WEST VALLEY CITY
Parks & Recreation

Westview Park Expansion
Site Improvement Project

6000 West 4059 South
West Valley City, UT 84128

WVC-PR-P009

Prepared By
West Valley City Parks and Recreation Department

West Valley Parks and Recreation
3600 South Constitution Blvd.
West Valley City, Utah 84119

PROJECT: Westview Park Expansion

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INVITATION TO BID

PART 1 GENERAL

1.1 CONSTRUCTION CONTRACT

A. Bidders are invited to Bid on a Construction Contract known as the ***Westview Park Expansion – Site Improvements Project.***

B. For information about the award of this Construction Contract contact ***Jason Erekson***, West Valley City, Telephone (801) ***955-4006***.

1.2 DESCRIPTION OF WORK

A. Location of Work: ***6624 West Parkway Blvd., West Valley City, Utah 84128***.

B. Scope of Work: Contractor will be responsible for all labor, materials, equipment, coordination and incidentals necessary to complete work as described in the Contract Documents. The work to be performed generally includes, but is not limited to the following:

1. The complete construction of a new city park Includes site clearing and grubbing, excavation and earth work, rough grading, top soil screening, irrigation system installation with controller, top soil placement, finish grading, sod/hydro-seed/drill seed turf, trees, shrubs, groundcover, utilities installation, concrete flatwork, concrete curbing, asphalt roadways and parking, structure erection, pre-fabricated concrete boardwalk installation, pre-fabricated pedestrian bridge installation, pre-fabricated pavilion installation, playground installation, impact material installation, lights and light piers, electrical systems, electrical service, gates and fencing, drinking fountain and park sign.

2. Other work normally encountered during construction on improved and unimproved properties.

1.3 BIDDERS' PRE-QUALIFICATION

A. Bidders are not required to be pre-qualified for this project.

1.4 BASIS OF BIDS

A. Bids shall be on a lump sum basis. Unsealed or segregated Bids will not be accepted. Bidders shall comply with all Instructions to Bidders.

1.5 CONTRACT TIME

A. The work will be substantially completed **in 100 calendar days** from the date of the Notice to Proceed.

1.6 EXAMINATION AND PROCUREMENT OF DOCUMENTS

A. Complete sets of Contract Documents may be examined and obtained beginning April 18, 2024 from the ENGINEER. Plan sets can be downloaded from a third party website and can be located via the West Valley City Engineering Division website, www.wvc-ut.gov/engineering.

B. Copies of **2017 version of APWA Manual of Standard Drawings and Specifications** may be obtained for a cost of sixty-five dollars ($65.00). Go to http://utah.apwa.net/ for purchase information.

1.7 PRE-BID CONFERENCE

A. A pre-bid conference ***will be held*** on April 23, 2024 at **9:00 am** in **the Family Fitness Center, Community Room A, which is located at 5415 West 3100 South, West Valley City, Utah.** All contractors intending on submitting a bid are invited to attend so they can obtain relevant information concerning the project. Bidders are advised that information affecting drawings, specifications, conditions, Scope of Work, etc. may be discussed. OWNER assumes no obligation to disclose information discussed at the pre-bid conference to Bidders who do not attend. Absent Bidders assume all risk of failure to attend.

1.8 BID SECURITY

A. Bid Security in the amount of at least five percent (5%) of the Bid must accompany each Bid in accordance with the Instructions to Bidders. Bid Security will be returned to each unsuccessful Bidder after tabulation and award of the Construction Contract.

1.9 BID LOCATION AND OPENING

A. Sealed Bids will be received at:
The Office of the City Recorder
3600 South Constitution Blvd.
Room 140
West Valley City, Utah 84119

until 11**:00 am Mountain Standard time**, as conclusively established by the clock at the bid opening location, **on May 9, 2024**. Bids received after the indicated time will not be accepted. Bids will be publicly opened in the City Council Chambers, 3600 South

Constitution Blvd., West Valley City, Utah 84119 at approximately ***11:05 am*** local time by an authorized City official.

B. On the outside of the envelope, the Bidder shall indicate the Construction Contract title, the name and address of the Bidder and the date and time of the Bid opening.

1.10 RIGHT TO REJECT BIDS

A. The OWNER reserves the right to reject any or all Bids or to waive any informality or technicality in any Bid if deemed to be in the best interest of the OWNER.

1.11 VALIDITY PERIOD FOR BIDS

A. Bids shall remain valid for 45 days after the day of Bid opening. Bidders who withdraw their Bid after the Bid opening, but before expiration of said period, shall forfeit their Bid Security if Notice of Intent to Award to Bidder is made by OWNER.

1.12 GOVERNING LAWS AND REGULATIONS

A. This project ***is not*** federally funded and ***does not*** require the payment of specific wage rates. Payroll submittal ***will not*** be required.

1.13 EMPLOYMENT STATUS VERIFICATION SYSTEM REQUIREMENTS

A. The Contractor shall present evidence to the City of participation in an approved Status Verification System prior to execution of this Agreement.

END OF DOCUMENT 00 11 16

DOCUMENT 00 2113

INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.1 DEFINED TERMS

A. Terms used in the Bid documents, which are defined in Article 1.1 of the General Conditions, will have the meanings indicated in the General Conditions. General Conditions: as published in Document 00 72 00 in the 2017 Edition Manual of Standard Specifications by the Utah Chapter of the American Public Works Association.

1.2 COPIES OF BID DOCUMENTS

A. Complete sets of Bid Documents must be used in preparing Bids. OWNER and ENGINEER assume no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid documents.

B. Bid documents are made available to Bidder only for the purpose of obtaining Bids on the work. No license or grant for any other use is given.

C. Bidding document copyrights shall remain with the OWNER. All provisions of the 2017 Manual of Standard Specifications and 2017 Manual of Standard Plans published by the Utah Chapter of the American Public Works Association, which are applicable to the work, are made a part of the Contract Documents by reference. The publications may be purchased separately from West Valley City, 3600 South Constitution Blvd. (2700 W.), Room 280, West Valley City, Utah 84119. Costs are $30.00 for the specifications and $25.00 for the plans (or $55.00 for the set).

1.3 PRE-BID CONFERENCE

A. A pre-Bid conference ***will be held*** at ***9:00 AM*** on Tuesday April 23, 2024, at ***the Family Fitness Center 5415 West 3100 South, Community Room "A",*** West Valley City, Utah. All contractors intending to submit a bid are invited to attend to obtain relevant information concerning the project. Bidders are advised that information affecting drawings, specifications, conditions, scope of work, etc. may be discussed. OWNER, assumes no obligation to disclose information discussed at the pre-bid conference to Bidders who do not attend. Absent Bidders assume all risk of failure to attend.

1.4 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

A. In General: Bidders are permitted to converse with ENGINEER'S personnel having knowledge of the project, plans, specifications, material sites, or conditions generally prevailing in the area of the project to aid in pre-Bid investigations. The OWNER is not bound by any statements or representations made by ENGINEER or ENGINEER'S personnel before the Bid opening or award of the Construction Contract, or for any assumptions or conclusions reached by a prospective Bidder as a result of such communication unless the ENGINEER issues an Addendum to all prospective Bidders.

B. Access to Site: The lands upon which the work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Bidder in performing the work are identified in the Contract Documents. All additional off-site lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Bidder.

C. Contract Documents: The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 1.4; that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents; and, that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the work.

D. Bidders' Obligations: The submission of a Bid constitutes acknowledgement that Bidder has complied with all Bidding instructions. It is the responsibility of each Bidder before submitting a Bid, to:

1. Examine the Contract Documents thoroughly;
2. Visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work;
3. Consider federal, state and local laws and regulations that may affect cost, progress, performance or furnishing of the work;
4. Study and carefully correlate Bidder's observations with the Contract Documents; and
5. Identify and notify ENGINEER in writing of all specific conflicts, errors or discrepancies in the Contract Documents, or if Bidder doubts their meanings.

The failure or omission of any Bidder to receive or examine any form, instrument, addendum other document, visit the site and become acquainted with conditions there existing, or attend the pre-Bid conference, shall in no way relieve any Bidder from obligations with respect to Bidder's Bid or to the Construction Contract.

E. Deviations from the Terms of the Contract Documents: OWNER will not accept any deviations whatsoever from the printed terms of the Agreement (Document 00 52 00) and the Contract Documents, except by Addendum or Change Order.

1.5 PHYSICAL CONDITIONS

A. In General: Before submitting a Bid, each Bidder will be responsible for review of OWNER'S explorations, tests and data concerning surface conditions, subsurface conditions and underground facilities at or contiguous to the site, or otherwise, which may affect cost, progress, performance or furnishing of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

B. Surface and Subsurface Conditions: Provisions concerning surface and subsurface conditions, if any, are set forth in the Geotechnical Data (Document 00 31 32). The document provides the identification of:

1. Reports of explorations and tests of subsurface conditions at the site which have been utilized by ENGINEER in preparing the Contract Documents; and
2. Drawings of physical conditions in or relating to existing surface and subsurface structures (except underground facilities) which are at or contiguous to the site and have been utilized by ENGINEER in preparing the Contract Documents.
3. Underground Facilities: Information and data indicated in the Contract Documents regarding underground facilities at or contiguous to the site is based upon information and data furnished to OWNER and ENGINEER by owners of such underground facilities. The OWNER does not assume responsibility for the accuracy or completeness thereof other than as provided in paragraph 4.3A.2 of the General Conditions or unless expressly provided in the Modifications to General Conditions (Document 00 73 03).
4. Additional Explorations: On request in advance, and if possible, OWNER will provide each Bidder access to the site to conduct any explorations and tests, as each Bidder deems necessary for submission of a Bid. Bidder shall obtain permits, fill all holes, clean up and restore the site to its former condition upon completion of such explorations. Bidder agrees to indemnify and save the OWNER harmless during and after the performance of additional explorations.
5. Modifications to the Contract Documents: Provisions concerning the adequacy of the data furnished for subsurface structures and underground facilities, and the possibility of changes in the documents due to differing conditions appear in Articles 4.2 and 4.3 of the General Conditions.

PART 2 BIDDING PROCEDURES

2.1 INTERPRETATIONS AND ADDENDA

A. All requests for interpretation of the Contract Documents shall be made in writing and delivered to the ENGINEER no later than three (3) calendar days prior to opening of Bids. If required, ENGINEER will send written interpretation to all persons receiving a set of Bid Documents in the form of a written Addendum. If a Bidder's request for interpretation is not responded to by ENGINEER, Bidder shall not rely on any interpretation in the request which is contrary to the intent and terms of the Contract Documents.

B. OWNER will not be responsible for any explanations or interpretations, except those duly issued in the form of written Addenda.

C. ENGINEER may also issue Addenda to modify the Bidding documents.

D. Any Addenda so issued during the time of Bidding shall be deemed to be Included in the Bid. All Addenda shall become a part of the Contract Documents.

E. Except to postpone the Bid opening, no Addenda shall be issued within 72 hours of the Bid opening.

F. Addenda will be mailed and/or faxed to address or telephone number noted on Plan Holder's List filled out by CONTRACTOR. CONTRACTOR is responsible to provide OWNER with current fax, telephone number, mailing address, and any changes thereto which occur before the Bid is submitted. Failure to receive addenda mailed and/or faxed to the address listed cannot be used as a reason to exclude the addenda from the Bid.

2.2 EQUIPMENT AND MATERIAL OPTIONS PRIOR TO BID OPENING

A. If a Bidder or supplier wishes to use items of equipment or materials other than those identified in the Contract Documents, said Bidder or supplier shall submit a written request for approval to the ENGINEER at least ten (10) days prior to the date set for opening of Bids.

B. The procedure for submission of any such product option shall be as set forth in Article 6.4 of the General Conditions. It is the sole responsibility of the Bidder or supplier to submit complete descriptive and technical information so that ENGINEER can make a proper appraisal.

C. ENGINEER'S failure to act upon such a request within three (3) days after receipt shall be deemed a denial thereof.
Any such approval is at the sole discretion of the ENGINEER and will be in the form of an Addendum issued to all Bidders holding Bid documents indicating that the additional equipment or materials are approved as equal to those specified for the project.

2.3 BID SECURITY

A. Amount of Bid Security: The total amount of the Bid on which Bid Security is to be based shall be the sum of all items of the Bid constituting the maximum amount of the possible award to the Bidder. The Bond amount must equal at least 5 percent of the total amount of the Bid.

B. Bid Bond: The Bond shall accompany the Bid and shall be issued by a surety company authorized to do business in the State of Utah. The Bond shall guarantee that the Bidder, if awarded the work will promptly enter into the Construction Contract to perform the work in the manner required by the Contract Documents.

C. Cashier’s Check: If a Cashier’s Check is used in lieu of a Bid Bond, the Cashier’s Check must be drawn on a bank doing business in the State of Utah and made payable to West Valley City Corporation.

D. Return of Bid Security: OWNER will return Bid Security to CONTRACTOR within seven (7) days after award of the Construction Contract. Bid Bonds and Cashier's Checks of all Bidders will be held until the Construction Contract is awarded or all Bids have been rejected. The liability of OWNER in regards to the checks shall be limited only to the return of the checks.

E. Default: In the event of failure or refusal of the Bidder to enter into the Construction Contract and the delivery to the OWNER a Performance Bond, Payment Bond and any other Bonds or documents required by the Contract Documents after Notice of Intent to Award by the OWNER, the Bidder forfeits the sum of the Bid Bond or Cashier's Check as liquidated damages to the OWNER.

2.4 CONTRACT TIME AND PUNCH LIST TIME

A. Provisions concerning Contract Time and Punch List Time are set forth in the Agreement (Document 00 52 00).

2.5 LIQUIDATED DAMAGES

A. Provisions concerning liquidated damages are set forth in the Agreement (Document 00 52 00).

2.6 RETAINAGE

A. Provisions concerning OWNER retaining money are set forth in the Agreement (Document 00 52 00).

2.7 BID FORM

A. The Bid Form (Document 00 41 00) identifies all forms comprising the Bid Documents.

B. Bids by corporations must be executed in the corporate name by the president, vice-president or other corporate officer authorized to sign and properly attested to as an official act of the corporation. At the OWNER'S request, authority to sign must be submitted.

C. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title and official partnership address must be shown.

D. All names must be typed or printed under or near the signature.

E. The Bid shall contain an acknowledgment of receipt of all Addenda. The Addenda numbers must be filled in on the Bid Form.

F. The Bidder's address, telephone number and facsimile number for communications regarding the Bid must be shown on the first page of the Bid Form.

G. The Bidder shall make no stipulations or alterations on the Bid forms. The Bidder must use only the Bid Form and Bid Schedules bound in the Contract Documents.

2.8 BID SCHEDULE

A. Any work or material which is specified in the Contract Documents or which is necessary because of the nature of the work, but which is not listed separately in the Bid Schedule (Document 00 43 00) shall not be measured or paid for separately. The cost of such work or material shall be considered as included in the Contract Price.

B. All blanks on the Bid Schedule (Document 00 43 00) must be completed in ink or by typewriter. If applicable, furnish both the unit and the total costs for each item. Numbers shall be stated in figures, and the signature of all persons signing shall be in longhand. The Bidder shall initial any corrections, alterations or erasures made by the Bidder on the Bid Schedule in ink.

2.9 SUBMISSION OF BIDS

A. The Bid Documents consist of the Bid Form (Document 00 41 00), Bid Schedule (Document 00 43 00), Bid Bond and any supplements or post-bid supplements as found in Modifications or Instructions to Bidders (Document 00 11 16).

B. Bids shall be submitted at the time and place indicated in the Invitation to Bid (Document 00 11 16) and should be enclosed in an opaque sealed envelope, marked with the project title, the name and address of the Bidder, and the date and the opening time for Bids. If the Bid is sent through the mail or other delivery system, the sealed envelope should be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it. It is the sole responsibility of the Bidder to deliver the Bid before the scheduled time.

C. Alternate Bids, other than those called for in the Bid Form, will not be considered.

D. No oral, telegraphic, telephonic, facsimile or modified Bids will be considered.

2.10 MODIFICATION AND WITHDRAWAL OF BIDS

A. At any time prior to the opening of Bids, Bids may be modified or withdrawn if a written withdrawal is signed by Bidder and delivered to the place where Bids are to be submitted.

B. Within 24 hours after Bids are opened, any Bidder may file written notice with OWNER that there was a substantial mistake made in the preparation of its Bid. Bidder must thereafter promptly demonstrate Bidder's mistake to the reasonable satisfaction of the OWNER. If OWNER agrees, Bidder may withdraw its Bid and the Bid Security will be returned to the Bidder.

2.11 OPENING OF BIDS

A. Bids will be opened and read aloud publicly unless obviously non-responsive. An abstract of the amounts of the base schedule of prices and any alternate schedules will be made available for review after the opening of Bids.

B. Any Bids received after the time specified in the Invitation to Bid (Document 00 11 16) will be returned unopened.

2.12 BIDS SUBJECT TO ACCEPTANCE FOR 45 DAYS

A. All Bids remain subject to acceptance for 45 days after the day of the Bid opening. OWNER may, in its sole discretion, release any Bid and return the Bid Security prior to the date.

2.13 NONDISCRIMINATION IN EMPLOYMENT

A. Work under this Bid will obligate the Bidder and Subcontractors not to discriminate in employment practices.

B. Bidders must, if requested, submit a compliance report concerning employment practices and policies in order to maintain their eligibility to receive the award of the Construction Contract.

C. Equal opportunity employment shall be reflected in the racial and sexual composition of the Bidder's work force and the OWNER urges an affirmative action program to overcome under-utilization.

D. Bidders are advised that the Construction Contract and its performance are subject to the applicable provisions of all Laws and Regulations. Bidder will be obligated upon written request, to give all applicable assurances of compliance in connection therewith.

E. If federal nondiscrimination requirements are required, the Bidder shall be fully knowledgeable and comply with such requirements. Refer to Community Development Block Grant Supplementary Conditions (Document 00 73 50).

PART 3 AWARD OF CONSTRUCTION CONTRACT

3.1 QUALIFICATIONS OF BIDDERS

A. Within seven (7) calendar days of ENGINEER'S request, a Bidder, whose Bid is under consideration for award, shall submit to the ENGINEER the following information for the Bidder. ENGINEER may request like information on Bidder's Subcontractors, or Bidder's Suppliers.

1. A Current financial statement for the work (as provided to Bonding company);
2. A chronological list of "in progress" and "completed" construction work done by Bidder during the last three (3) years; including project name, address, owner, contact name, and current telephone number;
3. Present construction commitments other than items listed in paragraph 2 above;
4. Proposed organizational structure such as firm ownership, project manager, progress scheduler, and superintendent for the Work of this Project;
5. Owned and rented equipment which is to be used to do the Work;
6. Investigations, arbitrations, litigations or claims which are pending, threatened, settled or otherwise disposed of within the last three (3) years;

7. Evidence of ability to perform and complete the Work in a manner and within the time limit specified. As a minimum, identify specific projects similar to the Work in physical size, cost, and commercial nature. If the work experiences of the project manager and superintendent designated to construct this project are different than that of the company, provide resumes of their work history. Include their actual project titles and indicate their actual responsibilities on each given project;
8. All matters consistent with federal, state and local Laws and Regulations;
9. Such other data as may be called for in the Modifications to Instructions to Bidders (Document 00 21 14) (if any).

B. OWNER will hold all requested information confidential to the extent allowed by law, and upon request, return such information to Bidder after acceptation or rejection of Bid.

C. Untimely response by Bidder will release OWNER of any obligation to further negotiate or consider the Bidder's Bid.

3.2 EVALUATION OF BIDS

A. OWNER reserves the right: to reject any and all Bids; to waive minor informalities in the Bid Schedule and elsewhere so long as the informalities do not affect the Contract Documents or render the Bid non-compliant with laws and regulations pertaining to bidding requirements; to negotiate and agree to contract terms with the successful Bidder; and to disregard non-conforming, non-responsive, unbalanced or conditional Bids.

B. OWNER reserves the right to reject any Bid if OWNER believes that it would not be in the best interest of the Project for the OWNER to make an award to that Bidder. Such rejection may be because the Bidder is not responsive, or the Bidder is unqualified or of doubtful ability or the Bid or Bidder fails to meet any other pertinent standard or criteria established by OWNER in the Supplementary Instructions to Bidders (Document 00 21 14).

C. OWNER will consider the qualifications of the Bidder (whether or not the Bid complies with the prescribed requirements) and such alternates, unit prices and other data, as may be requested in the Bid Form (Document 00 41 00), Bid Schedule (Document 00 43 00), or written requests issued prior to OWNER'S Notice of Intent to Award the Construction Contract.

D. OWNER may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as provided in the Subcontractors and Supplier Report (Document 00 43 36).

E. OWNER may consider the operating costs, maintenance requirements, performance data and guarantees of materials and equipment, when such data is required to be submitted prior to the Notice of Intent to Award the Construction Contract.

F. To establish qualifications of Bidder, OWNER may request such data indicated in Article 3.1 herein above and conduct such investigations, as OWNER deems appropriate.

G. If the Construction Contract is to be awarded, it will be awarded to the most responsive and lowest, qualified, responsible Bidder as determined by the OWNER. Alternates may be accepted depending upon availability of OWNER funds. Bid alternates will be considered in determining the most responsive, lowest, qualified, and responsible Bidder.

H. Bid Schedules will be evaluated as follows:
   1. On a lump sum basis.
   2. Prices written out in words shall govern over prices written out in numbers.
   3. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
   4. Bids shall not contain any recapitulations of or changes in the work to be done.

3.3 SUBCONTRACTORS, SUPPLIERS AND OTHERS

A. Bidder shall not subcontract more than **50%** percent of the dollar value of the total contemplated Work (exclusive of the supply of materials and equipment to be incorporated in the Work) without OWNER'S prior written approval.

B. Conflict of interest pertaining to Subcontractors is described in paragraph 6.5H of the General Conditions.

3.4 CONTRACT SECURITY AND OTHER SUBMITTALS

A. Performance Bond (Document 00 61 13) and Payment Bond (Document 00 61 14): The OWNER'S requirements as to Performance and Payment Bonds are set forth in the Modifications to General Conditions (Document 00 73 03). Specific requirements are set forth in the Performance Bond (Document 00 61 13) and the Payment Bond (Document 00 61 14).
   1. The Bidder should carefully examine the Bond Forms.
   2. When the successful Bidder delivers the executed Construction Contract to OWNER, the required Performance and Payment Bonds must accompany it.

B. Subcontractor and Supplier Report (Document 00 43 36): This report form is required within 48 hours of ENGINEER'S request. The form shall list the name and address of each Subcontractor who will perform work or labor or render service to the Bidder at the site of the Work, or a Subcontractor who, off the job site, will specially fabricate a portion of the Work or improvements according to detail Drawings. In each instance, the nature and extent of the Work to be sublet in an amount in excess of 2 percent of the Bid sum shall be described. Bidder must have the written consent of OWNER to substitute for any of the Subcontractors or Suppliers designated or to employ any Subcontractor or Supplier that is not listed.

C. Bidder Status Report (Document 00 43 38): One completed form shall be submitted upon ENGINEER'S request or after Bidder receives Notice of Intent to Award.

D. Other Information: When a determination has been made to award the Construction Contract, Bidder is required, prior to the award or after the award, or both, to furnish such other information as the ENGINEER requests.

3.5 ADJUSTMENTS TO THE COST OF THE WORK AFTER OPENING OF BIDS AND PRIOR TO AWARD

A. The Contract Price identified in the Agreement (Document 00 52 00) represents the Cost of the work that is to be paid by the OWNER to the CONTRACTOR. Signing an Agreement Supplement shall effect adjustments to the Contract Price that are agreed to between the OWNER and the successful Bidder.

