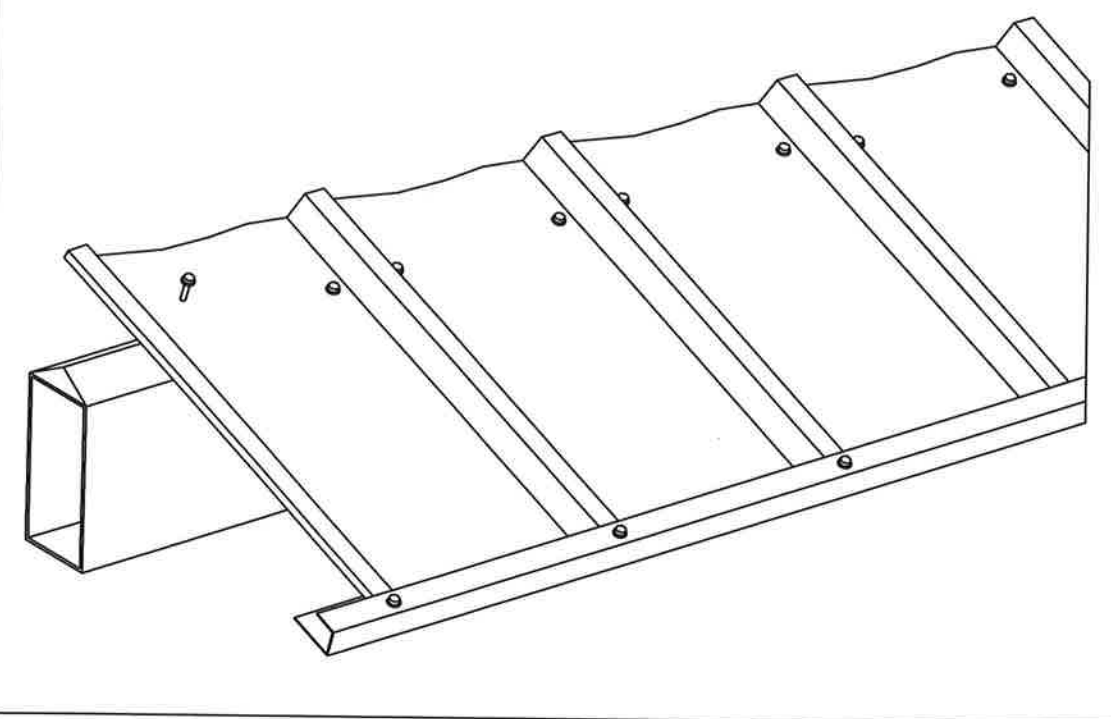
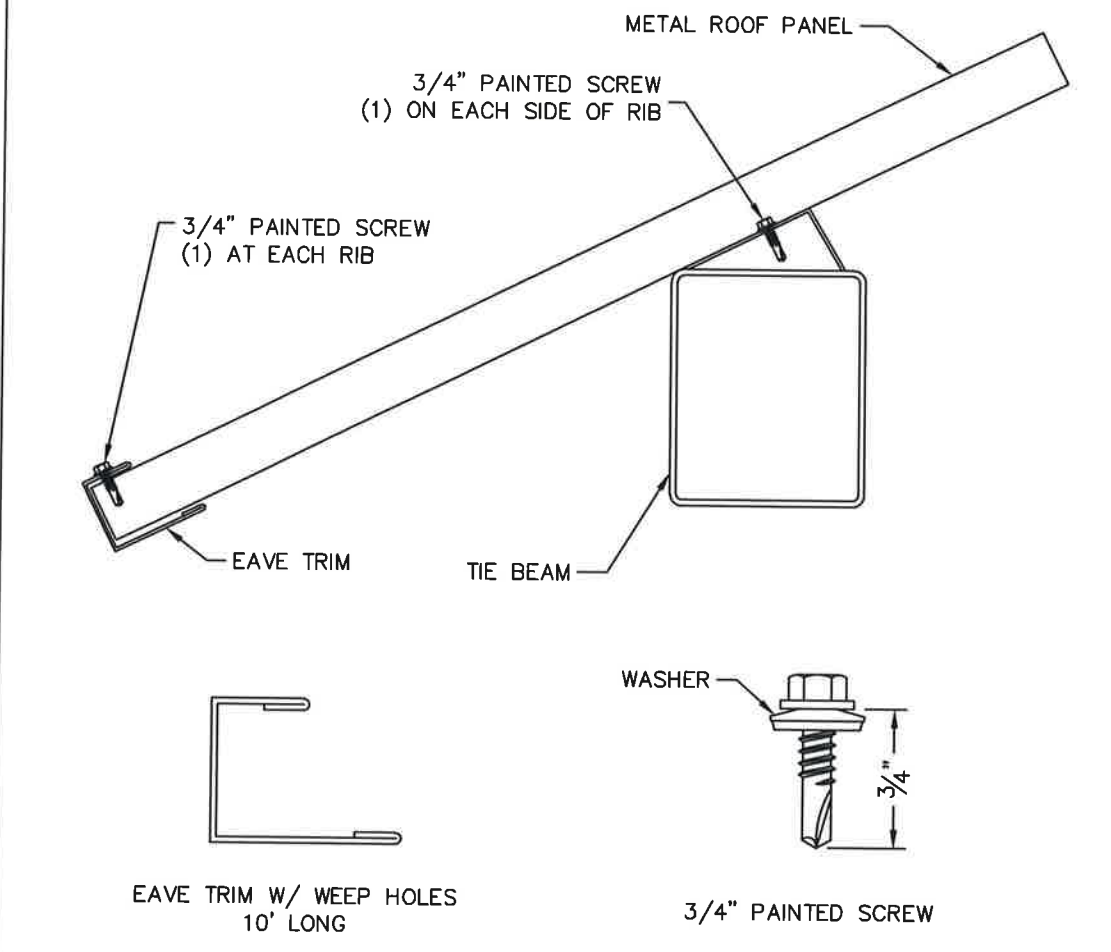
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M-P1



