



PROJECT MANUAL

Bidding Requirements, Contract Conditions
of the Contract and Specifications

LAYTON CITY PROJECT 22-02:

WELKER TRAILHEAD IMPROVEMENTS

2700 N. 2125 E. 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 1:00 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:

WELKER TRAILHEAD, Project 22-02

2700 N. 2125 E. Layton, Utah

Bids will be received for site improvements of the Welker Trailhead as delineated in the drawings. Major work items will include the following work: Prepare site for the installation of a CXT restroom and drinking fountain; install parking lot expansion; install concrete pathways; install benches, bike rack, bike repair stand, and landscaping improvements. Limit site work as shown in the drawings.

Project bidding documents are available at www.questcdn.com (Quest project #8522534) 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 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 1:00 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 (Quest project #8522534) 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 firsthand 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

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 Welker Trailhead Improvements, Project 22-02
▪ Welker Trailhead – 2700 N. 2125 E. 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 WELKER TRAILHEAD IMPROVEMENTS, Project 22-02 – 2700 North 2125 East 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 22-02

Layton City Welker Trailhead Improvements, Project 22-02:

Welker Trailhead – 2700 N. 2125 E.

BASE BID					
Item No.	Items Written in Words	Qty	Unit	Amount	
				Dollars	Cents
1	Mobilization / General Conditions	1	LS		
2	Construction Surveying & Staking	1	LS		
3	Traffic Control / Construction Fencing	1	LS		
4	Testing (Concrete / Compaction)	1	LS		
5	Erosion Control Elements & Protection	1	LS		
6	Clear & Grub Site	1	LS		
7	Earthwork & Grading	1	LS		
8	Parking Lot Expansion (and existing parking lot improvements)	1	LS		
9	Concrete Paving	1	LS		
10	Restroom Facility (See Note #1 Below)	1	LS		
11	Parking Lot Lighting & Related Electrical Appurtenances	1	LS		
12	All other Electrical/Utopia (for Restroom)	1	LS		
13	Trail Security Light	1	LS		
14	Drinking Fountain + Installation	1	LS		
15	Water & Sewer Connections to Drinking Fountain	1	LS		
16	Benches	1	LS		
17	Bike Rack & Bike Repair Stand	1	LS		
18	Fine Grading	1	LS		
19	Fencing	1	LS		
20	Landscaping	1	LS		
Welker Trailhead Total Base Bid:					

* **NOTE #1:** Restroom Facility as noted in plans is to be furnished by City (restroom is already here and is being stored at our facilities until it is time for install) and Installed by CXT. Contractor is responsible to prepare the pad for the restroom and to have all utilities stubbed up ready for hook-up upon arrival of the restroom. Owner will coordinate with CXT in purchasing the restroom and notify the Contractor of the timeline as to when the restroom will be delivered and ready for placement.

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 Welker Trailhead
Improvements, Project 22-02 – 2700 N. 2125 E. 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)

END OF SECTION 00 050

**SECTION 00 060
NOTICE OF AWARD**

To: _____

PROJECT Description: Layton City Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125 E. 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 Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125 E. 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 _____ (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 Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125 E. 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 Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125 E. 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 Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125 E. 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 Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125
E. _____, 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 Welker Trailhead Improvements, Project 22-02 – 2700 N. 2125 E. Layton, Utah
- B. Project summary:
 - Major work items will include the following work: Prepare site for the installation of a CXT restroom and drinking fountain; install parking lot expansion; install concrete pathways; install benches, bike rack, bike repair stand, 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 reduce 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 th 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 nd St, New York NY 10036 (212) 642-4900
APA	American Plywood Assoc, P.O. Box 11700 (98411, 7011 South 19 th 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 th 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 th 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 th 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 th 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 th 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 th & D St SW, Washington, DC 20406 (202) 708-9205
GSA	General Services Administration, F St & 18 th 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 th and 14 th 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:

NAME	DRAWING NUMBER
WELKER TRAILHEAD IMPROVEMENTS	CONSTRUCTION BID SET
CXT PRECAST PRODUCTS: DENALI	PRELIMINARY PLAN SET
MOST DEPENDABLE FOUNTAIN	10145 SM&SMSSFA

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:
CXT Restroom

34. BUILDING PERMITS

Contractor is 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 03 007
LIGHTING**

3.7.1. GENERAL. The Contractor shall furnish materials and construct walkway lighting as indicated on the drawings and as described herein.

A. WORK INCLUDED

1. Concrete base installation
2. Light Pole installation
3. Light fixture installation
4. Conduit
5. Wire installation
6. Fuse installation
7. Grounding and bonding
8. Junction Boxes
9. Meter Housing

B. QUALITY ASSURANCE

1. Comply with federal, state, and local electrical codes and regulations.
2. Materials and workmanship for street light construction shall be in accordance with applicable governing authority.
3. Only workers commercially licensed as Electrical Contractors shall be used in performing the work.

3.7.2. MATERIALS

A. LIGHT POLES

1. Shall be as noted in the design details. The poles shall be installed per the design details.

B. LIGHT FIXTURES

1. Shall be as noted in the design details.

C. CONDUIT

Shall be a minimum 1½ inch schedule 40 electrical PVC conduit for all installations with 90 degree sweeps for all bends and for all junction boxes. For any installation under roadways, prior approval shall be obtained from the city, and conduit shall be schedule 80. All joints shall be glued and all open end conduit shall have Duck Seal or approved equivalent.

D. #6 TC DIRECT BURIAL COPPER CABLE

1. Furnish and install #6 TC direct burial copper cable as indicated on the design drawings and design details. Provide all labor and materials to connect the conduit and cable to each junction box, splice box, and/or light pole; removal and legal disposal of waste materials, and associated work items to complete the bid.
2. Locate, mark and protect all existing structures and utilities, both buried and above grade (i.e., manholes, valves, cleanout boxes, water lines, gas lines, oil and petroleum pipe lines, telephone cables, etc.) and coordinate with the utility companies for the relocation of any line if necessary or the support of the facility.

E. WIRE CONNECTIONS

1. All lights shall be wired with minimum 6 gauge TC copper wire direct burial cable inside a minimum of 1½” Schedule 40 conduit 24” deep.
2. No more than 6 street lights shall be daisy chained together with a 240 Volt 30 amp breaker.
3. All splices shall be wire crimped and heat fused with covering and terminated in a junction box Carson L 1419-12.
4. Any junction within 150’ of any intersection shall be Carson H 1324.
5. All junction boxes between walkway light and system shall use a Multi-Seal RAB 350 Series connector for all hot phases of power.
6. All poles shall be wired with a 120 volt plug in receptacle.

F. FUSE

All fuse holders shall be in-line water tight LED-AA for light poles.

G. GROUNDING AND BONDING

1. Each meter housing shall have a 10-foot long 5/8-inch diameter copper grounding rod provided for each street light pole that is over 120 volts, or if more than one street light is connected to any power source.
2. Each splice box and junction box with fuses shall have a 10-foot long 3/4"-inch diameter copper grounding rod provided and installed.

H. JUNCTION BOXES

1. Shall be Carson L 1419-12 box with “STREET LIGHTING” marked on the lid.

I. FURNISH AND INSTALL SPLICE BOXES

1. Provide all materials, labor to furnish and install any splice boxes, grey non-conductive schedule 40 PVC conduits, ground rods, wires, connectors, all as directed by the City and per the design drawings and details. Provide all labor and equipment to place the material, backfill and compaction, testing, removal and legal disposal of waste materials, and associated work items to complete the bid.
2. Locate, mark and protect the existing structures and utilities, both buried and above grade (i.e., manholes, valves, cleanout boxes, water lines, gas lines, oil and petroleum pipe lines, telephone cables, etc.) and coordinate with the utility companies for the relocation of any line if necessary or the support of the facility.

J. METER HOUSING

1. Shall be V.I.T Strong box #MPE-B16-10K and shall be installed on a poured concrete base with a minimum 6-inch thickness.
2. Provide all materials, labor to furnish and install the V.I.T. Strongbox #MPE-B16-10K, strongbox with breaker panel, grey non-conductive schedule 40 PVC conduits, ground rods, wires, connectors, all as directed by the design drawings and details. Include all materials and labor to construct a concrete base for the housing. Provide all labor and equipment to place the material, backfill and compaction, testing, removal and legal disposal of waste materials, and associated work items to complete the bid.

3. Includes the necessary costs to locate, mark and protect the existing structures and utilities, both buried and above grade (i.e., manholes, valves, cleanout boxes, water lines, gas lines, oil and petroleum pipe lines, telephone cables, etc.) and coordinate with the utility companies for the relocation of any line if necessary or for the support of any facility.

3.7.3. EXECUTION

A. COORDINATION

1. Rocky Mountain Power will make the final connection of walkway lights. Contractor shall comply with all Rocky Mountain Power requirements.
2. Layton City will notify Rocky Mountain Power and request the lights be energized upon approval from the City.

B. INSTALLATION

1. Light poles shall not be within four (4) feet of water valve and 10 (10) feet of fire hydrants.
2. Installation of light poles within close proximity of trees shall be avoided unless approved by the City.
3. Light poles shall be set plumb. The pole shall be installed within ¼ degree of vertical.
4. On all lights, a minimum of two (2) bags of 80 pound concrete mix shall be used. A minimum of twenty-four (24) inch diameter hole for sidewalk pole and thirty (30) inch diameter hole for arterial pole shall be provided for the installation of the street light pole. Pole shall be centered in hole and plumb. Fill hole with concrete to within two (2) inches of wire hole, but not above. Post mix is not acceptable. Concrete form shall be Sono Tube.

END OF SECTION 03 007

**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. CrafcO 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
GRASSES AND WILDFLOWERS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Seeding.

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 Grass and Wildflower Seed: From seed vendor for each 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. 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 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

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.

3.7 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.

3.10 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 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. Architectural Bollard
- B. Bike Rack
- C. Bike Repair Station
- D. Park Bench
- E. Drinking Fountain

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. Bollard: Reliance Foundry's Architectural Bollard – Model #R-7902.
 - 1. Color: Black.
 - 2. 36" H x 4.3" diameter.
 - 3. Material: A36 steel.
 - 4. Mounting: Embed in concrete.

- B. Bike Rack: Keystone Ridge Designs Sonance 7 Loop Rack – Model #SN07-9.
 - 1. Color: Black.
 - 2. Mounting: Surface Mount.

- C. Bike Repair Station: Most Dependable Fountains Bike Repair Station with Bike Rack, Air Pump, and Tools – Model #185SM.
 - 1. Color: Textured Chrome.
 - 2. Mounting: Surface Mount.

- D. Park Bench: Keystone Ridge Designs Penn 6' Bench with Back – Model #PN26. Trash Receptacle: Keystone Ridge Designs Penn Litter Receptacle – MODEL #PN3-32
 - 1. Color: Black..
 - 2. Mounting: Surface Mount.

- E. Drinking Fountain: Most Dependable Fountains Drinking Fountain with Bottle Filler and Optional Pet Fountain – Model #10145 SMSSFA.
 - 1. Non-filtered, freeze resistant.
 - 2. Heavy duty vandal resistant finish, Color: Chrome.
 - 3. Drain to tie into sanitary sewer connection to restroom.

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. Reliance Foundry
6450 148th Street, Unit 207
Surrey, BC, Canada V3S 7G7
Phone: (877) 789-3245
- B. Keystone Ridge Designs
670 Mercer Road
Butler, PA 16001
Phone: (724) 284-1213
Fax: (724) 284-1253
Contact: Garrett Jacobs, (724) 284-1213 x244
- C. Most Dependable Fountains
5705 Commander Drive
Arlington, TN 380021
Phone: (901) 867-0039
Fax: (901) 867-4008
- D. Keystone Ridge Designs
670 Mercer Road
Butler, PA 16001
Phone: (724) 284-1213
Fax: (724) 284-1253
Contact: Garrett Jacobs, (724) 284-1213 x244
- E. Most Dependable Fountains
5705 Commander Drive
Arlington, TN 380021
Phone: (901) 867-0039
Fax: (901) 867-4008

END OF SECTION

SECTION 3

SURFACING AND SURFACE RESTORATION – PG 58-28

3.1. GENERAL.

a. Scope. This section defines the requirements for construction of and restoration of improved surfaces.

b. Special Requirements. Road construction shall conform to applicable requirements of State of Utah Standard Specifications for Road and Bridge Construction, 1979 Edition; restoration shall conform to applicable requirements of State of Utah Specifications for Excavation on State Highways, latest revision; and the work shall meet the Standards of the City.

c. General Construction Operations.

(1) Protection of Surfaces. In order to avoid unnecessary damage to existing paved surfaces, tracked equipment shall use rubber cleats when operating on or crossing paved surfaces, and shall follow requirements of the jurisdiction having control over the surface. The Contractor shall be responsible for damage done due to construction operations occurring to improved surfaces outside the limits of surface restoration as defined herein. Damaged surface outside these limits shall be repaired or replaced by and at the expense of the Contractor in a manner satisfactory to the City.

(2) Time. The Contractor shall provide temporary surfaces in good condition within one (1) day after backfill over pipe has been placed and shall complete repairs on street, sidewalk, curb, gutter, and other surfaces within seven (7) days from the date backfill over the pipe has been placed.

Restoration of any surfaces damaged by the Contractor's operations, but not within the area described in the specifications as being inside the limits of trench excavation and backfill, shall be completed within seven (7) days of surface damage.

(3) Cutting, Removing. The pavement, sidewalk, curb and gutter, etc., shall be sawcut vertically along the limits forming the trench, in such a manner as to not damage the adjoining pavement.

The portion of pavement to be removed shall be sawed or cut by equipment approved by the City, along straight lines designated by the City, or shall be broken back to the nearest construction joint or sawed crack. The portion of concrete sidewalk, or curb and gutter, to be removed shall be broken back to the nearest construction joint or formed crack in such a manner as not to damage the adjoining concrete.

Street surface other than concrete shall be sawcut in straight vertical lines parallel to the trench and the portion over the trench shall be removed in a manner that will not cause damage to the paved surface outside the limits of the vertical cut lines. Bituminous material shall be removed and wasted as directed by the City.

All pavement removed or damaged by the Contractor's operations outside the limits of the trench shall be replaced by the Contractor. All waste material resulting from the above operation shall be removed immediately from the site of the work.

3.2. THIS SECTION DELETED.

3.3. RESTORATION OF GRAVEL ROAD BASE.

a. General. Trenches or foundations excavated in bituminous or concrete surfaced areas such as road or parking areas, shall have the bituminous or concrete surface restored as specified in Paragraph "Restoration of Bituminous Surface Courses" or "Restore Concrete Surface" and the gravel road base restored as specified herein.

b. Materials. Gravel road base material shall meet the following gradation requirements.

Passing	1-inch Sieve	100%
Passing	1/2-inch Sieve	70%-100%
Passing No.	4 Sieve	41%-68%
Passing No.	16 Sieve	21%-41%
Passing No.	50 Sieve	10%-27%
Passing No.	200 Sieve	4%-13%

c. Placing. After the trench or foundation pit has been backfilled and approved by the City, gravel road base shall be placed in the trench or foundation pit to provide the minimum thickness specified after compaction.

Gravel road base shall be restored to the thickness of the original road base or to the thickness specified under the type of 6-inches, after compaction, below the bottom of the surface course to be restored.

Material for gravel road base shall be at near optimum moisture, spread in uniform layers across the entire width of the area, and compacted to 96% of maximum density as determined by AASHTO T-180, Method D.

3.4. TEMPORARY GRAVEL SURFACES.

a. General. Where pipe trenches or foundations are excavated in paved areas, the bituminous or concrete surface shall be replaced with a temporary gravel surface. The temporary gravel surface shall extend down to the bottom face of the original surface course and shall be graded flush with the top of adjacent surfaces to provide a hard, smooth surface.

b. Materials. Temporary gravel surface material shall meet the following gradation requirements:

Passing	1-inch Sieve	100%
Passing	1/2-inch Sieve	70%-100%
Passing No.	4 Sieve	41%-68%

Passing No.	16	Sieve	21%-41%
Passing No.	50	Sieve	10%-27%
Passing No.	200	Sieve	4%-13%

c. Placing. The temporary gravel surface material shall be placed in the trench or foundation pit after it has been backfilled, and after the gravel base has been placed and compacted. The temporary gravel shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the City, until the final surface is to be placed. Excess material shall be removed as directed by the City. The temporary surface shall be restored every 7 days until the final surface is placed. The surface shall be sprinkled with water at least once each day (weekends and holidays included, unless directed otherwise by the City).

Upon completion of satisfactory tests of the installed pipelines, laterals, service connections, and appurtenances, the City shall direct the Contractor to restore the final surface on all or any part of the work, at which time, Contractor shall remove the temporary gravel surface to the bottom of the surface to be restored. After removing temporary gravel, the gravel base course shall be graded and rolled to provide a compact, smooth base for placement of final surfacing.

3.5. RESTORATION OF BITUMINOUS SURFACE COURSE.

a. General. Trenches or foundations excavated in bituminous surfaced areas such as roads or parking areas, etc., shall have the bituminous surface restored as specified herein.

Where bituminous surfaces are to be restored, gravel road base shall be placed and restored as specified in paragraph Restoration of Gravel Road Base. Temporary gravel surfaces shall be placed and maintained as specified in paragraph Temporary Gravel Surfaces and shall be removed prior to placing the final bituminous surface course.

b. Plant Mixed Bituminous Surface Course. Bituminous surface course shall consist of a mixture of mineral aggregate and bituminous binder mixed at a thickness of paving adjacent to the trench area but not less than 2 1/2"; all in accordance with the 1979 issue of the Utah Department of Highway Standard Specifications for Road and Bridge Construction, Paragraphs 402.2 to and including 402.14, unless specified otherwise herein.

(1) Materials. Bituminous material shall be AC-10 grade.

Mineral aggregate shall meet the following gradation requirements.

Passing 1/2-inch sieve	100%
Passing No. 4 sieve	55% - 85%
Passing No. 16 sieve	24% - 38%
Passing No. 50 sieve	9% - 21%
Passing No. 200 sieve	4% - 8%

(2) Mix. The asphalt content of the mix shall be 4% minimum, by weight. The final mix shall meet the following requirements:

Marshall stability	1200/lbs. minimum
Flow (0.01 inch)	10 - 18
Voids content	2% to 4%

As specified in the latest edition of the Asphalt Institute Manual Series No. 2, the supplier shall submit a mix design showing the aggregate gradation, the asphalt grade and content, the Marshall stability, flow and voids content for the mix as well as the maximum density that could be obtained with the mix.

(3) Testing. Random samples of the surface course shall be selected by the Engineer (one sample shall be taken for each 100 square yards placed) and shall be tested for density by an independent testing laboratory at the Contractor's expense. If the density is less than 95% of maximum density as shown in the mix design, the surface shall be recompact and retested until 95% of maximum density is achieved.

(4) Placing. Where directed by the City, the gravel road base shall be treated with a prime coat consisting of a medium curing, cut back asphalt, MC-70 conforming to the requirements of AASHTO Specification M-82, shall be uniformly applied by approved spraying equipment to the gravel base surface in the amount of 0.15 gallons per square yard of surface. The edges of existing pavement shall be sprayed with a tack coat consisting if a rapid-setting, emulsified asphalt grade CRS-1. The bituminous surface course shall be placed and compacted thereon to the depth of the bituminous material removed but not less than 2 1/2 inches thick.

Before placing any bituminous surface course, the Contractor shall submit, for approval, to the City, his proposed methods for placing and compacting the bituminous surface course.

The bituminous surface course shall be placed by methods approved by the City.

In the event a dryer-drum mixing process is used, the temperature of the bituminous mixture at discharge from the mixer, shall be not less than 220[^] F. no more than 260[^] F. Overheated materials shall not be used in the pavement.

Unless otherwise accepted by the Engineer, compaction of the mixture shall be completed before the temperature of the mixture drops below 180[^] F.

Contact surface of curbing, gutter manholes and other structures shall be painted with tack coat consisting of a cut back asphalt grade RC-250 immediately before the paving materials are placed against them. Care should be taken during application to prevent the tack coat from being applied to exposed concrete above the contact surfaces.

Immediately adjacent to gutters, manholes and other structures, the bituminous surface course shall be spread uniformly high, so that after compaction it will be slightly above the edges of such structures.

Along curbs, gutters, manholes and other places inaccessible to the roller, the materials

shall be thoroughly compacted with hand tampers, but extreme care shall be exercised to prevent damaging the adjacent surfaces.

Should the surface pavement show oil rich patches after rolling, then the materials shall be removed from such areas and replaced with suitable materials.

Should the surface or pavement after rolling or while being rolled become cracked or appear to be loose or broken up, then all the material covering such area shall be removed and shall be removed and shall be replaced with suitable material.

(5) **Compacting.** After the material for the layer or course has been uniformly spread as above described, it shall be compacted by rolling with self-propelled rollers. The rollers shall be operated at a speed of between one hundred and hundred fifty feet per minute. All rollers shall be in first class mechanical condition, smooth running, and shall start and stop evenly and without jerking. Gasoline motored rollers shall have at least four (4) cylinders. The rolls shall be true cylinders, and any rolls showing bulges or depressions under a straight edge applied anywhere across the face shall not be used on the pavement.

Rolling of the bituminous surface course shall begin as soon after spreading as it will bear the roller without undue displacement or hair checking.

Rolling shall continue until all roller marks are eliminated, until the surface is of uniform texture and true to grade and cross-section, and until the density of at least ninety-five (95) percent of the theoretical density is obtained.

To prevent adhesion of the mixture to the rollers, the wheels of the rollers shall be kept properly moistened, but no excess of either water or oil will be permitted.

3.6. GRAVEL BASE COURSE.

a. **General.** Gravel base course shall consist of construction of a base course placed on a prepared subgrade in reasonably close conformance with the lines, grades and dimensions shown on the drawings or established by the developer's Engineer; and in accordance with these specifications.

b. **Materials.** Gravel base course material shall meet the following gradation requirements, and shall be in accordance with the State of Utah Standard Specifications for Road Bridge Construction, 1979 Edition, Section 301; Paragraphs 301.01 through 301.06; except as modified herein.

1 inch gradation

<u>Sieve Size</u>	<u>% Passing</u>	<u>Tolerance</u>
1 inch	100	+0%
1/2 inch	85	+6%
No. 4	55	+6%
No. 16	31	+4%

- iv) Theoretical maximum specific gravity.
 - v) Compaction density at design target air voids.
 - vi) Target Grading Curve for aggregate.
 - vii) Binder target percentage, dust to binder ratio, and the following as applicable.
 - (1) For Superpave mix design provide 1) voids in the mineral aggregate, and 2) voids fill with bituminous binder also known as VFA, and 3) Hamburg Wheel Tracker results.
 - (2) For Marshall mix design provide 1) tensile strength ratio, 2) voids in the mineral aggregate, 3) stability, 4) flow, 5) voids in the bituminous mix, and 6) voids filled with bituminous binder known as VFA.
 - viii) Percentages of 1) mineral filler, 2) anti-strip, 3) reclaimed bituminous pavement (RAP or ROSP), 4) recycle agent in the mix, and 5) virgin aggregate.
 - ix) Aggregate physical properties. The information is for suitability of source and not for project control. A new report may be required if aggregate source is changed. Test results shall not be older than 2 calendar years from the date of submission.
- b) Quality Assurance
 - 1) Do not change aggregate source or binder source until engineer accepts new sources and mix design.
 - c) Acceptance.
 - 1) General
 - i) Acceptance is by lot. One lot is one days' production.
 - ii) If non-complying material has been installed and no price for the material is specified, the acceptance shall be at the discretion of the Engineer.
 - iii) If test results are not within this section's limits, options include correction of production procedures or production of an alternate mix design acceptable to the engineer.
 - iv) Observation of contractor's field quality control testing does not constitute acceptance. Such testing, however, may be used by the engineer for acceptance if requirements in APWA Section 01 35 10 are met.
 - d) Binder
 - 1) Performance Grade Asphalt Binder
 - i) Blending with polymers is allowed
 - ii) Do not use acid blends without documentation supporting need.
 - iii) Adjust binder grade according to AASHTO M323 to account for any binder stiffness caused by adding RAP or ROSP to the mix.
 - 2) Bitumen Binder.
 - i) Oil sand source is contractor's choice
 - 3) Blended binder
 - i) Contractor's choice. A blended ratio of asphalt binder to bitumen binder in the range of about 1:4 to about 4:1 may require patent licensure. Contractor to verify.
 - e) Aggregate
 - 1) Crushed stone, crushed gravel, slag, sand, or combination.
 - 2) Use Table 1 to determine suitability of aggregate source.

Table 1 - Aggregate Physical Properties				
		Standard	Road Class	
			I&II	III
Coarse Aggregate				
Angularity, percent, minimum	One fractured face	D5821	90	95
	Two fractured faces		90	90
Wear, percent, maximum		C131	35	35
Flats or elongates, percent, maximum		D4791	--	20
Fine Aggregate				
Angularity, percent, minimum		T304	40	45
Sand equivalent, percent, minimum		D2419	45	60
Plastic limit, maximum		D4318	0	0
Blended Physical Properties				
Dry-rodded unit weight, lb/ft ³ , minimum		C29	75	75
Weight loss, percent, maximum		C88	16	16
Friable particles, percent, maximum		C142	2	2
Notes				
a) Road class is defined in APWA Section 32 01 31.				
b) Course aggregate does not pass No. 4 sieve. Fine aggregate does pass.				
c) Angularity is determined by weight.				
d) Wear of aggregate may have higher values if aggregate source is known to have higher values.				
e) Sand equivalent is waived for RAP aggregate but applies to the remainder of the aggregate blend				
f) Plastic limit, passing No. 40 sieve. Aggregate is non-plastic even when filler material is added to the aggregate.				
g) Weight loss, using sodium sulfate.				
h) Friable particles are clay lumps, shale, wood, mica, coal passing No. 4 sieve, and other deleterious materials.				

- f) Additives
- 1) Mineral Filler: ASTM D242
 - 2) Recycle Agent: ASTM D4552
 - 3) Anti-strip Agent: Heat stable cement slurry, lime slurry, or chemical liquid.
 - 4) RAP or ROSP: Free of detrimental quantities of deleterious materials.
 - i) Allowed up to 15 percent by weight of RAP or binder, whichever is lesser, with no change in specified binder grade.
 - ii) Determine RAP binder content by chemical extraction.
- g) Mix Design
- 1) Preparation
 - i) Get the mix designator and the road class from Layton City Engineering or engineer, or bid documents.

- ii) Use section a)2) to determine submittal requirements.
- iii) Aggregate Gradation – Marshall Mix Design
 - (1) See Table 2. The target gradation curve for the specified aggregate grade must lie within the master grading band limits. The target grading band limits for the target grading curve are the appropriate grading limits for acceptance. The target grading band limits are allowed to extend outside of the master grading band limits.

Table 2 - Master Grading Band Limits			
Sieve	Aggregate Grades		
	DM-1	DM-3/4	DM-1/2
1 inch	100		
3/4 inch		100	
1/2 inch	75-91		100
3/8 inch		75-91	
No. 4	47-61	46-62	60-80
No. 8			
No. 16	23-33	22-34	28-42
No. 50	12-22	11-23	11-23
No.200	3-7	3-7	3-7

- h) Source Quality Control
 - 1) Collect samples randomly. Do not change sampling points
 - i) Sampling aggregate, ASTM D75. Collect samples before the drum mixer.
 - ii) Sampling binder, ASTM D140.
 - iii) Sampling bituminous paving mixture, ASTM D979.
 - 2) Validate binder grade received from supplier, see APWA Section 32 12 03.
 - 3) Test mix every production day for the following:
 - i) Combined aggregate gradation in the mix, ASTM D5444.
 - ii) Binder content in the mix, ASTM D6307.
 - iii) Temperature of mix placed in the transport vehicle at the production plant.
 - (1) Asphalt Binder mixes.
 - (a) Hot Mix: 325 deg F maximum
 - (b) Warm Mix: 325 deg F maximum.
 - (2) Bitumen Binder mixes or Blended Binder mixes.
 - (a) Hot Mix: Not Allowed
 - (b) Warm Mix: 230 degrees maximum.
 - 4) Warm Mix Testing: When rutting or moisture susceptibility tests are required on plant produced warm mix, condition the warm mix material before testing for two hours at 275 plus or minus five deg F per AASHTO R30. The material may be cooled to room temperature before conditioning.
- i) Construction Equipment
 - 1) Mixing Plant
 - i) Positive means to determine the moisture content of aggregate.

- ii) Positive means to sample all material components.
- iii) Sensors to measure the temperature of the mix at discharge.
- iv) Ability to maintain discharge temperature of mix.
- v) Capability of maintaining plus or minus five percent tolerance on component percentages in final mix.

Plant–Mix Bituminous Paving Section

- j) Submittals
 - 1) Before Delivery: Submit 48 hours before delivery:
 - i) Location and name of bituminous concrete production facility.
 - ii) Mix design and method.
 - iii) Mix identification number or code.
 - iv) Type, grade, and weight of binder.
 - v) Type, grade, and weight of aggregate.
 - vi) Traffic control plan.
 - vii) Type and number of rollers.
 - viii) Manufacturer’s certificate of compliance for paving geotextiles.
 - ix) Certification of profilograph and profilograph operator.
 - x) Cold weather paving plan
 - 2) At Delivery: For each batch delivered to site identify:
 - i) Date and project description.
 - ii) Producer and plant.
 - iii) Name of contractor.
 - iv) Serial number of ticket.
 - v) Mix identification number or code.
 - vi) Truck number and time dispatched.
 - vii) Volume of mix delivered.
 - 3) After Placement: Before final payment submit summary report describing profile deviation and profile roughness.
- k) Quality Assurance
 - 1) Do not change aggregate source or binder grade until Engineer accepts new source and new mix design.
 - 2) Reject product and work that does not meet requirements of this section.
 - 3) Remove product found defective after installation and install acceptable product at no additional cost to City.
 - 4) Foreman of paving crew has completed at least three projects of similar size and nature.
 - 5) Submit a quality control and testing report describing source and field quality assurance activities performed by Contractor and Suppliers.
- l) Weather
 - 1) Temperature:
 - i) April 15 to October 15: Place pavement when air temperature in the shade and the roadway surface temperature are above 50 deg F. The Engineer may provide written approval if it is

- acceptable to place outside of this temperature limit.
- ii) Before April 15 and After October 15: Provide a Cold Weather Paving Plan. Engineer must accept the plan before proceeding.
 - (1) Include the following details:
 - (a) Haul details.
 - (b) Placement details.
 - (c) Compaction aids used in production.
 - (d) Coordination procedure for acceptance testing.
 - 2) Moisture: Do not place on frozen base, during adverse climatic conditions such as precipitation, or when roadway surface is wet or icy.
 - m) Notice
 - 1) Follow Laws and Regulations concerning when and to whom notices are to be given. Send written notice at least three days before start of paving.
 - 2) Indicate paving time and when new surface can be used.
 - 3) Warn of potential vehicle tow away and other construction issues affecting neighborhood.
 - 4) Should work not occur on specified day, send a new notice.
 - n) Acceptance
 - 1) General:
 - i) Acceptance is by Lot.
 - ii) If non-complying material has been installed and no price for the material is specified, the acceptance shall be at the discretion of the Engineer.
 - iii) Dispute resolution, see APWA 2017 Section 01 35 10.
 - iv) Opening a paved surface to traffic does not constitute acceptance.
 - v) Observation of Contractor's field quality control testing does not constitute acceptance. Such testing; however, may be used by Engineer for acceptance at the Engineers discretion.
 - 2) Mix Material: Accepted as specified for bituminous concrete, See Bituminous Concrete, above.
 - 3) Mix temperature at Site:
 - i) Reject mixes in the transport material exceeding 425 deg F.
 - ii) Dispose of cold mix in paver hopper as thin spread underlay.
 - 4) Grade, Cross Slope: Verify tolerances are not exceeded.
 - 5) Compaction: Options for acceptance are 1) core density, 2) non-destructive test density, or 3) control strip density with visual observation. Use core density unless specified elsewhere. A Lot is acceptable if density tests are within the specified limits:

Table 1 - Compaction Acceptance		
	Density, in Percent Relative to ASTM D2041	
Status	Average	Lowest Test
Accept	94	92
Reject	Less than 94	Less than 92

- i) Core Density: This method compares the average density of cores extracted from a pavement surface to maximum theoretical density:

- (1) Lot size: One day production with 1,000 square yard sub-lots or part thereof.
- (2) Sampling protocol: Use ASTM D3665 to randomly select in each sub-lot at least one surface test location and one longitudinal joint test location. Collect at least two test samples at each test location, ASTM D5361. Samples are full depth or overlay depth in overlay construction.
- (3) Testing protocol: ASTM D2725 for core density and ASTM D2041 for maximum theoretical density.
- ii) Non-Destructive Density Testing by Gage:
 - (1) Lot size: One day production with 1,000 square yard sub-lots or part thereof.
 - (2) Sampling protocol: Use ASTM D3665 to randomly select in each sub-lot at least one surface test location and one longitudinal joint test location.
 - (3) Testing protocol: ASTM D2950 or AASHTO TP68 and ASTM D2041 for maximum theoretical density.
- iii) Control Strip Density with Visual Observation:
 - (1) Lot: One day production.
 - (2) Sampling Protocol: Not required after rolling pattern is determined.
 - (3) Testing protocol: ASTM D6927 and D2041 to determine rolling pattern for 94 percent compaction, thereafter visual examination.
- iv) Compaction Dispute Resolution:
 - (1) Contractor:
 - (a) Provide an independent testing agency, see APWA 2017 Section 01 45 00.
 - (b) Take two supplement cores midway between deficient acceptance test locations, and midway between a deficient test location and an adjacent acceptable test location.
 - (c) Patch core holes.
 - (d) Conduct testing at no additional cost to Owner.
 - (2) Engineer:
 - (a) Accept Lot at full pay if new information shows compliance, or
 - (b) Reject Lot.
- 2) Thickness: A Lot is acceptable if test deficiencies are within specified limits: 0.00 to 0.375 inches.
 - i) Lot Size: One day production with 1,000 square yard sub-lots or part thereof.
 - ii) Sampling Protocol: Use ASTM D3665 to randomly select at least one surface test location and one longitudinal joint test location in each sub-lot. Collect at least two core samples at each test location, ASTM D5361. Samples are full depth. Overlay construction measured only on overlay portion of core sample.
 - iii) Testing Protocol: ASTM D3549:
 - (1) Minimum specified thickness: A Lot specified to have minimum thickness will be accepted if all sub-lot measurements meet or exceed minimum. If thickness is deficient, the Engineer will determine how to meet the standard.
 - (2) Actual Specified Thickness: A Lot specified to have actual thickness is acceptable if any sub-lot measurement does not exceed deficiency limits for acceptable thickness.
 - iv) Thickness Dispute Resolution:
 - (1) Contractor:
 - (a) Provide an independent testing agency, see APWA 2017 Section 01 45 00.

