SAN JUAN COUNTY
FAIRGROUNDS RV STALLS

PROJECT MANUAL

MAY 8, 2023
FOR BIDDING ONLY

Project #: 2204-024

Prepared by:

Jones & DeMille Engineering

www.jonesanddemille.com
1.800.748.5275

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ADVERTISEMENT FOR BIDS

San Juan County, 117 South Main Street, Monticello, Utah, 84535

General Notice:

San Juan County (Owner) is requesting Bids for the construction of the following Project: Fairgrounds RV Stalls

Bids for the construction of the Project will be received at the San Juan County Offices located at 117 South Main Street, Monticello, Utah, 84535, until Friday, May 26, 2023, at 4:00 pm local time. At that time, the Bids received will be publicly opened and read.

The Project includes the following Work: Install (22) RV stalls with power, water, and sewer utilities in the northwestern corner of the existing San Juan County Fairgrounds. Bids will be received for single contract.

The Project must be completed no later than Monday, July 31st, 2023.

Obtaining Bidding Documents:

Information and Bidding Documents for the Project can be found at the following designated websites: www.jonesanddemille.com or www.questcdn.com

Bidding Documents may be downloaded from the designated websites for a fee of $30.00. The designated websites will be updated with addenda, plan holders list, reports, and other information relevant to submitting a Bid for the Project. Official notifications, addenda, and other Bidding Documents will be offered through the designated websites.

Please submit all questions regarding the project to Katie Andrews at katie.a@jonesanddemille.com.

The Issuing Office for the Bidding Documents is: Jones & DeMille Engineering, Inc., 696 North Main Street, Monticello, Utah, 84535.

Prospective Bidders may examine the Bidding Documents at the Issuing Office Monday through Friday between the hours of 8:00 a.m. to 5:00 p.m., except holidays or may obtain copies of the Bidding Documents from the Issuing Office as described below. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including addenda, if any, obtained from sources other than the designated websites and the Issuing Office.

Printed copies of the Bidding Documents may be obtained from the Issuing Office upon payment of $40.00 for each set, no part of which will be refunded. Make checks payable to Jones & DeMille Engineering, Inc.

Pre-bid Conference:

A pre-bid conference for the Project will be held on Wednesday, May 17, 2023 at 10:00 am local time at Jones & DeMille Engineering, Inc., 696 North Main Street, Monticello, Utah 84535. Attendance at the pre-bid conference is encouraged but not required.

Instructions to Bidders:

For further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents. The Owner may reject any or all bids submitted.

Issued by:

Owner: San Juan County
By: Mack McDonald
Title: Chief Administrative Officer
Date: May 5, 2023

DOCUMENT 00 21 13
INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the Contract Documents. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its Bid and within 5 days of Owner's request, Bidder shall submit (a) written evidence establishing its qualifications such as financial data, previous experience, and present commitments, and (b) additional information as requested by Owner.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions:

1. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

2. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 *Site Visit and Testing by Bidders*

A. Bidder shall conduct the required Site visit during normal working hours and shall not disturb any ongoing operations at the Site.

B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

E. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A pre-bid conference will be held at the time and location stated in the invitation or advertisement to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

5.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner or Engineer will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 6 – INTERPRETATIONS AND ADDENDA

6.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 7 – BID SECURITY

7.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety licensed and authorized to issue bonds in the jurisdiction in which the Project is located.

7.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 14 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

7.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until thirty days after the Bid opening, whereupon Bid security furnished by such Bidders will be released or destroyed.

7.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released or destroyed within seven days after the Bid opening.

ARTICLE 8 – SUBSTITUTE AND "OR-EQUAL" ITEMS

8.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall include sufficient information to allow Engineer to determine if proposed material or equipment is acceptable. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

8.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 9 – BASIS OF BID

9.01 Lump Sum

A. Bidders shall submit a Bid on a lump sum basis as set forth in the Contract Form.

ARTICLE 10 – SUBMITTAL OF BID

10.01 An unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of the Bid Form.

10.02 A Bid shall be received no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the other required documents.

A. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "Attn: Mack McDonald. BID ENCLOSED: Fairgrounds RV Stalls." A mailed Bid shall be addressed to **San Juan County, 117 South Main Street, Monticello, Utah, 84535.**

B. If a Bid is sent by email or other electronic delivery system, the electronic bid shall be received, not just sent, before the date and time prescribed in the advertisement or invitation to bid. An emailed bid shall be sent to Katie Andrews at katie.a@jonesanddemille.com**.**

C. Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 11 – MODIFICATION AND WITHDRAWAL OF BID

11.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

11.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in the Paragraph above and submit a new Bid prior to the date and time for the opening of Bids.

11.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 12 – OPENING OF BIDS

12.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 13 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

13.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 14 – EVALUATION OF BIDS AND AWARD OF CONTRACT

14.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner will reject the Bid of any Bidder that

Owner finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive; provided that Owner also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

14.02 If Owner awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

14.03 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Contract Form or prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

14.04 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

14.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 15 – SIGNING OF CONTRACT

15.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted Contract Documents. Within 14 days thereafter, Successful Bidder shall execute and deliver the required bonds, insurance and other required documentation to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Contract to Successful Bidder, together with four printed and one portable document format (PDF) electronic copies of the Contract Documents.

15.02 The effective date of the Contract will be the date indicated on the Contract.

15.03 It is intended that the Contract Time will commence to run as soon as possible after the Contract Documents have been executed. The Contractor, Owner and Engineer will determine a mutually agreed upon date for the Contract Times to commence to run and that date will be indicated on the Notice to Proceed issued by the Owner.

END OF DOCUMENT

DOCUMENT 00 41 15
BID FORM
San Juan County – Fairgrounds RV Stalls
2204-024

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to: San Juan County, 117 South Main Street, Monticello, Utah, 84535.

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 7 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	**Addendum, Date**
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Bidding Documents.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations

obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

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

LUMP SUM BID

Lump Sum Bid Price	$

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security.

B. List of Proposed Subcontractors.

C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids.

D. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders and the Contract.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

_____

By:
[Signature] _____

[Printed name] _____
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:
[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

_____

_____

_____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

_____

Bidder's License No.: _____

DOCUMENT 00 43 13.11
BID BOND (PENAL SUM FORM)

Bidder	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Bid**
Name: San Juan County	Project *(name and location)*:
Address *(principal place of business)*:	Fairgrounds RV Stalls
117 South Main Street, Monticello, Utah, 84535	Monticello, Utah, 84535
	Bid Due Date: May 26, 2023 @ 4:00 pm
Bond	
Penal Sum:	
Date of Bond:	

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

Bidder	Surety
_____	_____
(Full formal name of Bidder)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature) (Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title:	Title:

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
    3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
    3.2. All Bids are rejected by Owner, or
    3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 03: CONTRACTING REQUIREMENTS

DOCUMENT 00 51 00
NOTICE OF AWARD

Date of Issuance:

Owner:	San Juan County	Owner's Contract No.:	
Engineer:	Jones & DeMille Engineering	Engineer's Project No.:	(2204-024)
Project:	Fairgrounds RV Stalls	Contract Name:	

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid for the above Contract, and that you are the Successful Bidder and are awarded a Contract for the following:

_____ .

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is: $_____ *[Note if subject to unit prices, or cost-plus.]*

Contract Documents will be made available to Bidder.

You must comply with the following conditions precedent within 14 days of the date of receipt of this Notice of Award:

1. Deliver performance and payment bonds.
2. Deliver insurance documentation.

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract, together with any additional copies of the Contract Documents.

Owner**:** San Juan County

Authorized Signature

By: _____

Title: _____

DOCUMENT 00 52 15

CONTRACT FOR CONSTRUCTION OF A SMALL PROJECT

Prepared by

Issued and Published Jointly by

CONTRACT FOR CONSTRUCTION OF A SMALL PROJECT

This Contract is by and between San Juan County (Owner) and

(Contractor).

Owner and Contractor hereby agree as follows:

ARTICLE 1 - THE WORK

1.01 Work

A. Work includes all labor, materials, equipment, services, and documentation necessary to construct the Project defined herein. The Work may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

B. The Contractor shall complete all Work as specified or indicated in the Contract Documents. The Project is generally described as follows:

1. Fairgrounds RV Stalls, which includes install of (22) RV stalls with power, water, and sewer utilities.

2. The Site of the Work includes property, easements, and designated work areas described in greater detail in the Contract Documents but generally located in the northwestern corner of the existing San Juan County Fairgrounds.

ARTICLE 2 - CONTRACT DOCUMENTS

2.01 Intent of Contract Documents

A. It is the intent of the Contract Documents to describe a functionally complete project. The Contract Documents do not indicate or describe all of the Work required to complete the Project. Additional details required for the correct installation of selected products are to be provided by the Contractor and coordinated with the Owner and Engineer. This Contract supersedes prior negotiations, representations, and agreements, whether written or oral. The Contract Documents are complementary; what is required by one part of the Contract Documents is as binding as if required by other parts of the Contract Documents.

B. During the performance of the Work and until final payment, Contractor and Owner shall submit all matters in question concerning the requirements of the Contract Documents, or relating to the acceptability of the Work under the Contract Documents to the Engineer. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

C. Engineer will render a written clarification, interpretation, or decision on the issue submitted, or initiate a modification to the Contract Documents.

D. Contractor, and its subcontractors and suppliers, shall not have or acquire any title to or ownership rights to any of the Drawings, Specifications, or other documents (including copies or electronic media editions) prepared by Engineer or its consultants.

2.02 Contract Documents Defined

A. The Contract Documents consist of the following documents:

1. This Contract.
2. Performance bond.
3. Payment bond.
4. Specifications listed in the Table of Contents.
5. Drawings as listed on the Drawing Sheet Index.
6. Addenda.
7. Exhibits to this Contract (enumerated as follows):
   a. None
8. The following which may be delivered or issued on or after the Effective Date of the Contract:
   a. Work Change Directives (EJCDC C-940).
   b. Change Orders (EJCDC C-941).
   c. Field Orders.

ARTICLE 3 - ENGINEER

3.01 Engineer

A. The Engineer for this Project is Jones & DeMille Engineering, Inc.

ARTICLE 4 - CONTRACT TIMES

4.01 Contract Times

A. The Work will be substantially completed on or before July 17,2023, and completed and ready for final payment on or before July 31, 2023.

4.02 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence in the performance of the Contract, and that Owner will incur damages if Contractor does not complete the Work according to the requirements of Paragraph 4.01. Because such damages for delay would be difficult and costly to determine, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,000 for each day that expires after such time until the Work is completed and ready for final payment.

4.03 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor or their subcontractors or suppliers.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times.

D. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor or Contractor's subcontractors or suppliers.

4.04 Progress Schedules

A. Contractor shall develop a progress schedule and submit to the Engineer for review and comment before starting Work on the Site. The Contractor shall modify the schedule in accordance with the comments provided by the Engineer.

B. The Contractor shall update and submit the progress schedule to the Engineer each month. The Owner may withhold payment if the Contractor fails to submit the schedule.

ARTICLE 5 - CONTRACT PRICE

5.01 Payment

A. Owner shall pay Contractor in accordance with the Contract Documents, the lump sum amount of (words) _____ _____ (numbers) ($ _____) for all Work.

ARTICLE 6 - BONDS AND INSURANCE

6.01 Bonds

A. Before starting Work, Contractor shall furnish a performance bond and a payment bond from surety companies that are duly licensed or authorized to issue bonds in the required amounts in the jurisdiction in which the Project is located. Each bond shall be in an amount equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until the completion of the correction period specified in Paragraph 7.12 but, in any case, not less than one year after the date when final payment becomes due.

6.02 Insurance

A. Before starting Work, Contractor shall furnish evidence of insurance from companies that are duly licensed or authorized in the jurisdiction in which the Project is located with a minimum AM Best rating of A-VII or better. Contractor shall provide insurance in accordance with the following:

1. Contractor shall provide coverage for not less than the following amounts, or greater where required by Laws and Regulations:

a. Workers' Compensation:

State:		Statutory
Employer's Liability:		
Bodily Injury, each Accident	$	500,000
Bodily Injury By Disease, each Employee	$	500,000
Bodily Injury/Disease Aggregate	$	500,000

b. Commercial General Liability:

General Aggregate	$	2,000,000
Products - Completed Operations Aggregate	$	1,000,000
Personal and Advertising Injury	$	1,000,000
Each Occurrence (Bodily Injury and Property Damage)	$	1,000,000

c. Automobile Liability herein:

Bodily Injury:		
Each Person	$	1,000,000
Each Accident	$	1,000,000
Property Damage:		
Each Accident	$	1,000,000

d. Excess or Umbrella Liability:

Per Occurrence	$	1,000,000
General Aggregate	$	1,000,000

e. Contractor's Pollution Liability:

Each Occurrence	$	1,000,000
General Aggregate	$	1,000,000

B. All insurance policies required to be purchased and maintained will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the insured and additional insured.

C. Automobile liability insurance provided by Contractor shall provide coverage against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

D. Contractor's commercial general liability policy shall be written on a 1996 or later ISO commercial general liability occurrence form and include the following coverages and endorsements:

1. Products and completed operations coverage maintained for three years after final payment;

2. Blanket contractual liability coverage to the extent permitted by law;

3. Broad form property damage coverage; and

4. Severability of interest; underground, explosion, and collapse coverage; personal injury coverage.

E. The Contractor's commercial general liability and automobile liability, umbrella or excess, and pollution liability policies shall include and list Owner and Engineer and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each as additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis.

1. Additional insured endorsements will include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.

2. Contractor shall provide ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent for design professional additional insureds.

F. Umbrella or excess liability insurance shall be written over the underlying employer's liability, commercial general liability, and automobile liability insurance. Subject to industry-standard exclusions, the coverage afforded shall be procured on a "follow the form" basis as to each of the underlying policies. Contractor may demonstrate to Owner that Contractor has met the combined limits of insurance (underlying policy plus applicable umbrella) specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policies and an umbrella or excess liability policy.

G. The Contractor shall provide property insurance covering physical loss or damage during construction to structures, materials, fixtures, and equipment, including those materials, fixtures, or equipment in storage or transit.

H. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 15.

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

7.01 Supervision and Superintendence

A. Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, safety, and procedures of construction.

B. Contractor shall assign a competent resident superintendent who is to be present at all times during the execution of the Work. This resident superintendent shall not be replaced without written notice to and approval by the Owner and Engineer except under extraordinary circumstances.

C. Contractor shall at all times maintain good discipline and order at the Site.

D. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday.

7.02 Other Work at the Site

A. In addition to and apart from the Work of the Contractor, other work may occur at or adjacent to the Site. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

7.03 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be new, of good quality and shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable supplier, except as otherwise may be provided in the Contract Documents.

7.04 Subcontractors and Suppliers

A. Contractor may retain subcontractors and suppliers for the performance of parts of the Work. Such subcontractors and suppliers must be acceptable to Owner.

7.05 Quality Management

A. Contractor is fully responsible for the managing quality to ensure Work is completed in accordance with the Contract Documents.

7.06 Licenses, Fees and Permits

A. Contractor shall pay all license fees and royalties and assume all costs incident to performing the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others.

B. Contractor shall obtain and pay for all construction permits and licenses unless otherwise provided in the Contract Documents.

7.07 Laws and Regulations; Taxes

A. Contractor shall give all notices required by and shall comply with all local, state, and federal Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages if Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations.

C. Contractor shall pay all applicable sales, consumer, use, and other similar taxes Contractor is required to pay in accordance with Laws and Regulations.

7.08 Record Documents

A. Contractor shall maintain one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved shop drawings in a safe place at the Site. Contractor shall annotate them to show changes made during construction. Contractor shall deliver these record documents to Engineer upon completion of the Work.

7.09 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work.

B. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. All persons on the Site or who may be affected by the Work;

2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. Other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction.

C. All damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, or anyone for whose acts the Contractor may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Contract Documents or to the acts or omissions of Owner or Engineer and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor).

D. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

E. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor shall act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.10 Shop Drawings, Samples, and Other Submittals

A. Contractor shall review and coordinate the shop drawing and samples with the requirements of the Work and the Contract Documents and shall verify all related field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information.

B. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

C. With each submittal, Contractor shall give Engineer specific written notice, in a communication separate from the submittal, of any variations that the shop drawing or sample may have from the requirements of the Contract Documents.

D. Engineer will provide timely review of shop drawings and samples.

E. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs.

F. Engineer's review and approval of a separate item does not indicate approval of the assembly in which the item functions.

G. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of shop drawings and submit, as required, new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

H. Shop drawings are not Contract Documents.

7.11 Warranties and Guarantees

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

7.12 Correction Period

A. If within one year after the date of substantial completion, any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly and without cost to Owner, correct such defective Work.

7.13 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts they may be liable.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 Owner's Responsibilities

A. Except as otherwise provided in the Contract Documents, Owner shall issue all communications to Contractor through Engineer.

B. Owner shall make payments to Contractor as provided in this Contract.

C. Owner shall provide Site and easements required to construct the Project.

D. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, unless stated elsewhere in the Contract Documents, Owner shall have sole authority and responsibility for such coordination.

E. The Owner shall be responsible for performing inspections and tests required by applicable codes.

F. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

G. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

H. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 Engineer's Status

A. Engineer will be Owner's representative during construction. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in this Contract.

B. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any subcontractor, any supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

C. Engineer will make visits to the Site at intervals appropriate to the various stages of construction. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work.

D. Engineer has the authority to reject Work if Contractor fails to perform Work in accordance with the Contract Documents.

E. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work.

F. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

ARTICLE 10 - CHANGES IN THE WORK

10.01 Authority to Change the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work.

10.02 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in the Work which are: (a) ordered by Owner or (b) agreed to by the parties or (c) resulting from the Engineer's decision, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

3. Changes in the Contract Price or Contract Times or other changes which embody the substance of any final binding results under Article 12.

B. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 11 - DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS

11.01 Differing Conditions Process

A. If Contractor believes that any subsurface or physical condition including but not limited to utilities or other underground facilities that are uncovered or revealed at the Site either differs materially from that shown or indicated in the Contract Documents or is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract Documents then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. After receipt of written notice, Engineer will promptly:

1. Review the subsurface or physical condition in question;

2. Determine necessity for Owner obtaining additional exploration or tests with respect to the condition;

3. Determine whether the condition falls within the differing site condition as stated herein;

4. Obtain any pertinent cost or schedule information from Contractor;

5. Prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and

6. Advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

ARTICLE 12 - CLAIMS AND DISPUTE RESOLUTION

12.01 Claims Process

A. The party submitting a claim shall deliver it directly to the other party to the Contract and the Engineer promptly (but in no event later than 10 days) after the start of the event giving rise thereto.

B. The party receiving a claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the claim through the exchange of information and direct negotiations. All actions taken on a claim shall be stated in writing and submitted to the other party.

C. If efforts to resolve a claim are not successful, the party receiving the claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the claim within 45 days, the claim is deemed denied.

D. If the dispute is not resolved to the satisfaction of the parties, Owner or Contractor shall give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction unless the Owner and Contractor both agree to an alternative dispute resolution process.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION OF DEFECTIVE WORK

13.01 Tests and Inspections

A. Owner and Engineer will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access.

B. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

C. If any Work that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense.

13.02 Defective Work

A. Contractor shall ensure that the Work is not defective.

B. Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. The Contractor shall promptly correct all such defective Work.

E. When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. If the Work is defective or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

ARTICLE 14 - PAYMENTS TO CONTRACTOR

14.01 Progress Payments

A. The Contractor shall prepare a schedule of values that will serve as the basis for progress payments. The schedule of values will be in a form of application for payment acceptable to Engineer. The unit price breakdown submitted with the bid will be used for unit price work. Break lump sum items into units that will allow for measurement of Work in progress.

14.02 Applications for Payments:

A. Contractor shall submit an application for payment in a form acceptable to the Engineer, no more frequently than monthly, to Engineer. Applications for payment will be prepared and signed by Contractor. Contractor shall provide supporting documentation required by the Contract Documents. Payment will be paid for Work completed as of the date of the application for payment.

B. Beginning with the second application for payment, each application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior applications for payment.

14.03 Retainage

A. The Owner shall retain 5 percent of each progress payment until the Work is substantially complete.

14.04 Review of Applications

A. Within 10 days after receipt of each application for payment, the Engineer will either indicate in writing a recommendation for payment and present the application for payment to Owner or return the application for payment to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. The Contractor will make the necessary corrections and resubmit the application for payment.

B. Engineer will recommend reductions in payment (set-offs) which, in the opinion of the Engineer, are necessary to protect Owner from loss because the Work is defective and requires correction or replacement.

C. The Owner is entitled to impose set-offs against payment based on any claims that have been made against Owner on account of Contractor's conduct in the performance of the Work, incurred costs, losses, or damages on account of Contractor's conduct in the performance of the Work, or liquidated damages that have accrued as a result of Contractor's failure to complete the Work.

14.05 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

14.06 Substantial Completion

A. The Contractor shall notify Owner and Engineer in writing that the Work is substantially complete and request the Engineer issue a certificate of substantial completion when Contractor considers the Work ready for its intended use. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Engineer will make an inspection of the Work with the Owner and Contractor to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor and Owner in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete or upon resolution of all reasons for non-issuance of a certificate identified in 14.06.B, Engineer will deliver to Owner a certificate of substantial completion which shall fix the date of substantial completion and include a punch list of items to be completed or corrected before final payment.

14.07 Final Inspection

A. Upon written notice from Contractor that the entire Work is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.08 Final Payment

A. Contractor may make application for final payment after Contractor has satisfactorily completed all Work defined in the Contract, including providing all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents and other documents.

B. The final application for payment shall be accompanied (except as previously delivered) by:

1. All documentation called for in the Contract Documents;

2. Consent of the surety to final payment;

3. Satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any liens or other title defects, or will so pass upon final payment;

4. A list of all disputes that Contractor believes are unsettled; and

5. Complete and legally effective releases or waivers (satisfactory to Owner) of all lien rights arising out of the Work, and of liens filed in connection with the Work.

C. The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

14.09 Waiver of Claims

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 60 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension.

15.02 Owner May Terminate for Cause

A. Contractor's failure to perform the Work in accordance with the Contract Documents or other failure to comply with a material term of the Contract Documents will constitute a default by Contractor and justify termination for cause.

B. If Contractor defaults in its obligations, then after giving Contractor and any surety ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. Declare Contractor to be in default, and give Contractor and any surety notice that the Contract is terminated; and

2. Enforce the rights available to Owner under any applicable performance bond.

C. Owner may not proceed with termination of the Contract under Paragraph 15.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

D. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

E. In the case of a termination for cause, if the cost to complete the Work, including related claims, costs, losses, and damages, exceeds the unpaid contract balance, Contractor shall pay the difference to Owner.

15.03 Owner May Terminate for Convenience

A. Upon seven days written notice to Contractor, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for, without duplication of any items:

1. Completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. Other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner, and provided Owner does not remedy such

suspension or failure within that time, either stop the Work until payment is received, or terminate the Contract and recover payment from the Owner.

ARTICLE 16 - CONTRACTOR'S REPRESENTATIONS

16.01 Contractor Representations

A. Contractor makes the following representations when entering into this Contract:

1. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on:

   a. The cost, progress, and performance of the Work;

   b. The means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and

   c. Contractor's safety precautions and programs.

5. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

6. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

7. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

8. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that, without exception, all prices in the Contract are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 17 - MISCELLANEOUS

17.01 Cumulative Remedies

A. The duties and obligations imposed by this Contract and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.02 Limitation of Damages

A. Neither Owner, Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

17.03 No Waiver

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract.

17.06 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

(Remainder of page intentionally left blank.)

IN WITNESS WHEREOF, Owner and Contractor have signed this Contract.

This Contract will be effective on _____ (which is the Effective Date of the Contract).

OWNER:	CONTRACTOR:
San Juan County	
By: Mack McDonald	By:
Title: Chief Administrative Officer	Title:
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest:	Attest:
Title:	Title:
Address for giving notices:	Address for giving notices:
117 South Main Street	
Monticello, Utah, 84535	
	License No.: (where applicable)

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Contract.)

DOCUMENT 00 55 00
NOTICE TO PROCEED

Owner:	San Juan County	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	(2204-024)
Contractor:		Contractor's Project No.:	
Project:	Fairgrounds RV Stalls		
Contract Name:			
Effective Date of Contract:			

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date]**.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The number of days to achieve Substantial Completion is **[number of days, from Agreement]** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **[number of days, from Agreement]** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions.] or **[none.]**

Owner:	San Juan County
By *(signature)*:	
Name *(printed)*:	
Title:	
Date Issued:	

Copy: Engineer

DOCUMENT 00 61 13.13
PERFORMANCE BOND FORM

Contractor	**Surety**
Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	Name: Address *(principal place of business)*:
Owner	**Contract**
Name: San Juan County Mailing address *(principal place of business)*: 117 South Main Street, Monticello, Utah, 84535	Description *(name and location)*: Fairgrounds RV Stalls Monticello, Utah, 84535 Contract Price: **[Amount from Contract]** Effective Date of Contract: **[Date from Contract]**

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: None

DOCUMENT 00 61 13.16
PAYMENT BOND FORM

Contractor	**Surety**
Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	Name: Address *(principal place of business)*:
Owner	**Contract**
Name: San Juan County Mailing address *(principal place of business)*: 117 South Main Street, Monticello, Utah, 84535	Description *(name and location)*: Fairgrounds RV Stalls Monticello, Utah 84535 Contract Price: **[Amount, from Contract]** Effective Date of Contract: **[Date, from Contract]**

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: None

Contractor's Application for Payment

Owner:		**Owner's Project No.:**	
Engineer:		**Engineer's Project No.:**	
Contractor:		**Contractor's Project No.:**	
Project:			
Contract:			
Application No.:		**Application Date:**	
Application Period:	**From**	**to**	

1. Original Contract Price					$ -
2. Net change by Change Orders					$ -
3. Current Contract Price (Line 1 + Line 2)					$ -
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)					$ -
5. Retainage					
a.		X	$ -	Work Completed	$ -
b.		X	$ -	Stored Materials	$ -
c. Total Retainage (Line 5.a + Line 5.b)					$ -
6. Amount eligible to date (Line 4 - Line 5.c)					$ -
7. Less previous payments (Line 6 from prior application)					
8. Amount due this application					$ -
9. Balance to finish, including retainage (Line 3 - Line 4)					$ -

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor: _____

Signature: _____ **Date:** _____

Recommended by Engineer		**Approved by Owner**	
By:		**By:**	
Title:		**Title:**	
Date:		**Date:**	
Approved by Funding Agency			
By:		**By:**	
Title:		**Title:**	
Date:		**Date:**	

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: ______________________
Engineer: ______________________
Contractor: ______________________
Project: ______________________
Contract: ______________________

Owner's Project No.: ______________
Engineer's Project No.: ______________
Contractor's Project No.: ______________

Application No.: ______________ **Application Period:** **From** ______________ **to** ______________ **Application Date:** ______________

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Original Contract								
			-			-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
Original Contract Totals		$ -	$ -	$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment

Owner: ____________________ **Owner's Project No.:** __________
Engineer: ____________________ **Engineer's Project No.:** __________
Contractor: ____________________ **Contractor's Project No.:** __________
Project: ____________________
Contract: ____________________

Application No.: __________ **Application Period:** From __________ to __________ **Application Date:** __________

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Change Orders								
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
						-		-
	Change Order Totals	$ -	$ -	$ -	$ -	$ -		$ -
Original Contract and Change Orders								
	Project Totals	$ -	$ -	$ -	$ -	$ -		$ -

Progress Estimate - Unit Price Work **Contractor's Application for Payment**

Owner: ____________________ **Owner's Project No.:** __________
Engineer: ____________________ **Engineer's Project No.:** __________
Contractor: ____________________ **Contractor's Project No.:** __________
Project: ____________________
Contract: ____________________

Application No.: __________ **Application Period:** From __________ to __________ **Application Date:** __________

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Original Contract											
					-		-		-		-
					-		-		-		-
					-		-		-		-
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				Original Contract Totals	$ -		$ -	$ -	$ -		$ -

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: ______________________________

Engineer: ______________________________

Contractor: ______________________________

Project: ______________________________

Contract: ______________________________

Owner's Project No.: ____________

Engineer's Project No.: ____________

Contractor's Project No.: ____________

Application No.: ____________ **Application Period:** From ____________ to ____________ **Application Date:** ____________

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Change Orders											
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				Change Order Totals	$ -		$ -	$ -	$ -		$ -
Original Contract and Change Orders											
				Project Totals	$ -		$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment

Stored Materials Summary

Contractor's Application for Payment

Owner:
Engineer:
Contractor:
Project:
Contract:

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

Application No.:

Application Period: **From** **to**

Application Date:

A	B	C	D	E	F	G	H	I	J	K	L	M
						Materials Stored			Incorporated in Work			
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Previous Amount Stored ($)	Amount Stored this Period ($)	Amount Stored to Date (G+H) ($)	Amount Previously Incorporated in the Work ($)	Amount Incorporated in the Work this Period ($)	Total Amount Incorporated in the Work (J+K) ($)	Materials Remaining in Storage (I-L) ($)
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					Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ -

DOCUMENT 00 63 36

Field Order No. _____

Date of Issuance: Effective Date:

Owner: San Juan County Owner's Contract No.:

Contractor: Contractor's Project No.:

Engineer: Jones & DeMille Engineering Engineer's Project No.: (2204-024)

Project: Fairgrounds RV Stalls Contract Name:

Contractor is hereby directed to promptly execute this Field Order, issued in accordance with the Contract Documents, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference: _____ Specification(s) _____ Drawing(s) / Detail(s)

Description:

Attachments:

ISSUED:	RECEIVED:
By: _____ Engineer (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____
Date: _____	Date: _____

Copy to: Owner

DOCUMENT 00 63 49
WORK CHANGE DIRECTIVE NO.: [Number]

Owner:	San Juan County	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	(2204-024)
Contractor:		Contractor's Project No.:	
Project:	Fairgrounds RV Stalls		
Contract Name:			
Date Issued:		Effective Date of Work Change Directive:	

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for the Work Change Directive:

[Describe the purpose for the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—Check one or both of the following

☐ Non-agreement on pricing of proposed change. ☐ Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: $ _____ **[increase] [decrease] [not yet estimated]**.

Contract Time: _____ days **[increase] [decrease] [not yet estimated]**.

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price ☐ Cost of the Work ☐ Other

	Recommended by Engineer	Authorized by Owner
By:		
Title:		
Date:		

DOCUMENT 00 63 63
CHANGE ORDER NO.: [Number]

Owner:	San Juan County	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	(2204-024)
Contractor:		Contractor's Project No.:	
Project:	Fairgrounds RV Stalls		
Contract Name:			
Date Issued:		Effective Date of Change Order:	

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	**Change in Contract Times [State Contract Times as either a specific date or number of days]**
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. **[Number of previous Change Order]**: $ _____	**[Increase] [Decrease]** from previously approved Change Orders No.1 to No. **[Number of previous Change Order]**: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: $ _____	**[Increase] [Decrease]** this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

	Recommended by Engineer (if required)	Authorized by Owner
By:	_____	_____
Title:	_____	_____
Date:	_____	_____
	Accepted by Contractor	Approved by Funding Agency (if applicable)
By:	_____	_____
Title:	_____	_____
Date:	_____	_____

DOCUMENT 00 65 16
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	San Juan County	Owner's Contract No.:	
Contractor:		Contractor's Project No.:	
Engineer:	Jones & DeMille Engineering	Engineer's Project No.:	(2204-024)
Project:	Fairgrounds RV Stalls	Contract Name:	

This Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor.]*

Amendments to Owner's responsibilities: ☐ None ☐ As follows

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

DOCUMENT 00 65 19.21
NOTICE OF ACCEPTABILITY OF WORK

Owner:	San Juan County	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	(2204-024)
Contractor:		Contractor's Project No.:	
Project:	Fairgrounds RV Stalls		
Contract Name:			
Notice Date:		Effective Date of the Construction Contract:	

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between Owner and Engineer for Professional Services dated **[date of professional services agreement]** ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer's professional opinion.
3. This Notice has been prepared to the best of Engineer's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

SPECIFICATIONS

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Definitions.
2. Submittal schedule.
3. Submittal procedures.
4. Construction Progress Schedule.
5. Product data.
6. Shop Drawings.
7. Samples.
8. Closeout submittals.
9. Test reports.
10. Certificates.
11. Manufacturer's instructions.
12. Manufacturer's field reports.
13. Contractor review.
14. Engineer review.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's, Owner’s, or construction team’s responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL SCHEDULE

A. Engineer will create summary of submittals to indicate Submittals required for Project and provide electronic copy to Contractor in Microsoft Excel format. Use summary of submittals provided by Engineer to create Schedule of Submittals.

B. Include following on Schedule of Submittals:
1. Submit by Date: Date submittal will be delivered to Engineer.
2. Review by Date: Date submittal will be reviewed by Engineer and returned to Contractor. Unless agreed otherwise in writing by Contractor and Engineer, will be 10 business days after date Submittal is delivered to Engineer.

C. Submit Schedule of Submittals via Email within 10 business days of Notice of Award.

D. If during progress of Work additional Submittals are identified, update Schedule of Submittals to include additional Submittals.