3.6 SIGNING OF AGREEMENT

A. Within ten (10) days after OWNER gives Notice of Intent to Award the Construction Contract to the successful Bidder, the Bidder shall pick up, sign and return the required number of copies of the Agreement (Document 00 52 00), Performance Bond (Document 00 61 13), Payment Bond (00 61 14), Certificate of Insurance and documents as specified in the Contract. A minimum of three (3) originals will be signed. One executed original will be returned to the Bidder.

B. Transfers, delegations or assignments of interests in the Contract Documents are prohibited, unless prior written authorization is received from the OWNER.

C. At the time of Bidding, and the signing of the Agreement (Document 00 52 00), and at all times during the Work, Bidder shall be properly licensed to do the Work and shall be in compliance with the license laws of the State of Utah, West Valley City and Salt Lake County.

PART 4 MISCELLANEOUS

4.1 EQUIPMENT AND MATERIAL OPTIONS AFTER BID OPENING

A. The Construction Contract, if awarded, will be on the basis of materials and equipment described in the Drawings, Specifications and any Addenda.

B. After the Effective Date of the Construction Contract, the procedure for submitting an application for substitution is set forth in Article 6.4 of the General Conditions.

END OF DOCUMENT 00 2113

DOCUMENT 00 2114

MODIFICATIONS TO INSTRUCTIONS TO BIDDERS

This document amends the Instructions to Bidders (Document 00 21 13). Modifications ***have not*** been made on this project.

END OF DOCUMENT 00 21 14

DOCUMENT 00 4100

BID FORM

PART 1 GENERAL

1.1 BIDDER

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. E-mail: _____

F. Facsimile: _____

G. Federal Tax Identification Number: _____

H. Bidder holds License Number: _____
Issued on _____ by the Utah State Department of Commerce, Division of Occupational and Professional Licensing. Bidder is licensed to practice as a Contractor. License renewal date is _____.

1.2 NOTICE

A. Pursuant to Section 58-55-6(2)(g). Utah Code Annotated (UCA), it is unlawful to submit a Bid for work for which a license is required under Chapter 55 of Title 58, UCA, by a person or other business entity not licensed or accepted from licensure as a contractor under Chapter 55 of Title 58, UCA. Pursuant to Section 58-556(3), UCA, contracts for the work may not be awarded to any person or other business entity that violates Section 58-556(2)(g), UCA, in submitting its bid.

1.3 CONSTRUCTION PROJECT

A. Project Name: **Westview Park Expansion - Site Improvements Project**

B. Project No: ***WVC-PR-P009***

C. OWNER: West Valley City, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

1.4 ADDENDA

A. Bidder hereby acknowledges receipt of the following Addenda.

_____

(list Addenda numbers here)

1.5 SUBMITTALS

A. To Bid for the Work, Bidder is required to submit the Bid Documents consisting of the Bid Form (Document 00 41 00), Bid Schedule (Document 00 43 00), Bid Bond and any supplements or post-bid supplements as found in Modifications or Instructions to Bidders (Document 00 21 14).

B. If Bidder receives notice after Bid Opening that OWNER is considering awarding the contract to the bidder, the Bidder is to submit the following documents:

1. ☐ Document 00 43 44 - Waiver of Interest Affidavit (CDBG)
2. ☒ Document 00 43 38 - Bidder Status Report
3. ☒ Document 00 43 36 - Subcontractor and Supplier Report
4. ☒ Document 00 52 00 - Agreement
5. ☒ Document 00 61 13 - Performance Bond
6. ☒ Document 00 61 14 - Payment Bond
7. ☒ Document 00 62 16 - Certificate of Insurance
8. ☐ Document 00 21 15 - Community Development Block Grant (CDBG)
9. ☐ Document 00 43 40 – Minority and Women Business Enterprises Reg. (CDBG)
10. ☐ Document 00 43 43 - Wage Determination Schedule (CDBG)

1.6 DEFINITIONS

A. Bid Documents: The Bid Documents consist of the Bid Form (Document 00 41 00), Bid Schedule (Document 00 43 00), bid Bond and any supplements or post-bid supplements as found in Modifications or Instructions to Bidders (Document 00 21 14).

B. Bid Bond: AIA Document A310 as published by the American Institute of Architects, 1736 N.Y. Ave. N.W. Washington, D.C. 20006 or one substantially the same and acceptable to the OWNER.

PART 2 COVENANTS

2.1 BIDDER TO ENTER INTO AN AGREEMENT

A. In General: Bidder agrees, if this Bid is accepted, to enter into a Construction Contract with the OWNER to perform and furnish all work specified or indicated in the Contract

Documents at the Contract Time and Contract Price identified in the Agreement (Document 00 52 00).

B. Agreement Supplement: If it becomes necessary to further define the Work, contract Price, Contract Time or some other portion of the Construction Contract prior to signing the Agreement (Document 00 52 00), ENGINEER shall prepare an Agreement Supplement (Document 00 54 00) describing, such change. The necessity for preparing such a contract modification is the OWNER'S sole option. If the Agreement Supplement is acceptable to the Bidder, the Bidder agrees to execute Agreement Supplement prior to or concurrent with the execution of the Agreement (Document 00 52 00).

2.2 BIDDER ACCEPTS TERMS AND CONDITIONS

A. Bidder accepts all of the terms and conditions of the Bid Documents, including without limitation those dealing with the disposition of Bid Security.

B. Bidder will pick up, sign and submit the Agreement (Document 00 52 00) with the Bonds and other documents required in the Contract within ten (10) days after the date of OWNER'S Notice of Intent to Award the Construction Contract.

2.3 REPRESENTATION OF BIDDER

A. In submitting the Bid, Bidder represents, as more fully set forth in the Instructions to Bidders (Document 00 21 13), that:

1. Nature of the Work: Bidder has become familiar with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

2. Surface and Subsurface Conditions: Bidder has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions that are identified in the Geotechnical Data (Document 00 31 32), (if any).

3. Underground Utilities: Bidder has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing underground facilities at or contiguous to the site.

4. Bidder Investigation: Bidder has correlated the result of all observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

5. Discrepancy Resolutions: Bidder has given ENGINEER written notice of all conflicts, errors or discrepancies that Bidder has discovered in the Contract Documents and acknowledges that all written resolutions thereof, issued by ENGINEER prior to Bid Opening are acceptable to Bidder.

2.4 OWNER'S RIGHTS AT BID AWARD

A. Bidder agrees OWNER has the right to reject this Bid, or to award the Work or any part thereof to the undersigned at the prices stipulated. Bidder agrees to make no claim for damages for such rejection or award.

B. If the Bid is rejected, then the Bid Security shall be returned to the Bidder.

C. If the Bid is accepted, the OWNER will notify Bidder of OWNER'S intent to award the Construction contract to the Bidder. The Bidder shall have ten (10) days to sign and return the Agreement (Document 00 52 00). Performance Bond (Document 00 61 13), Payment Bond (Document 00 61 14) and Certificate of Insurance to the ENGINEER. If Bidder fails to sign the Agreement, the Bid Security, at OWNER'S option, shall be claimed and cashed and the amount thereof, paid to OWNER as liquidated damages for failure of the Bidder to comply with the terms of the Bid.

D. Bidder agrees the Bid may be rejected if the submittals listed in this Document or the Notice of Intent to Award is not submitted within the time listed in the Notice of Intent to Award.

2.5 NON-COLLUSION

A. Bidder agrees the Bid is genuine. The Bid is not made in the interest of or on behalf of any undisclosed person, firm 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 person, firm or corporation to refrain from bidding.

D. Bidder has not sought by collusion to obtain for itself any other advantage over any separate Bidder or over OWNER.

2.6 BID PRICING

A. Bidder will complete the Work for the prices listed in the Bid Schedule (Document 00 43 00).

2.7 SUBSTANTIAL COMPLETION, PROJECT COMPLETION AND LIQUIDATED DAMAGES

A. Bidder agrees that the Work will be substantially complete and ready for final inspection on or before the expiration of the Contract Time indicated in the Agreement (Document 00 52 00).

B. Bidder agrees the Work will be complete and ready for final payment in accordance with Article 14.9 of the General Conditions (Document 00 72 00) on or before the expiration of the punch list time indicated in the Agreement (Document 00 52 00).

C. Bidder accepts the provisions of the Agreement (Document 00 52 00) as to liquidated damages in the event of failure to complete the Work on time and in accordance with the Contract Documents.

PART 3 EXECUTION

3.1 EFFECTIVE DATE

A. Bidder executes this Bid and declares it to be in effect as of _____ day of _____, 20_____.

3.2 BIDDER'S SUBSCRIPTION

A. Bidder's Signature: _____

B. Please print Bidder's name here: _____

C. Title: _____

END OF DOCUMENT 00 41 00

DOCUMENT 00 43 00

BID SCHEDULE

PART 1 GENERAL

1.1 DOCUMENT INCLUDES

A. Schedules of prices

B. Construction Drawings, Plans and Specifications as Attachment

C. Measurement and Payment provisions

1.2 CONSTRUCTION PROJECT

A. Project Name: **West View Park Expansion**

B. Project No: **WVC-PR-P009**

C. OWNER: West Valley City Corporation, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

1.3 SCHEDULE TO BE ADDED TO THE AGREEMENT

A. This Bid Schedule will be incorporated into the Agreement (Document 00 52 00) by reference.

B. Apparent low Bid will be the lowest Total Bid (total of schedule 1 and accepted bid alternate Schedules). Contract award will be based upon the lowest Total Bid.

C. Bidder further proposes to accept as full payment for the Work proposed herein in the amounts computed under the provisions of the Contract Documents and based on the unit prices provided in the Bid Proposal, it being expressly understood that the lump sum prices are independent of the exact quantities involved. Bidder agrees that the lump sum prices represent the true measure of the labor, materials and services required to furnish and install the item, including all allowances for overhead and profit for each type of work called for in these Contract Documents.

D. Refer to plans and specifications for detailed descriptions of work to be included in each bid item.

1.4 SCHEDULE OF PRICES

A. Base Bid Schedule is composed of:

1. Schedule No. 1

B. The Schedules are provided on the pages following this paragraph.

C. Cost of the Work is as follows:

1. Base Bid – Schedule No. 1 $_____

C. Payment Procedures: As per APWA Section 01 29 00.BID SCHEDULE

Base Bid – Schedule No. 1

Westview Park Expansion

UNIT PRICE BREAKDOWN

Owner requires Contractor to submit a lump-sum base bid listed above as well as submitting the following installed unit costs, including Contractor overhead and profit, to be used should the need arise to add or delete items during construction. Unit costs listed below must be valid for either adding or deleting and must be submitted with the Contractor's bid. Contractors failing to do so may be disqualified. Owner reserves the right to reject or modify any and/or all bids, and/or individual bid items, and/or quantities.

Item No.	Unit	Description of Bid Unit Items (includes all parts, labor and materials)	Unit Bid Price ($0.00)	
1.	SF	*Clearing and Grubbing		
2.	LF	*Concrete Curb and Gutter Removal		
3.	SF	*Concrete Paving Removal		
4.	SF	Rough Grading		
5.	CY	Cut Material		
6.	CY	Fill Material		
7.	CY	Top Soil		
8.	SF	Finish Grading		
9.	EA	Infiltration Well (4' dia. x 5.5' deep)		

10.	LF	Street Lighting Conduit and Conductors		
11.	EA	*WVC Street Light and Pole		
12.	EA	Internal Area Light and Pole		
13.	SF	*Concrete Paving – standard (4” over 4”)		
14.	SF	*Concrete Paving – patterned & integral-colored (4” over 4”)		
15.	LF	*Concrete Curb and Gutter		
16.	LF	*Concrete Waterway – 4ft		
17.	EA	*Open Driveway Approach (concrete waterway-4ft, and transition structures)		
18.	EA	A.D.A. ramp & detectable warning surface		
19.	SF	Asphalt Paving (3” over 10”)		
20.	SF	*Rock Mulch – 4” depth		
21.	LF	Concrete Mow Curb-12”		
22.	Each	*Rainbird PCT Drip Bubbler		
23.	Each	*Rainbird XCZ-100-PRB-LC 1” valve assembly		
24.	Each	Rainbird XCZ-150-PRB-COM 1.5” valve assembly		
25.	Each	Rainbird 5006-PL-PC, FC-MPR-SAM-R-SS rotor		
26.	Each	Rainbird 5012-PL-PC, FC-MPR-SAM-R-SS rotor		
27.	Each	Rainbird PEB-PRS-D 2” valve assembly		
28.	Each	Rainbird 44-NP 1” Quick Coupler Valve		
29.	Each	Gate Valve – 2” (per plans)		
30.	LF	2” Sched. 80 PVC Pipe and Fittings		
31.	LF	1.5” Sched. 80 PVC Pipe and Fittings		
32.	LF	1” Sched. 80 PVC Pipe and Fittings		
33.	LF	2” Sched. 40 PVC Pipe and Fittings		
34.	LF	*1.5” Sched. 40 PVC Pipe and Fittings		
35.	LF	1” Sched. 40 PVC Pipe and Fittings		
36.	LF	*3/4” Sched. 40 PVC Pipe and Fittings		

37.	Each	*Deciduous Tree – 2” cal.		
38.	Each	Shrub – 5 gal.		
39.	Each	Ornamental Grass – 5 gal.		
40.	SF	Turf-Grass Sod		

(partially funded by WVC Public Works)*

Note: **All items of work shown on the plans and specifications** must be included in the base bid. **Contractor is responsible for the completeness of his base bid. Changes in planned quantities will be changed according to the above listed Unit Prices.**

1.5 UNIT PRICE – MEASUREMENT AND PAYMENT

A. Base Bid Items: Schedule No. 1.
B. As per APWA Section 1 29 00
   a. Measured on a percent complete basis

END OF DOCUMENT 00 43 00

DOCUMENT 00 4301

BIDDER PREFERENCE FORM

1.1 PREFERENCES

A. The City grants preferences to certain types of bidders. After reviewing the requirements below, please indicate which preferences apply to this bid.

B. City Provider Preference – the City provides a 1% preference to any bidder who is physically located within City limits.

1. ☐ Yes ☐ No - **City Provider preference**

C. Other Preferences – the City provides a 1% preference to any bidder who can meet ALL of the following criteria:

1. **Program for veteran hiring and recruitment** - To meet this criterion, the bidder must maintain an active program to recruit and employ veterans
   ☐ Yes ☐ No
2. **Safety** – To meet this criterion, the bidder must maintain an active safety training program
   ☐ Yes ☐ No
3. **Drug testing** – To meet this criterion, the bidder must maintain a drug testing protocol in accordance with applicable law
   ☐ Yes ☐ No
4. **Job training** – To meet this criterion, the bidder must maintain an active job training program for employees
   ☐ Yes ☐ No
5. **Health insurance** – To meet this criterion, the bidder must offer health insurance to all full time employees
   ☐ Yes ☐ No
6. **Nondiscrimination** – To meet this criterion, the bidder must have and enforce a policy prohibiting discrimination in accordance with Title 26 of the West Valley City Municipal Code
   ☐ Yes ☐ No

1.2 OTHER PROVISIONS

A. City reserves the right, in its sole discretion, to verify that a bidder qualifies for any preferences which may be claimed above. If a bid claims a preference but does not qualify for that preference, the City reserves the right to refuse to consider that bid.

END OF DOCUMENT 00 43 01

DOCUMENT 00 4336

SUBCONTRACTOR AND SUPPLIER REPORT

PART 1 GENERAL

1.1 BIDDER

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.2 CONSTRUCTION PROJECT

A. Project Name: **Westview Park Expansion**

B. Project No: **WVC-PR-P009**

C. OWNER: West Valley City Corporation, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

PART 2 REPORT

2.1 SUBCONTRACTOR AND SUPPLIER REPORT

A. Failure of the Bidder to specify a Subcontractor for any portion of the Work constitutes an agreement by the Bidder that the Bidder is fully qualified to perform that portion, and that Bidder shall perform that portion. Bidder must have the written consent of OWNER to substitute for any of the Subcontractors or Suppliers designated below or to employ any Subcontractor or Supplier that is not listed below.

B. Bidder will be fully responsible to OWNER for the acts and omissions of Subcontractors and Suppliers and of persons either directly or indirectly employed by them, as Bidder is for the acts and omissions of persons employed by Bidder directly.

C. Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor or Supplier and the OWNER. Bidder agrees each subcontract with Bidder's Subcontractor will disclaim any third party or direct relationship between OWNER and any Subcontractor or Supplier.

D. The names and addresses of the Subcontractors and Suppliers who will work under the terms of the Contract Documents and the estimated dollar amount of each subcontract (in excess of 5 percent of the Bid sum) are set forth as follows.

Table 1

SUBCONTRACTORS		
Name	**Nature and Extent of Work to be Sublet**	**Dollar Amount**
1.		
2.		
3.		
4.		
5.		
SUPPLIERS		
Name	**Nature and Extent of Work to be Sublet**	**Dollar Amount**
1.		
2.		
3.		
4.		
5.		

PART 3 EXECUTION

3.1 EFFECTIVE DATE

A. Bidder executes this Subcontractor and Supplier Report and declares it to be a supplement to the Bid (Document 00 41 00) and in effect as of _____ day of _____, 20____.

3.2 BIDDER'S SUBSCRIPTION

A. Bidder's Signature: _____

B. Please print Bidder's name here: _____

C. Title: _____

END OF DOCUMENT 00 43 36

DOCUMENT 00 4338

BIDDER STATUS REPORT

PART 1 GENERAL

1.1 BIDDER

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.2 CONSTRUCTION PROJECT

A. Project Name: ***Westview Park Expansion***

B. Project No: ***WVC-PR-P009***

C. OWNER: West Valley City Corporation, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

PART 2 REPORT

2.1 BIDDER STATUS REPORT

A. Bidder affirms the following information is true and correct.

1. Number of Employees:
2. Bidder's firm is: (check the following as applicable)
   - ☐ Independently owned and operated
   - ☐ An affiliate of
   - ☐ A subsidiary of
   - ☐ A division of
   - ☐ A business with gross revenue in excess of $_____
   - ☐ A business with gross revenue below $_____

*PARENT COMPANY:

Name: _____

Address: _____

Telephone: _____

Facsimile: _____

PART 3 EXECUTION

3.1 EFFECTIVE DATE

A. Bidder executes this status report and declares it to be a supplement to the Bid Form (Document 00 41 00) and in effect as of the ____ day of _____,20 ____.

3.2 BIDDER'S SUBSCRIPTION

A. Bidder's Signature: _____

B. Please print Bidder's name here: _____

C. Title: _____

END OF DOCUMENT 00 43 38

CONTRACT FORMS

DOCUMENT 00 5200

AGREEMENT

PART 1 GENERAL

1.1 CONTRACTOR

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.2 OWNER

A. OWNER: West Valley City Corporation, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

1.3 CONSTRUCTION PROJECT

A. Project Name: **Westview Park Expansion**

B. Project No: **WVC-PR-P009**

1.4 ENGINEER

A. ***Jason Erekson***, is the OWNER'S representative and agent for this Construction Contract who has the rights, authority and duties assigned to the ENGINEER in the Contract Documents.

1.5 CONTRACT DOCUMENTS

A. The Bid Documents, Agreement, Agreement Supplement, General Conditions, Supplementary Conditions, Specifications, Standard Specifications, Drawings, Standard Plans together with all Modifications issued pursuant to Article 3.3 of Section 00 72 00 of the Manual of Standard Specifications, 2017 Edition.

PART 2 TIME AND MONEY CONSIDERATIONS

2.1 CONTRACT PRICE

A. The Contract Price includes the cost of the Work specified in the Contract Documents, plus the cost of all bonds, insurance, permits, fees and all charges, expenses or assessments of whatever kind or character.

B. The Schedules of Prices awarded from the Bid Schedule (Document 00 43 00) are as follows:

1. Base Bid - Schedule No. 1
2. Approved Alternate Schedules

C. An Agreement Supplement (Document 00 54 00) **is not** attached to this Agreement.

D. Based upon the above awarded schedules and the Agreement Supplement (if any), the Contract Price awarded is: _____dollars and _____ cents ($_____).

2.2 CONTRACT TIME

A. Contract Time shall be:

1. The work shall be Substantially Complete within **one hundred (100) calendar days** of Notice to Proceed. Final completion shall be achieved within **fifteen (15)** calendar days of Notice of Substantial Completion.
2. Any time specified in work sequences in the Summary of Work (Document 01 11 00) shall be part of the Contract Time.

2.3 PUNCH LIST TIME.

A. The Work will be complete and ready for final payment within ***fifteen (15)*** days after the date CONTRACTOR receives ENGINEER'S Final Inspection Punch List unless exemptions of specific items are granted by ENGINEER in writing or an exception has been specified in the Contract Documents.

B. Permitting the CONTRACTOR to continue and finish the Work or any part of the Work after the time fixed for its completion, or after the date to which the time for completion may have been extended, whether or not a new completion date is established, shall in no way operate as a waiver on the part of the OWNER of any of OWNER'S rights under this Agreement.

2.4 LIQUIDATED DAMAGES

A. Late Completion: Time is the essence of the Contract Documents. CONTRACTOR agrees that OWNER will suffer damage or final loss if the Work is not completed on time or within any time extensions allowed in accordance with Part 12 of the General Conditions (Document 00 72 00). CONTRACTOR and OWNER agree that proof of the exact amount of any such damage or loss is difficult to determine. Accordingly, instead of requiring any such proof of damage or specific final loss for late completion, CONTRACTOR agrees to pay the following sums to the OWNER as liquidated damages and not as a penalty.

1. Late Contract Time Completion: **$200.00** for each day or part thereof that expires after the Contract Time until the Work is accepted as Substantially Complete as provided in Article 14.5 of the General Conditions (Document 00 72 00).
2. Late Punch List Time Completion: ***Fifty Percent (50%)*** of the amount specified for Late Contract Time Completion for each day or part thereof if the Work remains incomplete after the Punch List Time. The Punch List shall be considered delivered on the date it is transmitted by facsimile, hand delivery or received by the CONTRACTOR by certified mail.

B. Work Sequence Completion: Time is the essence of sequenced work. If a work sequence is specified, then for each day or part thereof that exceeds the specified time and until ENGINEER determines such work sequence is Substantially Complete, the CONTRACTOR agrees to pay the following sums to the OWNER as liquidated damages and not as a penalty.

1. **N/A**

C. Survey Monuments: No land survey monument shall be disturbed or removed until ENGINEER has been properly notified and the ENGINEER'S surveyor has referenced the survey monument for resetting. The parties agree that upon such an unauthorized disturbance, it is difficult to determine the damages from such a disturbance. The parties also agree that CONTRACTOR will pay as liquidated damages the sum of one thousand dollars ($1,000.00) to cover such damage and expense.

D. Interruption of Public Services: No interruption of public services shall be caused by CONTRACTOR, its agents or employees, without the ENGINEER'S prior written approval. OWNER and CONTRACTOR agree that in the event damages stipulated above shall not be deemed to be a limitation upon OWNER'S right to recover the full amount of such damages. Because of the difficulty in determining the OWNER'S damages resulting from an unapproved interruption, the parties agree payment of the following liquidated damages to OWNER on a per day basis does not relieve CONTRACTOR from any liability for such a utility interruption to third parties.

1. **N/A**

In the event that any third party successfully makes a claim against OWNER for such interruption, CONTRACTOR shall be responsible for payment of claims.