- (b) Take two supplement cores midway between deficient acceptance test locations, and midway between a deficient test location and an adjacent acceptable test location.
 - (c) Patch core holes.
 - (d) Conduct testing at no additional cost to Owner.
- (2) Engineer:
 - (a) Graph deficient areas by plotting new cores and original cores to define deficient areas assuming the following.
 - (i) The graph represents the thickness of the pavement.
 - (ii) Thicknesses vary linearly along the pavement length from core depth to core depth.
 - (iii) The pavement is a constant depth in the transverse direction.
 - (b) Accept Lot at full pay if new information shows compliance, or
 - (c) Reject Lot.
- 3) Profile Roughness and Profile Deviation: See APWA 2017 Section 32 01 31.
- o) Warranty
 - 1) Joints at street fixtures and Portland cement flat work: If wider than ½ inch before end of the correction period seal joints with asphalt rubber or rubberized asphalt; See APWA Section 32 01 17.
- p) Construction Equipment
 - 1) Paver machine: Use track equipment when operating on fabrics, geogrids or pavement mats hotter than 180 deg F.
 - 2) Compactors: Steel wheel static or vibratory. Use pneumatic tire roller for intermediate rolling only.
- q) Preparation
 - 1) General:
 - i) Locate and preserve utilities. Contact utility companies and other agencies, for dangerous concentration of combustible, flammable, or explosive matter.
 - ii) Lower street fixtures if paving machine is not capable of passing over the fixtures.
 - iii) Remove vegetation from cracks, edges and joints. Sweep surface clean. Blow cracks clean. Remove leaves.
 - iv) Fill cracks and fix potholes.
 - v) Stabilize Portland cement concrete subgrade slabs.
 - 2) Traffic Control:
 - i) Implement notification and traffic control plan requirements. Do not proceed without certified flaggers.
 - ii) Apply temporary lane marking tape or paint after layout has been verified with Engineer.
 - 3) Aggregate Base Course:
 - i) Verify base course is placed to grade, compacted and dampened.
 - ii) If indicated, follow APWA Section 31 31 19 requirements for herbicide treatment or Section 32 12 13.19 for prime coat applications.
- r) Protection
 - 1) Trees, Plants, Ground Cover:
 - i) Protect trees, plants and other ground cover from damage.
 - ii) Prune trees to allow equipment passage underneath, See APWA Section 32 01 93. Repair tree damage at no additional cost to City.
 - 2) Protect all structures, including curb, gutter, sidewalks, guard rails, and guide posts from physical

- damage. Remove spatter, over-coat, or mar.
- 3) Do not discharge bituminous materials into borrow pits or gutters.
 - 4) Protect hot pavement from traffic until cool enough not to become marred.
 - 5) Remove saw-cut dust immediately. Protect neighborhood, storm drains and down-stream drainage.
- s) Temporary Surfacing
- 1) Place, roll, maintain, remove and dispose of temporary pavement surfaces.
 - 2) In sidewalk areas construct temporary pavements at least 1 inch thick and in all other areas at least 2 inches thick. At major intersections and other critical locations a greater thickness may be required.
- t) Line and Grade Control
- 1) Provide necessary survey stakes for horizontal and vertical control.
 - 2) Furnish, place, and maintain supports, wire devices, and materials as required to provide continuous line and grade reference controls for placing pavement, matching existing pavement surfaces, etc.
- u) Fabric Placement
- 1) See APWA Section 31 05 19.
- v) Pavement Placement
- 1) General:
 - i) Barricade off or eliminate fall off edges.
 - ii) Provide continuous forward paver movement so temperature 10 feet behind paver is as follows:

Table 2 - Minimum Pavement Temperature in Degrees F.						
Air Temperature Deg F	Compacted Mat Thickness					
	3/4"	1"	1-1/2"	2"	3"	4"
45-50	-	-	-	-	280	265
50-59	-	-	-	280	270	255
60-69	-	-	285	275	265	250
70-79	285	285	280	270	265	250
80-89	280	275	270	265	260	250
90+	275	270	265	260	250	250

- 1) Overlays or Subsequent Lifts:
 - i) Allow new base pavement or new inlay pavement to cure before placing overlays.
 - ii) Apply tack coat per APWA Section 32 12 13.13 if inlay or sub-base pavement surface is dirty or older than 24 hours.
- 2) Irregular Areas: Handwork is acceptable if specified grade, slope, compaction and smoothness are achieved.
- 3) Compaction:
 - i) Test mix placement until a compaction pattern is acceptable to Contractor. Continue random quality control testing.
 - ii) Do not over compact or under compact.
 - iii) Complete compaction before the following temperature is reached: 180 deg F.
- 4) Joints:
 - i) Construct joints to industry standards for texture, density, and smoothness.

- ii) Clean contact surfaces and apply tack coat. Ensure continuous bond between old and new pavement, or between successive day's work.
 - iii) Offset longitudinal joints a minimum of 12 inches in succeeding courses and at least 6 feet transversely to avoid a vertical joint through more than one course. In the top course restrict longitudinal joint to 1 foot either side of lane lines.
 - iv) Prevent traffic, including construction traffic, from crossing vertical edges. Apply tack coat to vertical edges before making another pass with paver if mix has cooled to 90 deg F.
- w) Tolerances
- 1) Compaction: Target is 94 percent of ASTM D2041 plus or minus 2 percent.
 - 2) Lift Thickness: If not indicated, meet the following tolerances: Minimum is 2 times maximum aggregate size; maximum is not more than limits established by manufacturer of compactor equipment. Thickness is measured after compaction.
 - 3) Smoothness:
 - i) Parallel to Centerline: See APWA Section 32 01 31.
 - ii) Cross Slope: ¼ inch in 10 feet except at cross section grade breaks.
- x) Repair
- 1) Repair ride disturbing or unsafe butt joints. Repair expense is at no additional cost to City.
 - 2) If pavement smoothness is deficient, follow APWA Section 32 01 31 repair requirements.
 - 3) Corrective action for profile deviations: Grinding is acceptable. See APWA Section 32 01 26. Apply a fog seal over grind areas. See APWA Section 32 01 13.50. If depressions cannot be corrected by grinding, remove and replace.
 - 4) Corrective action for profile roughness index: Grinding is acceptable. Re-profile corrected segments to verify ride index meets tolerance. Apply a fog seal over grind areas.
 - 5) When thickness is deficient, place additional material over deficient areas. DO NOT skin patch. Mill for inlay if necessary.
 - 6) Defective joints, seams, edges: repair.
 - 7) Unacceptable paving: remove and replace.
- y) Opening to Traffic
- 1) Temperature of pavement surface is not more than 180 deg F.

3.8. SUB-GRADE COURSE.

a. General. The sub-grade material course shall consist of granular material course placed on a prepared and proof-rolled native material grade in reasonably close conformance with the lines, grades and dimensions shown on the drawings or established by the developer's Engineer; and in accordance with these specifications.

b. Materials. The sub-grade material course shall consist of select manufactured granular material of well-graded sand, gravel, crushed gravel, or crushed stone composed of hard, tough and durable particles, and shall be free from vegetative matter, lumps or balls of clay, or other deleterious matter. The sub-grade material course shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing the 2-inch sieve. The maximum allowable aggregate size shall be 3 inches. The sub-grade material course

material shall meet the following gradation requirements, and shall be in accordance with the State of Utah Standard Specifications for Road Bridge Construction, 1979 Edition, Section 301; Paragraphs 301.01 through 301.06; except as modified herein.

3-inch gradation

<u>Sieve Size</u>	<u>% Passing</u>	<u>Tolerance</u>
3 inch	100	+0%
2 inch	93	+2%
1 1/2	85	+4%
1 inch	80	+4%
3/4 inch	75	+4%
1/2 inch	60	+4%
3/8 inch	55	+4%
No. 4	40	+4%
No. 16	35	+4%
No. 200	8	+2%

c. Placing. The sub-grade material course shall be placed to provide a minimum thickness of 8-inches after compaction. Material shall be placed at near optimum moisture, spread in uniform layers across the entire area, over previously compacted material. The material shall be compacted to 95% of maximum density as determined by AASHTO T-180, Method D.

Welker Trailhead Improvements

2700 North 2125 East, Layton, UT 84041



April 28, 2023

sheet index

1	L000 - Cover sheet
2	L001 - Project notes & sheet index
3	LD101 - Demo plan
4	LS101 - Overall site plan
5	LS201 - Dimension Plan
6	LS501 - Site plan details
7-12	LS502 - LS507 CXT Restroom Plans
13-15	C001 - C200 - Civil plans
16-22	EE001 - ES602 - Electrical plans
23	LP101 - Overall landscape plan

project team

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 E-MAIL: jgrandy@laytoncity.org



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 E-MAIL: cpreston@ensigneng.com

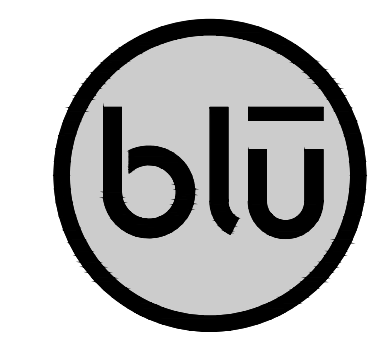


ELECTRICAL ENGINEER
 Spectrum Engineers
 324 S. State St., Suite 400
 Salt Lake City, UT 84111
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 F: 801.328.5155
 CONTACT: Spencer Little
 E-MAIL: spencer.little@speceng.com



General Notes

- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO ADJUST THE TOPS OF ALL EXISTING MANHOLES, CATCH BASINS, INLETS, COVERS, AND SIMILAR STRUCTURES TO FINISH GRADE.
- 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.
- THE PROJECT SHALL NOT BE CONSIDERED COMPLETE UNTIL ALL CURBS, PAVEMENT, AND SIDEWALKS HAVE BEEN SWEEPED CLEAN OF ALL DIRT AND DEBRIS.
- CONTRACTOR SHALL ROUGH GRADE TO WITHIN +/- A TENTH OF A FOOT FROM FINISH GRADE.
- ALL SPOT ELEVATIONS ARE FINISH GRADE UNLESS OTHERWISE NOTED.
- 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.
- CROSS SLOPES ON ALL NEW HARDSCAPE AND PAVEMENT SHALL NOT EXCEED 2% UNLESS OTHERWISE SHOWN.
- ALL AREAS WITHIN AND AFFECTED BY THIS PROJECT SHALL HAVE POSITIVE DRAINAGE. POSITIVE DRAINAGE SHALL BE PROVIDED TO DIRECT STORMWATER AWAY FROM ALL STRUCTURES.
- 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 PROVIDE AND MAINTAIN A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AS REQUIRED BY LAYTON CITY AND THE STATE OF UTAH.

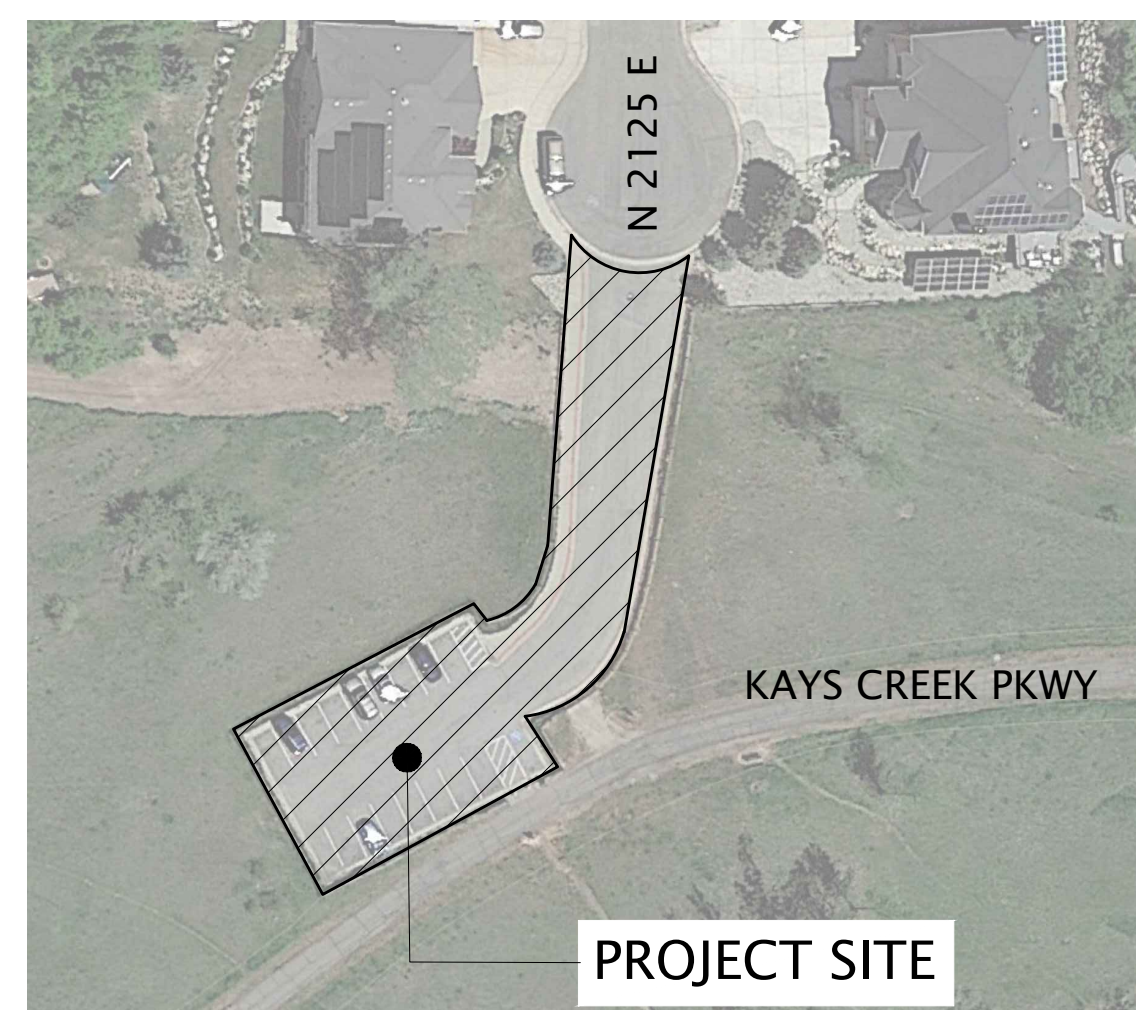


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 8719 S. Sandy Parkway
 Sandy, UT 84070
 p 801.913.7994
 OWNER:
 LAYTON CITY
 437 N WASATCH DR, LAYTON,
 UT 84041
 CONTACT:
 JOELLEN GRANDY
 801-336-3926

project location



project area (n)

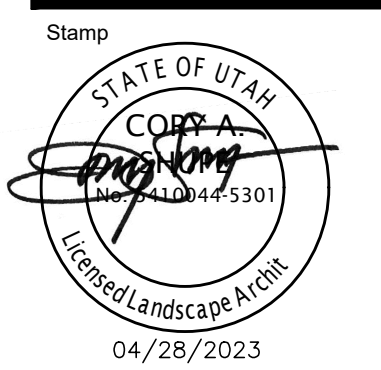


project site (n)

WELKER TRAILHEAD IMPROVEMENTS

2700 NORTH 2125 EAST
 LAYTON, UT 84041

REVISIONS	
NO.	DESCRIPTION



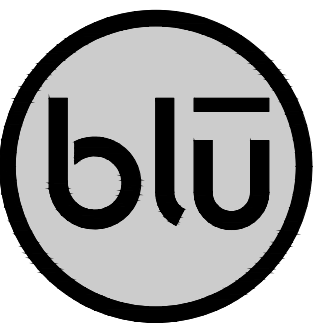
Designed By: TH
 Drawn By: TH
 Date: 04/28/2023
 Checked By: RD
 Project No: 22-199

Drawing Title
PROJECT NOTES & SHEET INDEX

Drawing number

L001

BID SET



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8719 S. Sandy Parkway
Sandy, UT 84070
p 801.913.7994

OWNER:

LAYTON CITY
437 N WASATCH DR. LAYTON,
UT 84041

CONTACT:

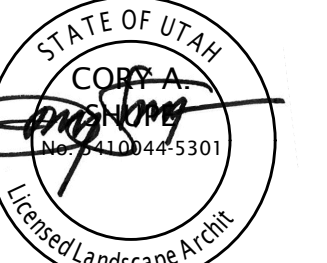
JOELLEN GRANDY
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2700 NORTH 2125 EAST
LAYTON, UT 84041

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04/28/2023

Designed By: TH

Drawn By: TH

Date: 04/28/2023

Checked By: RD

Project No: 22-199

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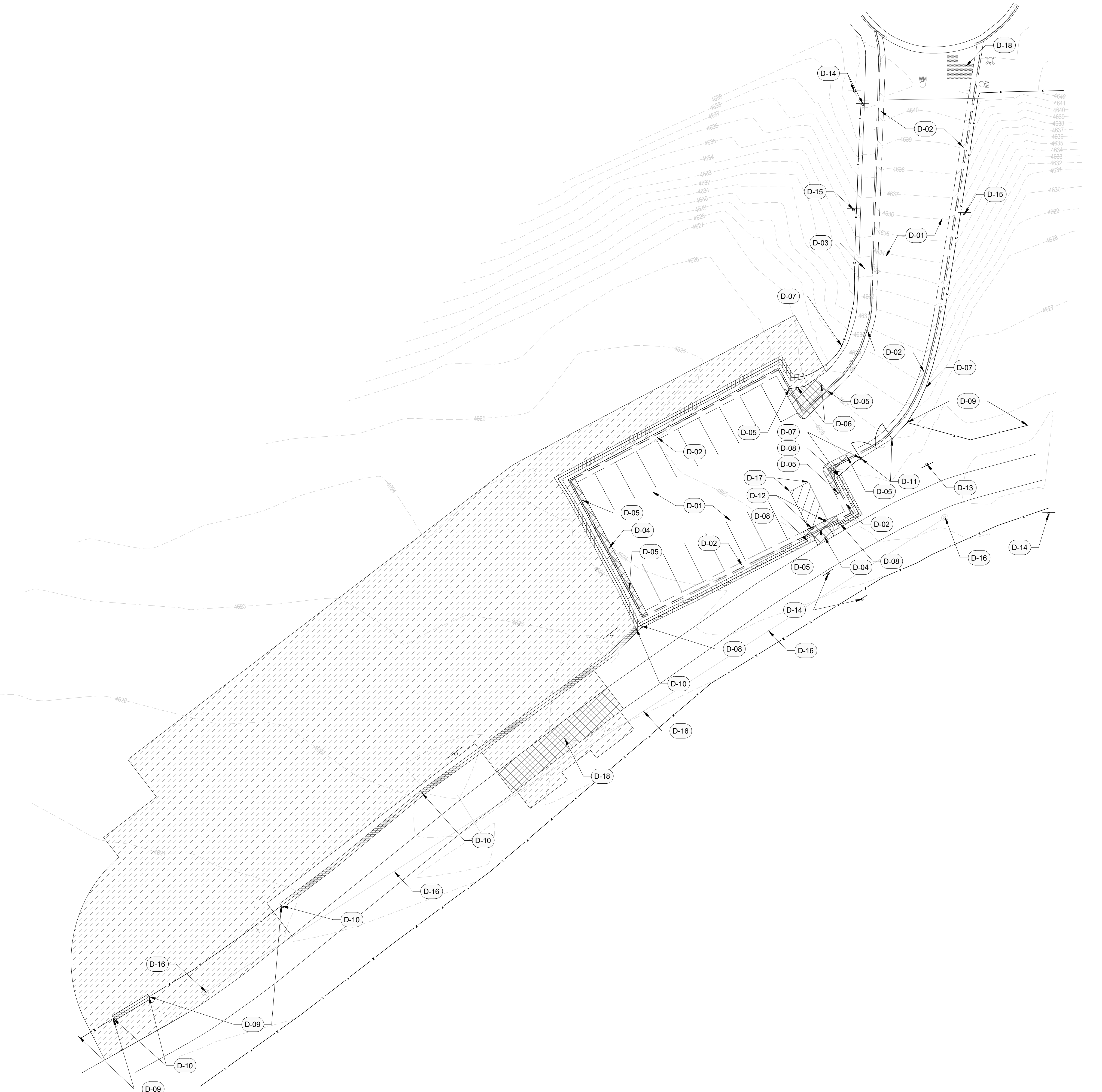
DEMO PLAN

Drawing number

LD101

BID SET

N 2125 E



DEMO

SYMBOL	DESCRIPTION
D-01	EXIST ASPHALT TO BE PRESERVED AND PROTECTED
D-02	EXIST CURB AND GUTTER TO BE PRESERVED AND PROTECTED
D-03	EXIST SIDEWALK TO BE PRESERVED AND PROTECTED
D-04	EXIST ASPHALT TO BE REMOVED
D-05	EXIST CURB AND GUTTER TO BE REMOVED
D-06	EXIST SIDEWALK TO BE REMOVED
D-07	RAIL FENCE SECTIONS TO BE PRESERVED AND PROTECTED.
D-08	RAIL SECTIONS TO BE REMOVED AND RESET WITH A CONCRETE FOUNDATION.
D-09	POST AND ROPE FENCE TO BE PRESERVED AND PROTECTED.
D-10	POST AND ROPE FENCE TO BE REMOVED AND SALVAGED. FENCE SECTIONS SHOULD BE STORED AND GIVEN TO LAYTON CITY STAFF.
D-11	EXIST GATE TO BE REMOVED - RETURN GATE TO OWNER
D-12	EXIST BOLLARDS TO BE REMOVED
D-13	EXIST SIGN TO BE REMOVED
D-14	EXIST SIGN TO REMAIN
D-15	PRESERVE AND PROTECT "NO PARKING SIGNAGE"
D-16	EXISTING SEWER LINE TO BE PRESERVED AND PROTECTED
D-17	EXIST STRIPING TO BE REMOVED
D-18	SAWCUT AND REMOVE ASPHALT AS REQUIRED FOR WATER LINE CONNECTION

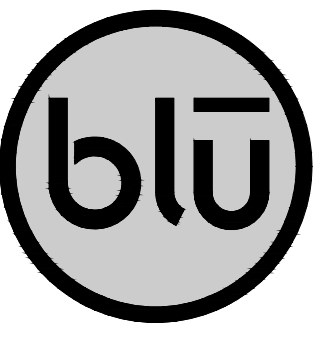
SYMBOL	DESCRIPTION
	AREA TO BE CLEARED AND GRUBBED. ALL EXISTING STRUCTURES, VEGETATION, AND FENCING SHOULD BE DISPOSED OF.
	HARDSCAPE TO BE SAWCUT AND REMOVED.
	RAIL FENCE SECTION TO BE REMOVED AND SALVAGED
	RAIL FENCE SECTION TO BE REMOVED AND RESET WITH A CONCRETE FOUNDATION
	POST AND ROPE SECTIONS TO BE REMOVED AND SALVAGED

DEMOLITION 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.
9. EXISTING PARKING LOT SHALL BE RE-STRIPED UPON CONSTRUCTION COMPLETION PER SITE PLAN.

Scale: 1" = 20'-0"





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p 801.913.7994

OWNER:
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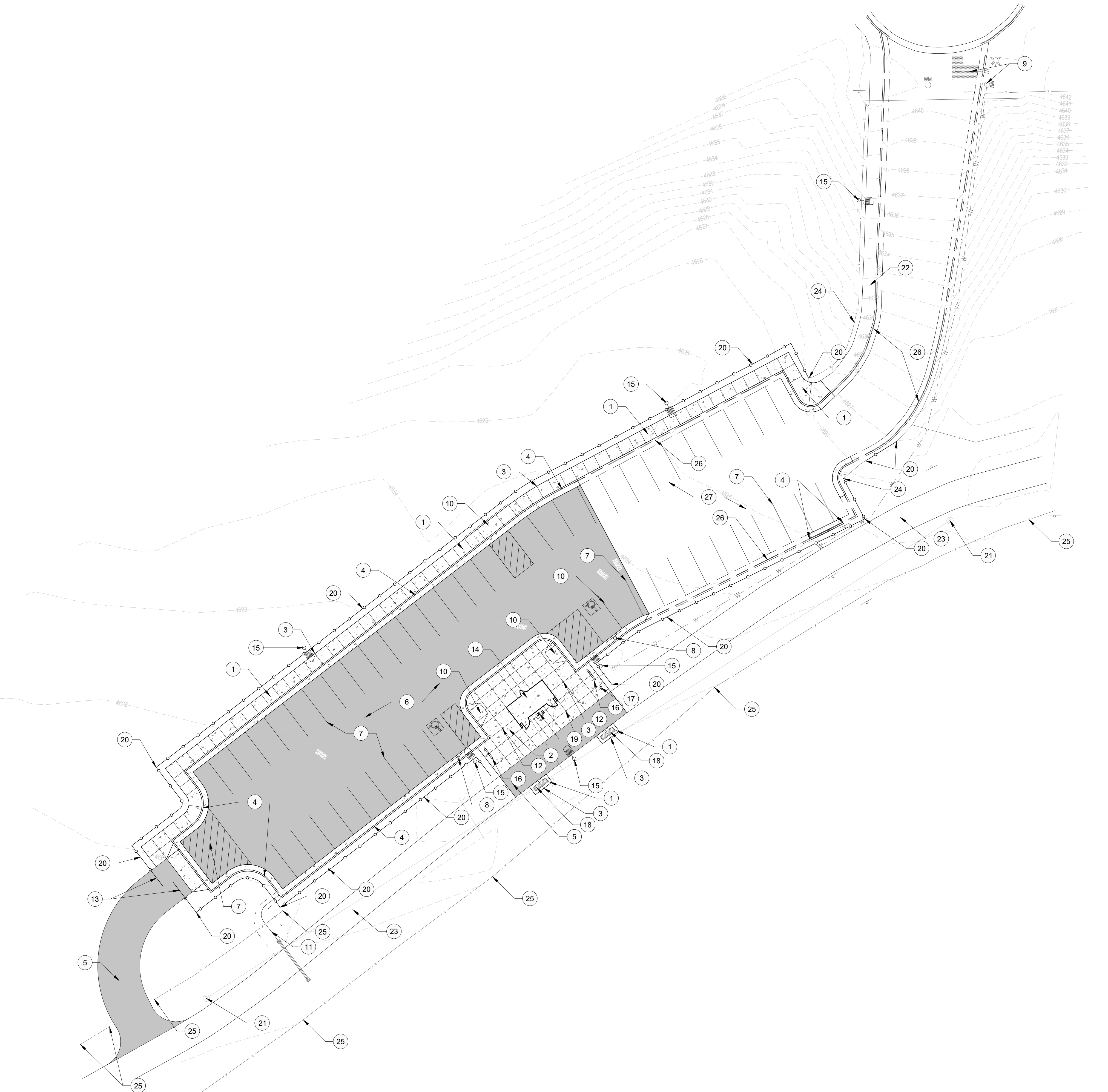
WELKER TRAILHEAD IMPROVEMENTS
2700 NORTH 2125 EAST
LAYTON, UT 84041

N 2125 E

REFERENCE NOTES SCHEDULE

SYMBOL	DESCRIPTION	DETAIL
1	CONCRETE SIDEWALK	1/LS501
2	CONCRETE PLAZA	1/LS501
3	SCORE JOINT	1/LS501
4	CURB AND GUTTER - SEE CIVIL DRAWINGS	
5	ASPHALT TRAIL	2/LS501
6	PARKING LOT EXPANSION - SEE CIVIL DRAWINGS	
7	PARKING LOT STRIPING - SEE CIVIL DRAWINGS	
8	ADA PARKING SIGN - SEE CIVIL DRAWINGS	
9	NEW WATER METER AND SERVICE, PATCH ASPHALT AS REQUIRED - SEE CIVIL DRAWINGS	
10	ADA RAMP PER LAYTON CITY STANDARDS - SEE CIVIL DRAWINGS	
11	BIOSWALE - SEE CIVIL DRAWINGS	
12	BOLLARD	3/LS501
13	PEDESTRIAN TRAIL GATE BARRIER, FURNISHED & INSTALLED BY LAYTON CITY (N.I.C.)	LS503-LS508
14	CXT RESTROOM	1/LS502
15	SECURITY LIGHTING - SEE ELECTRICAL	
16	BICYCLE RACK	4/LS501
17	BICYCLE REPAIR STATION	5/LS501
18	BENCH	6/LS501
19	DRINKING FOUNTAIN	7/LS501
20	TWO RAIL FENCING TO MATCH EXISTING FENCE	3/LS501
21	EXISTING SEWER LINE	
22	EXISTING SIDEWALK, PRESERVE AND PROTECT UNLESS OTHERWISE NOTED	
23	EXISTING ASPHALT TRAIL, PRESERVE AND PROTECT UNLESS OTHERWISE NOTED	
24	EXISTING RAIL FENCE, PRESERVE AND PROTECT UNLESS OTHERWISE NOTED	
25	EXISTING POST AND ROPE FENCE	
26	EXISTING CURB AND GUTTER, PRESERVE AND PROTECT UNLESS OTHERWISE NOTED	
27	EXISTING ASPHALT PARKING LOT, EXISTING ASPHALT PARKING LOT AND ACCESS ROAD SOUTH OF THE CUL-DE-SAC TO BE CRACK SEALED AND PATCHED, INCLUDING CURB PAN EDGE). APPLY FRICTIONAL MASTIC SEAL COAT OR AP4 SURFACE TREATMENT COAT. RESTRIP AS SHOWN	

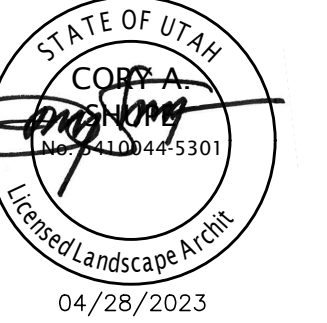
NOTES:
 1. CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING ITEMS THAT ARE TO REMAIN. ANY DAMAGE CAUSED TO EXISTING ITEMS TO REMAIN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
 2. RESTROOM FACILITY IS TO BE FURNISHED BY CITY AND INSTALLED BY CXT. CONTRACTOR IS RESPONSIBLE TO PREPARE THE PAD FOR THE RESTROOM AND TO HAVE ALL UTILITIES STUBBED UP READY FOR HOOK-UP UPON ARRIVAL OF THE RESTROOM. THE CITY WILL COORDINATE WITH CONTRACTOR AS TO WHEN THEY SHOULD COORDINATE PLACEMENT WITH CXT.



REVISIONS

NO.	DATE	DESCRIPTION

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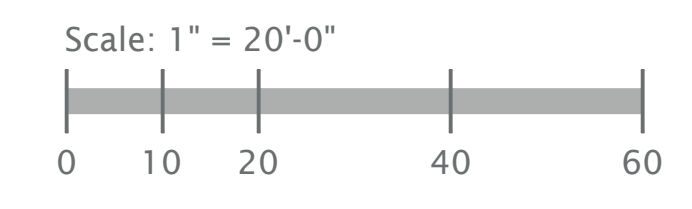
Designed By: TH
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 Date: 04/28/2023
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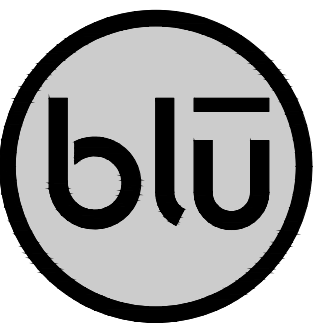
Drawing Title
SITE PLAN

Drawing number

LS101

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OWNER:
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 437 N WASATCH DR. LAYTON,
 UT 84041

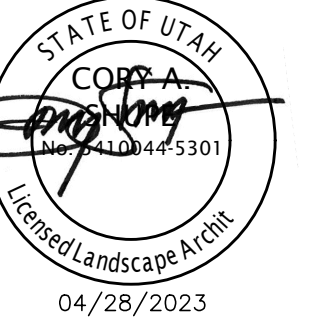
CONTACT:
 JOELLEN GRANDY
 801-336-3926

WELKER TRAILHEAD IMPROVEMENTS
 2700 NORTH 2125 EAST
 LAYTON, UT 84041

REVISIONS

NO.	DATE	DESCRIPTION

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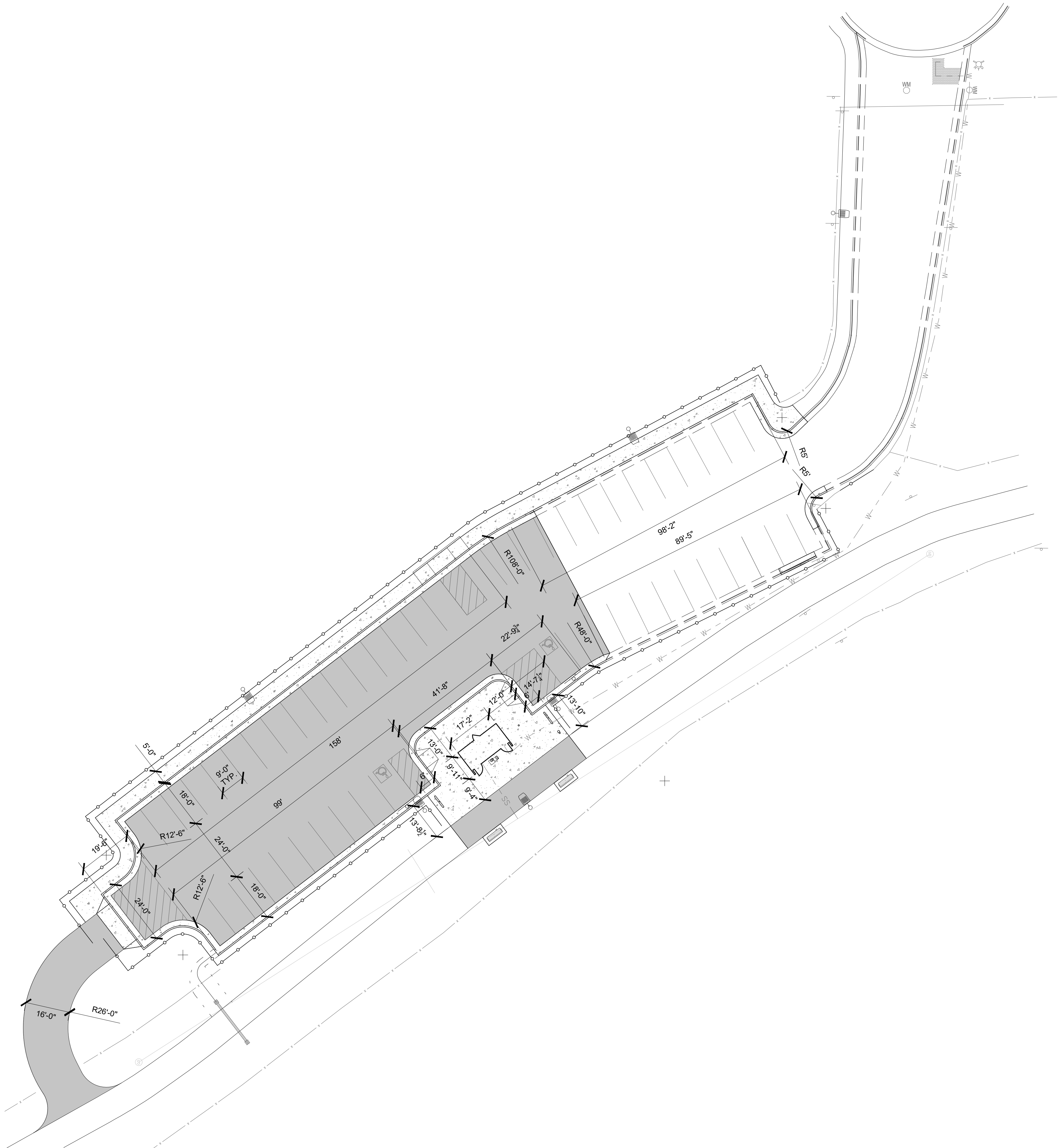
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 Drawn By: TH
 Date: 04/28/2023
 Checked By: RD
 Project No: 22-199

Drawing Title
DIMENSION PLAN

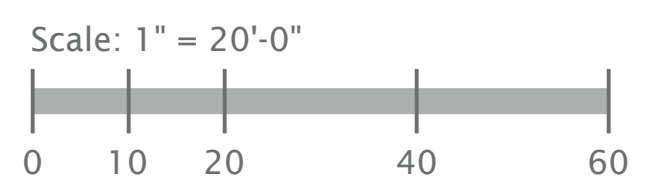
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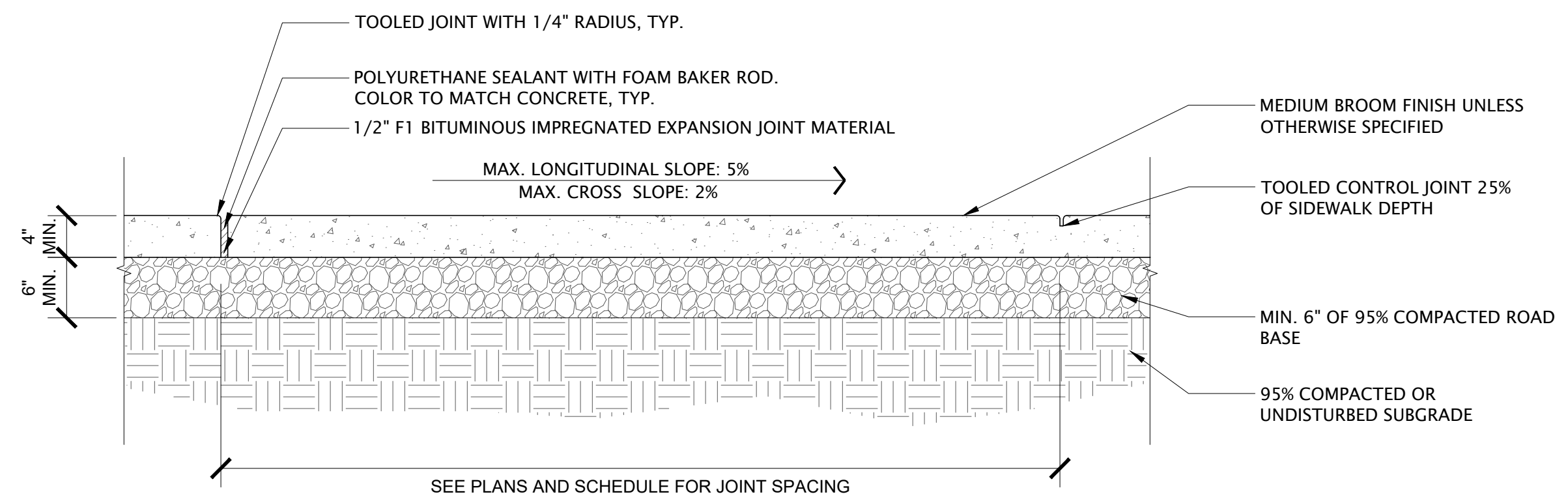
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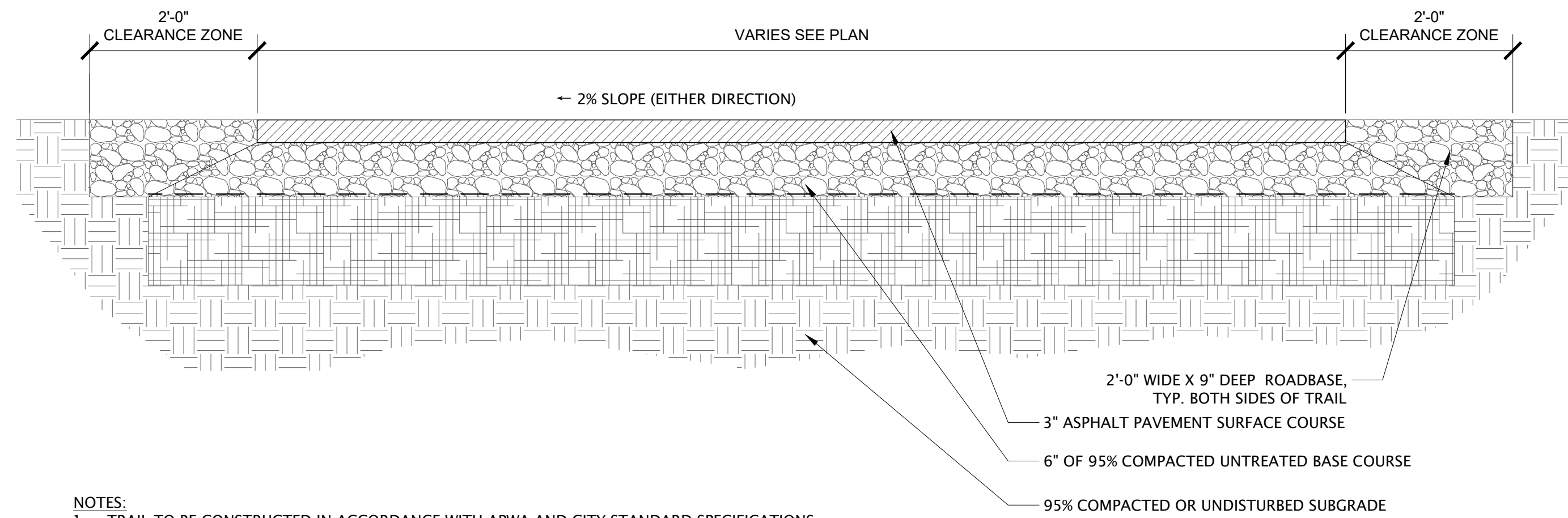
DIMENSION NOTES:
 1. ALL LAYOUT SHALL BE STAKED IN THE FIELD AND REVIEWED AND APPROVED BY OWNER PRIOR TO INSTALLATION AND CONSTRUCTION. FAILURE TO RECEIVE OWNER APPROVAL MAY RESULT IN RE-WORK BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
 2. NEW ASPHALT PARKING LOT AND NEW CURB AND GUTTER SHALL ALIGN AND TIE INTO EXISTING ASPHALT AND CURB AND GUTTER.
 3. ANY LAYOUT QUESTIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO ANY WORK BEING COMPLETED.