E. Submittal dates are intended for scheduling purposes and may be adjusted as needed during progress of Work and as agreed upon by Contractor and Engineer.

1.4 SUBMITTAL PROCEDURES

A. Unless indicated otherwise, provide submittals in electronic portable document format (PDF). Deliver to Engineer by email**.**

B. For non-PDF Submittals, transmit each Submittal with transmittal or cover letter and deliver to Engineer at business address.

C. Mark Submittals with submittal number indicated on Schedule of Submittals. Mark revised Submittals with original number and sequential alphabetic suffix.

D. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and specification section number appropriate to Submittal.

E. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of Work and Contract Documents.

F. Schedule Submittals to expedite Project, and coordinate submission of related items.

G. For each Submittal for review, allow 10 business days, excluding delivery time to and from Contractor where applicable.

H. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

I. Allow space on Submittals for Contractor and Engineer review stamps.

J. When revised for resubmission, identify changes made since previous submission.

K. Distribute copies of reviewed Submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

L. Submittals not requested will not be recognized nor processed.

M. Incomplete Submittals: Engineer will not review. Provide complete Submittals for each required item. Delays resulting from incomplete Submittals are not responsibility of Engineer.

1.5 CONSTRUCTION PROGRESS SCHEDULE

A. Submit construction Progress Schedule before or at Preconstruction Meeting.

B. Revise and resubmit at least monthly with each Application for Payment.

C. Show complete sequence of construction by activity, identifying Work of separate stages/phases and other logically grouped activities.

1.6 PRODUCT DATA

A. Product Data:
   1. Action submittal.
   2. Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
   3. Submit as PDF electronic files.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. After review, distribute copies according to submittal procedures.

1.7 SHOP DRAWINGS

A. Shop Drawings:
   1. Action submittal.
   2. Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
   3. Submit as PDF electronic files.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual specification sections, provide Shop Drawings signed and sealed by professional engineer responsible for designing components shown on Shop Drawings.

1. Include signed and sealed calculations to support design.
2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. After review, distribute copies according to submittal procedures.

1.8 SAMPLES

A. Samples:
1. Action submittal.
2. Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Samples for Selection as Specified in Product Sections:
1. Submit to Engineer for aesthetic, color, and finish selection.
2. Submit Samples of finishes, textures, and patterns for Engineer selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual specification sections. If number of Samples is not specified, submit at least two Samples. Engineer will retain one Sample.

F. Reviewed Samples that may be used in Work are indicated in individual specification sections.

G. After review, produce copies and distribute according to submittal procedures.

1.9 CLOSEOUT SUBMITTALS

A. Closeout Submittals: Comply with General Conditions and Section 01 70 00.

B. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.

C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

D. Unless indicated otherwise, submit as PDF electronic files.

1.10 TEST REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

C. Submit as PDF electronic files.

1.11 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

D. Submit as PDF electronic files.

1.12 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.

B. Submit instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing to Engineer.

C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

D. Submit as PDF electronic files.

1.13 MANUFACTURER'S FIELD REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

B. Submit report within 5 days of observation to Engineer for information.

C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

D. Submit as PDF electronic files.

1.14 CONTRACTOR REVIEW

A. Review submittals for compliance with Contract Documents and approve submittals before transmitting to Engineer, otherwise submittal will be returned to Contractor.

B. Contractor is responsible for:
   1. Determination and verification of materials including manufacturer's catalog numbers.
   2. Determination and verification of field measurements and field construction criteria.
   3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
   4. Determination of accuracy and completeness of dimensions and quantities.
   5. Confirmation and coordination of dimensions and field conditions at Site.
   6. Construction means, techniques, sequences, and procedures.
   7. Safety precautions.
   8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until acceptance of submittals have been received from Engineer.

1.15 ENGINEER REVIEW

A. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.

B. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

C. Acceptance of Submittal does not authorize changes to Contract requirements unless accompanied by Change Order, Field Order, or Work Change Directive.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 ATTACHMENTS

A. See attached summary of submittals consisting of two pages.

END OF SECTION

SUMMARY OF SUBMITTALS

Section	Submittal	Contractor's Anticipated Submission Date
01 57 13 TEMPORARY EROSION AND SEDIMENT CONTROL	Product Data: Submit manufacturer's data for products and accessories.	
02 32 19 EXPLORATORY EXCAVATIONS	Submit description of method and equipment to be used for trenchless exploratory excavation.	
03 30 00 CAST-IN-PLACE CONCRETE	Design Data: Submit concrete mix design for each concrete class used. Identify mix ingredients and proportions, including admixtures.	
03 30 00 CAST-IN-PLACE CONCRETE	Batch Ticket: Submit to Engineer's onsite representative with each truck load delivered. Include information as follows: Name of batch plant. Name of Contractor and Project. Mix design number or designation. Class of concrete mix and type of cement. Time and date of batching. Cubic yards of concrete. Weights of cement and each size of aggregate. Amount of water added at plant and any additional water added. Amount of each admixture.	
03 30 00 CAST-IN-PLACE CONCRETE	Project Record Documents: Record actual locations of embedded utilities and components concealed from view in finished construction.	
03 30 00 CAST-IN-PLACE CONCRETE	Warranty: Submit before or with final application for payment.	
31 23 16 EXCAVATION	Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slopes.	
31 23 16.13 TRENCHING	Test Results: Submit proctor and density quality control test results within 24 hours after testing is completed.	
31 23 23 FILL	Test Results: Submit proctor and density quality control test results within 24 hours after testing is completed.	
32 11 16 SUBBASE COURSES	Test Reports: Submit test results indicating granular borrow meets material requirements.	

32 11 23 AGGREGATE BASE COURSES	Prior to Production: Identify aggregate source. Submit test results indicating aggregate meets material requirements indicated in Table 2 of this Section. Submit job-mix gradation indicating single value for each sieve size within bands shown on Table 3 this Section.	
32 11 23 AGGREGATE BASE COURSES	Changes to Job-Mix Gradation: Submit in writing prior to start of day's production. Changes are subject to acceptance by Engineer. Retroactive changes are allowed only for first day's production.	
33 08 10.13 PRESSURE TESTING WATER UTILITIES	Test Reports: For each test performed, submit report with following information as applicable: Project name and number, Test type, date, and times. Pipe size, type, location, and length. Test fluid. Test pressure at low point in pipeline or pipeline section. Written description and photograph indicating location of any pipe damage, leakage or other deficiency observed. Amount of leakage measured versus allowable leakage. Description of repairs or corrects made. Certification that leakage rate measured conforms to specifications. Name and signature of test supervisor.	
33 08 10.13 PRESSURE TESTING WATER UTILITIES	Submit test bulkhead locations and design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.	
33 08 10.13 PRESSURE TESTING WATER UTILITIES	If in-place testing is not possible, submit alternate plan for testing.	
33 14 15 SITE WATER UTILITY	Product Data: Provide data for pipe, pipe fittings, valves, service line, thrust restraint devices, tracer wire, splice capsules, fire hydrants, and accessories.	
33 14 15 SITE WATER UTILITY	Test Results: Submit one copy of each bacteriological test results.	
33 31 12 SANITARY SEWERAGE GRAVITY PIPING	Product Data: Provide data indicating pipe, fittings, warning tape, and accessories.	

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Labeling.

E. Quality control testing.

F. Acceptance testing and inspection services.

G. Nonconforming Work.

H. Related Requirements:
   1. Section 01 33 00 – Submittal Procedures

1.2 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as minimum quality for Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work using persons qualified to produce required and specified quality.

D. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards; comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.

B. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.5 LABELING

A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.

B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
   1. Model number.
   2. Serial number.
   3. Performance characteristics.

C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 ACCEPTANCE TESTING AND INSPECTION SERVICES

A. Owner will employ and pay for services of Engineer or independent firm to perform acceptance testing and inspection.

B. Payment for retesting or re-inspection may be charged to Contractor by deducting testing charges from Contract Price.

C. Acceptance testing will govern over quality control testing performed by Contractor.

1.7 NONCONFORMING WORK

A. Whether discovered by Contractor or Engineer, correct or replace nonconforming Work at no cost to Owner.

B. Materials or Work which fail quality control or acceptance testing, shall be rejected. Make corrections or replace as necessary to meet requirements of Contract Documents.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary utilities.

B. Construction Facilities:
   1. Vehicular access.
   2. Parking.
   3. Progress cleaning and waste removal.
   4. Traffic control.
   5. Signage

C. Temporary Controls:
   1. Barriers.
   2. Enclosures and fencing.
   3. Water control.
   4. Dust control.
   5. Erosion and sediment control.
   6. Pollution control.

D. Removal of utilities, facilities, and controls.

E. Related Requirements:
   1. Section 01 57 13 – Temporary Erosion and Sediment Control.

1.2 TEMPORARY UTILITIES

A. Provide and pay for temporary utilities such as, but not limited to: electricity, heat, telephone, water and sanitary facilities.

B. Provide and maintain required sanitary facilities. Existing sanitary facility use is not permitted. Provide facilities at time of Project mobilization.

1.3 VEHICULAR ACCESS

A. Construct temporary access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.

B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.

D. Locate as indicated on Drawings, or as reviewed and accepted by Engineer.

E. Provide unimpeded access for emergency vehicles. Maintain 20 foot-wide driveways with turning space between and around combustible materials.

F. Provide and maintain access to fire hydrants free of obstructions.

G. Provide means of removing mud from vehicle wheels before entering streets.

H. Use existing on-site roads for construction traffic.

1.4 PARKING

A. Use of existing parking facilities by construction personnel is permitted.

B. Maintain existing gravel and paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain surfacing and drainage in original condition.

C. Provide means of removing mud from vehicle wheels before entering parking areas and streets.

1.5 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

A. Collect and remove waste materials, debris, and rubbish from Site daily and dispose off-site.

B. Sweep and clean paved areas.

1.6 TRAFFIC CONTROL

A. Use traffic control equipment, devices, and personnel as necessary to direct traffic safely through or around construction areas.

B. Signs, Signals, and Devices: Conform to Manual on Uniform Traffic Control Devices (MUTCD). Provide as required during construction operations.
   1. Post-Mounted Traffic Control and Informational Signs.
   2. Traffic Control Signals.
   3. Traffic Cones, Drums, Flares, and Lights.
   4. Flag Person Equipment.
   5. Pilot car.

C. Traffic Signs and Signals:

1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
2. Provide, operate, and maintain traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control and areas affected by Contractor's operations.
3. Relocate signs and signals as Work progresses, to maintain effective traffic control.

D. Removal:
1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation.
3. Remove post settings to depth of 2 feet.

1.7 SIGNAGE

A. Existing signage affected by Project construction is responsibility of Contractor.
1. Coordinate with Owner and Engineer to verify if signage should be kept in use throughout construction process.
2. Remove or cover signage as necessary to ensure lack of confusion and safety of general public.
3. Where possible, re-install or uncover signage as work progresses to maintain effective public information.
4. After construction is complete re-install or uncover signage promptly.
5. Restore signage to equal or better condition as existed prior to construction.

1.8 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas and to protect public.

B. Provide barriers to protect existing facilities and adjacent properties from damage from construction operations and demolition.

C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.

1.9 ENCLOSURES AND FENCING

A. Fencing:
1. Construction: Contractor's option

1.10 WATER CONTROL

A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.

B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

C. Provide temporary drainage for storm water and irrigation water. Make repairs to correct damage caused by temporary or lack of temporary drainage.

1.11 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into occupied areas.

C. If water is used for dust control, provide adequate supply of water. Do not waste water or over saturate construction areas.

1.12 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize surface area of bare soil exposed at one time.

C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.

1.13 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before final inspection.

B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.

C. Clean and repair damage caused by installation or use of temporary Work.

D. Restore existing and permanent facilities used during construction to original condition, unless indicated otherwise.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Temporary controls to reduce erosion and sediment.
      a. Fiber roll check dam.
      b. Silt fence.
      c. Stabilized construction entrance.
   2. Installation, inspection, maintenance and removal of controls.

B. Related Requirements:
   1. Section 01 50 00 - Temporary Facilities and Controls.
   2. Section 31 23 16 - Excavation.
   3. Section 31 23 16.13 - Trenching.
   4. Section 31 23 23 - Fill.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer’s data for products and accessories.

1.3 QUALITY ASSURANCE

A. Perform Work according to Utah Department of Environmental Quality standards.

B. Obtain storm water permit from Utah Department of Environmental Quality for construction activities.

C. Prior to starting construction, submit Notice of Intent to Utah Department of Environmental Quality.

D. At completion of construction, submit Notice of Termination to Utah Department of Environmental Quality.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's packaging including application instructions.

B. Store products and materials according to manufacturer's instructions.

PART 2 PRODUCTS

2.1 MATERIALS

A. Fiber Roll Check Dam:
   1. Fiber Roll: Weed free straw inside durable tubular polyethylene netting. Secure ends of netting with ties or clips. Provide 12-inch nominal diameter and 4-pounds per cubic foot density.
   2. Stakes: Nominal 2 by 2 wood or steel.

B. Silt Fence:
   1. Posts: Nominal 2 by 2 wood posts
   2. Filter Fabric: Woven geotextile fabric comprised of UV stabilized polypropylene yarns. Mirafi 100X or–equal.
   3. Fasteners: Staples and wood batten strips.

C. Stabilized Construction Entrance:
   1. Filter Fabric: Woven geotextile fabric comprised of UV stabilized polypropylene yarns. Mirafi 100X or-equal.
   2. Aggregate: Washed rock with 3-inch to 5-inch gradation.

PART 3 EXECUTION

3.1 PREPARATION

A. Do not start earth disturbing work until appropriate erosion and sediment control measures are in place.

B. Contractor may elect to use other best management practices for erosion and sediment control.

C. Plan and execute construction by methods to control surface drainage from cuts and fills. Prevent erosion and sedimentation.

D. Minimize surface area of bare soil exposed at one time.

3.2 INSTALLATION

A. Provide temporary measures including berms, dikes, drains, and other devices for erosion and sediment control.

B. Inspection and maintenance schedule for sediment control devices:
   1. Silt Fence and Fiber Roll: Inspect weekly and following any storm event. Repair damaged silt fence or fiber roll immediately. Correct any gaps in silt fence or fiber roll, or areas where silt fence or fiber roll is not functioning properly. Remove sediment from silt fence or fiber roll when depth exceeds 4-inches.
   2. Site and Drainage Ditches: Inspect weekly and following any storm event. Correct problem areas as necessary.
   3. Stabilized Construction Entrance: Inspect daily and following any storm event. Remove sediment build up and add / replace aggregate as necessary to function properly. Regrade as necessary.

C. Inspect earthwork activities weekly to detect any evidence of erosion. Apply corrective measures in timely manner.

D. Erosion control measures are to remain in place until 75 percent of site has been fully developed. Full development requires installation of pavement surfaces, final grading, utilities and establishment of landscaping. Coordinate with Owner prior to removal of erosion control measures.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Section Includes:
1. Field engineering.
2. Closeout procedures.
3. Starting of systems.
4. Demonstration and instructions.
5. Project record documents.
6. Operation and maintenance data.
7. Spare parts and maintenance products.
8. Product warranties and product bonds.
9. Examination.
10. Preparation.
11. Execution.
12. Cutting and patching.
13. Protecting installed construction.
14. Final cleaning.

B. Related Requirements:
1. Section 01 33 00 – Submittal Procedures.

1.2 FIELD ENGINEERING

A. Owner will employ surveyor registered in State of Utah and provide field engineering services as follows:
1. Proposed Site Improvements.

B. Prior to beginning Work, verify and establish floor elevations of existing facilities and elevations of existing improvements to ensure that new Work will match existing elevations, except where specifically detailed or indicated otherwise.

C. Promptly notify Engineer minimum of 48 hours prior to expected time for operations requiring field engineering services.

D. Promptly notify Engineer of discrepancies discovered.

E. Protect survey control, reference and other staking during construction. Preserve permanent reference points. If due to neglect of Contractor, pay cost for re-staking.

F. Preserve permanent reference points. Promptly notify Engineer of loss or destruction of reference point or relocation required because of changes in grades or other reasons.

1.3 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
   1. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
   2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
   3. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
   4. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:
   1. When Contractor considers Work to be substantially complete, submit to Engineer and Owner:
      a. Written certificate that Work, or designated portion, is substantially complete.
      b. List of items to be completed or corrected (initial punch list).
   2. After receipt of request for Substantial Completion, Engineer will schedule inspection with Owner and Contractor to determine whether Work or designated portion is substantially complete.
   3. When Engineer and Owner find that Work is substantially complete, Engineer will prepare Certificate of Substantial Completion accompanied by list of items to be completed or corrected (final punch list).
   4. After Work is substantially complete, Contractor shall:
      a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
      b. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
   1. When Contractor considers Work to be complete, submit written certification that:

a. Work has been examined for compliance with Contract Documents.
b. Work has been completed according to Contract Documents.
c. Work is completed and ready for final inspection.

2. Submittals: Submit final punch list indicating all items have been completed or corrected

3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:

1. After receipt of request for final inspection, Engineer will schedule final inspection with Owner and Contractor to determine whether Work or designated portion is complete.

2. Should Engineer and Owner consider Work to be incomplete or defective:

a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
b. Contractor shall remedy stated deficiencies.
c. Repeat as necessary until Work passes Engineer's and Owner's inspection.

1.4 STARTING OF SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.

B. Notify Engineer and Owner at least seven days prior to startup of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.

1.5 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel prior to Final Completion.

B. For equipment or systems requiring seasonal operation, perform demonstration for each season.

C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time and location.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

F. Provide additional demonstrations and instructions for each item of equipment and system is specified in individual Specification Sections.

1.6 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set record documents as follows; record actual revisions to Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to Contract.
   5. Reviewed Shop Drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates used.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in Work, and change orders.
2. Include locations of concealed elements of Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured depths of foundations in relation to finish main floor datum.
7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of Work.
9. Field changes of dimension and detail.
10. Details not on original Drawings.

G. Submit marked-up paper copy documents to Engineer with claim for final Application for Payment.

1.7 OPERATION AND MAINTENANCE DATA

A. Submit data in PDF composite electronic indexed file and 3 hard copies bound in 8-1/2 by 11-inch text pages, three ring binders and with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.

C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages. For large format drawings which cannot be reasonably folded or reduced in size, provide neat, clean, and organized set.

E. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include information as follows:
    a. Significant design criteria.
    b. List of equipment.
    c. Parts list for each component.
    d. Operating instructions.
    e. Maintenance instructions for equipment and systems.
    f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
    g. Safety precautions to be taken when operating and maintaining or working near equipment.
3. Part 3: Project documents and certificates, including information as follows:
    a. Shop Drawings and product data.
    b. Air and water balance reports.
    c. Certificates.
    d. Photocopies of warranties and bonds.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

B. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.9 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include table of contents and assemble in three ring binder with durable plastic cover.

F. Submit prior to final Application for Payment.

G. Time of Submittals:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
   2. Make other submittals prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual Specification Sections.

D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step-in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
   1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
   2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
   3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Engineer for final decision.

E. Allow for expansion of materials and building/structure movement.

F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
   1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
   2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.

G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
   1. Refer questionable mounting heights choices to Engineer for final decision.
   2. Accessible Elements and Space: Comply with applicable codes and regulations.

H. Adjust operating products and equipment to ensure smooth and unhindered operation.

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

A. Employ skilled and experienced installers to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
   1. Structural integrity of element.
   2. Integrity of weather-exposed or moisture-resistant elements.

3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight-exposed elements.
5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and nonconforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products according to requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

3.5 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment. Employ experienced personnel or professional cleaning firm.

B. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.

C. Clean furnishings and finishes in accordance with requirements set forth in associated Specification Sections.

D. Clean or replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean Site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

SECTION 01 71 13
MOBILIZATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Mobilizing personnel, equipment, supplies and other incidental items to and from Project Site.
2. Providing, maintaining and removing temporary facilities and controls.

B. Related Requirements:
1. Section 01 50 00 - Temporary Facilities and Controls.

1.2 MOBILIZATION

A. Conduct preparatory work and operations necessary to move personnel, equipment, supplies and incidentals to Project Site before beginning Work.

B. Establish field offices, buildings, temporary utilities and other necessary facilities to complete Work.

C. Provide, erect and maintain signs, signals and devices necessary for traffic control.

D. Remove equipment, supplies, temporary facilities, and temporary controls from Site when no longer required.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Construction waste collection and disposal.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 SALVAGE RIGHTS

A. Owner retains salvage rights for all materials. Properly dispose of materials not claimed for salvage by Owner.

3.2 CONSTRUCTION WASTE COLLECTION

A. Collect construction waste materials in marked bins or containers and arrange for transportation to waste processing facilities.

B. Maintain recycling and adaptive reuse storage and collection area in orderly arrangement with materials separated to eliminate co-mingling of materials required to be delivered separately to waste processing facility.

3.3 CONSTRUCTION WASTE DISPOSAL

A. Deliver construction waste to waste processing facilities. Obtain receipt for deliveries.

B. Dispose of construction waste not capable of being recycled or adaptively reused by delivery to landfill, incinerator, or other legal disposal facility. Obtain receipt for deliveries.

END OF SECTION

SECTION 02 32 19
EXPLORATORY EXCAVATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Excavating to locate existing utilities.
   2. Coordinating location of existing utilities with new utilities.

B. Related Requirements:
   1. Section 01 50 00 – Temporary Facilities and Controls.
   2. Section 31 23 16.13 – Trenching.
   3. Section 33 14 15 – Site Water Utility.
   4. Section 33 31 12 – Sanitary Sewerage Gravity Piping.

1.2 DEFINITIONS

A. Exploratory Excavation: Excavation by conventional backhoe or trackhoe to locate existing utilities.

B. Trenchless Exploratory Excavation: Excavation by vacuum using high velocity air stream to remove materials or other acceptable method to locate existing utilities. Use method that produces no more than one to two foot square area of disturbance and as deep as necessary to expose buried utility.

1.3 SUBMITTALS

A. Submit description of method and equipment to be used for trenchless exploratory excavation.

1.4 EXISTING CONDITIONS

A. Verify field location of existing utilities and coordinate with location of new utilities prior to installation.

PART 2 PRODUCTS

2.1 MATERIALS

A. Bedding: Use bedding material as indicated below, unless utility company requires otherwise.
   1. Excavated material consisting of loam, sandy clay, sand, or gravel which is free from clods and rocks larger than 3/8-inch, frozen material, organic material, and debris.

2. If excavated material is unsuitable for bedding, import bedding consisting of loam, sandy clay, sand, or gravel which is free from clods and rocks larger than 3/8-inch, frozen material, organic material, and debris.

B. Backfill: Use excavated material, imported material or flowable fill as follows:
   1. Excavated Material: Material originating from trench which are free from rubbish, debris, organic material, frozen material, or other objectionable material.
      a. May include rocks originating from trench and not exceeding 4 inches.
      b. May include broken concrete and asphalt pavement originating from trench and not exceeding 4 inches.
   2. Imported Material: Imported soil with 4 inch maximum gradation and free from frozen material, organic material, debris, and other objectionable material.

C. Tracer Wire and Locator Tape: Match existing materials or provide approved equal materials. Provide water tight connectors where necessary.

D. Warning Tape: Match existing materials or provide approved equal materials.

PART 3 EXECUTION

3.1 PREPARATION

A. Identify location of new utility lines.

B. Protect plant life, lawns, fences, existing structures, sidewalks, paving, curbs, and other features remaining.

C. Protect bench marks and control points.

D. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.

E. When working on shoulders or within roadway, place barricades, warning signs, and flag persons as needed to protect public and Work in accordance with Section 01 50 00.

3.2 EXCAVATION

A. At locations where horizontal directional drilling is used to install new utilities, use trenchless excavation methods to determine horizontal and vertical location of existing utilities.

B. At other locations, use conventional, trenchless, or other acceptable methods to determine horizontal and vertical location of existing utilities.

C. Use existing utility location information to determine best suitable location for new utilities. If there are conflicts with existing and new utility locations, notify Engineer.

3.3 BEDDING

A. Place bedding at sides and over top of exposed utility line. Place bedding in layers not exceeding 6 inches compacted depth. Place bedding to total depth of 12 inches surrounding utility line.

B. Compact bedding to 96 percent of maximum laboratory density.

C. Maintain moisture content of bedding within plus or minus 2 percent of optimum.

3.4 BACKFILL

A. When using excavated or imported materials, backfill trenches in accordance with Section 31 23 16.13.

B. Grade surplus material to blend in with existing contours or remove surplus materials from site.

C. Restore surface improvements to equal or better condition as existed prior to construction.

3.5 PROTECTION

A. Protect existing utilities from damage or displacement. Repair or replace if damaged.

B. Protect locating service wires, such as tracer wire. Repair or replace if damaged.

C. Replace damaged or removed warning tape. If 3 feet or more of warning tape is damaged or removed, install new warning tape in excavated area.

END OF SECTION

SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Formwork for cast-in-place concrete.
   2. Shoring, bracing, and anchorage.
   3. Form accessories.
   4. Form stripping.

B. Related Requirements:
   1. Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCE STANDARDS

A. American Concrete Institute (ACI):
   1. ACI 117 - Specification for Tolerances for Concrete Construction and Materials.
   2. ACI 301 - Specifications for Structural Concrete.
   3. ACI 318 - Building Code Requirements for Structural Concrete.

B. American Forest & Paper Association (AF&PA):
   1. AF&PA - National Design Specification (NDS) for Wood Construction.

C. APA - The Engineered Wood Association (APA):
   1. APA PS 1 - Voluntary Product Standard - Structural Plywood.

D. ASTM International (ASTM):
   1. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

E. West Coast Lumber Inspection Bureau (WCLIB):
   1. WCLIB - Standard No. 17 Grading Rules for West Coast Lumber.

1.3 COORDINATION

A. Coordinate Work of this Section with other Sections of Work in forming and placing openings, slots, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

1.4 QUALITY ASSURANCE

A. Perform Work according to ACI 318.

B. For wood products furnished for Work of this Section, comply with AF&PA.

C. Perform Work according to San Juan County standards.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Design, engineer, and construct formwork, shoring, and bracing according to ACI 318 to conform to achieve concrete shape, line, and dimension as indicated on Drawings.

2.2 WOOD FORM MATERIALS

A. Form Materials: At discretion of Contractor.

B. Lumber Forms:
   1. Applications: Edge forms and unexposed finish concrete.
   2. Boards: Surface boards on four sides.
   3. Material: Standard grade Douglas fir according to WCLIB Standard No. 17 or equal.
   4. Size: As required for design.

C. Plywood Forms:
   1. Application: Exposed finish concrete.
   2. Description: Comply with APA PS 1. Use full size panels where possible and label panels in accordance with APA.
   3. Plywood for Surfaces to Receive Membrane Waterproofing:
      a. Minimum Thickness: 5/8-inch.
      b. Grade: B-B Plyform Structural I Exterior in accordance with APA.
   4. Plywood with Smooth Finish Indicated on Drawings:
      a. Minimum Thickness: ¾-inch.
      b. Grade: HD Overlay Plyform Structural I Exterior in accordance with APA.

2.3 PREFABRICATED FORMS

A. Preformed Steel and FRP Forms: Matched, tightly fitted, and stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

B. Tubular Column:

1. Description: Round spirally wound laminated fiber or glass fiber.
2. Surface Treatment: Release agent, non-reusable.
3. Sizes: As indicated on Drawings.

C. Void Forms:
1. Moisture-resistant treated paper faces; biodegradable.
2. Structurally sufficient to support weight of wet concrete mix until initial set.
3. Thickness: As required.

D. Form Liners: Smooth, durable, grainless, and non-staining hardboard unless otherwise indicated on Drawings.

E. Framing, Studding, and Bracing: Stud or No. 3 structural light-framing grade.

2.4 FORMWORK ACCESSORIES

A. Form Ties: Be suitable material, type, size, shape, quality, and strength to ensure construction as designed.

B. Spreaders:
1. Description: Standard, non-corrosive metal-form clamp assembly, of type acting as spreaders and leaving no metal within 1-inch of concrete face.
2. Wire ties, wood spreaders, or through bolts are not permitted.

C. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size, strength, and character to maintain formwork in place while placing concrete.
1. Form Release Agent: Colorless mineral oil that will not stain concrete or absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.
2. Bituminous Joint Filler: Comply with ASTM D1751.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels, and centers before proceeding with formwork.

B. Verify that dimensions agree with Drawings and Shop Drawings.

C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, consult with Engineer before proceeding.

3.2 INSTALLATION

A. Earth Forms:

1. Trench earth forms neatly, accurately, and at least 2-inches wider than footing widths indicated on Drawings.
2. Trim sides and bottom of earth forms.
3. Construct wood edge strips at top of each side of trench to secure reinforcing and to prevent trench from sloughing.
4. Form sides of footings where earth sloughs.
5. Tamp earth forms firm and clear them of debris and loose material before depositing concrete.

B. Formwork:
1. Provide top form for sloped surfaces steeper than 1.5 horizontal to 1 vertical to hold shape of concrete during placement, unless demonstrated that top forms can be omitted.
2. Construct forms to correct shape and dimensions, mortar-tight, braced, and of sufficient strength to maintain shape and position under imposed loads from construction operations.
3. Camber forms where necessary to produce level finished soffits unless indicated otherwise on Drawings.
4. Positioning:
    a. Carefully verify horizontal and vertical positions of forms.
    b. Correct misaligned or misplaced forms before placing concrete.
5. Complete wedging and bracing before placing concrete.
6. Erect formwork, shoring, and bracing to achieve design requirements according to ACI 301.
7. Stripping:
    a. Arrange and assemble formwork to permit dismantling and stripping.
    b. Do not damage concrete during stripping.
    c. Permit removal of remaining principal shores.
8. Obtain acceptance of Engineer before framing openings in structural members not indicated on Drawings.

C. Form Removal:
1. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
2. Loosen forms carefully; do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
3. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged.
4. Discard damaged forms.
5. Form Release Agent:
    a. Apply according to manufacturer instructions.
    b. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

c. Do not apply form release agent if concrete surfaces are indicated to receive special finishes or applied coverings that may be affected by agent.
d. Soak inside surfaces of untreated forms with clean water, and keep surfaces coated prior to placement of concrete.

6. Form Cleaning:
   a. Clean forms as erection proceeds to remove foreign matter within forms.
   b. Clean formed cavities of debris prior to placing concrete.
   c. Flush with water or use compressed air to remove remaining foreign matter.
   d. Ensure that water and debris drain to exterior through cleanout ports.
   e. Cold Weather:
      1) During cold weather, remove ice and snow from within forms.
      2) Do not use de-icing salts.
      3) Do not use water to clean out forms unless formwork and concrete construction proceed within heated enclosure; use compressed air or other dry method to remove foreign matter.
7. Reuse and Coating of Forms:
   a. Thoroughly clean forms and reapply form coating before each reuse.
   b. For exposed Work, do not reuse forms with damaged faces or edges.
   c. Apply form coating to forms according to manufacturer instructions.
   d. Do not coat forms for concrete indicated to receive scored finish.
   e. Apply form coatings before placing reinforcing steel.

D. Forms for Smooth Finish Concrete:
1. Use steel, plywood, or lined-board forms.
2. Use clean and smooth plywood and form liners, uniform in size, and free from surface and edge damage capable of affecting resulting concrete finish.
3. Install form lining with close-fitting square joints between separate sheets without springing into place.
4. Use full-sized sheets of form liners and plywood wherever possible.
5. Tape joints to prevent protrusions in concrete.
6. Apply forming and strip wood forms in manner to protect corners and edges.
7. Level and continue horizontal joints.
8. Keep wood forms wet until stripped.

E. Arrange formwork to allow proper erection sequence and to permit form removal without damage to concrete.

F. Construction Joints:
   1. Install surfaced pouring strip where construction joints intersect on exposed surfaces to provide straight line at joints.
   2. Just prior to subsequent concrete placement, remove strip and tighten forms to conceal shrinkage.
   3. Appearance:
      a. Show no overlapping of construction joints.
      b. Construct joints to present same appearance as butted plywood joints.
   4. Arrange joints in continuous line straight, true, and sharp.

G. Embedded Items:
   1. Make provisions for pipes, sleeves, anchors, inserts, anchor slots, nailers, waterstops, and other features.
   2. Do not embed wood or uncoated aluminum in concrete.
   3. Obtain installation and setting information for embedded items furnished under other Sections.
   4. Securely anchor embedded items in correct location and alignment prior to placing concrete.
   5. Ensure that conduits and pipes, including those made of coated aluminum, meet requirements of ACI 318 regarding size and location limitations.

H. Screeds:
   1. Set screeds and establish levels for top and finish on concrete slabs.
   2. Slope slabs to drain where required or as indicated on Drawings.
   3. Before depositing concrete, remove debris from space to be occupied by concrete and thoroughly wet forms; remove freestanding water.

I. Screed Supports:
   1. For concrete over waterproof membranes and vapor retarder membranes, use cradle-, pad-, or base-type screed supports that will not puncture membrane.
   2. Staking through membrane is not permitted.

J. Cleanouts and Access Panels:
   1. Provide removable cleanout sections or access panels at bottoms of forms to permit inspection and effective cleaning of loose dirt, debris, and waste material.
   2. Clean forms and surfaces against which concrete is to be placed.
   3. Remove chips, sawdust, and other debris.