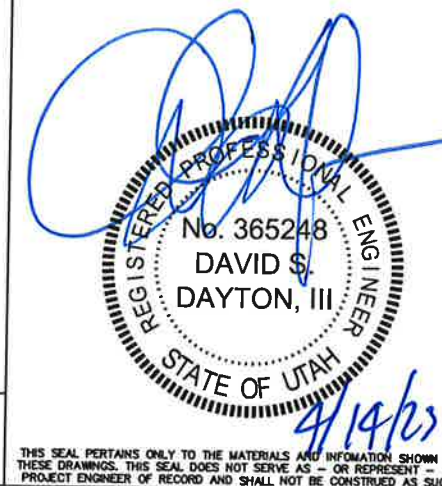
M-E1

M-E1

ROOF DETAILS

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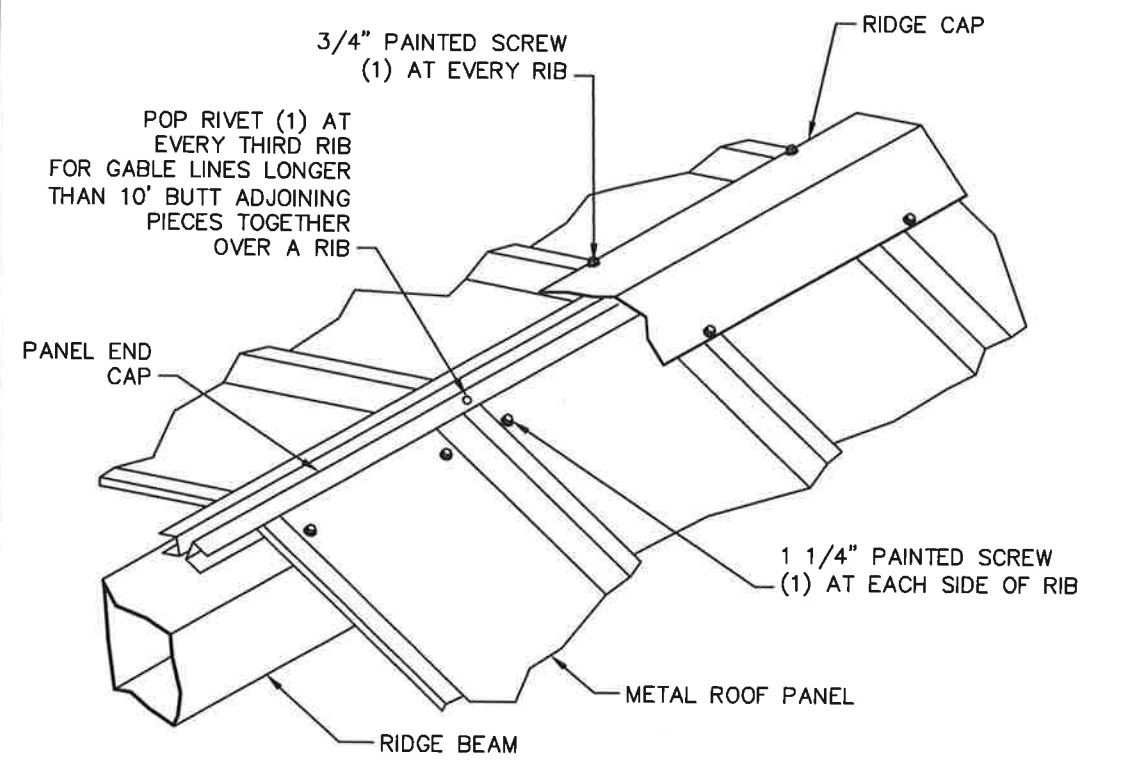
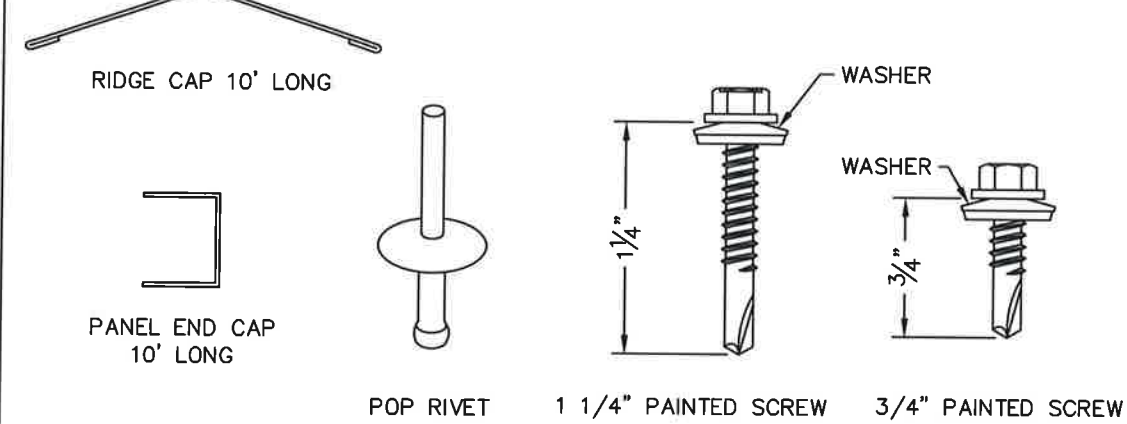