- 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 ON THE RESTROOM PAD SHOULD BE SAWCUT.

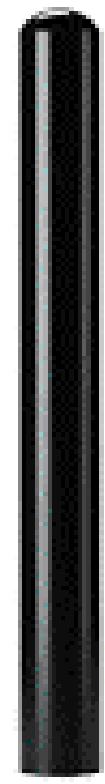
JOINT SPACING SCHEDULE		
WALK WIDTH	EXPANSION JT.	CONTROL JT.
10'	50' O.C.	10' O.C.
8'	50' O.C.	8' O.C.
6'	50' O.C.	6' O.C.
5'	50' O.C.	5' O.C.



- NOTES:
1. TRAIL TO BE CONSTRUCTED IN ACCORDANCE WITH APWA AND CITY STANDARD SPECIFICATIONS.
 2. WHERE TRAIL IS LOCATED OVER BURIED UTILITIES, THE ENTIRE UTILITY TRENCH IS TO BE BACKFILLED WITH IMPORTED FILL AND COMPACTED TO 95%.
 3. DRAINAGE DITCH PARALLEL TO TRAIL MAY BE REQUIRED FOR STORM WATER DESIGN. MINIMUM DITCH WIDTH IS 3 FT. OR AS APPROVED.
 4. STAKE ALIGNMENT AND CLEARING LIMITS IN THE FIELD FOR APPROVAL PRIOR TO CLEARING.

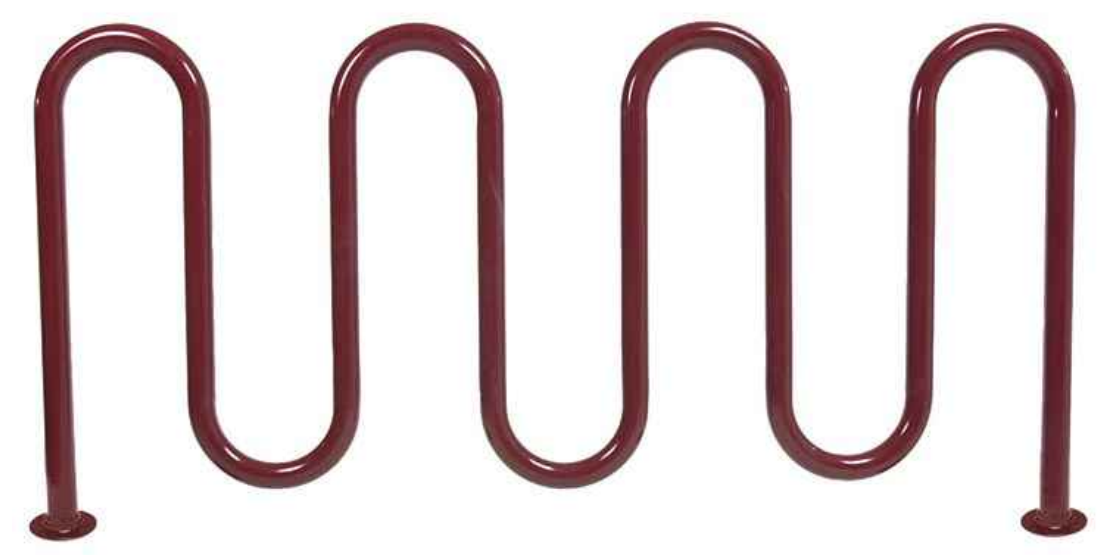
1 CONCRETE SIDEWALK/PLAZA WITH TOOLED JOINTS
NOT TO SCALE

2 ASPHALT TRAIL
NOT TO SCALE



- NOTES:
1. MANUFACTURER: RELIANCE FOUNDRY'S ARCHITECTURAL BOLLARD, MODEL R-7902
 2. DESCRIPTION: 36" HIGH X 4.3"
 3. MATERIAL: A36 STEEL
 4. COLOR: BLACK

3 BOLLARD
SCALE: NOT TO SCALE P-22-199-83



- NOTES:
1. MANUFACTURER: KEYSTONE RIDGE DESIGNS
 2. MODEL: SONANCE 7 LOOP RACK, MODEL: SN07-9
 3. COLOR: BLACK
 4. SURFACE MOUNT

4 BICYCLE RACK
SCALE: NOT TO SCALE P-22-199-81



- NOTES:
1. MANUFACTURER: MOST DEPENDABLE FOUNTAINS
 2. MODEL: BIKE RACK AND AIR PUMP MODEL 185 SM
 3. COLOR: TEXTURED CHROME
 4. SURFACE MOUNT

5 BIKE REPAIR STATION
SCALE: NOT TO SCALE P-22-199-84



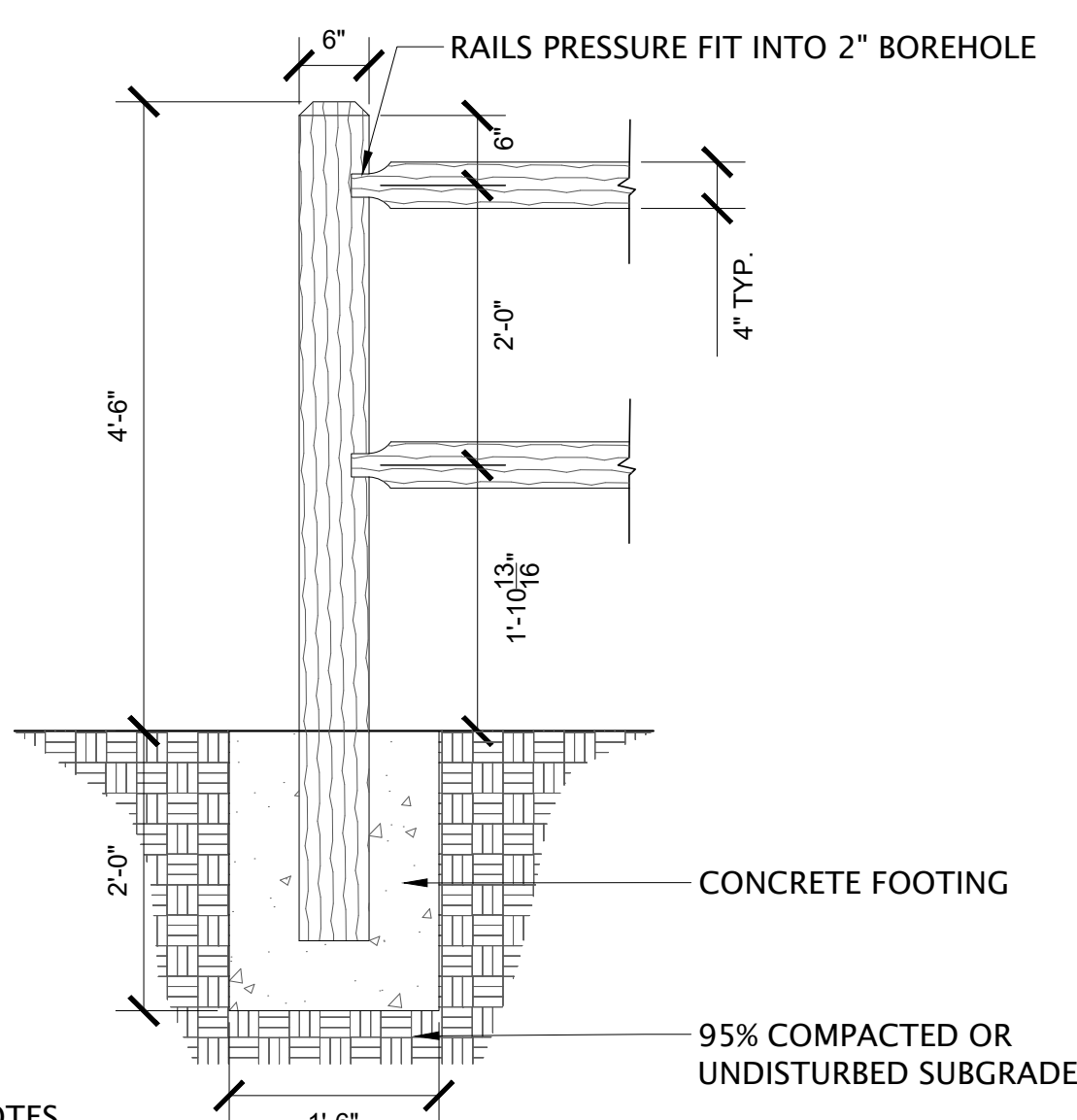
- NOTES:
1. MANUFACTURER: KEYSTONE RIDGE DESIGNS
 2. MODEL: PN26
 3. DESCRIPTION: 6' MODEL, SURFACE MOUNT
 4. COLOR: BLACK

6 PARK BENCH
NTS P-22-199-69



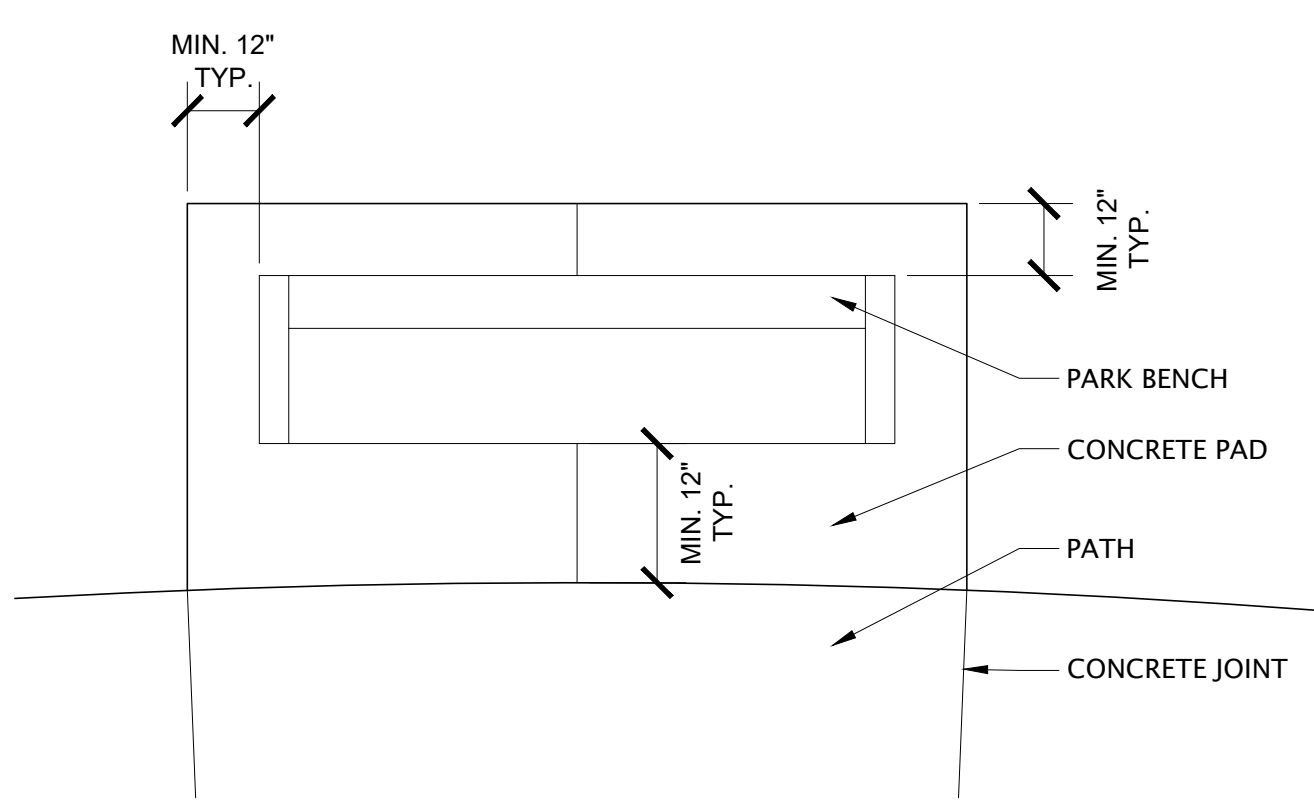
- NOTES:
1. MANUFACTURE: MOST DEPENDABLE FOUNTAINS
 2. MODEL: MDF-10145 SMSSFA, OPTIONAL PET FOUNTAIN INCLUDED
 3. MATERIAL: STAINLESS STEEL
 4. COLOR: TEXTURED CHROME
 5. BACK OF FOUNTAIN TO BE OFFSET 10" FROM EXTERIOR WALL OF RESTROOM BUILDING AND LOCATED NORTH/SOUTH AT CENTERLINE OF BUILDING. INSTALL FOUNTAIN PER MANUFACTURER'S WRITTEN INSTRUCTIONS. PROVIDE SEWER AND WATER AS REQUIRED.

7 DRINKING FOUNTAIN
SCALE: NOT TO SCALE P-22-199-85



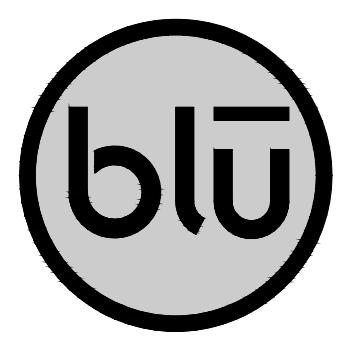
- NOTES:
1. POST AND RAIL WOOD IS TO MATCH EXISTING FENCE MATERIAL AND TREATMENT.

8 2 RAIL FENCE
3/4" = 1'-0" P-22-199-82



- NOTES:
1. EXACT BENCH DIMENSIONS VARY BASED ON SELECTED PRODUCT. ADJUST SIZE OF BENCH PAD AS NECESSARY TO MEET MINIMUM OFFSET REQUIREMENTS.
 2. INSTALL BENCH PER MANUFACTURER'S RECOMMENDATIONS.
 3. SEE SPECIFICATIONS FOR BENCH MODEL AND MANUFACTURER.

8 BENCH PAD
NOT TO SCALE P-22-199-14



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UT 84041
CONTACT:
JOELLEN GRANDY
801-336-3926

WELKER TRAILHEAD IMPROVEMENTS
2700 NORTH 2125 EAST
LAYTON, UT 84041

REVISIONS

NO.	DATE	DESCRIPTION

Stamp
STATE OF UTAH
CORP A
J. Grandy
Lic. No. 04475301
Landscape Architecture
04/28/2023

Designed By: TH
Drawn By: TH
Date: 04/28/2023
Checked By: RD
Project No: 22-199

Drawing Title
**SITE PLAN
DETAILS**

Drawing number
LS501

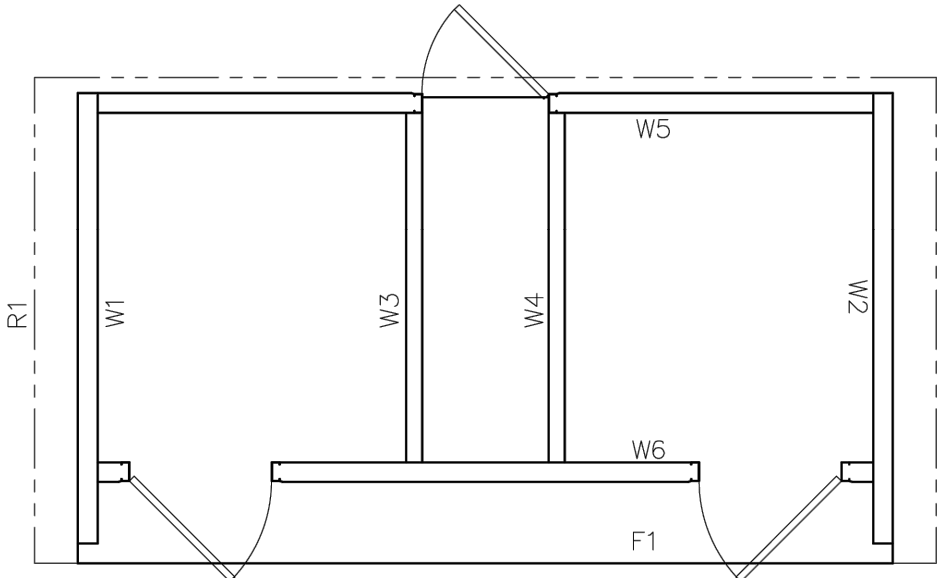
BID SET

DENALI DOUBLE FLUSH TOILET BUILDING

NOTES

- BUILDING IS DESIGNED TO COMPLY WITH THE 2015 INTERNATIONAL BUILDING CODE (IBC).
- DESIGN COMPLIES WITH THE PROVISIONS OF THE 2015 IBC FOR THE FOLLOWING LOADS:
GROUND SNOW LOAD = 250 PSF
FLOOR LIVE LOAD = 400 PSF
IBC DESIGN SPECTRAL RESPONSE $S_s = 1.720$, $S_1 = 0.661$
SITE CLASS D
SEISMIC USE GROUP: II
SEISMIC DESIGN CATEGORY: D
BEARING WALL SYSTEM "R" = 4.0
BASIC WIND SPEED = 100 MPH (3-SECOND GUST)
WIND EXPOSURE C, I = 1.0
- CONSTRUCTION TYPE: V-B
OCCUPANCY: U
EXTERIOR WALLS: 1-HR RATED PER IBC TABLE 721.1(2), ITEM 4-1.1
MINIMUM FIRE SEPARATION DISTANCE: 10 FEET
- CONCRETE STRENGTH $f'_c = 2500$ PSI INITIAL $f'_c = 5000$ PSI FINAL AIR ENTRAINMENT $6\% \pm 1.1/2\%$ IN PLASTIC CONCRETE.
REINFORCING STEEL: GRADE 60 $F_y = 60$ KSI MINIMUM LAP 18" AT SPLICES. THE BARS WITH DOUBLE ANNEALED 16 GA IRON WIRE REINFORCING TO BE PLACED IN CENTER OF PANEL UNDO ALL BENDS IN REINFORCING SHALL HAVE A MINIMUM RADIUS OF 6x THE BAR DIAMETER.
WELDED WIRE FABRIC(W.W.F.): 4x4xWBxWB, $F_y=65$ KSI (OR EQUIVALENT). COMPLY WITH ASTM A421, SMOOTH WIRE, MIN. LAP 2 SQUARES.
- EMBEDDED ITEMS IDENTIFIED ON DRAWINGS (i.e. PS-2, R301) REFER TO CXT STANDARD EMBEDMENT CATALOG.
- BACK OF PANELS TO HAVE SMOOTH TROWEL FINISH UNDO. ALL SURFACES TO BE TEXTURED ARE NOTED ON PANEL DWG'S.
- REFER TO SEPARATE CXT INCORPORATED SPECIFICATIONS COVERING DESIGN MATERIALS, PRODUCTION, AND INSTALLATION CRITERIA FOR SPECIFIC STYLE OF BUILDING.
- ALL REBAR BENDS ARE TO HAVE A MINIMUM RADIUS OF 6x THE BAR DIAMETER.
- INSTALLATION TO MEET APPLICABLE LOCAL, STATE & FEDERAL CODES, BY OTHERS.
- ADEQUATE PLUMBING FACILITIES TO BE PROVIDED IN ACCORDANCE WITH 2015 IBC SECTION 2902.3.2 (NOT BY CXT).

PANEL MARK NO. KEY PLAN



APPLICABLE CODES

- 2015 INTERNATIONAL BUILDING CODE
- 2015 INTERNATIONAL PLUMBING CODE
- 2014 NATIONAL ELECTRICAL CODE
- 2015 INTERNATIONAL MECHANICAL CODE
- 2015 INTERNATIONAL ENERGY CONSERVATION CODE

SPECIAL CONDITIONS AND/OR LIMITATIONS

ACCESSIBILITY TO THIS BUILDING, INCLUDING PARKING IS TO BE PROVIDED BY OTHER AND CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL BUILDING CODES.

INDEX OF DRAWINGS

NO.	TITLE
DN-01	COVER SHEET
DN-02	BUILDING ELEVATIONS
DN-03	INTERIOR ELEVATIONS
DN-04	FLOOR PLAN
DN-05	FINISH DETAILS
DN-06	CASTING DETAILS
DN-07	WALL PANEL W1
DN-08	WALL PANEL W2
DN-09	WALL PANEL W3
DN-10	WALL PANEL W4
DN-11	WALL PANEL W5
DN-12	WALL PANEL W6
DN-13	ROOF SLAB R1
DN-14	ROOF SLAB R2
DN-15	FLOOR SLAB F1
DN-16	RIGGING DETAIL
DN-17	FOUNDATION DETAIL
DN-18	FIELD STUB UP LOCATIONS
DN-19	PLUMBING PLAN, DIAGRAMS & SCHEDULES
DN-20	ELECTRICAL PLAN, DIAGRAMS & SCHEDULES
DN-21	ELECTRICAL PANEL ASSEMBLY DETAIL
DN-22	B.O.M.

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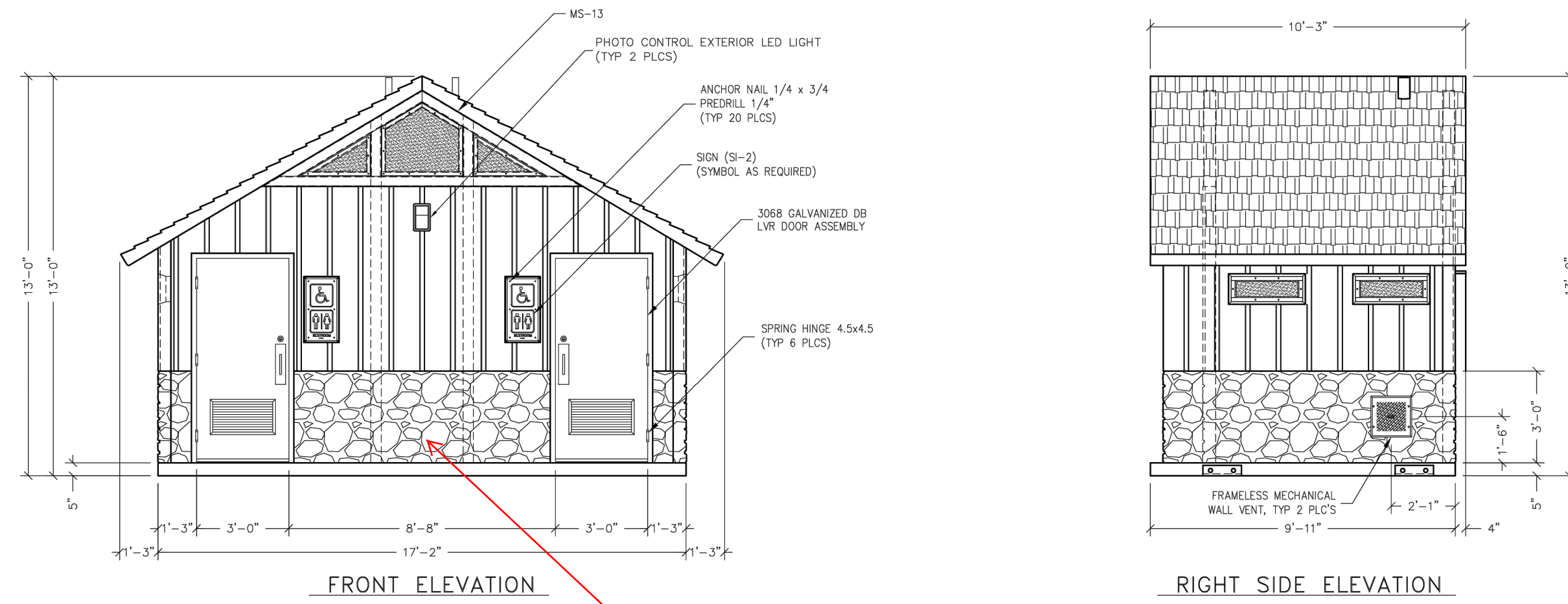
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3602772
DENALI
BUILDING NUMBER DN-256

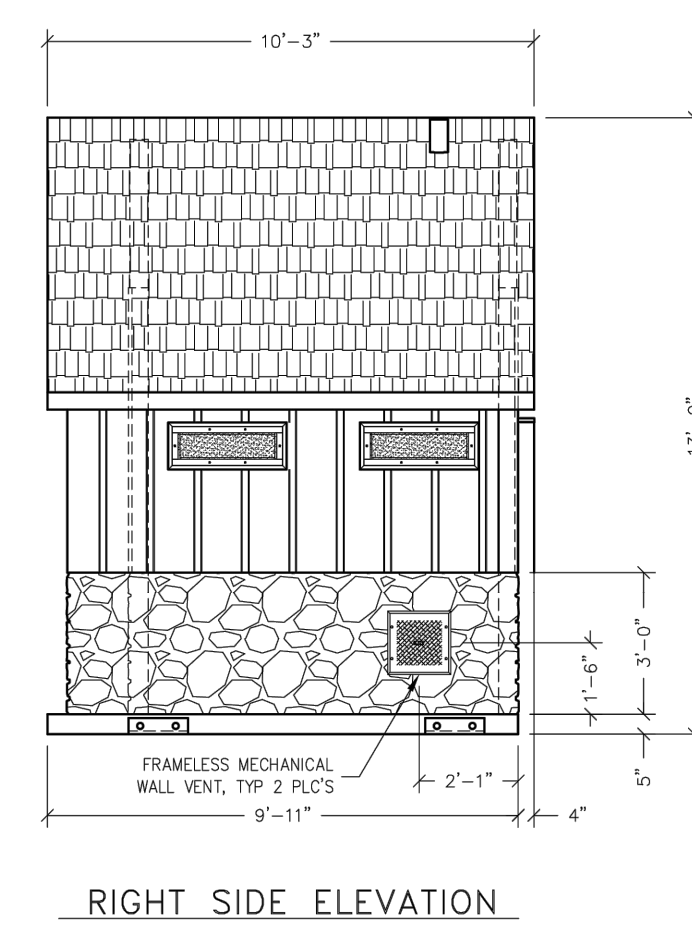
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DESIGNED: NEW FILE NO.: 20-256-01
CHECKED: NEW FILE NO.: 48
DATE: 02-28-23

COVER SHEET
SHEET NO. 22

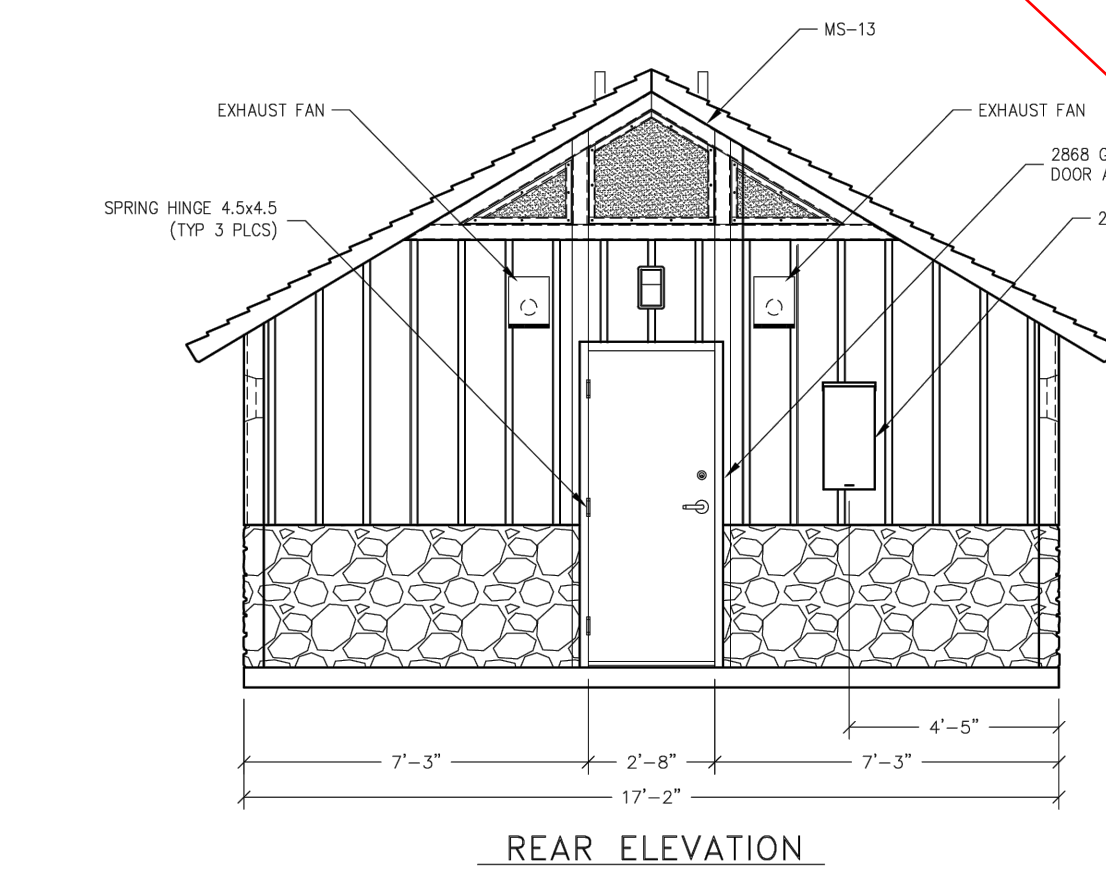
DN-01



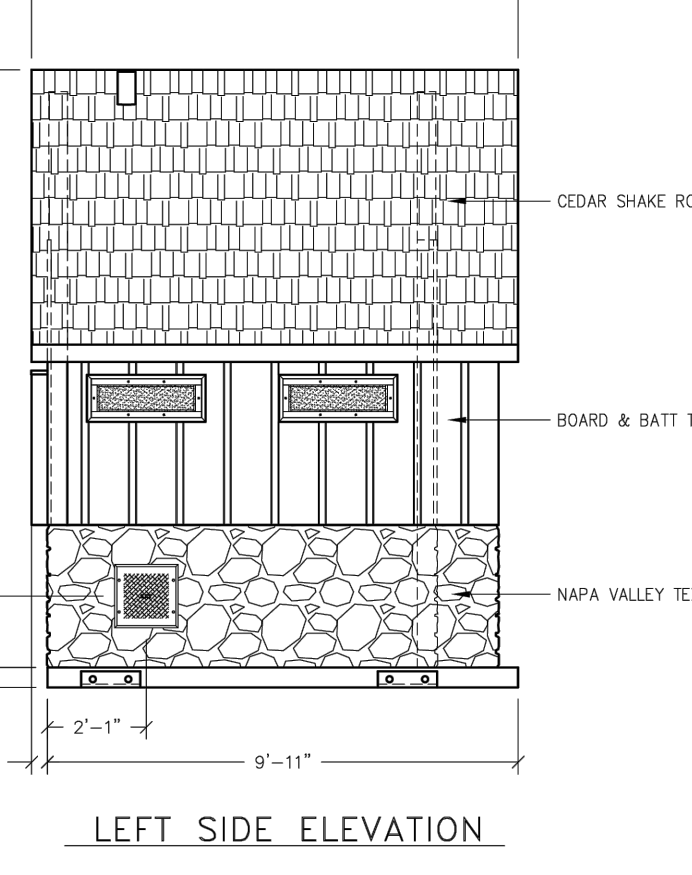
FRONT ELEVATION



RIGHT SIDE ELEVATION



REAR ELEVATION



LEFT SIDE ELEVATION

Contractor will need to cut a 6" x 6" B.O. for Drinking Fountain. Coordinate with Drinking Fountain Manufacturer for exact location of where B.O. should be installed so as to match the connection of the drinking fountain. (To be installed by Layton City Contractor)

EMBEDDED MATERIALS	ITEM	QTY
	SPRING HINGE 4.5x4.5	2
	3068 DOOR ASSEMBLY	2
	2868 DOOR ASSEMBLY	1
	ANCHOR NAIL 1/4x3/4	20
	MS-13	2
	SI-2	2

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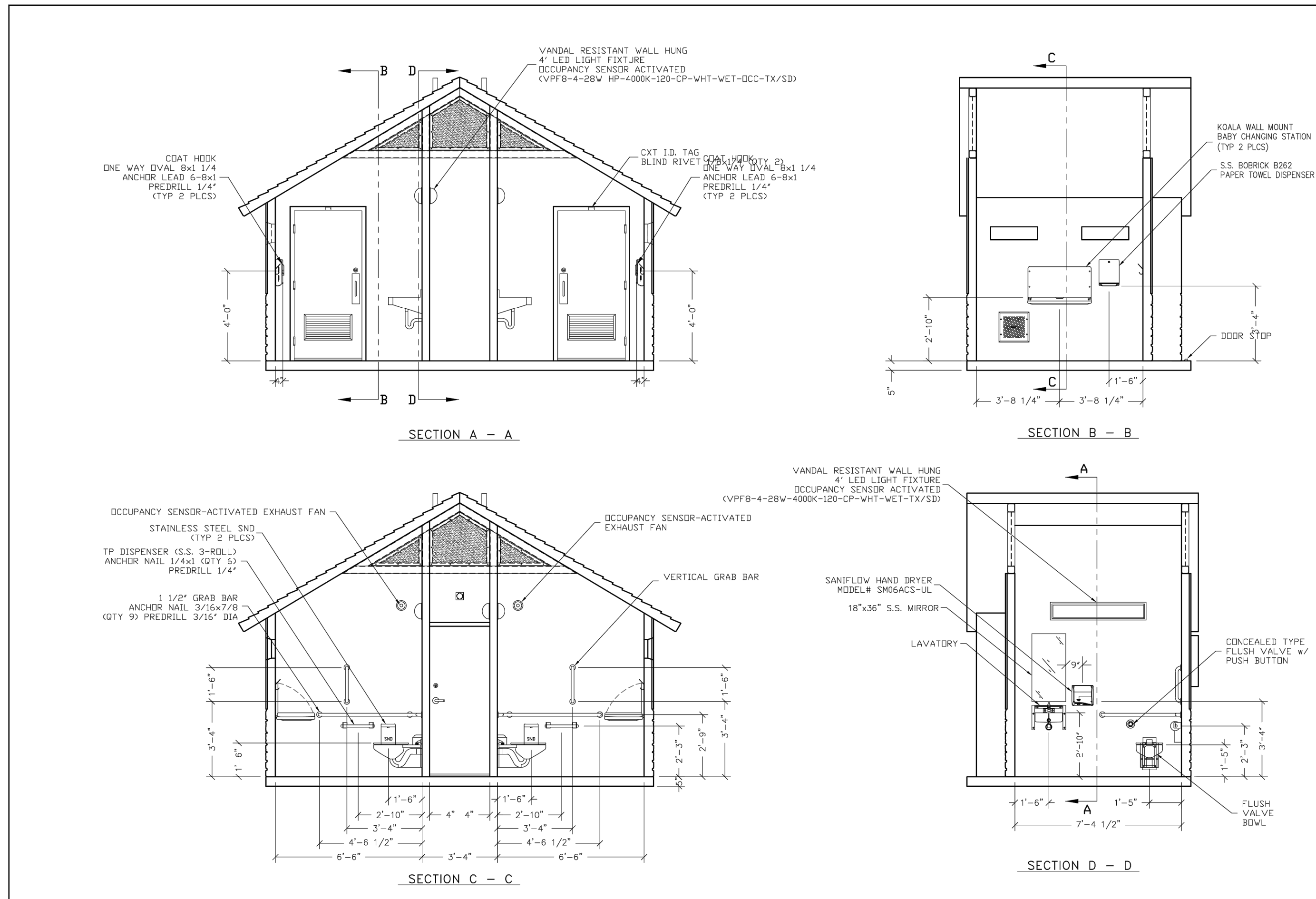
901 N. Highway 77, Henderson, NV 89045
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DENALI
BUILDING NUMBER DN-256