4. Thoroughly blow out forms with compressed air just before concrete is placed.

3.3 TOLERANCES

A. Tolerances: Construct formwork to produce completed concrete surfaces within construction tolerances according to ACI 117.

B. Camber: As indicated on Drawings.

3.4 FIELD QUALITY CONTROL

A. Inspection:
   1. Inspect erected formwork, shoring, and bracing to ensure that Work complies with formwork design and that supports, fastenings, wedges, ties, and items are secure.
   2. Notify Engineer after placement of reinforcing steel in forms but prior to placing concrete. For walls, notify Engineer after placement of reinforcing steel but prior to placement of forms on one side of wall.
   3. Schedule concrete placement to permit formwork inspection before placing concrete.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes Cast-in-Place Concrete for Items as Follows:
   1. Thrust blocks.
   2. Utility collars.
   3. Control, expansion, and contraction joint devices.
   4. Concrete curing.

B. Related Requirements:
   1. Section 03 10 00 – Concrete Forming and Accessories.
   2. Section 33 14 15 – Site Water Utility System.

1.2 PRICE REDUCTION

A. Price Reduction for Compressive Strength:
   1. If compressive strength test of concrete does not meet requirement of Table 3 of this Section, Engineer may allow price reduction pending review of affected structural element. If allowed, Engineer will calculate price reduction using Table 1 of this Section.
   2. Price reduction will be dollar reduction per cubic yard from Table 1 of this Section multiplied by cubic yards of concrete place for compressive strength test represented.
   3. If test results for compressive strength are more than 400-pounds per square inch below specified compressive strength in Table 3 of this Section, Engineer will reject concrete and require removal.

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Table 1. Price Reduction for Compressive Strength

Compressive Strength Below Specified Strength (psi)	Reduction per Cubic Yard
1-100	$10.00
101-200	$25.00
201-300	$50.00
301-400	$100.00
Greater than 400	Reject

1.3 REFERENCE STANDARDS

A. American Concrete Institute (ACI):
   1. ACI 301 – Specifications for Structural Concrete.
   2. ACI 305.1 – Specification for Hot Weather Concreting.
   3. ACI 306.1 – Standard Specification for Cold Weather Concreting.
   4. ACI 308.1 – Specification for Curing Concrete.
   5. ACI 309R – Guide for Consolidation of Concrete.
   6. ACI 318 – Building Code Requirements for Structural Concrete.

B. ASTM International (ASTM):
   1. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   2. ASTM C33 - Standard Specification for Concrete Aggregates.
   3. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   4. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
   5. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete.
   6. ASTM C150 - Standard Specification for Portland Cement.
   7. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   8. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
   9. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
   10. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
   11. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
   12. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
   13. ASTM C685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
   14. ASTM C1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
   15. ASTM C1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
   16. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
   17. ASTM C1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

1.4 COORDINATION

A. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

1.5 SUBMITTALS

A. Design Data:
   1. Submit concrete mix design for each concrete class used.
   2. Identify mix ingredients and proportions, including admixtures.

B. Batch Ticket: Submit to Engineer's onsite representative with each truck load delivered. Include information as follows:
   1. Name of batch plant.
   2. Name of Contractor and Project.
   3. Mix design number or designation.
   4. Class of concrete mix and type of cement.
   5. Time and date of batching.
   6. Cubic yards of concrete.
   7. Weights of cement and each size of aggregate.
   8. Amount of water added at plant and any additional water added.
   9. Amount of each admixture.

1.6 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of embedded utilities and components concealed from view in finished construction.

B. Warranty: Submit before or with final application for payment.

1.7 QUALITY ASSURANCE

A. Perform Work according to ACI 318, unless indicated otherwise.

B. Acquire cement and aggregate from one source for Work.

1.8 AMBIENT CONDITIONS

A. Hot Weather Concreting: Comply with ACI 305.1, except as modified herein.
   1. From mixing to placement, maintain concrete temperature not to exceed 90 degrees Fahrenheit.
   2. When ambient air temperature exceeds 90-degrees Fahrenheit, moist cure concrete for minimum of 5-days following placement.
   3. Cool surfaces that will come in contact with concrete to below 95 degrees Fahrenheit.

B. Cold Weather Concreting: Comply with ACI 306.1, except as modified herein.
   1. When ambient air temperature is above 45-degrees Fahrenheit, maintain concrete temperature at minimum equal to air temperature, but not greater than 90-degrees Fahrenheit.
   2. When ambient air temperature is below 45-degrees Fahrenheit, maintain concrete temperature at or above but not more than 10-degrees Fahrenheit above minimum temperatures shown in Table 2 of this Section.

3. Do not place concrete without using blankets and heaters, or other accepted protective measures when ambient air temperature is less than 20-degrees Fahrenheit.
4. Adequately vent combustion-type heaters that produce carbon monoxide. Position heaters and ducts so hot air does not cause areas of concrete surface to overheat or over-dry. Maintain most conditions to avoid excessive loss of moisture from external heat.
5. Do not place concrete against adjacent concrete, foundations, formwork, reinforcing, or other items that are frozen or have surface temperature less than 40-degrees Fahrenheit.

Table 2.
Concrete Temperature (Degrees Fahrenheit) for Cold-Weather Construction

Condition		Sections less than 12 inches	Sections 12 to 36 inches	Sections 36 to 72 inches	Sections over 72 inches
Minimum temperature fresh concrete as mixed in weather indicated	Above 30 ˚F 0 ˚F to 30 ˚F Below 0 ˚F	60 65 70	55 60 65	50 55 60	45 50 55
Minimum temperature fresh concrete as placed and maintained (protection period)		55	50	45	40
Maximum allowable gradual drop in temperature in first 24 hours after end of protection		50	40	30	20

C. Measure concrete temperature with surface thermometer insulated from surrounding air.

D. Protection Period:
1. Maintain concrete temperature after placement at minimum temperatures shown in Table 2 of this Section for minimum six days.
2. For high-early strength concrete, maintain concrete temperature after installation at minimum temperatures shown in Table 2 of this Section for minimum three days.

1.9 WARRANTY

A. Provide written guarantee to promptly remove and/or repair defective concrete for two-year period after date of substantial completion.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete:
   1. Cement:
      a. Portland cement complying with ASTM C150.
      b. Use Type II - Moderate Sulfate Resistant or Type II-V blend for Class A through C concrete.
      c. Use Type V - High Sulfate Resistant for Class S2 and S3 concrete. Meet or exceed sulfate Exposure Class S2 Severe in accordance with Tables 4.2.1 and 4.3.1 of ACI 318.
   2. Coarse Aggregate:
      a. Comply with ASTM C33.
      b. Maximum Size: According to ACI 318.
         1) Not larger than 1/5 narrowest dimension between sides of form.
         2) Not larger than 1/3 depth of slab.
         3) Not larger than ¾ minimum clear distance between reinforcing bar or between reinforcing bars and forms, whichever is smallest.
   3. Fine Aggregate: Comply with ASTM C33.
   4. Water:
      a. Comply with ASTM C1602.
      b. Potable.

B. Admixtures:
   1. Do not use calcium chloride or admixtures that contain calcium chloride.
   2. Air Entrainment: Comply with ASTM C260. Use pre-measured admixtures for air entrainment added on site.
   3. Chemical: Submit with mix design for review prior to use.
      a. Comply with ASTM C494.
      b. Type A - Water Reducing. Slump requirements on Table 3 of this Section may be changed to 5-inches maximum for all classes of concrete.
      c. Type D - Water Reducing and Retarding. Slump requirements on Table 3 of this Section may be changed to 5-inches maximum for all classes of concrete.
      d. Type F - Water Reducing, High Range. Slump requirements on Table 3 of this Section may be changed to 9-inches maximum for all classes of concrete.
      e. Set retarding admixtures may be used when haul time will be exceeded. Establish effective life of concrete mix by trial batch.
   4. Fly Ash: Comply with ASTM C618, Class F, and not exceed 3-percent loss on ignition and do not exceed 15-percent CaO content. May be used to replace cement. Limit content of fly ash to 30-percent of required cement content by weight. Submit with mix design for review prior to use.

5. Plasticizing: Comply with ASTM C1017 and submit with mix design for review prior to use.

2.2 CONCRETE MIX

A. Determine mix design with required portions of cement, aggregate, admixtures, and water. Verify mix design with trial batch.

B. Provide concrete complying with Table 3 of this Section.

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Table 3. Concrete Class and Requirements							
Class	Coarse Aggregate Size (inches)	Maximum Water/ Cement Max Ratio (lb. /lb.)	Minimum Cement Content (Sacks/ C. Y.)	Slump (inches)	Air Content (Percent)	Mix Design Compressive Strength (PSI)	28 Day Minimum Compressive Strength (PSI)
S3 or S3(AE)	1" to No. 4	0.45	7.0	1-3.5	5.0-7.5	6520	5000
S2 or S2(AE)	1" to No. 4	0.45	6.5	1-3.5	5.0-7.5	5870	4500
AA(AE)	2" to No. 4	0.44	6.0	1-3.5	5.0-7.5	5210	4000
	1 1/2" to No.4	0.44	6.0	1-3.5	5.0-7.5	5210	4000
	1" to No. 4	0.44	6.5	1-3.5	5.0-7.5	5210	4000
	3/4" to No. 4	0.44	6.5	1-3.5	5.0-7.5	5210	4000
A or A(AE)	1 1/2" to No. 4	0.45	5.0	1-3.5	4.5-7.5	3910	3000
	1" to No. 4	0.45	5.0	1-3.5	4.5-7.5	3910	3000
	3/4" to No. 4	0.45	5.25	1-3.5	4.5-7.5	3910	3000
B or B(AE)		0.62	4.0	2-5	3.0-6.0	3260	2500
C or C(AE)		0.71	4.0	2-5	3.0-6.0	2610	2000

(AE) = Air-Entrainment

C. Ready-Mixed Concrete: Mix and deliver concrete according to ASTM C94. For remote locations where ready mixed concrete is not readily available, mix and deliver concrete according to ASTM C685.

D. Site-Mixed Concrete: Request and obtain acceptance from Engineer prior to using site-mixed concrete. Mix concrete according to ACI 318.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify requirements for concrete cover over reinforcement.

B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

A. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with epoxy.

B. If concrete subgrade is dry, dampen with water prior to placing concrete. Keep subgrade firm and free from excess water.

C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

D. Remove water from areas receiving concrete before concrete is placed.

3.3 INSTALLATION

A. Placing Concrete:
   1. Place concrete according to ACI 318.
   2. Notify Engineer minimum 48-hours prior to commencement of operations.
   3. Convey concrete from mixer to place of final position by methods that will prevent segregation of mix or loss of materials. Use tremie or other accepted method. Do not allow concrete to free fall more than 5 feet, or less if segregation of mix occurs.
   4. After concrete has been conveyed from mixer, do not add water. Adding water to place concrete will be cause for rejection.
   5. Place concrete in continuous operation for each panel or section as determined by predetermined joints.
   6. Consolidate concrete during placement using hand tools, mechanical vibrators, vibrating screeds, and finishing machines in accordance with ACI 309R. Consolidation techniques will be reviewed and accepted with Concrete Placement Plan.

a. Do not use vibrator to move concrete horizontally.
b. Do not vibrate high slump (greater than 6-inches) concrete, unless accepted by Engineer.
c. Do not over vibrate concrete.
d. Provide sufficient vibrators to consolidate concrete within 15-minutes after placement of concrete in forms.
e. Provide at least two vibrators for each concrete placement greater than 25-cubic yards.
f. Do not attach vibrators to or against forms or reinforcing steel.
g. Do not allow vibrators to penetrate concrete layers that have taken initial set.

7. Maintain records of concrete placement, including date, location, quantity, air temperature, and test samples taken.
8. Place concrete continuously between predetermined expansion, control, and construction joints.
9. Do not interrupt successive placement and do not permit cold joints to occur.

B. Concrete Finishing:
1. Provide non-slip broom finish to exterior concrete platforms and slabs. Slightly roughen concrete surface by grooming with fiber-bristle broom.
2. Do not use steel trowels or fresno to finish exterior concrete.
3. Do not use jitter bugs for concrete consolidation.

C. Curing and Protection:
1. Immediately after placement, protect concrete from premature drying, excessively hot, or cold temperatures, and mechanical injury.
2. Maintain concrete with minimal moisture loss at relatively constant temperature for period as necessary for hydration of cement and hardening of concrete.
3. Cure horizontal concrete surfaces according to ACI 308.1 using one of following methods:
a. Ponding: Maintain 100-percent coverage of water over slab continuously for seven days.
b. Spraying: Spray water over slab and maintain wet for seven days.
c. Absorptive Matt: Cover slab with saturated mat lapping ends and sides. Maintain saturated condition for seven days.
d. Membrane Curing Compound: Apply curing compound in two coats with second coat applied at right angles to first.
e. Polyethylene Film: Spread over slab, lap edges and sides, seal with pressure sensitive tape and cover with plywood as necessary to secure film. Maintain in place for seven days.
4. Cure vertical surfaces according to ACI 308.1 using one of following methods:

a. Spraying: Spray water over surface and maintain wet for seven days.
b. Membrane Curing Compound: Apply curing compound in two coats with second coat applied at right angles to first.

5. Provide additional protection as necessary to prevent freezing during cold weather.
6. Use curing method which is compatible with finish coat of concrete surface.

3.4 FIELD ACCEPTANCE TESTING

A. Engineer will perform in accordance with ACI 318 and referenced standards.

B. Field Testing: Comply with ASTM C172. Sample and test concrete at least once for every 50-cubic yards or less of each class of concrete placed each day.
1. Slump Test: Comply with ASTM C143.
2. Air Content Test: Comply with ASTM C231.
3. Perform initial air and slump test on first truck of each day prior to placing concrete in forms.
a. If initial air and slump test are acceptable, proceed with placement of concrete.
b. If initial air and slump tests are not acceptable, reject concrete and remove from site or make required corrections to make concrete acceptable.
4. Perform final air and slump tests on middle portion of batch in accordance with ASTM C172.
5. Temperature Test: Comply with ASTM C1064.
6. Compressive Strength Test: Comply with ASTM C31 and C39.
a. Cast four cylinders.
b. Test one cylinder at 7-days.
c. Test three cylinders at 28-days. Compressive strength will be average of three cylinders.
7. If tests are not acceptable, make adjustments in mix design and/or production. If necessary, remove and replace Work.

3.5 NON-CONFORMING WORK

A. Optional Core Compressive Strength Testing: If compressive strength test fails, compressive strength testing by core samples may be requested. Submit detailed request to Engineer.
1. Sampling and Testing Procedures: Comply with ASTM C42.
2. Drill three cores for each failed strength test from failed concrete.
3. If compressive strength test of cores does not meet requirements of Table 3 of this Section, Engineer may reject concrete and require

removal or allow concrete to remain with price reduction. Price reduction or replacement will be at discretion of Owner and Engineer.

B. Patching:
   1. Allow Engineer to observe concrete surfaces immediately upon removal of forms.
   2. Honeycombing or Embedded Debris in Concrete:
      a. Not acceptable.
      b. Notify Engineer upon discovery.
   3. Patch imperfections as indicated by Engineer.

C. Defective Concrete:
   1. Description: Concrete not conforming to required lines, details, dimensions, tolerances, or specified requirements.
   2. Repair or replacement of defective concrete will be indicated by Engineer.
   3. Do not patch, fill, touch up, repair, or replace exposed concrete, except as indicated by Engineer for each individual area.

END OF SECTION

SECTION 31 05 16
AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Coarse aggregate materials.
   2. Fine aggregate materials.

B. Related Requirements:
   1. Section 32 11 23 - Aggregate Base Courses.

1.2 SUBMITTALS

A. Samples: In air-tight containers, 10 lb. sample of each type of fill to testing laboratory.

B. Materials Source: Name of imported materials suppliers.

C. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

A. Furnish each aggregate material from single source throughout Work.

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

A. Coarse Aggregate Type A1 (Untreated Base Course): Conform to Section 32 11 23.

B. Coarse Aggregate Type A2 (Select Fill): AASHTO M147, hard durable fragments of stone or gravel, free from organic matter with liquid limit of not more than 25; plasticity index of not more than 5 according to ASTM D4318. within following limits:

Sieve Size	Percent Passing
3 inches	100
1-1/2 inch	90 to 100
No. 4	30 to 70
No. 8	20 to 60
No. 30	10 to 40
No. 200	0 to 12

C. Coarse Aggregate Type A3 (Gravel): Screened or Crushed Gravel : stone; free of shale, clay, friable material and debris; graded according to ASTM C136; within following limits:

Sieve Size	Percent Passing
2 inches	100
1 inch	95
3/4 inch	50 to 100
3/8 inches	15 to 55
No. 4	0 to 25
No. 200	0 to 5

D. Aggregate Type A4 (Pea Gravel): Natural stone; washed, free of clay, shale, organic matter; graded according to ASTM C136 ASTM D2487 Group Symbol GM ASTM D2487 Group Symbol GC ASTM D2487 Group Symbol; to following limits:
1. Minimum Size: 1/4 inch.
2. Maximum Size: 5/8 inch.

2.2 FINE AGGREGATE MATERIALS

A. Fine Aggregate Type A6 (Sand): Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded according to ASTM C136; within following limits:

Sieve Size	Percent Passing
No. 4	100
No. 14	10 to 100
No. 50	5 to 90
No. 100	4 to 30
No. 200	0

2.3 SOURCE QUALITY CONTROL

A. Coarse Aggregate Material - Testing and Analysis: Perform according to AASHTO T180.

B. Fine Aggregate Material - Testing and Analysis: Perform according to AASHTO T180.

C. When tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 EXCAVATION

A. Stockpile excavated material meeting requirements for coarse aggregate materials and fine aggregate materials.

B. Remove excess excavated materials, coarse aggregate materials and fine aggregate materials not intended for reuse, from Site.

C. Remove excavated materials not meeting requirements for coarse aggregate materials and fine aggregate materials from Site.

3.2 STOCKPILING

A. Stockpile materials on Site at locations accepted by Engineer.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.

D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

E. Stockpile unsuitable or hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of.

3.3 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade Site surface to prevent free-standing surface water.

B. When borrow area is indicated, leave area in clean and neat condition. Grade Site surface to prevent free standing surface water.

END OF SECTION

SECTION 31 23 13
SUBGRADE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Grading, scarifying, watering and compacting for subgrade preparation.

B. Related Requirements:
1. Section 31 23 16 – Excavation.
2. Section 31 23 23 – Fill.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
3. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

1.3 DEFINITIONS

A. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.

B. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve

C. Soil Classification: In accordance with ASTM D2487 and AASHTO M145.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify subgrade is ready for final grading and compacting.

3.2 PREPARATION

A. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements.

B. Excavate soil to subgrade elevation in accordance with Section 31 23 16.

C. Place excavated soil in fill sections in accordance with Section 31 23 23.

3.3 SUBGRADE PREPARATION

A. After excavating to subgrade elevation, scarify and re-compact top (8)-inches of subgrade soil prior to placing subbase and base course materials.

B. Compact subgrade to minimum 95 percent of maximum laboratory density.

C. Maintain optimum moisture content of subgrade soil. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.

D. Proof roll subgrade and notify Engineer of any soft spots.

3.4 FINISHING

A. Finish subgrade to reasonably smooth and uniform surface.

3.5 TOLERANCES

A. Finish Subgrade Surface: Plus or minus 0.04-foot from required grade and plus or minus 0.1-foot from required line.

B. Subgrade Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.

3.6 FIELD ACCEPTANCE TESTING

A. Maximum Laboratory Density: Engineer will determine in accordance with AASHTO T180, Method D for A-1 soils and AASHTO T99, Method D for other soils .Test each type of soil encountered on site.

B. Establish roller patterns necessary to achieve density indicated.

C. Density Tests: Engineer will perform in accordance with ASTM D6938.

1. Frequency: Take minimum of two tests for each 1,500 square yards of subgrade.

2. Acceptance: Equals or exceeds density indicated in this Section.

3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.7 PROTECTION

A. Protect existing utilities and improvements indicated to remain, from damage.

B. Repair or replace items damaged by operations.

C. Maintain subgrade until next layer is placed.

END OF SECTION

SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Excavating topsoil and soil.
2. Excavating soft spots and rock.
3. Over excavation.
4. Dewatering.

B. Related Requirements:
1. Section 31 23 13 – Subgrade Preparation.
2. Section 31 23 23 – Fill.
3. Section 32 11 16 – Subbase Courses.
4. Section 32 11 23 – Aggregate Base Courses.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):
1. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.3 DEFINITIONS

A. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.

B. Excavation Classification: Will be based on soil type and equipment required.
1. Excavation: Excavation of unclassified soils. Use minimum of D8 bulldozer, 330 trackhoe with ripper shank, or equal equipment. Contractor may elect to use larger equipment, but electing to use larger equipment will not change classification of excavation.
2. Rock Excavation: Excavation of solid rock which requires using excavator with rock hammer or use of explosives and cannot be removed with minimum equipment required for unclassified soils noted above.

C. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.

D. Soil Classification: ASTM D2487.

E. Subgrade Soft Spot Repair: Excavation of soft spots below subgrade and backfilling with granular borrow to subgrade elevation. Use of geotextile and geogrid will be determined by Engineer.

F. Topsoil: Top 6 inches of existing onsite soil.

1.4 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slopes.

1.5 QUALITY ASSURANCE

A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

A. Structural Fill: Untreated base course in accordance with Section 32 11 23.

B. Granular Borrow: In accordance with Section 32 11 16.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify survey benchmark and intended elevations for Work are as indicated on Drawings.

3.2 PREPARATION

A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.

B. Where indicated, notify utility company to remove or relocate utilities.

C. Identify required lines, levels, contours, and datum.

D. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.

E. Where necessary, remove vegetation from site.

3.3 TOPSOIL EXCAVATION

A. Excavate existing on-site soils to depth of 6-inches to remove topsoil from areas to be further excavated, re-landscaped, or regraded, without mixing with foreign materials for use in finish grading.

B. Do not excavate excessively wet topsoil.

C. Stockpile topsoil on site and protect from erosion.

D. Remove excess topsoil not intended for reuse, from Site.

3.4 SOIL EXCAVATION

A. Excavate soil as required to construct improvements, provide drainage, accommodate construction operations, and as indicated on Drawings.

B. Do not excavate excessively wet soil.

C. When excavating through roots of trees which are to remain, perform Work by hand and cut roots with sharp axe.

D. Slope banks to angle of repose or less until shored. Provide shoring as needed.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Correct areas over excavated with structural fill in accordance with Section 32 11 23.

G. Compact disturbed load bearing soil in direct contact with footings to original density.

H. Remove lumped soil, boulders, rock and unsuitable soils from site.

I. Trim excavation to required elevation. Remove loose materials.

J. Stockpile soil on site and protect from erosion.

K. Horizontally bench existing slopes greater than 4:1 (horizontal to vertical) to key placed fill material to slope to provide firm bearing.

3.5 SOFT SPOT EXCAVATION

A. If soft areas appear, scarify, aerate and re-compact. If soft areas persist, notify Engineer. Coordinate soft spot excavation with Engineer.

B. If soft areas are due to neglect by Contractor, correct soft areas with no additional compensation by Owner.

C. Engineer will determine depth and area to be excavated for soft spot repairs. Excavate unsuitable soil and dispose offsite.

D. Backfill soft spot excavation with granular borrow in accordance with Section 32 11 16, unless indicated otherwise on Drawings or indicated otherwise by Engineer.

3.6 ROCK EXCAVATION

A. Rock excavation is not anticipated.

3.7 DEWATERING

A. Keep excavation free from surface and ground water. Keep excavation free of standing water.

B. Maintain adequate drainage through pumping, pipe culverts, drainage ditches, and other methods.

C. Provide temporary facilities when interrupting utilities, irrigation, drainage and other systems.

D. Grade perimeter of excavation to prevent surface water from draining into excavation.

3.8 FINISHING

A. Finish excavation area to reasonably smooth and uniform surface.

3.9 TOLERANCES

A. Top Surface of General Excavated Areas: Plus or minus 0.1-foot from required elevation.

B. Top Surface of Subgrade: Plus or minus 0.04-foot from required elevation.

3.10 FIELD ACCEPTANCE TESTING

A. For structures, request visual inspection of bearing surfaces by Engineer before installing subsequent work.

3.11 PROTECTION

A. Protect existing utilities and improvements indicated to remain, from damage.

B. Protect plant life, lawns, and other features remaining as part of final landscaping.

C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

D. Protect benchmarks and survey control point from damage or displacement.

E. Repair or replace items damaged by earthwork operations.

F. Maintain subgrade until next layer is placed.

END OF SECTION

SECTION 31 23 16.13
TRENCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Excavating trenches for utilities and utility structures.
2. Backfill and compaction for utility trenches.
3. Rock excavation for trenches.

B. Related Requirements:
1. Section 02 32 19 - Exploratory Excavations.
2. Section 33 14 15 - Site Water Utility.
3. Section 33 31 12 - Sanitary Sewerage Gravity Piping.
4. Section 33 31 15 - Site Sanitary Sewerage Utility.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO M145 - Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
3. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International (ASTM):
1. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
2. ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

C. Occupational Safety and Health Administration (OSHA).

1.3 DEFINITIONS

A. Backfill: Material placed after utilities and bedding.

B. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.

C. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.

D. Soil Classification: ASTM D2487 and AASHTO M145.

E. Trench Excavation Classification: Will be based on soil type and equipment required.
   1. Trench Excavation: Excavation of unclassified soils. Use minimum of 330 trackhoe with ripper shank or equal equipment. Contractor may elect to use larger equipment, but electing to use larger equipment will not change classification of excavation.
   2. Rock Trench Excavation: Excavation of solid rock which requires using excavator with rock hammer or use of explosives, and cannot be removed with minimum equipment required for unclassified soils noted above.

F. Utility: Any buried pipe, duct, conduit, cable and appurtenance.

PART 2 PRODUCTS

2.1 MATERIALS

A. Backfill: Excavated material free from rubbish, debris, organic material, frozen material, or other objectionable material.
   1. Rocks originating from trench and not exceeding 12 inches.
   2. Broken Portland cement concrete and asphalt concrete pavement originating from trench and not exceeding 6 inches.
   3. If excavated material is not suitable for backfill, import granular material.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify field measurements and existing utilities being crossed prior to Work.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

3.2 PREPARATION

A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.

B. Make exploratory excavations as necessary to locate existing utilities to avoid utility conflicts and make utility connections. Make exploratory excavations in accordance with Section 02 32 19.

C. Identify required location and elevation of new utility lines and buried structures.

D. Notify Engineer immediately after utility conflicts are identified.

E. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.

F. When working on shoulders or within roadway, use traffic regulation measures in accordance with Section 01 50 00 to direct traffic through work zone.

G. Install appropriate erosion and sediment control measures prior to starting trenching.

H. Clear vegetation, debris, and rubbish from utility alignment. Dispose of material off site.

I. When service lines cross paved roads, install service line by jacking, moleing, or augering under pavement.

J. When trench is in sodded areas, carefully remove sod and stockpile for placement after backfill is placed.

K. When trench is in cultivated areas, remove 12 inches of topsoil and stockpile for placement as final layer of backfill.

3.3 EXCAVATION

A. Excavate soil required for installation of utility lines and appurtenances.

B. Cut trenches sufficiently wide to enable installation of pipe and appurtenances, and allow inspection. Cut slope of trench walls to meet Utah State Industrial Commission and OSHA requirements, and soil conditions. Provide shoring where needed. Take necessary precautions to protect employees in or around excavations.

C. Remove water from trench. Maintain trenches free from water. Dewatering of trench will be considered incidental to trenching and shall be included in bid price.

D. Hand trim excavation for bell and spigot pipe joints and to required elevation for buried structures. Remove materials that interfere with Work.

E. Remove lumped soil, boulders, and rock.

F. Correct areas over excavated and re-compact.

G. Stockpile excavated material alongside of trench or in other areas to minimize damage to improvements.

H. No more than 500 linear feet of open trench permitted. At end of each work day, bring backfill operation concurrent with excavation operation.

I. For pipe, minimum width of trench shall not be less than outside diameter of pipe plus 12 inches on each side of pipe.

J. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and utilities.

K. Cut out soft areas of subgrade not capable of compaction in place. Backfill with coarse grained soil, and compact to density equal to or greater than requirements for subsequent backfill material.

3.4 ROCK EXCAVATION

A. Rock excavation is not anticipated.

3.5 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.

B. Use laser-beam instrument with qualified operator to establish lines and grades.

C. Engineer may make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

3.6 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil. Meet OSHA requirements.

B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

C. Design sheeting and shoring to be removed at completion of trenching work.

D. Repair damage caused by failure of sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to new and existing work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.7 BACKFILL

A. After utilities, appurtenances, and bedding have been installed; backfill trenches. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

B. Employ placement method that does not disturb or damage utilities and other improvements.

C. Backfill in layers not exceeding 12 inches non-compacted depth. Reduce layer thickness if tests show unsatisfactory density. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment. When using hand-operated compaction equipment, backfill in layers not exceeding 6 inches no-compacted depth.

D. Mix rocks with finer material to minimize voids. Do not place rocks exceeding 2 inches within 12 inches of pavement subgrade and within 2 feet of structures.

E. When trench is in cultivated areas, place stockpiled topsoil in final layer of backfill. Remove rocks exceeding 1.5 inches from topsoil.

F. Maintain optimum moisture content of backfill materials to attain required compaction density.

G. Compact backfill to density indicated in Compaction Schedule at end of this Section.

H. Grade surplus material to blend in with existing contours or remove surplus materials from site if necessary. Do not leave rocks originating from trench and exceeding 2 inches on finish grade.

I. Slope surface grade away from buried structures.

J. Restore damaged surface improvements including, but not limited to: fences, ditches, culverts, signs, delineators, curbs, sidewalks, structures, landscaping, and other miscellaneous items. Restore improvements to equal or better condition as existed prior to construction.

K. Make roadway repairs or construct temporary gravel surface immediately after backfill is placed. Maintain gravel surface until final surface is placed.

3.8 TOLERANCES

A. Top Surface of General Backfill: Plus or minus 0.1 foot from required elevations.

B. Top Surface of Backfill under Paved Areas: Plus or minus 0.04 foot from required subgrade elevation.

C. Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.

3.9 FIELD ACCEPTANCE[KA1] TESTING

A. Maximum Laboratory Density: Engineer will determine in accordance with AASHTO T180, Method D for A-1 soils and AASHTO T99, Method D for other soils **.** Test for each type of soil encountered on site.

B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.

C. Density Tests: Engineer will perform in accordance with ASTM D6938.
   1. Frequency: Take minimum of one density test per lift for each 500 linear feet of trench and take minimum of one density test per lift for each road crossing.
   2. Acceptance: Average density equals or exceeds density indicated in Compaction Schedule at end of this section. Reject single density tests greater than 4 percent below specified density.
   3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.10 PROTECTION OF FINISHED WORK

A. Protect utilities indicated to remain from damage.

B. Protect existing improvements to remain from damage.

C. Protect bench marks and survey control point from damage or displacement.

D. Protect finished Work from damage.

E. Reshape and re-compact trenches subjected to vehicular traffic during construction. Add and compact additional material to trenches which settle 0.75 inch or greater.

3.11 COMPACTION SCHEDULE

A. Non Traveled Areas: Compact backfill to minimum 90 percent of maximum laboratory density. Includes trenches in landscape areas and unimproved areas.

B. Traveled Areas and Structures: Compact backfill to minimum 96 percent of maximum laboratory density. Includes trenches below structures, sidewalks, roads, parking lots, driveways and roadway shoulders within 10 feet of pavement edge.

END OF SECTION

SECTION 32 01 23.19
BASE SOFT SPOT REPAIR

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removing soft spots in existing aggregate base course.
   2. Replacing aggregate base course.

B. Related Requirements:
   1. Section 32 11 23 – Aggregate Base Courses.

1.2 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record locations of base soft spot repairs.

1.3 QUALITY ASSURANCE

A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

A. Untreated Base Course (UBC): In accordance with Section 32 11 23.

PART 3 EXECUTION

3.1 EXAMINATION

A. Notify Engineer if soft spots are discovered in existing aggregate base course.

B. Allow Engineer to observe aggregate base course soft spots.

3.2 PREPARATION

A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.

B. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.

3.3 REPAIR

A. Excavate and remove existing aggregate base course and subgrade soil as necessary to 12 inch depth and dispose of materials offsite.

B. Remove material without damaging surrounding aggregate base course.

C. Leave edges square and vertical. Remove loose material and clean vertical edges.

D. Allow Engineer to observe condition of subgrade prior to making repairs. Remove additional material when determined by Engineer.

E. Compact existing subgrade material. Use largest vibratory or impact compaction equipment possible. Add water or aerate as necessary to maintain optimum moisture content of subgrade material. Compact until there is no additional improvement to measured density. Use nuclear gage to measure density.

F. Place and compact untreated base course in 6 inch layers to total depth of 12 inches in accordance with Section 32 11 23.

3.4 FINISHING

A. Finish repair area to reasonably smooth and uniform surface. Match finish grade elevation of existing aggregate base course.

3.5 PROTECTION

A. Protect existing utilities and improvements indicated to remain, from damage.

B. Repair or replace items damaged by operations.

END OF SECTION

SECTION 32 11 16
SUBBASE COURSES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Granular borrow for subbase course.
   2. Granular borrow for backfill and soft spot repairs.