E. Deduct Damages from Moneys Owed CONTRACTOR: OWNER shall be entitled to deduct and retain liquidated damages out of any money that may be due or become due the CONTRACTOR. The extent that the liquidated damages exceed any amounts that would otherwise be due the CONTRACTOR, the CONTRACTOR shall be liable for such amounts and shall return such excess to the OWNER.

2.5 RETAINAGE

A. Retainage is OWNER'S Option: OWNER may, in its sole discretion, retain five percent (5%) of the value of all Work done and materials or equipment supplied as part security for the fulfillment of the Construction Contract by the CONTRACTOR. If, in ENGINEER'S opinion, the Work is proceeding in accordance with CONTRACTOR'S approved progress schedule, and all progress schedule submittals are current and up to date, and all required payrolls, shop drawings, and miscellaneous submittals are current and up to date, the OWNER may choose not to withhold retainage.

1. Amount to be Retained: If at any time after 50% of the Work has been completed, and $50,000 or more has been retained, OWNER may make any of the remaining progress payments in full, if, in the OWNER'S sole discretion, the Work is progressing satisfactorily. OWNER may pay monthly to the CONTRACTOR while carrying on the Work, the balance not retained as aforesaid, after deducting there from all previous payments and all sums to be kept or retained under the provisions of the Construction Contract. No such estimate of payment shall be required to be made when, in judgement of the ENGINEER, the Work is not proceeding in accordance with the Contract Documents or when in ENGINEER'S judgement the total value of the Work done since the last estimate amounts to less than three hundred dollars ($300.00). No such estimate or payment shall be construed to be an acceptance of any defective or improper Work or materials.
2. Reducing the Retainage: As the Work nears completion and solely at the ENGINEER'S discretion, the OWNER may reduce the retainage to an amount more in line with the Work actually remaining.
3. Retainage Held Until Final Payment: The OWNER reserves the right to retain all amounts previously withheld or due the CONTRACTOR, including liquidated damages, until all Punch List items are complete. However, at ENGINEER'S sole option, ENGINEER may authorize the release of up to all retained amounts except any liquidated damages and double ENGINEER'S best estimate of the CONTRACTOR'S cost to complete all remaining Punch List items.

B. Interest: Except when CONTRACTOR is required to submit a Waiver of Interest Affidavit (Document 00 43 44), and except for money retained for items not provided or installed in accordance with the Contract Documents, any money retained by the OWNER will be placed in an interest bearing account held by the OWNER as of the date such money would have otherwise been payable. The interest accrued thereon will be due and payable to the CONTRACTOR within 30 days after the retained monies are paid.

2.6 PAYMENT PROCEDURES

A. Progress Payments: CONTRACTOR shall submit Applications for Payment in accordance with Part 14 of the General Conditions (Document 00 72 00). Payment shall not become due or payable for any contract item not provided or installed by CONTRACTOR.

1. Withholding Payment: OWNER reserves the right to withhold payment from CONTRACTOR for non-compliance with any provision of the Contract Documents.
2. Price Adjustments: OWNER will consider making partial payment to the CONTRACTOR for certain non-conforming work in advance of any negotiated settlement reached between the CONTRACTOR and the OWNER, provided the CONTRACTOR requests in writing that this be done. CONTRACTOR agrees that any such payments made by the OWNER are "payments in advance" and that any money that becomes due when the final settlement is negotiated will not constitute payments "withheld" or "retained" under State Law.

B. Final Payment: After completion of all Work and Punch List items, OWNER, shall pay the Contract Price due after deducting there from all previous payments, unit price quantity adjustments, penalties, liquidated damages, and other amounts to be retained. All prior progress payments shall be subject to correction in the final payment. The final payment shall not be due and payable until the expiration of 30 days from approval of the request for final payment of CONTRACTOR by the OWNER'S finance department.

1. Submittal: Final payment shall not be made until the CONTRACTOR has delivered and ENGINEER has accepted all submittals specified in Article 14.8 of the General Conditions (Document 00 72 00).
2. OWNER Released From Claims: The payment and acceptance of the final Contract Price due and the adjustment and payment for any Work done in accordance with any alterations of the same, shall release the OWNER from any and all claims of CONTRACTOR on account of Work performed under the Contract Documents or any modification thereof, except for those claims specifically agreed to as reserved and unresolved by the OWNER.

2.7 EXTRA WORK

A. No money will be paid to the CONTRACTOR for any additions, deletions or revisions in the Work as stipulated in Article 10.1 of the General Conditions (Document 00 72 00), unless a Contract Modification for such has been made in writing and executed by the OWNER and CONTRACTOR.

PART 3 COVENANTS

3.1 ASSIGNMENT NOT BINDING WITHOUT WRITTEN CONSENT

A. OWNER and CONTRACTOR agree no assignment of any right or interest in the Contract Documents will be made without the written consent of the OWNER and the CONTRACTOR. No assignment will release or discharge the OWNER or the CONTRACTOR from any duty or responsibility under the Contract Documents unless specifically stated to the contrary in any written consent to an assignment.

B. CONTRACTOR shall make no assignment of money that is due without the OWNER'S written consent (except to the extent that the effect of this restriction may be limited by Law or Regulation).

3.2 BINDING TERMS

A. OWNER and CONTRACTOR each binds itself, its partners, successors, assign and legal representatives to the other party hereto, its partners, successors, assign and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

3.3 INDEMNIFICATION

A. Provisions concerning indemnification are set forth in Article 6.17 of the General Conditions (Document 00 72 00).

3.4 DISPUTE RESOLUTION

A. In General:

1. Unless a decision shall be held by an appropriate court of law to have been procured by fraud or to be arbitrary and capricious or so grossly erroneous as necessarily to imply bad faith, any factual decision made under this Article shall be final and binding in any suit or action arising under this Construction Contract, including any actions by CONTRACTOR or others against OWNER or any of OWNER'S agents, consultants, or employees.
2. Compliance with provisions of this Article, shall be a condition precedent prior to any legal action by the CONTRACTOR or any of CONTRACTOR'S Subcontractors and Suppliers against OWNER or any of OWNER'S agents, consultants, or employees.
3. The provisions of this Article shall not preclude or limit judicial review of issues of law.
4. Ambiguities in or between Contract Documents shall be construed in favor of the OWNER.

B. Disputes Not Related to the Guarantee of the Work: Any dispute arising under the Construction Contract concerning a question of fact, not related to the guarantee of the Work (Article 13.1 of the General Conditions (Document 00 72 00)), which is not disposed of by contract modification shall be decided pursuant to the following procedure:

1. Any decision by ENGINEER interpreting the requirements of the Contract Documents may be appealed in writing to the ENGINEER. The ENGINEER'S decision shall be reduced to writing and a copy shall be mailed or otherwise furnished to the CONTRACTOR. The decision of ENGINEER shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the CONTRACTOR mails or otherwise furnishes to ENGINEER a written appeal to the City Engineer.
2. Within 15 days from the receipt of any such appeal, the City Engineer shall issue a decision in writing and mail or otherwise furnish a copy thereof to the CONTRACTOR. The decision of the City Engineer shall be final and conclusive unless, within 15 days from the date of receipt of such decision, the CONTRACTOR mails or otherwise furnished to the City Engineer a written appeal to the Standing Appeals and Dispute Committee.
3. The Standing Appeals and dispute Committee shall consist of the City Attorney, Public Works Director and City Manager, or their designees.
4. The City Engineer issuing the decision appealed from shall present the department's case prior to deliberations of the Committee, otherwise the City Engineer shall be disqualified and excluded from the Committee's decision process.
5. The decision of said Committee shall be rendered in writing within 15 days from receipt of the appeal and mailed or otherwise delivered to the CONTRACTOR.
6. The decision of said Committee shall be the final binding interpretation of the facts that are the subject of the appeal.

C. Disputes Related to the Guarantee: Except as otherwise provided by contract modification, any dispute concerning a question of fact involving or arising out of the guarantee required by the Contract Documents (Article 13.1 of the General Conditions (Document 00 72 00)), which is not disposed of by contract modification shall be decided pursuant to the provisions of Paragraph 3.4B above, except that the initial factual decision shall be issued in writing by the ENGINEER, together with the City Engineer. Any appeal there from shall be made within 15 days directly to the Standing Appeals and Dispute Committee where such disputes shall be governed by Paragraphs 3.4B.3 to 3.4B.6 above.

D. Work During Appeal: Notwithstanding the pendency of any protest or appeal provided above, CONTRACTOR shall, if so ordered by ENGINEER, proceed with the Work under the Contract Documents according to ENGINEER'S direction and according to the decision on any appeal. The existence of a claim or protest shall not excuse CONTRACTOR from the requirements of the Contract Documents, including, but not limited to, the Contract Time.

E. Appeals of Termination or Suspension: Any decision of OWNER to terminate or suspend the Work shall not be subject to the provisions of this Article.

3.5 ATTORNEYS FEES

A. In the event there is a failure to perform under this Agreement and it becomes reasonably necessary for any party to employ the services of an attorney in connection therewith (whether such attorney be in house or outside counsel), either with or without litigation, on appeal or otherwise, the losing party to the controversy shall pay to the successful party reasonable attorneys fees incurred by such party, and, in addition, such costs and expenses as are incurred in enforcing this Agreement.

3.6 CHOICE OF LAW

A. This Agreement shall be interpreted pursuant to, and the terms thereof governed by, the laws of the State of Utah. This Agreement shall be further governed by CITY ordinances in effect at the time of the execution of this Agreement. However, the parties expressly acknowledge that any subdivision or other development regulations enacted after the execution of this Agreement, which are reasonably necessary to protect the health, safety, and welfare of the citizens of CITY, shall also apply to the subdivision or development that is the subject of this Agreement.

3.7 SEVERABILITY

A. If a court of competent jurisdiction declares any portion of this Agreement invalid, the remaining portions shall not be affected thereby, but shall remain in full force and effect.

3.8 INTEGRATION

A. This Agreement, including all Contract Documents as defined herein, embodies the entire understanding of the parties, and there are no further or other agreements or understandings, written or oral, in effect between the parties relating to the subject matter herein.

3.9 EMPLOYMENT STATUS VERIFICATION

A. Contractor warrants that it is in and shall remain in compliance during the term of this Agreement with the Status Verification System requirements of Utah Code Annotated Section 63G-11-103.

PART 4 EXECUTION

4.1 EFFECTIVE DATE

A. OWNER and CONTRACTOR executed this Agreement and declared it in effect as of the _____day of _____, 20___.

4.2 CONTRACTOR'S SUBSCRIPTION AND ACKNOWLEDGEMENT

A. Type of organization: _____
(corporation, partnership, individual, etc.)

B. If CONTRACTOR is a corporation, attach a corporate resolution evidencing CONTRACTOR'S authority to sign.

C. CONTRACTOR'S Utah license number: _____

D. CONTRACTOR'S signature: _____

E. Please print name here: _____

F. Title: _____

G. Corporate Acknowledgement:
In the County of _____, State of _____, on the _____ of _____, 20_____ personally appeared before me _____ (name of person), whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he/she is the _____ (title) of _____ (name of corporation), a corporation, and that said document was signed by him/her in behalf of said corporation by authority of its bylaws or of a Resolution of its Board of Directors, and he/she acknowledged to me that said corporation executed the same.

_____
Notary Public

H. Agent for Service of Process:

1. Agent's signature: _____
2. Agent's title: _____

I. Corporate Authority: At the request of the OWNER, evidence satisfactory to the OWNER shall be submitted which shows the person executing this Agreement has the required authority to execute this Agreement.

4.3 OWNER'S SUBSCRIPTION AND ATTESTATION

A. Approval as to form: _____
(OWNER'S attorney)

B. Approval as to budget: _____
(OWNER'S Parks and Recreation Director)

C. OWNER'S signature: _____

D. Name and Title: _____

E. Attest: _____
(signature of City Recorder or City Recorder designee)

END OF DOCUMENT 00 52 00

DOCUMENT 00 6113

PERFORMANCE BOND

PART 1 GENERAL

1.1 BOND

A. Number: _____

B. Amount: _____

dollars and _____ cents ($_____)

1.2 SURETY

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.3 CONTRACTOR

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.4 OWNER

A. OWNER: West Valley City Corporation, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

1.5 CONSTRUCTION PROJECT

A. Project Name: **Westview Park Expansion**

B. Project No: ***WVC-PR-P009***

1.6 DEFINED TERMS

A. Terms used in this Performance Bond that are defined in Article 1.1 of the General Conditions (Document 00 72 00) will have the meanings indicated in the General Conditions.

PART 2 COVENANTS

2.1 SURETY'S AND CONTRACTOR'S RELATIONSHIP

A. Surety as surety, and CONTRACTOR as principal, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER as oblige, for the performance of the Construction Contract, whether awarded or about to be awarded.

B. If CONTRACTOR performs the Construction Contract, the Surety and the CONTRACTOR shall have no obligation under this Bond, except to participate in conferences indicated in Article 2.3.

2.2 NOTICE

A. Notice to the Surety, the OWNER or the CONTRACTOR shall be sent by certified mail, facsimile, or hand delivered to the address shown on this bond agreement.

B. Notices sent as required by paragraph 2.2A shall be effective on the date on which such notice was sent.

C. Notice may be sent by facsimile. Facsimile notice shall be effective on the date of transmission provided that a confirmation establishing the successful transmission of the notice is sent by first-class mail, postage prepaid, along with a copy of the notice transmitted, not later than twenty-four (24) hours after the facsimile notice is transmitted.

D. If any notice requires a period of less than seven (7) days for response, the notice shall be sent by facsimile.

E. If the time for response to any notice expires on a Saturday, Sunday or a legal holiday in the State of Utah, the time shall be extended to the next working day.

2.3 PROCEDURE TO INVOKE SURETY'S OBLIGATION

A. If the CONTRACTOR fails to perform or to comply with the terms of the Construction Contract, and such failure to perform or to comply has not been waived by the OWNER, the OWNER may notify the CONTRACTOR and the Surety, at their addresses described above, that the OWNER is considering declaring the CONTRACTOR in default.

B. Before declaring the default, the OWNER shall request and attempt to arrange a conference with the CONTRACTOR and the Surety to be held at a time and place required by the OWNER to discuss methods of performing the Work.

C. If the CONTRACTOR does not attend the conference or agree to cure any deficiencies in the CONTRACTOR'S performance of the Work to the satisfaction of the OWNER, the OWNER may declare the CONTRACTOR in default and formally terminate the CONTRATCTOR'S right to complete the Work. Such default shall not be declared earlier than ten (10) days after the CONTRACTOR and the Surety have received notice as provided in Article 2.2.

D. If the Contract with the CONTRACTOR is terminated, the OWNER agrees to pay the unpaid balance of the contract price to the Surety for completion of the Work in accordance with the terms of the Construction Contract or to a contractor selected by the Surety to perform the Work in accordance with the terms of the Construction Contract.

2.4 SURETY'S OPTIONS AT CONTRACTOR TERMINATION

A. Surety Completes the Work: The Surety may undertake to perform and complete the Work itself, through its agents or through independent contractors.

B. Surety Obtains Bids or Proposals: The Surety may obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Work.

1. Such bids or proposals shall be prepared by the Surety for execution by the OWNER and the completion contractor selected.
2. Surety shall secure the contract with Performance and Payment bonds executed by a qualified surety equivalent to this Performance Bond and the Payment Bond (Document 00 61 14); and
3. Surety shall pay to the OWNER the amount of damages as described in Paragraph 2.6 in excess of the balance of the Contract Price incurred by the OWNER resulting from the CONTRACTOR'S default.

C. Surety to Pay OWNER: Surety may determine the amount not to exceed the amount of this bond specified in paragraph 1.1, for which Surety believes it may be liable to pay, and tender payment therefore to the OWNER. OWNER has sole discretion to accept payment. If the OWNER refuses the payment tendered, 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.

2.5 PROCEDURE FOR OWNER TO DECLARE SURETY IN DEFAULT

A. The OWNER may declare the Surety to be in default upon the following procedures.

1. The OWNER shall issue an additional written notice to the Surety, after declaring the CONTRACTOR in default as provided in Article 2.3, demanding that the Surety perform its obligations under this Bond.
2. Surety shall respond to the OWNER within 15 days after receipt of the OWNER'S additional notice, either denying the claim or accepting liability and exercising its options under Article 2.4.

2.6 SURETY'S OBLIGATIONS

A. After the OWNER has terminated the CONTRACTOR'S right to complete the Construction Contract, and if the Surety elects to complete the Construction Contract as provided in Article 2.4, then the responsibilities of the Surety to the OWNER shall not be greater than those of the CONTRACTOR under the Construction Contract, and the responsibilities of the OWNER to the Surety shall not be greater than those of the OWNER under the Construction Contract.

B. To the limit of the amount of this Bond, but subject to commitment by the OWNER to pay all valid and proper payments made to or on behalf of the CONTRACTOR under the Construction Contract, the Surety is obligated, without duplication, for:

1. The responsibilities of the CONTRACTOR for correction of defective work and completion of the Construction Contract;
2. Design professional and delay costs resulting from the CONTRACTOR'S default and resulting from the actions or failure to act of the Surety under Article 2.4; and
3. Liquidated damages that are or may become due for any reason.

C. Should there be a default of the SURETY under the terms of this Bond or should the SURETY in any way fail to act as required under the terms of this Bond and the Agreement as determined by a court of competent jurisdiction, the SURETY shall be directly obligated to pay any and all costs, expenses and any other damages flowing to the CITY, including, but not limited to, court costs and attorneys fees (whether such fees be the result of in-house or outside counsel), plus interest thereon, irrespective of whether such costs, expenses, damages, and interests exceed the limit of the amount of this Bond.

2.7 UNRELATED OBLIGATIONS OF THE CONTRACTOR

A. The Surety and the OWNER shall not be liable to others for obligations of the CONTRACTOR that are unrelated to the Construction Contract, and the balance of the contract price shall not be reduced or changed on account of any such unrelated obligations.

B. No right of action shall accrue on this Bond to any person or entity other than the OWNER or its heirs, executors, administrators, or successors.

2.8 SURETY WAIVES NOTICE OF ANY CHANGE

A. Surety hereby waives notice of any change, including changes of contract time, contract price and scope of work, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

2.9 VENUE

A. Any suit or action commenced by OWNER under this Bond shall be for action in a court of competent jurisdiction in West Valley City, State of Utah.

2.10 ATTORNEY'S FEES

A. In the event there is a failure to perform under this Agreement and it becomes reasonably necessary for any party to employ the services of an attorney in connection therewith (whether such attorney be in house or outside counsel), either with or without litigation, on appeal or otherwise the losing party to the controversy shall pay to the successful party reasonable attorneys fees incurred by such party, and, in addition, such costs and expenses as are incurred in enforcing this Agreement.

PART 3 EXECUTION

3.1 EFFECTIVE DATE

A. Surety and CONTRACTOR executed this Bond Agreement and declared it to be in effect as of _____ day of _____, 20_____.

3.2 CONTRACTOR'S SUBSCRIPTION AND ACKNOWLEDGEMENT

A. Type of organization: _____
(corporation, partnership, individual, etc.)

B. If CONTRACTOR is a corporation, attach a corporate resolution evidencing CONTRACTOR'S authority to sign.

C. CONTRACTOR'S signature: _____

D. Please print name here: _____

E. Title: _____

F. Corporate Acknowledgement:

In the County of _____, State of _____, on the _____ day of _____, 20 _____, personally appeared before me _____ (name of person), whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he/she is the _____ (title) of _____ (name of corporation), a corporation, and that said document was signed by him/her in behalf of said corporation by authority of its bylaws or of a Resolution of its Board of Directors, and he/she acknowledged to me that said corporation executed the same.

_____
Notary Public

3.3 SURETY'S SUBSCRIPTION AND ACKNOWLEDGEMENT

A. Attach evidence of Surety's corporate authority to sign.

B. Surety's signature: _____

C. Please print name here: _____

D. Title: _____

E. Acknowledgement:

In the County of _____, State of _____, on the _____ day of _____, 20 _____, personally appeared before me _____ (name of person), whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he/she is the _____ (title) of _____ (name of corporation), a corporation, and that said document was signed by him/her in behalf of said corporation by authority of its bylaws or of a Resolution of its Board of Directors, and he/she acknowledged to me that said corporation executed the same.

_____
Notary Public

END OF DOCUMENT 00 61 13

DOCUMENT 00 6114

PAYMENT BOND

PART 1 GENERAL

1.1 BOND

A. Number: _____

B. Amount: _____

dollars and _____ cents ($_____)

1.2 SURETY

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.3 CONTRACTOR

A. Name: _____

B. Address: _____

C. City, State, Zip: _____

D. Telephone: _____

E. Facsimile: _____

1.4 OWNER

A. OWNER: West Valley City Corporation, a municipal corporation of the State of Utah, 3600 South Constitution Blvd, West Valley City, Utah 84119.

1.5 CONSTRUCTION PROJECT

A. Project Name: **Westview Park Expansion**

B. Project No: ***WVC-PR-P009***

1.6 DEFINED TERMS

A. Terms used in this Performance Bond that are defined in Article 1.1 of the General Conditions (Document 00 72 00) will have the meanings indicated in the General Conditions.

PART 2 COVENANTS

2.1 SURETY'S AND CONTRACTOR'S RELATIONSHIP

A. Surety as surety, and CONTRACTOR as principal, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the OWNER as oblige, for the performance of the Construction Contract, whether awarded or about to be awarded.

B. If CONTRACTOR performs the Construction Contract, the Surety and the CONTRACTOR shall have no obligation under this Bond.

2.2 NOTICE

A. Notice to the Surety, the OWNER or the CONTRACTOR shall be sent by certified mail, facsimile, or hand delivered to the address shown on this bond agreement.

B. Notices sent as required by paragraph 2.2A shall be effective on the date on which such notice was sent.

C. Notice may be sent by facsimile. Facsimile notice shall be effective on the date of transmission provided that a confirmation establishing the successful transmission of the notice is sent by first-class mail, postage prepaid, along with a copy of the notice transmitted, not later than twenty-four (24) hours after the facsimile notice is transmitted.

D. If any notice requires a period of less than seven (7) days for response, the notice shall be sent by facsimile.

E. If the time for response to any notice expires on a Saturday, Sunday or a legal holiday in the State of Utah, the time shall be extended to the next working day.

2.3 CONDITIONS OF SURETY'S LIABILITY

A. With respect to the OWNER, this Bond agreement shall be null and void if the contractor promptly takes the following actions:

1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
2. Defends, indemnifies and saves harmless the OWNER from all claims, demands, Liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Work, provided the OWNER has tendered defense of such claims, demands, liens or suits to the CONTRACTOR and the Surety.

2.4 PROCEDURE TO INVOKE SURETY'S OBLIGATION

A. Concerning Claimants who have a Direct Contract with the CONTRACTOR: The Surety shall have no obligation to Claimants under this Bond who are employed by or have a direct contract with the CONTRACTOR until Claimants have given notice to the Surety at the address shown on this Bond agreement and sent a copy, or notice thereof, to the OWNER, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

B. Concerning Claimant who does not have a Direct Contract with the CONTRACTOR:

1. The Claimant shall furnish written notice to the CONTRACTOR and send a copy, or notice thereof, to the OWNER, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed;
2. The Claimant shall have either received a rejection in whole or in part from the CONTRACTOR, or not received within 15 days of furnishing the above notice, any communication from the CONTRACTOR by which the CONTRACTOR has indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 15 days, the claimant shall have sent a written notice to the Surety at the address described on this Bond agreement and sent a copy, or notice thereof, to the OWNER stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the CONTRACTOR.