SCALE: 1/8"=1'-0" (DATE: 02-28-23)
DESIGNED: NEW FILE NO.: 20-256-01
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BUILDING ELEVATIONS
SHEET NO. 22

DN-02

UTAH STATE PE DRAWINGS REQUIRED	UTAH STATE PE DRAWINGS REQUIRED
WALL TEXTURE: BOARD & BATT / NAPA VALLEY	WALL TEXTURE: BOARD & BATT / NAPA VALLEY
WALL COLOR: BUCKSKIN	WALL COLOR: BUCKSKIN
STONE COLOR: MOUNTAIN BLEND	STONE COLOR: MOUNTAIN BLEND
ROOF TEXTURE: CEDAR SHAKE	ROOF TEXTURE: CEDAR SHAKE
ROOF COLOR: JAVA BROWN	ROOF COLOR: JAVA BROWN
TRIM PAINT: DTM ALKYL ENAMEL BROWN	TRIM PAINT: DTM ALKYL ENAMEL BROWN



EMBEDDED MATERIALS	ITEM	QTY
	BLIND RIVET 1/8x1/4	4
	GRAB BAR	2
	TP DISPENSER	2
	TOILET PAPER ROLL	6
	COAT HOOK	2
	DOOR STOP	2
	ONE WAY OVAL 3/4	4
	ANCHOR LEAD 6-8x1	4
	CXT I.D. TAG	2
	ANCHOR NAIL 1/4x1	12
	ANCHOR NAIL 1/4x3/4	8
	ANCHOR NAIL 3/8x7/8	18
	KOALA CHANGING STATION	2
	SND	2
	S.S. PAPER TOWEL DISPENSER	2

OU. FT. CONC. SQ. FT. W.W.F.
APPROXIMATE WEIGHT

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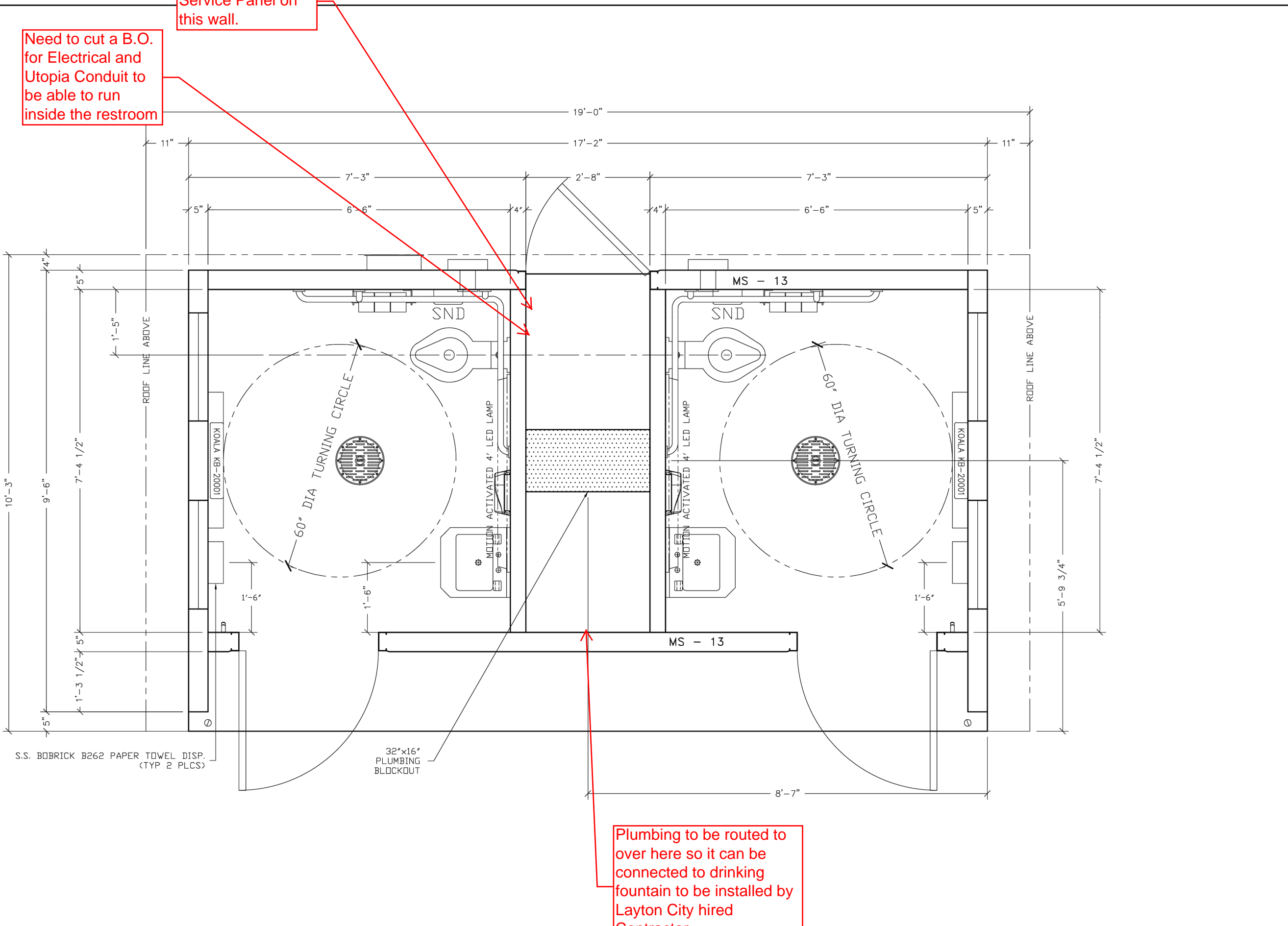
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INTERIOR ELEVATIONS
SHEET NO. 22

DN-03



Install Electrical Service Panel on this wall.
Need to cut a B.O. for Electrical and Utopia Conduit to be able to run inside the restroom

Plumbing to be routed to over here so it can be connected to drinking fountain to be installed by Layton City hired Contractor.

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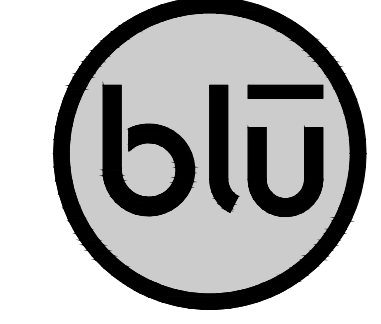
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3602772
DENALI
BUILDING NUMBER DN-256

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FLOOR PLAN
SHEET NO. 22

DN-04



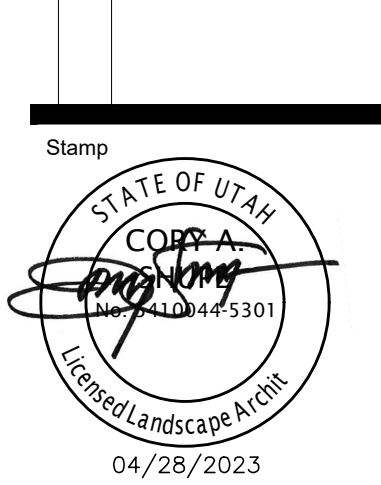
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OWNER:
LAYTON CITY
437 N WASATCH DR. LAYTON,
UT 84041

CONTACT:
JOELLEN GRANDY
801-336-3926

WELKER TRAILHEAD IMPROVEMENTS
2700 NORTH 2125 EAST
LAYTON, UT 84041

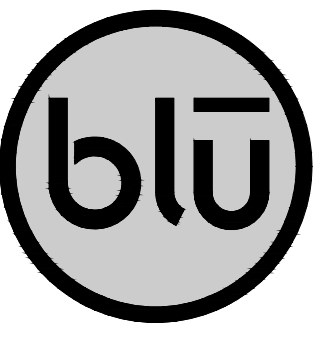
NO.	DESCRIPTION



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Drawn By: TH
Date: 04/28/2023
Checked By: RD
Project No: 22-199

Drawing Title
CXT RESTROOM PLANS

Drawing number
LS502



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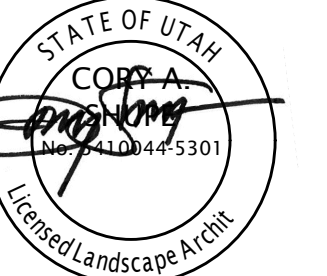
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REVISIONS

NO.	DATE	DESCRIPTION

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Designed By:

TH

Drawn By:

TH

Date:

04/28/2023

Checked By:

RD

Project No:

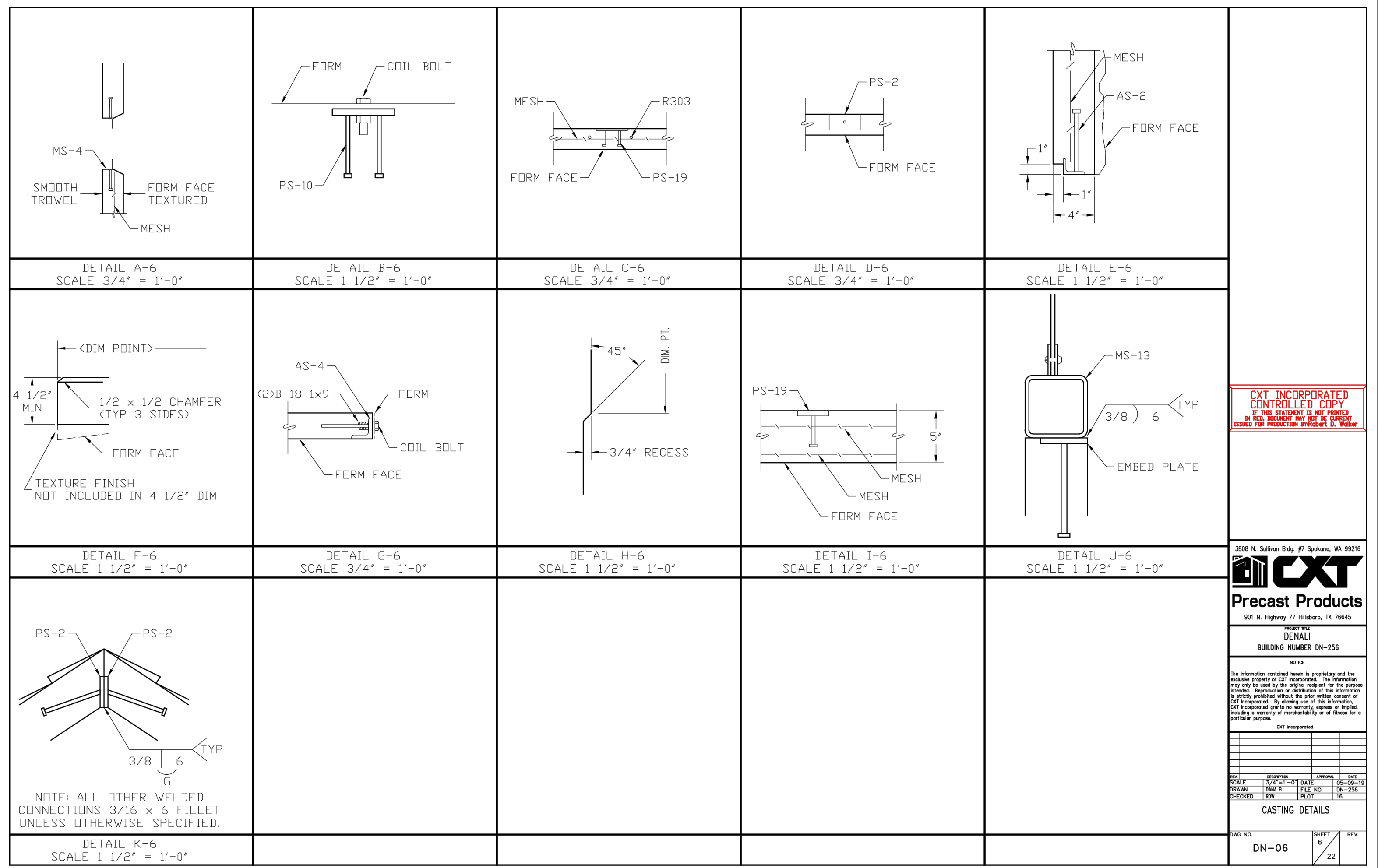
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Drawing Title

CXT
RESTROOM
PLANS

Drawing number

LS503



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PROJECT: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/2" = 1'-0" (ALL)
DATE: 04-28-23
DRAWN: TH
CHECKED: RD

CASTING DETAILS

NO.	SHEET	REV.
DN-06	6	22

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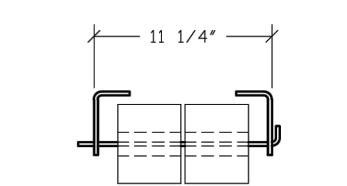
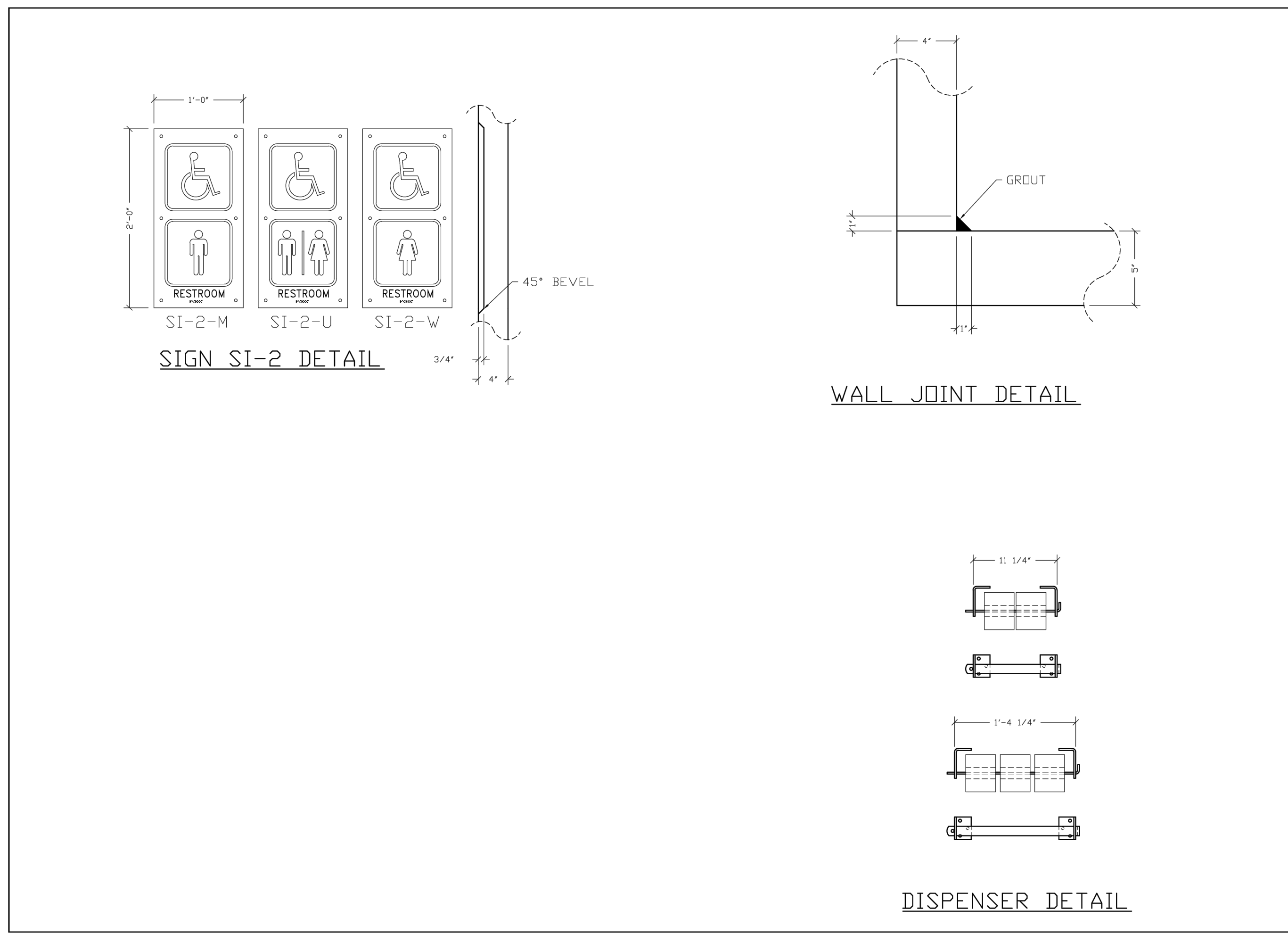
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PROJECT: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/2" = 1'-0" (ALL)
DATE: 04-28-23
DRAWN: TH
CHECKED: RD

FINISH DETAILS

NO.	SHEET	REV.
DN-05	5	22



ITEM	QTY
AS-2	3
PS-2	1
PS-10	2
PS-19	6
R303	5
R409	1
R410	1
R4109	3
R322	6
R3x38	2
MS-4 80	2
MS-2 80	1

OU. FT. CONC.	SQ. FT. W.W.F.
23.4 (0.87)	68

APPROXIMATE WEIGHT: 3510

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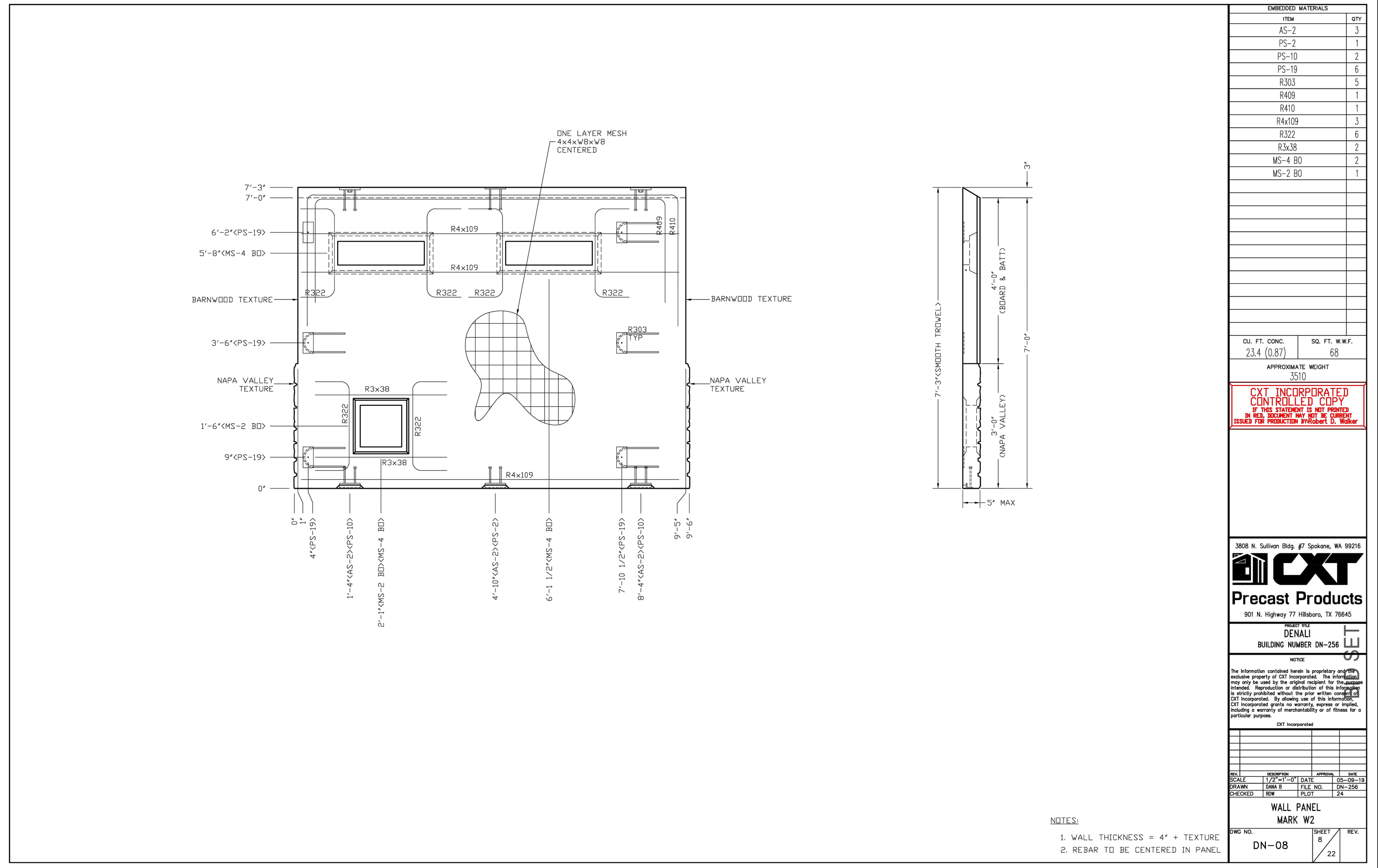
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PROJECT: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/2" = 1'-0" (ALL)
DATE: 04-28-23
DRAWN: TH
CHECKED: RD

WALL PANEL
MARK W1

NO.	SHEET	REV.
DN-07	7	22



ITEM	QTY
AS-2	3
PS-2	1
PS-10	2
PS-19	6
R303	5
R409	1
R410	1
R4109	3
R322	6
R3x38	2
MS-4 80	2
MS-2 80	1

OU. FT. CONC.	SQ. FT. W.W.F.
23.4 (0.87)	68

APPROXIMATE WEIGHT: 3510

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PROJECT: DENALI
BUILDING NUMBER: DN-256

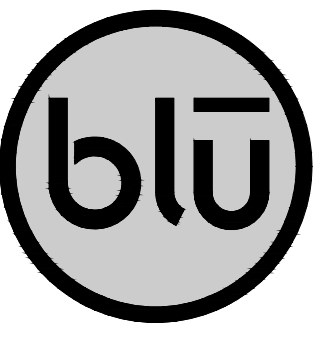
SCALE: 1/2" = 1'-0" (ALL)
DATE: 04-28-23
DRAWN: TH
CHECKED: RD

WALL PANEL
MARK W2

NO.	SHEET	REV.
DN-08	8	22

NOTES:
1. WALL THICKNESS = 4" + TEXTURE
2. REBAR TO BE CENTERED IN PANEL

NOTES:
1. WALL THICKNESS = 4" + TEXTURE
2. REBAR TO BE CENTERED IN PANEL



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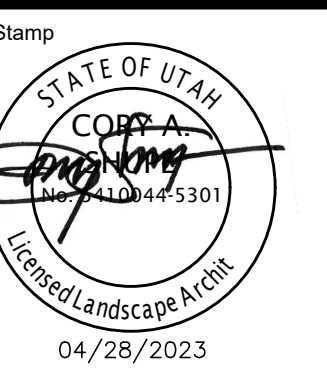
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437 N WASATCH DR. LAYTON,
UT 84041

CONTACT:
JOELLEN GRANDY
801-336-3926

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2700 NORTH 2125 EAST
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REVISIONS

NO.	DESCRIPTION



Designed By: TH
Drawn By: TH
Date: 04/28/2023
Checked By: RD
Project No: 22-199

Drawing Title
CXT
RESTROOM
PLANS

Drawing number
LS504

EMBEDDED MATERIALS

ITEM	QTY
AS-2	2
PS-2	6
PS-10	2
R317	4
R320	2
R320	4
R320	2
W.C. WALL SLEEVE	1
BLOCKOUT 3" DIA	1
BLOCKOUT 1 1/2" DIA	1
BLOCKOUT 2" DIA	1
4x4 E-BOX	4
ROUND MUD RING	1
RECT MUD RING	1

CU. FT. CONC. 27.6 (1.02) SQ. FT. W.W.F. 81

APPROXIMATE WEIGHT 4140

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Precast Products
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DESIGNER: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/8"=1'-0" (DATE: 04-28-23)
DRAWN: TH (DATE: 04-28-23)
CHECKED: RD (DATE: 04-28-23)

WALL PANEL MARK W3

REV. 9 22

NOTES:
1. WALL THICKNESS = 4"
2. REINFORCING BARS R3X130 TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL 1/2" MIN. COVER
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

EMBEDDED MATERIALS

ITEM	QTY
AS-2	2
PS-2	6
PS-10	2
R317	4
R320	2
R320	4
R320	2
W.C. WALL SLEEVE	1
BLOCKOUT 3" DIA	1
BLOCKOUT 1 1/2" DIA	1
BLOCKOUT 2" DIA	1
4x4 E-BOX	4
ROUND MUD RING	1
RECT MUD RING	1

CU. FT. CONC. 27.6 (1.02) SQ. FT. W.W.F. 81

APPROXIMATE WEIGHT 4140

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3808 N. Sullivan Blvd. #7 Sparks, NV 89216
CXT
Precast Products
901 N. Highway 77, Henderson, NV 89045

DESIGNER: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/8"=1'-0" (DATE: 04-28-23)
DRAWN: TH (DATE: 04-28-23)
CHECKED: RD (DATE: 04-28-23)

WALL PANEL MARK W4

REV. 10 22

NOTES:
1. WALL THICKNESS = 4"
2. REINFORCING BARS R3X130 TO BE PLACED IN PAIRS ONE EACH FACE OF PANEL 1/2" MIN. COVER
3. ALL OTHER BARS TO BE CENTERED IN PANEL.

EMBEDDED MATERIALS

ITEM	QTY
AS-2	4
PS-2	9
PS-10	4
PS-13	4
R317	4
R320	4
R320	2
R320	6
R320	1
R320	1
4x4 E-BOX	2
B.O. 4 1/2" DIA	1
3/8 1/8" x 1/4" BLOCKOUT	1
ROUND MUD RING	1
4x4 E-BOX	2

CU. FT. CONC. 43.4 (1.61) SQ. FT. W.W.F. 124

APPROXIMATE WEIGHT 6300

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DESIGNER: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/8"=1'-0" (DATE: 04-28-23)
DRAWN: TH (DATE: 04-28-23)
CHECKED: RD (DATE: 04-28-23)

WALL PANEL MARK W5

REV. 11 22

NOTES:
1. WALL THICKNESS = 4" + TEXTURE
2. REBAR TO BE CENTERED IN PANEL
3. BLOCKOUT TEXTURE FOR LIGHT, SERVICE PANEL, AND EXHAUST FANS.

EMBEDDED MATERIALS

ITEM	QTY
AS-2	4
PS-2	9
PS-10	4
PS-13	4
R317	6
R320	2
R320	6
R320	4
R320	4
R320	1
R320	1
3" x 2" MUD	2
4x4 E-BOX	2
ROUND MUD RING	1
40 1/8" x 82 1/4" BLOCKOUT	2

CU. FT. CONC. 36.8 (1.36) SQ. FT. W.W.F. 96

APPROXIMATE WEIGHT 5520

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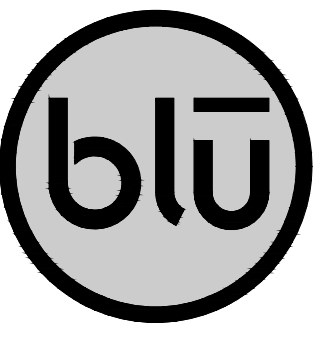
DESIGNER: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/8"=1'-0" (DATE: 04-28-23)
DRAWN: TH (DATE: 04-28-23)
CHECKED: RD (DATE: 04-28-23)

WALL PANEL MARK W6

REV. 12 22

NOTES:
1. WALL THICKNESS = 4" + TEXTURE
2. REBAR TO BE CENTERED IN PANEL
3. BLOCKOUT TEXTURE FOR EXTERIOR LIGHT.



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Sandy, UT 84070
p 801.913.7994

OWNER:
LAYTON CITY
437 N WASATCH DR. LAYTON,
UT 84041

CONTACT:
JOELLEN GRANDY
801-336-3926

WELKER TRAILHEAD IMPROVEMENTS
2700 NORTH 2125 EAST
LAYTON, UT 84041

REVISIONS

NO.	DATE	DESCRIPTION

Stamp
STATE OF UTAH
CORP. A
Landscape Architecture
04/28/2023

Designed By: TH
Drawn By: TH
Date: 04/28/2023
Checked By: RD
Project No: 22-199

Drawing Title
CXT
RESTROOM
PLANS

Drawing number
LS505

EMBEDDED MATERIALS	QTY
PS-19	11
PS-10	4
FL-847	4
R320	8
R303	11
R3x19	4
R3x10	4
R4x18	16
BLOCKOUT 5" DIA	1

CU. FT. CONC.	SQ. FT. W.A.F.
47.6 (1.76)	226

APPROXIMATE WEIGHT
7140

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PROJECT: DENALI
BUILDING NUMBER: DN-256

SCALE: 1/2"=1'-0" (DATE: 04-28-23)
DRAWN: TH (FILE NO: 22-199)
CHECKED: RD (FILE NO: 22-199)

ROOF SLAB
MARK R2

SHEET 14 OF 22
DN-14

EMBEDDED MATERIALS	QTY
PS-19	11
PS-10	4
FL-847	4
R320	8
R303	11
R3x19	4
R3x10	4
R4x18	16
BLOCKOUT 5" DIA	1

CU. FT. CONC.	SQ. FT. W.A.F.
47.6 (1.76)	226

APPROXIMATE WEIGHT
7140

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CHECKED: RD (FILE NO: 22-199)

ROOF SLAB
MARK R2

SHEET 14 OF 22
DN-14

EMBEDDED MATERIALS	QTY
PS-19	11
PS-10	4
FL-847	4
R320	8
R303	11
R3x19	4
R3x10	4
R4x18	16
BLOCKOUT 5" DIA	1

CU. FT. CONC.	SQ. FT. W.A.F.
47.6 (1.76)	226

APPROXIMATE WEIGHT
7140

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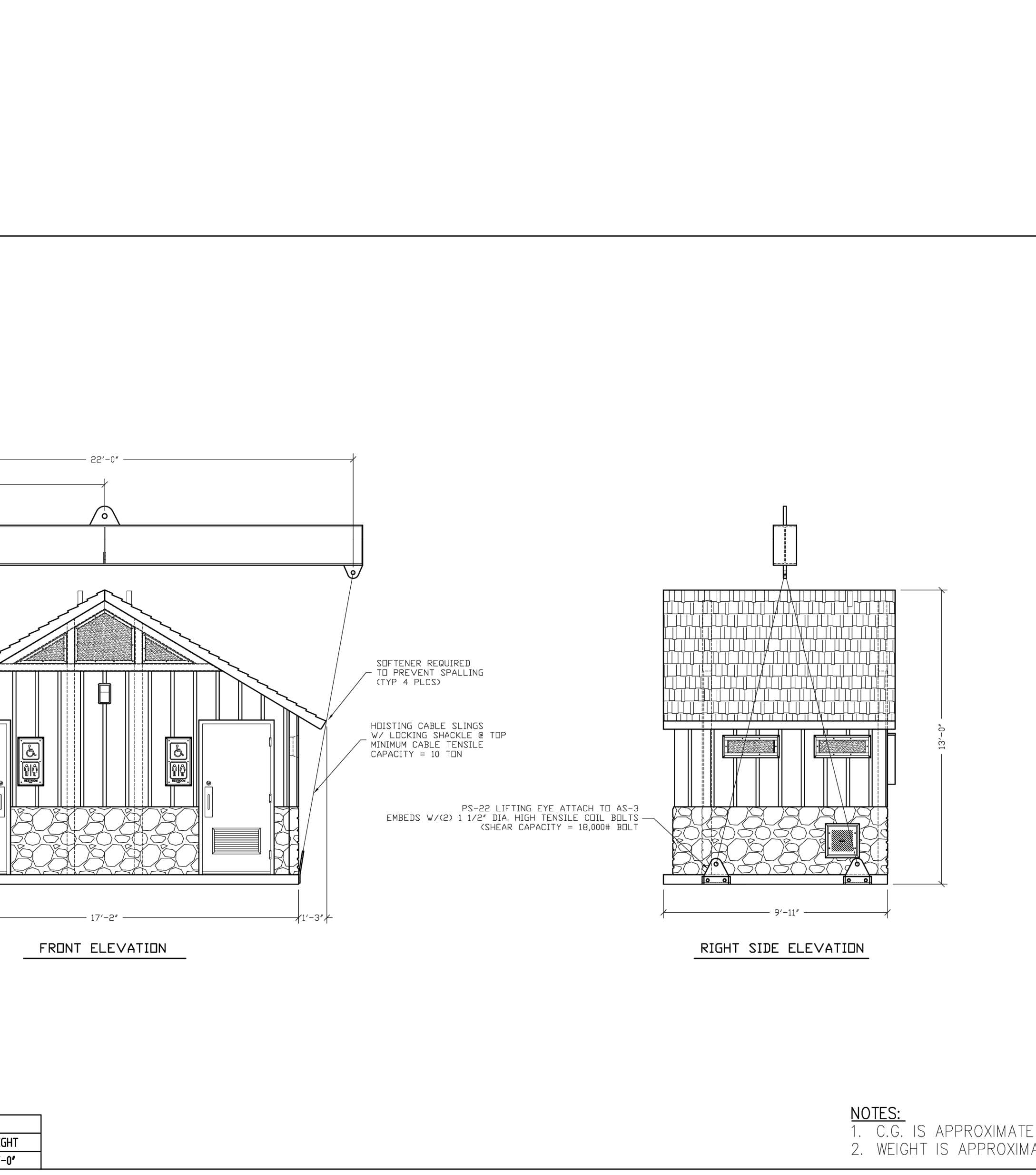
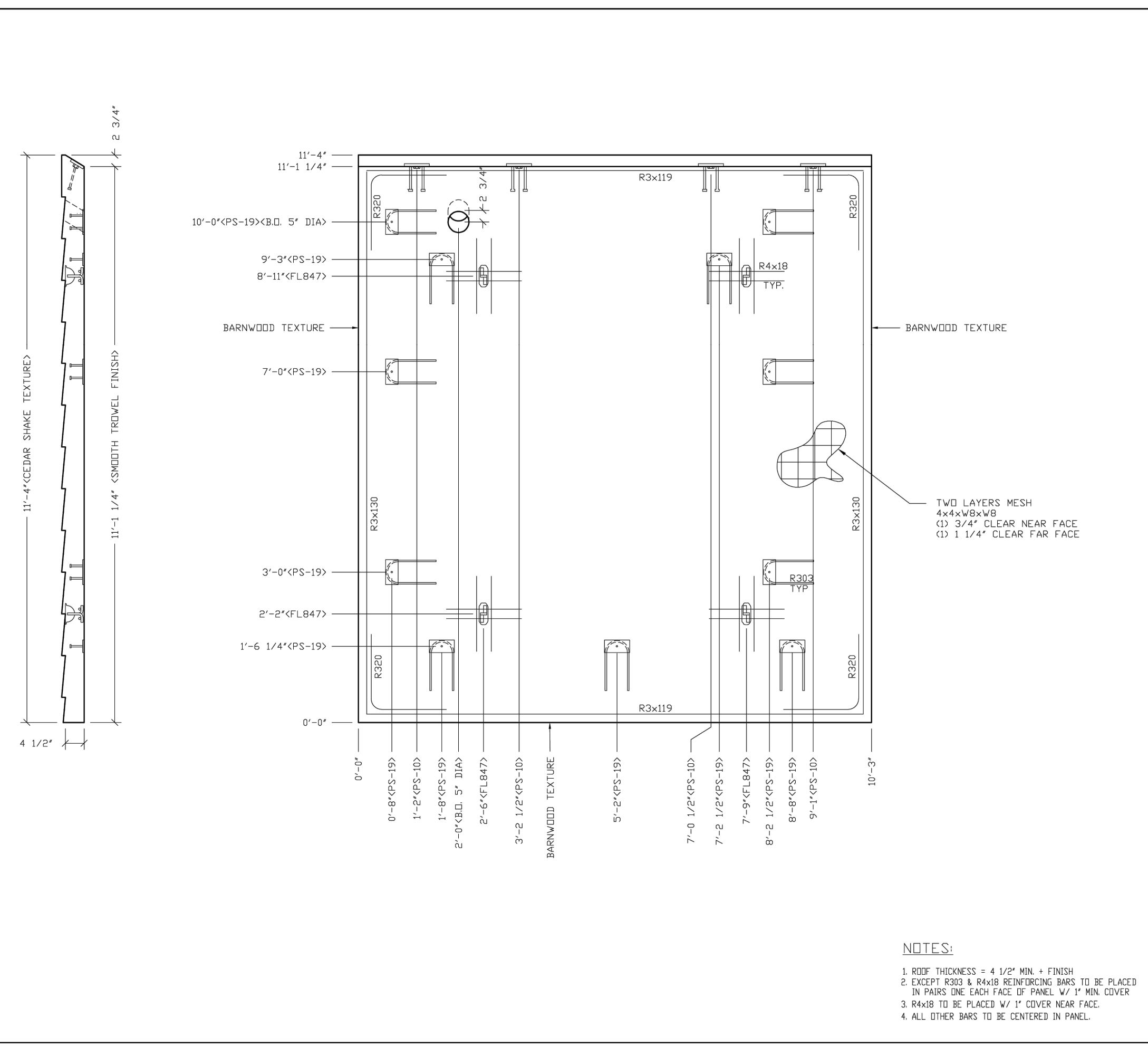
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CHECKED: RD (FILE NO: 22-199)