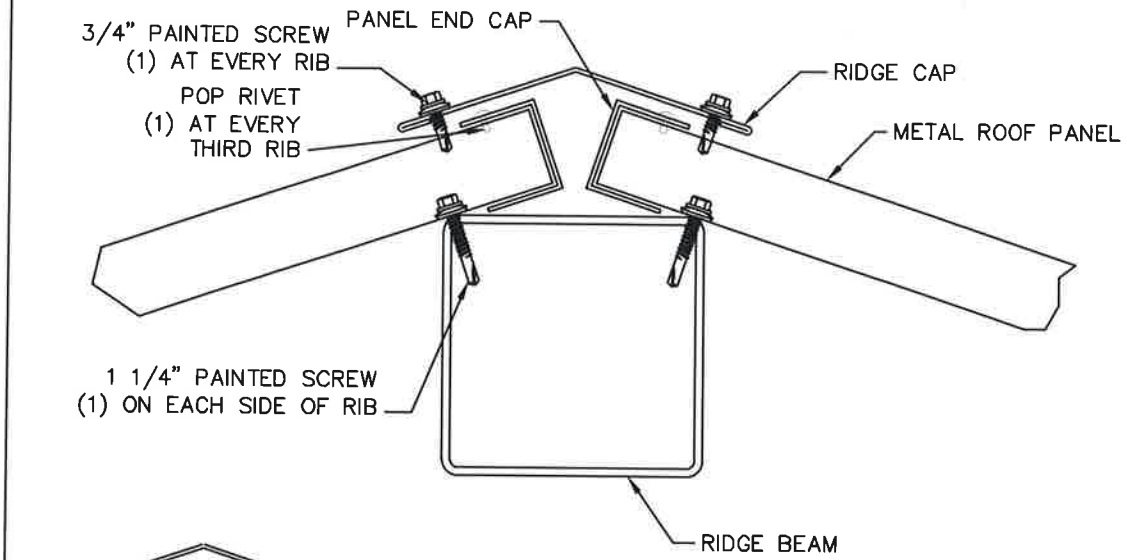
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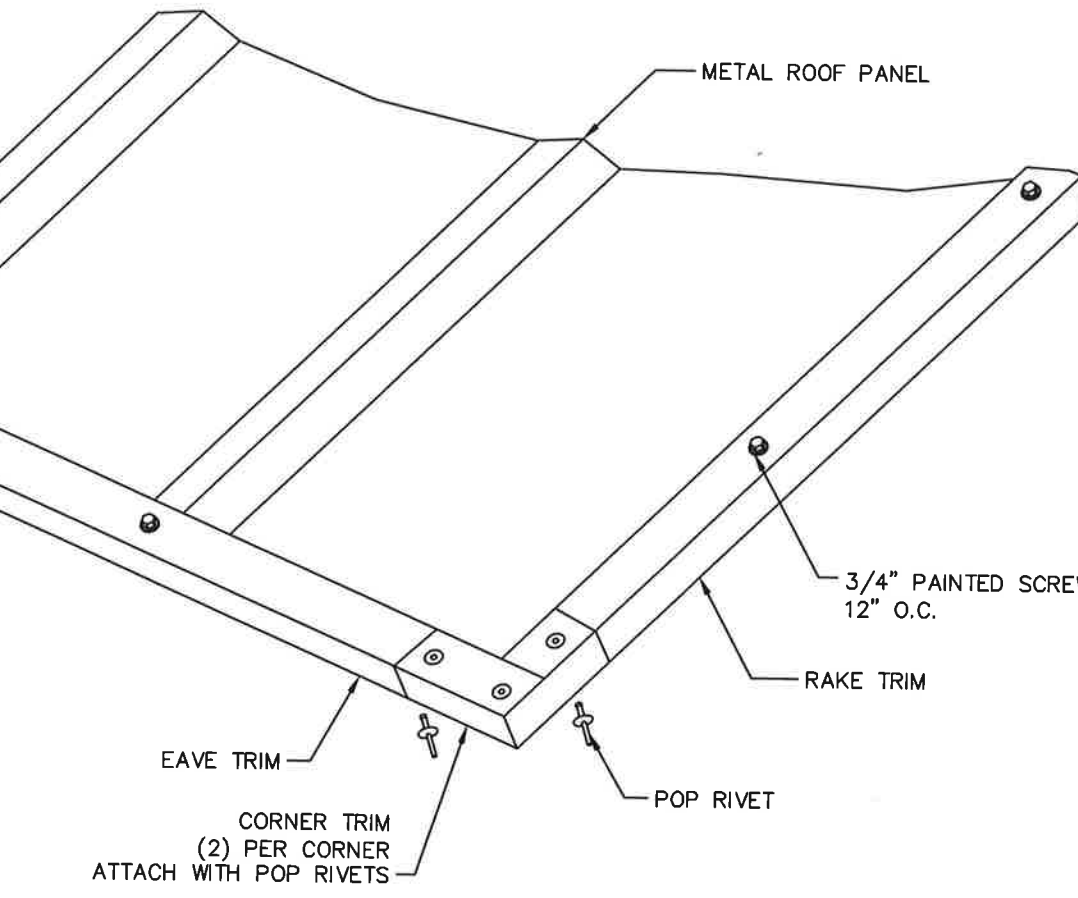
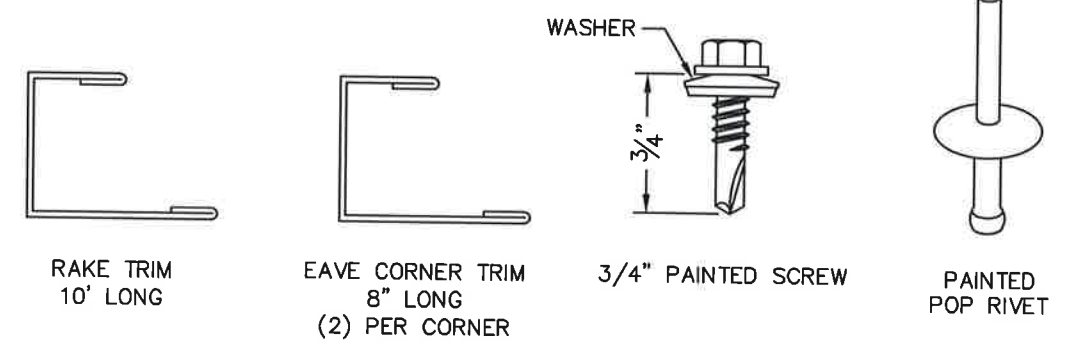
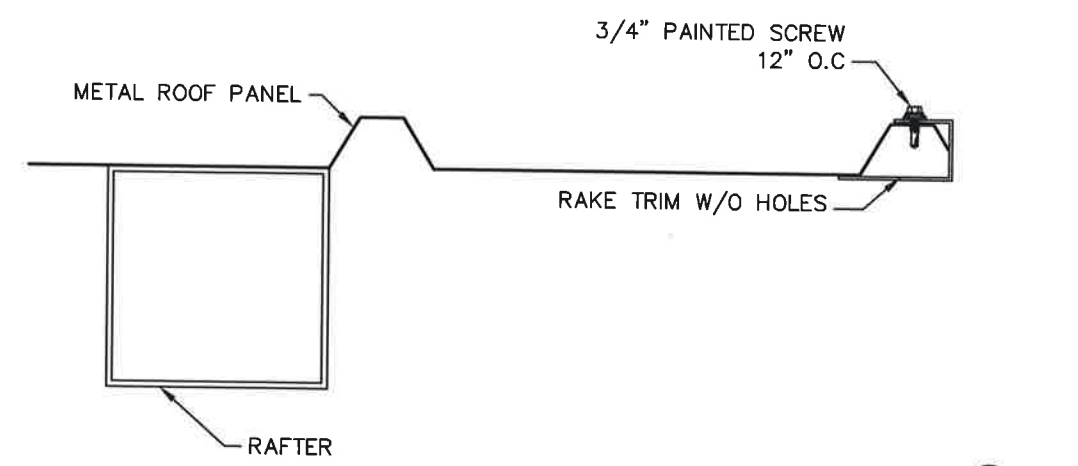