2.5 SURETY'S OPTION TO SETTLE CLAIMS

A. When the Claimant has satisfied the conditions of Article 2.4, the Surety shall promptly and at the Surety's expense take the following actions.

1. Send an answer to the Claimant, with a copy to the OWNER, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
2. Pay or arrange for payment of any undisputed amounts.

2.6 SURETY'S OBLIGATIONS

A. Surety's total obligations under this bond shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

B. Should there be a default of the SURETY under the terms of this Bond or should the SURETY in any way fail to act as required under the terms of this Bond and the Agreement, as determined by a court of competent jurisdiction, the SURETY shall be directly obligated to pay any and all costs, expenses, and any other damages flowing to the CITY, including, but not limited to, court costs and attorneys fees (whether such fees be the result of in-house or outside counsel), plus interest thereon, irrespective of whether such costs, expenses, damages and interest exceed the limit of the amount of this Bond.

2.7 USE OF FUNDS

A. Amounts owed by OWNER to CONTRACTOR under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, against the Performance Bond (Document 00 61 13). By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Work are dedicated as follows:

1. The OWNER has first priority to use the funds for the completion of the Work.
2. The CONTRACTOR and the Surety have second priority to use the funds to satisfy the obligations of the CONTRACTOR and the Surety under this Bond.

2.8 UNRELATED OBLIGATIONS OF THE CONTRACTOR

A. The Surety and the OWNER shall not be liable to Claimants or others for obligations of the CONTRACTOR that are unrelated to the Construction Contract.

B. The OWNER shall not be liable for payment of any damages, costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

2.9 SURETY WAIVES NOTICE OF ANY CHANGE

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

2.10 VENUE

A. Any suit or action commenced by a Claimant under this Bond shall be for action in a court of competent jurisdiction in the City of West Valley, Sate of Utah.

2.11 COPIES OF THE BOND

A. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the CONTRACTOR or OWNER shall promptly furnish a copy of this Bond or shall permit a copy to be made.

2.12 ATTORNEY'S FEES

A. In the event there is a failure to perform under this Agreement and it becomes reasonably necessary for any party to employ the services of an attorney in connection therewith (whether such attorney be in house or outside counsel), either with or without litigation, on appeal or otherwise, the losing party to the controversy shall pay to the successful party reasonable attorneys fees incurred by such party, and, in addition, such costs and expenses as are incurred in enforcing this Agreement.

PART 3 EXECUTION

3.1 EFFECTIVE DATE

A. Surety and CONTRACTOR executed this Bond Agreement and declared it to be in effect as of _____ day of _____, 20 _____.

3.2 CONTRACTOR'S SUBSCRIPTION AND ACKNOWLEDGEMENT

A. Type of organization: _____
(corporation, partnership, individual, etc.)

B. If CONTRACTOR is a corporation, attach a corporate resolution evidencing CONTRACTOR'S authority to sign.

C. CONTRACTOR'S signature: _____

D. Please print name here: _____

E. Title: _____

F. Corporate Acknowledgement:

In the County of _____, State of _____, on the _____ day of _____, 20 _____, personally appeared before me _____ (name of person), whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he/she is the _____ (title) of _____ (name of corporation), a corporation, and that said document was signed by him/her in behalf of said corporation by authority of its bylaws or of a Resolution of its Board of Directors, and he/she acknowledged to me that said corporation executed the same.

_____
Notary Public

3.3 SURETY'S SUBSCRIPTION AND ACKNOWLEDGEMENT

A. Attach evidence of Surety's corporate authority to sign.

B. Surety's signature: _____

C. Please print name here: _____

D. Title: _____

E. Acknowledgement:

In the County of _____, State of _____, on the _____ day of _____, 20 _____, personally appeared before me _____ (name of person), whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who affirmed that he/she is the _____ (title) of _____ (name of corporation), a corporation, and that said document was signed by him/her in behalf of said corporation by authority of its bylaws or of a Resolution of its Board of Directors, and he/she acknowledged to me that said corporation executed the same.

_____
Notary Public

END OF DOCUMENT 00 61 14

DOCUMENT 00 6216

CERTIFICATE OF INSURANCE

PART 1 GENERAL

1.1 PROCEDURE

A. For filing purposes, add *Certificates of Insurance* to the Contract Documents following this page.

B. Certificate of Insurance must include the following information in addition to the standard information:

1. **Westview Park Expansion; Project # WVC-PR-P009**

2. Cancellation: the cancellation section should read as follows: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will mail 30 days written notice to the certificate holder named."

3. Commercial General Liability: CONTRACTOR shall secure and maintain during the life of the Construction Contract and at all times thereafter when CONTRACTOR may be correcting, removing or replacing Defective Work, commercial general liability and property damage insurance policy. The policy shall protect the CONTRACTOR, the OWNER, the ENGINEER, and any Subcontractor performing work covered by the Construction Contract from claims for damages for personal injury, including accidental death, and from claims for property damage which may arise from CONTRACTOR'S operations under this Construction Contract, whether such operations be by itself or by any Subcontractor or by anyone directly or indirectly employed by either of them. Unless specified otherwise in the supplementary Conditions, the minimum amounts of such insurance for each occurrence shall be $3,000,000.00 per project aggregate limit. The insurance for this Project is not required to include specific insurance for environmental liabilities.

4. Automobile Liability Insurance: Whenever CONTRACTOR or any Subcontractor shall use and operate automobiles, trucks or other vehicles on public streets and highways in complying with the terms and conditions of the Construction Contract, CONTRACTOR or each Subcontractor shall carry automobile liability insurance with limits not less than $2,000,000.00 for any on accident or loss.

END OF DOCUMENT 00 62 16

CONDITIONS OF THE CONTRACT

DOCUMENT 00 7303

MODIFICATIONS TO GENERAL CONDITIONS

(Supplementary Conditions)

This Document amends the provisions specified in the General Conditions (Document 00 72 00) in the Manual of Standard Specifications published by the Utah Chapter of the 2017 Edition American Public Works Association.

Add the following paragraph:

3.6 COPIES OF DOCUMENTS

A. OWNER shall furnish to CONTRACTOR the number of copies of the Contract Documents as are reasonably necessary for the execution of the Work (up to 3 copies) unless additional copies are provided for in the Specifications. Additional copies will be furnished upon request, at the cost of reproduction.

B. OWNER shall not furnish to CONTRACTOR the 2017 Edition Manual of Standard Plans, the 2017 Edition Manual of Standard Specifications, the current edition of MUTCD, and the Traffic Control Manual published by the Utah Chapter of APWA. The CONTRACTOR shall purchase such documents separately.

C. Copies of all Contract Documents including the 2017 Edition Manual of Standard Plans, the 2017 Edition Manual of Standard Specifications shall be provided on site by the CONTRACTOR.

Substitute the following in Part 5:

5.1 PERFORMANCE, PAYMENT AND OTHER BONDS

A. Prior to OWNER executing the Agreement, CONTRACTOR shall file with the OWNER a good and sufficient Performance Bond and a Payment Bond, each in the sum of not less than 100 percent of the Contract Price.

B. The Bonds shall be executed by the CONTRACTOR and secured by a company duly and regularly authorized to do a general surety business in the State of Utah and named in the current list of Companies holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies as published in current Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department, with an underwriting limitation

equal to or greater than the Contract Price which the Bond guarantees or with a current "A-" rating or better in A.M. Best Co., Inc.'s, Best Insurance Reports, Property and Casualty Edition.

C. Said Bonds shall guarantee the faithful performance of the Construction Contract by the CONTRACTOR and payment of labor and materials. They shall inure by their terms to the benefit of the OWNER. Neither this nor any other provision requiring a Performance Bond shall be construed to create any rights in any third party Claimant as against the OWNER for performance of the Work under the Construction Contract.

D. If the surety on any Bond furnished by CONTRACTOR is subject to any proceeding under the Bankruptcy code (Title 11, United States Code) or becomes insolvent or its right to do business is terminated in the Sate of Utah or it ceases to meet the requirements of this Article, CONTRACTOR shall, within 15 days thereafter, substitute another Bond and surety, both of which must be acceptable to OWNER.

Article 5.2 of the General Conditions is hereby repealed and the following is substituted therefore:

5.2 INSURANCE

A. In General: All policies of insurance provided shall be issued by insurance companies qualified to do business in the State of Utah and listed on the U.S. Treasury Department's current Department of Treasury Fiscal Services List 570, or having a general policy holder's rating of not less than "A-VII" in the most current available A. M. Best Co., Inc.'s Best's Insurance Report. CONTRACTOR shall furnish copies of certificates of insurance concurrent with or prior to the signing of the Agreement. The certificates shall name the OWNER, its officers, officials, employees or volunteers as additional insured. If requested, CONTRACTOR shall also furnish copies of the insurance policies secured for the Work.

B. Worker's Compensation Insurance: In addition to other required insurance, the CONTRACTOR shall obtain and maintain during the life of the Construction Contract, worker's compensation insurance as required by Laws and Regulations for all of CONTRACTOR'S employees employed at the site of the Work, and in case any work is subcontracted, the CONTRACTOR shall require the Subcontractor similarly to provide worker's compensation insurance for all the latter's employees, unless such employees are covered by protection as required by Laws and Regulations.

C. Commercial General Liability: CONTRACTOR shall secure and maintain during the life of the Construction Contract and at all times thereafter when CONTRACTOR may be correcting, removing or replacing Defective Work, commercial general liability and property damage insurance policy. The policy shall protect the CONTRACTOR, the OWNER, the ENGINEER, and any Subcontractor performing work covered by the Construction Contract from claims for damages for personal injury, including accidental death, and from claims for property damage which may arise from CONTRACTOR'S operations under this Construction Contract, whether such operations be by itself or by any Subcontractor or by anyone directly or indirectly employed by either of them. Unless specified otherwise in the supplementary Conditions, the minimum

amounts of such insurance for each occurrence shall be $3,000,000.00 per project aggregate limit. The insurance for this Project is not required to include specific insurance for environmental liabilities.

D. Automobile Liability Insurance: Whenever CONTRACTOR or any Subcontractor shall use and operate automobiles, trucks or other vehicles on public streets and highways in complying with the terms and conditions of the Construction Contract, CONTRACTOR or each Subcontractor shall carry automobile liability insurance with limits not less than $2,000,000.00 for any on accident or loss.

E. Insurance Non-cancelable for 30 Days: Each policy of insurance provided in the Contract Documents shall be absolutely non-cancelable for a period of not less than 30 days after notice and shall contain the following provisions or one substantially the same as the following: "This Policy shall not be subject to cancellation, change, or reduction of coverage by the other party or parties hereto, unless notice, as defined herein is sent to the OWNER, with a copy of the ENGINEER and the OWNER."

F. Builder's Risk: Builder's Risk ***is*** required on this project. If required please read:

1. CONTRACTOR agrees to and assumes the risk of loss for any damage or loss to the Work and Project by any means or occurrence until Substantial Completion. CONTRACTOR further agrees to obtain builder's risk or course of construction insurance in the total amount of the replacement cost.

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

H. Other Insurance Provisions: The policies are to contain, or be endorsed to contain, the following provisions:

1. Commercial General Liability and Automobile Liability Coverage:

a. The OWNER, its officers, officials, employees and volunteers are to be covered as insured's as respects: liability arising out of activities performed by the insured's general supervision of the CONTRACTOR; products and complete operations of the CONTRACTOR; premises owned, occupied or used by the CONTRACTOR; or automobiles owned, not owned, lease, hired or borrowed by the CONTRACTOR. The coverage shall contain no special limitations on the scope of protection afforded to the OWNER, its officers, officials, employees or volunteers.

b. The CONTRACTOR'S insurance coverage shall be primarily insurance as respects the OWNER, its officers, officials, employees or volunteers. Any insurance or self-insurance maintained by the OWNER,

its officers, officials, employees or volunteers shall be excess of the CONTRACTOR'S insurance and shall not contribute with it.

c. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the OWNER, its officers, officials, employees or volunteers.

d. The CONTRACTOR'S insurance shall apply separately to each insured against whom claim is made or suit is brought, expect with respect to the limits of the insurer's liability.

2. Worker's Compensation and Employers Liability Coverage: To the extent permitted by law, the insurer shall agree to waive all rights of subrogation against the OWNER, its officers, officials, employees or volunteers for losses arising from work performed by the CONTRACTOR for the OWNER.

3. All Coverage: Each policy of insurance provided in the Contract Documents shall be endorsed with a provision or provisions stating the policy shall be absolutely non-cancelable, suspended, voided or subject to change or reduction of coverage by the other party or parties hereto, for a period of not less than thirty (30) days after written notice by certified mail, return receipt requested, has been given to the OWNER, with a copy to the ENGINEER and to the OWNER.

I. Verification of Coverage: CONTRACTOR shall furnish the OWNER with certificates of Insurance and with original endorsements effecting coverage required by the clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on forms provided or approved by the OWNER. Where by statute, the OWNER'S workers' compensation-related forms cannot be used, equivalent forms approved by the Insurance Commissioner are to be substituted. All certificates and endorsements are to be received and approved by the OWNER prior to or concurrent with the execution of the Agreement by the CONTRACTOR. The OWNER reserves the right to require complete, certified copies of all required insurance policies at any time.

J. Subcontractors: CONTRACTOR shall include all subcontractors as named insured's under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

6.16 Contractor's General Warranty and Guarantee

E. The Contractor warrants to the City that materials, equipment, and systems furnished under the Contract will be new and of good quality, that the work will be free from defects in quality and workmanship, and that the work will conform to the requirements of the Contract Documents. If, within <u>one year</u> after the date of **Substantial Completion** any of the work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Project Manager. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

1. At the conclusion of the one year warranty period, a final project acceptance inspection will be performed by the City.
2. Any items needing repair or replacement will then be performed by the Contractor without additional charge or cost to the City.
3. Once all work is complete, City will release all bonds.

END OF DOCUMENT 00 73 03

DOCUMENT 00 9113

ADDENDA AND MODIFICATIONS

PART 1 GENERAL

1.1 PROCEDURE

A. For filing purposes, add Addenda and Modifications to the Contract Documents following this page.

END OF DOCUMENT 00 91 13

SUPPLEMENTAL AND SPECIAL PROVISIONS

Westview Park Expansion

SECTION 01 00 00
GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Sections, shall apply to all work stated in this and subsequent sections.
B. Separation of the specifications into divisions and sections is for convenience only and is not intended to establish limits of work.
C. The Specifications (divisions/sections) and Drawings are complimentary, and what is called for by any one shall be as binding as if called for by all. Anything not expressly set forth in either, but which is reasonably implied, shall be furnished and performed the same as if it were both shown and mentioned. It is the intention of the documents to include all labor and materials, equipment, and transportation necessary to complete the work shown or indicated by the drawings or called for in the specifications, in accordance with the best practices prevailing for the work of the various kinds. Materials or work described in words or those which are implied and having a well known trade or technical meaning, shall be held to refer to recognized standards.

1.2 DEFINITIONS

A. West Valley City Project Manager: Jason Erekson

West Valley City Parks and Recreation
3600South Constitution Blvd.
West Valley City, Utah 84119
(801) 955-4006

1. The person designated by Parks & Recreation Division to act in its behalf shall have authority to transmit instructions, receive information, interpret and define policy and decisions, with respect to materials, equipment, elements and systems pertinent to proper execution of the work and hereafter be known as the **Project Manager**.

1.3 PROCEDURES

A. This Contractor shall provide all items, materials, operations and methods including all labor, equipment and incidentals necessary for the successful completion of the project.
B. This Contractor shall be duly licensed for the work involved and shall secure all building permits and certificates, and obtain all inspections as might be required for the proper prosecution of the work.
C. This Contractor should visit the site prior to submitting a bid to adequately determine the scope, intent and requirements of the project and its satisfactory completion.

1.4 QUALITY ASSURANCE

A. A Pre-Construction conference will be held before the start of any work, with the Contractor and Project Manager, to review the drawings, specifications, and applicable requirements pertaining to the work and to establish mutual understanding of procedures and precautions related to the proper prosecution of the work.
B. The City reserves the right to reject any or all sub-contractors who have previously performed unsatisfactorily for the City or who do not meet the requirements specified in

other sections of these specifications.

1.7 PRODUCTS

A. Materials used by the Contractor or any Sub-contractor shall be new, unless noted otherwise, and shall be of specified quality and furnished in sufficient quantity to facilitate proper and speedy execution of the work. Materials must be delivered to the site in original packaging with labels and trademarks intact.

1.9 SUBMITTALS

A. Submittal Procedure
1. Review submittals prior to transmittal. Determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
2. Coordinate submittals with requirements of Work and of Contract Documents.
3. Sign or initial each sheet of shop drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify Project Manager in writing at time of submittal, of any deviations from requirements of Contract Documents.
4. Do not fabricate products or begin work that requires submittals until return of submittal with Project Manager acceptance.
5. Transmit submittals to Project Manager under transmittal form. Submit the number of copies that Contractor requires, plus the number of copies required by Project Manager.
6. Comply with submittal sequences shown in the progress schedule.
7. When required by Laws and Regulations, affix licensed professional's stamp to submittal documents.
8. Identify pertinent Drawing sheet and detail number, and Specification section number.
9. Identify deviations from Contract Documents.
10. Identify the date when Project Manager must complete review of submittal.
11. After review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
12. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

B. Shop Drawings
1. Present drawings in a clear and thorough manner. Title each drawing with Project name and number. Identify each element of drawings by reference to sheet number and detail or equipment schedule.
2. Identify field dimensions. Show relation to adjacent or critical features or work or products.
3. Provide sheet size adequate for Project Manager review.

C. Product Data
1. Submit only pages which are pertinent. Mark each copy of standard printed data to identify pertinent products, referenced to specification section and article number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions, And required clearances.
2. Modify product data by deleting information that is not applicable to the Work or by marking each copy to identify pertinent data.
3. Supplement standard information, if necessary, to provide additional information applicable to the Work.
4. Provide manufacturer's preparation, assembly and installation instructions.

D. Samples
5. Submit 1 of each sample required by Contract Documents. Samples shall show

the quality, type, range of color, finish and texture of the material.

D. Certificates

1. Submit certificates, in duplicate, in accordance with requirements of each Specification section.

1.10 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

A. Temporary Utilities

1. The Contractor shall provide service required for construction operations

B. Barriers and Enclosures

1. Provide to prevent public entry to work areas and to protect existing trees and plants. Provide as required to protect existing facilities, improvements and adjacent properties from damage from construction operations. Repair damage at no cost to the City.
2. Provide barriers around trees and plants designated to remain. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.
3. Provide protection against weather - rain, winds, storms, frost or heat so as to maintain all work free from injury or damage. New work shall be covered if necessary.

C. Security

1. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.

D. Temporary Controls

1. Surface Water, Erosion, and Sediment Control
   a. Surface water shall be controlled so that the construction area is not allowed to become wet from runoff from adjacent areas. Surface water shall be directed away from these areas but not directed toward adjacent property, buildings, or any improvement that may be damaged by water. Surface water shall not be allowed to enter sanitary sewers.
   b. Maintain excavations free of water. Provide and operate pumping equipment as needed.
   c. Prevent erosion and sedimentation.
   d. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   e. Provide and maintain public access road around the work area.
2. Construction Cleaning:
   a. All public and private areas used as haul roads shall be continuously maintained and cleaned of all construction caused debris such as mud, sand, gravel, soils, pavement fragments, sod, etc. Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned.
   b. Public roads shall be maintained in accordance with applicable ordinances and regulations.
   c. Throughout all phases of construction, including suspension of work, and until final acceptance of the project, the Contractor shall keep the work site clean and shall remove daily all refuse, dirt, damaged materials, unusable materials, and all other trash or debris that he has created from his construction activities.
   d. Materials and equipment shall be removed from the site as soon as they are no longer necessary; and upon completion of the work and before final inspection, the entire work site shall be cleared of equipment, unused materials, and rubbish so as to present a satisfactory, clean and neat appearance. All cleanup costs shall be included in the Contractor's bid.
3. Dust Control:

a. Dust control measures shall be implemented by application of water to all work areas, storage areas, haul and access roads, or other areas affected by construction.
b. All work shall be in compliance with the Federal, State, and local air pollution standards, and not cause a hazard or nuisance to personnel and the public in the vicinity of the work.
c. Provide positive means to prevent air-borne dust from dispersing into atmosphere.
d. Execute work by methods to minimize raising dust from construction operations.

E. Traffic Regulation
1. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and City's operations.
2. Monitor parking of construction personnel's vehicles. Construction personnel will be restricted to parking in designated areas only.
3. Prevent parking on or adjacent to access roads or in non-designated areas.
4. Consult with authorities, establish public thoroughfares to be used for haul routes and site access.
5. Confine construction traffic to haul routes and designated construction limits.

1.11 INSTALLATIONS

A. The Contractor shall comply with all applicable safety ordinances, including required O.S.H.A. standards.
B. Contractor shall be responsible for all cutting, fitting, and/or patching as may be required to complete the work or to make its several parts fit together properly. During the course of construction, every care shall be taken to prevent damage to existing buildings and landscape elements not a part of the contract. Any damaged areas shall be restored to a "like new" condition at no additional cost to the City.

1.12 PERMITS

A. The Contractor will be responsible for securing all permits that may be required to complete the work.

1.13 FIELD ENGINEERING

A. From information provided on the drawings and provided by the City as herein specified, the contractor shall establish grades, lines, and levels required for the completion of the work in accordance with the drawings and specifications. The Contractor shall be responsible for all site engineering and layout and shall provide construction staking as necessary. The Contractor shall be responsible for the accurate placement of improvements. Any inconsistencies or problems found during this work shall be reported to the Project Manager before proceeding with the work.

1.14 COORDINATION

A. Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the project, any unfit person or anyone unskilled in the work assigned to him.
B. The Contractor and Sub-contractor(s) shall coordinate their work with adjacent work of others and coordinate their efforts so as to facilitate the progress of the project. Each contractor shall afford the other contractor every reasonable opportunity for the installation and/or storage of their materials.

1.15 UTILITIES

A. The locations of existing underground utilities depicted on the drawings are shown in an approximate way only. The Contractor shall determine the exact location of all existing utilities, whether or not shown on the drawings, before commencing work. Contractor agrees to be fully responsible for any and all damages which might be occasioned by his failure to exactly locate and preserve any and all underground utilities. If damaged or removed, the existing utility shall be restored or replaced by Contractor in as nearly the original condition and location as is reasonably possible, at no cost to the City.

B. The Contractor shall notify all utility companies, including Blue Stake, whether identified on the site or not, of any required connections to, or modifications or abandonment of, existing lines and/or equipment during the execution of the work. The Contractor shall properly and timely notify each utility company involved so as to properly schedule the work and coordinate necessary inspections and acceptance.

1. All such work shall be done in compliance with each utility company's requirements and standards.

1.16 CLEAN-UP

A. Contractor shall at all times keep premises free from accumulations of waste materials or rubbish; shall immediately remove any demolition debris; and shall, at the completion of the work, leave the area clean and habitable with no additional maintenance work required by the City upon acceptance.

1.17 RECORD DOCUMENTS

A. Contractor shall maintain one (1) copy of all drawings, specifications, addenda, field orders, approved shop drawings and change orders as "Record Documents".

1. These documents shall be maintained in good condition and marked during construction so as to record all changes and modifications to the work and to document exact dimensions (from permanent features of the site), along with grades and elevations of all exterior and interior underground work, including conduit, piping, valves, and drains.
2. At Substantial Completion of the project, documentation of changes, red-lines, and as-builts will be submitted to Project Manager for review and approval.