B. Related Requirements:
   1. Section 31 23 16 – Excavation.
   2. Section 31 23 16 – Fill.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
   2. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

1.3 DEFINITIONS

A. Lot: One day's production.

B. Rocky Material: Material with more than 30-percent retained on ¾-inch sieve.

C. Soil Classification: AASHTO M145.

1.4 SUBMITTALS

A. Test Reports:
   1. Submit test results indicating granular borrow meets material requirements.

1.5 QUALITY ASSURANCE

A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

A. Granular Borrow: Natural gravel or crushed rock.

1. Classification: AASHTO M145, A-1-a through A-1-b.
2. Gradation: 6-inches maximum.

PART 3 EXECUTION

3.1 PREPARATION

A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place granular borrow on soft, muddy, or frozen surfaces.

C. Do not place granular borrow until subgrade is accepted by Engineer.

3.2 INSTALLATION

A. Place granular borrow in layers not exceeding 12-inches. If necessary to obtain required compaction, reduce layer thickness.

B. Place to thickness, elevation, and grades indicated on Drawings.

C. Compact to density indicated in this Section. Establish roller patterns necessary to achieve required density.

D. Maintain optimum moisture content. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.

E. Use hand-operated mechanical tamping equipment in areas inaccessible to self-propelled compaction equipment.

3.3 TOLERANCES

A. Moisture Content: Plus, or minus 2-percent of optimum. Test in accordance with ASTM D6938.

B. Total Compacted Thickness: Plus, or minus ½-inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compact.

C. Top Surface of granular borrow: Plus, or minus 0.04-foot from required elevation.

3.4 FIELD ACCEPTANCE TESTING

A. Maximum Laboratory Density: Engineer will determine in accordance with AASHTO T180, Method D **,** excepted as indicated below for rocky material.

B. Maximum Field Density for Rocky Material: Determine in accordance with requirements as follows:

1. Use test strip at least 100-feet long and 18-feet wide.
2. Place first lift of granular borrow at optimum moisture content and make two roller passes. Keep equipment off test strip, except equipment required for compaction.
3. Select 3 random test locations on test strip. Select test locations at least 30-feet from sources of radiation, 10-feet from large objects such as structures, and 12-inches from unsupported edge.
4. Take one minute reading at each test location with gauge in direct transmission mode taken at depth of ½ lift thickness. Test in accordance with ASTM D6938.
5. Record dry density test results, pounds per cubic foot, for each test location.
6. Check that test results from 3 test locations are within 3-pounds per cubic foot of each other. If test results are not within 3-pounds per cubic foot, one or more test locations may be reading oversize rock or void. Move to new test location for each suspect location and retest. Repeat until satisfactory test results are obtained.
7. Record average of density and moisture results with number and type of passes, vibratory or static.
8. Clearly mark test locations, such as with paint; do not paint gauge.
9. Take subsequent density determinations in same locations and same gauge orientation as first test.
10. Make two or more roller passes over entire test strip.
11. Repeat density determinations.
12. Record density results and total number of passes.
13. Continue rolling and testing, maintaining moisture content, until density test results decrease or maintain same results, within 1-pound per cubic foot. Perform one more roller pass, in static mode, and take density test determination. Final density test should not show decrease of more than 1.5-pound per cubic foot.
14. Note, slight decrease in density may be observed before maximum density is achieved. If suspected, examine material and if no fracture of material is visible, continue rolling/density testing process until maximum density is achieved.
15. Plot average field density on vertical axis with associated number of roller passes on horizontal axis.
16. Connect plotted points with smooth curve.
17. Highest point of curve is maximum field density. Use maximum field density for subsequent testing.

C. Density Tests: Engineer will perform in accordance with ASTM D6938, excepted as indicated below for rocky material.
   1. Frequency:
      a. For small areas such as parking lots and driveways less than 5,000-square yards, take minimum of two tests for each 1,500-square yards per each layer.

b. For large areas such as roadways greater than or equal to 5,000-square yards, take minimum of one test for each 5,000-square yards per each layer.

2. Acceptance: Equals or exceeds 96-percent of maximum laboratory density.
3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

D. Density Tests for Rocky Material: Engineer will perform in accordance with ASTM D6938.
1. Frequency: Take minimum of two tests for each 1,500-square yards per each lift.
2. Acceptance: Equals or exceeds 100-percent of maximum field density.
3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.5 PROTECTION

A. Maintain adequate drainage.

B. Maintain granular borrow until next layer is placed.

END OF SECTION

SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Untreated base course for pavements.
2. Untreated base course for concrete site elements.
3. Untreated base course for road repairs.

B. Related Requirements:
1. Section 31 23 16 – Excavation.
2. Section 31 23 23 – Fill.

1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
2. AASHTO T11 – Standard Method of Test for Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.
3. AASHTO T19 – Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate.
4. AASHTO T27 - Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
5. AASHTO T89 – Standard Method of Test for Determining the Liquid Limit of Soils.
6. AASHTO T90 - Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
7. AASHTO T96 - Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
8. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
9. AASHTO T193 – Standard Method of Test for the California Bearing Ratio.
10. AASHTO T335 – Standard Method of Test for Determining the Percentage of Fracture in Coarse Aggregate.

1.3 DEFINITIONS

A. Lot: One day’s production.

B. Soil Classification: AASHTO M145.

1.4 SUBMITTALS

A. Prior to Production:
   1. Identify aggregate source.
   2. Submit test results indicating aggregate meets material requirements indicated in Table 1 of this Section.
   3. Submit job-mix gradation indicating single value for each sieve size within bands shown on Table 2 this Section.

B. Changes to Job-Mix Gradation: Submit in writing prior to start of day's production. Changes are subject to acceptance by Engineer. Retroactive changes are allowed only for first day's production.

1.5 QUALITY ASSURANCE

A. Obtain materials from accepted commercial pit. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

A. Untreated Base Course:
   1. Crushed stone, crushed gravel, or crushed slag.
   2. Well-graded, clean, hard, tough, durable, and sound mineral aggregates.
   3. Free of organic matter and contamination from chemical or petroleum products.
   4. Meet requirements of Table 1 of this Section.
   5. Gradation:
      a. Establish job-mix (target) gradation within gradation target band listed in Table 2 of this Section.
      b. Percent passing is based on total aggregate (dry weight), and fine and coarse aggregate having approximately same bulk specific gravities.
      c. Test in accordance with AASHTO T11 and T27.

Table 1. Aggregate Properties		
Property	Requirements	Test Method
Dry Rodded Unit Weight	Not less than 75 lb./ft^3	AASHTO T19
Liquid Limit/Plastic Index	Non-plastic	AASHTO T89 AASHTO T90
Aggregate Wear	Not to exceed 50 percent.	AASHTO T96
Two Fractured Face	50% Minimum	AASHTO T335
CBR with 10 Pound Surcharge Measured at 0.20 Inch Penetration	70% Minimum	AASHTO T193

Table 2. Gradation Limits	
Sieve Size	Job Mix Gradation Target Band
1½ inch	100
1 inch	90 - 100
¾ inch	70 - 85
½ inch	65 - 80
⅜ inch	55 - 75
No. 4	40 - 65
No. 16	25 - 40
No. 200	7 - 11

PART 3 EXECUTION

3.1 PREPARATION

A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place untreated base course on soft, muddy, or frozen surfaces.

C. Do not place untreated base course until subgrade is accepted by Engineer.

3.2 INSTALLATION

A. Spread untreated base course over prepared subgrade.

B. Minimize segregation of untreated base course during placement.

C. Maintain optimum moisture content of untreated base course. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.

D. Place aggregate in maximum 6-inch compacted layers. If total compacted thickness indicated on Drawings exceeds 6-inches, place in layers of equal thickness. If untreated base course is placed in successive layers, do not place next layer until previous layer has been tested and accepted.

E. Grade surfaces to elevations indicated.

F. Compact with self-propelled compaction equipment. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment.

3.3 TOLERANCES

A. Moisture Content: Plus, or minus 2-percent of optimum. Test in accordance with ASTM D6938.

B. Total Compacted Thickness: Plus, or minus ½-inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compact.

C. Top Surface of untreated base course: Plus, or minus 0.04-foot from required elevation.

D. Surface Smoothness: Plus, or minus 3/8-inch measured with 10-foot straight edge.

3.4 FIELD ACCEPTANCE TESTING

A. Maximum Laboratory Density: Engineer will determine in accordance with AASHTO T180, Method D**.**

B. Establish roller patterns necessary to achieve density indicated.

C. Density Tests: Engineer will perform in accordance with ASTM D6938.
   1. Frequency:
      a. For small areas such as parking lots and driveways less then 2,500-square yards, take minimum of two tests for each 1,200-square yards per each layer.
      b. For large areas such as roadways greater than or equal to 2,500-square yards, take minimum of one test for each 2,500-square yards per each layer.
   2. Acceptance: Equals or exceeds 96-percent of maximum laboratory density for each lot.
   3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

D. Gradation Tests: Engineer will take samples from material on grade. Perform in accordance with AASHTO T11 and T27.

1. Frequency: Lot may be evaluated on basis of one sample.
2. Acceptance: Based on job-mix gradation.
3. If tests indicate material is not acceptable, make adjustments in production. If necessary, remove and replace Work.

3.5 PROTECTION

A. Maintain adequate drainage.

B. Maintain untreated base course until surface course is placed or until final acceptance.

END OF SECTION

SECTION 33 08 10.13
PRESSURE TESTING WATER UTILITIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Testing requirements for pressurized potable and non-potable water piping systems.
   2. Cleaning pipelines.
   3. Testing reports.

B. Related Requirements:
   1. Section 01 33 00 – Submittal Procedures.

1.2 REFERENCE STANDARDS

A. American Society of Mechanical Engineers (ASME):
   1. ASME Boiler and Pressure Vessel Code.

B. ASTM International (ASTM):
   1. ASTM F2164 - Standard Practice for Field Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure.

C. Plastics Pipe Institute (PPI):
   1. Handbook of Polyethylene Pipe.

1.3 DEFINITIONS

A. Leakage: Quantity of water required to maintain specified hydrostatic test pressure after pipeline has been filled with water and air expelled.

B. PSIG: Pounds per square inch gage pressure.

1.4 COORDINATION

A. Coordinate Work of this Section with Owner.

1.5 SUBMITTALS

A. Test Reports: For each test performed, submit report with following information as applicable:
   1. Project name and number,
   2. Test type, date, and times.
   3. Pipe size, type, location, and length.
   4. Test fluid.
   5. Test pressure at low point in pipeline or pipeline section.

6. Written description and photograph indicating location of any pipe damage, leakage or other deficiency observed.
7. Amount of leakage measured versus allowable leakage.
8. Description of repairs or corrects made.
9. Certification that leakage rate measured conforms to specifications.
10. Name and signature of test supervisor.

B. Submit test bulkhead locations and design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.

C. If in-place testing is not possible, submit alternate plan for testing.

1.6 QUALITY ASSURANCE

A. For potable water pipelines, perform Work according to Utah Division of Drinking Water standards.

PART 2 PRODUCTS

2.1 TESTING EQUIPMENT

A. Provide calibrated pressure gauges, pipes, bulkheads, compressors, chart recorder, meters, and other equipment necessary to perform testing.

B. Provide power and other necessary temporary utilities to perform testing.

C. Place vents, taps, and drains necessary for testing.

2.2 TEST BULKHEADS

A. Design and fabricate test bulkheads per Section VIII of ASME Boiler and Pressure Vessel Code.
1. Design bulkhead for pressure at least 2.0 times specified test pressure for section of pipe containing bulkhead.
2. Limit stresses to 70 percent of yield strength of bulkhead material at bulkhead design pressure. Include air-release and water drainage connections.

B. Use materials complying with Part UCS of ASME Boiler and Pressure Vessel Code.

2.3 TESTING MEDIUM

A. Hydrostatic Testing:
1. Use water.
2. For potable water pipelines, obtain and use only potable water.
3. Submit request for use of water from waterlines of Owner 48 hours in advance of testing.

PART 3 EXECUTION

3.1 TESTING PREPARATION

A. Conduct pressure tests on exposed and aboveground piping after piping has been installed and attached to pipe supports, hangers, anchors, expansion joints, valves, and meters, or submit alternate plan if in place testing cannot be performed.

B. Conduct pressure tests on buried piping after valves, accessories, and thrust restraints have been installed.

C. Install temporary piping needed to carry test fluid to pipe being tested.

D. Install temporary drain lines needed to carry testing fluid away from pipe being tested.

E. Prior to starting test, notify Owner and Engineer 48 hours in advance of test.

3.2 CLEANING

A. For pneumatic tests, blow air through pipes. Maintain flushing velocity of at least 3 feet per second for water testing and at least 2,000 feet per minute for pneumatic testing. Flush pipes for time period as given by formula:

$$T = \frac{2L}{3}$$

in which:

T = flushing time (seconds)

L = pipe length (feet).

B. For pipelines 24 inches or larger in diameter, acceptable alternatives to flushing are use of high-pressure water jet, sweeping, or scrubbing. Remove water, sediment, dirt, and foreign material accumulated in pipe during cleaning operation by discharging, vacuuming, or other acceptable method.

3.3 TESTING AND DISINFECTION SEQUENCE FOR POTABLE WATER PIPING

A. Perform required disinfection after hydrostatic testing, except when pipeline being tested is connected to potable pipeline.

B. Locate and install test bulkheads, valves, connections to existing pipelines, and other appurtenances in manner to provide air gap separation between existing potable water pipelines and pipeline being tested. Disinfect water

and pipeline being tested before hydrostatic testing when connected to potable pipeline.

3.4 TESTING NEW PIPE WHICH CONNECTS TO EXISTING PIPE

A. Prior to testing new pipelines that are to be connected to existing pipelines, isolate new pipeline from existing pipeline by means of test bulkheads, spectacle flanges, or blind flanges. After new pipeline has been successfully tested, remove test bulkheads or flanges and connect to existing piping.

3.5 HYDROSTATIC TESTING

A. Pressure test new main line piping, except HDPE pipe, as follows:
   1. Test water piping at pressure rating of pipe.
   2. Fill pipe with water and place under slight pressure for at least 48 hours.
   3. Bring pipe pressure to test pressure and maintain for 4 hours minimum.
   4. Provide accurate means for measuring quantity of water needed to maintain test pressure on pipe for test period.
   5. If volume of water added to pipe is 10 gallons per inch of pipe diameter per mile of pipe per 24 hours or less, pipe passes test.
   6. If pipe does not pass test, find source of leakage, repair or replace, and retest. Correct any visible leakage.

B. Pressure test high density polyethylene (HDPE) main line piping as follows:
   1. Test pipe in accordance with ASTM F2164, Handbook of Polyethylene Pipe by PPI, and pipe manufacturer's recommendations.
   2. Slowly fill pipe with water and expel air from pipe at high points. Do not exceed filling rate of 10 percent of maximum design flow.
   3. Close air valves after air is expelled and raise pressure to specified test pressure.
   4. Pressurize pipe to 1.5 times design working pressure. Do not exceed design pressure of any pipe, fitting, thrust restraint, or other piping component. Use test pressure indicated in table at end of this section.
   5. Observe joints, fittings, and valves under pressure. Remove and replace cracked pipes, joints, fittings, valves and other piping components showing visible leakage and retest.
   6. Correct any visible deficiencies and retest.
   7. Allow pipe line to expand for initial expansion period of 4 hours. Add water to pipe line to maintain test pressure during expansion period.
   8. After expansion period of 4 hours, add water as necessary for pipe to be at test pressure.
   9. Observe pipe pressure for one hour without adding water. If pipe pressure remains within 5 percent of test pressure and pipe has no

visible leaks, then pipe passes test. If pipe pressure drops more than 5 percent below test pressure or pipe has visible leaks, then pipe does not pass test. Correct any visible leakage. Repair areas with leaks and retest.

10. If retest is required, allow 8 hours to pass from time pipe is depressurized to start of new test.
11. Conduct separate pressure tests for each pipe segment with different pressure classes of pipe.

C. For short lengths of pipe where full pressure test is not possible, place pipeline under operating pressure and verify there are no visible leaks. Repair or replace piping as necessary to correct visible leaks.

3.6 REPETITION OF TEST

A. Locate and correct any faulty Work. Restore Work and any damage resulting from leak and repair. Eliminate visible leakage. Repeat testing and make corrections as necessary until pipe passes required testing.

3.7 BULKHEAD AND TEST FACILITY REMOVAL

A. After satisfactory test, remove testing fluid, remove test bulkheads and other test facilities, and restore pipe coatings.

B. After test has been completed and demonstrated to comply with specifications, disconnect and remove temporary piping. Do not remove exposed vent and drain valves at high and low points in tested piping; remove any temporary buried valves and cap associated outlets. Plug taps or connections to existing piping from which test fluid was obtained.

C. Remove such temporary drain lines after completing pressure testing. Drain pipes after pipes have been successfully tested.

3.8 TEST PRESSUE AND TEST FLUIDS

A. See table as follows for testing and design pressures (psig):

3.9 PROTECTION

A. Protect pipe and accessories from damage or displacement.

B. Prevent mud, silt, gravel, and other foreign materials from entering pipeline.

END OF SECTION

SECTION 33 14 15
SITE WATER UTILITY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe, fittings, valves and accessories for water lines.
   2. Water service pipe and accessories.
   3. Thrust restraint devices.
   4. Disinfection.

B. Related Requirements:
   1. Section 03 30 00 – Cast-In-Place Concrete.
   2. Section 31 23 16.13 - Trenching.
   3. Section 33 08 10.13 – Pressure Testing Water Utilities

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):
   1. ASTM D2241 – Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series).
   2. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

B. American Water Works Association (AWWA):
   1. AWWA C153 – Ductile-Iron Compact Fittings, 3 In. through 24 in. (76mm through 610 mm) and 54 in. through 64 In. (1,400 mm through 1,600 mm), for Water Service.
   2. AWWA C509 – Resilient Seated Gate Valves 3 in. through 12 in. NPS, for Water and Sewage Systems.
   3. AWWA C651 – Disinfecting Water Mains.
   4. AWWA C700 - Cold-Water Meters—Displacement Type, Metal Alloy Main Case.
   5. AWWA C800 – Threads for Underground Service Line Fittings.

C. National Sanitation Foundation (NSF):
   1. NSF-14 - Standard for Thermoplastic Materials, Pipe, Fittings, Valves, Traps and Joining Materials.
   2. NSF 61 - Drinking Water System Components - Health Effects.

1.3 DEFINITIONS:

A. Bedding: Fill placed under, beside, and directly over pipe to 12 inches above top of pipe, prior to subsequent backfill operations.

1.4 SYSTEM REQUIREMENTS

A. Burial Depth: Minimum 4 feet for main lines..

1.5 SUBMITTALS

A. Product Data: Provide data for pipe, pipe fittings, valves, service line, thrust restraint devices, tracer wire, splice capsules, fire hydrants, and accessories.

B. Test Results: Submit one copy of each bacteriological test results.

1.6 REGULATORY REQUIREMENTS

A. Conform to requirements of Utah Department of Environmental Quality and Owner.

PART 2 PRODUCTS

2.1 PIPE

A. Polyvinyl Chloride (PVC) Pipe: 3-inch diameter and larger.
   1. Class: ASTM D2241 PVC.
   2. Joints: Bell and spigot with elastomeric gaskets in accordance with ASTM F477.
   3. Color: Blue.
   4. Certification: Be NSF 61 approved and bear NSF label.
   5. Fittings: AWWA C153, Class 350, ductile iron, compact fittings with mechanical joints and gaskets.

B. Sleeve Coupling: Class 350, ductile iron, mechanical joints with gaskets, 12-inch minimum length. Manufactured by Tyler Pipe or equal.

2.2 VALVES

A. Gate Valve: AWWA C509, iron body, bronze trim, non-rising stem with 2 inch square operator nut, single wedge, resilient seat. Rated for 200 pounds per square inch working pressure. Shall open by turning operator nut counter-clockwise.

B. Valve Box & Cover: Cast iron, extension sleeve type, cast word WATER on cover.

2.3 SERVICES

A. Corporation Stop: Bronze body, in accordance with AWWA C800. Provide standard iron pipe threads and compression fittings for polyethylene pipe with stainless steel insert stiffeners. Ford Ballcorp as manufactured by The Ford Meter Box Company, Inc. or equal.

B. Fittings: Bronze, Mueller 110 compression fittings.

A. Coppersetter: 18-inch height with ball valve inlet and dual check valve outlet. Manufactured by The Ford Meter Box Company, Inc. or equal.
   1. 2 Inch: Model VBB77-18B-44-77-Q-NL

B. Meter Barrel: Minimum 36-inch diameter by 36-inch high, white, high-density polyethylene with corrugated exterior and smooth interior. Provide larger sizes where indicated on Drawings.

C. Meter Barrel Ring and Lid: Cast iron with WATER METER or WATER cast on lid.

D. Meter: AWWA C700, displacement type magnetic drive cold water meter with bronze main case.

2.4 ACCESSORIES

A. Thrust Restraint Devices: Use one of following:
   1. Concrete Thrust Blocks: Class B or B(AE) concrete in accordance with Section 03 30 00.
   2. Restrained Joints:
      a. Pipe: Bell and spigot joint restraint harness or clamp. Rated at pressure class of pipe or greater.
      b. Pipe Fittings: Mechanical joint with restrained follower gland. Rated at pressure class of pipe or greater. Megalug, or equal.

B. Tracer Wire: 12/1 UF direct burial wire.
   1. Splices: 3M Company, Cat. No. MH14 BCX heat shrink butt splice or equal.
   2. Color: Blue.

C. Bedding:
   1. Excavated materials consisting of earth, loam, sandy clay, sand, and gravel which are free from clods of earth, rocks larger than 0.75 inch, frozen material, organic material and debris.
   2. If excavated material is unsuitable or insufficient for bedding after screening, import bedding consisting of pitrun gravel, crushed rock with sand, or sand, with 0.75 inch maximum size gradation.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify location, depth, material, and size of existing water lines.

B. Excavate pipe trench in accordance with Section 31 23 16.13. Hand trim excavation for accurate placement of pipe.

C. Remove large rocks or other hard matter which could damage pipe or impede installation.

D. Remove water from trench.

3.2 INSTALLATION – PIPE

A. Install pipe and fittings. Seal joints watertight. Route pipe in straight line.

B. Place bedding material at sides of pipe and over pipe in layers not exceeding 6 inches compacted depth. Place bedding to minimum compacted thickness of 12 inches above top of pipe.

C. If excavated material is unsuitable for bedding or trench bottom is unsuitable to support pipe, import granular bedding.

D. Compact bedding to 96 percent of maximum laboratory density. Maintain moisture content of bedding material within plus or minus 2 percent of optimum to attain required compaction density.

E. Install tracer wire continuous below spring line of pipe. Install tracer wire with new service, fire and main lines. Where there is existing tracer wire, connect new tracer wire to existing tracer wire. If splices are required, make watertight connection.

F. Place restraining devices according to manufacturers' recommendations or concrete thrust blocks at any change of pipe direction and fittings. Use mechanical joint restraint devices on fittings for live tie-ins when there is not adequate time for concrete thrust blocks to cure.

G. Backfill trench in accordance with Section 31 23 16.13.

3.3 INSTALLATION – VALVES

A. Set valves on solid bearing. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.4 INSTALLATION – SERVICES

A. Coordinate service connection with Owner.

3.5 WATER PIPING DISINFECTION

A. After completing pressure test, flush pipe to remove dirt or other foreign objects.

B. Add liquid chlorine or liquid calcium hypochlorite to pipe to obtain 50 ppm concentration of chlorine. Maintain 25 ppm chlorine residual at end of 24

hours. Disinfect piping in accordance with Utah State Rules for Public Drinking Water Systems and AWWA C651.

C. Flush chlorinated water from pipe. Dispose of chlorinated water in accordance with Utah Water Quality Board rules in accordance with of Utah Administrative Code R317.

D. After flushing chlorinated water from piping, sample and complete bacteriological testing.
   1. Frequency: For every 1,200 feet of new main piping, take two consecutive samples 24 hours apart. Use sterile sample bottles furnished by testing laboratory.
   2. Acceptance: Absence of coliform bacteria in two consecutive samples taken 24 hours apart.
   3. If necessary re-chlorinate until satisfactory bacteriological tests are obtained.
   4. Do not put piping into service until test results are satisfactory.

E. If service lines are not disinfected with main line, flush service lines with chlorinated water prior to connecting and putting into use.

3.6 PROTECTION

A. Protect pipe and accessories from damage or displacement.

B. Prevent mud, silt, gravel, and other foreign materials from entering pipe and keep off joint surfaces.

C. Install plug in pipe end when pipe laying is not in progress.

END OF SECTION

SECTION 33 31 12
SANITARY SEWERAGE GRAVITY PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Section Includes:
   1. Sanitary sewer piping, fittings, accessories and bedding.
   2. Testing and cleaning.

B. Related Requirements:
   1. Section 03 30 00 – Cast-in-Place Concrete.
   2. Section 31 23 16.13 – Trenching.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM):
   1. ASTM D1784 – Standard Classification System and Basis for Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
   2. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
   3. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
   4. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   5. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

B. UNI-BELL PVC Pipe Association (UNI-B):
   1. UNI-B-6 – Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe.

1.3 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe to 12 inches above top of pipe, prior to subsequent backfill operations.

1.4 SUBMITTALS

A. Product Data: Provide data indicating pipe, fittings, warning tape, tracer wire, and accessories.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of Utah Department of Environmental Quality.

B. Install sewer pipes with minimum of 10 feet horizontal or 18 inches vertical separation from water pipes. Measure distance from outside edge of pipe to outside edge of pipe. Install sewer pipes below water pipes.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

A. Main collection lines and service lines: Polyvinyl Chloride (PVC) Gravity Sewer Pipe:
   1. ASTM D3034 for diameters from 4 inches to 15 inches.
   2. PVC material conforming to ASTM D1784.
   3. Minimum pipe stiffness of 46 psi according to ASTM D2412.
   4. SDR of 35.

B. Pipe Joints: Bell and spigot style with elastomeric gaskets conforming to ASTM F477.

C. Fittings: Same material as pipe molded or formed to suite pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

D. Warning Tape: Plastic, bright green color, continuously printed with “SANITARY SEWER PIPE BELOW”, minimum 6 inches wide by 4 mil thick, manufactured for direct burial.

E. Tracer Wire: 12 AWG solid, Type UF, copper conductor with PVC insulation, and rated for 600 volts. Use green color insulation to meet APWA color code for identification of buried utilities.

F. Cleanout Concrete Pad: Class A(AE) concrete in accordance with Section 03 30 00.

2.2 BEDDING MATERIALS

A. Bedding:
   1. Excavated materials consisting of earth, loam, sandy clay, sand, and gravel which are free from clods of earth, rocks larger than 3/4 inch, frozen material, organic material and debris.
   2. If excavated material is unsuitable for bedding, import bedding consisting of pitrun gravel, crushed rock, sand, or other material approved by Engineer with 3/4 inch maximum size gradation. If necessary, provide imported bedding at no extra cost to Owner.

PART 3 EXECUTION

3.1 PREPARATION

A. Excavate trench in accordance with Section 31 23 16.13.

B. Verify that trench is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

C. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.

D. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

E. Remove water from trench.

F. In areas where new pipe is being installed to replace existing pipe, pump wastewater from upstream manhole to downstream manhole to bypass construction area.

3.2 INSTALLATION

A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Install pipe in straight line. Seal joints watertight.

B. Lay pipe at slope indicated on Drawings.

C. Install service lines as indicated on Drawings.

D. Install tracer wire with pipe.

E. Place bedding at sides and over top of pipe in lifts not exceeding 6 inches compacted depth. Place bedding to minimum compacted thickness of 12 inches above top of pipe.

F. Compact bedding to 96 percent of maximum laboratory density. Maintain optimum moisture content to attain required density.

G. Backfill trench in accordance with Section 31 23 16.13.

H. Place warning tape 2 feet above top of pipe.

I. Clean sewer pipe.

3.3 TOLERANCES

A. Pipe Slope: Plus or minus 0.04 feet, except level or reverse gradients not permitted.

3.4 FIELD ACCEPTANCE TESTS

A. Closed Circuit TV Inspection:
   1. Owner reserves right to visually inspect interior of sewer pipe mains using television camera following deflection test and prior to one year warranty.
   2. Correct defects at no additional cost to Owner.
   3. Owner will pay costs for initial TV inspection.
   4. Additional TV inspections required because of defects shall be paid by Contractor.

3.5 PROTECTION

A. Protect pipe from damage or displacement.

B. Prevent mud, silt, gravel and other foreign materials from entering pipe and keep off joint surfaces.

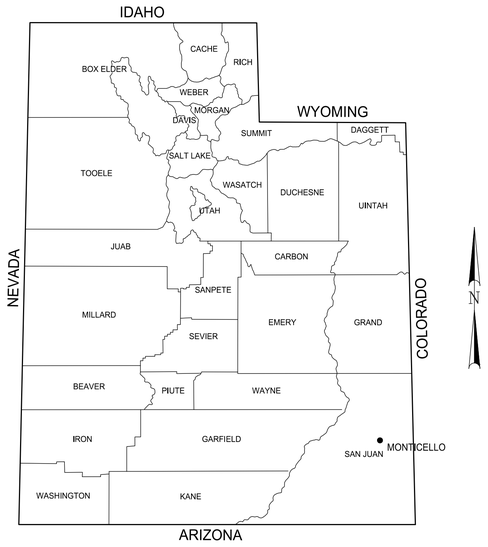
C. Install plug in pipe end when pipe laying is not in progress.

END OF SECTION

DRAWINGS

SAN JUAN COUNTY
FAIRGROUNDS RV STALLS
MONTICELLO, UTAH
2023

PROJECT NO.	SHEET NO.
2204-024	C-001
SUBMITTAL:	BID SET



PROJECT LOCATION

VICINITY MAP

INDEX TO SHEETS	
SHEET NO.	SHEET TITLE
C-001	TITLE
C-002	LEGEND & NOTES
C-100	EXISTING CONDITIONS
C-101	SITE PLAN
C-301	UTILITY PLAN
C-501 TO C-502	DETAILS

NOTE: SEE SHEET E001 FOR INDEX TO ELECTRICAL DRAWINGS.