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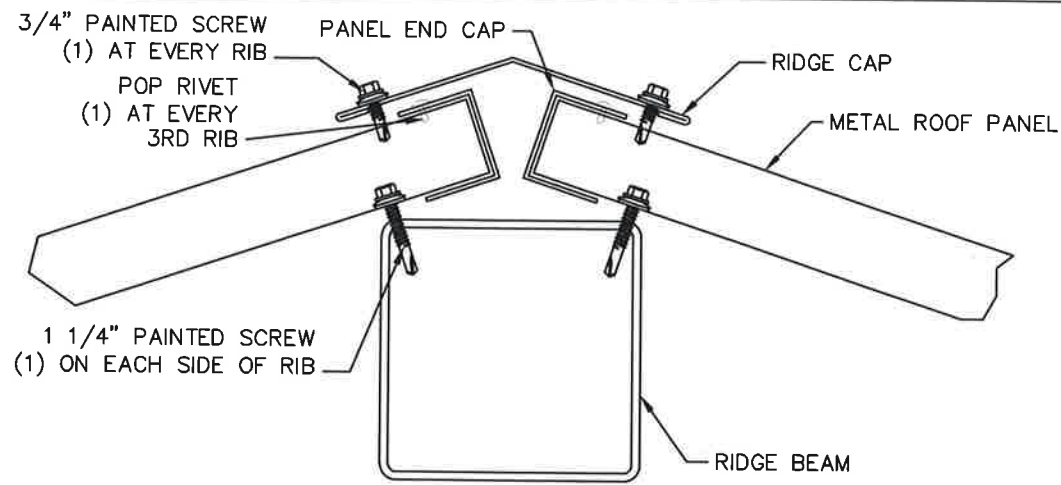
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METAL ROOF CONNECTION AT RIDGE **M-G1**