1.18 SUBSTANTIAL COMPLETION

A. Substantial Completion: The point in time when the Work is sufficiently complete, in accordance with the Contract Documents, that the City can occupy or use the Work for its intended purpose. Substantial Completion shall be issued in writing by the Project Manager to the Contractor.

B. Substantial Completion procedures:

1. Before requesting substantial completion of the work from the Project Manager, Contractor shall have received approval on all building permit required inspections, as administered by the local governing municipality. The Contractor shall also supply proof of payment for all utility costs incurred during construction.
2. Contractor shall have received written acceptance of Turf Establishment from Project Manager.
3. The Contractor shall request in writing his intent to have the City review and accept the project as substantially complete.
4. This request must be submitted to the Project Manager at least five (5) calendar days prior to the requested observation date in order to give those involved time to schedule attendance.
   a. If the work is found not substantially complete, or if the list of incomplete

items is more than a few, the Contractor shall be charged for the time of those in attendance at this meeting. These monies shall be deducted from the amount due the contractor at the end of the project.

1.19 CLOSE OUT DOCUMENTS

A. Submit the following Close-out Documents:
   1. One year warranty letter.
   2. Lien Waiver
   3. Record documents.
   4. Instruct City's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
   5. Submit demonstration and training videotapes.

1.20 ONE YEAR WARRANTY PERIOD and FINAL PROJECT ACCEPTANCE

A. The Contractor warrants to the City that materials, equipment, and systems furnished under the Contract will be new and of good quality, that the work will be free from defects in quality and workmanship, and that the work will conform to the requirements of the Contract Documents. If, within one year after the date of **Substantial Completion** any of the work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Project Manager. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

   1. At the conclusion of the one year warranty period, a final project acceptance inspection will be performed by the City.
   2. Any items needing repair or replacement will then be performed by the Contractor without additional charge or cost to the City.
   3. Once all work is complete, City will release all bonds.

END OF SECTION

SECTION 01 01 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 Description of Work

The work for this project shall consist of, but not be limited to preparing the site and furnishing all labor materials, and equipment to complete the following improvements with quality workmanship, in a timely manner, and in compliance with project plans and specifications:

1. Review and accept existing site conditions.
2. Obtain all permits required to perform construction.
3. Contractor shall provide survey, engineering and construction staking needed to complete the project. All surveying and construction staking shall be done under the supervision of a licensed land surveyor.
5. Protect existing walks and other site amenities as much as possible during construction. Repair or replace any items damaged during construction.
5. Install improvements as indicated on contract documents.
8. Establish and maintain landscaping as indicated in the specifications. Follow specified maintenance practices during establishment period.
9. Provide owner with As-Built Drawings.

1.2 Licensing Requirement

Minimum Licensing requirements shall include: S330 - Landscape General Contractor and any other classes of licenses to complete the work, as shown by the plans and specifications under supervision of the **Project Manager.**

1.3 Responsibility

It is intended that the General Contractor herein after referred to as the Contractor, shall be responsible for the overall management of the construction work. This includes any work done by their employees directly or through sub-contractors. The Contractor shall properly coordinate all work done, expediting the work of various trades, as necessary, so that different elements are built and installed in proper sequence. They must function properly and, as intended, at the completion of the project.

The Contractor shall visit the site prior to submitting a bid to adequately determine the scope, intent, and requirements of the project and its satisfactory completion.

1.4 Coordination - General

The Contractor shall see to it that orders for manufactured items called for by the various specifications, are ordered by the various trades and are delivered at the proper time.

END OF SECTION

SECTION 01 1400

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Conditions affecting construction.

1.2 EXISTING CONDITIONS

A. The east roadway is fairly narrow and there are currently no parking signs present along roadway. We will work with HOA to allow some construction parking, making sure roadway is not blocked to other traffic.

1.3 SITE CONDITIONS

A. Storage: There should be adequate area on site for construction staging, material and equipment storage, employee parking etc. Do not store equipment or materials in the public right of way.

B. Soil Conditions: No unusual soil conditions should exist. There is some fill material on-site.

C. In inclement weather, mud is to be expected. Consider existing conditions in preparing bid prices, work schedules and in protecting and moving equipment. Contractor is responsible to keep adjacent streets and project areas clean from mud tracking.

G. Prior to the start of construction, ENGINEER will perform a topographical survey of the site to determine the existing ground contours. Commencing excavation operations is evidence the CONTRACTOR accepts OWNER'S survey of the site.

1.4 DRAINAGE

A. Control all water impacting the work site during construction. Provide drainage protection of existing facilities. In the event of rain, maintain drainage lines to insure no flooding, the integrity of trenches, and stability of existing excavations.

B. Control and maintain all irrigation tail water that currently drains onto street or into existing storm drain system.

1.7 TREE PROTECTION PLAN

A. A tree protection plan is not required.

1.9 BURIED STREET AND PARKING LOT LIGHT WIRE

A. Visit the site and verify whether street light wires are overhead or underground.

B. Repair at no cost to the OWNER any CONTRACTOR caused damage to buried or overhead street and parking lot lighting wiring.

1.12 TRAFFIC RESTRICTIONS

A. ***None***

PART 2 PRODUCTS Not used.

PART 3 EXECUTION Not used.

END OF SECTION 01 14 40

SECTION 01 3113

COORDINATION

This Specification changes a portion of 2017 Edition APWA Standard Specification Section 01 31 13. All other provisions of the Section remain in full force and effect.

PART 1 GENERAL

1.2 COORDINATING WITH ENGINEER

Add the following paragraph to 1.2:

F. Project Meetings: The CONTRACTOR shall hold weekly coordination meetings at a time and place as mutually agreed to by the CONTRACTOR and ENGINEER. The meetings shall include the project superintendent and other necessary personnel from the CONTRACTOR and personnel from the ENGINEER. In addition, the meeting may include, at the discretion of the ENGINEER, representatives from other utilities and the public. The CONTRACTOR shall present project status and coordination issues, and provide a progress schedule update. The weekly meetings are considered incidental to the project and no separate payment will be made.

Meetings may be skipped upon mutual decision between the CONTRACTOR and the ENGINEER.

Add the following article:

1.8 PUBLIC AGENCY PERSONNEL TO CONTACT

A. Utility Companies: Utility companies generally require a minimum of 48 hours notice if their utility requires location, relocation, or protection. Contact the following individuals to coordinate.

1. Questar Gas: Joyce Jacobsen – 324-3957. Call 2 weeks prior to having Questar work on gas mains and 1 week on service lines to property owners. A Questar representative must be present at the preconstruction meeting and when working around high pressure gas mains.
2. Rocky Mountain Power: Builder's Hotline – 1-800-469-3981
3. Qwest Communications: Matt Ivester – 974-8169
4. Granger-Hunter Improvement District: Doug Bradfield – 801-955-2228
5. Comcast: Marty Pollock – 401-3032
6. Salt Lake County Surveyor: Pamela Birt – 468-2016 (Survey Monuments)
7. Traffic Signal (Coordinate with Salt Lake County): James Nell – 557-9698
8. Utah Transit Authority (UTA): Michael Clara – 262-5626 ext. 2325

B. West Valley City

1. Schedule Engineering Inspections: 801-963-3318
2. Parks Department Project Representative: Jason Erekson – 801-955-4006
3. Parks Department Inspector: Kelly Simper – 801-955-7382
4. City Engineer: Dan Johnson – 801-963-3228
5. West Valley City Traffic Engineer: Erik Brondum – 801-963-3561
6. Excavation Permits/Street Closure: Randy Petersen – 801-963-3350
7. Fire: 801-963-3367
8. Police: 801-963-3300
9. West Valley City Sanitation Division: 801-955-3720

END OF SECTION 01 31 13

SECTION 01 3216

PROGRESS SCHEDULE

PART 1 GENERAL

1.3 SUBMITTALS

Add the following:

D. OWNER will withhold payment if CONTRACTOR fails to prepare, submit, or update the Progress Schedule as required.

END OF SECTION 01 32 16

SECTION 01 3300

SUBMITTAL PROCEDURE

This specification changes a portion of 2017 Edition APWA Standard Specification Section 01 33 00. All other provisions of the Section remain in full force and effect.

PART 1 GENERAL

1.3 PROCEDURE

Add the following paragraph:

J. Owner will withhold payment if contractor fails to prepare, submit or update submittals, as required.

1.8 SUBMITTALS

Add the following section:

A. If CONTRACTOR submits documents for product other than that specified, provide a written statement to ENGINEER noting such (See Transmittal Form).

B. Use the following list to identify CONTRACTOR's due dates and Engineers actions dates:

SUBMITTAL ACTION AND DUE DATE LIST

Submittal	**Section Reference**	**When Due**
Submittal Register	01 33 00	Pre-Construction Conference
Preliminary Progress Schedule	00 72 00	Pre-Construction Conference
Mobilization Plan	00 72 00	Pre-Construction Conference
Safety and Protection Plan	00 72 00	Pre-Construction Conference
Quality Control Program	00 72 00	Pre-Construction Conference
Copy of NOI (Notice of Intent Submitted to the Division of Water Quality, Department of Environmental Quality)	01 57 20	Pre-Construction Conference
SWPPP (Storm Water Pollution Prevention Plan)	01 57 20	Pre-Construction Conference
Copy of West Valley City Stormwater Permit	01 57 20	Pre-Construction Conference
Copy of NOT (Notice of Termination Submitted to the Division of Water Quality, Department of Environmental Quality)	01 57 20	Prior to Final Payment
Permits for Work	01 14 00	Prior to Starting Work
Traffic Control Plan	01 55 26	72 Hours Prior to Starting Work
Construction Land Surveyor Name, Address Registration No.	01 71 23	72 Hours Prior to Starting Work
Progress Schedule	01 32 16	With Each Monthly Pay Request
Written Permission to use Private Citizen's Property and Water	00 73 03	24 Hours Prior to Use
Common Fill	31 05 13	Prior to Delivery to Site
Crushed Aggregate Base	32 11 23	5 Days Prior to Placement
Crushed Aggregate Base Mix Design	32 11 23	5 Days Prior to Use
Asphalt Concrete Mix Design	32 12 05	5 Days Prior to Use
Asphalt Concrete Batch Delivery Ticket	32 12 16	Upon Delivery to Site
Portland Cement Concrete Source Data and Supplier's Mix No.	03 30 04	5 Days Prior to Use
Water System Product Data	33 11 00	5 Days Prior to Installation
Water System Disinfection Report	33 13 00	Prior to Water Line Use
Pipeline Commissioning	33 08 00	Prior to System Use
Portland Cement Concrete Quality Control Test Reports	03 30 04 03 30 10	Daily as applicable
Portland Cement Concrete Batch Delivery Ticket	03 30 10	Upon Delivery to Site
Portland Cement Concrete Curing Compound Source, Type, and Data	03 39 00	72 Hours Prior to 1st Concrete Placement
Top Soil Supplier and Source Data	31 05 13	72 Hours Prior to Placement
Certification of Compliance and Request for Final Inspection	01 78 50	5 Working Days Prior to Substantial Completion
Quantity of Unclassified Excavation	31 23 16	Prior to Final Payment
Land Survey Closeout Documentation	01 71 23 01 71 34 31 05 10	Prior to Final Payment
Evidence of Payment to Suppliers and Subcontractors	01 78 50	Prior to Final Payment
Redlines	01 78 39	Prior to Final Payment

1. Notes: Section reference listed in this table but not found in the Project Manual may be found in the APWA Standard Specifications 2017 Edition.

1.9 ENGINEER'S STAMP

A. Form of the ENGINEER's stamp is as follows:

SUBMITTAL REVIEW

[ ] NO EXCEPTIONS TAKEN
[ ] MAKE CORRECTIONS NOTED
[ ] SUBMIT SPECIFIED ITEM
[ ] REJECTED
[ ] RESUBMIT
[ ] DO NOT RESUBMIT

This review is for general conformance with the design concepts of the Work and general compliance with the Contract Documents and does not constitute an approval or variance. Corrections or comments, or the failure to make them, on this review does not relieve the CONTRACTOR from full contract compliance.

The CONTRACTOR is responsible for compliance with all contract provisions, dimensions, sizes, capacities, fabrication and construction techniques, installation, coordinating work with others, and performing the Work in a safe and satisfactory manner.

Date: _____ By: _____

WEST VALLEY CITY PARKS AND RECREATION

B. Meaning of ENGINEER's Stamp:

1. No Exceptions Taken: Submittals have been reviewed and no corrections were noted.
2. Make Corrections Noted: Submittals that have only minor discrepancies. Resubmission will not be required unless the stamp is marked "Resubmit".
3. Submit Specified Item: Submittals that are incomplete or require more than minor corrections will be annotated to indicate necessary corrections. Resubmit the part of the submittal showing the corrections.
4. Rejected: Submittals that are fundamentally in error, covering wrong equipment or construction, or require extensive corrections.
5. Resubmit: Submittals that require resubmission. Make corrections required, note any changes by dating the revisions to correspond with the change require date, and resubmit the corrected materials.
6. Do Not Resubmit: Submittals which are not necessary to resubmit.

TRANSMITTAL FORM

	DATE:	[ ] NEW SUBMITTAL [ ] RESUBMITTAL

Section I REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (this section will be initialed by the CONTRACTOR)

TO:	FROM:	TRANSMITTAL NO. PREVIOUS TRANSMITTAL NO.
SPECIFIC SECTION NUMBER (See instructions)	CONTRACT TITLE:	CONTRACT NO.

SUBMITTAL ITEM NO.	DESCRIPTION OF ITEM SUBMITTED (Type Size, model number, etc.)	SAMPLE OR CERTIFICATE (See instructions)	NO. OF COPIES	CONTRACT REFERENCE DOCUMENT		VARIATION (See instructions)	ENGINEER REVIEW CODE (See instructions)
				SPEC PARA. NO.	DRAWING SHEET NO.		
a.	b.	c.	d.	e.	f.	g.	h.

REMARKS	I certify that the above submitted items have been reviewed in detail and are correct and conform with the Contract Drawings and Specifications except as otherwise noted. _____ NAME AND SIGNATURE OF CONTRACTOR

Section II OWNER'S ACTION (this section will be completed by the ENGINEER)

ENCLOSURES RETURNED (List by Item. No.)	SIGNATURE OF REVIEWING AGENT	DATE

FORM 013301 (Read Instructions on the reverse side prior to initialing this form)

INSTRUCTIONS

GENERAL

1. Form is self-transmittal. Letter of transmittal is not required.
2. Submittals requiring expeditious handling will be submitted individually on this form.
3. ENGINEER's review of submittals does not release or relieve CONTRACTOR from complying with all requirements of the Contract Documents.

SECTION 1

1. TRANSMITTAL No.: Number each transmittal consecutively in the space entitled "Transmittal No.". This number will identify each submittal.
2. PREVIOUS TRANSMITTAL No.: Mark the box for re-submittal and insert the transmittal number of last submission as well as the new submittal number in the spaces provided. Each re-submittal will become a new transmittal.
3. SPECIFICATION SECTION No.: Cover only one specification section with each transmittal.
4. Column "a": For each entry on this form, the "SUBMITTAL ITEM No." will be the same as the SUBMITTAL ITEM No. indicated on the Submittal Register.
5. Column "c": When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate".
6. Column "g": CONTRACTOR will place a check mark in the "Variation" column when a submittal is not in accordance with the plans and specifications – also, a written statement to that effect shall be included in the space provided for "Remarks" or on a separate page.
7. Column "h": For each item reviewed, ENGINEER shall assign action codes as follows.

A.	No Exceptions Taken.
B.	Make Corrections Noted. Resubmissions not required.
C.	Submit Specified Item.
D.	Rejected.
E.	Resubmit
F.	Do Not Resubmit. Receipt acknowledged.
G.	Will be returned by separate correspondence.
H.	Other (Specify).

SUBMITTAL REGISTER				PROJECT TITLE LOCATION CONTRACTOR											NO.						
SCHEDULED ACTIVITY	SUBMITTAL ITEM NO.	SPECIFCATION PARAGRAPH NUMBER	**DESCRIPTION OF SUBMITTAL**	TYPE OF SUBMITTAL											REVIEW ACTION	CONTRACTOR NEED DATES			ENGINEER ACTION DATES		OTHER
				SAMPLES	SHOP DRAWINGS	PARTS LIST	PRODUCT DATA	DESIGN DATA	SPECIFICATIONS	CERTIFICATES	INSTRUCTIONS	TESTING RESULTS	O&M MANUAL	OTHER	REVIEW REQUIRED BY	SUBMITTAL DATE	APPROVAL NEED BY	MATERIAL NEEDED BY	DATE RECEIVED	ACTION CODE	

INSTRUCTIONS

GENERAL

1. CONTRACTOR to Complete Form: Review the Contract Documents to insure completeness. Expand general category listings. Show individual entries on this form for each item.
2. Resubmittals: If a submittal is returned for correction, provide a new Submittal Identification Number. Identify the number on the submittal register and resubmit the information for review. Do not amend the data already contained on the submittal register.

SUBMITTAL REGISTER

1. SCHEDULE ACTIVITY: If an activity on the Progress Schedule is assigned to the submittal, place the schedule activity number in the "SCHEDULED ACTIVITY" column.
2. SUBMITTAL ITEM No.: Assign to each entry on the Submittal Register a sequential number in the "SUBMITTAL IDENTIFICATION (ITEM NUMBER)" column.
3. REVIEW ACTION: The "REVIEW ACTION" column identifies technical review responsibility of submittal. Review of all products and materials is the CONTRACTOR's responsibility; however, certain specified submittals will also require ENGINEER for information.
    a. If REVIEW ACTION Column is Blank: Identified submittal shall be approved by the CONTRACTOR and then submitted to the ENGINEER for information.
    b. If the "ENGINEER" is Identified in the REVIEW ACTION Column: Identified submittals shall be first approved by the CONTRACTOR and then submitted to the ENGINEER for review.
4. ENGINEER ACTION DATES: This column is for ENGINEER's use to record date submittal was received and the action code assigned in the submittal review process.

END OF SECTION 01 3300

SECTION 01 4219

REFERENCES

PART 1 GENERAL

1.1 REFERENCE STANDARDS

A. Industry standards

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

AABC	American Air Balance Council, 1518 K St NW, Suite 503, Washington, DC 20005 (202) 737-0202
AAMA	American Architectural Manufacturers Assoc, 1540 K Street NW, Palantine, IL 60067 (708) 202-1350
AAN	American Association of Nurserymen, 1250 Eye St NW, Suite 500, Washington, DC 20005 (202) 789-2900
AASHTO	American Association of State Highway & Transportation Officials, 444 North Capitol St, Suite 249, Washington, DC 20001 (202) 624-5800
ACI	American Concrete Institute, P.O. Box 19150, 22400 West 7 Mile Rd, Detroit, MI 48219 (313) 532-2600
AGA	American Gas Assoc, 1515 Wilson Blvd, Arlington VA 22209 (703) 841-8400
AIA	American Institute Of Architects, 1735 New York Ave NW, Washington, DC 20006 (202) 626-7300

AISC	American Institute of Steel Construction, One East Wacker Drive, Suite 3100, Chicago, IL 60601-2001 (312) 670-2400
AISI	American Iron & Steel Institute, 1101 17th St NW, Washington, DC 20036-4700 (202) 452-7100
AITC	American Institute of Timber Construction, 7012 South Revere Parkway #140, Englewood CO 80112 (303) 792-9559
AMCA	Air Movement & Control Assoc, 30 West University Dr, Arlington Heights, IL 60004 (312) 394-0150
ANSI	American National Standards Institute, 11 West 42nd St, New York NY 10036 (212) 642-4900
APA	American Plywood Assoc, P.O. Box 11700 (98411, 7011 South 19th St (98466), Tacoma, WA (206) 565-6600
ARI	Air Conditioning & Refrigeration Institute, 4301 Fairfax Drive, Suite 425, Arlington, VA 22203 (703)524-8800
ASHRAE	American Society of Heating, Refrigeration, & Air conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329 (404) 636-8400
ASME	American Society of Mechanical Engineers, 345 East 47th St. New York, NY 10017 (212) 705-7722
ASTM	American Society for Testing & Materials, 1916 Race St, Philadelphia, PA 19103 (215) 299-5400
AWI	Architectural Woodwork Institute, 13924 Braddock Road, Suite 100, P O Box 1550, Centreville, VA 22020 (703) 222-1100
AWPA	American Wood Preservers' Assoc, P O Box 286, Woodstock MD 21163-0286 (410) 465-3169
AWS	American Welding Society, 550 LeJeune Road NW, P O Box 351040, Miami, FL 33135 (305) 443-9353
AWWA	American Water Works Assoc, 6666 West Quincy Ave, Denver, CO 80235 (303) 794-7711
BHMA	Builders' Hardware Manufacturers Assoc, 355 Lexington Ave, 17th Floor, New York NY 10017 (212) 661-4261
BIA	Brick Institute of America, 11490 Commerce Park Drive, Suite 300, Reston VA 22091 (703) 620-0010
CRI	Carpet & Rug Institute, P O Box 2084, Dalton, GA 30722 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute, 933 Plum Grove Rd, Schaumburg, IL 60173 (312) 517-1200
DHI	Door & Hardware Institute, 14170 Newbrook Drive, Chantilly, VA 22021 (703) 222-2010
EIMA	EIFS Industry Manufacturers Association, 2759 State Road 580, Suite 112, Clearwater FL 34621 (813) 726-6477
FM	Factory Mutual Research Organization, 1151 Boston-Providence Turnpike, Norwood, MA 02062 (617) 762-4300
GA	Gypsum Association, 810 First Street NE, Suite 510 Washington, DC 20002 (202) 289-5440
IEEE	Institute of Electrical & Electronic Engineers, 345 East 47th St, New York, NY 10017 (212) 705-7900
LPI	Lightning Protection Institute, 33365 North Arlington Heights Road, Arlington Heights, IL 60004 (800) 488-6864
MFMA	Maple Flooring Manufacturers' Assoc, 60 Revere Dr, Suite 500, Northbrook, IL 60062 (708) 480-9138

NAAMM	National Association of Architectural Metal Manufacturers, 600 South Federal St, Suite 400, Chicago, IL 60605 (312) 922-6222
NEC	National Electric Code (from NFPA)
NEMA	National Electrical Manufacturer's Association, 2101 'L' St, NW, Washington, DC 20037 (202) 457-8400
NFPA	National Fire Protection Assoc, One Batterymarch Park, P O Box 9101, Quincy, MA 02269-9101 (80) 344-3555
NFRC	National Fenestration Rating Council, 1300 Spring Street, Suite 120, Silver Spring, MD 20910 (301) 589-6372
NSF	National Sanitation Foundation, 3475 Plymouth Rd, P O Box 1468, Ann Arbor, MI 48106 (313) 769-8010
NWWDA	National Wood Window and Door Association, 1400 East Touhy Ave, #G54, Des Plaines, IL 60018 (213) 299-5200
PCA	Portland Cement Assoc, 5420 Old Orchard Road, Skokie, IL 60077 (312) 966-6200
PCI	Prestressed Concrete Institute, 175 West Jackson Blvd, Chicago, IL 60604 (312) 786-0300
PEI	Porcelain Enamel Institute, 102 Woodmont Boulevard, Suite 360, Nashville, TN 38205 (615) 385-0758
SDI	Steel Door Institute, 30200 Detroit Road, Cleveland OH 44145 (216) 899-0010
SIGMA	Sealed Insulating Glass Manufacturers Association, 401 North Michigan Avenue, Chicago IL 60611 (312) 644-6610
SJI	Steel Joist Institute, 1205 48th Avenue North, Suite A, Myrtle Beach, SC 29577 (803) 449-0487
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, 4201 Lafayette Center Drive, Chantilly, VA 22116 (703) 803-2980
SPIB	Southern Pine Inspection Bureau, 4709 Scenic Highway, Pensacola, FL 32504 (904) 434-2611
TCA	Tile Council of America, P O Box 326, Princeton, NJ 08542 (609) 921-7050
TPI	Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI 53719 (608) 833-5900
UL	Underwriters Laboratories, 333 Pfingsten Rd, Northbrook, IL 60062 (708) 272-8800
WWPA	Western Wood Products Assoc, Yeon Building 522 SW 5th Avenue, Portland OR 97204-2122 (503) 224-3930

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

CS	Commercial Standard (U>S> Department of Commerce), Government Printing Office, Washington, DC 20402 (202) 377-2000
DOT	Department of Transportation, 400 Seventh St SW, Washington, DC 20590 (202) 366-4000

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

1.2 GOVERNING REGULATIONS/AUTHORITIES

A. Contact authorities having jurisdiction directly for information and decisions having bearing on the Work.

B. Obtain copies of regulations required to be retained at Project site, available for reference by parties who have a reasonable need for such reference.