ROOF SLAB
MARK R2

SHEET 14 OF 22
DN-14



EMBEDDED MATERIALS	QTY
PS-19	11
PS-10	4
FL-847	4
R320	8
R303	11
R3x19	4
R3x10	4
R4x18	16
BLOCKOUT 5" DIA	1

CU. FT. CONC.	SQ. FT. W.A.F.
47.6 (1.76)	226

APPROXIMATE WEIGHT
7140

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BUILDING NUMBER: DN-256

SCALE: 1/2"=1'-0" (DATE: 04-28-23)
DRAWN: TH (FILE NO: 22-199)
CHECKED: RD (FILE NO: 22-199)

ROOF SLAB
MARK R1

SHEET 13 OF 22
DN-13

EMBEDDED MATERIALS	QTY
PS-19	11
PS-10	4
FL-847	4
R320	8
R303	11
R3x19	4
R3x10	4
R4x18	16
BLOCKOUT 5" DIA	1

CU. FT. CONC.	SQ. FT. W.A.F.
47.6 (1.76)	226

APPROXIMATE WEIGHT
7140

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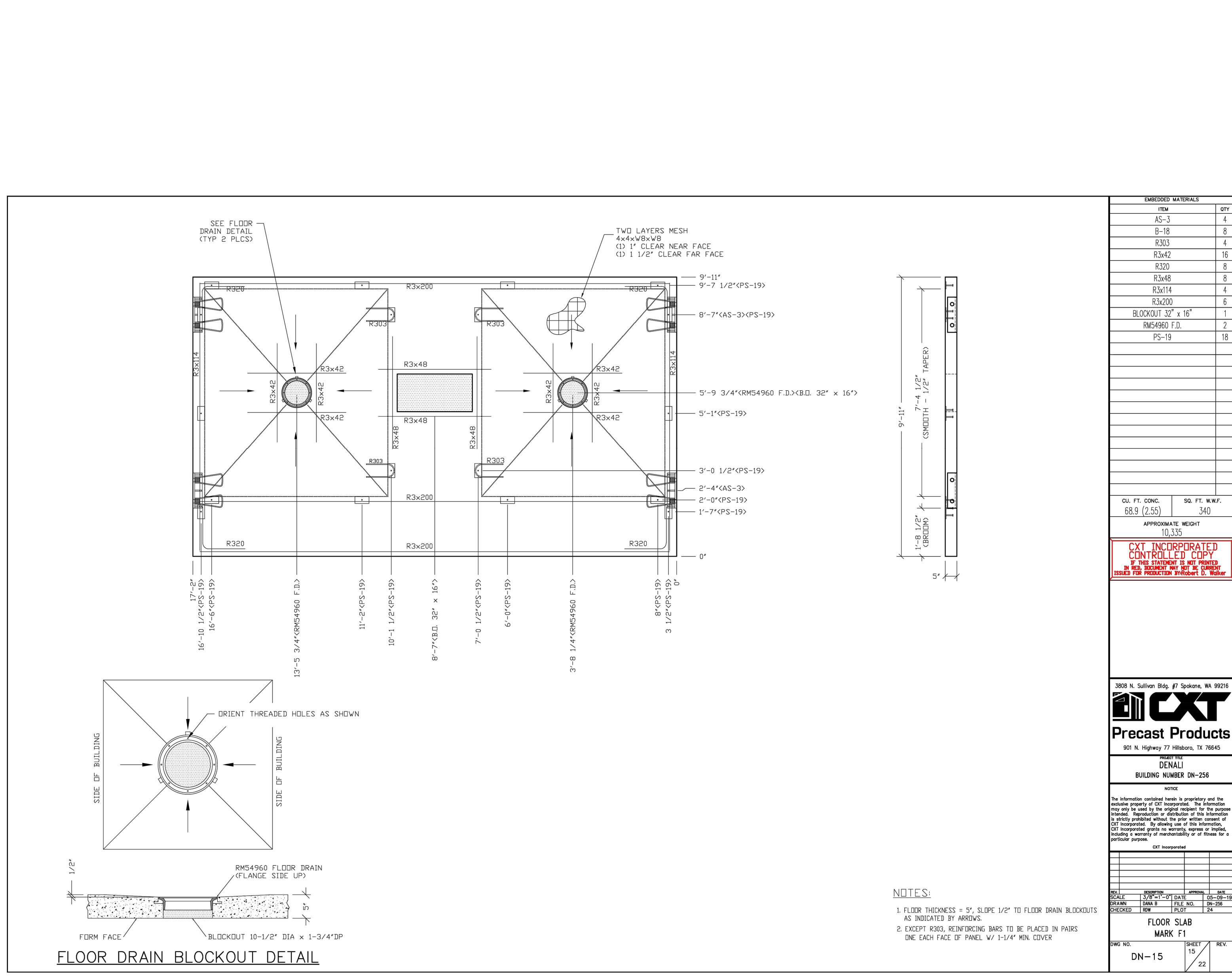
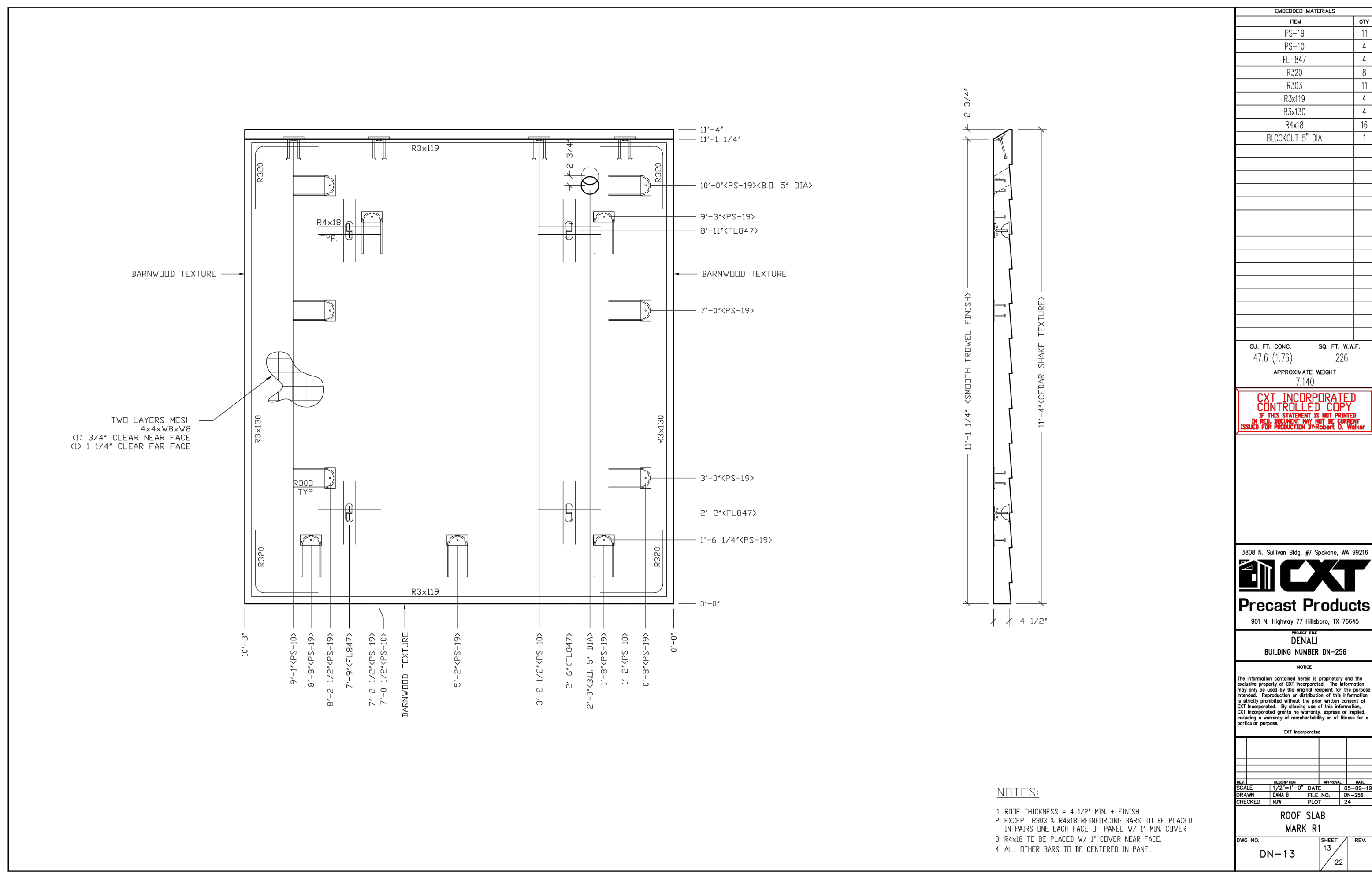
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BUILDING NUMBER: DN-256

SCALE: 1/2"=1'-0" (DATE: 04-28-23)
DRAWN: TH (FILE NO: 22-199)
CHECKED: RD (FILE NO: 22-199)

ROOF SLAB
MARK R1

SHEET 13 OF 22
DN-13

SHIPPING WEIGHTS AND DIMENSIONS DN-256				
WEIGHT	LENGTH	WIDTH	HEIGHT	
53,300	17'-2"	10'-3"	13'-0"	



EMBEDDED MATERIALS	QTY
PS-19	11
PS-10	4
FL-847	4
R320	8
R303	11
R3x19	4
R3x10	4
R4x18	16
BLOCKOUT 5" DIA	1

CU. FT. CONC.	SQ. FT. W.A.F.
88.9 (2.55)	340

APPROXIMATE WEIGHT
10,335

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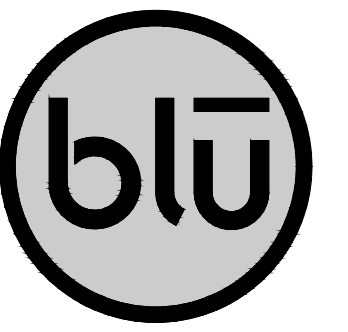
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PROJECT: DENALI
BUILDING NUMBER: DN-256

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CHECKED: RD (FILE NO: 22-199)

FLOOR SLAB
MARK F1

SHEET 15 OF 22
DN-15



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OWNER:

LAYTON CITY
437 N WASATCH DR. LAYTON,
UT 84041

CONTACT:

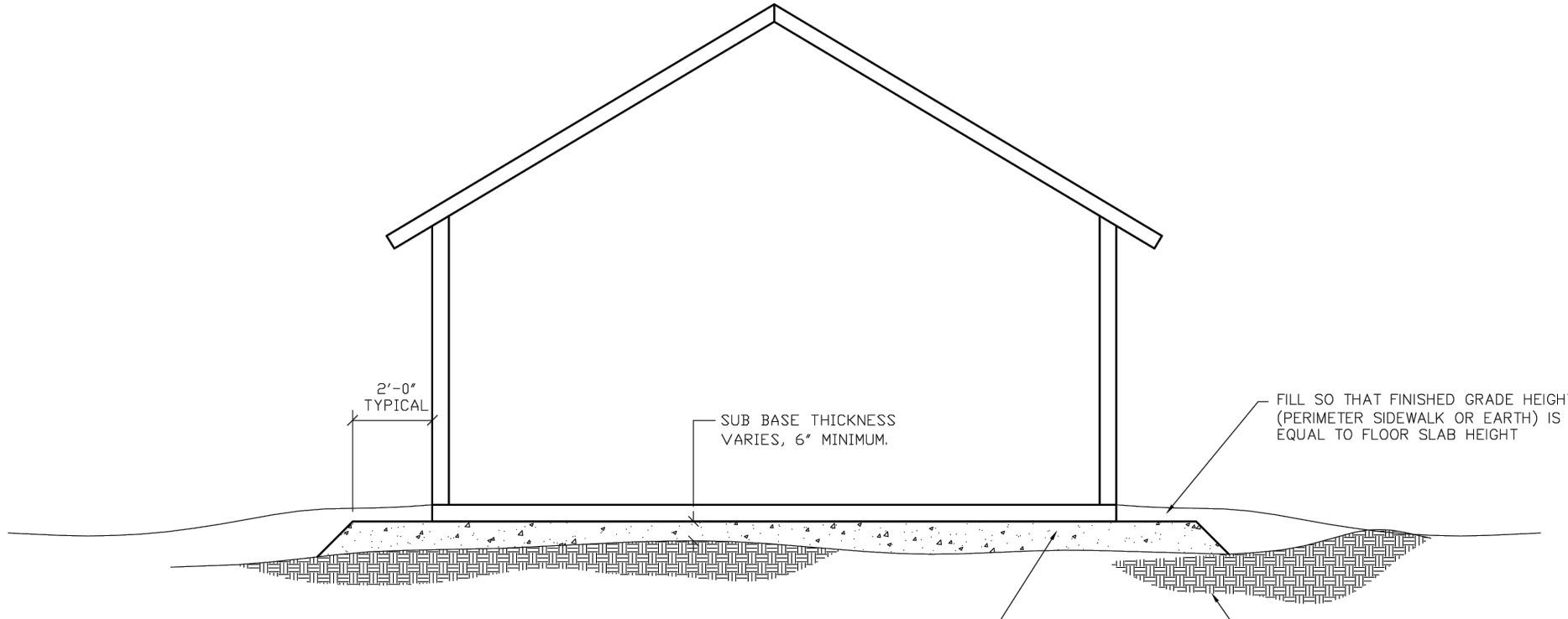
JOELLEN GRANDY
801-336-3926

NOTE:

THIS FACTORY ASSEMBLED BUILDING AS CONSTRUCTED PROVIDES A RIGID BOX TYPE STRUCTURAL SYSTEM. VERTICAL LOADS ARE TRANSFERRED PRIMARILY THROUGH BEARING WALLS TO A PREPARED GRANULAR SUB-BASE WHICH DISSIPATES VERTICAL LOADS UNIFORMLY TO THE NATIVE SUBGRADE AND ALSO ACTS AS A FROST BARRIER. DUE TO THE INHERENT STIFFNESS OF THE BUILDING, IT WILL REMAIN SAFE AND STRUCTURALLY SOUND IN THE UNLIKELY EVENT OF FREEZING ACTION BELOW THE BUILDING.

LATERAL LOADS ARE TRANSFERRED TO THE GROUND THROUGH FRICTIONAL RESISTANCE WITHOUT SLIDING OR SHIFTING BETWEEN THE BUILDING FLOOR SLAB AND THE PREPARED SOIL AND GRAVEL SUB-BASE ON WHICH THE BUILDING RESTS. SEISMIC ANALYSES ARE BASED ON LOADS DETERMINED IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE USING THE FOLLOWING PARAMETERS, WHICH MEET OR EXCEED THE CODE PRESCRIBED REQUIREMENTS FOR THIS INSTALLATION.

THIS BUILDING, AS DESIGNED, RESTS ON A PROPERLY PREPARED GRANULAR SUB-BASE WHICH WILL BE SAFE AND STRUCTURALLY SOUND FOR VERTICAL AND LATERAL LOADS AS DISCUSSED ABOVE. A FULL DEPTH FOUNDATION WALL AT THE BUILDING PERIMETER, TYPICAL FOR OTHER TYPES OF BUILDING CONSTRUCTION, IS NOT REQUIRED FOR THIS BUILDING.



PRIOR TO PLACEMENT OF BUILDING A PROPERLY PREPARED SUB-BASE SHALL BE PROVIDED. SUB-BASE SHALL BE A MINIMUM OF 6" THICK AND CONSIST OF 3/4" MINUS CRUSHED ROCK (ROAD BASE MATERIAL) COMPACTED TO 95% OF OPTIMUM DENSITY IN ACCORDANCE WITH ASTM D 1557. FINISHED SURFACE OF SUB-BASE SHALL BE FLAT AND LEVEL WITH A MAXIMUM DEVIATION OF +/- 1/4" FROM A TRUE HORIZONTAL PLANE. REFER TO BUILDING HANDLING SHEET FOR SUB-BASE REQUIREMENTS DURING BUILDING PLACEMENT. (PREPARED SUB-BASE NOT BY CXT)

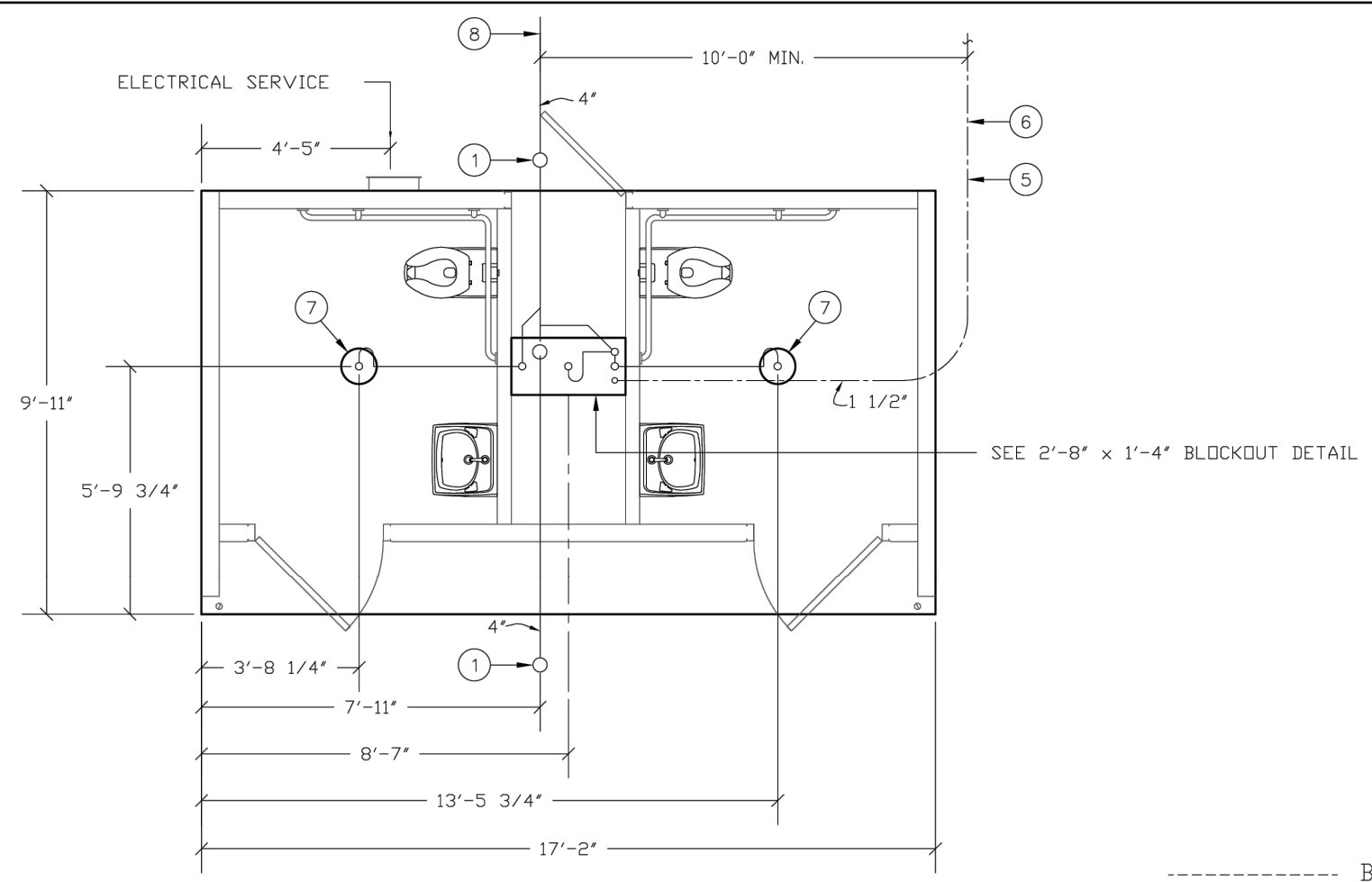
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PROJECT: DENALI
BUILDING NUMBER DN-256

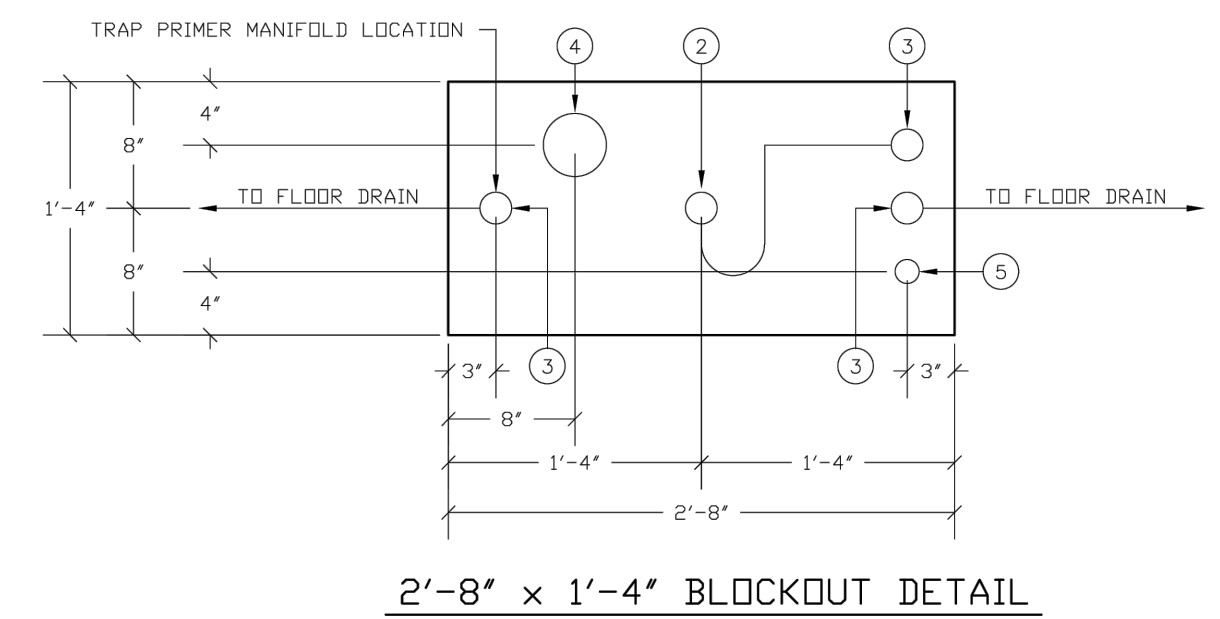
SCALE: 1/4" = 1'-0"
DATE: 02-28-23
DESIGNED BY: JLG
CHECKED BY: JLG

FOUNDATION DETAIL
SHEET 17 OF 22



FLOOR DRAIN BLOCKOUTS & BELOW FLOOR PIPING

ALL PIPING INDICATED ON THIS SHEET IS NOT BY CXT



BELOW FLOOR PIPING - KEY NOTES

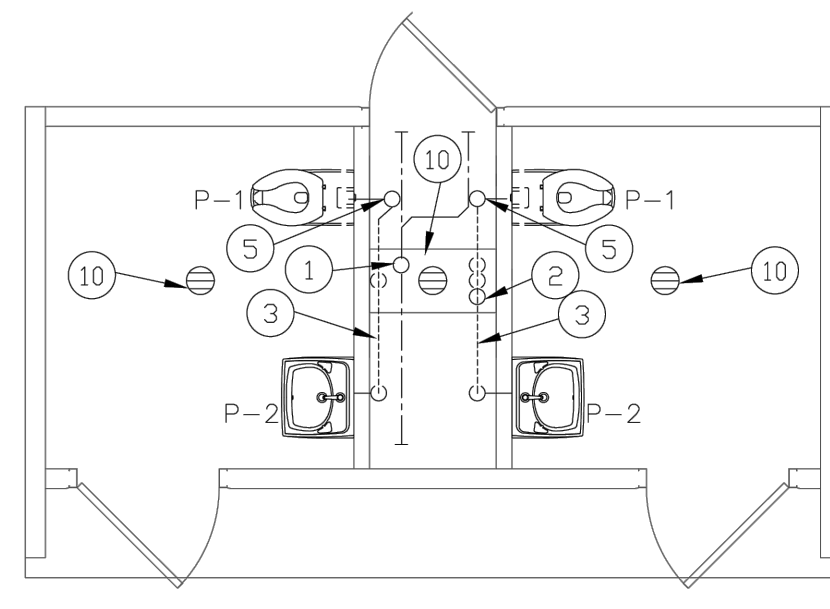
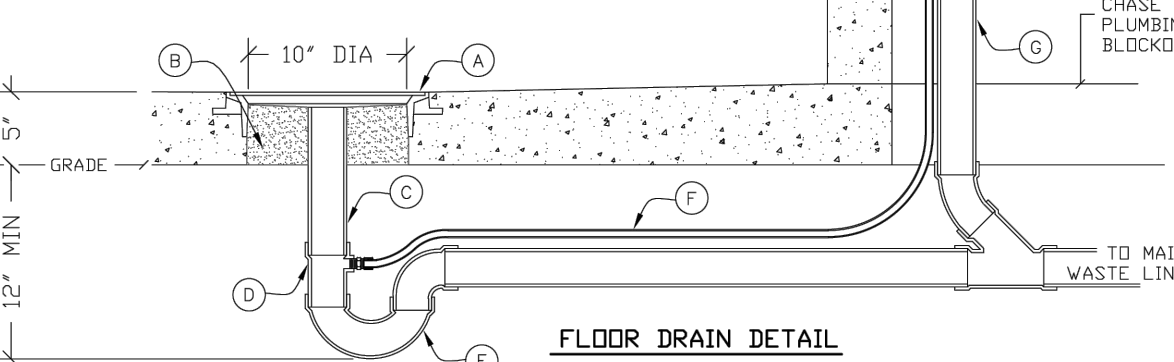
- 1. 4" CLEAN OUT TO GRADE.
- 2. 2" FLOOR DRAIN FIELD INSTALLED TRAP PRIMER SYSTEM IF REQUIRED BY AUTHORITY HAVING JURISDICTION. (2'-8" x 1'-4" BLOCKOUT)
- 3. 2" VENT PIPES EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG. (2'-8" x 1'-4" BLOCKOUT)
- 4. 4" WASTE PIPE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE TEST PLUG. (2'-8" x 1'-4" BLOCKOUT)
- 5. 1 1/2" TYPE K ANNEALED 'SOFT' COPPER WATER SERVICE EXTENDED 12" ABOVE FINISHED FLOOR LEVEL, PROVIDE CAP AT END. (2'-8" x 1'-4" BLOCKOUT)
- 6. MIN. BURY PER LOCAL REQUIREMENTS TO PROTECT AGAINST FREEZING AND DAMAGE.
- 7. 2" FLOOR DRAIN FIELD INSTALLED TRAP PRIMER SYSTEM IF REQUIRED BY AUTHORITY HAVING JURISDICTION. (10" DIA BLOCKOUT)
- 8. 30" MIN. BURY, PROVIDE TRACER TAPE.

PIPING LEGEND

- BELOW FLOOR VENT PIPING SCH 40 ABS TYPE DWV
- BELOW FLOOR WASTE PIPING SCH 40 ABS TYPE DWV
- 1 1/2" TYPE 'K' ANNEALED 'SOFT' COPPER WATER SERVICE

FLOOR DRAIN DETAIL NOTES

- A. CAST-IN DRAIN HOUSING (10" INSIDE DIM - PROVIDED BY CXT)
- B. FIELD INSTALLED GROUT, SLOPE TO DRAIN (CXT PROVIDED-INSTALLATION NOT BY CXT)
- C. 2" WASTE PIPE - STUB UP 12" ABOVE GRADE (NOT BY CXT)
- D. TAPPED P-TRAP ADAPTER (NOT BY CXT)
- E. P-TRAP ASSEMBLY (NOT BY CXT)
- F. 1/2" O.D. COPPER TRAP PRIMER LINE (NOT BY CXT)
- G. 2" FLOOR DRAIN VENT RISER - STUB UP 12" ABOVE GRADE (NOT BY CXT)
- H. TRAP PRIMER MANIFOLD (PRE-PLUMBED AND INSTALLED BY CXT)
- I. 1/2" SHUT OFF VALVE (PRE-PLUMBED AND INSTALLED BY CXT)



PLUMBING FLOOR PLAN

1/4" = 1'-0"

- WATER PIPE - KEY NOTES
- 1. 4" WASTE THRU FLOOR, NOT BY CXT. SEE WASTE & VENT DIAGRAM
- 2. 1-1/2" COLD WATER THRU FLOOR, NOT BY CXT
- 3. 1 1/2" V & 1/2" CW ALONG WALL, SEE WASTE & VENT, WATER DIAGRAMS.
- 4. NOT USED
- 5. 2" VENT THROUGH ROOF
- 6. TO THIS POINT BY CXT.
- 7. WATER HAMMER ARRESTOR SLOUX CHIEF HYDRA-RESTOR #654-C DR OR EQUAL
- 8. 1/2" AIR BUICK CONNECTION 1/2" BALL VALVE FOR BLOWING OUT WATER PIPING.
- 9. 3/4" NDSB 818B W/ SOLEW ON VACUUM BREAKER
- 10. FLOOR DRAIN FIELD INSTALLED (NOT BY CXT)
- 11. 2" VENTS, IF FLOOR DRAIN OPTION IS ACCEPTED.

WASTE & VENT RISER DIAGRAM

- PIPING LEGEND
- HOT WATER (OPTIONAL)
- COLD WATER
- VENT
- WASTE
- FIELD INSTALLED (NOT BY CXT)
- SHUT-OFF VALVE
- WATER PIPE: COPPER, ASTM 588, TYPE L
- WASTE PIPE: ABS, ASTM D2661, SCHED. 40
- PROVIDE BACKFLOW PREVENTER ONLY IF SPECIFICALLY REQUIRED BY LOCAL JURISDICTION

WATER PIPING RISER DIAGRAM



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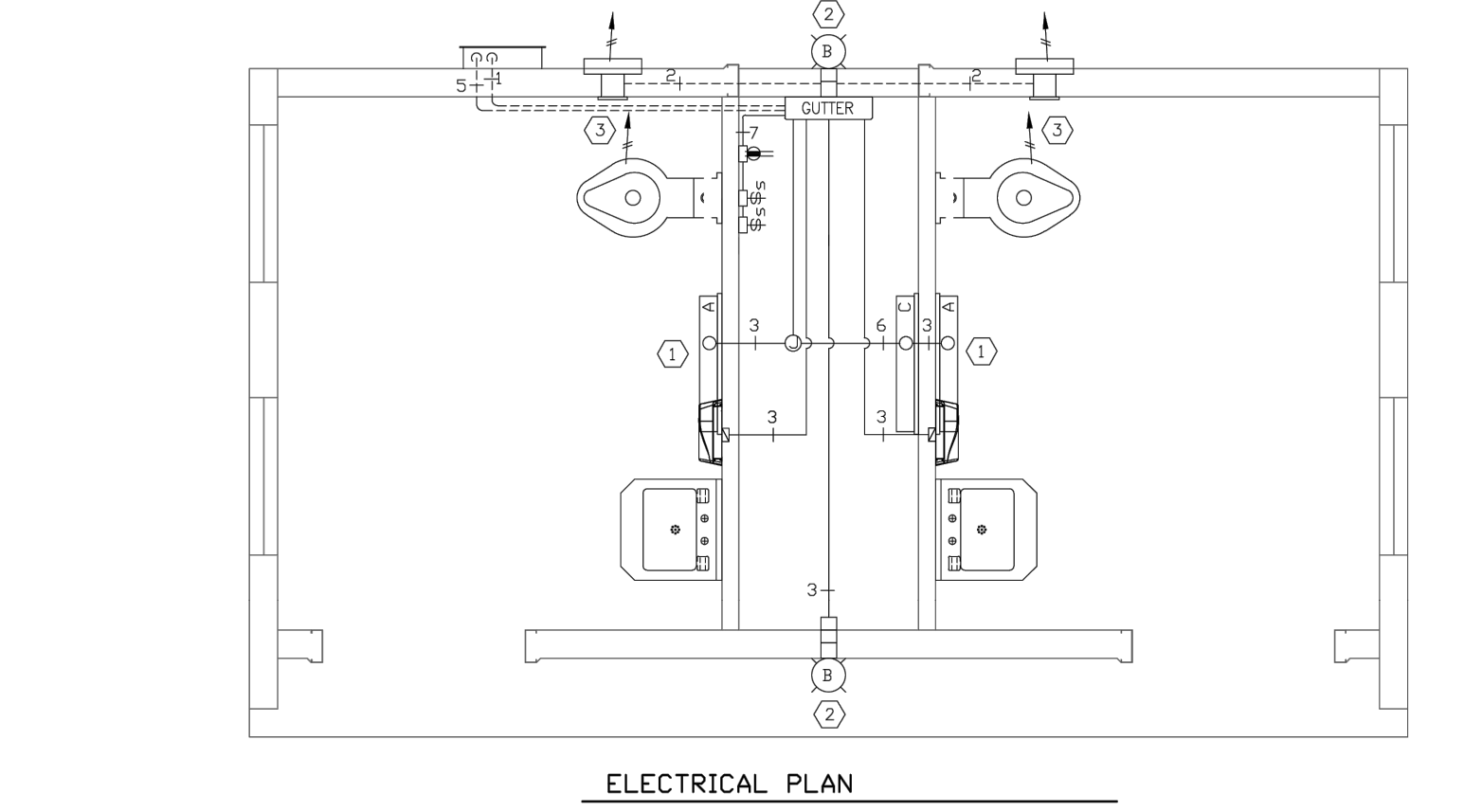
PROJECT: DENALI
BUILDING NUMBER DN-256

SCALE: 1/4" = 1'-0"
DATE: 02-28-23
DESIGNED BY: JLG
CHECKED BY: JLG

PLUMBING PLANS, NOTES
SHEET 19 OF 22

Table with columns: SYM, DESCRIPTION, MANUFACTURER, CXT PART NUMBER, FLUSH VALVE/FAUCET, SUPPLIES, HW, CW, WASTE, VENT, SUPPLIES / NOTES

- NOTES:
- 1. OFFSET FLUSH VALVE TAILPIECE PER ADA, RIGHT OR LEFT HAND, AS REQUIRED. PROVIDE FLUSH VALVE FOR 4" WALL THICKNESS.
- 2. HAMMER ARRESTOR JRS520-T-C, FLOOR DRAIN S2005A025NBLP, TRAP PRIMER- MIFAB MM500, DISTR UNIT- MIFAB
- 3. MOUNT RIM OF P-1 AT 17" ABOVE FLOOR.
- 4. 1/2X15 COMP ANG LAV BSCR1915AC.
- 5. USE CLOSET GASKET JG13534 AND Z1203 FINISH KIT
- 6. 3 PC COVER SET PF202WH.
- 7. TRAP PRIMER- MIFAB MM500, DISTR UNIT- MIFAB
- 8. NOT USED.