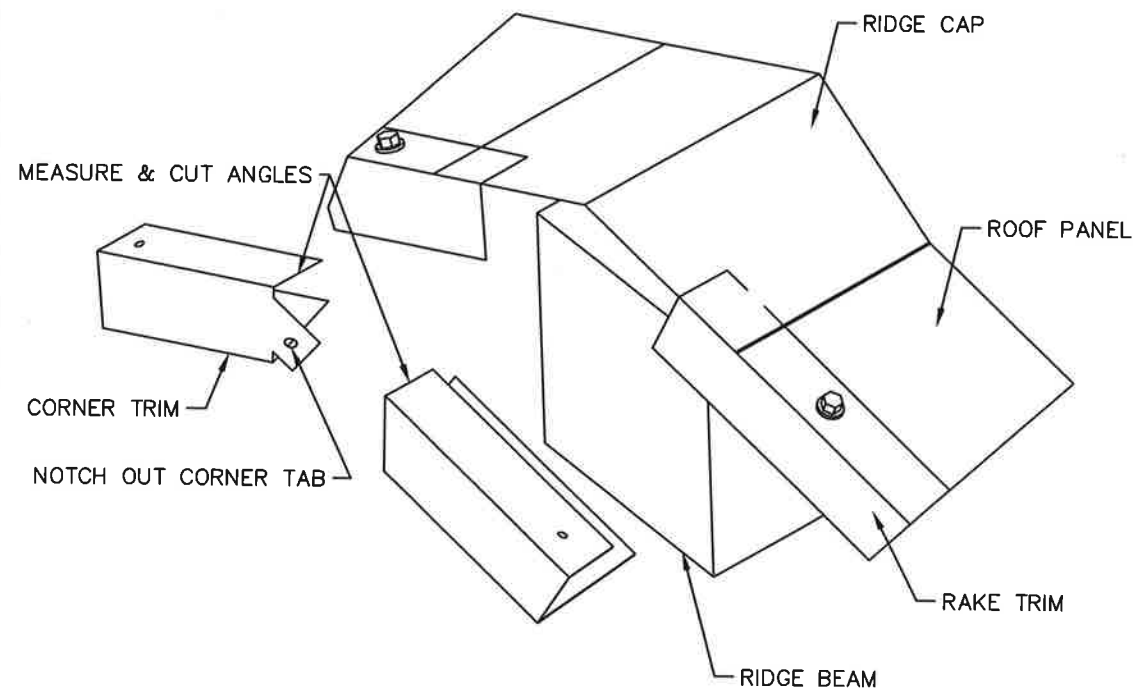


METAL ROOF CONNECTION AT RAKE **M-R1**



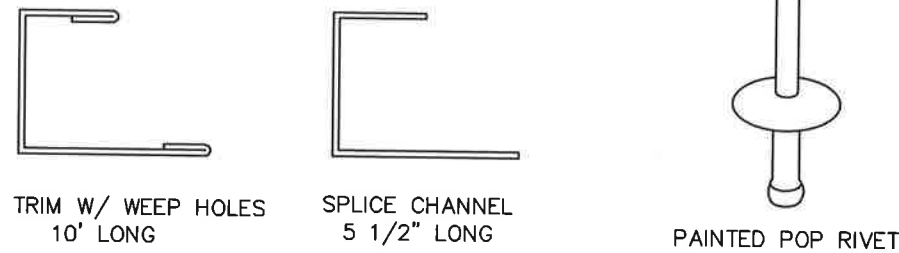
CUT A MITER AND CORNER TAB ON (1) OF THE CORNER PIECES  
 CUT AN OPTIONAL MITER ON THE SECOND EAVE CORNER