1.3 SUBMITTALS

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

PART 2 PRODUCTS – Not used

PART 3 EXECUTION – Not used

END OF SECTION 01 4219

SECTION 01 4340

RESIDENT SUPERINTENDENT

This specification changes a portion of 2017 Edition APWA Standard Specification Section 01 43 40. All other provisions of the section remain in full force and effect.

PART 1 GENERAL

1.3 DUTIES IN GENERAL

I. Traffic Control Plan. Assure the traffic control plan and updates are implemented and Traffic Control supervisor adheres to the requirements of Section 01 55 26 and modifications herein.

J. Safety Plan. Assure CONTRACTOR's safety plan is implemented. Provide a safe working environment.

K. Summary of Quantities Earned. ENGINEER keeps Summary of Quantities Earned. Review the records weekly for accuracy, sign and return to ENGINEER with disparities noted. Disparities shall be resolved within one week of discovery.

L Monitor the use of temporary utilities.

M. Monitor periodic cleaning.
1. Enforce compliance with specifications.
2. Resolve any conflicts.

N. Changes and Substitutions.
1. Recommend desirable changes to ENGINEER.
2. Review subcontractor and supplier requests for changes and substitutions, submit recommendations to ENGINEER.
3. Promptly notify all subcontractors and suppliers of pending changes or substitutions.

END OF SECTION 01 4340

SECTION 01 4500

QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

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

A. Testing Responsibilities: Testing and inspecting services are required to verify compliance with requirements specified or indicated. **The owner shall engage and pay for services of an independent agency to perform inspections and tests specified in the schedule attached herein.** These services do not relieve Contractor of responsibility for compliance with the Contract Documents.

1. Specified test, inspections and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with Contract Documents.
2. Requirements for Contractor to provide quality-assurance and control Services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this section.

B. Retesting: The Contractor is responsible for retesting costs where results prove unsatisfactory and do not indicate compliance with Contract Documents, regardless of whether the original test was the Contractor's responsibility.

1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

C. Associated Services: The Contractor shall cooperate with agencies performing inspections or tests and provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include but are not limited to:

1. Provide access to the Work and furnish incidental labor and facilities necessary to facilitate inspections and tests.
2. Take representative samples of materials that require testing or assist the agency in taking samples.
3. Provide facilities for storage and curing of samples, and deliver samples to testing laboratories.
4. Provide a preliminary design mix proposed for use for material mixes that require control by the testing agency.
5. Provide security and protection of samples and test equipment at the Project site.

D. Duties of the Testing Agency: The agency engaged to perform inspections and testing of materials and construction shall cooperate with the Architect and Contractor in performance of its duties, and provide qualified personnel to perform inspections and tests.

1. The agency shall notify Owner and Contractor promptly of deficiencies observed during performance of its services.
2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

E. Coordination: This Contractor and each agency engaged to perform inspections and tests shall coordinate the sequence of activities to avoid removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling inspections, tests, taking samples and similar activities.

F. Submittals: The testing agency shall submit a certified written report of each inspection and test to the Owner, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible, submit a certified written report of each inspection and test through the Contractor, in duplicate. Submit additional copies of each report to the governing authority, when the authority so directs.

G. Report Data: Written reports of each inspection or test shall include, but not be limited to:
Date of issue
Project title and number
Name, address and telephone number of testing agency
Dates and locations of samples and tests or inspections
Names of individuals making the inspection or test
Designation of the Work and test method
Identification of product and Specification Section
Complete inspection or test data
Test results and an interpretation of test results
Ambient conditions at the time of sample taking and testing
Comments or professional opinion as to whether inspected or tested work complies with Contract Document requirements
Name and signature of laboratory inspector
Recommendations or retesting

H. Qualifications for Service Agencies: Engage inspection and testing agencies which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and specialize in the types of inspections and tests to be performed. Each inspection and testing agency engaged shall be authorized to operate in the State in which the Project is located.

I. Repair and Protection: Upon completion of inspection and testing repair damaged construction and restore substrates and finishes to eliminate deficiencies. Comply with requirements for "Cutting and Patching". Protect construction exposed by or for quality control service activities and protect repaired construction. The Contractor is responsible for repair and protection regardless of the assignment of responsibility for inspection and testing.

PART 2 - SCHEDULE OF CONTRACTOR PROVIDED TESTING SERVICES

A. Earthwork: Allow testing service to inspect and approve each subgrade and fill layer before further backfill or construction work is performed. Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2167 (rubber balloon method), as applicable.

1. Field density tests may also be performed by the nuclear method in accordance with ASTM D 2922, providing that the calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. In conjunction with each density calibration check, check the calibration curves furnished with the moisture gages in accordance with ASTM D 3017.
2. If field tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Project Architect.

B. Footing Subgrade: For each strata of soil on which footings will be placed, perform at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata when acceptable to Project Architect.

C. Paved Areas: Perform at least one field density test of subgrade for every 2,000 sq. ft. of paved area of slab, but in no case fewer than three tests. In each compacted fill layer, perform one field density test for every 2,000 sq.ft. of overlaying building slab or paved area, but in no case fewer than three tests.

D. Asphalt Paving: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness.

E. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:

Base Course:	1/2", plus or minus
Surface Course:	1/4", plus or minus

F. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surface will not be acceptable if exceeding the following tolerances for smoothness:

Base Course Surface:	1/4"
Wearing Course Surface:	3/16"

Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template; 1/4".
Check surface areas at intervals as directed by Architect.

G. Portland Cement Concrete (Paving & Structural): Sampling and testing for quality control during placement of concrete may include the following, as directed by Architect.

H. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with

ASTM C 94.

1. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.

2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM D 231 pressure method for normal weight concrete; one for each day's pour of each type of air-entranced concrete.
3. Compression Test Specimen: ASTM C 31; one set of 3 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
4. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, one specimen tested at 28 days, and one specimen retained in reserve for later testing if required. When total quantity of a given class of concrete is less than 50 cu. yds, strength test may be waived by Architect, if, in his judgment, adequate evidence of satisfactory strength is provided. When strength of field-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

END OF SECTION 01 4500

SECTION 01 5526

TRAFFIC CONTROL

This specification changes a portion of 2017 Edition APWA Standard Specification No. 01 55 26. All other provisions of the Section remain in full force and effect.

PART 1 GENERAL

1.5 TRAFFIC CONTROL TECHNICIAN

Add the following paragraph:

B. Responsibilities and Duties:
   1. Oversees all traffic control operations.
   2. Implements the Traffic Control Plan.
   3. Remains available 24 hours a day, seven days a week and can be on-site within 30 minutes of notification.
   4. Corrects deficiencies immediately upon verbal or written notification from the Engineer or representative.
   5. Inspect and document inspections of traffic control on a form acceptable to the Engineer at least four times each day, at least one of which must be conducted during nighttime hours.
      a. Before beginning of shift.
      b. At mid-shift.
      c. Half-hour after shift ends.
      d. At the midpoint of the off-shift period.
   6. Coordinates project traffic control with emergency services and local law enforcement agencies.
   7. Inspect and document inspections of traffic control twice each day when no construction work is being done.
      a. One during day light hours and one during night time hours.
      b. Conduct inspections a minimum of 8 hours apart.
   8. Completes a daily record of traffic control activities using a form acceptable to the Engineer.
   9. Submit to the Engineer inspection and activities forms each week on a day and time acceptable to the Engineer.

1.6 FLAGGER

Modify the following:

B. Equipment:
   1. In compliance with most current version of MUTCD.

C. Clothing:
   1. In compliance with most current version of MUTCD.

1.7 SAFETY

Add the following article:

A. When exposed to public vehicular traffic, employees shall wear hard hats and warning vests or other suitable garments marked with or made of reflectorized or high-visibility material in compliance with most current version of MUTCD.

PART 3 EXECUTION

3.2 TRAFFIC CONTROL DEVICES

Add the following paragraphs:

D. Wash devices weekly unless conditions warrant more frequent cleaning.

E. Replace any device missing any part of the message or background.

F. Replace or repair graffiti damaged signs.

Add the following article:

3.3 SPECIAL TRAFFIC CONTROL PROVISIONS

A. In General:
   1. Provide, maintain and control all traffic information signs and traffic control devices as indicated in the most current version of the MUTCD.
   2. Properly secure all temporary traffic control signs and barricades from movement in high winds.
   3. Provide and maintain one 12 foot wide minimum traffic lane at all times.
   4. Limit work in residential areas from 7:00 a.m. to 9:00 p.m.

B. Pedestrian Traffic Control:
   1. Regulate pedestrian traffic as shown in the most current version of the MUTCD. Provide safe, convenient travel path that replicates as nearly as possible the most desirable characteristics of sidewalks or footpaths.
   2. At the work zone, use solid rails or firm plastic netting between barricade devices. They must be easily identifiable to the vision impaired and the blind using a white cane.
   3. Make passageways safe within and around the work zone. Help the blind, the wheel chair bound and people with other types of navigational disability.
   4. Do not lead pedestrian into direct conflict with work site vehicles, equipment, or with mainline traffic moving through or around the work site.

5. Meet ADA (Americans with Disabilities Act) requirements when constructing temporary ramps over curb, gutter, sidewalk, and other construction.
6. Close sidewalk to public use only when approved by the City's transportation ENGINEER.
7. Coordinate with school flagging personnel.

C. Vehicular Traffic Control Plan:
1. Submit a Traffic Control Plan that satisfies requirements of the current version of the MUTCD. All signalized intersections shall be treated as a separate construction phase.
2. Show phases of street improvement work. Provide the least amount of traffic disruption.
3. Provide signs that display name of businesses located in the work zone. Show motorist by signage, how to reach business destination.

D. Work Site Traffic Supervisor Responsibilities: Follow the "Elements of a good Traffic Control Program" of the most current version of the MUTCD.

E. Access to Properties:
1. Provide access to all affected properties except for durations less than 24 hours or during periods when achieving concrete strengths.
2. Notify occupants of adjacent properties at least 48 hours in advance of change or loss of access and the anticipated duration.
3. Construct temporary ramps over curb, gutter, sidewalks and other construction to each residence and business entrance as required for uninterrupted vehicular and pedestrian access.

F. Parking Restrictions:
1. Post "No Parking" signs every 50 feet 24 hours in advance of need.

G. Public Transit:
1. Keep existing bus stops open and clear for bus service operation.
2. Minimize bus service disruption in and around the stops.
3. Provide at least 48 hours advance notice to the Utah Transit Authority.
4. Notify Utah Transit Authority of Road Closures

H. Signalized Intersections, Major Streets, State Roads, Downtown Area:
1. Operate large equipment on major streets, state roads and signalized intersections only during off-peak traffic hours. Peak traffic hours are 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.
2. For each approach to a major street provide a Certified Flagger. Flagger shall only control traffic outside the limits of a signalized intersection.
3. Existing left turn lanes may be used for through traffic movement when the need to reduce the through traffic to one lane approach to signalized intersections. Install "No Left Turn" signs stating the "Bus Exception" message.

I. Partial or Complete Lane Closure Authorization (Without Permit):
1. Provide Certified Flagger when work momentarily affects travel lanes. Example: A backhoe maneuvering in a travel lane outside of the construction work zone.

2. If one traffic lane for each direction cannot be maintained, provide one 12 ft. wide lane with Certified Flaggers alternating traffic flow for each direction.
3. Major streets may be reduced to one 12 ft. wide travel lane for each direction during work hours. Left turn prohibition shall be required when through lanes are reduced to one lane of travel. Install "No Left Turn" signs stating the "Bus Exception" message.

J. Street Closure: (Permit Required)
1. Maintain local traffic at all times during the project.
   a. Maintain access to abutting properties at all times via one 12 ft. wide travel lane.
   b. Provide alternative access whenever normal access is blocked and an alternative access method is possible.
   c. Notify affected property owners 48 hours in advance of change or loss of access and the anticipated duration of time.

END OF SECTION 01 5526

SECTION 01 5719

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 GENERAL PROVISIONS

A. Comply with all Federal, State, local laws and regulations, and the provisions of this Section controlling environmental pollution.

B. Prevent pollution of streams, lakes, ponds, and reservoirs with sediment, fuels, oils, bitumens, chemicals, or other harmful materials and pollution of the atmosphere from particulate and gaseous matter.

C. Incorporate Best Management Practices to prevent hazardous material releases by segregating wastes, providing secondary containment and having spill kits and absorbents on hand.

1.2 HAZARDOUS MATERIAL - DISCOVERED DURING CONSTRUCTION

A. Immediately suspend work in the area and notify the ENGINEER if abnormal conditions are encountered or exposed during construction that indicates the presence of a hazardous material, toxic or hazardous waste.
   1. Treat the conditions with extreme caution.
   2. Abnormal conditions include, but are not be limited to, the following: presence of barrels; buried storage tanks; above ground tanks; obnoxious odors; excessively hot earth; stained and discolored soils; smoke; unidentifiable powders, sludges, pellets; or any other condition that could be a possible indicator of hazardous material, toxic or hazardous waste.

B. Resume operation in this area when directed by the ENGINEER. Continue working in other areas of the project, unless otherwise directed by the ENGINEER.

C. Dispose of the hazardous material, toxic or hazardous waste under the requirements and regulations of the Utah State DEPARTMENT of Environmental Quality and United State Environmental Protection Agency.
   1. Perform by change order necessary work required to dispose of these materials.
   2. Disposition of waste materials requiring special procedures by certified personnel will be arranged by the ENGINEER with qualified persons to dispose of the material.

1.3 HAZARDOUS MATERIAL - CONTRACTOR CAUSED

A. Notify the ENGINEER of Environmental Quality of spills of petroleum based products or hazardous waste if the release would meet the definition of a hazardous waste as defined in 40 U.S. Code of Federal Regulations 261.
   1. Notify the ENGINEER immediately after the discovery of the spill.
   2. Notify the DEPARTMENT of Environmental Quality (DEQ) in writing within 5 calendar days of the discovery.
   3. Notify the DEQ in accordance with R315.9 of Utah Administrative Code. 24-hour phone number: (801) 536-4123.

B. Dispose of spilled material according to the requirements and regulations of the Utah State DEPARTMENT of Environmental Quality.

C. Pay for the required clean-up operations.

1.4 LIVE STREAMS

A. Ford or work in live streams, canals or any live body of water (live water) only with approval from the Utah Division of Water Quality and Utah Division of Water Rights. Do not operate mechanized equipment in live water unless provided for in the Contract. Minimize stream, and canal siltation.

B. Use a dike or barrier to separate work areas or pits located in or adjacent to streams from the main stream. Prevent sediment from entering adjacent streams.

C. Treat water used to wash aggregate or water from other operations that produce sediment by filtration, settling basins, or other methods that reduce sediment concentrations to the level of the stream or lake into which it is discharged.

1.5 OPEN BURNING

A. Not permitted.

1.6 ABRASIVE BLASTING - VISIBLE EMISSION STANDARDS

A. Visible Emission Standards:
   1. Abrasive blasting inside Salt Lake or Utah Counties where the performance standards in this article, paragraph C are used: Do not discharge into the atmosphere an opacity darker than 20 percent for a period or periods aggregating more than 3 minutes in any 1 hour.
   2. Abrasive blasting inside Salt Lake or Utah Counties where the performance standards in this article, paragraph C are not used: Do not discharge into the atmosphere an opacity darker than 40 percent for a period or periods aggregating more than 3 minutes in any 1 hour.

B. Visible Emission Evaluation Techniques:

1. Rad emissions from unconfined blasting at the densest point of the emission after a major portion of the spent abrasive has fallen out. Densest point will be between 6 feet and 25 feet from the impact surface of the abrasive blasting nozzle.
2. Judge emissions from unconfined blasting employing multiple nozzles as a single source unless each nozzle meets the emission and performance standards.
3. Read emissions from confined blasting at the densest point after the air contaminant leaves the enclosure.

C. Performance Standards: Any one of the following may be used as a performance standard.
1. Confined blasting
2. Wet abrasive blasting
3. Hydroblasting
4. Unconfined blasting using abrasives defined below:
   a. Before blasting, the abrasive will not contain more than 1 percent by weight material passing a #70 U.S. standard sieve.
   b. After blasting, the abrasive will not contain more than 1.8 percent by weight material 5 micron or smaller.
   c. Abrasives reused for dry unconfined blasting are exempt from the requirements of "after blasting," but must conform with the requirements of "before blasting" above.

D. Abrasive Certification: Sources using the performance standard for unconfined blasting must demonstrate they have obtained abrasives from persons who have certified (submitted test results) to the Utah Air Quality Executive Secretary at least annually that such abrasives meet the requirements outlined above for abrasives.

1.7 NOISE AND VIBRATION CONTROL

A. Identify haul routes and percussive noise sources that annoy sensitive receptors and prevent these sources from becoming a problem.

B. Definitions and Standards - Use terminology that meets applicable American National Standards Institute (ANSI) publications and commonly accepted practices of acoustical measurements.
1. Receptor - An occupied residential dwelling, church, hospital, school, outdoor stage, or structure confining other noise sensitive activities.
2. Noise Sensitive Zone - The land enclosed within a 1500 foot radius circle of any receptor.
3. Sound Level - The total sound pressure level from all concurrent construction activities related to the subject project, as measured with a sound level meter using the A-weighting network (ANSI S1.4). The standard notation is dB(A) or dBA.
4. Percussive Noise - Short burst(s) of banging or clattering noise including but not limited to blasting, pile driving, and jack-hammering.

C. Prohibitions - Suspend construction work under the following conditions:

1. Construction activity in a noise sensitive zone causes the sound level within 10 feet of the nearest receptor to exceed: 95 dBA in daytime (7 a.m. - 9 p.m.), or 55 dBA in nighttime (9 p.m. - 7 a.m.)
2. A noise sensitive zone on Sundays and State Holidays.
3. Project related construction noise or vibration does not meet specifications. Suspend the portion of construction work responsible for the problem until noise is reduced to the required noise standards.

D. Compliance:
1. Follow the local noise ordinances, except where a variance in accordance with local regulations has been granted.
2. Local noise ordinance variance does not provide an exemption from complying with the requirements of this article, paragraph C.

E. Percussive Noise: Notify the ENGINEER at least 2 weeks in advance of any percussive noise activity that is expected to exceed the provisions of this article, paragraph C. Coordinate with the ENGINEER to notify the public.

1.8 ENVIRONMENTAL CLEARANCE BY THE CONTRACTOR

A. Obtain and provide the following environmental clearances before beginning project activity when adding or selecting any ground- or resource-disturbing features such as material (gravel, borrow or waste) sites, equipment staging sites, office sites, water lines, holding ponds, etc., not provided in the Contract:
1. Wetlands: Obtain written clearance from the U.S. Army Corps of ENGINEERs.
2. Floodplains - Initiate consultation concerning the proposed additional feature(s) with the Region Hydraulics Section. Subsequent coordination with the Federal Emergency Management Agency (FEMA) may be required. Verification of non-interference by the CONTRACTOR with a floodplain or compliance with FEMA guidelines will be provided to the CONTRACTOR by the Region Hydraulic ENGINEER.
3. Prime, Unique, and Important Farmland - Initiate consultation concerning the proposed additional feature(s)with the farmland specialist with the Regions Environmental ENGINEER. Subsequent coordination by the CONTRACTOR with the U.S. Natural Resources conservation service may be required. The Region provides written clearance to the CONTRACTOR.
4. Utah Pollutant Discharge Elimination System (UPDES) - Obtain UPDES permit for storm water discharge from Utah Division of Water Quality (DWQ). Comply with the requirements of the permit including submittal of Notice of Intent (NOI) form to DWQ and development and approval of the storm water pollution prevention plan by the DWQ when required.
5. Air Quality: Obtain construction approval from the Utah Division of Air Quality and West Valley City if construction project or area of disturbance outside of the project is in an area of air quality non-attainment for any pollutant.

B. CONTRACTOR is responsible for all costs of pursuing and obtaining all the above clearances, and is not entitled to time extension for delays encountered in obtaining these clearances.

PART 2 PRODUCTS Not used.

PART 3 EXECUTION Not used.

END OF SECTION 01 5719

SECTION 01 5720

ENVIRONMENTAL CONTROL SUPERVISOR

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description of the responsibilities of the CONTRACTOR'S Environmental Control Supervisor (ECS) to monitor and document environmental mitigation and compliance on the project.

1.2 RELATED SECTIONS

A. Section 01 57 19: Environmental Protection

B. Section 01 57 00: Temporary Controls

C. Section 32 93 13: Mulch

D. Section 32 92 00: Seed, Turf Seed, and Sod

1.3 SUBMITTALS

A. Submit a NOI and a NOT to the Division of Water Quality at the Department of Environmental Quality (DEQ) as described under Article 3.3.

B. Submit Storm Water Pollution Prevention Plan (SWPPP) inspection reports to the ENGINEER within 24 hours of the inspection as set forth under Article 3.4.

C. Obtain and submit a West Valley City Stormwater Permit.

1.4 ECS QUALIFICATIONS

A. Knowledge of erosion control principles and best management practices for roadway construction sites.

B. Knowledge of the laws surrounding environmental clearances and how to obtain these clearances required under Section 01 57 19, article 1.8 AEnvironmental Clearances by the CONTRACTOR.@

C. Be sufficiently knowledgeable to understand the significance and implementation of environmental plans, details, and specifications.

1.5 NON-PERFORMANCE PENALTY

A. A $500 non-performance penalty assessed against the CONTRACTOR for each calendar day, or portion thereof, during which the project is in non-compliance with permits and regulations.

B. No extension of contract time allowed for any project delay resulting directly or indirectly from a violation of project environmental requirements.

PART 2 PRODUCTS Not used.

PART 3 EXECUTION

3.1 GENERAL RESPONSIBILITIES

A. Successful implementation of all environmental protection commitments and the correct installation of environmental mitigation measures associated with the project.

B. Keep the project in environmental compliance.

C. ECS responsibilities take precedence over any other work commitments.

D. Obtain environmental clearances as addressed in Section 01 57 19, article 1.8 AEnvironmental Clearances by the CONTRACTOR@ for disturbances, waste sites, staging areas, for example not provided in the Contact.

E. Be available at all times (24-hours a day) during the active project construction to respond as necessary to environmental compliance and to the direction of the ENGINEER. Be available as needed during seasonal shutdowns.