ELECTRICAL PLAN

NTS

KEY NOTES

- 1. OCCUPANCY SENSOR CONTROLLED LIGHTS. EXHAUST FANS TO COME ON WITH RESTROOM LIGHTS.
- 2. LIGHT FIXTURE TO BE CONTROLLED BY PHOTOCELL.
- 3. EXTERIOR LIGHT WIRING IN CONCEALED CONDUIT.
- 4. CIRCUIT AS NEEDED FOR THE LOAD OF THE EXHAUST FAN. WIRE THRU SPEED SWITCH (IN CHASE) AND OCCUPANCY SENSOR ISOLATED CONTACT.
- 5. CHASE LIGHT TO BE OCCUPANCY SENSOR CONTROLLED.
- 6. GFI OUTLET FOR HOT WATER HEATER. CIRCUITS NEEDED FOR ADDITIONAL LOAD.

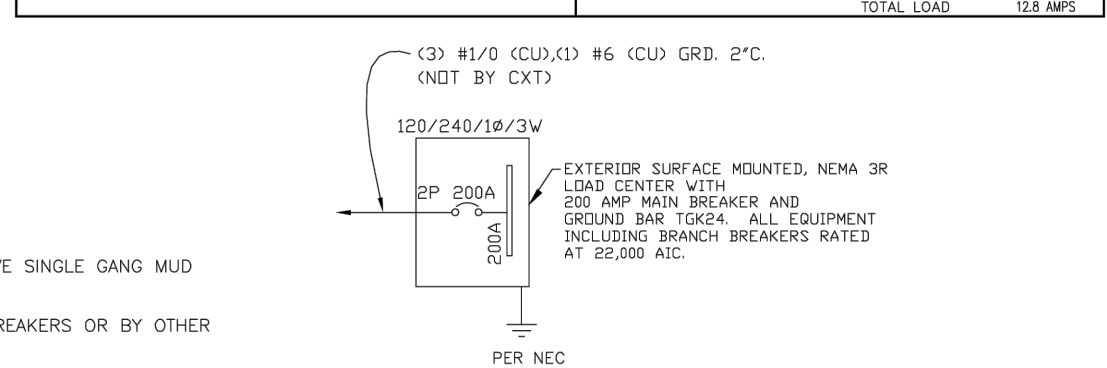
GENERAL ELECTRICAL NOTES

- 1. RECESSED JUNCTION BOXES FOR SINGLE DEVICES SHALL HAVE SINGLE GANG MUD RINGS CAST IN CONCRETE WALLS.
- 2. ALL RECEPTACLES SHALL BE GFCI PROTECTED BY CIRCUIT BREAKERS OR BY OTHER GFCI RECEPTACLES.
- 3. EXPOSED CONDUIT SHALL BE EMT, 1/2" MINIMUM. RECESSED CONDUIT SHALL BE SCHEDULE 40 PVC, 3/4" MINIMUM.
- 4. INSTALL ALL WIRING IN CONDUIT OR RELATED ENCLOSURES.
- 5. ALL ELECTRICAL INSTALLATIONS SHALL MEET THE 2014 NATIONAL ELECTRICAL CODE.
- 6. MINIMUM WIRE SIZE SHALL BE #12 AWG COPPER, THIN INSULATION UNLESS NOTED OTHERWISE.
- 7. ROUTE ALL CONDUITS IN UTILITY ROOM AT CEILING OR FACE OF WALLS.
- 8. NOT USED.
- 9. PROVIDE SPEED SWITCH FOR FAN CONTROL LOCATED IN CHASE.
- 10. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND MAY NOT SHOW EXACT LOCATIONS OF DEVICES. REFER TO WALL PANEL AND OTHER DRAWINGS FOR EXACT LOCATIONS OF J-BOXES, ETC.

SYMBOLS LEGEND

- NOTE REFERENCE
- COMBINATION SWITCH AND DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE (X = BREAKER # IF SHOWN)
- GFI DUPLEX RECEPTACLE (X = BREAKER # IF SHOWN)
- ON / OFF SWITCH
- SPEED SWITCH
- JUNCTION BOX
- RECESSED JUNCTION BOX
- SURFACE MOUNTED CONDUIT, CROSSHATCH OR SLASH AND NUMBER DENOTES WIRE CALL BEAING UNID, UNLESS NOTED) ONE WIRE TO BE GROUND
- CONCEALED CONDUIT
- LOAD CENTER 'M'
- WALL MOUNTED FLUORESCENT FIXTURE
- CEILING MOUNTED FLUORESCENT FIXTURE
- EXTERIOR LIGHT FIXTURE
- HAND DRYER WITH DISCONNECT SWITCH
- WATER HEATER
- OCCUPANCY SENSOR WITH RECESSED JUNCTION BOX
- SAFETY DISCONNECT
- PANEL OR DEVICE AS NOTED
- THERMOSTAT
- HEATER

PANEL SCHEDULE table with columns: AMP, SURFACE MOUNT, CIRCUIT, NO., DESCRIPTION, OCP TYPE, VA, (A), (B), (C), (D), LOAD, TOTAL CONNECTED VA LOAD, 2,372



ONE-LINE POWER DIAGRAM

NTS

LIGHTING FIXTURE SCHEDULE table with columns: FIXTURE NUMBER, VOLTAGE, WATTS, DESCRIPTION

EXHAUST FAN SCHEDULE table with columns: SYM, MFR, MODEL #, CFM, SONES, VOLTS, AMPS, NTS

- NOTE:
- 1. WITH SPEED CONTROL MOUNTED IN CHASE.
- 2. FANS LISTED FOR NET LOCATION, CONTROL VIA OCCUPANCY SENSOR. LOCATE OPEN FACE J-BOX ON EXTERIOR SIDE OF PANEL.

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CXT
Precast Products
901 N. Highway 77, Henderson, NV 89045

PROJECT: DENALI
BUILDING NUMBER DN-256

SCALE: 1/4" = 1'-0"
DATE: 02-28-23
DESIGNED BY: JLG
CHECKED BY: JLG

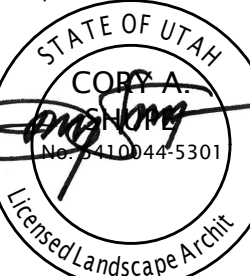
FIELD STUB UP LOCATIONS
SHEET 18 OF 22

WELKER TRAILHEAD IMPROVEMENTS
2700 NORTH 2125 EAST
LAYTON, UT 84041

REVISIONS

Table with columns: NO., DESCRIPTION

Stamp



04/28/2023

Designed By: TH
Drawn By: TH
Date: 04/28/2023
Checked By: RD
Project No: 20-199

Drawing Title

CXT
RESTROOM
PLANS

Drawing number

LS506

3608 N. Sullivan Blvd. #7 Sparks, NV 89216
CXT
Precast Products
901 N. Highway 77, Henderson, NV 89045

PROJECT: DENALI
BUILDING NUMBER DN-256

SCALE: 1/4" = 1'-0"
DATE: 02-28-23
DESIGNED BY: JLG
CHECKED BY: JLG

ELECTRICAL PLAN, NOTES & SCHEDULE
SHEET 20 OF 22

GENERAL NOTES

- 1. 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.)... 2. CONTRACTOR TO STRICTLY FOLLOW THE MOST CURRENT COPY OF THE SOILS REPORT FOR THIS PROJECT... 3. CONTRACTOR MUST VERIFY ALL EXISTING CONDITIONS BEFORE BIDDING... 4. CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE IN ACCORDANCE WITH THE CITY, STATE, OR COUNTY REGULATIONS FOR WORKING IN THE PUBLIC WAY... 5. CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL ACCORDING TO GOVERNING AGENCY STANDARDS... 6. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT SURFACE IMPROVEMENTS... 7. CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTING ANY SETTLEMENT OF OR DAMAGE TO EXISTING UTILITIES... 8. THE CONTRACTOR IS RESPONSIBLE TO FURNISH ALL MATERIALS TO COMPLETE THE PROJECT... 9. ALL EXPOSED SURFACES WILL HAVE A TEXTURED FINISH, RUBBED, OR BROOMED... 10. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED... 11. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS... 12. ALL DIMENSIONS, GRADES, AND UTILITY DESIGN SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION... 13. NO CHANGE IN DESIGN LOCATION OR GRADE WILL BE MADE BY THE CONTRACTOR WITHOUT THE WRITTEN APPROVAL OF THE PROJECT ENGINEER... 14. NATURAL VEGETATION AND SOIL COVER SHALL NOT BE DISTURBED PRIOR TO ACTUAL CONSTRUCTION OF A REQUIRED FACILITY OR IMPROVEMENT... 15. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, MAINTAINING, OR RESTORING ALL MONUMENTS AND MONUMENT REFERENCE MARKS WITHIN THE PROJECT SITE... 16. EXISTING UTILITY INFORMATION SHOWN IS FOR INFORMATIONAL PURPOSES ONLY... 17. ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER... 18. CONSULT ALL OF THE DRAWINGS AND SPECIFICATIONS FOR COORDINATION REQUIREMENTS BEFORE COMMENCING CONSTRUCTION... 19. AT ALL LOCATIONS WHERE EXISTING PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING PAVEMENT SHALL BE SAWCUT TO A CLEAN, SMOOTH EDGE... 20. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT, ADOPTED EDITION OF ADA ACCESSIBILITY GUIDELINES... 21. 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... 22. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELEPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION... 23. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING INSPECTION AND TESTING OF ALL FACILITIES CONSTRUCTED UNDER THIS CONTRACT... 24. IF EXISTING IMPROVEMENTS NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS... 25. WHENEVER EXISTING FACILITIES ARE REMOVED, DAMAGED, BROKEN, OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS... 26. CONTRACTOR SHALL MAINTAIN A NEATLY MARKED SET OF FULL-SIZE RECORD DRAWINGS SHOWING THE FINAL LOCATION AND LAYOUT OF ALL STRUCTURES AND OTHER FACILITIES... 27. 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... 28. ALL EXISTING GATES AND FENCES TO REMAIN UNLESS OTHERWISE NOTED ON PLANS... 29. ALL EXISTING TREES ARE TO REMAIN UNLESS OTHERWISE NOTED ON PLANS... 30. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE GOVERNING AGENCY PRIOR TO THE PLACEMENT... 31. CONTRACTORS ARE RESPONSIBLE FOR ALL OSHA REQUIREMENTS ON THE PROJECT SITE... 32. 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

- 1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS, CITY AND STATE REQUIREMENTS AND THE MOST RECENT EDITIONS OF THE FOLLOWING... 2. CONTRACTOR SHALL COORDINATE LOCATION OF NEW 'DRY UTILITIES' WITH THE APPROPRIATE UTILITY COMPANY... 3. EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS BASED ON ON-SITE SURVEY... 4. CARE SHOULD BE TAKEN IN ALL EXCAVATIONS DUE TO POSSIBLE EXISTENCE OF UNRECORDED UTILITY LINES... 5. TRENCH BACKFILL MATERIAL AND COMPACTION TESTS ARE TO BE TAKEN PER APWA STANDARD SPECIFICATIONS... 6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONFORMING TO LOCAL AND FEDERAL CODES GOVERNING SHORING AND BRACING OF EXCAVATIONS AND TRENCHES... 7. THE CONTRACTOR IS REQUIRED TO KEEP ALL CONSTRUCTION ACTIVITIES WITHIN THE APPROVED PROJECT LIMITS... 8. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE, CAUSED BY ANY CONDITION INCLUDING SETTLEMENT... 9. ALL WATER LINE AND SEWER LINE INSTALLATION AND TESTING TO BE IN ACCORDANCE WITH LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS... 10. ALL MANHOLES, HYDRANTS, VALVES, CLEANOUT BOXES, CATCH BASINS, METERS, ETC. MUST BE RAISED OR LOWERED TO FINAL GRADE... 11. CONTRACTOR SHALL NOT ALLOW ANY GROUNDWATER OR DEBRIS TO ENTER THE NEW OR EXISTING PIPE DURING CONSTRUCTION... 12. SILT AND DEBRIS ARE TO BE CLEANED OUT OF ALL STORM DRAIN BOXES... 13. CONTRACTOR SHALL CLEAN ASPHALT, TAR OR OTHER ADHESIVES OFF OF ALL MANHOLE LIDS AND INLET GRATES... 14. EACH TRENCH SHALL BE EXCAVATED SO THAT THE PIPE CAN BE LAID TO THE ALIGNMENT AND GRADE AS REQUIRED... 15. 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... 16. ALL SEWER LINES AND SEWER SERVICES SHALL HAVE A MINIMUM SEPARATION OF 10 FEET... 17. CONTRACTOR SHALL INSTALL THRUST BLOCKING AT ALL WATERLINE ANGLE POINTS AND TEES... 18. ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING... 19. CONTRACTOR SHALL INSTALL MAGNETIC LOCATING TAPE CONTINUOUSLY OVER ALL NONMETALLIC PIPE.

TRAFFIC CONTROL AND SAFETY NOTES

- 1. TRAFFIC CONTROL AND STRIPING TO CONFORM TO THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)... 2. BARRICADING AND DETOURING SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE CURRENT M.U.T.C.D... 3. NO STREET SHALL BE CLOSED TO TRAFFIC WITHOUT WRITTEN PERMISSION FROM THE APPROPRIATE AGENCY... 4. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROVIDE FOR SMOOTH TRAFFIC FLOW AND SAFETY... 5. DETOURING OPERATIONS FOR A PERIOD OF SIX CONSECUTIVE CALENDAR DAYS, OR MORE, REQUIRE THE INSTALLATION OF TEMPORARY STREET STRIPING... 6. ALL TRAFFIC CONTROL DEVICES SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE END OF THE WORK... 7. TRAFFIC CONTROL DEVICES (TCDs) SHALL REMAIN VISIBLE AND OPERATIONAL AT ALL TIMES... 8. 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... 9. THE CONTRACTOR SHALL PROVIDE BARRICADES, SIGNS, FLASHERS, OTHER EQUIPMENT AND FLAG PERSONS NECESSARY TO INSURE THE SAFETY OF WORKERS AND VISITORS... 10. 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...

DEMOLITION NOTES

- 1. EXISTING UTILITY INFORMATION SHOWN IS FOR INFORMATIONAL PURPOSES ONLY... 2. THERE MAY BE BURIED UTILITIES WITHIN THE LIMITS OF DISTURBANCE THAT ARE NOT SHOWN ON THE PLANS... 3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LOCATING AND PROTECTING FROM DAMAGE ALL EXISTING UTILITIES AND IMPROVEMENTS...

GRADING AND DRAINAGE NOTES

- 1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT... 2. THE CONTRACTOR SHALL STRIP AND CLEAR THE TOPSOIL, MAJOR ROOTS AND ORGANIC MATERIAL FROM ALL PROPOSED BUILDING AND PAVEMENT AREAS... 3. THE CONTRACTOR SHALL REMOVE ALL ORGANIC MATERIAL AND OTHER DELETERIOUS MATERIALS PRIOR TO PLACING GRADING FILL OR BASE COURSE... 4. ALL DEBRIS PILES AND BERMS SHOULD BE REMOVED AND HAULED AWAY FROM SITE... 5. THE CONTRACTOR SHALL CONSTRUCT THE BUILDING PAD TO THESE DESIGN PLANS AS PART OF THE SITE GRADING CONTRACT... 6. THE CONTRACTOR SHALL GRADE THE PROJECT SITE TO PROVIDE A SMOOTH TRANSITION BETWEEN NEW AND EXISTING ASPHALT, CURB AND GUTTER... 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE AND DEBRIS ON ADJACENT STREETS... 8. THE CONTRACTOR SHALL BE FAMILIAR WITH ALL CONDITIONS AND RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL REPORT... 9. THE CONTRACTOR SHALL TAKE APPROPRIATE GRADING MEASURES TO DIRECT STORM SURFACE RUNOFF TOWARDS CATCH BASINS... 10. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON ON-SITE SURVEY... 11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT... 12. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT... 13. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN... 14. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED... 15. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED... 16. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS, AND ALL OTHER PUBLIC RIGHT-OF-WAYS IN A CLEAN, SAFE AND USABLE CONDITION...

ABBREVIATIONS

Table with 2 columns: Abbreviation and Description. Includes APWA (AMERICAN PUBLIC WORKS ASSOCIATION), AR (ACCESSIBLE ROUTE), ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS), AWMA (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), PRL (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), SW (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

Legend table with 3 columns: Symbol, Description, and Symbol. Includes SECTION CORNER, EXISTING MONUMENT, PROPOSED MONUMENT, EXISTING REBAR AND CAP, SET ENSIGN REBAR AND CAP, EXISTING WATER METER, PROPOSED WATER METER, EXISTING WATER MANHOLE, PROPOSED WATER MANHOLE, EXISTING WATER BOX, EXISTING WATER VALVE, PROPOSED WATER VALVE, EXISTING FIRE HYDRANT, PROPOSED FIRE HYDRANT, EXISTING SECONDARY WATER VALVE, PROPOSED SECONDARY WATER VALVE, EXISTING IRRIGATION BOX, EXISTING IRRIGATION VALVE, PROPOSED IRRIGATION VALVE, EXISTING SANITARY SEWER MANHOLE, PROPOSED SANITARY SEWER MANHOLE, EXISTING SANITARY CLEAN OUT, PROPOSED SANITARY CLEAN OUT, EXISTING STORM DRAIN CLEAN OUT BOX, PROPOSED STORM DRAIN CLEAN OUT BOX, EXISTING STORM DRAIN INLET BOX, PROPOSED STORM DRAIN INLET BOX, EXISTING STORM DRAIN CATCH BASIN, PROPOSED STORM DRAIN CATCH BASIN, EXISTING STORM DRAIN COMBO BOX, PROPOSED STORM DRAIN COMBO BOX, EXISTING STORM DRAIN CLEAN OUT, EXISTING STORM DRAIN CULVERT, PROPOSED STORM DRAIN CULVERT, TEMPORARY SAG INLET PROTECTION, TEMPORARY IN-LINE INLET PROTECTION, ROOF DRAIN, EXISTING ELECTRICAL MANHOLE, EXISTING ELECTRICAL BOX, EXISTING TRANSFORMER, EXISTING UTILITY POLE, EXISTING LIGHT, EXISTING GAS METER, EXISTING GAS MANHOLE, EXISTING GAS VALVE, EXISTING TELEPHONE MANHOLE, EXISTING TELEPHONE BOX, EXISTING TRAFFIC SIGNAL BOX, EXISTING CABLE BOX, EXISTING BOLLARD, PROPOSED BOLLARD, EXISTING SIGN, PROPOSED SIGN, EXISTING SPOT ELEVATION, PROPOSED SPOT ELEVATION, EXISTING FLOW DIRECTION, EXISTING TREE, DENSE VEGETATION.

NOTE: MAY CONTAIN SYMBOLS THAT ARE NOT USED IN THIS PLAN SET.



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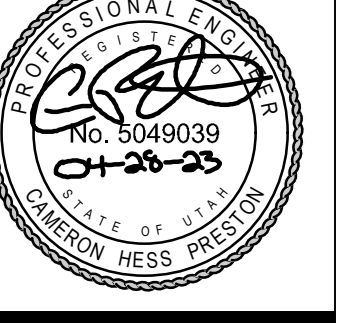
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REVISIONS

Table with 2 columns: No. and Description. Includes revision 01: 04/20/2014.

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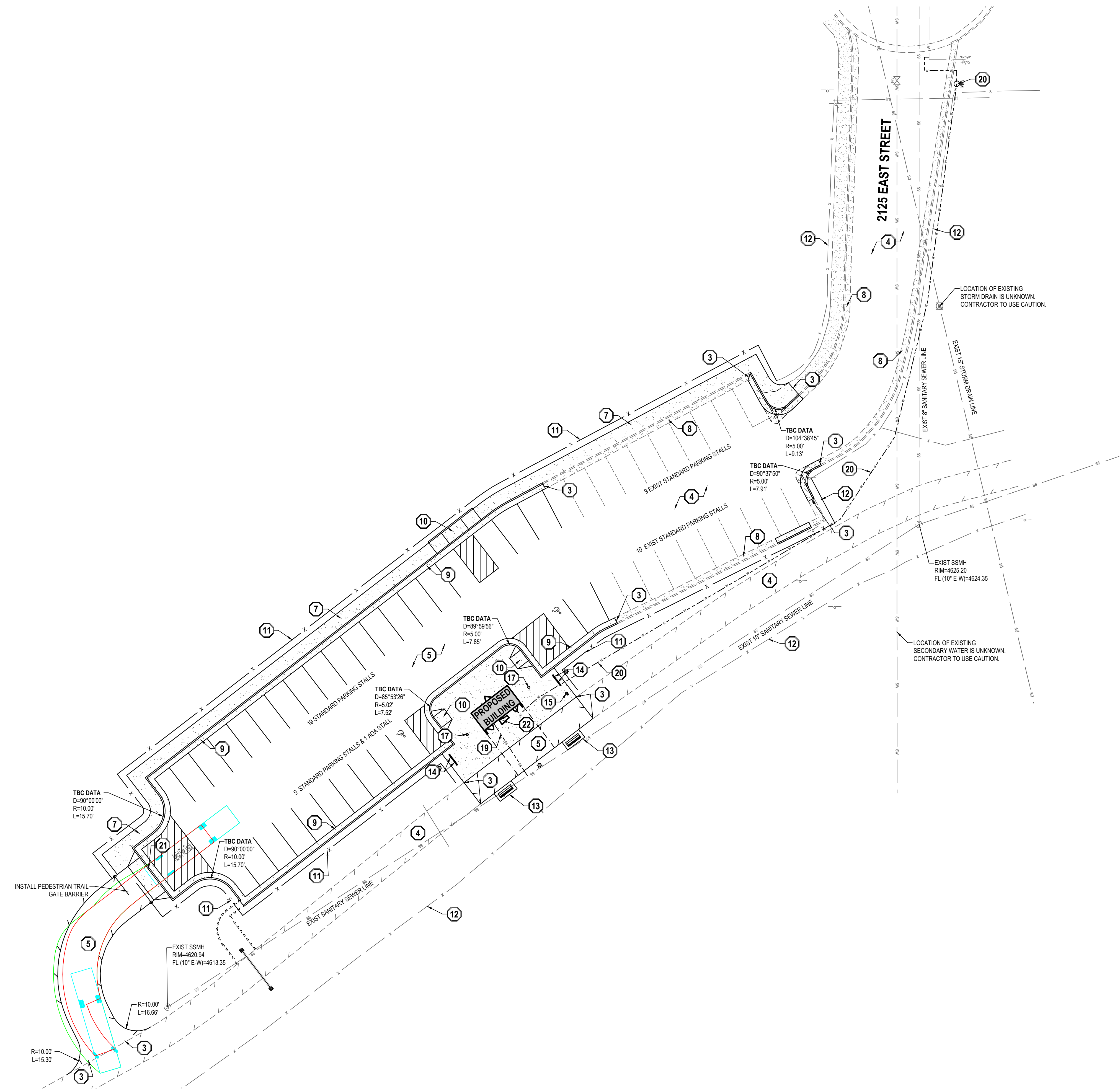


Designed By: C.WRIGHT
Drawn By: C.WRIGHT
Date: 5/1/23
Checked By: C.PRESTON
Project No: 22-199

GENERAL
NOTES

C-001

BID SET



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, SOIL, 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.

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 NOT USED
- 2 NOT USED
- 3 MATCH EXISTING IMPROVEMENTS
- 4 EXIST ASPHALT. PRESERVE AND PROTECT.
- 5 INSTALL 3" ASPHALT PAVEMENT OVER 8" UNTREATED BASE PER LAYTON CITY STANDARDS AND SPECIFICATIONS.
- 6 EXIST SIDEWALK. PRESERVE AND PROTECT.
- 7 INSTALL 4" THICK CONCRETE SIDEWALK PER LAYTON CITY STANDARDS AND SPECIFICATIONS.
- 8 EXIST 30" CURB AND GUTTER. PRESERVE AND PROTECT.
- 9 INSTALL 30" TYPE 'A' CURB AND GUTTER LAYTON CITY STANDARDS AND SPECIFICATIONS.
- 10 INSTALL HANDICAP ACCESS RAMP PER LAYTON CITY STANDARDS AND SPECIFICATIONS.
- 11 INSTALL FENCE. SEE ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
- 12 EXIST FENCE. PRESERVE AND PROTECT.
- 13 INSTALL BENCH
- 14 INSTALL BIKE RACK
- 15 INSTALL BIKE REPAIR STATION
- 16 NOT USED
- 17 INSTALL BOLLARD
- 18 NOT USED
- 19 INSTALL 4" SANITARY SEWER SERVICE @ 2.0% MIN. SLOPE
- 20 INSTALL 3/4" HDPE CTS-OD SDR-9 POLY CULINARY WATER SERVICE LATERAL WITH 5/8" METER
- 21 TRUCK ACCESS: INSTALL DRIVE APPROACH PER LAYTON CITY STANDARD DRAWING ST-06
- 22 INSTALL DRINKING FOUNTAIN



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REVISIONS

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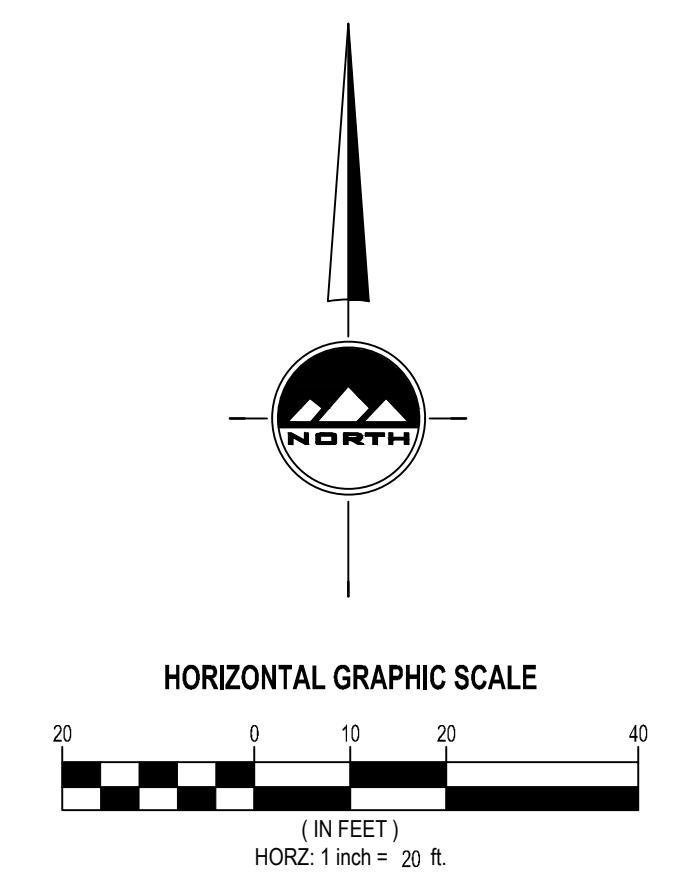


Designed By: C.WRIGHT
 Drawn By: C.WRIGHT
 Date: 5/1/23
 Checked By: C.PRESTON
 Project No: 22-199

BID SET

**SITE AND
 UTILITY PLAN**

C-100



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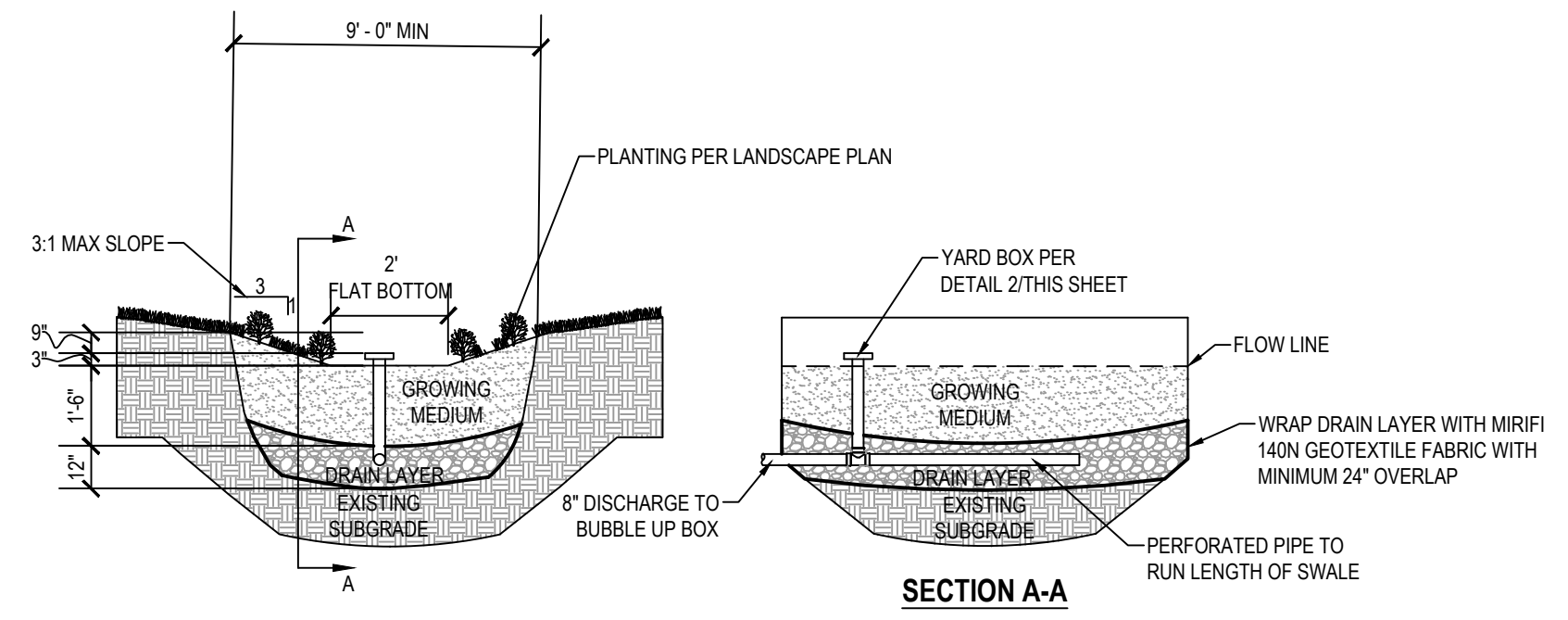
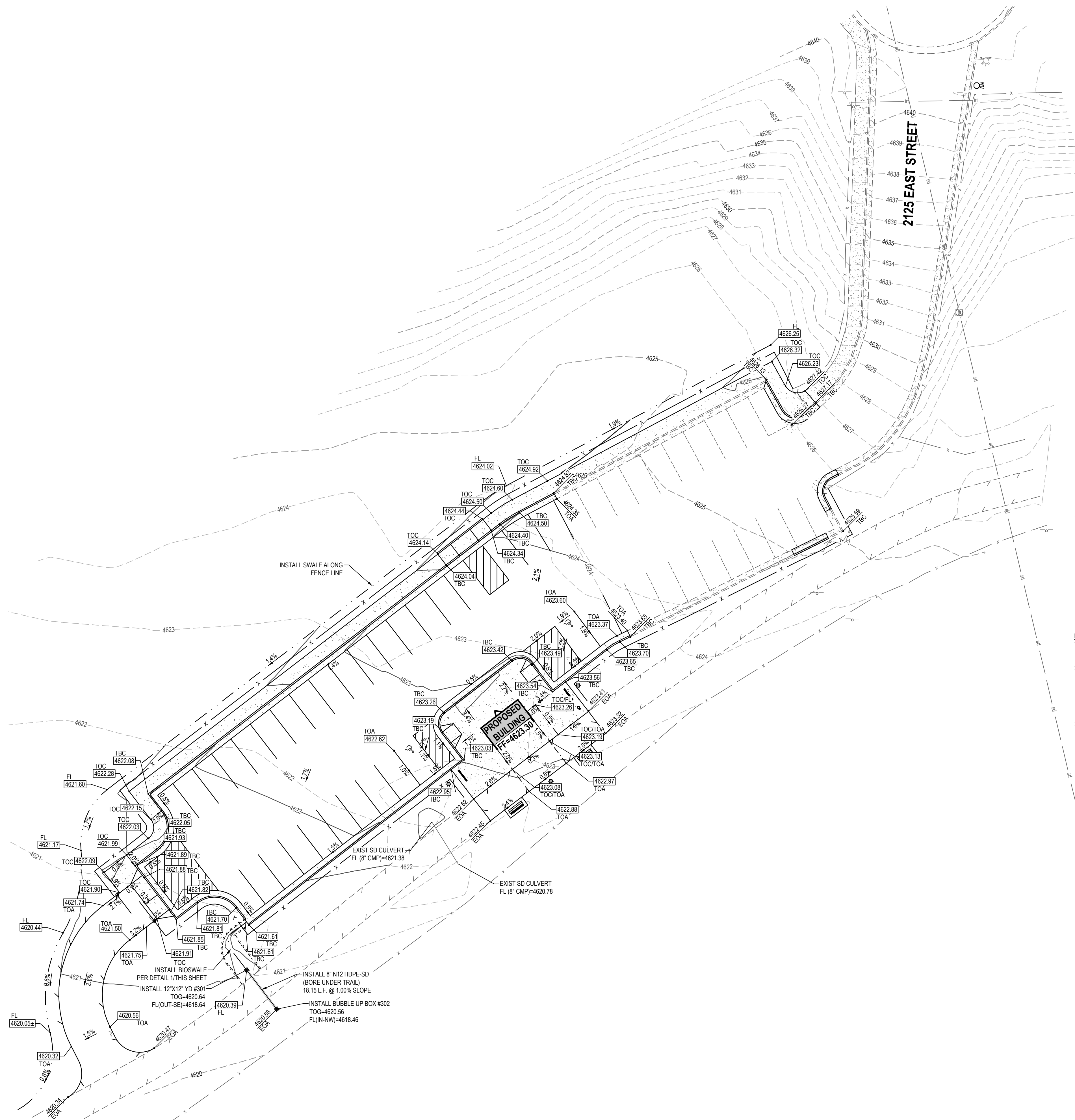
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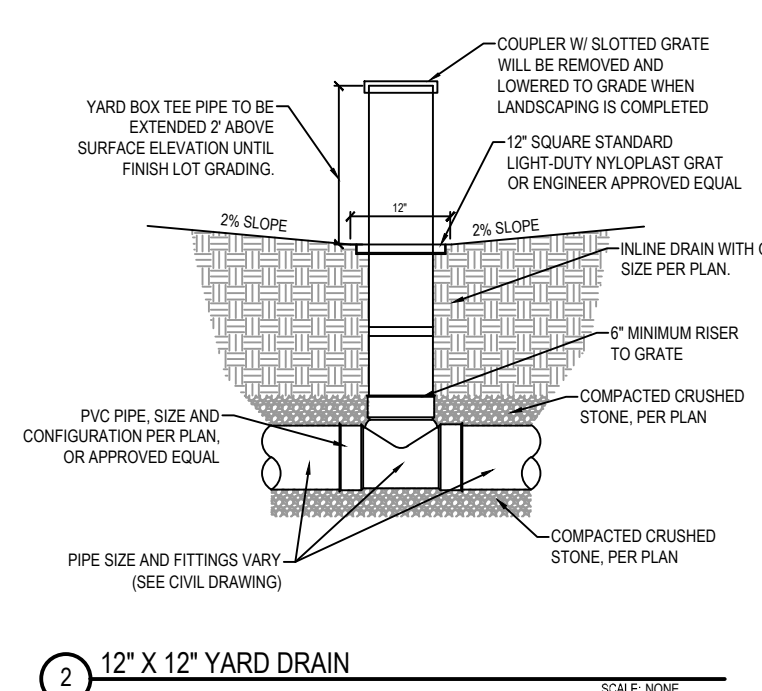
GENERAL NOTES

- ALL WORK TO COMPLY WITH THE GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
- ALL IMPROVEMENTS MUST COMPLY WITH ADA STANDARDS AND RECOMMENDATIONS.
- 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.
- THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING SOIL CONDITIONS.
- 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.
- SLOPE ALL LANDSCAPED AREAS AWAY FROM BUILDING FOUNDATIONS TOWARD CURB AND GUTTER OR STORM DRAIN INLETS.
- 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.
- ALL STORM DRAIN INFRASTRUCTURE TO BE INSTALLED PER LAYTON CITY OR APWA STANDARD PLANS AND SPECIFICATIONS.
- ENSURE MINIMUM COVER OVER ALL STORM DRAIN PIPES PER MANUFACTURER'S RECOMMENDATIONS. NOTIFY ENGINEER IF MINIMUM COVER CANNOT BE ATTAINED.
- 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.
- THE CONTRACTOR SHALL ADJUST TO GRADE ALL EXISTING UTILITIES AS NEEDED PER LOCAL GOVERNING AGENCY'S STANDARDS AND SPECIFICATIONS.
- NOTIFY ENGINEER OF ANY DISCREPANCIES IN DESIGN OR STAKING BEFORE PLACING CONCRETE, ASPHALT, OR STORM DRAIN STRUCTURES OR PIPES.
- THE CONTRACTOR IS TO PROTECT AND PRESERVE ALL EXISTING IMPROVEMENTS, UTILITIES, AND SIGNS, ETC. UNLESS OTHERWISE NOTED ON THESE PLANS.