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APPROVAL

RECOMMENDED FOR APPROVAL:

PROFESSIONAL ENGINEER
DANNY L. FLANNERY
NO. 7734559-2202
STATE OF UTAH

May 11, 2023
DATE

APPROVED:

CLIENT DATE

h:\jdproj\2204-024\dwg\c-001 title and legend

LEGEND

EXISTING FEATURES

- SANITARY SEWER LINE
- SANITARY SEWER MANHOLE
- CULINARY WATER LINE
- CULINARY WATER VALVE
- BURIED POWER LINE
- OVERHEAD POWER LINE
- BURIED TELEPHONE LINE
- OVERHEAD TELEPHONE LINE
- BURIED CABLE TV LINE
- OVERHEAD CABLE TV LINE
- FIBER OPTIC LINE
- NATURAL GAS LINE
- IRRIGATION LINE
- STORM DRAIN
- FENCE LINE (BARBED OR STOCKTIGHT)
- FENCE LINE (CHAIN LINK)
- DRAINAGE CULVERT
- CONCRETE SURFACING (SIDEWALK, CURB, GUTTER, ETC.)
- FLOW LINE OF DITCH
- EDGE OF ASPHALT SURFACING
- EDGE OF GRAVEL SURFACING
- EDGE OF DIRT SURFACING
- FIRE HYDRANT
- WATER METER
- GAS METER
- STRUCTURE
- POWER POLE & GUY WIRE
- TREE
- DELINEATOR POST
- STREET SIGN
- TELEPHONE PEDESTAL
- MAILBOX
- WATER MANHOLE
- LIGHT POLE

MISC. FEATURES

- SUBDIVISION BOUNDARY LINE
- LOT LINES
- EXISTING RIGHT OF WAY LINE
- EXISTING N/A LINE
- EXISTING CITY BLOCK LINES (BLOCK LINE)
- PROPOSED RIGHT-OF-WAY LINE
- SECTION LINE
- QUARTER SECTION LINE
- (P.U.E.) PUBLIC UTILITY EASEMENT
- DEED LINE
- PROPERTY LINE

ABBREVIATIONS

TBC	TOP BACK OF CURB	EPP	POWER POLE
FLG	FLOW LINE OF GUTTER	SMH	SEWER MANHOLE
LOC	LIP OF CURB	CMH	COMMUNICATION MANHOLE
TSW	TOP OF SIDEWALK	R/W	RIGHT-OF-WAY
TOC	TOP OF CONCRETE	T.C.E.	TEMPORARY CONSTRUCTION EASEMENT
EOA	EDGE OF ASPHALT		
TOA	TOP OF ASPHALT	P.U.E.	PUBLIC UTILITY EASEMENT
TOG	TOP OF GRATE		
FLC	FLOW LINE OF CULVERT	STA	STATION
SW	SIDEWALK	L / LT	LEFT
FG	FINISHED GROUND	R / RT	RIGHT

PROPOSED FEATURES

- SANITARY SEWER LINE
- SANITARY SEWER MANHOLE
- SANITARY SEWER SERVICE
- CULINARY WATER LINE
- CULINARY WATER VALVE
- BURIED POWER LINE
- OVERHEAD POWER LINE
- BURIED TELEPHONE LINE
- OVERHEAD TELEPHONE LINE
- BURIED CABLE TV LINE
- OVERHEAD CABLE TV LINE
- FIBER OPTIC LINE
- NATURAL GAS LINE
- IRRIGATION LINE
- STORM DRAIN
- FENCE LINE (BARBED OR STOCKTIGHT)
- FENCE LINE (CHAIN LINK)
- DRAINAGE CULVERT
- EDGE OF ASPHALT
- EDGE OF CONCRETE
- FIRE HYDRANT
- CULINARY WATER METER
- GAS METER
- DELINEATOR POST
- STREET SIGN
- POWER POLE
- MAILBOX
- LIGHT POLE
- CONCRETE SURFACING
- ASPHALT SURFACING
- TOP OF CUT LIMITS
- TOE OF FILL LIMITS

GENERAL NOTES

1. REQUEST ACCEPTANCE FROM ENGINEER PRIOR TO MAKING MODIFICATIONS TO DRAWINGS, SPECIFICATIONS, OR CONSTRUCTION SCHEDULE.
2. PERFORM CONSTRUCTION IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL PLUMBING CODE (IPC), INTERNATIONAL FIRE CODE (IFC), AND/OR OWNER STANDARDS AND SPECIFICATIONS.
3. IN CASE OF CONFLICT BETWEEN CODES, REFERENCE STANDARDS, STATE RULES, DRAWINGS AND SPECIFICATIONS, ADHERE TO MOST STRINGENT REQUIREMENTS.
4. EXISTING UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS ONLY AND ARE BASED ON UTILITY MAPS AND FIELD SURVEY.
5. LOCATE AND PROTECT EXISTING UTILITIES AND ANY OBSTRUCTIONS DURING COURSE OF CONSTRUCTION. NOTIFY BLUE STAKES (811) AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES ON SITE. RESTORE UTILITIES DAMAGED DURING CONSTRUCTION TO CONDITION EQUAL TO OR BETTER THAN EXISTING CONDITION PRIOR TO CONSTRUCTION.
6. NOTIFY ENGINEER OR PROJECT REPRESENTATIVE OF ANY CONFLICTS BETWEEN EXISTING FEATURES AND NEW CONSTRUCTION.
7. UNLESS DETAILED, SPECIFIED OR INDICATED OTHERWISE, CONSTRUCTION SHALL BE AS INDICATED IN APPLICABLE TYPICAL DETAILS AND GENERAL NOTES.
8. CONTRACTOR IS RESPONSIBLE FOR ALL ASPECTS OF SAFETY INCLUDING, BUT NOT LIMITED TO, EXCAVATION, TRENCHING, SHORING, TRAFFIC CONTROL AND SECURITY.
9. MEET UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY AND U.S. EPA REQUIREMENTS, RULES, AND REGULATIONS.
10. OBTAIN REQUIRED APPROVALS AND PERMITS AND PAY REQUIRED FEES PRIOR TO BEGINNING CONSTRUCTION.
11. PROVIDE WRITTEN NOTIFICATION INCLUDING CONTACT INFORMATION, TO RESIDENTS AND BUSINESSES IMPACTED BY CONSTRUCTION. PROVIDE NOTICE MINIMUM OF 48 HOURS IN ADVANCE OF WORK BEING PERFORMED. MAINTAIN DRIVEWAY ACCESS TO RESIDENCES AND BUSINESSES AT ALL TIMES UNLESS PARKING ARRANGEMENTS HAVE BEEN MADE WITH RESIDENTS AND BUSINESSES WHILE WORK IS COMPLETED ADJACENT TO OR ON THEIR PROPERTIES.
12. WORK WITH INDIVIDUAL PROPERTY OWNERS OR BUSINESS FOR ACCESS AND PERMISSION TO CONNECT TO UTILITY SERVICE AT PROPERTIES.
13. OBTAIN RIGHT OF INGRESS AND EGRESS SHOULD WORK OR PERSONNEL VENTURE ONTO PRIVATE PROPERTY WHICH IS NOT INCLUDED IN OWNER ACQUIRED RIGHTS-OF-WAY AND EASEMENTS.
14. OBTAIN COUNTY PERMIT BEFORE BEGINNING CONSTRUCTION FOR WORK LOCATED WITHIN 30 FEET OF GOVERNMENT SURVEY MONUMENT OR PUBLIC LAND SURVEY GOVERNMENT CORNER.

SURVEY NOTES

1. SUBJECT SITE WAS FIELD SURVEYED AUGUST 2022 BY JONES AND DEMILLE ENGINEERING.
2. ANY COORDINATES, IF SHOWN, ARE LOCAL COORDINATES UNLESS OTHERWISE INDICATED.
3. DISTANCES REFLECT GROUND MEASUREMENTS.

CONSTRUCTION NOTES

1. NOTIFY OWNER, AT LEAST TWO BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION.
2. SCHEDULE AND ATTEND PRE-CONSTRUCTION MEETING PRIOR TO STARTING CONSTRUCTION ACTIVITIES. SCHEDULE MEETING THROUGH OWNER OR OWNER'S REPRESENTATIVE.
3. PROVIDE CONSTRUCTION SCHEDULE TO ENGINEER AND OWNER.
4. FIELD VERIFY EXISTING CONDITIONS. QUANTITIES, LENGTHS, VOLUMES, AND AREAS INDICATED ARE APPROXIMATE AND ARE PROVIDED TO ASSIST CONTRACTOR. VERIFY QUANTITIES AND DETERMINE MEASUREMENTS, AS NECESSARY.
5. VERIFY DIMENSIONS BEFORE STARTING WORK AND IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.
6. OBTAIN APPROVAL FROM OWNER PRIOR TO CONSTRUCTION FOR USE OF STAGING AREAS (IF ANY) NOT SHOWN ON DRAWINGS. COORDINATE WITH OWNER TO IDENTIFY POTENTIAL USEABLE STAGING AREAS. RESTORE STAGING AREA TO PRECONSTRUCTION CONDITION.
7. PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION AND REPLACE OR RESTORE IMPROVEMENTS DAMAGED AS RESULT OF CONSTRUCTION ACTIVITY. RESTORE IMPROVEMENTS TO AS-GOOD-AS OR BETTER-THAN CONDITION THAT EXISTED PRIOR TO CONSTRUCTION. REPAIR IRRIGATION/SPRINKLERS WITHIN 24 HOURS FOLLOWING PLACEMENT OF IMPROVEMENTS.
8. PROPERLY BACKFILL, COMPACT, AND RESTORE PAVEMENT WITHIN STREET RIGHT-OF-WAY.
9. DISPOSE WASTE OFF SITE AT LANDFILL OR OTHER LEGAL DISPOSAL FACILITY.
10. REMOVE SURPLUS EXCAVATION FROM SITE. USE TOPSOIL OR OTHER NATIVE MATERIAL IN LANDSCAPE OR NATIVE GRADING. STOCKPILE TOPSOIL SEPARATELY FROM OTHER EXCAVATED MATERIALS. PLACE TOPSOIL IN LANDSCAPED AREAS IN 4 INCHES THICK MINIMUM AND GRADE TO DRAIN.
11. PERFORM CONSTRUCTION QUALITY CONTROL TESTING, INCLUDING SOILS, BACKFILL CONCRETE, UTILITIES, ETC.
12. PERFORM MATERIALS TESTING AND SUBMIT COPIES OF TEST RESULTS TO ENGINEER AND/OR OWNER AS REQUIRED PER SPECIFICATIONS. COORDINATE TESTING WITH INSPECTORS AND/OR ENGINEER. PERFORM DENSITY TESTING ON TRENCH BACKFILL, GRANULAR BORROW, AND UNTREATED BASE COURSE PLACEMENT FOR ROADWAY AND PRIOR TO ANY CONCRETE PLACEMENT WHERE NECESSARY. SEE SPECIFICATIONS FOR TESTING FREQUENCY.
13. PROVIDE SITE DUST CONTROL AND SUPPRESSION FOR DURATION OF PROJECT, INCLUDING WEEKENDS.
14. PROVIDE AND MAINTAIN ANY AND ALL TEMPORARY UTILITIES DURING CONSTRUCTION.
15. PROVIDE PAVEMENT MARKINGS, STRIPING AND SIGNAGE PER THE REQUIREMENTS OF THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

EROSION CONTROL NOTES

1. PERFORM CONSTRUCTION WORK IN ACCORDANCE WITH UTAH POLLUTION DISCHARGE ELIMINATION SYSTEM (UPDES) REGULATIONS.
2. DURING CONSTRUCTION, PREVENT AND CONTROL EROSION DUE TO WIND AND WATER.
3. PROVIDE ADDITIONAL EROSION CONTROL MEASURES WHEN UNFORESEEN PROBLEMS OCCUR. ADJUST EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) AS NECESSARY DUE TO GRADE CHANGES DURING CONSTRUCTION. OWNER MAY REQUIRE ADDITIONAL CONTROL DEVICES UPON INSPECTION OF PROPOSED FACILITIES.
4. KEEP STREETS CLEAN AND FREE FROM SOIL AND DEBRIS DURING CONSTRUCTION.
5. PROTECT STORM DRAIN FACILITIES ON SITE AND ADJACENT TO SITE FROM SITE RUNOFF. INSTALL INLET PROTECTION DEVICES IMMEDIATELY UPON INDIVIDUAL INLETS BECOMING FUNCTIONAL.
6. DISPOSE OF WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, ETC.) IN MANNER THAT PREVENTS CONTACT WITH STORM WATER DISCHARGES FROM SITE.
7. STABILIZE CONSTRUCTION AREAS AT END OF EACH WORKING DAY. INCLUDE BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF PAVING FOR ROAD CONSTRUCTION.
8. MAINTAIN MEASURES CONTAINED IN SWPPP IN FULLY FUNCTIONAL CONDITION UNTIL FINAL STABILIZATION OF SITE. CHECK EROSION AND SEDIMENTATION CONTROL MEASURES BY QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF END OF RAINFALL EVENT. COMPLETE ANY NEEDED CLEANING AND REPAIRS WITHIN TIME FRAMES SPECIFIED IN SWPPP AND/OR UPDES GENERAL PERMIT.
9. REMOVE INLET PROTECTION DEVICES AFTER N.O.T. AND FINAL ACCEPTANCE BY OWNER.

SANITARY SEWER NOTES

1. MAINTAIN 10 FOOT HORIZONTAL SEPARATION BETWEEN CULINARY WATER LINES AND SANITARY SEWER LINES.
2. WHERE CULINARY WATER LINE CROSSES OVER TOP OF SANITARY SEWER LINE, MAINTAIN VERTICAL SEPARATION OF 18 INCHES BETWEEN WATER LINE AND SEWER LINE. IF 18 INCHES VERTICAL SEPARATION CANNOT BE ACHIEVED OVER SEWER LINE, OBTAIN ACCEPTANCE FROM ENGINEER AND OWNER FOR PROPOSED APPROACH.
3. USE NON-SHRINK GROUT WHEREVER GROUT IS REQUIRED FOR SANITARY SEWER FACILITIES.
4. REMOVE SILT AND DEBRIS FROM MANHOLES AND PIPE. MAINTAIN MANHOLES AND PIPES IN CLEAN CONDITION UNTIL FINAL ACCEPTANCE BY OWNER.

STAMP: PROFESSIONAL ENGINEER — DANNY L. FLANNERY — NO. 7234559-2202 — STATE OF UTAH

NO.	DATE	DESIGN REV. BY	REMARKS
			ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS

UPDATED: 5/11/2023
PLOTTED: 5/11/2023
DWG CREATED: CR_DATE
PEN TBL.: ####
DWG NAME: C-001 TITLE AND LEGEND
SHT SET: ####
SCALE: NONE

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GIS - ENVIRONMENTAL - MATERIALS TESTING
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SAN JUAN COUNTY
SJC FAIRGROUNDS RV PARK
LEGEND & NOTES

SUBMITTAL: BID SET
PROJECT NUMBER: 2204-024

SAN JUAN COUNTY

SHEET NO. C-002

SHEET NO.	C-100
COUNTY	SAN JUAN

SAN JUAN COUNTY

SJC FAIRGROUNDS RV PARK

EXISTING CONDITIONS

SUBMITTAL: BID SET | PROJECT NUMBER: 2204-024

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NO.	DATE	DESIGN REV. BY	REMARKS
			ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS

SCALE: 1"=20'	DWG NAME: C-100 EXISTING CONDITIONS	DWG CREATED: CR_DATE	UPDATED: 5/11/2023
	SHT SET: ####	PEN TBL: 1stndrd-v2800.ctb	PLOTTED: 5/11/2023

STAMP:

STAMP:

PROFESSIONAL ENGINEER
DANNY L. FLANNERY
NO. 7234559-2202
STATE OF UTAH

NO.	DATE	REMARKS
	10.20.22	ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS

DWG NAME: C-101 SITE PLAN
SHT SET: ####

DWG CREATED: DL_DATE
PEN TBL: 1in24in36in30.ctb

UPDATED: 5/17/2023
PLOTTED: 5/17/2023

SCALE: 1"=20'

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SAN JUAN COUNTY

SJC FAIRGROUNDS RV PARK

SITE PLAN

PROJECT NUMBER: 2204-024

SUBMITTAL: BID SET

SAN JUAN
COUNTY

SHEET NO. C-101

PROFESSIONAL ENGINEER
DANNY L. FLANNERY
NO. 7734559-2202
STATE OF UTAH

STAMP:

NO.	DATE	DESIGN REV. BY	REMARKS
			ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS

SCALE: 1"=20'
DWG NAME: C-301 UTILITY PLAN
SHT SET: ####
DWG CREATED: CR_DATE
PEN TBL: _1stndrd-ir2800.ctb
UPDATED: 5/11/2023
PLOTTED: 5/11/2023

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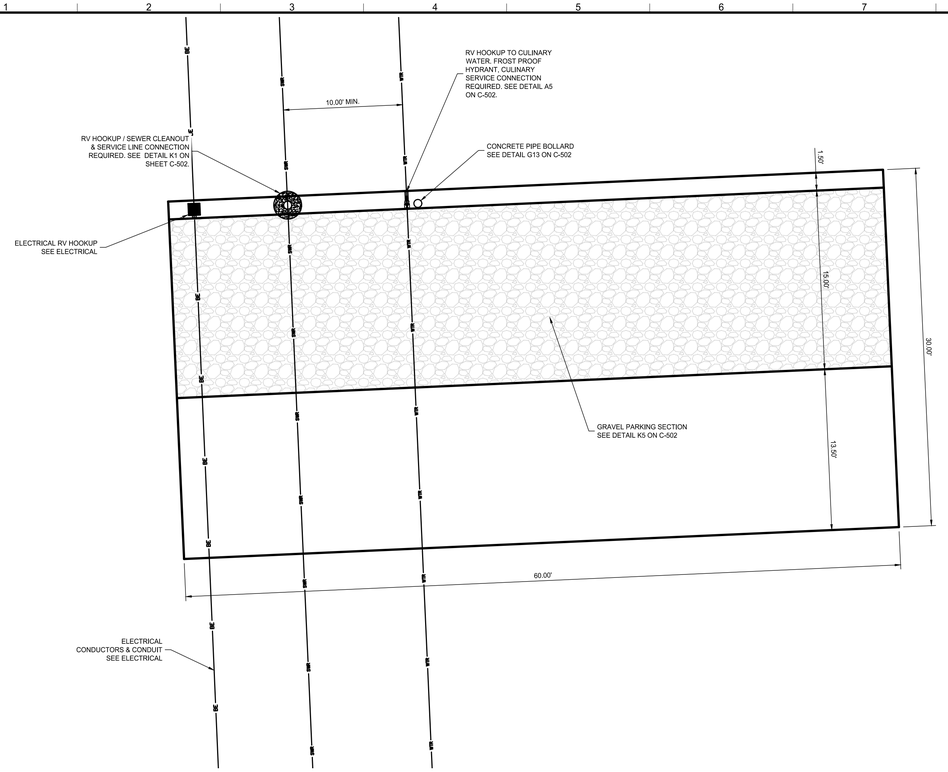
SAN JUAN COUNTY
SJC FAIRGROUNDS RV PARK
UTILITY PLAN

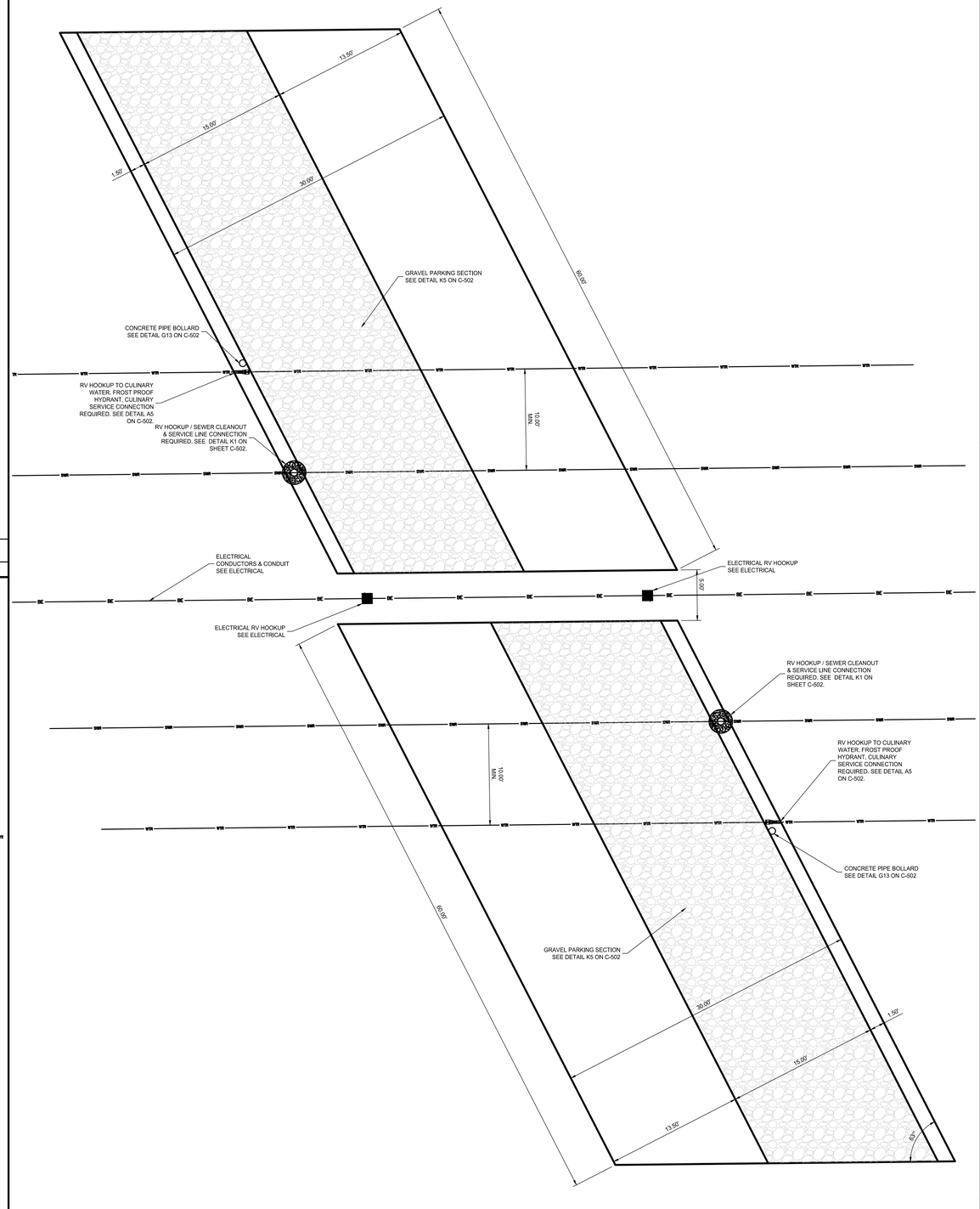
SUBMITTAL: BID SET
PROJECT NUMBER: 2204-024

SAN JUAN COUNTY

SHEET NO. C-301



G1	*PERPENDICULAR R.V. STALL*
SCALE	1"=6'



A1	*ANGLED R.V. STALL*
SCALE	1"=6'

A9	*BACK-TO-BACK R.V. STALLS*
SCALE	1"=6'

STAMP:

PROFESSIONAL ENGINEER
DANNY L. FLANNERY
NO. 7234559-2202
STATE OF UTAH

NO.	DATE	REMARKS
		DESIGN
		ORIGINAL SUBMISSION FOR AUTHORIZATION
		REVISIONS

DWG CREATED: CR_DATE
PEN TBL: typeplot2000.ctb

UPDATED: 5/11/2023
PLOTTED: 5/11/2023

SCALE: 1"=6"
DWG NAME: C-501 DETAILS
SHT SET: ####

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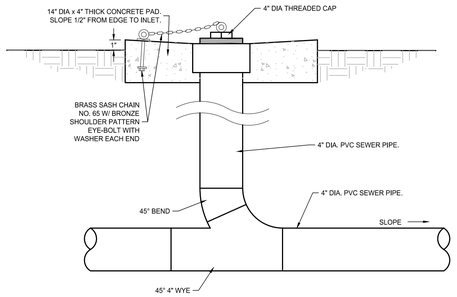
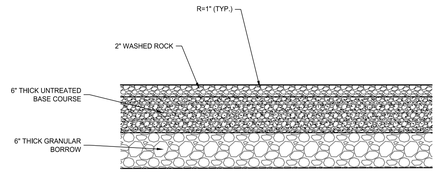
SAN JUAN COUNTY
SJC FAIRGROUNDS RV PARK
DETAILS
PROJECT NUMBER: 2204-024
SUBMITTAL: BID SET

SAN JUAN
COUNTY
SHEET NO. C-501

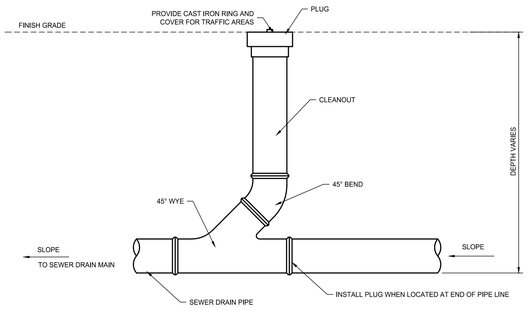


NOTES:
1. WHEN CONNECTION IS LOCATED AT END OF SEWER LINE, INSTALL PLUG ON END OF WYE.
2. DEPTH VARIES.

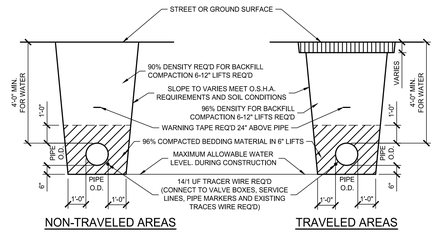
K1	R.V. SEWER CONNECTION
SCALE	NTS



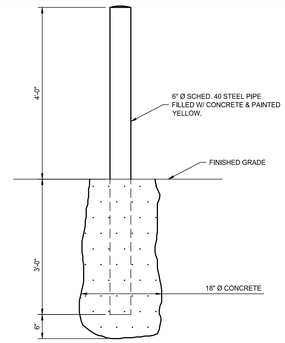
K5	GRAVEL PARKING SECTION
SCALE	NTS



G1	SEWER CLEANOUT
SCALE	NTS



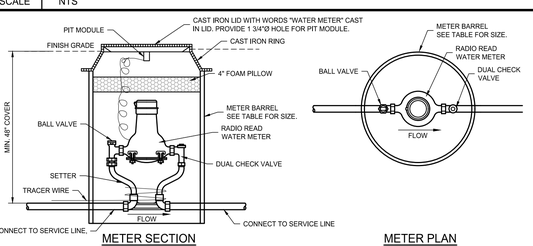
G5	UTILITY TRENCH
SCALE	NTS



G13	CONCRETE PIPE BOLLARD
SCALE	NTS

D1	SEWER SERVICE CONNECTION
SCALE	NTS

D5	NOT USED
SCALE	NTS



METER SECTION

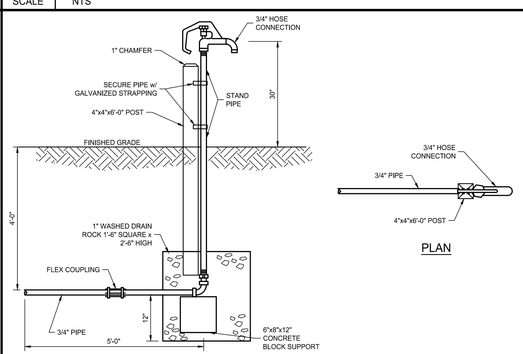
METER PLAN

METER BARREL SCHEDULE		
METER SIZE	BARREL SIZE	LENGTH
3/4"	21"Ø MIN.	36" MIN
1"	21"Ø MIN.	36" MIN
1-1/2"	36"Ø MIN.	36" MIN
2"	36"Ø MIN.	36" MIN

NOTES:
1. INSTALL TRACER WIRE WITH ALL NEW SERVICE LINES.
2. WRAP TRACER WIRE AROUND COPPER SETTER.
3. USE CONCRETE BARREL AND TRAFFIC RATED LID WHEN METER IS LOCATED IN TRAFFIC AREA, WHICH INCLUDE ROADWAYS AND DRIVEWAYS
4. FOAM PILLOW MAY BE NEEDED IN AREAS WHERE WATER METERS ARE ABOVE FROST DEPTH.
5. RELATED SPEC SECTION 33 14 12.

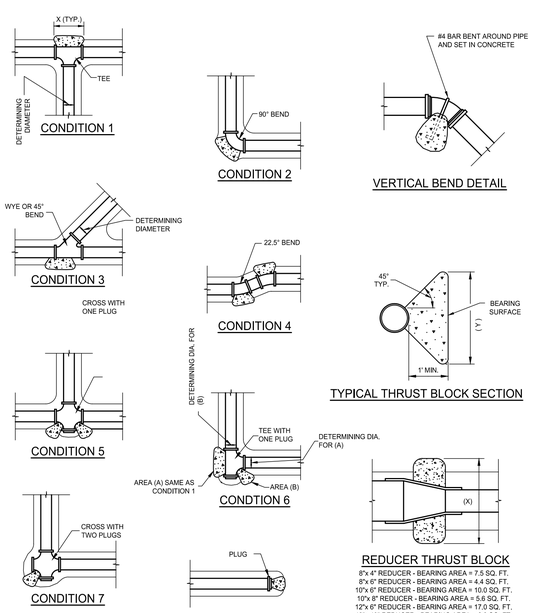
3/4" - 2" WATER METER DETAIL

A1	CULINARY WATER METER
SCALE	NTS



PLAN

A5	FROST-PROOF YARD HYDRANT
SCALE	NTS



THRUST BLOCK BEARING AREA (X) x (Y)								
PIPE SIZE	CONDITION NUMBER & PIPE WORKING PRESSURE							
	1	2	3	4	* 5	6 (B)	7	8
	200	200	200	200	200	200	200	200
2"	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
4"	2.5	3.5	1.9	1.0	1.8	1.8	3.5	2.5
6"	5.7	8.0	4.4	2.2	4.0	4.0	8.0	5.7
8"	10.1	14.2	7.7	3.9	7.1	7.1	14.2	10.1
10"	15.7	22.2	12.1	6.1	11.1	11.1	22.2	15.7
12"	22.6	31.9	17.4	8.8	16.0	16.0	31.9	22.6
16"	31.6	44.6	24.4	12.3	22.4	22.4	44.6	31.6

* NOTE: BEARING AREAS ARE IN SQUARE FEET.
AREA APPLIES TO EACH INDIVIDUAL BLOCK (2 REQ'D).

NOTES
1. ALL THRUST BLOCKS SHALL BE POURED WITH BEARING SURFACES AGAINST UNDISTURBED EARTH OR AN APPROVED COMPACTED FILL.
2. CONCRETE SHALL BE 2500 psi OR HIGHER.
3. ALL THRUST BLOCK SIDES SHALL BE FORMED.
4. ALLOWABLE SOIL BEARING PRESSURE ASSUMED TO BE 1000 psf.
5. THE RATIO OF "X" TO "Y" (THRUST BLOCK AREA) SHALL BE NO GREATER THAN 3:1.
6. MINIMUM CURE TIME FOR THRUST BLOCKS IS 3 DAYS PRIOR TO PRESSURIZING SYSTEM.
7. THRUST BLOCKS SHALL NOT INTERFERE WITH NUTS & BOLTS OF FITTINGS.
8. SEE PIPE CONDITIONS ON THIS SHEET.
9. INSTALL MECHANICAL JOINT RESTRAINT ON ALL JOINTS OF FITTINGS.
10. INCLUDE APPROVED MECHANICAL RESTRAINED JOINTS WITH CONCRETE THRUST BLOCKS. SEE DETAIL 'B2' THIS SHEET.

8"x 4" REDUCER - BEARING AREA = 7.5 SQ. FT.
8"x 6" REDUCER - BEARING AREA = 4.4 SQ. FT.
10"x 6" REDUCER - BEARING AREA = 10.0 SQ. FT.
10"x 8" REDUCER - BEARING AREA = 5.6 SQ. FT.
12"x 6" REDUCER - BEARING AREA = 17.0 SQ. FT.
12"x 10" REDUCER - BEARING AREA = 6.9 SQ. FT.