3.2 REGULATORY AGENCY COORDINATION

A. Work through the ENGINEER to maintain coordination and communications between the CONTRACTOR and Regulatory Agencies. Process all official communications through the ENGINEER.

B. Coordinate and conduct on-site meetings on an as-needed basis with Regulatory Agency Inspectors. This could include Regulatory Inspectors from the Utah Division of Water Quality, Utah Division of Water Rights (Stream Alterations), U.S. Army Corps of Engineers (wetlands), and U.S. Fish and Wildlife Service.

C. Notify the ENGINEER in writing of the results of any agency coordination meeting within 24-hours.

3.3 UTAH POLLUTION DISCHARGE ELIMINATION SYSTEM (UPDES) PERMIT COMPLIANCE

A. Prepare, sign, and submit to the ENGINEER a Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity under the UPDES General Permit No. UTS 000001. NOI forms can be obtained from the DEQ or UDOT.

B. Do not start earth-disturbing activities until the completed and signed NOI form has been submitted to the Division of Water Quality at the DEQ.

C. Work directly with the DEPARTMENT SWPPP coordinator designated by the ENGINEER.

D. Place temporary or permanent stabilization measures (for example, mulch, erosion control blankets) as soon as practicable but in no case longer than 14 days unless construction activities resume on that portion of the site within 21 days when activity ceased. If snow cover precludes the mulch placement, apply as soon as practicable. Seasonal shutdowns require that mulch be placed for all disturbed portions of the project.

E. Do not start earth disturbing work until project perimeter temporary erosion measures and those protecting environmentally sensitive areas are in place and approved.

F. Understand that the erosion control measures on the SWPPP are diagrammatic and must be adapted in the field to meet their intended purpose. As the project progresses through the various construction phases, implement the appropriate erosion control measures for that stage. Make necessary changes to the SWPPP to accommodate construction sequencing.

G. Obtain approval from the ENGINEER to make changes to the SWPPP. Install additional erosion control measures as directed by the ENGINEER.

H. Be available as needed to coordinate the SWPPP, make necessary changes, inspect, maintain sediment control devices, and resolve other sediment and erosion control issues.

I. Monitor earthwork during construction to detect any evidence of the start of erosion. Pro-actively apply corrective measures.

J. Apply the appropriate maintenance of temporary erosion controls. Refer to Section 10 57 00.

K. At the end of construction, submit a Notice of Termination (NOT) form to the Division of Water Quality to terminate the permit. NOT forms can be obtained at the DEQ or UDOT.

3.4 SWPPP INSPECTIONS

A. At the commencement of earth moving activity, start performing inspections of all temporary erosion control measures a minimum of once every seven calendar days and

within 24 hours after any storm event greater than 0.5 inch. Where construction sites have been temporarily or seasonally shut down, conduct inspections once a month.

B. Invite OWNER'S SWPPP coordinator appointed by the ENGINEER to the inspections.

C. After each inspection, complete an inspection report and submit it to the ENGINEER within 24 hours. Include the following information:
   1. Name(s) of personnel attending the inspection.
   2. Date of inspection
   3. List of problems identified in the previous inspection and document if corrections have been made.
   4. List by station, earth disturbing activities since previous inspection.
   5. List by station, erosion and sediment control measures installed since previous inspection.
   6. List by station, new and unresolved problems encountered with specific erosion control measures and describe solutions to be implemented.

3.5 UNIT PRICE – MEASUREMENT AND PAYMENT

A. Environmental control supervisor shall be incidental and included in cost of all other work.

END OF SECTION 01574

SECTION 01 7113

MOBILIZATION AND DEMOBILIZATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Mobilization and demobilization requirements

1.2 DEFINITIONS

A. Mobilization includes bringing all necessary equipment to the site to do the Work. It also includes all labor, materials, and equipment to set up temporary offices, buildings, facilities, signs and utilities.

B. Demobilization includes removing all construction equipment and debris, so site is left clean.

1.3 TEMPORARY FACILITIES

A. Field Office: CONTRACTOR'S choice.

B. Utilities: Provide power, telephone, water, storm and sanitary facilities, and all other temporary utilities required.

C. Security and Protection: Construct and maintain temporary fencing for the protection of materials, tools, and equipment. Obtain prior approval for all fence locations.

D. Construction and Support: Set up and maintain in a neat and orderly manner temporary roads and paving, dewatering facilities, enclosures, identification signs and bulletin boards, waste disposal and temporary heat. Provide and maintain temporary all weather pedestrian walk ways and road detours.

E. Invert Cover: Install covers as shown in Standard Plans or Drawings. Installation must be tight so no debris can by-pass the cover and enter the pipes below.

PART 2 PRODUCTS

2.1 MATERIALS

A. Temporary Materials: CONTRACTOR'S choice.

PART 3 EXECUTION

3.1 INSTALLATIONS

A. Relocate and modify temporary facilities as required.

B. Install temporary utility service or connect to existing service.

C. Locate field offices, storage sheds, sanitary facilities, and other temporary Construction and support facilities for easy access. Use of gasoline-burning, open flame, or salamander type heating units is prohibited.

3.2 REMOVALS

A. Completely remove temporary materials and equipment;

1. When construction needs can be met because of permanent installation.
2. At completion of the work.

B. Clean or repair damage caused by installation or use of temporary facilities.

C. Restore areas to original or to specified condition at completion of the Work.

END OF SECTION 01 7113

SECTION 01 7123

CONSTRUCTION LAYOUT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Construction surveying requirements

1.2 SUBMITTALS

A. Prior to contract closeout, submit:
   1. Documentation to verify accuracy of survey work.
   2. When required by Laws and Regulations, submit a certificate, signed by a licensed professional, certifying that elevations and locations of improvements conform with the Contract Documents.
   3. All survey data, survey information showing dimensions, location angles, and elevations of construction on contract Record Documents.

1.3 SURVEY REFERENCE POINTS

A. Known basic horizontal and vertical control points for the Project are indicated.
B. Locate and protect survey control points prior to starting site work, and preserve all permanent reference points during construction.
C. Notify ENGINEER in writing within 24 hours of any survey work changes, or clarifications required for Project. Secure written authorization prior to making any changes or relocations.
D. Report in writing when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
E. Replace construction stakes damaged or destroyed by CONTRACTOR at no additional cost to OWNER.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 PROJECT SURVEY REQUIREMENTS

A. Any work done without line and grade established by CONTRACTOR is at CONTRACTOR'S own risk.
B. Locate and layout by instrumentation and similar appropriate means to include but not limited to:
   1. Pavement Subgrade and Finish Grade
   2. Site improvements
      i. Stakes for grading, fill and topsoil placement
      ii. Slope elevations
      iii. Utility locations and invert elevations
   3. Batter boards for structures
   4. Retaining wall locations and elevations

5. Curb and gutter alignment and grade
6. Building foundations, column locations and floor levels
7. Controlling lines and levels required for civil, mechanical, and electrical trades

END OF SECTION 01 7123

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. The work to be performed under this section shall consist of furnishing all labor, materials, and equipment to form, pour, finish, and cure concrete walks, curbs and gutters, flat work, retaining walls, footings, mowstrips, and other concrete as per the plans and specifications. The work may include but not be limited to excavation, forming, pouring, finishing, jointing, curing, protecting, removing forms, restoring earth or sod around the edges, and guaranteeing the work.

PART 2 - MATERIALS

2.1 CEMENT

A. The cement shall be Portland Type II cement meeting current AASHTO Designation M-85 Specifications. The supplier and mix of concrete shall not be changed during the complete concrete phase of the project. All concrete shall be Class AA (AE) Type II. A 6.5 bag cement mix shall be used with a slump of 4-inch maximum. The concrete shall have a 6% air entrainment with a plus or minus variable of 1%. All air entraining agents shall conform to the requirements of AASHTO Designation ASTM260. The 28 day compressive strength shall be 4,000 P.S.I.

2.2 AGGREGATE

A. The aggregate shall be well graded from fine to coarse. The fine aggregate shall be uniformly graded meeting the requirements of AASHTO Designation ASTM-C33. Coarse aggregate shall be 1" to #4 conforming to the requirements of AASHTO Designation M-92.

2.3 FIBER REINFORCEMENT

A. Synthetic fibrous reinforcement: Collated, fibrillated with a mix ratio of 1/5 pounds of fiber to 1.0 cubic yards of concrete.

2.4 WATER

A. The maximum water/cement ratio shall be 5 gallons per sack. All water used in mixing the concrete shall be clean and free of oil, alkali, organic matter, or other deleterious substances.

2.5 FILL AND BACK FILL

A. The entire area beneath the concrete shall be excavated to the proper depth to allow for the specified thickness of untreated base course or the area shall be compacted to 95% as measured by a Procter test.

B. All excavated material shall be either re-used on the site or hauled away as specified on the plans.

C. Where untreated base course (free drainage material) is specified, the contractor shall import the required quantities from a local supplier. The contractor shall submit samples of the material to be used to the Inspector 3 days prior to use on the site. The untreated base course shall meet the requirements of Section 301 of the most recent edition of State of Utah Standard Specifications for Road and Bridge Construction. This refers to AASHTO Designations I-90, T-27, T-11, T-19 for mineral aggregate requirements. The gradation shall be for 3/4 or 1" maximum passing through the sieves in the percentages and with the

tolerances shown on page 108, section 301.03 of the State Standard Specifications referred to above. (Base material shall be installed 4" wider than concrete walk width, both sides.)

2.6 FORMS

A. Forms shall be of suitable materials such as wood, plastic, metal, or combinations thereof. Forms shall be of the shape and dimensions shown on the plans and true to line and grades specified. All forms shall be free from knotholes, loose knots, cracks, splints, warps, or other defects affecting the strength or appearance of the finished product. All forms shall be free of bulges and warping. They shall be cleaned thoroughly before they are used on this project. There shall be no split holes, bolts, or nuts on the final concrete surface when the forms are removed.

B. If at any stage of work, during or after placing the concrete, the forms sag or bulge the affected concrete shall be removed. Exceptions may be taken by the Inspector if the concrete is going to be covered with earth.

PART 3 - EXECUTION

3.2 JOB SITE CLEANLINESS

A. All debris shall be removed from the inside of the forms prior to placement of any concrete. Placement operations may be postponed when in the opinion of the Inspector rainfall, excessive wind, low temperatures, wet spots, or the base is not sufficiently compacted. The Contractor shall take all necessary measures to protect the concrete after placement to prevent rain, graffiti, or other damage to the surface.

B. Concrete mix trucks shall be routed to each pour over areas where the least possible damage will occur to the existing sprinkler irrigation system, utilities, lawn, or plant materials. The Contractor shall be responsible for repair of damage done by the concrete mix trucks and any other vehicles involved in these operations.

C. The concrete shall be spread in horizontal layers insofar as practical & only of the thickness that can be satisfactorily hand worked or compacted with vibrators & other such equipment.

D. The concrete shall be deposited as near the final resting place as possible so as to minimize working it and to prevent separating the ingredients.

E. The concrete slope shall be 1" per 10' or 1% in the direction of the natural grade or as indicated on the plans. Flat work will have not more than a 1/8” difference in a 20’ radius.

3.3 SAMPLING AND TESTING

(Testing as noted in this section is at the owner’s option, and generally will not be required unless verification of the contractor’s workmanship and quality is required.)

A. All concrete shall be sampled and tested in accordance with AASHTO Designation T-141 for air entrainment, slump, and strength. The Contractor shall have the test made at the appropriate times and places. All test results shall be sent to the Owner by the testing laboratory at the Owner’s expense.

1. Slump Test: Slump tests shall be made in accordance with AASHTO Designation T-119. If a slump test does not meet the specifications, a second slump test shall be made immediately on the same load. The load will be accepted or rejected from the site by the inspector depending on the results of the second test.

2. Air Entrainment: Air entrainment tests shall be made in accordance with AASHTO Designations T-152. If an air entrainment test does not meet the specification, a second test shall be taken immediately on the same load. The load will be accepted or rejected from the site by the Inspector depending on the results of the second test.

3. Compression Tests: Making, curing, and determining compressive strength of concrete cylinders shall be in accordance with AASHTO Designation T-22 and T23. Compressive strength shall be determined from "Strength Tests" in which the average of three standard cylinders shall constitute one strength test. Cylinders for strength tests shall be taken by the testing laboratory, which will also inspect the batching procedure to ascertain compliance with the mix design.

   If any individual strength test is below 4,000 PSI, the concrete may be accepted by the project Owner after reviewing the circumstances. The price the Owner shall pay for the concrete will be reduced in accordance with the following schedule:

PSI Below Specified Strength Specification	Pay Factor (Percent)
1-100	98
101-200	94
200-300	88
301-400	80

4. Proctor Tests: Compaction of the natural or imported base shall be tested in accordance with AASHTO Designation T-191. All testing procedures and any additional tests which may be required shall follow those specified in the most recent edition of State of Utah Standard Specifications for Road and Bridge Construction.

B. Initial sampling and testing costs to be paid by the Owner. If required, re-sampling and retesting due to failed test results to be paid by the Contractor.

C. All batching and mixing procedures shall be followed based upon the West Valley City Public Works Specifications as related to the most recent edition of the State of Utah Standard Specifications for Road and Bridge Construction

3.4 PREPARATION

A. The following must be completed before concrete arrives on-site:

1. Base course fully compacted
2. Concrete forms in place and approved by the owner

3.5 FINISH

A. Unless specified on the plans, the finish for all concrete flat work shall be a non-skid surface by medium brooming.

3.6 JOINTING

A. Joints shall be placed in the concrete by the Contractor so as to control and minimize cracking. Normally the Contractor shall follow the jointing patterns shown on the plans or submit a drawing showing recommended changes for approval by the Owner.

1. Control Joints: Shall be every 10 feet in curb and gutter. Sidewalk joints shall be in linear feet equal to the width of the walk (for example, a 6-foot wide walk shall be scored every 6 linear feet.) Slab work shall be jointed a maximum in feet of 2 -1/2 times the thickness of the concrete in inches (for example, the joints would be less than 15 feet apart for a slab 6 inches thick) and never more than 15 feet apart - for a 4" slab, between 8 - 10 feet.

   The control joints shall be a depth of 1/4 the thickness of the slab. Control joints shall be made before shrinkage cracking occurs. All control joints shall be continuous across the concrete except where interrupted by a post, wall, joint, or

other obstacle.

Control joints shall be tool cut (within 24 hours of pour), filled with an exterior weather sealant, & then a one part polyurethane sealant such as Chem-Calks 900. They may be hand formed with a deep cut wand tool with 1/4 radius round edges.

2. Construction Joints: Shall be created longitudinally by the edges of paving or transversely at the end of each days work. A key way shall be formed by fastening a key of wood, plastic, or PVC to the form of the first slab. The thickness of the key way shall be 1/5 of the thickness of the slab. The edges shall be rounded 1/4" radius, never on slabs less than 6" thick. Use a release agent on wood formed key ways and 50' or less on walkways.

3. Isolation Joints: Shall be created at junctions of new and existing pavement, at buildings, or other abutting objects. A 1/2" expansion joint material (full depth) shall be placed against the existing object to prevent bonding.

3.7 WINTER CONCRETE

A. When outside temperatures reach 35 degrees Fahrenheit, a 7-1/2 bag mix shall be used; heated water shall be used in the concrete mix. Heaters shall be used to heat the aggregate to a temperature of 70-150 degrees Fahrenheit. The aggregates shall be uniformly heated and the development of "hot spots" shall be avoided. The temperature of the mixed concrete shall be 60-90 degrees Fahrenheit. A straw blanket shall be used on all surfaces. Concrete shall not be poured on frozen ground and shall meet A.C.I. 305 and 306 requirements for hot and cold weather precautions. Concrete temperature must be maintained at 50 degrees Fahrenheit or greater but never more than 90 degrees Fahrenheit for 7 days.

B. Any additional costs associated with using winter concrete mixes and installation/curing methods shall be borne by the contractor.

3.8 CARE AND CURING

A. All concrete shall be cured for a minimum of 7 days before heavy loads may be placed upon it. Care shall be taken by the supplier and the contractor to prevent too rapid curing and the improper aging of the concrete. Materials such as burlap mats, hay, straw, polyethylene, and water shall be used if necessary.

B. After pouring and during the curing process, the contractor shall see that no initials or other unnecessary marks are made into the surface. The Contractor shall replace any section containing permanent marks at the completion of the project. Prior to that time, the Contractor may grind the surface or take measures to erase any permanent marks in a section if approved by the Owner.

3.9 **FORM REMOVAL**

A. After the concrete is cured, all forms, stakes, and fastening materials shall be removed from the concrete. Care shall be taken to protect the edges from chipping and to prevent damage to the concrete during removal.

B. All forming materials shall be taken from the site as soon as possible after removal. The area taken up by the forms shall be filled with approved backfill, if needed, and compacted so that top soil shall be placed on top to meet finished grade. If the area is in existing lawn, the sod shall be removed back from the edges of the concrete the standard width of new commercial sod. Then new commercial sod shall be laid full width along the edges of the new concrete until all areas are repaired. The finish grade against the concrete shall be 1 to 1-1/2" below the top of the concrete for sod, 1" for seed.

3.10 CLEAN-UP

A. Upon completion of the concrete work, the entire affected area shall be cleaned up by the Contractor. All wood, forms, stakes, rocks, sod, and other extraneous material shall be removed from the premises.

3.11 GUARANTEE AND REPLACEMENT

A. The Contractor shall guarantee all concrete materials, labor, and workmanship for 1 year following final completion. Cracks in the concrete shall be routed out and filled with exterior weather sealant.

END OF SECTION

SECTION 12 9300

SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following site furnishings:
1. Fitness Equipment
2. Playground Synthetic Surfacing

1.3 OWNER-PROVIDED ITEMS

A. Items listed in this section will be provided by the owner and installed by the contractor.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain all site furnishings through one source from a single manufacturer for each item.

B. Product Delivery, Storage and Handling:
1. Store products in a manner which will preclude damage. Damaged materials will be rejected. Remove all damaged material from the job site immediately, and replace at no cost to the Owner.
2. Furnish suitable equipment to locate all site furnishing materials carefully and efficiently. Lift materials using lifting inserts provided by manufacturer where applicable.

PART 2 - PRODUCTS

2.1 FITNESS EQUIPMENT (Owner-provided, Owner-installed)

A. Manufacturer: GameTime
1. Refer to plans.

2.7 PLAYGROUND SYNTHETIC SURFACING (Contractor-provided, Owner-installed)

A. Manufacturer: GameTime

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not install site furnishings prior to acceptance by Owner of area to receive such materials.

B. Examine area and conditions for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.

C. Verify drawing dimensions with actual field conditions.

D. Report to the Owner all conditions which prevent proper execution of this work or that are different from those shown. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated on Drawings.

B. All metal inserts, anchor slots, anchors, anchor bolts, fastenings, and other fastening devices, for attachment of site improvement items to concrete and masonry, shall be stainless steel.

C. Contractor shall be responsible for the correct location of site improvement items. Free-standing site improvement items shall be set plumb and horizontal regardless of the pitch of the finished surrounding grade unless otherwise shown on Drawings.

3.3 GUARANTEE

A. Contractor will furnish and deliver standard written manufacturer's guarantee in Owner's name covering all materials and workmanship under this section, in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

B. Contractor shall pay for repairs of any damage to any part of the project, or caused by defects in his work and for any repair to the materials or equipment caused by replacement. Complete all repairs to the satisfaction of the Owner's Representative.

C. Replace any part of the work installed under this contract requiring excessive maintenance. Work of this nature will be considered defective. Replace at no cost to the Owner upon notification during the one-year guarantee period.

3.4 CLEANING

A. Keep all areas of work clean, neat and orderly at all times.

B. Clean up and remove all debris from the work area to satisfaction of Owner prior to Final Acceptance.

END OF SECTION

SECTION 22 1400
STORM SEWER SYSTEMS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Storm sewer piping

B. Storm drainage boxes with grates and lids as required.

1.2 REFERENCES

A. The applicable provisions of the latest editions of the References listed below shall govern the Work covered under this Section, unless there is a conflict between said References and the requirements of this Section. In the case of such conflict, the requirements of this Section shall apply.

B. Concrete Reinforcing Steel Institute (CRSI)

C. American Society for Testing and Materials (ASTM)

D. American National Standards Institute (ANSI)

E. Utah Occupational Safety and Health Division (UOSHD).

F. American Association of State Highway and Transportation Officials (AASHTO)

1.3 SUBMITTALS

A. Submittals shall be provided in accordance with the requirements of General Conditions of these specifications.

B. Submit evidence of materials conformance with applicable requirements as well as these specifications.

C. Submittals shall include the following items:

1. Certification of pipe materials and drainage structures conformance with the requirements specified herein. (ASTM C76, AASHTO HS20, etc)
2. Concrete mix designs and reinforcing drawings for cast-in-place structures.
3. Sieve analyses and/or certifications of imported bedding and backfill materials to verify conformance with requirements specified herein.
4. Shop drawings of precast structures, screen filter, pipe materials, and castings.

1.4 QUALITY ASSURANCE

A. All products shall be inspected by Contractor, prior to installation, for damage. No damaged products will be used.

B. All working conditions shall be in accordance with the "Utah Occupational Safety and Health Division", Safe Practices for Excavation & Trenching Operations, latest edition, or other Laws or Regulations which apply.

1.5 DELIVERY AND HANDLING

A. Workmanship and methods employed in the handling, transportation, storage, bedding, and laying of pipe, fittings, associated structures and accessories shall conform to the appropriate manufacturers' recommendations and/or ASTM recommendations.

B. Load and unload pipe, fittings, and accessories in such a manner as to avoid shock or damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers providing materials or equipment as part of this specification shall have a minimum of five years' experience in the manufacture, testing, and installation of such materials and equipment.

B. Manufacturers shall provide, upon request, verification of a consistent record of meeting or exceeding materials or performance standards as specified herein.

C. Allowable Manufacturers - Subject to compliance with specified requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to the following:

1. Storm Sewer Piping
   a. High Density Polyethylene Pipe (HDPE)
      1) ADS
      2) Hancor
      3) Or approved equal
2. Catch Basins (Nyoplast)
   a. Hancor
   b. ADS - Salt Lake City, Utah
   c. Or approved equal

2.2 STORM SEWER PIPING

A. Unless otherwise indicated, piping materials shall conform to the following minimum requirements.

B. Polyethylene (PE) Pipe (12" to 36" Diameter). ADS N-12 or approved equal.

1. Corrugated, smooth wall polyethylene pipe shall meet the requirements of AASHTO M294.

C. Polyvinyl Chloride (PVC) Pipe

1. Polyvinyl Chloride Pipe shall meet the requirements of ASTM D1785.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify installation or connection requirements prior to construction by potholing as necessary.

B. Verify that Work covered under other sections of these specifications is complete to the point that Work covered under this section may properly commence without hindering or damaging Work of other trades. Do not proceed with construction until unsatisfactory conditions have been corrected.

3.2 METHODS AND PROCEDURES

A. Install materials and equipment included in the Work in accordance with materials/equipment manufacturer's recommended methods and procedures.

B. All working conditions shall be in accordance with the "Utah Occupational Safety and Health Division", Safe Practices for Excavation & Trenching Operations, latest edition, or other Laws or Regulations which apply.

3.3 INSTALLATION

A. General

1. Install storm sewer piping to the lines, grades, and elevations indicated on the drawings. Install connections at the locations indicated.