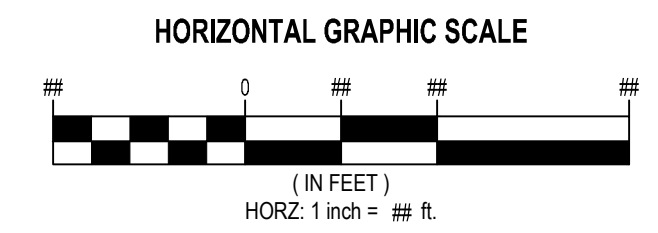
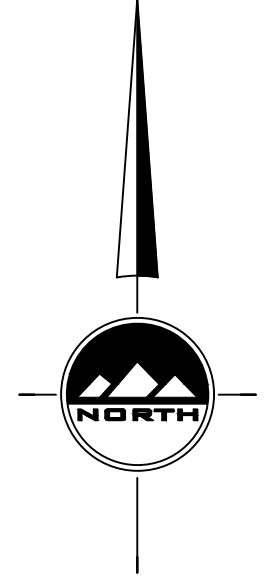


- NOTES:
- PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING, AND AFTER CONSTRUCTION.
 - DIMENSIONS:
WIDTH OF SWALE: 9'-0" MINIMUM
DEPTH OF SWALE (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 9"
LONGITUDINAL SLOPE OF SWALE: 6.0% OR LESS
FLAT BOTTOM WIDTH: 2' RECOMMENDED
SIDE SLOPES OF SWALE: 3:1 MAXIMUM
 - SETBACKS:
SWALE MUST BE 10' AWAY FROM FOUNDATION AND 5' AWAY FROM PROPERTY LINES
 - PERFORATED PIPING MUST BE CAST IRON, ABS OR PVC. 4" PIPE REQUIRED. UNIFORM PLUMBING CODE ALSO APPLIES.
 - DRAIN LAYER.
 - 3/4" - 1 1/2" WASHED ROCK. DEPTH: 12"
 - GROWING MEDIUM:
18" MINIMUM DEPTH. USE SAND/LOAM/COMPOST 3-WAY MIX, OR APPROVED MIX THAT WILL SUPPORT HEALTHY PLANTS.
 - CHECK DAMS SHALL BE PLACED EVERY 10' WHERE SLOPE EXCEEDS 4% AND BE EQUAL TO THE WIDTH OF THE PLANTER.
 - SPLASH BLOCK: INSTALL 4-6" WASHED RIVER ROCK OR SPLASH PAD FOR EROSION CONTROL AT INLETS AND DOWNSPOUT.

1 BIOSWALE SCALE NONE



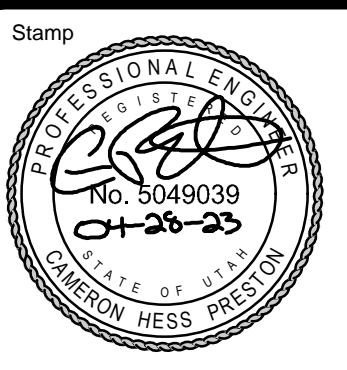
2 12" X 12" YARD DRAIN SCALE NONE



**WELKER TRAILHEAD
IMPROVEMENTS**
2700 NORTH 2125 EAST, LAYTON, UT 84041

REVISIONS

NO.	DATE	DESCRIPTION



Designed By: C. WRIGHT
Drawn By: C. WRIGHT
Date: 5/1/23
Checked By: C. PRESTON
Project No: 22-199

**GRADING AND
DRAINAGE PLAN**

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 CONTRACTORS 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 EQUIPMENT	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.

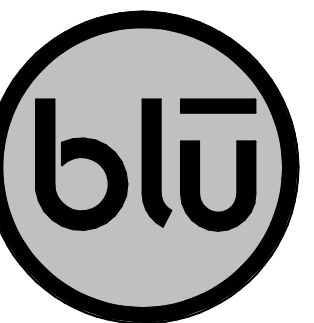
TECHNOLOGY SYSTEMS: THE TERM "TECHNOLOGY SYSTEMS" IS USED TO DESCRIBE ALL LOW VOLTAGE SYSTEMS GENERALLY REFERRED TO AS "SPECIAL SYSTEMS". THESE SYSTEMS INCLUDE BUT ARE NOT NECESSARILY LIMITED TO ALL SYSTEMS WHICH UTILIZE VOLTAGES OF LESS THAN 71 VOLTS SUCH AS SOUND SYSTEMS, VIDEO SYSTEMS, TV SYSTEMS, 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 (EXCLUDING 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
ES101	ELECTRICAL SITE PLAN
ES505	SITE JUNCTION BOX DETAILS
ES508	ELECTRICAL SITE LIGHTING DETAILS AND SCHEDULES
ES601	ONE-LINE DIAGRAM
ES602	EXTERIOR LIGHTING FIXTURE SCHEDULE



blu line designs
planning | landscape architecture | design

8710 S. Sandy Parkway
Sandy, UT 84070
p 801.679.3157

OWNER:
LAYTON CITY
437 N WASHATCH DR.
LAYTON, UT 84041

CONTACT:
JOLEEN GRANDY
PH: 801-336-3926

WELKER TRAILHEAD IMPROVEMENTS

2700 NORTH 2125 EAST
LAYTON, UT 84041

REVISIONS

NO.	DATE	DESCRIPTION

Stamp



Designed By: JUN
Drawn By: JUN
Date: 04/26/2023
Checked By: SCL
Project No: 230019

Drawing Title

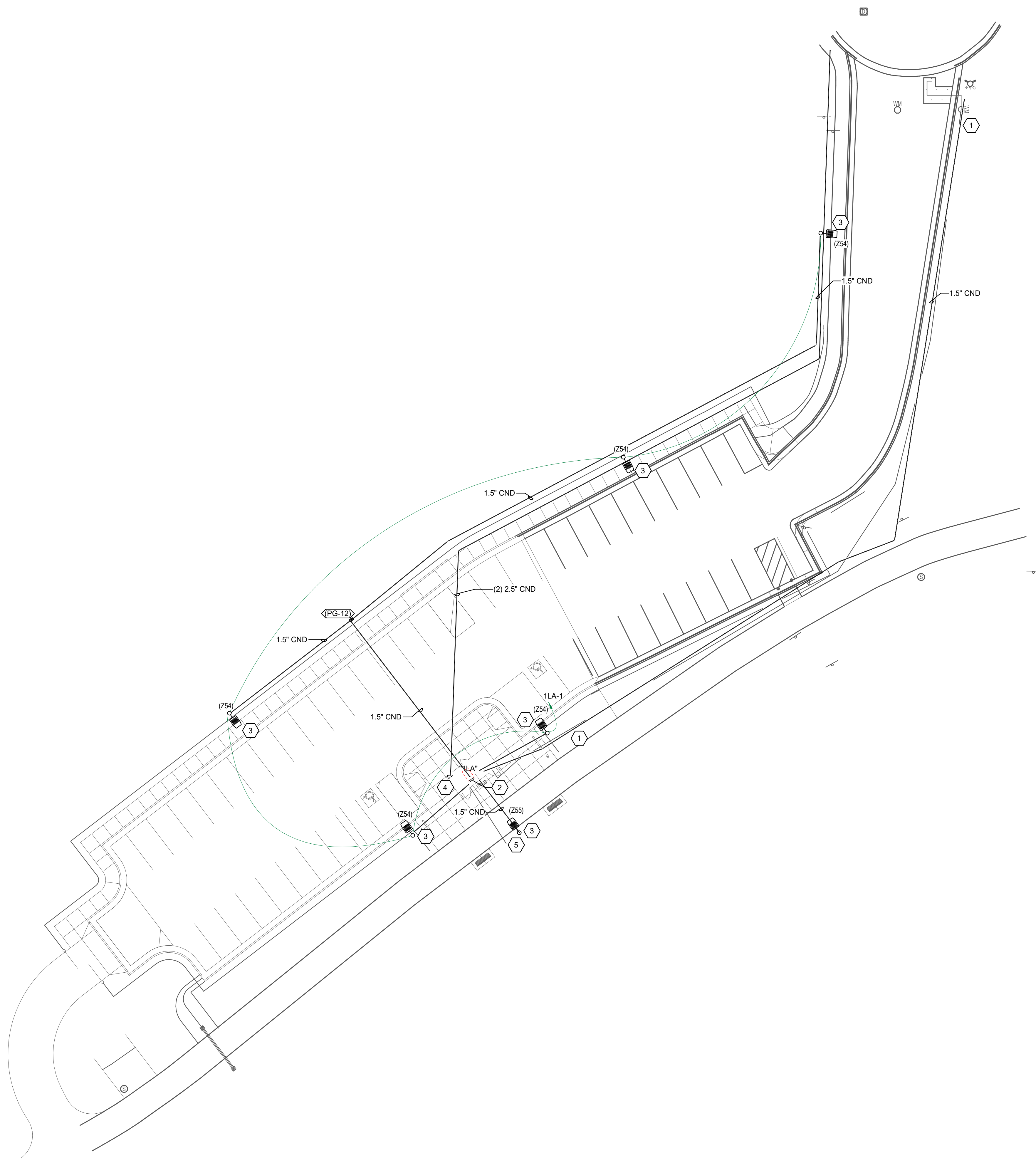
ELEC COVER SHEET

Drawing number

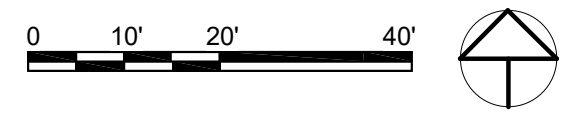
EE001

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



1 ELECTRICAL SITE PLAN
SCALE: 1" = 20'-0"



GENERAL SHEET NOTES

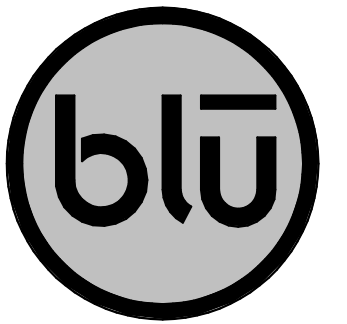
- 1 THE ELECTRICAL CONTRACTOR SHALL MEET WITH AND COORDINATE WITH ALL SERVICE PROVIDERS (POWER, COMMUNICATION, CABLE/SATELLITE, ETC.) TO THE FACILITY ON SITE PRIOR TO ANY WORK BEING PERFORMED. CONFIRM WITH EACH SERVICE PROVIDER EXACT LOCATIONS EQUIPMENT AND ROUTING. COMPLY WITH ALL SERVICE PROVIDER'S 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)

SHEET KEYNOTES

- 1 PROVIDE 1.5" CONDUIT FOR TELECOMMUNICATION LINES TO FUTURE SECURITY CAMERAS. RUN CONDUIT TO NEW RESTROOM AND STUB UP INTO CHASE OF RESTROOM.
- 2 PANEL TO BE INSTALLED IN NEW RESTROOM CHASE. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
- 3 PROVIDE 1.5" CND FOR UTOPIA SECURITY CAMERA FROM CHASE IN NEW RESTROOM. CONDUIT TO STUB UP INTO LIGHT POLE. COORDINATE EXACT REQUIREMENTS FOR STUB UP LOCATION AND ACCESS PANEL AVAILABILITY PRIOR TO ROUGH-IN.
- 4 METER TO BE INSTALLED ON OUTSIDE WALL OF NEW RESTROOM. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
- 5 LIGHT FIXTURE TO BE NEW EXPERIMENTAL SOLAR OPTION. PRODUCT TO BE FONROCHE AUTONOMOUS LIGHTING FIXTURES. LIGHT FIXTURE TO BE MOUNTED ON 20' LIGHT POLE, AND TO BE PROGRAMMED TO OPERATE AT FULL LIGHT FOR (5) HOURS AFTER SUNSET. THEN DIMMING FOR THE REMAINDER OF THE NIGHT. THEN AT FULL LIGHT FOR AN HOUR BEFORE SUNRISE. COORDINATE EXACT LIGHTING REQUIREMENTS WITH THE LIGHTING PROVIDER PRIOR TO ROUGH-IN.

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



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WELKER TRAILHEAD IMPROVEMENTS

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REVISIONS

NO.	DESCRIPTION

Stamp



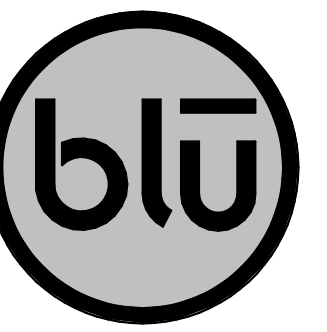
Designed By: JUN
Drawn By: JUN
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Checked By: SCL
Project No: 230019

Drawing Title
**ELECTRICAL
SITE PLAN**

Drawing number

ES101

BID SET



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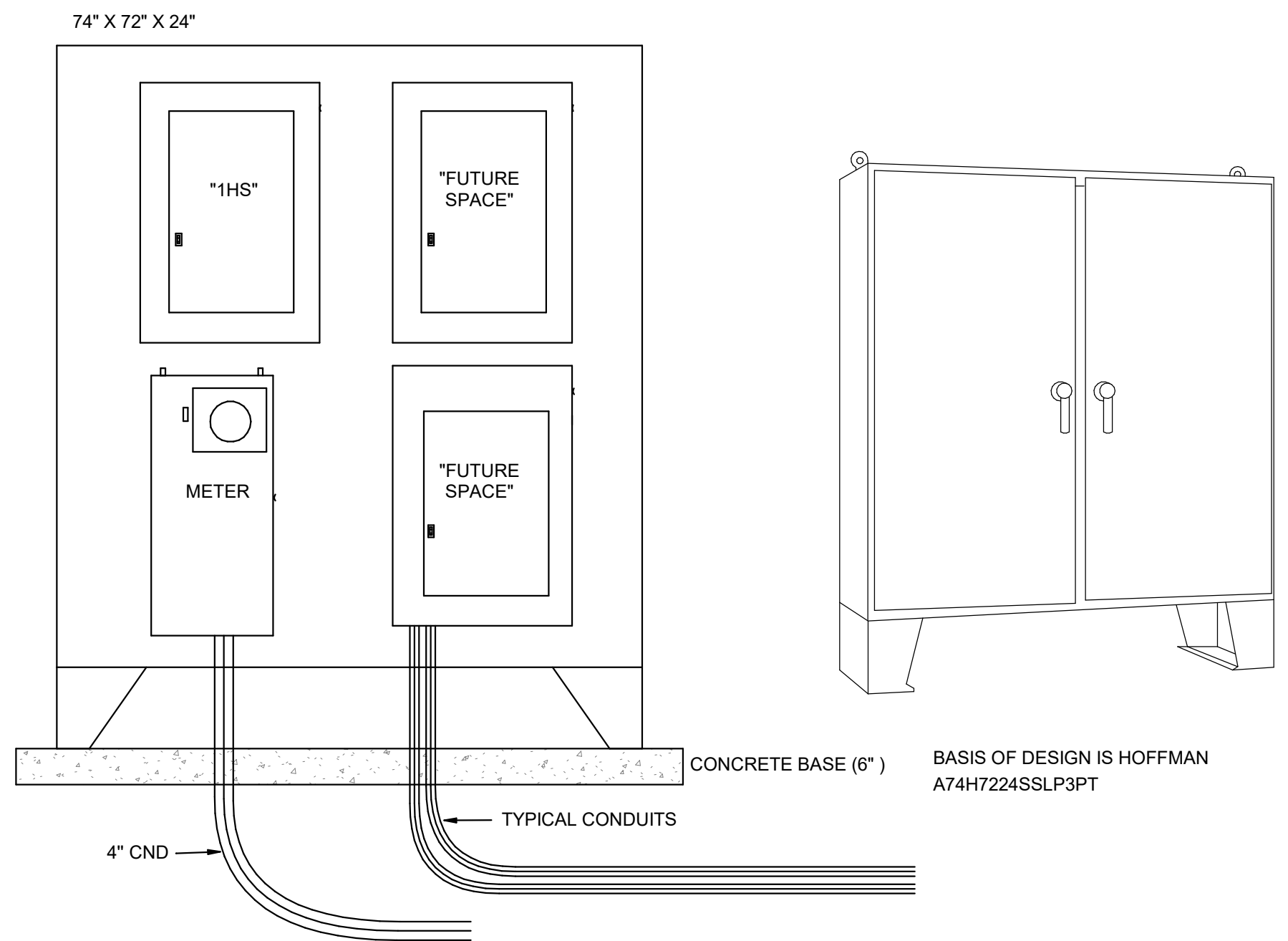
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Drawing Title
SITE ELECTRICAL DETAILS

Drawing number

ES502

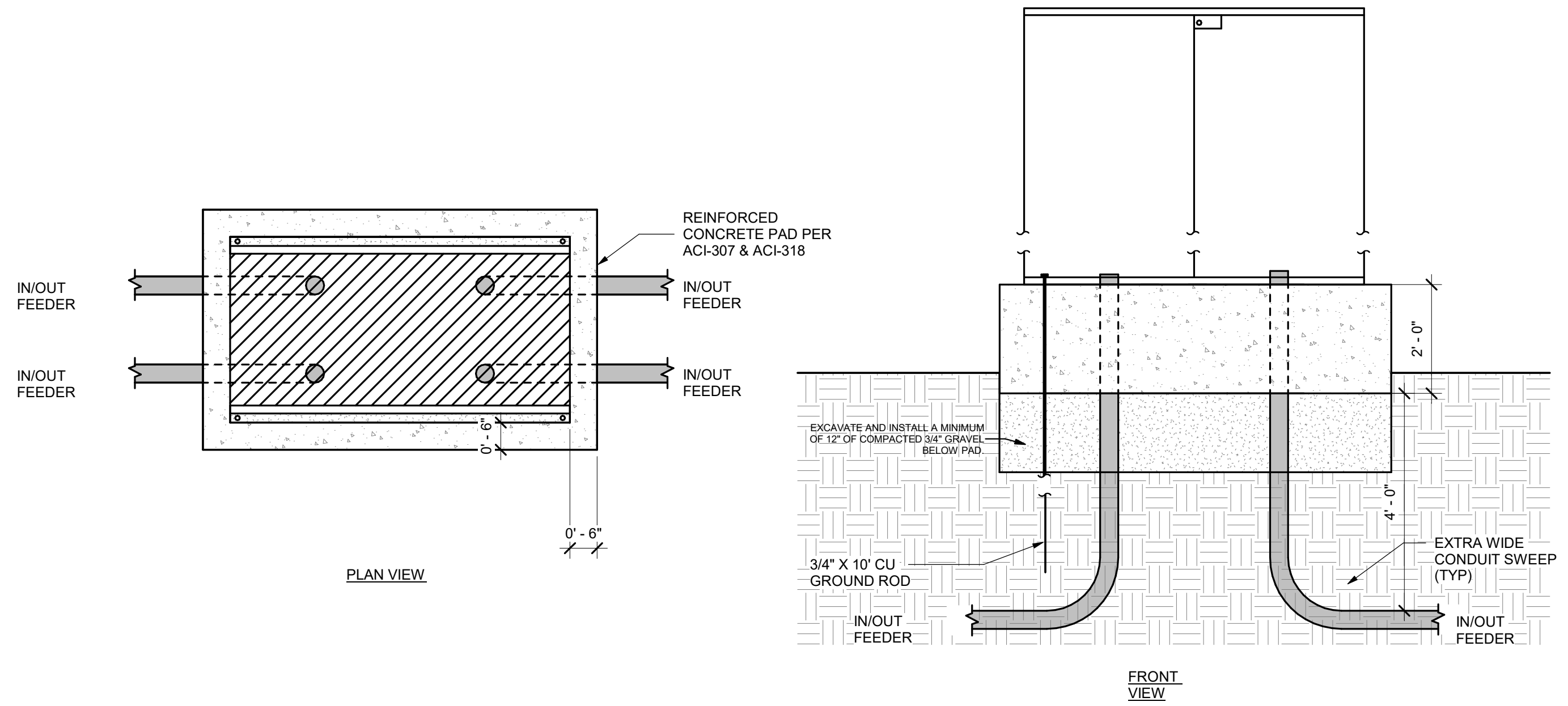
BID SET



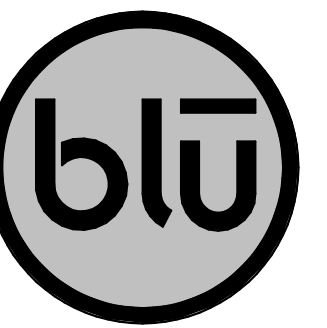
- GENERAL NOTES:
 1. PROVIDE NEMA 4X STAINLESS STEEL ENCLOSURE.
 2. ELECTRICAL CONTRACTOR MUST CONFIRM ENCLOSURE WITH ELECTRICAL ENGINEER BEFORE INSTALLATION.

B3 FREESTANDING STRONG BOX WITH PANEL AND GEAR DETAIL
 SCALE: NTS

Not applicable to plan set. Panels are to be installed inside the chase of the restroom. Meter to be installed on the outside of the restroom.



A3 TYPICAL CONCRETE BASE FOR MOUNTED STRONG BOX DETAIL
 SCALE: NTS



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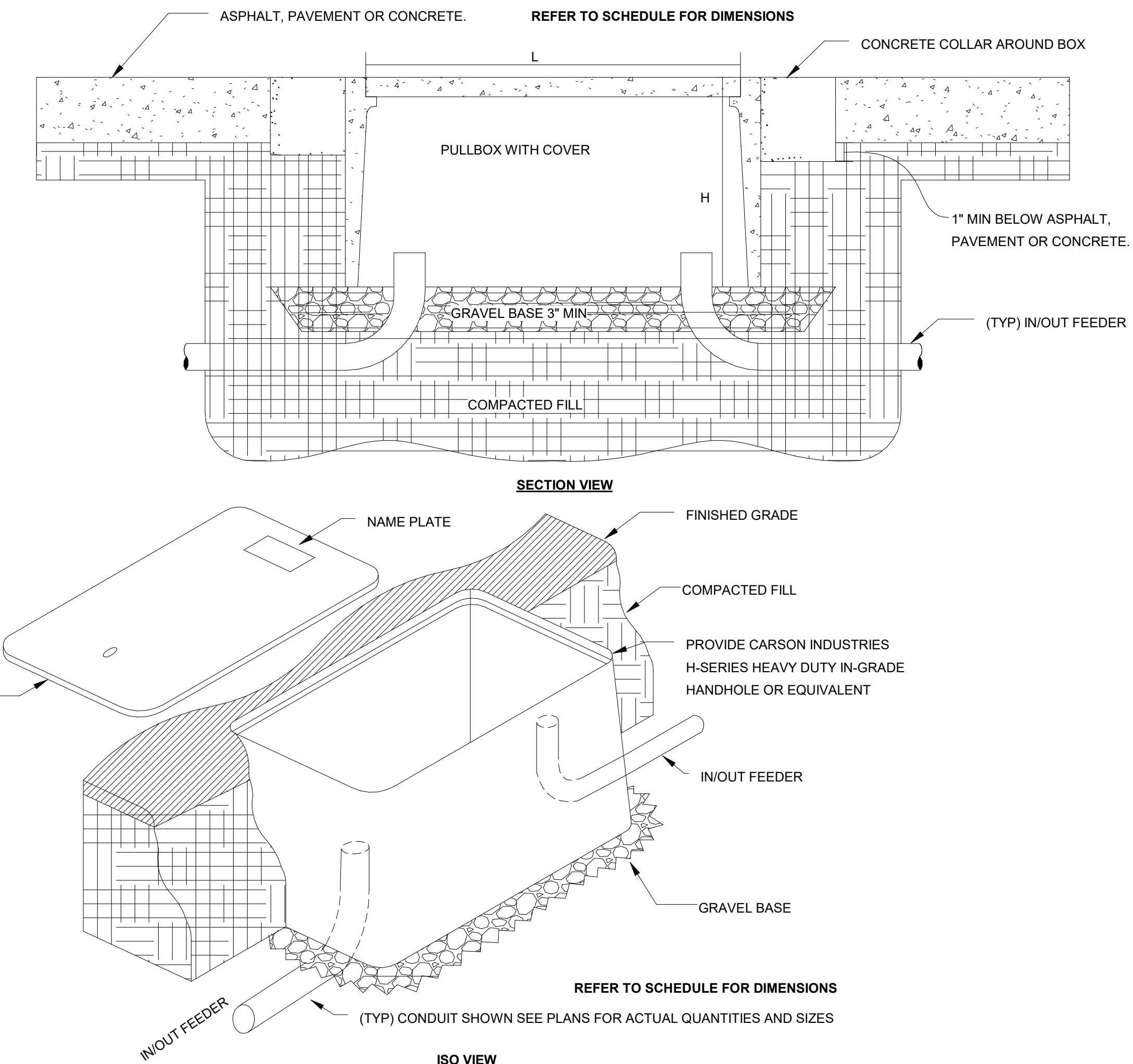
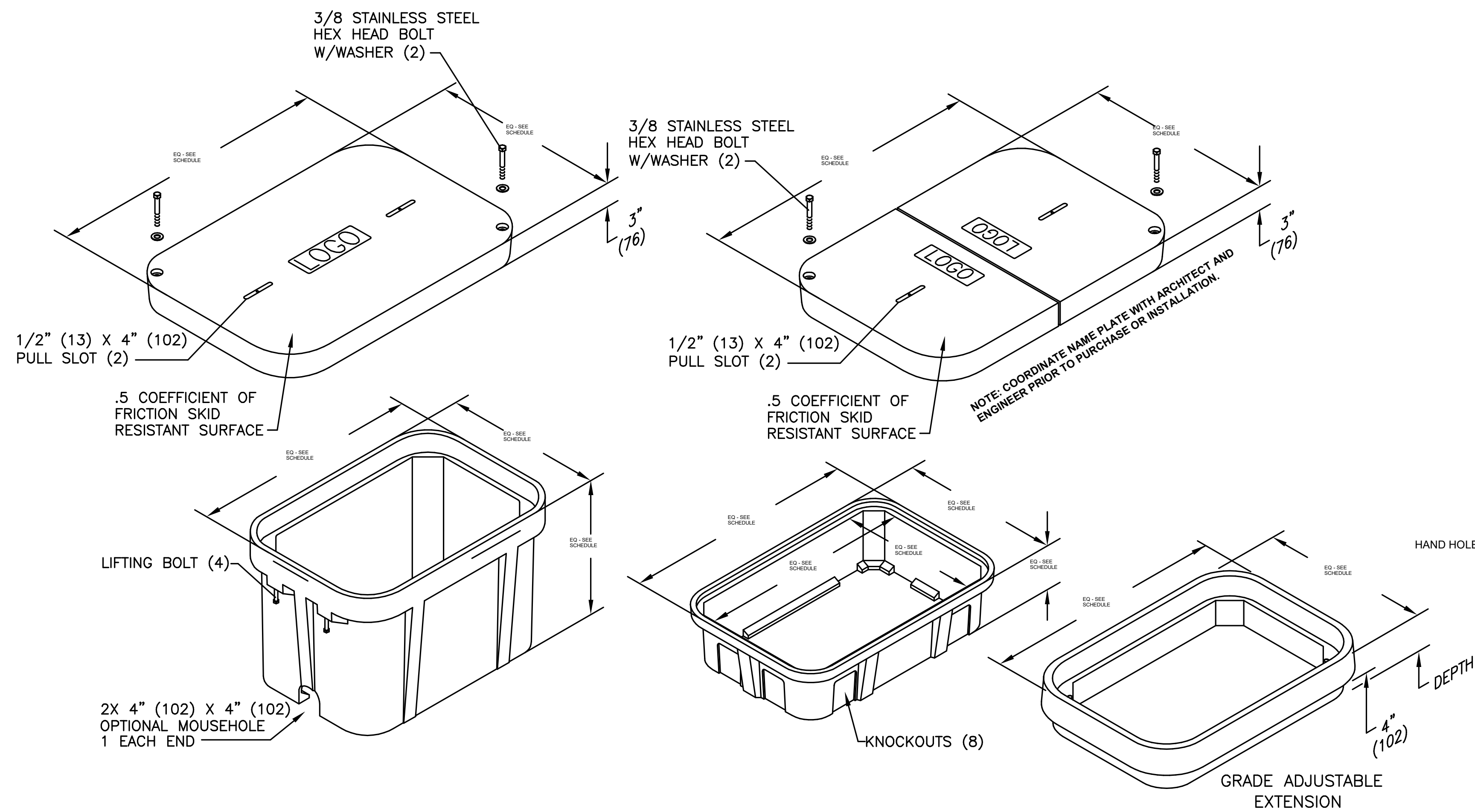
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APPLICATION TIERS	TYPE	DESCRIPTION	BOX OPTIONS	DESCRIPTION	COVER OPTIONS	DESCRIPTION	SYMBOLS LEGEND				FIXTURE STYLES		
LIGHT DUTY	VERTICAL	PEDESTRIAN TRAFFIC ONLY.	BA	BOX WITH OPEN BOTTOM	CA	BOLT DOWN COVER	PG-34	PG-22	PG-23	PG-22	STYLE NAME	DESCRIPTION	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		NOTES: 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.			PC	STRAIGHT SIDES ALLOW FOR EASY ADJUSTMENT OF BOX SHOULD THE GRADE LEVEL CHANGE. ALL PG BOXES ARE STACKABLE AND ARE AVAILABLE WITH GASKETING.
TIER 15	VERTICAL	DRIVEWAY, PARKING LOT, AND OFF ROAD APPLICATIONS SUBJECT TO OCCASIONAL ACCIDENTAL VEHICULAR TRAFFIC.	BG	GASKETED BOX WITH OPEN BOTTOM	LP	CAST IRON 6"x12" LID				PX	THE FLARED DESIGN PREVENTS FROST HEAVE AND COVERS ARE INTERCHANGEABLE WITH MANY PRECAST CONCRETE PARTS. PX BOXES ARE ALSO NESTABLE FOR COMPACT STORAGE.		
TIER 22	LATERAL		LATERAL	DA	BOX WITH SOLID BOTTOM	LQ	CAST IRON 9"x12" LID				PT	THESE ENCLOSURES FEATURE A 1 DEGREE FLARE FOR MAXIMUM STRENGTH. FLARED DESIGN OPTIMIZES INTERNAL VOLUME AND MINIMIZES FROST HEAVE.	
			DG	GASKETED BOX WITH SOLID BOTTOM	LK	POLYMER CONCRETE 6"x9" DROP-IN LID				PD			
			JA	FOOTED BOX	LL	POLYMER CONCRETE 7" X 13" DROP-IN LID							
			EA	EXTENSION	LS	THROUGH SLOT (NO METER LID)							
			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



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Drawing Title
SITE JUNCTION BOX DETAILS

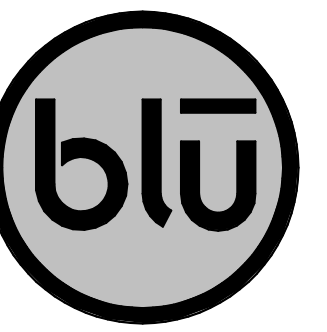
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A1 TYPICAL UNDERGROUND JUNCTION BOX DETAIL

SCALE: NTS

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Project No: 230019

Drawing Title
ELECTRICAL
SITE LIGHTING
DETAILS AND
SCHEDULES

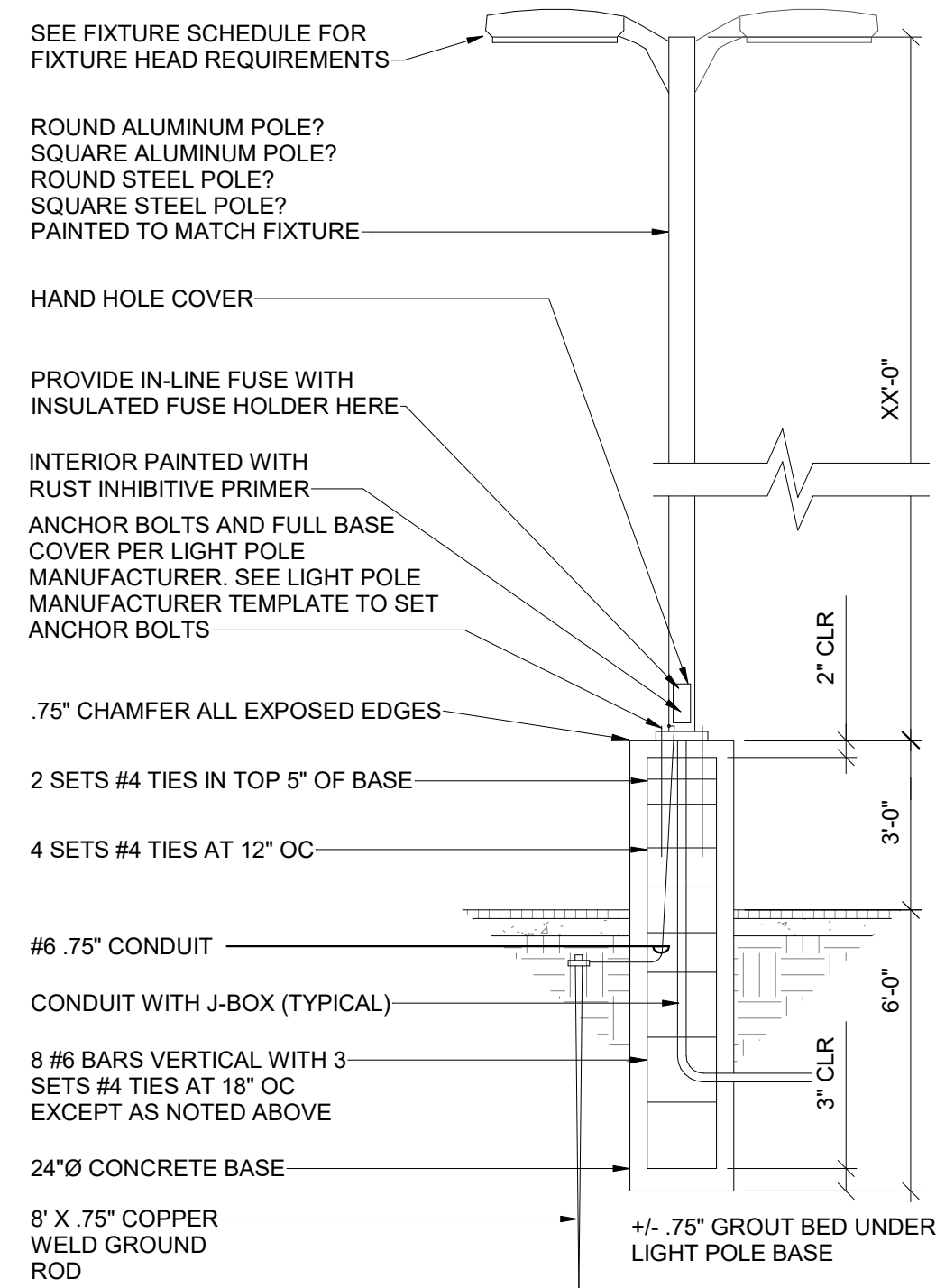
Drawing number

ES508

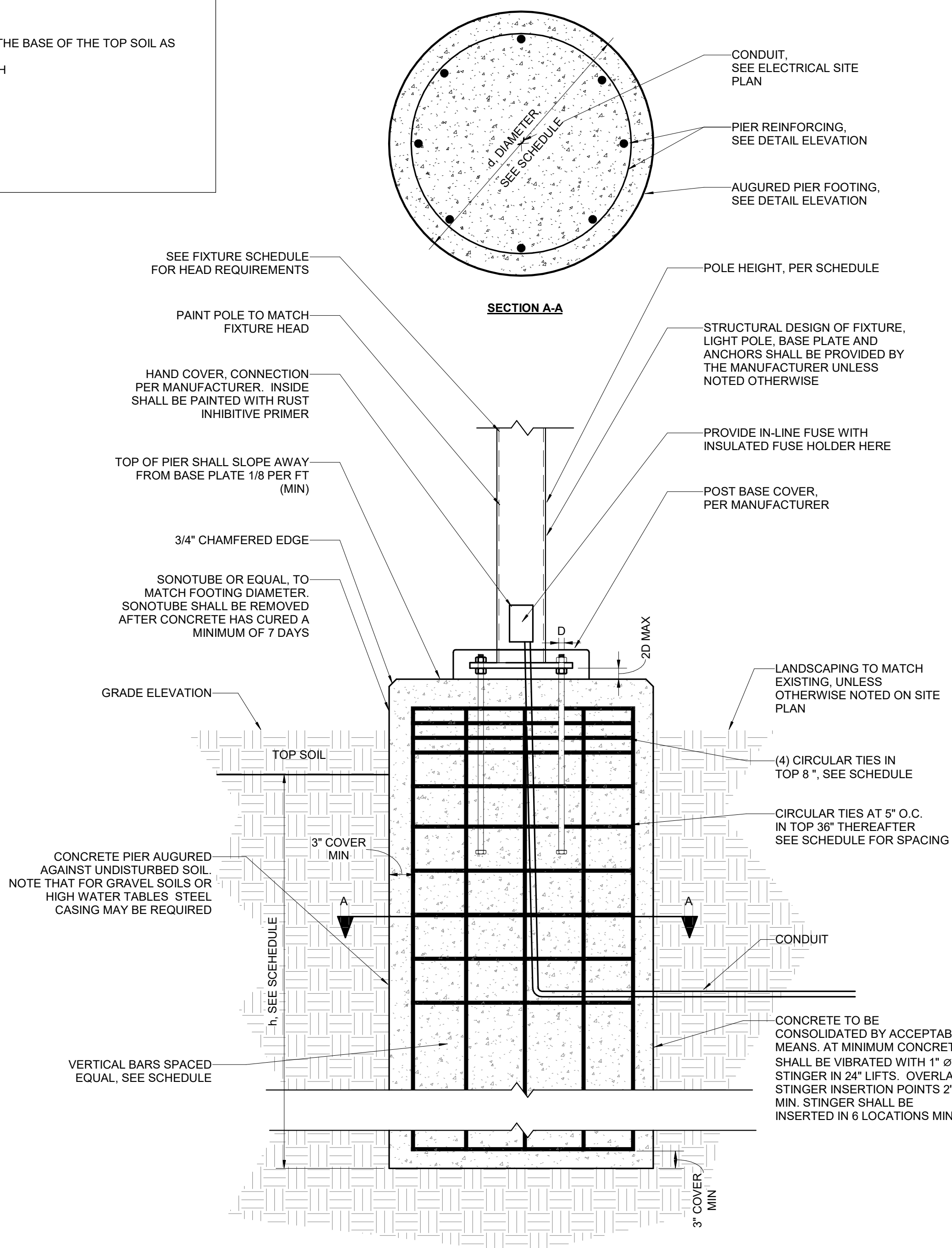
LIGHT POLE PIER FOOTING SCHEDULE¹

WIND SPEED (mph)	MAX EPA (FT ³)	LIGHT POLE HEIGHT (ft)	LIGHT POLE DIA (in) max	FOOTING DIAMETER, d (in)	h=MIN FOUNDATION ² EMBED. (ft)	VERTICAL REINF. BAR SIZE	VERTICAL BAR QUANTITY	CIRC. TIE BAR SIZE	CIRC. TIE SPACING (in)
120	2	30	8	24	7'-6"	#5	8	#4	12" O.C.
120	2	25	8	24	6'-6"	#5	8	#4	12" O.C.
120	2	20	8	24	6'-0"	#5	8	#4	12" O.C.
120	2	15	8	24	5'-0"	#5	8	#4	12" O.C.
120	2	10	8	24	4'-6"	#5	8	#4	12" O.C.
120	2	30 ³	8	18	-	-	-	-	-
120	2	25 ³	8	18	-	-	-	-	-
120	2	20	8	18	6'-0"	#5	5	#4	12" O.C.
120	2	15	8	18	5'-0"	#5	5	#4	12" O.C.
120	2	10	8	18	4'-6"	#5	5	#4	12" O.C.
120	2	30 ³	6	16	-	-	-	-	-
120	2	25 ³	6	16	-	-	-	-	-
120	2	20	6	16	6'-6"	#5	4	#4	12" O.C.
120	2	15	6	16	5'-6"	#5	4	#4	12" O.C.
120	2	10	6	16	4'-6"	#5	4	#4	12" O.C.