A9	THRUST BLOCK
SCALE	NTS

STAMP:

PROFESSIONAL ENGINEER
DANNY L. FLANNERY
NO. 7234559-2202
STATE OF UTAH

NO.	DATE	REMARKS
		ORIGINAL SUBMISSION FOR AUTHORIZATION
		REVISIONS

DESIGN
DWG CREATED: CR_DATE
PEN TBL: typeplot2000.ctb
UPDATED: 5/11/2023
PLOTTED: 5/11/2023

SCALE: NTS
DWG NAME: C-501 DETAILS
SHT SET: ####

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SAN JUAN COUNTY
SJC FAIRGROUNDS RV PARK
DETAILS
PROJECT NUMBER: 2204-024
SUBMITTAL: BID SET

SAN JUAN
COUNTY
SHEET NO. C-502

ABBREVIATIONS

#	QUANTITY OR COUNT
#G	1-GANG, 2-GANG, ETC.
#P	1-POLE, 2-POLE, ETC.
A	AMPS OR AMPERES
AC	ALTERNATING CURRENT
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AIC	AMPERE INTERRUPTING CAPACITY
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM MATERIAL
ALT	ALTERNATE
AMP	AMPS OR AMPERES
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARCH	ARCHITECT
AU	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BAT	BATTERY
BC	BARE COPPER
BFC	BELOW FINISHED CLG
BFG	BELOW FINISHED GRADE
BR	BRANCH
C	CONDUIT
CA	CONSTRUCTION ADMIN
CAB	CABLE OR CABINET
CAT#	CATEGORY#
CB	CIRCUIT BREAKER
CBA	COLOR BY ARCHITECT
cd	CANDELA
CKT	CIRCUIT
CLG	CEILING
CND	CONDUCTOR
CNTRL	CONTROL, CONTROLLER
CO	CONDUIT ONLY
CRD	CARD READER
CU	COPPER MATERIAL
CWA	COORDINATE W/ARCHITECT
CWO	COORDINATE W/OWNER
DC	DIRECT CURRENT
DD	DUCT SMOKE DETECTOR
DED	DEDICATED
DISC	DISCONNECT SWITCH
DIST	DISTANCE
DWG	DRAWING
E	EXISTING TO REMAIN
EA	EACH OR PER EACH
EC	ELECTRICAL CONTRACTOR
EM	EMERGENCY/EGRESS
EMT	ELECTRIC METALLIC TUBING
EN	EXISTING TO BE REPLACED WITH NEW
ENG	ENGINEER, ENGINEERING
EQ	EQUIPMENT
ER	EXISTING TO BE RELOCATED
EST	ESTIMATE OR ESTIMATED
EX	EXISTING TO BE REMOVED
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FC	FOOT CANDLE
FL	FLOOR
FLA	FULL LOAD AMPERES
FM	FLUSH MOUNT
FMC	FLEXIBLE METALLIC CONDUIT
FT	FOOT OR FEET
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CURRENT INTERRUPTER
GND	GROUND
HEQ	HEAD-END EQUIPMENT
HP	HORSEPOWER
Hz	HERTZ (FREQUENCY)
IAW	IN ACCORDANCE WITH
IBC	INTERNATIONAL BUILDING CODE
IECC	INTERNATIONAL ENERGY CONSERVATION CODE
IFC	INTERNATIONAL FIRE CODE
IG	ISOLATED GROUND
IN	INCH
IW	INPUT WATTS
JB	JUNCTION BOX
KCMIL	1000 CIRCULAR MILS (MCM)
KV	KILO-VOLTS
KVA	KILO-VOLT-AMPERES
KW	KILO-WATTS
KWh	KILO-WATT HOURS
LED	LIGHT EMITTING DIODE
LF	LINEAR FOOT
LFMC	LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUID-TIGHT FLEXIBLE NON-METAL CONDUIT
LMN	LUMEN
LTG	LIGHTING
LV	LOW VOLTAGE
MAN	MANUAL
MAT	MATERIAL
MAX	MAXIMUM
MB	MAIN BREAKER
MC	METAL CLAD CABLE
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCM	SEE KCMIL
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL CONTRACTOR
MET	METER
MIN	MINIMUM
MFG	MANUFACTURING
MFR	MANUFACTURER
MLO	MAIN LUGS ONLY
MNT	MOUNT
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTR	MOTOR
MILL	MILLWORK
n	NUMBER OF SETS
N	NEW
NA	NOT AVAILABLE/APPLICABLE
NAC	NOTIFICATION APPLICANCE CIRCUIT
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NG	NEUTRAL-GROUND BOND
NIC	NOT IN CONTRACT/SCOPE
NTS	NOT TO SCALE
OAE	OR APPROVED EQUIVALENT
OH	OVERHEAD
P	POLE
PB	PUSH-BUTTON
PC	PHOTOCELL
PF	POWER FACTOR
PH	PHASE
PLUMB	PLUMBING CONTRACTOR
PN	PART NO. OR MODEL NO.
PNL	PANEL OR PANELBOARD
POC	POINT OF CONNECTION
PP	POWER PACK
PTR	PRIOR TO ROUGH-IN
PVC	POLYVINYL CHLORIDE
PWR	POWER
QC	QUALITY CONTROL
QTY	QUANTITY
RCPT	RECEPTACLE
REQ	REQUIRED, REQUIREMENT
RM	ROOM
RM	ROOF MOUNTED
RMC	RIGID METALLIC CONDUIT
RNC	RIGID NON-METALLIC CONDUIT
Rx	RECEIVER
SBJ	SYSTEM BONDING JUMPER
SCA	SHORT CIRCUIT AMPERES
SCBA	COLOR BY ARCHITECT
SD	SMOKE DAMPER
SDN	STUB-DOWN
SE	SERVICE ENTRANCE
SF	SQUARE FOOT/FEET
SLC	SIGNALING LINE CKT LOOP
SM	SURFACE MOUNT
SMF	SINGLE-MODE FIBER
SP	SLAVE PACK
SPK	SPEAKER
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATIONS
SS	SELECTOR SWITCH
SSW	SAFETY SWITCH
STD	STANDARD
SW	SWITCH
SYS	SYSTEM
TB	TERMINAL BLOCK
TC	TIME CLOCK
TEMP	TEMPERATURE
TSP	TWISTED SHIELDED PAIR
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UC	UNDER CABINET
UFC	UPSTREAM FAULT CURRENT
UFER	CONCRETE ENCASED ELECTRODE
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
USB	UNIVERSAL SERIAL BUS INPUT
UTIL	UTILITY COMPANY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VA	VOLT-AMPERES
VAC	AC VOLTAGE
VDC	DC VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
W	WATTS OR WIRE
WAP	WIRELESS ACCESS POINT
WM	WALL MOUNTED
WP	WEATHERPROOF/NEMA 3R
WPC	WITH PULL CORD
XFER	TRANSFER
XFR	TRANSFORMER
Z	IMPEDANCE

GENERAL NOTES

1. THE ELECTRICAL SYSTEMS DEFINED BY THESE PLANS AND SPECIFICATIONS ARE TO BE CONSTRUCTED AS COMPLETE AND OPERABLE SYSTEMS AND SHALL BE BID WITH THIS INTENT. THE CONTRACTOR SHALL VISIT THE SITE, READ ALL THE RELEVANT DOCUMENTS AND BECOME FAMILIAR WITH THE TYPE OF CONSTRUCTION AND WORK TO BE ACCOMPLISHED. SHOULD ANY ERROR, OMISSION OR CONFLICT EXIST IN EITHER THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING BEFORE SUBMITTING HIS BID PRICE SO A CHANGE CAN BE ISSUED IN A PRE-BID ADDENDUM. OTHERWISE, THE CONTRACTOR AND/OR EQUIPMENT SUPPLIER SHALL SUPPLY THE PROPER MATERIALS AND LABOR TO INSTALL COMPLETE AND OPERABLE SYSTEMS AT THEIR OWN EXPENSE. WHEN EACH ELECTRICAL SYSTEM IS COMPLETE, THE CONTRACTOR SHALL TEST AND CONFIRM IT'S PROPER OPERATION. ANY INCOMPLETE SYSTEM SHALL BE MADE COMPLETE AND OPERABLE.
2. THE ARCHITECTURAL AND MECHANICAL PLANS ARE CONSIDERED A PART OF THE ELECTRICAL DOCUMENTS SO FAR AS THEY APPLY. THE ELECTRICAL CONTRACTOR SHALL REFER TO AND COORDINATE WITH THEM. NO EXTRA COST SHALL BE ALLOWED FOR FAILURE TO COORDINATE THE CONTRACT DOCUMENTS WITH OTHER TRADES AND/OR IF EQUIPMENT DIMENSIONS ARE GREATER THAN SPECIFIED AND/OR DIMENSIONED ON THE PLANS.
3. NO ADDITIONS TO THE CONTRACTOR BID WILL BE ALLOWED FOR CHANGES MADE NECESSARY BY INTERFERENCE WITH OTHER WORK.
4. THE ELECTRICAL CONTRACTOR SHALL PROVIDE EQUIPMENT, MATERIALS AND LABOR FOR THE CONNECTIONS OF ALL EQUIPMENT SHOWN ON THE PLANS - ARCHITECTURAL, MECHANICAL, ETC.
5. THIS PROJECT IS TO BE INSTALLED IN STRICT ACCORDANCE WITH LOCAL AND STATE CODES AND THE NEC. IF AT ANY TIME DURING CONSTRUCTION, OR AFTER, SOMETHING IS FOUND TO BE INSTALLED IN VIOLATION OF THE CODES LISTED ABOVE, IT SHALL BE CORRECTED AT THE CONTRACTORS EXPENSE.
6. THE ELECTRICAL CONTRACTOR SHALL INSTALL A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT RUN. CONDUIT SHALL NOT BE USED AS AN EQUIPMENT GROUNDING CONDUCTOR. THE ELECTRICAL CONTRACTOR SHALL GROUND THE ELECTRICAL SYSTEM IN ACCORDANCE WITH LOCAL AND NATIONAL CODES.
7. ELECTRICAL CONTRACTOR SHALL CONFIRM MINIMUM CODE (NEC) WORKING CLEARANCE BEFORE INSTALLING ANY ELECTRICAL PANELS OR CABINETS AND SHALL MOVE THE PANELS AT HIS EXPENSE IF REJECTED BY AN INSPECTOR. IF CLEARANCE IS NOT POSSIBLE, THE DESIGNER SHALL BE NOTIFIED IMMEDIATELY IN WRITING.
8. THE CONTRACTOR SHALL ALLOW THE MOVEMENT, BEFORE ROUGH-IN, OF ANY ELECTRICAL PANEL, DEVICE, LIGHT FIXTURE, ETC. A DISTANCE OF 10 FEET WITHOUT REQUIRING ADDITIONAL COST TO THE PROJECT.
9. TO ASSURE ALL DEVICES ARE RIGIDLY SET, THE ELECTRICAL CONTRACTOR SHALL SECURE ALL DEVICE BOXES WITH BRACKETS, HANGERS, ETC. DESIGNED FOR THE APPLICATION. ANY DEVICE BOXES NOT SECURED WILL BE MADE SECURE AT THE CONTRACTORS EXPENSE.
10. BEFORE ANY ELECTRICAL CONDUIT, BOXES, ETC. ARE COVERED (FLOOR, CEILINGS, WALLS, ETC.), THEY SHALL BE APPROVED BY THE INSPECTING OFFICER (INSPECTOR). THE UNCOVERING AND REPLACEMENT OF ELECTRICAL WORK FOR THE INSPECTION PURPOSES WILL BE AT THE COST OF THE ELECTRICAL CONTRACTOR.
11. DURING CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL REMOVE, REROUTE, AND/OR RELOCATE ANY EXISTING ELECTRICAL EQUIPMENT THAT CONFLICTS WITH THE REMODEL OR ADDITION. ALL SYSTEMS SHALL BE OPERABLE AT THE COMPLETION OF THE PROJECT. THE OWNER RESERVES FIRST RIGHT OF REFUSAL ON ALL ELECTRICAL EQUIPMENT WHICH IS NOT TO BE REUSED. EQUIPMENT WHICH IS NOT REUSED OR RECLAIMED BY THE OWNER BECOMES THE PROPERTY OF THE ELECTRICAL CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES.
12. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ELECTRICAL CONTINUITY TO REMAINING EQUIPMENT WHEN ANY EXISTING ELECTRICAL EQUIPMENT IS REMOVED.

Sheet List Table

COORDINATION SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING	COMMENTS
XX / X	MECHANICAL/PLUMBING EQUIPMENT CALLOUT		
X / XX.X	DIAGRAM CALLOUT		

ELECTRICAL LINETYPE SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING	COMMENTS
———	CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING		
– – – –	CONDUIT RUN CONCEALED IN FLOOR OR BELOW GROUND		
— — —	SURFACE RACEWAY/WIREMOLD		
-·-·-·-	LOW VOLTAGE CONDUIT RUN		
—·—·—	VOLTS DIRECT CURRENT		
- - - - -	DEMOLITION		
— x — x —	DEMOLITION		
———	EXISTING TO REMAIN		
	HOME RUN TO PANEL		
	CONDUIT STUB		
	CONDUIT BREAK/CONTINUATION		
	CONDUIT STUB DOWN		
	CONDUIT STUB UP		

SCHEMATIC SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING	COMMENTS
	ONE-LINE DIAGRAM FUSE		
100A 3P	ONE-LINE DIAGRAM CIRCUIT BREAKER		
M	ONE-LINE DIAGRAM METER BASE		
	ONE-LINE DIAGRAM GROUND ROD		
	ONE-LINE DIAGRAM TRANSFORMER		
250A-4	ONE-LINE DIAGRAM CONDUCTOR CALLOUT		

SYMBOL NOTES

(1) SEE LUMINAIRE SCHEDULE FOR FIXTURE TYPES AND DESCRIPTION
(2) SEE LUMINAIRE SCHEDULE FOR MOUNTING REQUIREMENTS
(3) WIRE LIGHT FIXTURE FROM ADJACENT J-BOX
(4) CONNECT NEAREST UN-SWITCHED HOT CONDUCTOR TO EMERGENCY BALLAST
(5) DIRECTIONAL ARROWS INDICATE REQUIRED CHEVRONS
(6) COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL INTERIOR ELEVATIONS
(7) USE WITH POWER PACK
(8) "X" IN SYMBOL IS INCHES BETWEEN RECEPTACLE ALONG WIREWAY. SEE DRAWINGS
(9) PROVIDE UL LISTED DEVICE COMPATIBLE WITH THE FIRE ALARM PANEL/SYSTEM
(10) MATCH THE VOLTAGE OF THE RELAY WITH THAT OF THE CONTROLLING CIRCUIT
(11) USE A 4"X4" BOX WITH A MUD RING TO MATCH THE DEVICE AND INSTALLATION.
(12) PROVIDE MUD RING AND/OR BOX COVER APPROPRIATE FOR DEVICE/FIXTURE SERVED
(13) USE HEAVY DUTY DEVICE FOR 480 VOLT
(14) SIZE TO THE EQUIPMENT BEING CONTROLLED
(15) FIRE ALARM PANELS:
FACP: FIRE ALARM CONTROL PANEL
NAC: NOTIFICATION APPLIANCE CIRCUIT PANEL
ANNUN: GRAPHIC ANNUNCIATOR PANEL
SES: SMOKE EVACUATION SYSTEM PANEL
(16) LIGHT FIXTURES ARE SCALED WITHIN THE DRAWINGS BASED ON ACTUAL DIMENSIONS
(17) COORDINATE MOUNTING HEIGHT WITH ARCHITECTURAL INTERIOR ELEVATIONS AND ELECTRICAL PLANS

LIGHTING SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING	COMMENTS
	LINEAR LIGHT FIXTURE. SEE LUMINAIRE SCHEDULE	CEILING	(1)(2)(3)(16)
	EMERGENCY LINEAR LIGHT FIXTURE	CEILING	(1)(2)(3)(16)
	LINEAR LIGHT FIXTURE	WALL	(1)(2)(3)(16)
	LIGHT FIXTURE. SEE LUMINAIRE SCHEDULE	CEILING	(1)(3)
	EMERGENCY LIGHT FIXTURE. SEE LUMINAIRE SCHEDULE	CEILING	(1)(3)
	EMERGENCY LIGHT FIXTURE. SEE LUMINAIRE SCHEDULE	AS NOTED	(1)(2)
	EXIT SIGN. SEE LUMINAIRE SCHEDULE	CEILING	(1)(4)(5)
	EXIT SIGN, ON WALL. SEE LUMINAIRE SCHEDULE	AS NOTED	(1)(2)(4)(5)
	DUAL TECH VACANCY SENSOR	CEILING	(7)
$T	SINGLE POLE TIMER SWITCH	+4'-0"	(17)
$	LOW VOLTAGE SWITCH. SEE RELAY PANEL	+4'-0"	(17)
	DUAL TECH VACANCY SWITH	+4'-0"	(17)
	ASTRONOMIC TIME CLOCK, SURFACE	+6'-6" A.F.F.	

POWER SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	MOUNTING	COMMENTS
(S)(D)(Q)	(S)SIMPLEX (D)DUPLEX (Q)QUADPLEX OR DOUBLE DUPLEX		
	CONVENIENCE OUTLET, STANDARD	+18"	
	CONVENIENCE OUTLET, GFCI	+18"	
	CONVENIENCE OUTLET, CUSTOM MOUNTED. SEE ARCHITECTURAL INTERIOR ELEVATIONS	AS NOTED	(6)
	CONVENIENCE OUTLET, CUSTOM MOUNTED GFCI. SEE ARCHITECTURAL INTERIOR ELEVATIONS	AS NOTED	(6)
WP	CONVENIENCE OUTLET IN WEATHERPROOF ENCLOSURE	+18"	
$TH	MANUAL MOTOR WITH THERMAL OVERLOAD		
WP	FUSED DISCONNECT SWITCH IN WEATHERPROOF ENCLOSURE	AS NOTED	(13)(14)
	MOTOR		
	MANUAL TRANSFER SWITCH	AS NOTED	(13)(14)
	UTILITY POWER POLE	POLE	
	UTILITY PEDESTAL	PEDESTAL	
M	UTILITY METER	SEE PLANS	
	TRANSFORMER	SEE PLANS	
	MAIN DISTRIBUTION PANEL 'MDP'	SEE PLANS	
	PANEL BOARD, SURFACE	+6'-6" A.F.F.	(15)

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PROFESSIONAL ENGINEER
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#13060801-2202
STATE OF UTAH
STAMP:

NO.	DATE	REMARKS
	2/24/23	ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS

DWG CREATED: 01/05/23
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SHT SET: 22501 SAN JUAN COUNTY FAIRGROUNDS RV PARK

SCALE: SCALE

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SAN JUAN COUNTY
SJC FAIRGROUNDS RV STALLS
ELECTRICAL SYMBOLS AND NOTES
PROJECT NUMBER: 2204-024
SUBMITTAL:

SAN JUAN COUNTY
SHEET NO. E001

E001 ELECTRICAL SYMBOLS AND NOTES
SCALE

ELECTRICAL SITE PLAN

SCALE: 1" = 40'-0"

0' 40' 80'

GENERAL NOTES

1. ELECTRICAL CONTRACTOR TO COORDINATE ALL SITE UTILITY REQUIREMENTS WITH EMPIRE ELECTRIC.

KEYED NOTES

1. TYPICAL DIRECT BURY RV PEDESTAL. MILBANK: U5200-XL-75 OR APPROVED EQUIVALENT.
2. APPROXIMATE LOCATION OF EXISTING UTILITY PRIMARY VOLTAGE POWER POLE. TRANSITION UNDERGROUND WITH RISER PER EMPIRE ELECTRIC SPECIFICATIONS.
3. APPROXIMATE ROUTING OF NEW UNDERGROUND PRIMARY VOLTAGE FEEDER. COORDINATE ROUTING AND INSTALLATION REQUIREMENTS WITH EMPIRE ELECTRIC.
4. APPROXIMATE LOCATION OF NEW PAD MOUNTED TRANSFORMERS. COORDINATE EXACT LOCATION AND INSTALLATION REQUIREMENTS WITH EMPIRE ELECTRIC.
5. APPROXIMATE LOCATION OF NEW RACK MOUNTED MAIN SERVICE DISCONNECT AND METERING PER EMPIRE ELECTRIC STANDARDS.
6. WEATHERPROOF RECEPTACLE IN SQUARE STRAIGHT STEEL POLE. ORDER POLE WITH RECEPTACLE CUTOUT 18" ABOVE POLE BASE. FINISH HEIGHT WITH 30" CONCRETE BASE IS AROUND 48".
7. PROVIDE (2) 2-1/2" AND (2) 1" SCHEDULE 40 PVC CONDUIT STUBS FROM MDP2 FOR FUTURE EXPANSION. CAP, LABEL, AND PROVIDE CONDUITS WITH PULL-CORDS. STAKE LOCATION OF STUB TERMINATION.

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DWG SAME: 2204-024-ES101
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SAN JUAN COUNTY

SJC FAIRGROUNDS RV STALLS

ELECTRICAL SITE PLAN

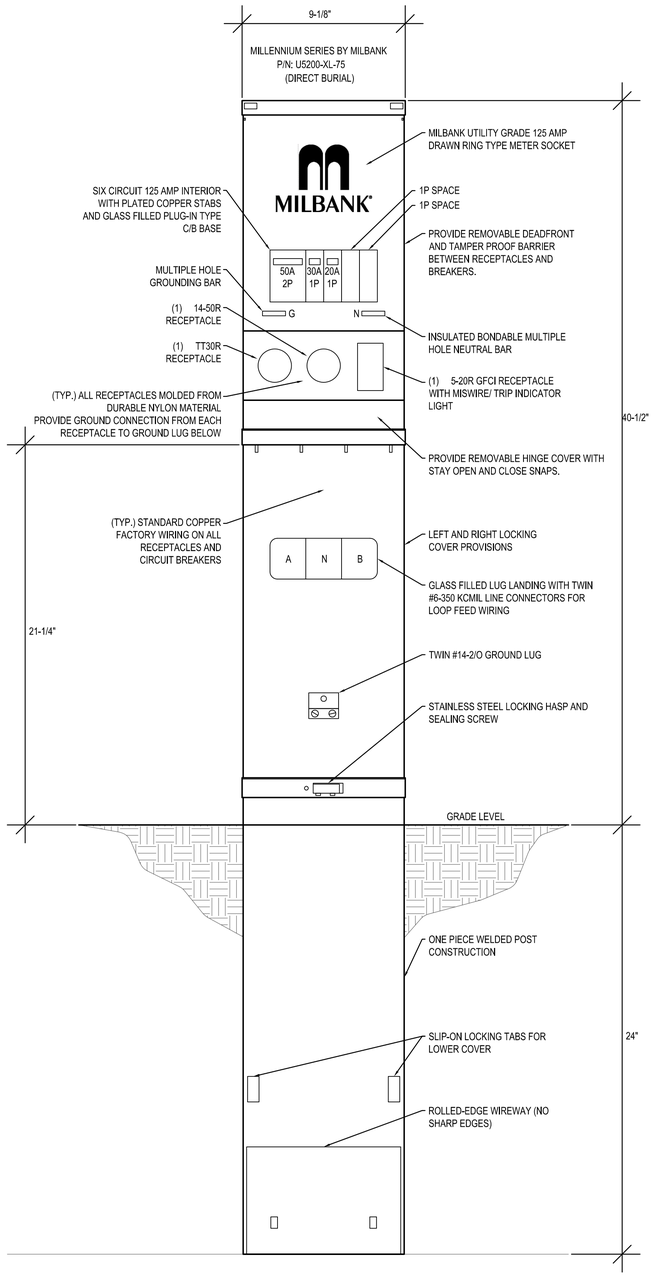
PROJECT NUMBER: 2204-024

SUBMITTAL:

SAN JUAN
COUNTY

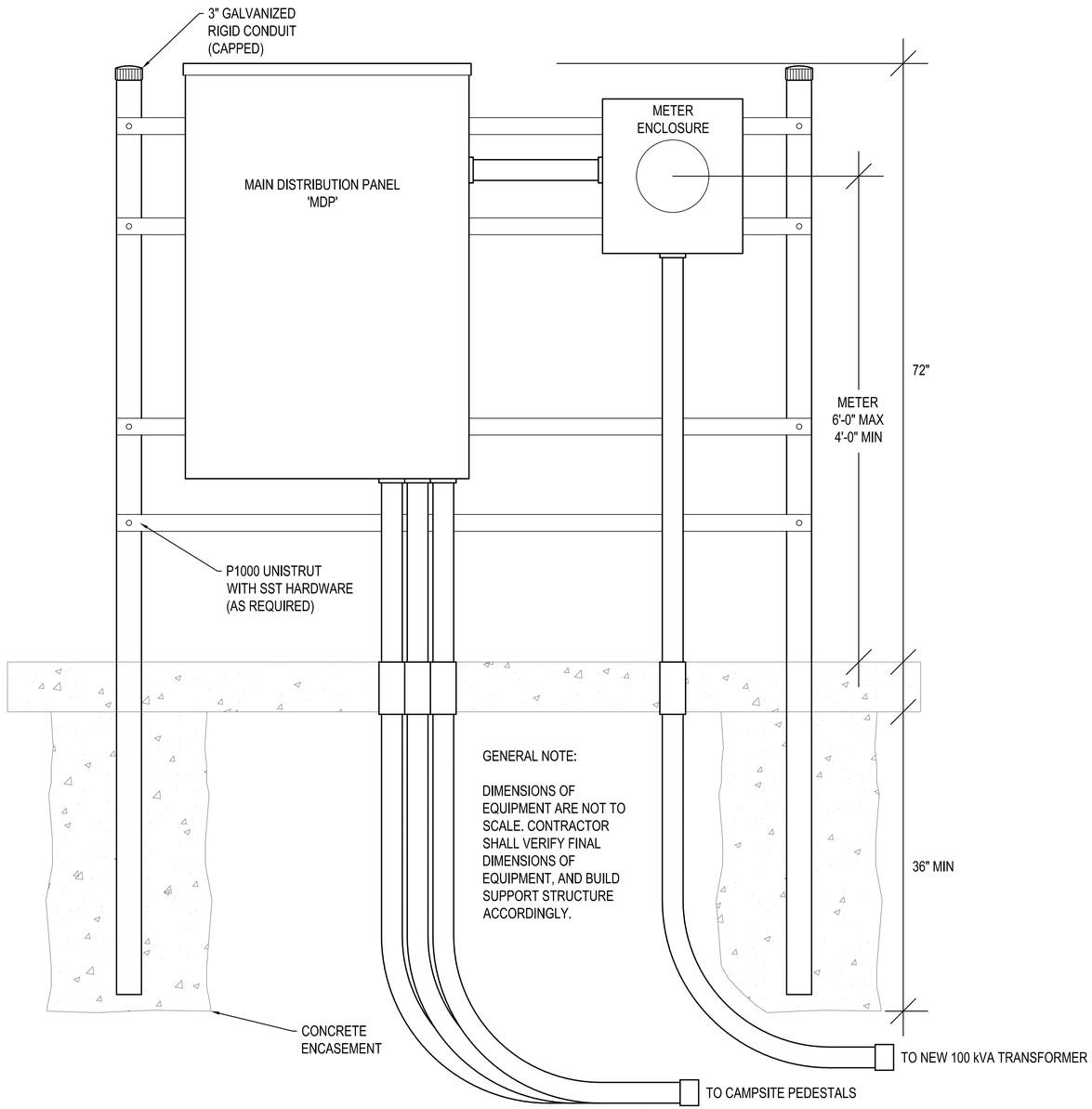
SHEET NO. ES101

ES101	ELECTRICAL SITE PLAN
SCALE	1" = 40'-0"



RV01 ENLARGED RV PEDESTAL DIAGRAM

SCALE: NO SCALE



SE01 SERVICE EQUIPMENT DETAIL - ELEVATION

SCALE: NO SCALE

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NO.	DATE	REMARKS
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DWG NAME: 2204-024-E501
SHT SET: 22501 SAN JUAN COUNTY FAIRGROUNDS RV PARK

SCALE: SCALE

SAN JUAN COUNTY
SJC FAIRGROUNDS RV STALLS
ELECTRICAL DIAGRAMS

PROJECT NUMBER: 2204-024

SUBMITTAL:

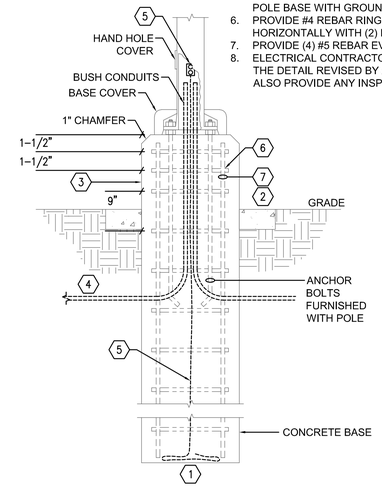
SAN JUAN
COUNTY

SHEET NO. E501

E501 ELECTRICAL DIAGRAMS
SCALE

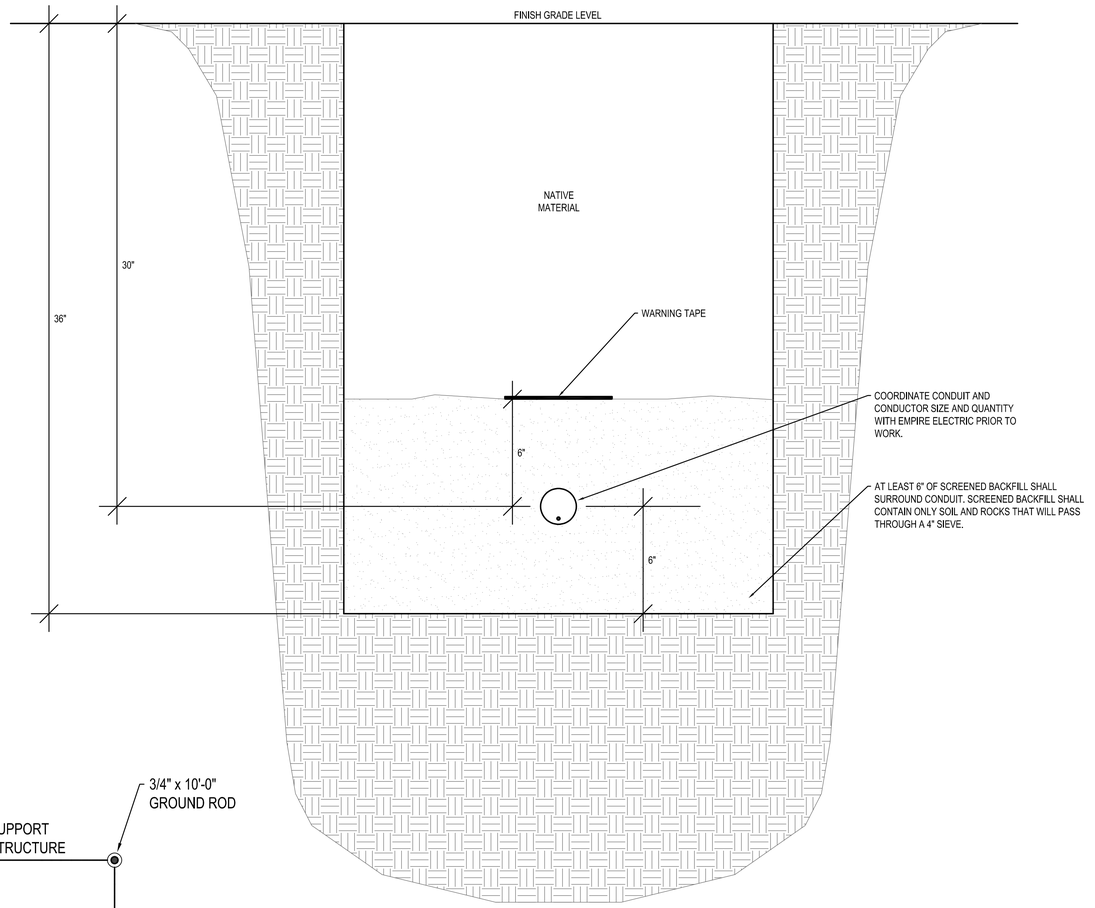
FOUNDATION DEPTH CHART	
HEIGHT	DEPTH
12'	4'-6"
18'	5'-0"
20'	5'-0"
25'	5'-6"
30'	6'-0"
35'	6'-6"
40'	7'-0"

NOTES:
1. FOUNDATIONS ARE 24" IN DIAMETER UNLESS NOTED OTHERWISE.
2. PROVIDE 6" X 4" DEEP CONCRETE MOW STRIP, FLUSH WITH GRADE WHERE FOUNDATION IS LOCATED ON GRASS.
3. BASE SHALL EXTEND 30" ABOVE GRADE WHERE LOCATED IN PARKING LOTS AND AREAS SUBJECT TO VEHICULAR ACCESS.
4. CONDUIT SHALL BE LOCATED A MINIMUM OF 24" BELOW GRADE. USE RIGID WRAPPED ELBOWS.
5. PROVIDE #6 BARE COPPER COILED 10'-0" IN BOTTOM OF FOUNDATION, OR 10' X 5/8" COPPER GROUND ROD, AS REQUIRED BY LOCAL AUTHORITY. CONNECT GROUND TO POLE BASE WITH GROUND LUG.
6. PROVIDE #4 REBAR RINGS SPACED 9" APART HORIZONTALLY WITH (2) RINGS IN TOP 4".
7. PROVIDE (4) #5 REBAR EVENLY SPACED VERTICALLY.
8. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO HAVE THE DETAIL REVISED BY A STRUCTURAL PE, WHO WILL ALSO PROVIDE ANY INSPECTION REQUIREMENTS.