SLIDE THE CORNER TRIM OVER THE RAKE TRIM AND RIDGE CAP  
 THEN ATTACH THE TRIM WITH POP RIVETS TO THE EAVE TRIM



METAL ROOF RAKE CORNER CONNECTION DETAIL

M-M2

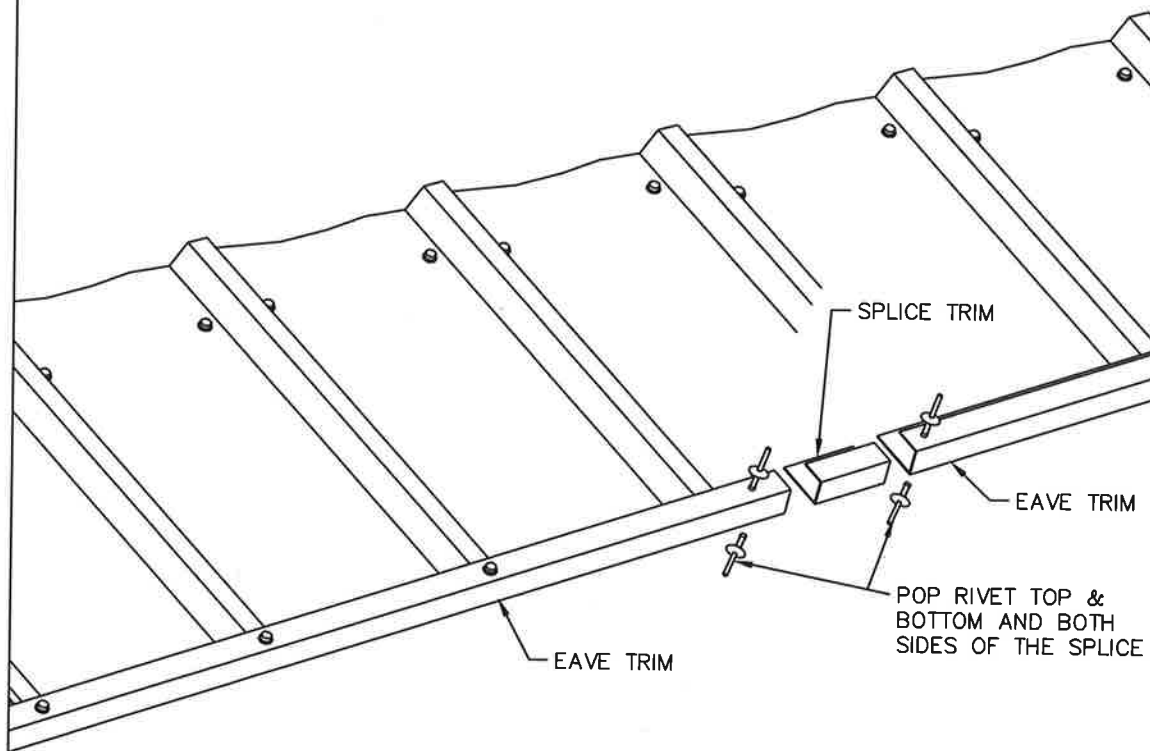
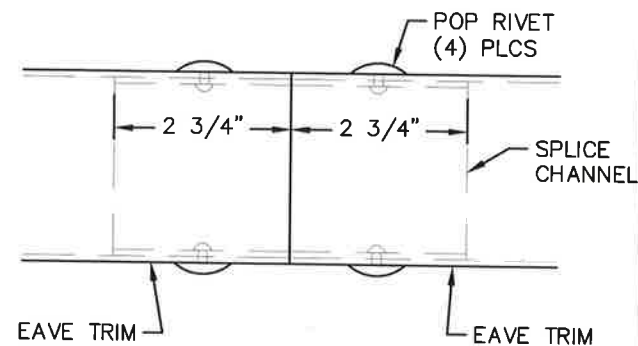