- NOTE:
1. CONTRACTOR SHALL SUBMIT DEFERRED SUBMITTAL FOR LIGHT POST FOOTING TO ENGINEER OF RECORD. SCHEDULE ABOVE IS FOR BIDDING PURPOSES ONLY.
2. SCHEDULE ABOVE ASSUMES CLAY OR SILT SOIL CONDITIONS WITH SEISMIC CLASS D AND DEFAULT SOIL PARAMETERS FROM IBC SECTION 1806.2
3. EXCEEDS THE MAXIMUM BEARING CAPACITY OF 1500 PSF. VERIFY ALLOWABLE SOIL BEARING WITH SOILS REPORT.
4. TOP SOIL SHALL NOT BE USED TO RESIST LATERAL LOAD IN FOOTING. THE EMBED DEPTH IN THE TABLE SHALL BE BEGIN BELOW THE BASE OF THE TOP SOIL AS SHOWN IN THE ELEVATION.
5. SECTION VIEW IS FOR VISUAL REPRESENTATION ONLY. VERIFY BAR QUANTITY WITH SCHEDULE 60,000 PSI REBAR YIELD STRENGTH
6. CONCRETE MIX SHALL BE FOR EXTERIOR CONCRETE SUBJECT TO FREEZE THAW CONATIONS WITH THE MINIMUM PROPERTIES.
A. 3000 PSI
B. TYPE II PORTLAND CEMENT
C. WATER TO CEMENT RATIO = 0.5%
D. AIR ENTRAINMENT = 5%
E. MAX AGGREGATE SIZE= 1"
F. CONCRETE EXPOSURE CLASS= F2, S0, C1
G. 4" SLUMP BEFORE ADDITION OF PLASTICIZER

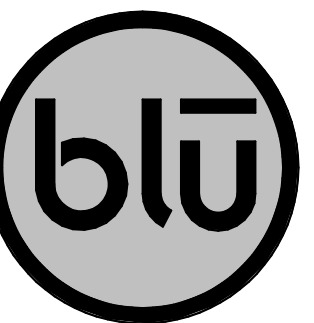


2 PARKING LOT LIGHT POLE BASE DETAIL
SCALE: NTS



1 TYPICAL LIGHT POLE FOOTING SCHEDULE
SCALE: NTS

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Drawing Title
**ONE-LINE
DIAGRAM**

Drawing number

ES601

BID SET

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.

COPPER CONDUCTOR AND CONDUIT SCHEDULE

SCHEDULE NUMBER (E.G.) 5
SUBSCRIPT (NOTE 5) IG

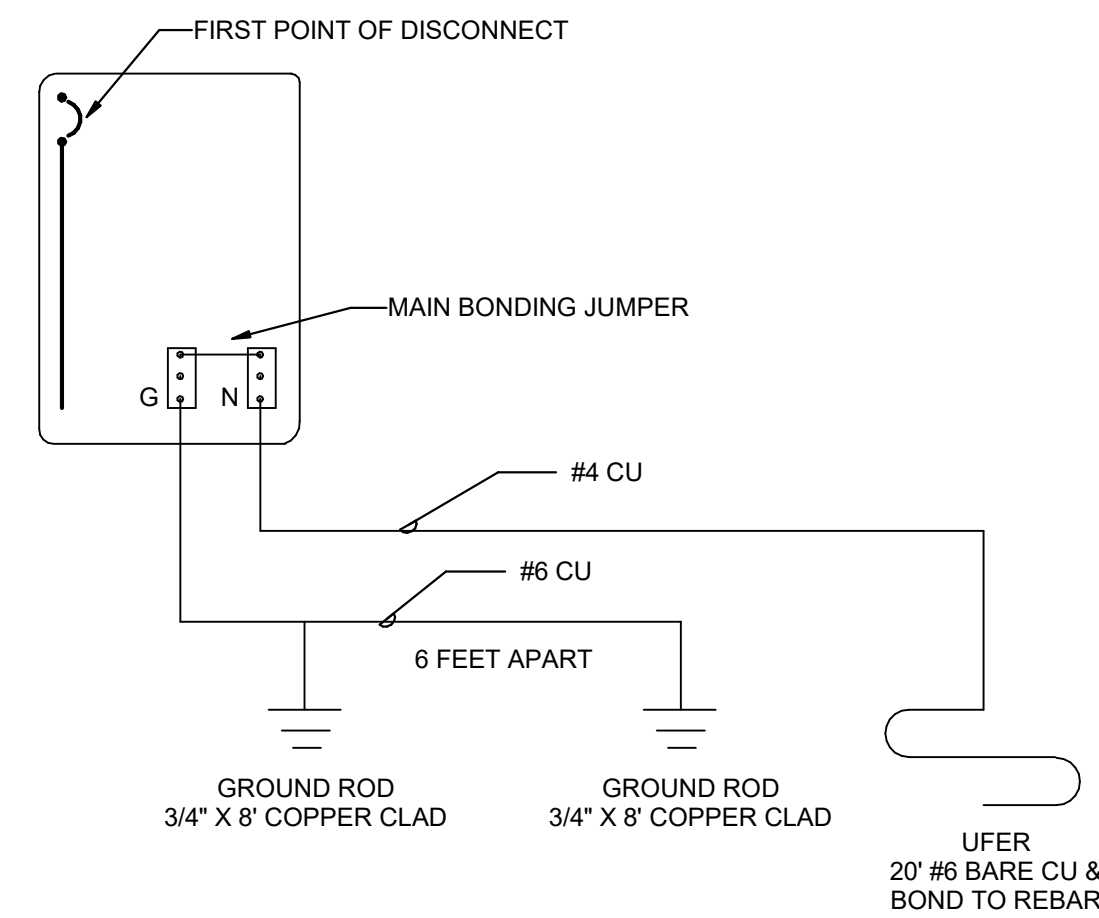
SYM	AMP	HH AMPS	CONDUIT SIZE	CONDUCTOR (NOTE 1) QTY	CONDUCTOR (NOTE 1) SIZE	CONDUCTOR (NOTE 1) G	IGHH	SE	NOTES
1	20	-	.75	2	12	12	12	8	2
2	20	-	.75	3	12	12	12	8	2,3
3	20	24	.75	4	12	12	12	8	2,3
4	30	-	.75	2	10	10	10	8	2
5	30	-	.75	3	10	10	10	8	2
6	30	32	.75	4	10	10	10	8	2
7	40	-	1	2	8	10	8	6	2
8	40	-	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

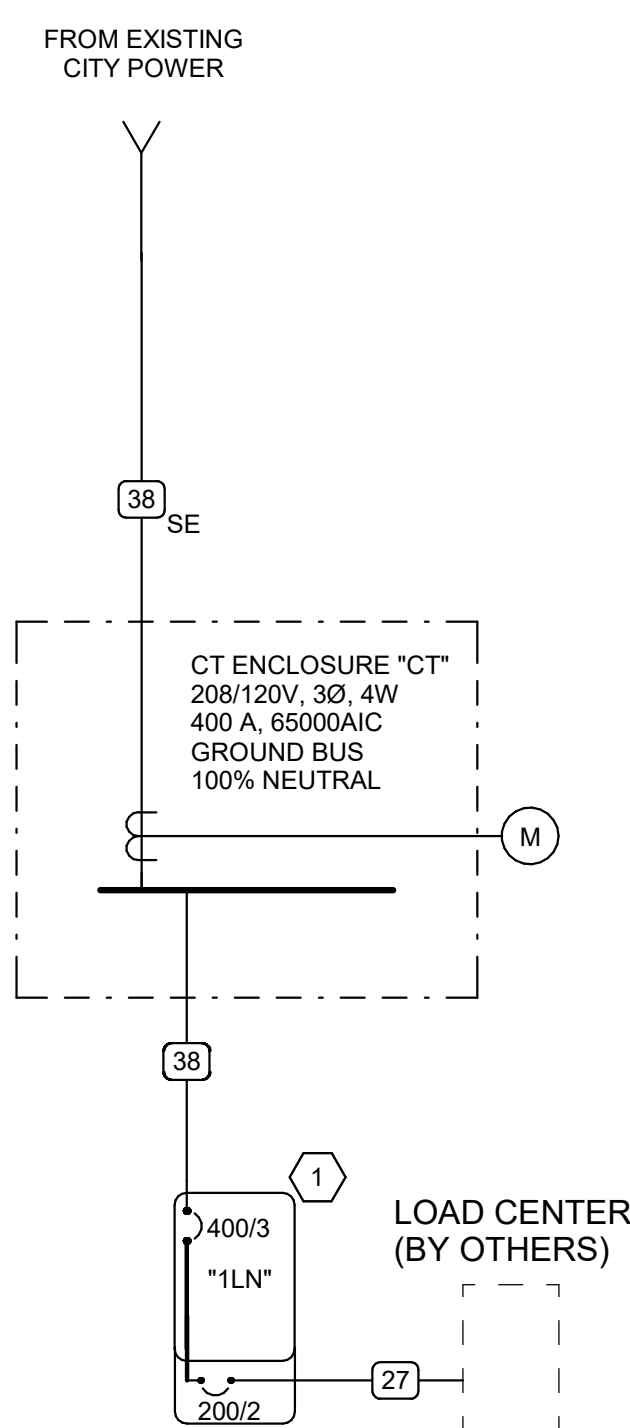
- CONDUCTORS SHOWN ARE SHOWN FOR EACH CONDUIT WITH MODIFICATIONS AS NOTED IN NOTE 5. ALL CONDUCTORS SHOWN ARE THIN UNLESS OTHERWISE NOTED.
- PROVIDE EQUIPMENT GROUND CONDUCTORS PER TABLE 250-122 WHEN CIRCUIT BREAKERS ARE SIZED GREATER THAN AMPERE RATING SHOWN IN TABLE.
- PROVIDE #10 NEUTRALS FOR MULTIWIRED 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 IGHH 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.
- RACEWAY ONLY. CONDUCTORS PROVIDED BY UTILITY.

SHEET KEYNOTES

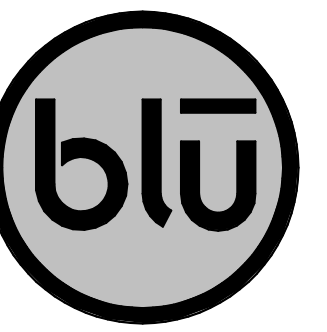
- PROVIDE PANEL WITH GROUNDING AND MAIN BONDING JUMPER. REFER TO DETAIL (C1) ON SAME SHEET FOR MORE INFORMATION.



C1 GROUNDING RISER DIAGRAM
SCALE: NTS



1 ONE LINE DIAGRAM
SCALE: NTS



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EXTERIOR LIGHTING FIXTURE SCHEDULE

ABBREVIATIONS

LUMINAIRE	EMERGENCY	BALLAST	FINISH	LENS	MOUNTING	CONFIGURATION	NOTES
ARHR - AIR RETURN AND HEAT REJECTION DL - DAMP LOCATION EQC - EARTHQUAKE CLIPS F - FUSING HLD - HINGED AND LATCHED DOOR HS - HOUSE SIDE SHIELD PS - PHOTOCELL SWITCH QRS - QUARTZ RESTRIKE ST - STATIC WG - WIRE GUARD WL - WET LOCATION	NE - NORMAL AND EMERGENCY CONNECTIONS EB - EMERGENCY BATTERY PACK ET - EMERGENCY TRANSFER DEVICE	IS - INSTANT START RS - RAPID START PS - PROGRAM START, PARALLEL LAMP OPERATION PSMH - PULSE START METAL HALLIDE (CWA OR ELECTRONIC) PPLF - PROVIDE POWER LINE FILTER LVLM - LOW VOLTAGE TRANSFORMER (MAGNETIC) LVTE - LOW VOLTAGE TRANSFORMER (ELECTRONIC)	MW - MATTE WHITE BL - BLACK SIL - SILVER G - GOLD CL - CLEAR PW - PAINTED WHITE EA - EXTRUDED ALUMINUM S - STEEL GS - GALVANIZED STEEL C - CAST CBA - COLOR BY ARCHITECT SCBA - STANDARD COLOR BY ARCHITECT CCA - CUSTOM COLOR BY ARCHITECT FS - MEETS FEDERAL STANDARD 209D TP - THERMALLY PROTECTED FL - FLUSH R - REGRESS M - MITERED	#A - ACRYLIC #THICK #OA - ACRYLIC #THICK (OPAL) GC - GLASS (CLEAR) GO - GLASS (OPAL) GF - GLASS (FROSTED) SGL - SOFT GLOW LENS HPL - HIGH PERFORMANCE LENS DO - DROP OPAL CGL - CONVEX GLASS LENS S - SATIN LENS	B - BASE C - CEILING F - FLANGE G - GRID P - PENDANT PL - POLE R - RECESSED S - SURFACE W - WALL	BA - BANNER ARMS BH - BULL HORN DL - 2 1/2" SHAPE DS - 2 @ 180 PT - INLINE POST TOP Q - QUAD SH - SHEPHERDS HOOK SL - SINGLE T - 3" T SHAPE	1. PROVIDE UNIT PRICES AND FIXTURE BRAND SELECTED FOR ADD/DELETE CHANGES FOR EACH FIXTURE TYPES SHOWN WITHIN 48 BUSINESS HOURS OF THE BID DATE. FAILURE TO COMPLY WITH THIS REQUIREMENT MAY DISQUALIFY THE PRODUCTS AND EMPOWER THE ENGINEER TO DETERMINE FAIR VALUE FOR FIXTURE AND INSTALLATION CHANGES, WITHOUT FURTHER INPUT FROM THE CONTRACTOR OR INSTALLER. 2. CONTRACTOR ALLOWANCE PRICES ARE ACCURATE WHEN THIS JOB WAS SPECIFIED, CONTRACTOR AND ELECTRICAL DISTRIBUTOR SHALL VERIFY THIS ALLOWANCE AND REPORT ANY PROBLEMS TO THE ENGINEER BEFORE THE BID. ALLOWANCE PRICE MAY OR MAY NOT INCLUDE LAMP(S) OR FREIGHT AS NOTED, AND DO NOT INCLUDE ANY TAXES.
1. VERIFY THE PROPER MOUNTING KITS OR ACCESSORIES TO FACILITATE INSTALLATION AS SHOWN AT EACH LOCATION ON THE DRAWINGS. 2. COMPLY WITH THE "EXTERIOR LIGHTING" SECTION OF THE SPECIFICATIONS. 3. REFER TO SPECIFICATIONS FOR IMPORTANT TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES, BALLASTS, AND LAMPS. 4. ALL FIXTURES SHALL BE APPROVED BY UL OR ANOTHER ACCEPTABLE TESTING LAB FOR THE PURPOSE INTENDED AND WITH THE LAMP AND BALLAST PROPOSED.		DIMMING BALLAST D2 - 2 WIRE DIMMER D3 - 3 WIRE DIMMER D4 - 4 WIRE DIMMER DD - DIGITAL DIMMER SDP - STEP DIMMER BALLAST		REFLECTOR AND DISTRIBUTION I - TYPE I II - TYPE II III - TYPE III IV - TYPE IV V - TYPE V VSO - TYPE V SQUARE SA - SPUN ALUMINUM SR - SEGMENTED REFLECTOR BWF - NEMA BEAM WIDTH 1 THRU 7			
				CUTOFF CLASSIFICATION FC - FULL CUTOFF CO - CUTOFF SC - SEMI CUTOFF NC - NONCUTOFF	POLE RS - ROUND STRAIGHT RT - ROUND TAPERED SS - SQUARE STRAIGHT ST - SQUARE TAPERED		

ID	IMAGE	TYPE	LUMINAIRE					LAMP		BALLAST		FINISH			DIFFUSER				REFLECTOR				MOUNTING				MANUFACTURER (CATALOG SERIES)			ALLOWANCE			
			BACK	UP	GLARE	LENGTH	WIDTH	DEPTH	DIAMETER / APERTURE	OPTIONS	COLOR	TYPE	LUMINAIRE LUMENS	INPUT VOLTS	ANSI WATTS	HOUSING	TRIM	OTHER	TYPE	FINISH	CONFIGURATION	OPTIONS	DISTRIBUTION TYPE	FINISH	EFFICIENCY	TYPE	CONFIGURATION	POLE BASE HEIGHT	POLE HEIGHT		WIND RATING	OPTIONS	OPTION 1
(Z54)		MODERN STYLE, LED POLE LIGHT, 20' POLE				26"	14"		4000K	LED	12000		120	SCBA	SCBA	SCBA					V		0			3' - 0"	20' - 0"			SUPERIOR (SX11365)	ENERGY (HALO150)	ALCON (11410-D)	
(Z55)		MODERN STYLE, LED POLE LIGHT, 20' POLE, DIRECT BURIAL.				26"	14"		4000K	LED	15000	277	120	SCBA	SCBA	SCBA					FTW		0			3' - 0"	20' - 0"			FONROCHE (CK16)	-	-	

WELKER TRAILHEAD IMPROVEMENTS

2700 NORTH 2125 EAST
LAYTON, UT 84041

REVISIONS	
NO.	DESCRIPTION

Stamp



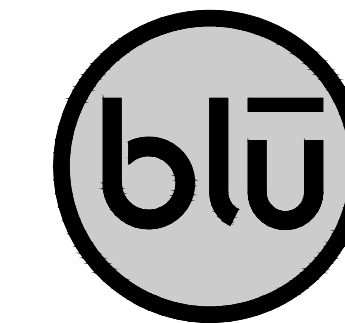
Designed By: JUN
 Drawn By: JUN
 Date: 04/26/2023
 Checked By: SCL
 Project No: Z30019

Drawing Title
EXTERIOR LIGHTING FIXTURE SCHEDULE

Drawing number

ES602

BID SET



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

N 2125 E

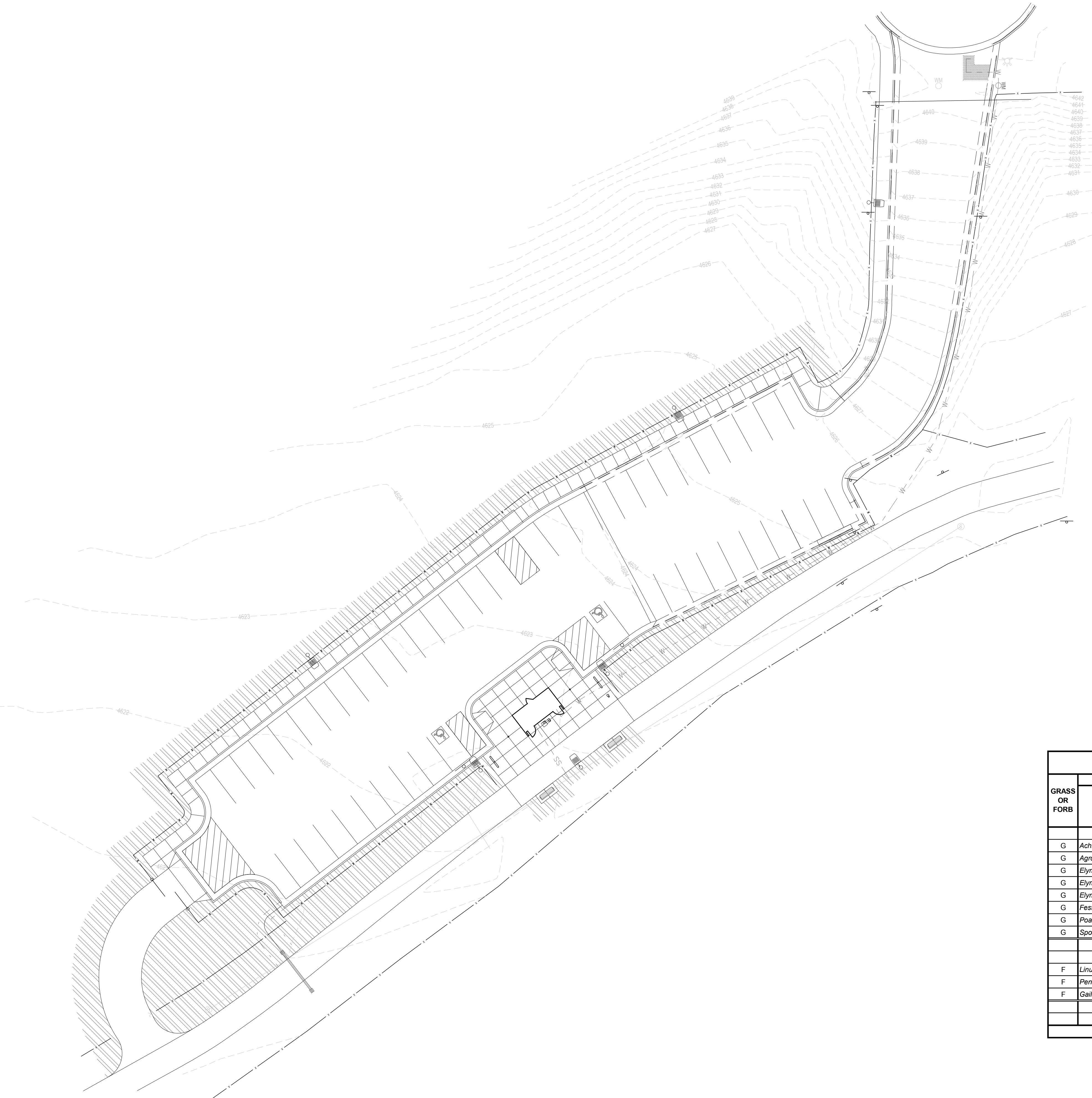
PLANT SCHEDULE

GROUND COVERS	BOTANICAL / COMMON NAME	CONT	SPACING	QTY
	NATIVE SEED MIX	BED		9,462 SF

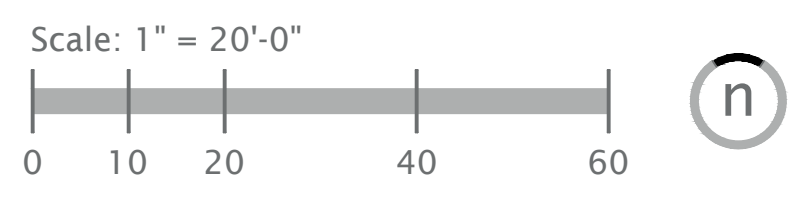
* ALL SHOWN QUANTITIES ARE PROVIDED FOR CONVENIENCE ONLY. CONTRACTOR IS RESPONSIBLE TO CONDUCT INDEPENDENT TAKEOFFS TO ESTABLISH QUANTITIES. PLAN SYMBOL QUANTITIES OVERRIDE QUANTITIES SHOWN IN SCHEDULE.

LANDSCAPE NOTES:

1. ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE LATEST AMERICAN PUBLIC WORKS ASSOCIATION (APWA) AND LAYTON CITY STANDARDS, SPECIFICATIONS, AND DETAILS.
2. 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.
3. 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.
4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITS, LICENSES, AND APPROVALS REQUIRED TO LEGALLY AND RESPONSIBLY COMPLETE THE WORK.
5. 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.
6. 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.
7. ALL COMPACTED AREAS DEVELOPED THROUGH CONSTRUCTION WITHIN PROPOSED LANDSCAPE AREAS SHALL BE SCARIFIED AND LOOSENEED TO A DEPTH OF 12" PRIOR TO LANDSCAPE AND IRRIGATION WORK BEGINNING.
8. NO PLANT SPECIES SUBSTITUTIONS WILL BE MADE WITHOUT APPROVAL OF OWNER.
9. SEEDING LIMITS 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.
10. ALL AREAS WITHIN AND AFFECTED BY THIS PROJECT SHALL HAVE POSITIVE DRAINAGE. POSITIVE DRAINAGE SHALL BE PROVIDED TO DIRECT STORMWATER AWAY FROM ALL STRUCTURES.
11. ALL CLARIFICATIONS OF DISCREPANCIES BETWEEN THE DRAWINGS AND THE SITE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO BEGINNING OF WORK.



UDOT ROADWAY SEED SCHEDULE - ANNUAL AVERAGE PRECIPITATION RATE OF 16-22"									
GRASS OR FORB	SPECIES NAME		Number of Seeds per Pound (LBS)	DRILL SEED			BROADCAST SEED		
	BOTANICAL NAME	COMMON NAME		Pounds (LBS) of Pure Live Seed (PLS)/Acre	Percentage of Seed mixture	Number of Seeds (PLS/Sq. Foot)	Pounds (LBS) of Pure Live Seed (PLS)/Acre	Percentage of Seed mixture	Number of Seeds (PLS/Sq. Foot)
Grass Species									
G	<i>Achnatherum hymenoides</i>	Indian ricegrass	141,000	2.50	10.81%	8	3.75	10.81%	12
G	<i>Agropyron cristatum</i> 'Ephraim'	Ephraim Crested wheatgrass	265,250	1.00	8.14%	6	1.50	8.14%	9
G	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Thickspike wheatgrass	154,000	2.00	9.45%	7	3.00	9.45%	11
G	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	Slender wheatgrass	159,000	2.80	13.66%	10	4.20	13.66%	15
G	<i>Elymus wawaaiensis</i>	Snake River wheatgrass	120,000	3.00	11.04%	8	4.50	11.04%	12
G	<i>Festuca arizonica</i>	Arizona fescue	550,000	0.50	8.44%	6	0.75	8.44%	9
G	<i>Poa secunda</i> ssp. <i>sandbergii</i>	Sandberg bluegrass	1,047,000	0.30	9.64%	7	0.45	9.64%	11
G	<i>Sporobolus airoides</i>	Alkali sacaton	1,758,000	0.15	8.09%	6	0.23	8.09%	9
				12.25	79.26%	59	18.38	79.26%	89
Forb Species									
F	<i>Linum lewisii</i>	Lewis flax	170,000	2.00	10.43%	8	3.00	10.43%	12
F	<i>Penstemon strictus</i>	Rocky Mountain penstemon	592,000	0.30	5.45%	4	0.45	5.45%	6
F	<i>Gaillardia arisata</i>	Blanket flower	132,000	1.20	4.86%	4	1.80	4.86%	5
				3.50	20.74%	16	5.25	20.74%	23
TOTALS =				15.75	100.00%	75	23.63	100.00%	112



WELKER TRAILHEAD IMPROVEMENTS
 2700 NORTH 2125 EAST
 LAYTON, UT 84041

REVISIONS

NO.	DESCRIPTION

Stamp: STATE OF UTAH, CORP A, LICENSED LANDSCAPE ARCHITECT, 04/28/2023

Designed By: TH
 Drawn By: TH
 Date: 04/28/2023
 Checked By: RD
 Project No: 22-199
 Drawing Title: LANDSCAPE PLAN
 Drawing number: LP101

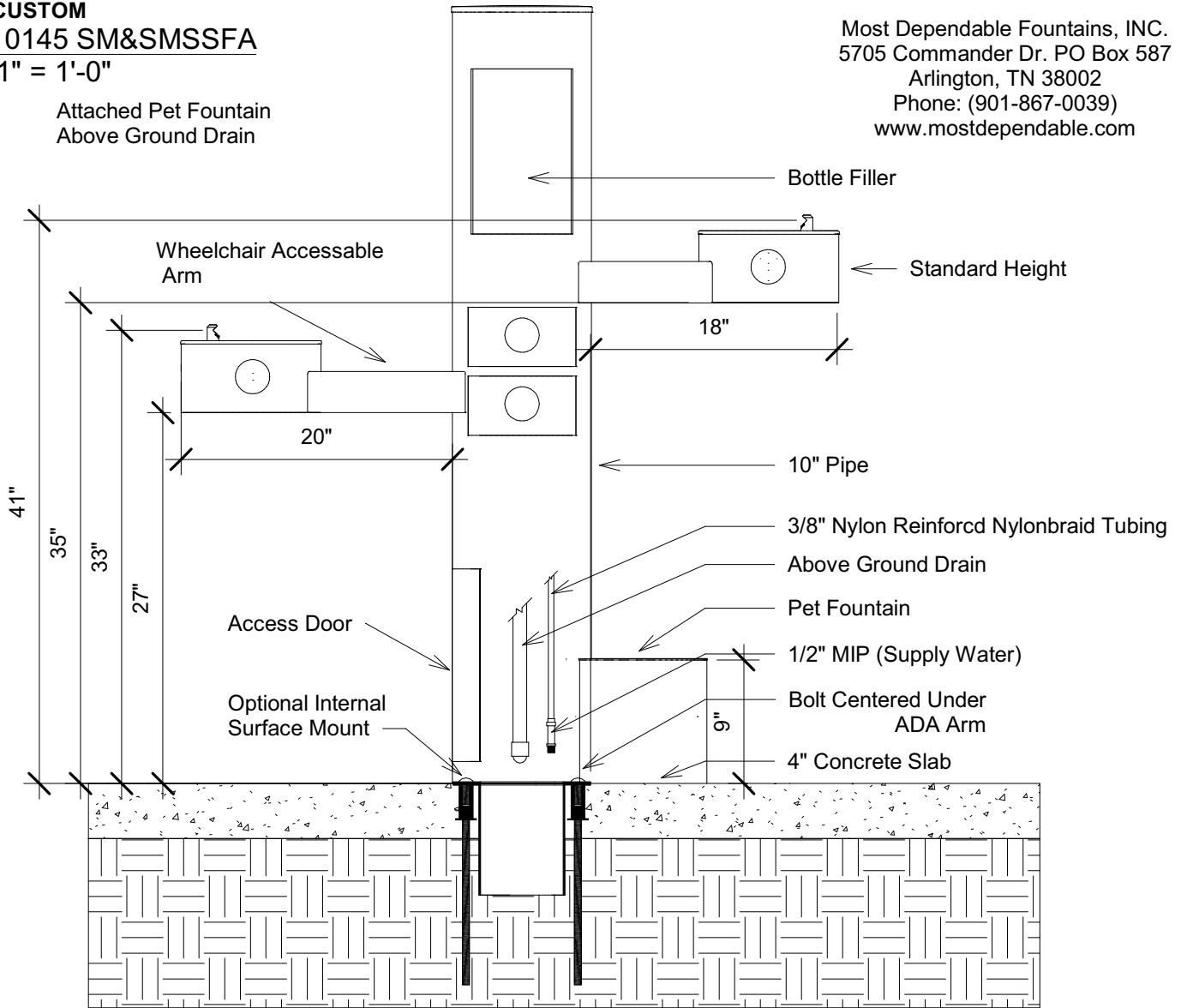
LP101

CUSTOM
10145 SM&SMSSFA

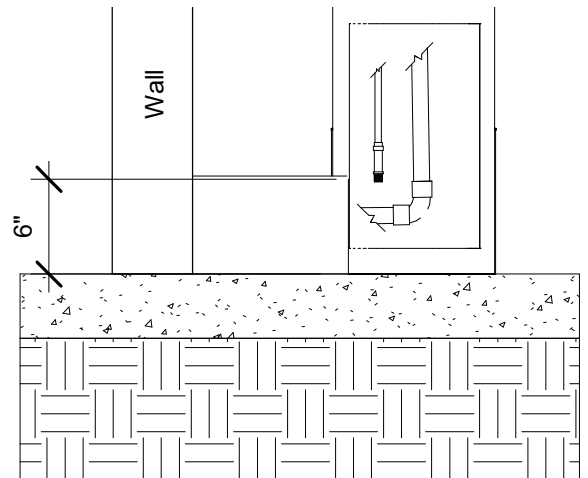
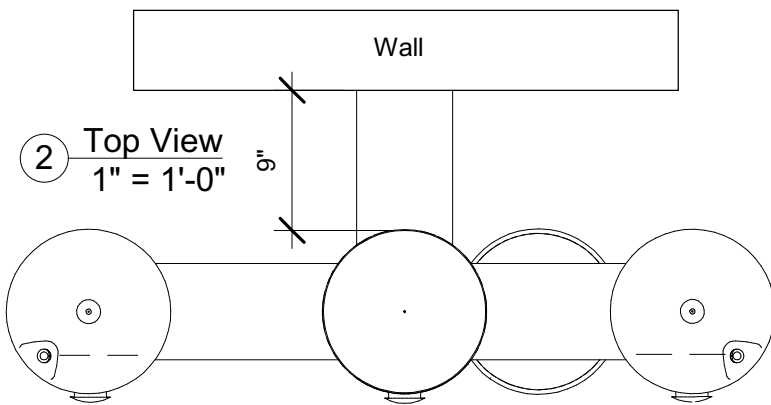
① 1" = 1'-0"

Attached Pet Fountain
 Above Ground Drain

Most Dependable Fountains, INC.
 5705 Commander Dr. PO Box 587
 Arlington, TN 38002
 Phone: (901-867-0039)
 www.mostdependable.com



② Top View
 1" = 1'-0"



- Meets ADA Hi/Lo requirements.
- Solid engineering and intuitive design.
- MDF bottle fillers help promote the "going green" movement.
- Includes water filter.
- Sanitary recessed spout.
- Maintenance friendly and built "tank tough".
- Push button requires less than 5 lbs of pressure to operate.
- One piece welded construction with steel.
- Optional 10" stainless steel surface carrier is recommended for easier installation.
- Simple winterization if applicable.
- Supply connection stops above grade behind the access door.
- All products including 'SS' are powder coated for extra protection.
- Weight: 240 lbs.