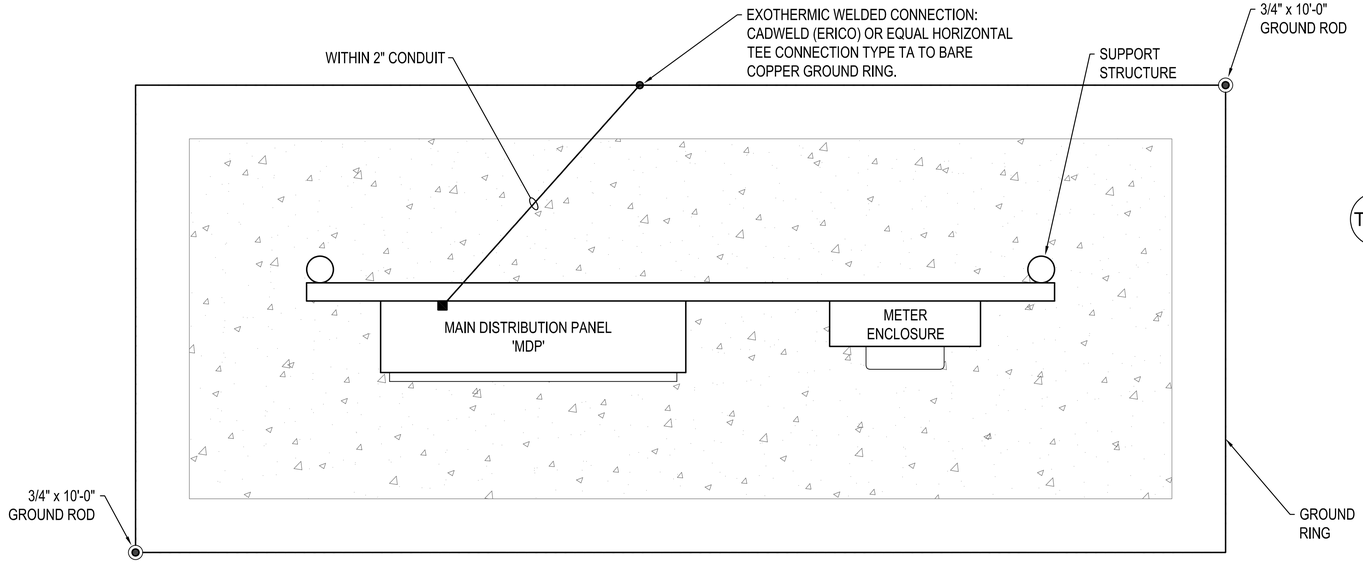
PB01 LIGHTING POLE FOUNDATION

SCALE: NO SCALE



TR02 SECONDARY TRENCH SECTION

SCALE: NO SCALE



GENERAL NOTES:
1. DIMENSIONS OF EQUIPMENT ARE NOT TO SCALE. CONTRACTOR SHALL VERIFY FINAL DIMENSIONS OF EQUIPMENT, AND BUILD SUPPORT STRUCTURE ACCORDINGLY.
2. CONDUIT FOR GROUND RING ENDS AT CONCRETE SLAB UNDERGROUND

SE02 SERVICE EQUIPMENT DETAIL - FOOTPRINT

SCALE: NO SCALE

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SAN JUAN COUNTY
SJC FAIRGROUNDS RV STALLS
ELECTRICAL DIAGRAMS
PROJECT NUMBER: 2204-024
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SAN JUAN COUNTY

SHEET NO. E502

PANELBOARD SCHEDULE

PED-1,7,10,13,16,20 | VOLTAGE 120/240 | MOUNTING | FEED | MAINS 125 AMP | DIMS. 9-1/8" W | SPECIAL EQUIPMENT: X GROUND BUS
PANEL U5200-XL-75 | | | | | | X SUB-FEED LUGS
TYPE SEE DRAWINGS | PHASE 1 WIRES 3 | FLUSH | TOP | X LUGS | 5-9/16" D | X NEMA 3R
LOCATION | AIC 10K AMPS | X SURF. | X BOTTOM | BRKR | 64-1/2" H | 200% NEUTRAL
SURGE PROTECTOR

CIR NO.	CIRCUIT DESCRIPTION	CODE	BRKR P	BRKR AMP	BRKR SIZE	WIRE	CIRCUIT LOAD	COMBINED PHASES A	COMBINED PHASES B	CIRCUIT LOAD	WIRE SIZE	BRKR AMP	BRKR P	CODE	CIRCUIT DESCRIPTION	CIR NO.
1	RECEPTACLE	-	2	50	6	6000	6000				12	20	1	-	RECEPTACLE	2
3	-	-	-	-	-	6000			6000		-	-	-	-	SPACE ONLY	4
5	RECEPTACLE	-	1	30	10		0				-	-	-	-	SPACE ONLY	6
7								12000	12000						TWO DOWNSTREAM	8
9								12000	12000						PED CONTRIBUTION	10
CODES:						VA	18000	18000	29 KVA	6 = EXISTING BREAKER TO REMAIN, REMOVE LOAD						
1 = SEE ONE-LINE DIAGRAM OR EQUIPMENT SCHEDULE						DIV	14400	14400	AV. AMPS	7 = AFCI BREAKER			8 = GFEP BREAKER			
FOR OCPD, CONDUCTOR, GROUND AND CONDUIT SIZING.						AMPS	120	120	120 A	9 = EXISTING BRKR AND LOAD TO REMAIN						
2 = SHUNT-TRIP BREAKER	3 = PROVIDE NEW BREAKER FOR EXISTING LOAD									10 = PROVIDE NEW BREAKER FOR NEW LOAD						
4 = GFCI BREAKER	5 = PROVIDE LOCK-OFF DEVICE									11 = UTILIZE EXISTING BREAKER FOR NEW LOAD						
THIS PANEL, LUGS, BREAKERS, ETC. SHALL ALL BE RATED 75° C AND 10K AIC																

PANELBOARD SCHEDULE

PED-2,4,6,8,11,14,17,21 | VOLTAGE 120/240 | MOUNTING | FEED | MAINS 125 AMP | DIMS. 9-1/8" W | SPECIAL EQUIPMENT: X GROUND BUS
PANEL U5200-XL-75 | | | | | | X SUB-FEED LUGS
TYPE SEE DRAWINGS | PHASE 1 WIRES 3 | FLUSH | TOP | X LUGS | 5-9/16" D | X NEMA 3R
LOCATION | AIC 10K AMPS | X SURF. | X BOTTOM | BRKR | 64-1/2" H | 200% NEUTRAL
SURGE PROTECTOR

CIR NO.	CIRCUIT DESCRIPTION	CODE	BRKR P	BRKR AMP	BRKR SIZE	WIRE	CIRCUIT LOAD	COMBINED PHASES A	COMBINED PHASES B	CIRCUIT LOAD	WIRE SIZE	BRKR AMP	BRKR P	CODE	CIRCUIT DESCRIPTION	CIR NO.
1	RECEPTACLE	-	2	50	6	6000	6000				12	20	1	-	RECEPTACLE	2
3	-	-	-	-	-	6000			6000		-	-	-	-	SPACE ONLY	4
5	RECEPTACLE	-	1	30	10		0				-	-	-	-	SPACE ONLY	6
7								6000	6000						ONE DOWNSTREAM	8
9								6000	6000						PED CONTRIBUTION	10
CODES:						VA	12000	12000	22 KVA	6 = EXISTING BREAKER TO REMAIN, REMOVE LOAD						
1 = SEE ONE-LINE DIAGRAM OR EQUIPMENT SCHEDULE						DIV	10800	10800	AV. AMPS	7 = AFCI BREAKER			8 = GFEP BREAKER			
FOR OCPD, CONDUCTOR, GROUND AND CONDUIT SIZING.						AMPS	90	90	90 A	9 = EXISTING BRKR AND LOAD TO REMAIN						
2 = SHUNT-TRIP BREAKER	3 = PROVIDE NEW BREAKER FOR EXISTING LOAD									10 = PROVIDE NEW BREAKER FOR NEW LOAD						
4 = GFCI BREAKER	5 = PROVIDE LOCK-OFF DEVICE									11 = UTILIZE EXISTING BREAKER FOR NEW LOAD						
THIS PANEL, LUGS, BREAKERS, ETC. SHALL ALL BE RATED 75° C AND 10K AIC																

PANELBOARD SCHEDULE

PED-3,5,9,12,15,18,19,22 | VOLTAGE 120/240 | MOUNTING | FEED | MAINS 125 AMP | DIMS. 9-1/8" W | SPECIAL EQUIPMENT: X GROUND BUS
PANEL U5200-XL-75 | | | | | | X SUB-FEED LUGS
TYPE SEE DRAWINGS | PHASE 1 WIRES 3 | FLUSH | TOP | X LUGS | 5-9/16" D | X NEMA 3R
LOCATION | AIC 10K AMPS | X SURF. | X BOTTOM | BRKR | 64-1/2" H | 200% NEUTRAL
SURGE PROTECTOR

CIR NO.	CIRCUIT DESCRIPTION	CODE	BRKR P	BRKR AMP	BRKR SIZE	WIRE	CIRCUIT LOAD	COMBINED PHASES A	COMBINED PHASES B	CIRCUIT LOAD	WIRE SIZE	BRKR AMP	BRKR P	CODE	CIRCUIT DESCRIPTION	CIR NO.
1	RECEPTACLE	-	2	50	6	6000	6000				12	20	1	-	RECEPTACLE	2
3	-	-	-	-	-	6000			6000		-	-	-	-	SPACE ONLY	4
5	RECEPTACLE	-	1	30	10		0				-	-	-	-	SPACE ONLY	6
CODES:						VA	6000	6000	12 KVA	6 = EXISTING BREAKER TO REMAIN, REMOVE LOAD						
1 = SEE ONE-LINE DIAGRAM OR EQUIPMENT SCHEDULE						DIV	6000	6000	AV. AMPS	7 = AFCI BREAKER			8 = GFEP BREAKER			
FOR OCPD, CONDUCTOR, GROUND AND CONDUIT SIZING.						AMPS	50	50	50 A	9 = EXISTING BRKR AND LOAD TO REMAIN						
2 = SHUNT-TRIP BREAKER	3 = PROVIDE NEW BREAKER FOR EXISTING LOAD									10 = PROVIDE NEW BREAKER FOR NEW LOAD						
4 = GFCI BREAKER	5 = PROVIDE LOCK-OFF DEVICE									11 = UTILIZE EXISTING BREAKER FOR NEW LOAD						
THIS PANEL, LUGS, BREAKERS, ETC. SHALL ALL BE RATED 75° C AND 10K AIC																

FEEDER SCHEDULE - PANELBOARDS

FEEDER	FEEDER CONDUCTOR AMP	n	QTY	DESC.	SIZE	MAT.	E.G. CONDUCTOR QTY	SIZE	MAT.	CONDUIT SIZE	CONDUIT TYPE	KEYED NOTES
125A-3	120	1	3	A-B-N	#1/0	AL	1	#4	AL	1-1/2"	PVC-40	1
125A-3+	135	1	3	A-B-N	#2/0	AL	1	#4	AL	1-1/2"	PVC-40	1
125A-3++	155	1	3	A-B-N	#3/0	AL	1	#4	AL	2"	PVC-40	1
125A-3+++	230	1	3	A-B-N	300	AL	1	#2	AL	2-1/2"	PVC-40	1
400A-3	410	2	3	A-B-N	250	AL	1	#1	AL	2-1/2"	PVC-40	1

GENERAL NOTES:
- THHN/THWN/THWN-2 FOR 400 KCMIL AND BELOW, XHHW/XHHW-2 FOR 500 KCMIL AND ABOVE.
- GROUND CONDUCTOR SHALL BE DELETED FOR SERVICE ENTRANCE CONDUCTORS.
- ALL CONDUITS SHALL BE SIZED IN ACCORDANCE WITH NEC CHAPTER 9, TABLE 1.
- WHERE CONDUIT TYPES ARE USED OTHER THAN THOSE SPECIFIED WITHIN THIS SCHEDULE, THE CONTRACTOR SHALL DEMONSTRATE CONDUIT FILL COMPLIANCE WITH NEC CHAPTER 9, TABLE 4.

KEYED NOTES:
1 REFER TO NEC 310,15(B)(16) FOR THE AMPACITY OF 75 DEGREE C RATED CU OR AL.

GROUNDING ELECTRODE

G.E. SIZE BASED ON NEC TABLE 250.66 [GROUNDING ELECTRODE CONDUCTOR FOR ALTERNATING-CURRENT SYSTEMS.]

MAIN SERVICE SIZE [A]:	400
LOCATION OF NEUTRAL TO GROUND BOND:	MDP2
MAIN SERVICE FEEDER SIZE: CONDUCTOR [NO. SETS - SIZE AL]:	400A-3 2 - 250 KCMIL AL
CALCULATED AL EQUIVALENT CMIL:	500000
EQUIVALENT CU MAIN FEEDER: CONDUCTOR [NO. SETS - SIZE CU]:	400-3 1 - 500 KCMIL CU
CALCULATED CU EQUIVALENT CMIL:	500000
GROUNDING ELECTRODE SIZE:	#1/0 AWG CU
G.E. CONDUCTOR MATERIAL:	PER NEC 250.62
G.E. CONDUCTOR INSTALLATION:	PER NEC 250.64

GROUNDING ELECTRODE

G.E. SIZE BASED ON NEC TABLE 250.66 [GROUNDING ELECTRODE CONDUCTOR FOR ALTERNATING-CURRENT SYSTEMS.]

MAIN SERVICE SIZE [A]:	400
LOCATION OF NEUTRAL TO GROUND BOND:	MDP1
MAIN SERVICE FEEDER SIZE: CONDUCTOR [NO. SETS - SIZE AL]:	400A-3 2 - 250 KCMIL AL
CALCULATED AL EQUIVALENT CMIL:	500000
EQUIVALENT CU MAIN FEEDER: CONDUCTOR [NO. SETS - SIZE CU]:	400-3 1 - 500 KCMIL CU
CALCULATED CU EQUIVALENT CMIL:	500000
GROUNDING ELECTRODE SIZE:	#1/0 AWG CU
G.E. CONDUCTOR MATERIAL:	PER NEC 250.62
G.E. CONDUCTOR INSTALLATION:	PER NEC 250.64

KEYED NOTES

1. (1) 1" SCHEDULE 40 PVC CONDUIT WITH #10 AWG CU CONDUCTORS FOR AREA LIGHTING.
2. (1) 1" SCHEDULE 40 PVC CONDUIT WITH #10 AWG CU CONDUCTORS FOR RECEPTACLES.

PANELBOARD SCHEDULE

MDP2 | VOLTAGE 120/240 | MOUNTING | FEED | MAINS 400 AMP | DIMS. W | SPECIAL EQUIPMENT: X GROUND BUS
PANEL NQ | | | | | | SUB-FEED BRKR
TYPE SEE DRAWINGS | PHASE 1 WIRES 3 | FLUSH | TOP | LUGS | D | X NEMA 3R
LOCATION | AIC 22K AMPS | X SURF. | X BOTTOM | 400 BRKR | H | SURGE PROTECTOR
200% NEUTRAL

CIR NO.	CIRCUIT DESCRIPTION	CODE	BRKR P	BRKR AMP	BRKR SIZE	WIRE	CIRCUIT LOAD	COMBINED PHASES A	COMBINED PHASES B	CIRCUIT LOAD	WIRE SIZE	BRKR AMP	BRKR P	CODE	CIRCUIT DESCRIPTION	CIR NO.
1	PED-10,11,12	1	2	-	-	18000	36000			18000	-	-	2	1	PED-13,14,15	2
-	-	-	-	-	-	18000			36000	18000	-	-	-	-	-	-
3	PED-16,17,18	1	2	-	-	18000	18000			-	125	2	-	-	SPARE	4
-	-	-	-	-	-	18000			18000		-	-	-	-	-	-
5	SPARE	-	2	125	-		0			-	20	1	-	-	SPARE	6A
-	-	-	-	-	-			0		-	20	1	-	-	SPARE	6B
CODES:						VA	54000	54000	59 KVA	6 = EXISTING BREAKER TO REMAIN, REMOVE LOAD						
1 = SEE ONE-LINE DIAGRAM OR EQUIPMENT SCHEDULE						DIV	29700	29700	AV. AMPS	7 = AFCI BREAKER			8 = GFEP BREAKER			
FOR OCPD, CONDUCTOR, GROUND AND CONDUIT SIZING.						AMPS	248	248	248 A	9 = EXISTING BRKR AND LOAD TO REMAIN						
2 = SHUNT-TRIP BREAKER	3 = PROVIDE NEW BREAKER FOR EXISTING LOAD									10 = PROVIDE NEW BREAKER FOR NEW LOAD						
4 = GFCI BREAKER	5 = PROVIDE LOCK-OFF DEVICE									11 = UTILIZE EXISTING BREAKER FOR NEW LOAD						
SERVICE ENTRANCE RATED	THIS PANEL, LUGS, BREAKERS, ETC. SHALL ALL BE RATED 75° C AND 22K AIC															

PANELBOARD SCHEDULE

MDP1 | VOLTAGE 120/240 | MOUNTING | FEED | MAINS 400 AMP | DIMS. W | SPECIAL EQUIPMENT: X GROUND BUS
PANEL NQ | | | | | | SUB-FEED BRKR
TYPE SEE DRAWINGS | PHASE 1 WIRES 3 | FLUSH | TOP | LUGS | D | X NEMA 3R
LOCATION | AIC 22K AMPS | X SURF. | X BOTTOM | 400 BRKR | H | SURGE PROTECTOR
200% NEUTRAL

CIR NO.	CIRCUIT DESCRIPTION	CODE	BRKR P	BRKR AMP	BRKR SIZE	WIRE	CIRCUIT LOAD	COMBINED PHASES A	COMBINED PHASES B	CIRCUIT LOAD	WIRE SIZE	BRKR AMP	BRKR P	CODE	CIRCUIT DESCRIPTION	CIR NO.
1	PED-1,2,3	1	2	-	-	18000	30000			12000	-	-	2	1	PED-4,5	2
-	-	-	-	-	-	18000			30000	12000	-	-	-	-	-	-
3	PED-7,8,9	1	2	-	-	18000	36000			18000	-	-	2	1	PED-20,21,22	4
-	-	-	-	-	-	18000			36000	18000	-	-	-	-	-	-
5	PED-6,19	1	2	-	-	12000	12798			798	10	20	1	-	AREA LTG	6A
-	-	-	-	-	-	12000			12540	540	10	20	1	-	SITE RECEPT	6B
CODES:						VA	78798		78540	76 KVA	6 = EXISTING BREAKER TO REMAIN, REMOVE LOAD					
1 = SEE ONE-LINE DIAGRAM OR EQUIPMENT SCHEDULE						DIV	38438		37980	AV. AMPS	7 = AFCI BREAKER		8 = GFEP BREAKER			
FOR OCPD, CONDUCTOR, GROUND AND CONDUIT SIZING.						AMPS	320		317	318 A	9 = EXISTING BRKR AND LOAD TO REMAIN					
2 = SHUNT-TRIP BREAKER	3 = PROVIDE NEW BREAKER FOR EXISTING LOAD										10 = PROVIDE NEW BREAKER FOR NEW LOAD					
4 = GFCI BREAKER	5 = PROVIDE LOCK-OFF DEVICE										11 = UTILIZE EXISTING BREAKER FOR NEW LOAD					
SERVICE ENTRANCE RATED	THIS PANEL, LUGS, BREAKERS, ETC. SHALL ALL BE RATED 75° C AND 22K AIC															

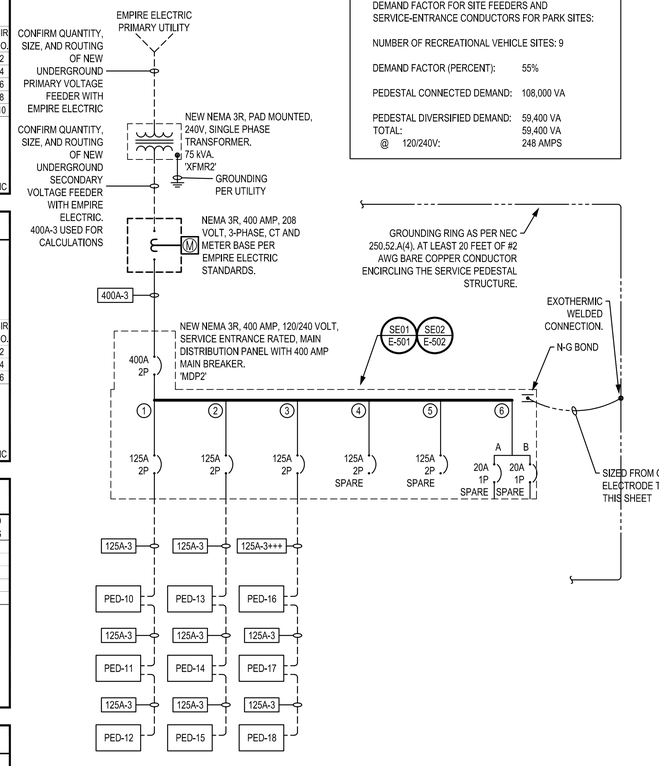

TABLE 551.73

DEMAND FACTOR FOR SITE FEEDERS AND SERVICE-ENTRANCE CONDUCTORS FOR PARK SITES:

NUMBER OF RECREATIONAL VEHICLE SITES: 9

DEMAND FACTOR (PERCENT):	55%
PEDESTAL CONNECTED DEMAND:	108,000 VA
PEDESTAL DIVERSIFIED DEMAND:	59,400 VA
TOTAL:	59,400 VA
@ 120/240V:	248 AMPS

2 SINGLE-LINE DIAGRAM 'MDP2'

E601 SCALE: NO SCALE

NOTE:
PROVIDE ACCESSIBLE LOCATIONS FOR ALL GROUNDING ELECTRODES TO ALLOW FOR INSPECTION PER NEC 250.24 (A)(1)

CLEARANCES TO OTHER UNDERGROUND UTILITIES

WATER:	5 FT. HORIZONTAL
SEWER:	5 FT. HORIZONTAL
NATURAL GAS:	10 FT. HORIZONTAL
CABLE TV:	1 FT. HORIZONTAL. 6" VERTICAL ABOVE SECONDARY
PHONE:	1 FT. HORIZONTAL. 6" VERTICAL ABOVE SECONDARY

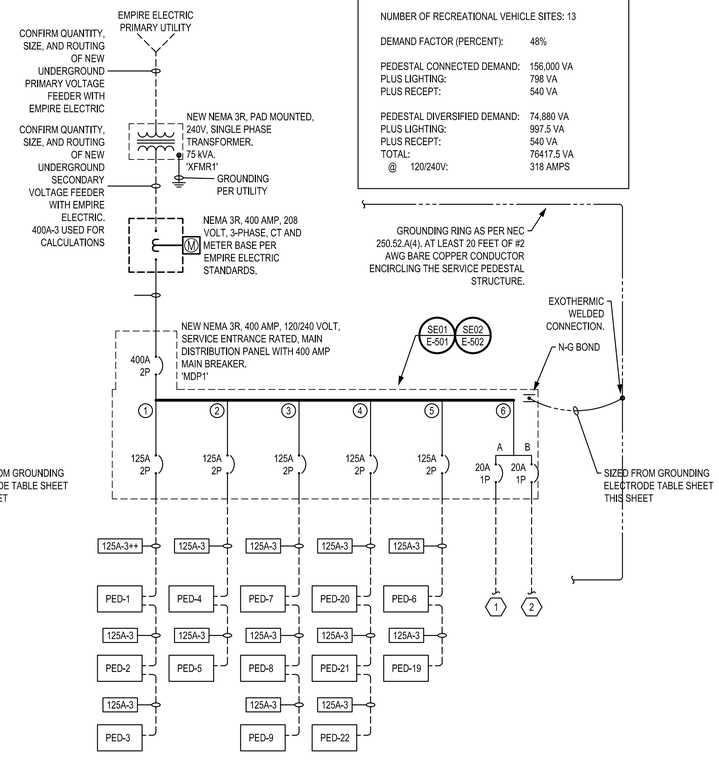

TABLE 551.73

DEMAND FACTOR FOR SITE FEEDERS AND SERVICE-ENTRANCE CONDUCTORS FOR PARK SITES:

NUMBER OF RECREATIONAL VEHICLE SITES: 13

DEMAND FACTOR (PERCENT):	48%
PEDESTAL CONNECTED DEMAND:	156,000 VA
PLUS LIGHTING:	798 VA
PLUS RECEPT:	540 VA
PEDESTAL DIVERSIFIED DEMAND:	74,880 VA
PLUS LIGHTING:	997.5 VA
PLUS RECEPT:	540 VA
TOTAL:	76417.5 VA
@ 120/240V:	318 AMPS

1 SINGLE-LINE DIAGRAM 'MDP1'

E601 SCALE: NO SCALE

NOTE:
PROVIDE ACCESSIBLE LOCATIONS FOR ALL GROUNDING ELECTRODES TO ALLOW FOR INSPECTION PER NEC 250.24 (A)(1)

CLEARANCES TO OTHER UNDERGROUND UTILITIES

WATER:	5 FT. HORIZONTAL
SEWER:	5 FT. HORIZONTAL
NATURAL GAS:	10 FT. HORIZONTAL
CABLE TV:	1 FT. HORIZONTAL. 6" VERTICAL ABOVE SECONDARY
PHONE:	1 FT. HORIZONTAL. 6" VERTICAL ABOVE SECONDARY

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PROFESSIONAL ENGINEER
JAMES JOSEPH KORHORN, JR
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01-23-23
STATE OF UTAH
STAMP:

Jones & DeMille Engineering, Inc.
CIVIL & STRUCTURAL ENGINEERING - SURVEYING
GIS - ENVIRONMENTAL - MATERIALS TESTING
1.800.748.5275 www.jonesanddemille.com

NO.	DATE	REMARKS
	03/06/23	ORIGINAL SUBMISSION FOR AUTHORIZATION
		REVISIONS

SCALE:
DWG NAME: 2204-024-SS01
SHT SET: 22501 SAN JUAN COUNTY FAIRGROUNDS RV PARK
DWG CREATED: 01/05/23
PEN TBL: cad standard.ctb
UPDATED: 3/7/2023
PLOTTED: 3/7/2023

SCALE

SAN JUAN COUNTY
SJC FAIRGROUNDS RV STALLS
ONE-LINE AND CALCULATIONS
PROJECT NUMBER: 2204-024
SUBMITTAL:

SAN JUAN
COUNTY
SHEET NO. E601

E601 ONE-LINE AND CALCULATIONS
SCALE

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER: CATALOG NUMBER	VOLTS	LAMPS QTY	LAMPS MODEL	MOUNTING	VA
A1	DUAL POLE MOUNTED AREA LUMINAIRES AND TYPE IV OPTICS MOUNTED ON 20' SSS POLE AND RECEPTACLE AT 18' WITH BI-LEVEL MOTION/AMBIENT SENSOR	LITHONIA RSX1 LED P4 40K R4MVOLT SPA NLTAIR2 PIRHN SCBA OR APPROVED EQUIVALENT	120	1	266 W LED	POLE	266 VA

GENERAL NOTES

1. REFER TO LUMINAIRE DESCRIPTION FOR FIXTURE REQUIREMENTS. MANUFACTURER'S MODEL NUMBERS MAY NOT BE SPECIFIC OR COMPLETE. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE COMPLETE FIXTURES AS DESCRIBED ON THIS SCHEDULE WITH ALL MOUNTING HARDWARE AND EQUIPMENT FOR A COMPLETE INSTALLATION.
2. REFER TO THE ARCHITECTURAL REFLECTED CEILING DRAWINGS FOR EXACT FIXTURE LOCATIONS AND CEILING TYPES. VERIFY EXACT CEILING TYPES AND BRING TO THE ATTENTION OF THE ARCHITECT AND THE ELECTRICAL ENGINEER WITH ANY DISCREPANCIES PRIOR TO BID. FIXTURES SHALL MATCH ARCHITECTURAL CEILING TYPES.
3. PROVIDE ALL FIXTURE SUPPORT AND SEISMIC BRACING TO SECURE FIXTURE TO STRUCTURE, WALLS AND CEILING SYSTEMS. REFER TO MOUNTING DETAILS FOR ADDITIONAL REQUIREMENTS. PROVIDE ALL POLE BASES AS SHOWN ON THE DETAILS.
4. PRIOR APPROVAL SHALL BE REQUIRED FOR ALL MANUFACTURER'S WHO ARE NOT LISTED ON THIS SCHEDULE. THE PRIOR APPROVALS SHALL BE SUBMITTED TO THE ELECTRICAL ENGINEER (7) WORKING DAYS PRIOR TO THE BID. PRIOR APPROVALS RECEIVED AFTER THIS TIME CUT-OFF SHALL NOT BE REVIEWED OR APPROVED.
5. SUBMITTALS FOR PRIOR APPROVAL SHALL BE EQUIVALENT TO THE SPECIFIED FIXTURES AND REVIEWED AND SIGNED BY THE PRINCIPLE OF THE ORGANIZATION THAT IS SUBMITTING FOR APPROVAL. PROVIDE COMPLETE FIXTURE SUBMITTALS AS LISTED IN THE SPECIFICATION. ALL INFORMATION THAT DOES NOT APPLY TO THE FIXTURE BEING SUBMITTED SHALL BE CROSSED OUT. THE ELECTRICAL ENGINEER SHALL BE THE FINAL DETERMINATION IF THE FIXTURE IS EQUIVALENT OR NOT.
6. FIXTURES THAT HAVE BEEN REVIEWED AND APPROVED AS EQUIVALENT TO THE SPECIFIED FIXTURES SHALL BE LISTED IN AND ADDENDUM PRIOR TO BID. LIGHT FIXTURES WITHOUT PRIOR APPROVAL ARE REJECTED AND CONTRACTOR SHALL BASE THEIR BID ON THE APPROVED LISTED FIXTURES. A VERBAL APPROVAL WILL NOT BE GIVEN OR APPROVED BY VBFA AT ANY TIME.
7. ANY ADDITIONAL TIME REQUIRED TO VERIFY IF SUBMITTED FIXTURE MEETS ALL PHOTOMETRIC REQUIREMENTS SHALL BE PAID BY THE AGENCY REQUESTING APPROVAL. PHOTOMETRIC POINT-BY-POINT PLANS MAY BE REQUIRED FROM THE AGENCY SUBMITTING FOR APPROVAL INDICATING EQUIVALENCY.
8. COLOR TEMPERATURE FOR ALL LAMPING SHALL BE 3500K FOR INTERIOR LIGHTING AND 4000K FOR EXTERIOR LIGHTING UNLESS NOTED OTHERWISE IN THIS SCHEDULE.
9. PROVIDE FACES AND CHEVRONS AS SHOWN ON THE DRAWINGS.

VOLTAGE DROP - 240/1

WIRE SIZE		#12 AWG CU			#10 AWG CU			#8 AWG CU			#6 AWG CU		
°C		60	75	90	60	75	90	60	75	90	60	75	90
A	kVA	20	25	30	30	35	40	40	50	55	55	65	75
5	1.20	383	364	347	609	579	552	968	921	878	1539	1465	1397
7.5	1.80	255	242	231	406	386	368	645	614	585	1026	976	931
10	2.40	191	182	173	304	289	276	484	460	439	769	732	698
12.5	3.00	153	145	139	243	231	221	387	368	351	615	586	558
15	3.60	127	121	115	203	193	184	322	307	292	513	488	465
17.5	4.20	-	104	99	174	165	157	276	263	251	439	418	399
20	4.80	-	91	86	152	144	138	242	230	219	384	366	349
22.5	5.40	-	-	77	135	128	122	215	204	195	342	325	310
25	6.00	-	-	-	-	115	110	193	184	175	307	293	279
27.5	6.60	-	-	-	-	105	100	176	167	159	279	266	254
30	7.20	-	-	-	-	-	92	161	153	146	256	244	232
32.5	7.80	-	-	-	-	-	-	-	141	135	236	225	214
35	8.40	-	-	-	-	-	-	-	131	125	219	209	199
37.5	9.00	-	-	-	-	-	-	-	122	117	205	195	186
40	9.60	-	-	-	-	-	-	-	115	109	192	183	174
42.5	10.20	-	-	-	-	-	-	-	-	103	181	172	164
45	10.80	-	-	-	-	-	-	-	-	-	-	162	155
47.5	11.40	-	-	-	-	-	-	-	-	-	-	154	147
50	12.00	-	-	-	-	-	-	-	-	-	-	146	139
52.5	12.60	-	-	-	-	-	-	-	-	-	-	-	133
55	13.20	-	-	-	-	-	-	-	-	-	-	-	127
57.5	13.80	-	-	-	-	-	-	-	-	-	-	-	121
60	14.40	-	-	-	-	-	-	-	-	-	-	-	116

VOLTAGE DROP - 120/1

WIRE SIZE		#12 AWG CU			#10 AWG CU			#8 AWG CU			#6 AWG CU		
°C		60	75	90	60	75	90	60	75	90	60	75	90
A	kVA	20	25	30	30	35	40	40	50	55	55	65	75
5	0.60	191	182	173	304	289	276	484	460	439	769	732	698
7.5	0.90	127	121	115	203	193	184	322	307	292	513	488	465
10	1.20	95	91	86	152	144	138	242	230	219	384	366	349
12.5	1.50	76	72	69	121	115	110	193	184	175	307	293	279
15	1.80	63	60	57	101	96	92	161	153	146	256	244	232
17.5	2.10	-	52	49	87	82	78	138	131	125	219	209	199
20	2.40	-	45	43	76	72	69	121	115	109	192	183	174
22.5	2.70	-	-	38	67	64	61	107	102	97	171	162	155
25	3.00	-	-	-	-	57	55	96	92	87	153	146	139
27.5	3.30	-	-	-	-	52	50	88	83	79	139	133	127
30	3.60	-	-	-	-	-	46	80	76	73	128	122	116
32.5	3.90	-	-	-	-	-	-	-	70	67	118	112	107
35	4.20	-	-	-	-	-	-	-	65	62	109	104	99
37.5	4.50	-	-	-	-	-	-	-	61	58	102	97	93
40	4.80	-	-	-	-	-	-	-	57	54	96	91	87
42.5	5.10	-	-	-	-	-	-	-	-	51	90	86	82
45	5.40	-	-	-	-	-	-	-	-	-	-	81	77
47.5	5.70	-	-	-	-	-	-	-	-	-	-	77	73
50	6.00	-	-	-	-	-	-	-	-	-	-	73	69
52.5	6.30	-	-	-	-	-	-	-	-	-	-	-	66
55	6.60	-	-	-	-	-	-	-	-	-	-	-	63
57.5	6.90	-	-	-	-	-	-	-	-	-	-	-	60
60	7.20	-	-	-	-	-	-	-	-	-	-	-	58

VOLTAGE DROP NOTES

3 PH VD CALCULATION USED: 1.732 x K x Q x I x [D / ECM]
1 PH VD CALCULATION USED: 2 x K x Q x I x [D / ECM]
THE PURPOSE OF THESE TABLES IS TO DISPLAY THE MAXIMUM ALLOWABLE 1-WAY DISTANCES IN FEET FOR BRANCH CIRCUITS [AT DESIGN LOAD] THAT MAINTAIN A TARGET MAXIMUM OF 3 PERCENT VOLTAGE DROP. WHERE FEEDER CIRCUIT VOLTAGE DROP [AT DESIGN LOAD] EXCEEDS 2 PERCENT, THESE TABLES CANNOT BE USED. THE COMBINED FEEDER PLUS BRANCH VOLTAGE DROP MUST NOT EXCEED 5 PERCENT PER ASHRAE 90.1, SECTION 8.4.1 [ADDENDUM C] AND IECC C405.9.
K FACTORS USED: 60°C = 12.275, 75°C = 12.9, 90°C = 13.525
CALCULATION USED TO ADJUST K FACTORS FOR 60°C AND 90°C CONDUCTORS:
K2 = 12.9 x [1 + 0.00323 x [T2 - 75]]

VOLTAGE DROP CALCS

VOLTAGE DROP [VD] NOTES: NEC TABLES 8 AND 9
SINGLE PHASE CALCS: 2 x K x Q x I x [D / ECM]
MINIMUM PANEL LOADING: 80%

PANEL MDP2
- DISTANCE FROM UTIL XFMR: 30 FT
- CONDUCTOR [NO. SETS - SIZE]: 2 - 250 AL
- EQUIPMENT LOAD: 320 A [240 V]
- VOLTAGE DROP %: 0.340%

PANEL PED-10
- DISTANCE FROM MDP: 20 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 120 A [240 V]
- VOLTAGE DROP %: 0.402%

PANEL PED-11
- DISTANCE FROM PED-10: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-12
- DISTANCE FROM PED-11: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-15
- DISTANCE FROM PED-14: 100 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 1.674%

PANEL PED-14
- DISTANCE FROM PED-13: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-13
- DISTANCE FROM MDP: 90 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 120 A [240 V]
- VOLTAGE DROP %: 1.808%

PANEL PED-18
- DISTANCE FROM PED-17: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-16
- DISTANCE FROM MDP: 260 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - 300 AL
- EQUIPMENT LOAD: 120 A [240 V]
- VOLTAGE DROP %: 1.845%

PANEL PED-17
- DISTANCE FROM : 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

THE PURPOSE OF THIS TABLE IS TO SERVE AS A GUIDE TO ENSURE FEEDER VOLTAGE DROP [AT DESIGN LOAD] BE HELD TO A LEVEL AT OR BELOW 2 PERCENT IN AN ATTEMPT TO KEEP THE OVERALL FEEDER + BRANCH VOLTAGE DROP [AT DESIGN LOAD] TO A LEVEL AT OR BELOW 5 PERCENT COMPLIANT WITH ASHRAE 90.1 [2013], SECTION 8.4.1 [ADDENDUM C].