THIS CONNECTION IS ONLY REQUIRED ON SHELTERS WITH EAVES LONGER THAN 10'

SLIDE THE SPLICE TRIM INTO THE EAVE TRIM APPROXIMATELY 2 3/4"

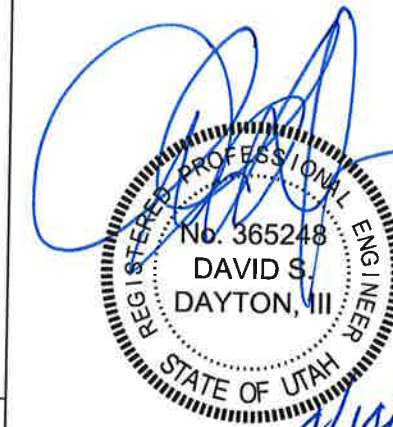
POP RIVET TOP & BOTTOM AND BOTH SIDES OF THE SPLICE

SPLICES ARE NOT GUARANTEED TO FALL IN THE CENTER OF THE EAVE



METAL ROOF EAVE SPLICE CONNECTION DETAIL

M-S1



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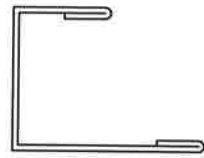
ROOF DETAILS

DRAWN BY:	DTH
DATE:	3/22/2023
JOB NO.:	7907
REVISION:	A
BUILDING TYPE:	RG32X53M-P4
PROJECT NAME:	ANDY ADAMS LAYTON, UT 84041

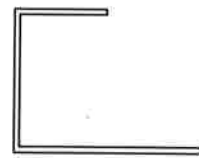
SHEET  
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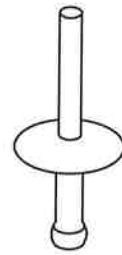
DWG: Jobs \7907\RM-000004 - 7907.dwg



RAKE TRIM W/O WEEP HOLES  
10' LONG



SPLICE CHANNEL  
5 1/2" LONG



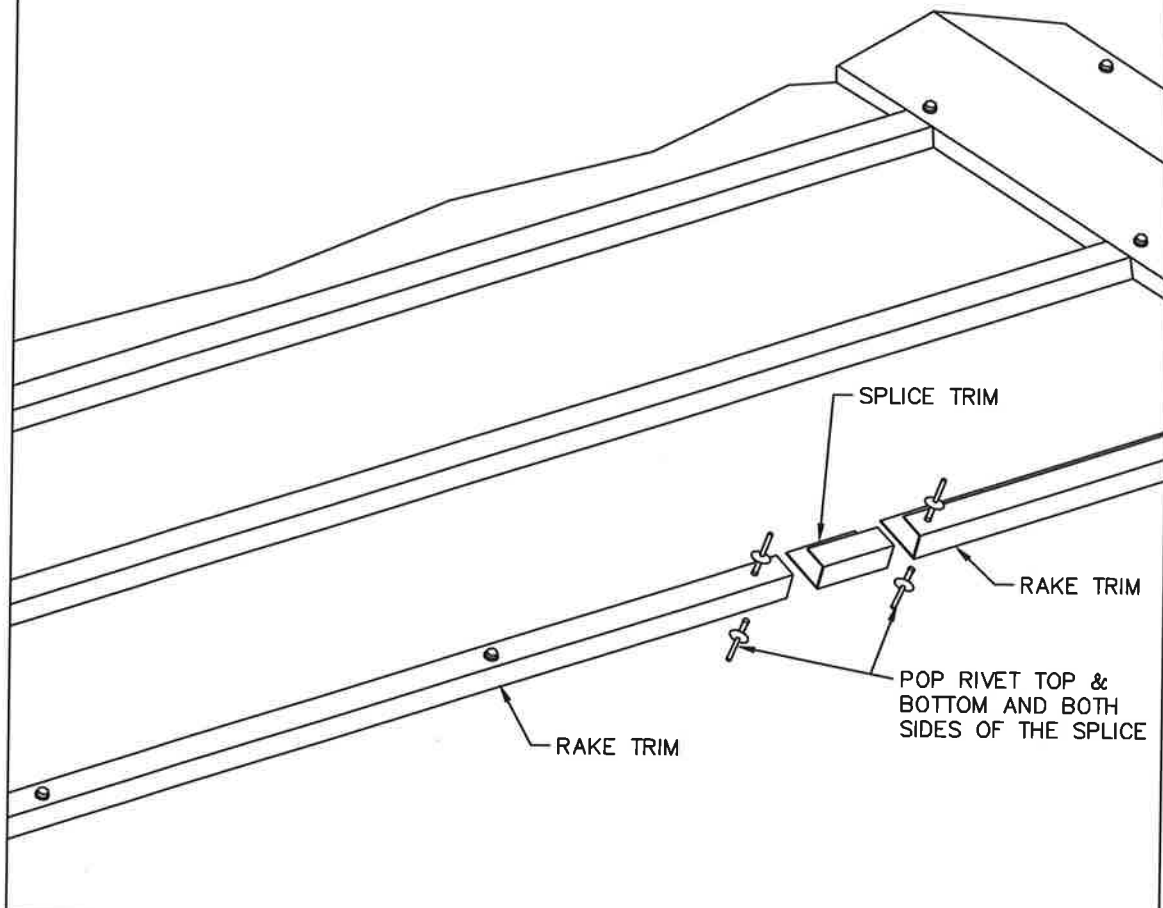
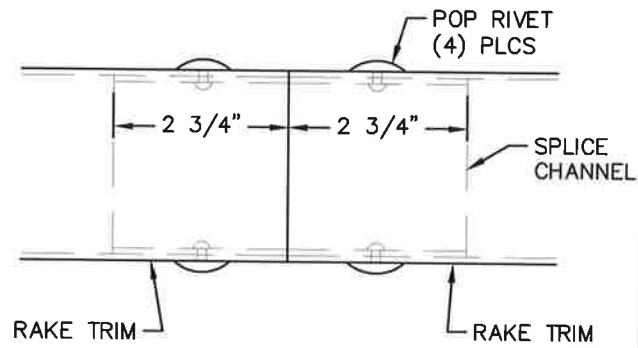
PAINTED POP RIVET

THIS CONNECTION IS ONLY REQUIRED  
ON SHELTERS WITH RAKES LONGER  
THAN 10'

SLIDE THE SPLICE TRIM INTO THE  
RAKE TRIM APPROXIMATELY 2 3/4"

POP RIVET TOP & BOTTOM  
AND BOTH SIDES OF THE SPLICE

SPLICES ARE NOT GUARANTEED TO  
FALL IN THE CENTER OF THE EAVE



METAL ROOF RAKE SPLICE CONNECTION DETAIL

M-S2

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ROOF DETAILS

DRAWN BY:

DTH

DATE:

3/22/2023

JOB NO.:

7907

REVISION:

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BUILDING TYPE:

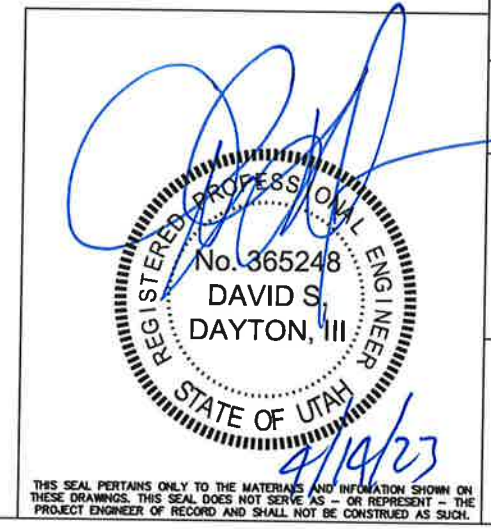
RG32X53M-P4

PROJECT NAME:

ANDY ADAMS  
LAYTON, UT 84041

SHEET

R1.4



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