FAULT CURRENT CALCS

FAULT AVAILABLE AT XFMR: 15625 A RMS SYMM
ESTIMATED SERVICE XFMR SIZE: 75 kVA
ESTIMATED SERVICE XFMR %Z: 2.0%
ESTIMATED SERVICE XFMR PF: 100%
METHOD: CALCULATED
MOTOR CONTRIBUTION [6 x FLA]: 0 A
SERVICE VOLTAGE: 120/240V, 1Ph

PANEL MDP2
- MIN DISTANCE FROM UTIL XFMR: 30 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 2 - 250 AL
- FAULT AVAILABLE: 13565 Amps

PANEL PED-10
- MIN DISTANCE FROM MDP: 20 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 9778 Amps

PANEL PED-11
- MIN DISTANCE FROM PED-10: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 6274 Amps

PANEL PED-12
- MIN DISTANCE FROM PED-11: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 4619 Amps

PANEL PED-15
- MIN DISTANCE FROM PED-14: 100 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 2487 Amps

PANEL PED-14
- MIN DISTANCE FROM PED-13: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3856 Amps

PANEL PED-13
- MIN DISTANCE FROM MDP: 90 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 4945 Amps

PANEL PED-18
- MIN DISTANCE FROM PED-17: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3002 Amps

PANEL PED-16
- MIN DISTANCE FROM MDP: 260 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - 300 AL
- FAULT AVAILABLE: 4568 Amps

PANEL PED-17
- MIN DISTANCE FROM : 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3623 Amps

NOTE: THESE FAULT CURRENT CALCULATIONS ARE BASED ON AN ESTIMATED TRANSFORMER SIZE, ESTIMATED TRANSFORMER IMPEDENCE, ESTIMATED FEEDER SIZE, ESTIMATED FEEDER MATERIAL AND ESTIMATED DISTANCES BETWEEN EQUIPMENT AS INDICATED HEREIN. PRIOR TO EQUIPMENT BEING FIELD MARKED AS REQUIRED BY NEC 110.24[A]. THE CONTRACTOR SHALL ENSURE THAT THE ESTIMATED VALUES IDENTIFIED WITHIN THIS TABLE MATCH THE ACTUAL VALUES AND DISTANCES. IF DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IN WRITING IN ORDER TO ADJUST THE CALCULATIONS.

VOLTAGE DROP CALCS

VOLTAGE DROP [VD] NOTES: NEC TABLES 8 AND 9
SINGLE PHASE CALCS: 2 x K x Q x I x [D / ECM]
MINIMUM PANEL LOADING: 80%

PANEL MDP1
- DISTANCE FROM UTIL XFMR: 30 FT
- CONDUCTOR [NO. SETS - SIZE]: 2 - 250 AL
- EQUIPMENT LOAD: 320 A [240 V]
- VOLTAGE DROP %: 0.341%

PANEL PED-1
- DISTANCE FROM MDP1: 220 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - 300 AL
- EQUIPMENT LOAD: 120 A [240 V]
- VOLTAGE DROP %: 1.561%

PANEL PED-2
- DISTANCE FROM PED-1: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-3
- DISTANCE FROM PED-2: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-7
- DISTANCE FROM MDP1: 75 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 120 A [240 V]
- VOLTAGE DROP %: 1.507%

PANEL PED-8
- DISTANCE FROM PED-7: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-9
- DISTANCE FROM PED-8: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-5
- DISTANCE FROM PED-4: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-4
- DISTANCE FROM MDP1: 110 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 1.841%

PANEL PED-6
- DISTANCE FROM MDP1: 45 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.753%

PANEL PED-19
- DISTANCE FROM PED-6: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-20
- DISTANCE FROM MDP1: 110 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #2/0 AL
- EQUIPMENT LOAD: 120 A [240 V]
- VOLTAGE DROP %: 1.763%

PANEL PED-21
- DISTANCE FROM PED-20: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

PANEL PED-22
- DISTANCE FROM PED-21: 40 FT
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- EQUIPMENT LOAD: 100 A [240 V]
- VOLTAGE DROP %: 0.670%

THE PURPOSE OF THIS TABLE IS TO SERVE AS A GUIDE TO ENSURE FEEDER VOLTAGE DROP [AT DESIGN LOAD] BE HELD TO A LEVEL AT OR BELOW 2 PERCENT IN AN ATTEMPT TO KEEP THE OVERALL FEEDER + BRANCH VOLTAGE DROP [AT DESIGN LOAD] TO A LEVEL AT OR BELOW 5 PERCENT COMPLIANT WITH ASHRAE 90.1 [2013], SECTION 8.4.1 [ADDENDUM C].

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ESTIMATED SERVICE XFMR SIZE: 75 kVA
ESTIMATED SERVICE XFMR %Z: 2.0%
ESTIMATED SERVICE XFMR PF: 100%
METHOD: CALCULATED
MOTOR CONTRIBUTION [6 x FLA]: 0 A
SERVICE VOLTAGE: 120/240V, 1Ph

PANEL MDP1
- MIN DISTANCE FROM UTIL XFMR: 30 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 2 - 250 AL
- FAULT AVAILABLE: 13565 Amps

PANEL PED-1
- MIN DISTANCE FROM MDP1: 220 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - 300 AL
- FAULT AVAILABLE: 5087 Amps

PANEL PED-2
- MIN DISTANCE FROM PED-1: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3942 Amps

PANEL PED-3
- MIN DISTANCE FROM PED-2: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3217 Amps

PANEL PED-7
- MIN DISTANCE FROM MDP1: 75 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 5531 Amps

PANEL PED-8
- MIN DISTANCE FROM PED-7: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 4203 Amps

PANEL PED-9
- MIN DISTANCE FROM PED-8: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3390 Amps

PANEL PED-5
- MIN DISTANCE FROM PED-4: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3474 Amps

PANEL PED-4
- MIN DISTANCE FROM MDP1: 110 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 4333 Amps

PANEL PED-6
- MIN DISTANCE FROM MDP1: 45 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 7248 Amps

PANEL PED-19
- MIN DISTANCE FROM PED-6: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 5126 Amps

PANEL PED-20
- MIN DISTANCE FROM MDP1: 110 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #2/0 AL
- FAULT AVAILABLE: 5018 Amps

PANEL PED-21
- MIN DISTANCE FROM PED-20: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3900 Amps

PANEL PED-22
- MIN DISTANCE FROM PED-21: 40 FT
- CONDUIT TYPE: NON-CONDUCTIVE
- CONDUCTOR [NO. SETS - SIZE]: 1 - #1/0 AL
- FAULT AVAILABLE: 3900 Amps

NOTE: THESE FAULT CURRENT CALCULATIONS ARE BASED ON AN ESTIMATED TRANSFORMER SIZE, ESTIMATED TRANSFORMER IMPEDENCE, ESTIMATED FEEDER SIZE, ESTIMATED FEEDER MATERIAL AND ESTIMATED DISTANCES BETWEEN EQUIPMENT AS INDICATED HEREIN. PRIOR TO EQUIPMENT BEING FIELD MARKED AS REQUIRED BY NEC 110.24[A]. THE CONTRACTOR SHALL ENSURE THAT THE ESTIMATED VALUES IDENTIFIED WITHIN THIS TABLE MATCH THE ACTUAL VALUES AND DISTANCES. IF DISCREPANCIES ARE FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IN WRITING IN ORDER TO ADJUST THE CALCULATIONS.

1 E602 — SINGLE-LINE DIAGRAM
SCALE: NO SCALE

NOTE:
PROVIDE ACCESSIBLE LOCATIONS FOR ALL GROUNDING ELECTRODES TO ALLOW FOR INSPECTION PER NEC 250.24 (A)(1)

CLEARANCES TO OTHER UNDERGROUND UTILITIES
- WATER: 5 FT. HORIZONTAL
- SEWER: 5 FT. HORIZONTAL
- NATURAL GAS: 10 FT. HORIZONTAL
- CABLE TV: 1 FT. HORIZONTAL 6" VERTICAL ABOVE SECONDARY
- PHONE: 1 FT. HORIZONTAL 6" VERTICAL ABOVE SECONDARY

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VBFA Project #: 22501
For Questions Contact: J. KORHORN

STAMP: PROFESSIONAL ENGINEER — JAMES KORHORN, JR — #13060801-2202 — STATE OF UTAH — 01-23-23

NO.	DATE	REMARKS
1	2/24/23	ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS
DWG CREATED: 01/05/23
PEN TBL: cad standard.ctb
UPDATED: 3/7/2023
PLOTTED: 3/7/2023
SCALE:
SHT SET: 22501 SAN JUAN COUNTY FAIRGROUNDS RV PARK
DWG NAME: 22501VLH-E601

Jones & DeMille Engineering, Inc.
CIVIL & STRUCTURAL ENGINEERING - SURVEYING
GIS - ENVIRONMENTAL - MATERIALS TESTING
1.800.748.5275 www.jonesanddemille.com

SAN JUAN COUNTY
SJC FAIRGROUNDS RV STALLS
ELECTRICAL SCHEDULES
PROJECT NUMBER: 2204-024
SUBMITTAL:

SAN JUAN COUNTY
SHEET NO. E602

E602 ELECTRICAL SCHEDULES
SCALE

CONTINUED FROM SHEET E701

PART 1 – GENERAL

A. DESCRIPTION

1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TRANSPORTATION AS REQUIRED TO PROPERLY INSTALL A COMPLETE AND OPERABLE ELECTRICAL SYSTEM.

B. RULES AND REGULATIONS

1. ALL WORK AND MATERIALS SHALL BE INSTALLED AS SHOWN AND HEREIN SPECIFIED.

2. THE LATEST EDITIONS OF THE FOLLOWING SPECIFICATIONS, STANDARDS, AND AMENDMENTS, AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION, SHALL FORM A PART OF THIS SPECIFICATION THE SAME AS IF HEREIN WRITTEN OUT IN FULL (ALL MATERIALS AND INSTALLATIONS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS THEREOF:
   - A.) NFPA (NATIONAL FIRE PROTECTION ASSOCIATION), PUBLICATION NUMBER 70, "NATIONAL, ELECTRICAL CODE"; PUB. NO. 72E, "AUTOMATIC FIRE DETECTORS".
   - B.) UL (UNDERWRITERS LABORATORIES, INC.).
   - C.) NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION).
   - D.) UBC (UNIFORM BUILDING CODE) AND STANDARD BUILDING CODE.
   - E.) IBC (INTERNATIONAL BUILDING CODE).
   - F.) IFC (INTERNATIONAL FIRE CODE).
   - G.) IECC (INTERNATIONAL ENERGY CONSERVATION CODE).
   - H.) IEC (INTERNATIONAL ELECTRICAL CODE).
   - I.) STATE AND LOCAL BUILDING AUTHORITY AND CODES.

C. PERMITS AND INSPECTIONS UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR SHALL APPLY, PAY FOR AND SCHEDULE ALL APPLICABLE PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY AND ALL PUBLIC AUTHORITIES HAVING JURISDICTION AND REQUIRING INSPECTION.

1. EC SHALL INCLUDE ALL UTILITY COMPANY CHARGES IN THE BASE BID.

D. WORKMANSHIP AND MATERIAL

1. WORKMANSHIP SHALL BE OF THE BEST QUALITY AND NONE BUT COMPETENT PERSONNEL SKILLED IN THEIR TRADE SHALL BE EMPLOYED. THE CONTRACTOR SHALL FURNISH THE SERVICES OF AN EXPERIENCED SUPERINTENDENT, WHO WILL BE IN CHARGE OF THE EXECUTION OF WORK, UNTIL COMPLETED AND ACCEPTED.

2. UNLESS OTHERWISE HEREIN AFTER SPECIFIED, ALL MATERIALS AND EQUIPMENT UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE NEW, OF BEST GRADE AND AS LISTED IN PRINTED CATALOGS OF THE MANUFACTURER. EACH ARTICLE OF IT'S KIND SHALL BE THE STANDARD PRODUCT OF A SINGLE MANUFACTURER.

3. THE OWNER'S REPRESENTATIVE SHALL HAVE THE RIGHT TO ACCEPT OR REJECT MATERIAL EQUIPMENT AND/OR WORKMANSHIP AND DETERMINE WHEN THEY HAVE COMPLIED WITH THE REQUIREMENTS HEREIN SPECIFIED.

4. ALL MANUFACTURED MATERIALS SHALL BE CLEARLY MARKED OR STAMPED WITH THE MANUFACTURER'S NAME AND RATING.

5. REFERENCE TO STANDARDS ARE INTENDED TO BE THE LATEST REVISION OF THE STANDARD SPECIFIED, OR THAT ACCEPTED BY THE AUTHORITY HAVING JURISDICTION.

E. MANUFACTURER'S RECOMMENDATIONS

1. EQUIPMENT INSTALLED UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR HEREIN SPECIFIED.

F. GUARANTEE

1. ALL MATERIALS AND EQUIPMENT PROVIDED AND INSTALLED UNDER THIS SECTION SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR. SHOULD ANY TROUBLE OR MALFUNCTIONS DEVELOP DURING THIS PERIOD DUE TO DEFECTIVE MATERIALS OR FAULTY WORKMANSHIP, THE CONTRACTOR WILL BE HELD LIABLE AND SHALL FURNISH LABOR, MATERIALS AND EQUIPMENT NECESSARY TO CORRECT THE TROUBLE OR MALFUNCTION WITHOUT ADDITIONAL COST TO THE OWNER. ALL DEFECTIVE MATERIAL OR INFERIOR WORKMANSHIP NOTICED DURING THE TIME OF INSTALLATION SHALL BE CORRECTED IMMEDIATELY TO THE ENTIRE SATISFACTION OF THE ARCHITECT AND OWNER, AT NO ADDITIONAL COST.

G. OPERATION AND MAINTENANCE MANUALS

1. WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE, AS A MINIMUM, THE LOCATION, LUMINAIRE IDENTIFIER, CONTROL AND CIRCUITING FOR EACH PIECE OF LIGHTING EQUIPMENT.

2. OPERATION AND MAINTENANCE MANUALS SHALL BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE. THESE MANUALS SHALL INCLUDE, A MINIMUM, THE FOLLOWING:
   - a. SUBMITTAL DATA INDICATING ALL SELECTED OPTIONS FOR EACH PIECE OF LIGHTING EQUIPMENT AND LIGHTING CONTROLS.
   - b. OPERATION AND MAINTENANCE MANUALS FOR EACH PIECE OF LIGHTING EQUIPMENT AND LIGHTING CONTROLS WITH ROUTINE MAINTENANCE CLEARLY IDENTIFIED INCLUDING, AS A MINIMUM, A RECOMMENDED RELAMPING PROGRAM AND A SCHEDULE FOR INSPECTING AND RECALIBRATING ALL LIGHTING CONTROLS.
   - c. A COMPLETE NARRATIVE OF HOW EACH LIGHTING CONTROL SYSTEM IS INTENDED TO OPERATE INCLUDING RECOMMENDED SETTINGS.

H. DEFINITIONS

1. FURNISH: TO SUPPLY AND DELIVER, UNLOAD, INSPECT FOR DAMAGE.

2. INSTALL: TO UNPACK, ASSEMBLE, ERECT, APPLY, PLACE, FINISH, CURE, PROTECT, CLEAN, AND MAKE READY FOR USE.

3. PROVIDE: TO FURNISH AND INSTALL.

I. SUBMITTALS

1. PROVIDE SHOP DRAWINGS AND MANUFACTURER'S LITERATURE OF MATERIALS AND EQUIPMENT AS REQUIRED IN THE GENERAL CONDITIONS, AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND AS LISTED BELOW:

2. CATALOG CUTS
   - A.) CONDUIT AND FITTINGS.
     - 1.) RIGID METAL
     - 2.) INTERMEDIATE METAL
     - 3.) ELECTRICAL METALLIC TUBING
     - 4.) FLEXIBLE METALLIC
     - 5.) LIQUID TIGHT FLEXIBLE METALLIC
     - 6.) FITTINGS (EACH TYPE)
   - B.) WIRE AND CABLE
   - C.) SWITCHES
     - 1.) SNAP
     - 2.) LOCATOR
     - 3.) PILOT
     - 4.) DIMMER
     - 5.) OCCUPANCY/VACANCY
   - D.) RECEPTACLE OUTLETS
     - 1.) GENERAL PURPOSE
     - 2.) GROUND FAULT CIRCUIT INTERRUPTION
     - 3.) SWITCHED
     - 4.) USB
   - E.) TRIM AND COVER PLATES (EACH TYPE AND STYLE)
   - F.) PANEL BOARDS
   - G.) CIRCUIT BREAKERS (EACH SIZE AND TYPE)
   - H.) SAFETY SWITCHES
   - I.) FUSES (EACH SIZE AND TYPE)
   - J.) LIGHTING FIXTURES
   - K.) NAMEPLATES
   - L.) PHOTOELECTRIC SWITCHES

3. SHOP DRAWINGS
   - A.) PANEL BOARDS
   - B.) LIGHTING FIXTURES

THE ABOVE IS A STANDARD SUBMITTAL REQUIREMENT LIST. ELECTRICAL CONTRACTOR SHALL SUBMIT ALL APPLICABLE ITEMS FOR REVIEW. MATERIAL NOT SUBMITTED AND APPROVED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTORS COST IF DIRECTED BY THE ARCHITECT OR THE OWNER'S REPRESENTATIVE.

PART 2 – MATERIALS

A. GENERAL

1. MATERIALS AND EQUIPMENT SHALL BE STANDARD CATALOGED PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF THE PRODUCT. UL LISTED, AND SHALL BE THE LATEST STANDARD DESIGN THAT CONFORMS TO SPECIFIED MATERIALS AND EQUIPMENT.

B. RACEWAY

1. ELECTRICAL METALLIC TUBING (EMT) SHALL BE USED IN INTERIOR DRY LOCATIONS.

2. GALVANIZED FLEXIBLE STEEL OR LIQUID TIGHT STEEL CONDUIT SHALL BE USED FOR CONNECTIONS TO MECHANICAL EQUIPMENT AND TRANSFORMERS OR AS INDICATED. LIQUID TIGHT CONDUIT SHALL BE USED IN EXTERIOR OR DAMP LOCATIONS.

3. SCHEDULE 40 PVC (WITH PVC COATED OR VINYL TAPE DOUBLE WRAPPED RIGID STEEL ELBOWS AND RISES) SHALL BE USED FOR RUNS THAT ARE IN CONTACT WITH THE EARTH.

4. 3/4" CONDUIT SHALL BE THE MINIMUM SIZE CONDUIT.

5. OUTDOOR AND WET OR DAMP LOCATIONS: PROVIDE RIGID STEEL CONDUIT. PROVIDE CAST METAL OR PVC OUTLET, JUNCTION, AND PULL BOXES.

6. PROVIDE SEAL-OFFS IN ALL CONDUITS THAT ENTER THE FREEZERS AND COOLERS.

C. FITTINGS

1. ALL FITTINGS SHALL BE STEEL/MALLEABLE IRON WITH INSULATING BUSHINGS.

D. OUTLETS AND JUNCTION BOXES

1. BOXES IN INTERIOR DRY LOCATION SHALL BE GALVANIZED ONE-PIECE PRESSED STEEL, KNOCKOUT TYPE, NOT LESS THAN 4 INCHES SQUARE AND 2 1/8" DEEP; APPLETON, RACO, OR EQUAL.

2. BOXES SHALL BE EQUIPPED WITH PLASTER RINGS, EXTENSION RINGS, AND FIXTURE STUDS AS REQUIRED.

3. BOXES FOR FLOOR OUTLETS SHALL BE OF THE CAST-METAL THREADED-CONDUIT-ENTRANCE, WATERPROOF TYPE WITH MEANS FOR ADJUSTING COVER PLATE TO FINISHED FLOOR LEVEL. BOXES SHALL BE SUCH AS HUBBELL B2503 OR EQUAL. THE COVER SHALL BE HUBBELL S3925, S3082 OR EQUAL TO MATCH THE FLOOR TYPE OR AS SHOWN ON THE PLANS.

4. PROVIDE FLUSH MOUNTING OUTLET BOX IN FINISHED AREAS.

5. BOXES FOR STRUCTURED CABLING (DATA & PHONE) IN INTERIOR DRY LOCATIONS SHALL BE GALVANIZED ONE-PIECE PRESSED STEEL, KNOCKOUT TYPE 4 11/16" x 2 1/8"; RAYCO OR EQUAL.

6. ALL BOXES IN FINISHED SPACES SHALL BE PROVIDED WITH MUD RINGS AS REQUIRED FOR THE DEVICE AND WALL MATERIAL.
   - a. CONTROLLED DUPLEX CONVENIENCE RECEPTACLES, 125 VOLT, 20 AMP:

DESCRIPTION: PROVIDE PERMANENTLY MARKED RECEPTACLE WITH THE POWER SYMBOL AND THE WORD "CONTROLLED". MARKING IDENTIFIES WHICH RECEPTACLES ARE TURNED OFF BY AUTOMATIC CONTROLS WHEN THE SPACE IS VACANT.

E. CONDUCTORS

1. ALL CONDUCTORS SHALL BE SOFT DRAWN, ANNEALED COPPER IN RACEWAY SIZED AS SHOWN ON THE PLANS. ALL CONDUCTORS TO BE MINIMUM #12 AWG U.N.O. #8 AWG AND LARGER SHALL BE STRANDED OR AS INDICATED ON THE DRAWINGS.

2. CONDUCTORS SHALL BE COPPER, THHN OR THWN-2 COLOR CODED IN ACCORDANCE WITH PART 3, SECTION C. 1. OF THESE SPECIFICATIONS.

F. WIRING CONNECTIONS

1. MAKE ALL ELECTRICAL CONNECTIONS.

2. MAKE CONNECTION TO DEVICES USING "PIG-TAILS". DO NOT USE A DEVICE AS A CONNECTION OR A SPLICE UNIT.

3. DO NOT PLACE STRANDED CONDUCTORS DIRECTLY UNDER SCREWS. INSTALL CRIMP-ON, INSULATED, FORK TERMINALS FOR CONDUCTOR TERMINATIONS, OR INSTALL SOLID CONDUCTORS.

G. IDENTIFICATION

1. PROVIDE EACH PANEL BOARD, DISCONNECT SWITCH, AND BREAKER IN SWITCHBOARD WITH A MICARTA PLASTIC NAMEPLATE MADE OF WHITE-FACED BLACKCORE PLASTIC LAMINATE. NAMEPLATE SHALL BE MINIMUM 3" WIDE BY 3/4" HIGH FOR PANEL BOARD IDENTIFICATION INCLUDE DESIGNATION, PHASE, AND VOLTAGE. FASTEN WITH EPOXY GLUE. DOUBLE STICK TAPE IS NOT ACCEPTABLE. PROVIDE UPDATED PANEL SCHEDULES IN ALL ALTERED EXISTING PANELS.

H. WIRING DEVICES

1. PLATES – COLOR OF PLATE SHALL MATCH ADJACENT WALL FINISHES. VERIFY COLOR WITH ARCHITECT.

2. TELEPHONE OUTLETS SHALL BE PROVIDED WITH OUTLET BOX AND PLATE AS INDICATED ON THE DRAWINGS.

3. SWITCHES – SHALL BE AS SHOWN ON THE PLANS OR EQUAL OF P&S, LEVITON OR COOPER 20 AMP, SILENT TYPE. COLOR SHALL MATCH ADJACENT WALL FINISHES, VERIFY COLOR WITH ARCHITECT.

4. RECEPTACLES – SHALL BE AS SHOWN ON PLANS OR EQUAL OF P&S, LEVITON OR COOPER 20AMP. COLOR SHALL MATCH ADJACENT WALL FINISHES, VERIFY COLORS WITH ARCHITECT.

5. SPECIAL PURPOSE OUTLETS SHALL BE AS INDICATED ON THE DRAWINGS.

I. PANEL BOARDS

1. DEAD FRONT TYPE, EQUIPPED WITH BOLT – ON CIRCUIT BREAKERS AND PROVISIONS FOR FUTURE BREAKERS, AS INDICATED. SQUARE D, GENERAL ELECTRIC, SIEMENS, OR CUTLER HAMMER. THE NUMBER OF POLES, TYPE, VOLTAGE, AND AMP RATING SHALL BE AS INDICATED ON THE PLANS. BUS BARS SHALL BE COPPER. PROVIDE FULL SIZE GROUND BUS. NEUTRAL WIRES SHALL BE CONNECTED TO A COMMON NEUTRAL BUS WITH BINDING SCREWS OR LUGS, THE NEUTRAL BUS SHALL BE INSULATED FROM THE CABINET.

2. FURNISH COMPLETE WITH DOOR, KEYED LOCK AND TYPE WRITTEN, LAMINATED DIRECTORY. CABINETS SHALL BE RIGIDLY SUPPORTED INDEPENDENT OF CONDUITS. KEYING SHALL MATCH EXISTING PANEL BOARDS, IF ANY.

3. PROVIDE FULLY RATED PANEL BOARDS WITH A MINIMUM AIC RATING AS INDICATED ON THE DRAWINGS.

J. INTERIOR AND EXTERIOR LUMINARIES

1. PROVIDE LIGHTING SYSTEM COMPLETE WITH LAMPS AND ACCESSORIES, AS INDICATED IN THE CONTRACT DOCUMENTS.

2. LUMINARIES:
   - A.) PROVIDE COMPLETE LUMINAIRE ASSEMBLIES OF TYPE INDICATED ON THE DRAWINGS WITH FEATURES, OPTIONS AND ACCESSORIES AS SCHEDULED AND AS NEEDED FOR A COMPLETE ASSEMBLY AND INSTALLATION.
   - B.) PHILLIPS AUTO ENERGY ADVANTAGE ECON-O-WATT LAMPS SHALL NOT BE USED.

CONTINUE ON SHEET E702

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VBFA Project #: 22501

For Questions Contact: J. KORHORN

STAMP:
PROFESSIONAL ENGINEER
JAMES RICK KORHORN, JR
#13060801-2202
01-23-23
STATE OF UTAH

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CIVIL & STRUCTURAL ENGINEERING - SURVEYING
GIS - ENVIRONMENTAL - MATERIALS TESTING
1.800.748.5275 www.jonesanddemille.com

NO.	DATE	REMARKS
	23-Jan-23	ORIGINAL SUBMISSION FOR AUTHORIZATION

REVISIONS

DWG CREATED: 01/05/23
PEN TBL: cad standard.ctb
UPDATED: 3/7/2023
PLOTTED: 3/7/2023

SCALE:
DWG NAME: J:\2204\24-E701.dwg
SHT SET: 22501 SAN JUAN COUNTY FAIRGROUNDS RV PARK

SAN JUAN COUNTY
SJC FAIRGROUNDS RV STALLS
ELECTRICAL SPECIFICATIONS
PROJECT NUMBER: 2204-024
SUBMITTAL:

SAN JUAN
COUNTY
SHEET NO. E701

E701 ELECTRICAL SPECIFICATIONS
SCALE

CONTINUED FROM SHEET E701

PART 3 – EXECUTION

A. DESCRIPTION

1. ALL MATERIALS SHALL BE INSTALLED IN A PROFESSIONAL MANNER INDICATIVE OF THE TRADE. ALL PENETRATIONS OF THE OUTSIDE WALLS OR ROOF SHALL BE SEALED WITH APPROPRIATE SEALANT OR CAULK FOR THE PARTICULAR SURFACE INVOLVED.

B. RACEWAYS

1. RACEWAYS SHALL RUN CONCEALED UNLESS OTHERWISE INDICATED. EXPOSED RACEWAY RUNS SHALL BE PARALLEL WITH SUPPORTING WALLS, BEAMS, AND CEILINGS AND WITH EACH OTHER AND SHALL NOT RUN CLOSER THAN 6 INCHES TO ANY WATER PIPE OR HEATER FLUME.

2. RACEWAY ENDS SHALL BE REAMED AFTER THREADING AND AFTER CUTTING AND BE MADE TO BUTT IN THE CENTER OF THE COUPLING. THE USE OF RUNNING THREADS IS PROHIBITED.

3. RACEWAYS SHALL BE INSTALLED AS A COMPLETE SYSTEM, CONTINUOUS FROM OUTLET TO OUTLET, CABINET, BOX OR FITTINGS, AND SHALL BE MECHANICALLY CONNECTED SO THAT ADEQUATE ELECTRICAL CONTINUITY FROM ONE TO ANOTHER IS OBTAINED. CONDUITS SHALL BE SUPPORTED WITH ONE OR TWO HOLE STAMPED STEEL OR MALLEABLE IRON STRAPS (SUCH AS MANUFACTURED BY RACO) DESIGNED FOR SUPPORTING CONDUIT. THE SIZE OF STRAP SHALL MATCH THE SIZE OF THE CONDUIT. NAILS, PERFORATED STRAP, OR PLUMBERS TAPE SHALL NOT BE USED FOR SUPPORT OF RACEWAY.

4. PROVIDE 1/8" POLY PULL CORD IN RACEWAYS WITHOUT CONDUCTORS.

5. FOUR 90 DEGREE BENDS MAXIMUM BETWEEN TERMINATIONS OR BOXES.

C. CONDUCTORS

1. ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT AND COLOR CODED AS FOLLOWS:

PHASE	240/120
PHASE A	BLACK
PHASE B	RED
NEUTRAL	WHITE
GROUND	GREEN

2. MAKE JOINTS, SPLICES, TAPS AND CONNECTORS IN CONDUCTORS WITH SOLDERLESS CONNECTORS.

3. WIRING FOR FIRE ALARM SHALL BE TWISTED AND/OR SHIELDED SIZE AS RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT AND TO ENSURE PROPER VOLTAGE AT THE DEVICE (AVOID VOLTAGE DROP OF MORE THAN 3%).

D. JUNCTION AND PULL BOXES

1. PULL BOXES SHALL BE PROVIDED WHERE INDICATED OR WHERE NECESSARY TO FACILITATE THE PULLING OF CONDUCTORS. TELEPHONE RACEWAYS SHALL HAVE A MAXIMUM OF TWO 90 DEGREE BENDS BETWEEN TERMINATIONS OR BOXES.

E. GROUNDING

1. INSTALL A CODE SIZED GROUNDING CONDUCTOR IN ALL RACEWAYS. DO NOT USE THE RACEWAY FOR GROUNDING. MAKE GOOD CONTACT AT ALL PANEL BOARDS, OUTLET BOXES, AND JUNCTION OR PULL BOXES TO THE RACEWAY SYSTEM. USE APPROVED BONDING MATERIALS.

F. BONDING

1. BOND ALL PIPING (GAS WATER, ETC) AS REQUIRED BY THE NEC. CONFIRM SYSTEMS TO BE USED WITH MC.

G. TESTING

1. DEMONSTRATE THAT ALL COMPONENTS OF THE WORK OF THIS DIVISION HAVE BEEN PROVIDED AND THAT THEY OPERATE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

2. TEST WIRING AND CONNECTORS FOR CONTINUITY, SHORT CIRCUITS AND IMPROPER GROUNDS. TEST EACH LIGHTING AND APPLIANCE PANEL WITH MAINS DISCONNECTED FROM FEEDERS, BRANCHES CONNECTED, WALL SWITCHES CLOSED AND FIXTURES PERMANENTLY CONNECTED AND COMPLETE WITH LAMPS. TEST EACH INDIVIDUAL POWER CIRCUIT WITH THE POWER EQUIPMENT CONNECTED FOR PROPER OPERATION.

3. PROVIDE DETAILED DOCUMENTATION OF EACH TEST PERFORMED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE, WITH THE NAMES AND THE SIGNATURES OF QUALIFIED INDIVIDUALS WHO CONDUCTED AND WITNESSED EACH TEST.

THE INDIVIDUAL(S) RESPONSIBLE FOR THE FUNCTIONAL TESTING SHALL NOT BE DIRECTLY INVOLVED IN EITHER THE DESIGN OR CONSTRUCTION OF THE PROJECT AND SHALL PROVIDE DOCUMENTATION CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET OR EXCEED ALL DOCUMENTED PERFORMANCE CRITERIA.

END

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NO.	DATE	REMARKS
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