B. Bedding:

1. Bedding shall be prepared in accordance with Section 31 20 00 of these specifications and as indicated on the drawings.
2. Over-excavate as necessary and install approved material to provide firm, stable foundation for sewer piping installation. Over-excavation shall be approved by Authorized owner's representative.
3. Prepare bedding to insure trench bottom is free of large stones, debris, frozen, organic or other deleterious materials.
4. Excavate to pipe bells to insure pipe is supported properly along its entire length.

C. Pipe Laying Procedures

1. Dewater trench as necessary to prevent the accumulation of groundwater or other unacceptable water in trench.
2. Pipe laying operations shall proceed in an uphill direction with all bell facing uphill unless otherwise specifically approved by Authorized owner's representative.
3. Contractor shall follow pipe manufacturer=s recommended practice for lowering, assembling, and installing storm sewer pipe.
4. During pipe installation, verify that no foreign material is inside pipe. Clean interior of each pipe joint prior to installation.
5. Storm sewer pipe shall be laid to uniform line and grade between manholes or drainage structures unless otherwise approved by the Authorized owner's representative.
6. Plug open end of installed storm sewer piping and close trench at the end of each day=s work. Open trenches may not be left overnight without specific permission from the Authorized owner's representative.

D. Backfilling

1. Install backfill and compact in accordance with manufacturer=s requirements and as indicated on the drawings. Backfill shall not be placed in lifts greater than can be properly compacted to the required density.
2. Backfill material shall be free of large rocks, organic or frozen material.

E. Catch Basins

1. Excavation, bedding and backfill for catch basin installation shall be as recommended by manufacturer and as indicated on the drawings.
2. Install catch basins at locations and to grades indicated on the drawings.
   a. Set catch basin lid flush with finished surface unless otherwise noted on the drawings.

3. Prevent debris from entering installed storm sewer piping via catch basins by providing suitable barriers or covers.

4. Pipe transition into catch basin must be smooth and free of any pockets or indentations. Any such inconsistencies shall be filled with non-shrink grout to form a smooth surface.

3.4 PROTECTION

A. Provide barricades and restrict access as appropriate to prevent damage to Work in place.

B. Contractor shall be responsible for protection of Work in place against displacement, damage, loss or theft until Owner=s acceptance. Any Work installed and subsequently damaged, lost, or displaced shall be repaired or replaced to the Owner=s satisfaction at no additional cost.

3.5 CLEANING

A. Thoroughly clean all pipe lengths or units of all debris immediately after laying.

B. Thoroughly clean by flushing and remove all debris from storm sewer pipe and manholes. Inspect and clean all lines as specified herein. Storm sewerage facilities shall be thoroughly cleaned prior to turning over to the Owner.

3.6 TESTING

A. Contractor shall provide all materials, equipment, and labor to perform testing of installed storm sewer piping, structures, and manholes as required for acceptance by Authorized owner's representative.

B. Authorized owner's representative shall be notified no less than two full working days prior to any proposed testing.

C. Testing of storm sewer shall consist of the following.

1. Authorized owner's representative shall visually inspect each run of piping by lamping to verify consistent line and grade.

2. Perform testing procedures as required by City.

END OF SECTION

SECTION 31 0513

COMMON FILL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Common fill materials.

1.2 REFERENCES

A. ASTM C 136: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

B. ASTM D 1883: Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils.

C. ASTM D 2487: Standard Test Method for Classification of Soils for Engineering Purposes.

D. ASTM D 2844: Test Method for Resistance R-Value and Expansion Pressure of Compacted Soils.

E. ASTM D 3282: Standard Practice for Classification of Soils and Soil- Aggregate Mixtures for Highway Construction Purposes.

F. ASTM D 3740: Standard Recommended Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.3 SUBMITTALS

A. Prior to delivering material to site, identify.

1. Name of Supplier and source
2. Gradation of common fill material.

B. If a change in source of material is required, submit name of Supplier, source and gradation analysis of material prior to delivery to site.

1.4 QUALITY ASSURANCE

A. Use a laboratory that follows and complies with Section 01 45 00 and ASTM D 3740.

B. Reject common fill products that do not meet requirements of this section.

C. Remove any product found defective after installation and install acceptable product at no additional cost to OWNER.

PART 2 - PRODUCTS

2.1 BORROW

A. Classifications A-1-a through A-4, ASTM D 3282.

2.2 GRANULAR BORROW

A. Classifications A-1-a, A-1-b, A-2-4, or A-3, ASTM D 3282.

B. Material meets design CBR-value (ASTM D 1883) or R value (ASTM D 2844) for suitability of source, not for project control testing.

2.3 GRANULAR BACKFILL BORROW

A. Classification A-1, ASTM D 3282. B. Well graded.

B. Particle size; 2 inch maximum.

C. Material meets design CBR-value (ASTM D 1883) or R value (ASTM D 2844) for suitability of source, not for project control testing.

2.4 RECYCLED FILL

A. Material: Pulverized portland cement concrete, pulverized asphalt pavement or combination, either mixed with or not mixed with a new aggregate.

B. Gradation: Meet the requirements of this Section based upon use; e.g. borrow, granular borrow, granular backfill borrow, etc.

2.5 NATIVE

A. When allowed by OWNER, material obtained from Excavations may be used as fill, provided organic material, rubbish, debris, and other objectionable materials are removed and CONTRACTOR has submitted the appropriate Proctor data.

2.6 CLAY

A. Classification CL, CL-ML, or ML, ASTM D 2487.

B. Free of organic matter, frozen material, debris, rocks, and deleterious materials.

C. Homogeneous, relatively uniform.

2.7 SAND

A. Friable river or bank aggregate, free of loam and organic matter.

Graded as follows.

Percent Passing

Sieve	**by Weight**
3/8	100
100	1 – 10

2.8 GRAVEL

A. Material: Rock, stone, or other high quality mineral particle or combination.

B. Gradation: ASTM D 448 narrow band.

1. **Sewer Rock**

ASTM Nominal Size	Size No.
3.5 to 1.5”	1
2.5 to 1.5”	2
2 to 1”	3
1.5 to 3/4”	4
1 to 1/2"	5

2. **Pea Gravel**.

Nominal Size	ASTM Size No.
3/4 to 3/8”	6
1/2 to No. 4	7
3/8 to No. 8	8
No. 4 to No. 16	9
No. 4 (screenings)	10

2.10 SOURCE QUALITY CONTROL

A. Verify gradation, ASTM C 136.

B. Select Samples on a random location and time basis.

C. If tests indicate materials do not meet specified requirements, change materials and retest at no additional cost to OWNER.

END OF SECTION

SECTION 31 2316

EXCAVATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Excavation and disposal of excavated materials.

B. Protection of existing facilities, utilities, and structures affected by excavation.

1.2 DEFINITIONS

A. Classified Excavation: The excavation of specified materials.

C. Incidental Excavation: Excavation done for CONTRACTOR's benefit, excavation error, dewatering of Excavation, slough, or over-break.

D. Unclassified Excavation: The excavation of all materials encountered regardless of the nature, size, or manner in which they are removed. Presence of isolated boulders or Rock fragments will not be sufficient cause to change classification of surrounding materials.

1.3 STORAGE AND HANDLING

A. Stockpile excavated material to cause a minimum of inconvenience to public and provide for emergency services as necessary.

B. Provide free access to all existing fire hydrants, water and gas valves, and meters.

C. Provide free flow of storm water in all gutters, conduits, and natural water courses.

D. Utilize traffic control signs, markers, and procedures in product storage and handling activities.

E. Promptly remove other material from site.

1.4 SITE CONDITIONS

A. Prior to excavation, photograph existing surfaces along which work may take place in order to determine, after construction is completed, whether any damage to existing improvements occurred prior to construction operations.

B. Perform Incidental Excavation at no additional cost to OWNER.

PART 2 - PRODUCTS

2.1 MATERIALS FOR OVER EXCAVATED AREAS

A. Common fill, Section 31 05 13.

B. Crushed aggregate base, Section 32 11 23.

C. Stabilization fill, crushed aggregate base or common fill with maximum rectilinear particle size of 2 inches.

D. Stabilization fabric

PART 3 - EXECUTION

3.1 PREPARATION

A. Use white paint and mark the proposed Excavation.

B. Call the one-call center and wait the required amount of time. Color of one call center marks indicate the following.

1. White: Proposed Excavation
2. Pink: Temporary survey markings
3. Red: Electric power lines, cables, conduit and lighting cables
4. Yellow: Gas, oil, steam, Petroleum or gaseous materials
5. Orange: Communications, alarm, signal, cables or conduits.
6. Blue: Potable water.
7. Purple: Reclaimed Water, irrigation and slurry lines
8. Green: Sewer and storm drain lines

3.2 PROTECTION

A. Identify required lines, grades, contours, and benchmarks.

B. Pothole, expose or otherwise locate utilities as necessary to give utility company at least 4 days' notice to protect, preserve, or relocate a utility that interferes with or may be damaged by excavation work.

C. Where utilities or structures conflict with design grades, report conflict to the appropriate utility company and OWNER 14 days prior to the initiation of work within the conflict area.

D. Support and protect from damage any existing facility and structure that exists in, passes through, or passes under the site.

E. No Contract Time extension shall be granted and no additional compensation shall be made if CONTRACTOR fails to pothole and identify buried utilities or structures which conflict with the Work.

3.3 SHORING

A. Slope, shore, sheet, brace or otherwise support Excavations over 4 feet deep.

B. When soil conditions are unstable, Excavations shallower than 4 feet deep must also be sloped, supported or shored.

3.4 DEWATERING

A. Keep Excavation free from surface and ground water.

B. If ground water table is in the intended construction operations, dewater Excavations.

C. If there are no olfactory or visual indications of contamination in the water, discharge according to requirements of Federal, State or local agency having jurisdiction.

D. If any evidence of contamination in the water, based on olfactory or visual indications, cease excavation work until potential risks are evaluated. During evaluation, handle water as a contaminated material.

E. Pay for damages and costs resulting from dewatering operations.

3.5 GENERAL EXCAVATION REQUIREMENTS

A. Excavate topsoil from areas to be re-landscaped or regraded and other marked areas.

B. Excavate site to line and grade indicated.

C. Carefully excavate soils in vicinity of buried utility marks placed by the one-call center.

D. Where soil has been softened or eroded by flooding or hardened by drying during unfavorable weather, rework all damaged areas or replace with approved material at no additional cost to OWNER.

E. Notify Owner of unexpected subsurface conditions.

F. Underpin adjacent structure, service utilities and pipe chases that may be damaged by Excavation work.

G. Protect Excavation walls as required. If conditions permit, slope Excavation Sides to maintain a safe and clean working area. Remove loose materials.

H. Where OWNER deems Subgrade material to be susceptible to frost heave or otherwise unsatisfactory, excavate additional depth.

3.6 PATHWAY EXCAVATION

A. In advance of setting line and grade stakes, clean Subgrade area of brush, weeds, vegetation, grass, and debris. Drain all depressions or ruts that contain water.

B. Backfill and compact over excavation.

3.7 STRUCTURAL AND LANDSCAPE EXCAVATION

A. Provide Shoring, cribs, cofferdams, caissons, pumping, bailing, draining, sheathing, bracing, and related items.

B. For piling work, coordinate special requirements for piling. Protect Excavation walls.

C. If conditions permit, slope Excavation Sides as excavation progress. Maintain a safe and clean working area.

D. Support Excavations. Do not interfere with the bearing of adjacent foundations, pipelines, etc.

3.8 TRENCH EXCAVATION

A. Grade bottom of Trenches to provide uniform bearing surface.

B. If necessary, make bellholes and depressions required to complete joining of pipe or box.

C. Limit width of Trench excavations to the dimensions suitable for worker access per pipe manufacturer's recommendation. Provide enough space for compaction equipment. Notify OWNER if excavation operations exceed any indicated line and grade limits.

D. Protect Trenches overnight.

3.9 EXTRA EXCAVATION

A. If unstable material is encountered at the bottom or face of any excavation, do not

perform extra excavation without written consent.

B. Correct excavations beyond the specified lines and grades by filling and compacting the resulting voids with acceptable fill.

C. Volume of Excavation within any specified pay limit will be determined by the method of average-end-areas in the original position.

3.10 TOLERANCE

A. Grading: Top surface of Subgrade = plus or minus 1 inch.

END OF SECTION

SECTION 31 2326

COMPACTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Compaction of granular fill materials.

1.2 REFERENCES

A. ASTM D 698: Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN- m/m^3)).

B. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))

C. ASTM D 2216: Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock.

D. ASTM D 2922: Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

E. ASTM D 3017: Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

F. ASTM D 3282: Standard Practice for Classification of Soils and Soil- Aggregate Mixtures for Highway Construction Purposes.

G. ASTM D 3740: Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.3 DEFINITIONS

A. A-1 Soil: Defined in ASTM D 3282.

B. Modified Proctor Density: The maximum laboratory density, as defined in and determined by ASTM D 1557 using procedure A, B or C as applicable.

C. Relative Density (or Relative Compaction): The ratio of field dry density to the maximum laboratory density expressed as a percentage.

D. Standard Proctor Density: The maximum laboratory density, as defined in and determined by ASTM D 698 using procedure A, B or C as applicable.

1.4 QUALITY ASSURANCE

A. Use a laboratory that follows and complies with ASTM D 3740.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 COMPACTION

A. Moisten or dewater backfill material to obtain optimum moisture for compaction.

B. Correct deficient compaction conditions. Replace or repair materials and damaged facilities.

C. When no density compactive effort is specified, compact the entire area to eliminate unstable zones.

3.2 FIELD QUALITY CONTROL

A. Testing: Owner to contract with Testing Laboratory for testing of materials.

1. Because of changes in source of materials or proportions requested by CONTRACTOR.
2. Because of Failure of materials to meet specification requirements.
3. For other testing services needed or required by CONTRACTOR.

B. Report: For each material tested, record the following.

1. Vertical and horizontal location of the test.
2. Optimum laboratory moisture content.
3. Field moisture content.
4. Maximum laboratory dry density.
5. Field density.
6. Percent compaction results.
7. Certification of test results by testing agency.

C. Optimum Soil Density: Use ASTM D 2216 and the following industry standards.

1. For A-1 Soils: Use test method C of ASTM D 1557 (Modified Proctor)
2. For All Other Soils: Use test method C of ASTM D 698 (Standard Proctor).

D. Field Density:

1. Use ASTM D 3017 and test method C of ASTM D 2922 for shallow depth nuclear testing.
2. No density determinations are required on any material containing more than 65 percent material retained on the number 10 sieve or more than 60 percent material retained on the number 4 sieve. In lieu of reporting densities in such cases, report the sieve analysis to document the material type.

END OF SECTION

SECTION 32 1123

CRUSHED AGGREGATE BASE

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Treated or untreated base course requirements.

1.2 REFERENCES

A. ASTM C 29: Standard Test Method for Unit Weight and Voids in Aggregate.

B. ASTM C 131: Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

C. ASTM C 136: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

D. ASTM D 75: Standard Practice for Sampling Aggregates.

E. ASTM D 448: Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

F. ASTM D 1883: Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils.

G. ASTM D 2419: Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

H. ASTM D 3665: Standard Practice for Random Sampling of Construction Materials.

I. ASTM D 3740: Standard Recommended Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

J. ASTM D 4318: Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

K. ASTM D 5821: Standard Test Method for Determining the percentage of Fractured Particles in Coarse Aggregate.

1.3 DEFINITIONS

A. Aggregate Grading Band: Allowable deviation from Target Gradation Curve based upon the number of gradation tests in a Lot. It is possible that gradation for any sieve may lie outside of its respective Master Grading Band limits.

B. Master Grading Band: Gradation limits allowed for various sieve sizes ranging from the maximum size sieve to the No. 200 sieve.

C. Mean of Deviations: The sum of the absolute values of the variance between each screen target value and each measured value divided by the number of tests in the Lot.

E. Target Gradation Curve: A smooth locus of points within the limits of the Master Grading Band.

1.4 SUBMITTALS

A. Name of Supplier and aggregate source.

B. Target Gradation Curve.

1.5 QUALITY ASSURANCE

A. Use a laboratory that follows and complies with Section 01 45 00 and ASTM D 3740.

1.6 ACCEPTANCE

A. Treated or Untreated Base Course

1. Owner is not obligated to accept changes in Target after any material is delivered to site.
2. Suitability of Source: Meet Table 2 properties.

PART 2 - PRODUCTS

2.1 UNTREATED BASE COURSE (ROAD BASE)

A. Material: Crushed rock, gravel, sand or other high quality mineral particle, or combination.

Table 2 – Properties

Physical Property	Units	Aggregate Class			ASTM Test
		A	B	C	
Dry Rodded Unit Weight, min.	lb/ft3	75			C 29
Liquid Limit, max.		25			D 4318
Plastic Index, max.		0	0	6	D 4318
Sand Equivalent, min.	percent	35			D 2419
Wear (hardness), max.	percent	50			C 131
Gradation		Table 3			C 136
Two Fractured Faces, min.	percent	90	50	50	D 5821
CBR, min.	percent	70	55	40	D 1883

NOTES

(a) Liquid limit, plastic limit, sand equivalent: Passing No. 40 sieve.

(b) Wear: Retained on No. 8 sieve.

(c) CBR: Use a 10 lb surcharge measured at 0.20 inch penetration at 95 percent of modified Proctor.

(d) Faces: Retained on No. 4 sieve.

Table 3 – Gradation			
US Sieve Size	**Master Grading Bands Limits**		
	Grade 1-1/2	**Grade 1**	**Grade 3/4**
2"	–	–	–
1-1/2"	100	–	–
1"	–	100	–
3/4 "	81 – 91	–	100
1/2 "	67 – 77	79 – 91	–
3/8"	–	–	78 – 92
No. 4	43 – 53	49 – 61	55 – 67
No. 16	23 – 29	27 – 35	28 – 38

2.2 ASPHALT TREATED BASE COURSE

A. Meet requirements of this Section Article 2.1 and the following.

1. Sand equivalent and fractured face measured after asphalt residue is burned off.
2. Plasticity and wear requirements apply to virgin aggregate portion only.
3. Allowable asphalt content is controlled by CBR.

B. If aggregate contains RAP.

1. Screen crushed RAP to remove debris.
2. Mechanically blend virgin and RAP aggregates. Do not use windrows for blending.

2.4 SOURCE QUALITY CONTROL

A. Sample, ASTM D 75 on a random basis, ASTM D 3665.

B. Reject crushed aggregate base products that do not meet requirements of this Section.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Remove any product found defective after installation and install acceptable product at no additional cost to the OWNER.

END OF SECTION

SECTION 32 12 03

PAVING ASPHALTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Performance graded asphalt, asphalt cement, cutback asphalt, emulsified asphalt, recycle asphalt, and crack patch asphalt.
B. Requirements for accepting non-complying paving asphalts.

1.2 REFERENCES

A. ASTM D 113: Standard Test Method for Ductility of Bituminous Materials.
B. ASTM D 977: Standard Specification for Emulsified Asphalt.
C. ASTM D 2026: Standard Specification for Cutback Asphalt (Slow- Curing Type).
D. ASTM D 2027: Standard Specification for Cutback Asphalt (Medium- Curing Type).
E. ASTM D 2028: Standard Specification for Cutback Asphalt (Rapid- Curing type).
F. ASTM D 2397: Standard Specification for Cationic Emulsified Asphalt.
G. ASTM D 3381: Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
H. ASTM D 4552: Standard Practice for Classifying Hot-Mix Recycling Agents.
I. ASTM D 5710: Standard Specification for Trinidad Lake Modified Asphalt.
J. ASTM D 6373: Standard Specification for Performance Graded Asphalt Binder.

1.3 SUBMITTALS

A. Submit bill of lading for each shipment of paving asphalt from vendor. Identify the following.
    1. Source of product (manufacturer);
    2. Type and grade of asphalt, And
    3. Type and amount of additives in the product.

1.4 QUALITY ASSURANCE

A. Reject paving asphalts which are not uniform in appearance and consistency or which foam when heated to mixing temperature.
B. Do not use storage containers contaminated with other types or grades of Petroleum products.
C. Do not use Petroleum product that does not comply with contract requirements.

1.5 ACCEPTANCE

A. General:
    1. Acceptance is by Lot. One Lot is one day's production.
    2. If non-complying material has been installed and no price for the material is specified, apply price adjustment against cost of work requiring material as part of its installation.
B. Performance Graded Asphalt Binder (PGAB): Sub-lot size is 20,000 gallons. Collect sub-lot Sample randomly from oil storage unit.
    1. Refer to limits identified in Section 209 of UDOT's "Manual of Instruction Part 8 Materials". Pay factors are as follows.

a. If none of the critical properties are outside rejection limit a composite price adjustment of 25 percent or less is allowed.
b. If one or more of the critical properties falls outside the rejection limit or if a composite price adjustment is more than 25 percent, paving asphalt will be rejected.

C. Asphalt Cement (AC) Binder: Sub-lot size is 20,000 gallons. Collect sub-lot Sample randomly from oil storage unit.
1. Ductility: Meet this Section's requirements, or
2. Viscosity or Penetration: Meet graphics published in Section 955 of UDOT's "Manual of Instructions, Part 8 Materials".
a. Lot may be accepted using the published graphics. If price adjustment exceeds 30 percent, reject paving asphalt, or
b. If allowed to remain after placement, price adjustment will be 50 percent.

D. Cut-back Binder: Meet this Section's requirements for ductility.
E. Trinidad Lake Modified Asphalt: Supplier's certificate for ASTM compliance.
F. Emulsified Asphalt: Supplier's certificate for ASTM compliance.
G. Recycle Asphalt: Identity of source (asphalt cement or tar products).
H. Crack Patch: Meet material requirements.

PART 2 - PRODUCTS

2.1 PERFORMANCE GRADE ASPHALT BINDER (PGAB)

A. Petroleum asphalt that complies with ASTM D 6373. Blending the paving asphalt with polymers or natural asphalts is CONTRACTOR's choice.

2.2 ASPHALT CEMENT (AC)

A. Petroleum asphalt that complies with Table 2 of ASTM D 3381 except as follows:
1. Replace ductility at 77 deg. F. (25 deg. C.) with ductility at 39.2 deg. F. (4 deg. C.). Use the following values.
- AC-5: greater than 25.
- AC-10: greater than 15.
- AC-20: greater than 5.
2. Delete the loss on heating requirement on residue from "Thin-Film Oven Test".

B. AC-5 Latex Additive: Anionic emulsion of butadiene-styrene low- temperature copolymer consisting of 2 percent by weight (solids basis), stabilized with fatty-acid soap for storage stability.

2.3 TRINIDAD LAKE MODIFIED ASPHALT (TLA)

A. Petroleum asphalt that complies with ASTM D 5710 (a blend of natural asphalts).

2.4 SLOW CURE CUT-BACK ASPHALT (SC)

A. Petroleum asphalt that complies with ASTM D 2026 (fluxed with a light oil) except if penetration of residue is more than 200 and its ductility at 77 deg. F (25 deg. C) is less than 100 cm., the material will be acceptable if the ductility at 59 deg. F. (15 deg. C) is greater than 100.

2.5 MEDIUM CURE CUT-BACK ASPHALT (MC)

A. Petroleum asphalt that complies with ASTM D 2027 (fluxed or blended with a kerosene-type solvent, non-foaming when heated to application temperature) except if penetration of residue is more than 200 and its ductility at 77 deg. F. (25 deg. C) is less than 100 cm., the material will be acceptable if the ductility at 59 deg. F. (15 deg. C) is greater than 100.

2.6 RAPID CURE CUT-BACK ASPHALT (RC)

A. Petroleum that complies with ASTM D 2028 asphalt (fluxed or blended with a naphtha-solvent, non-foaming when heated to application temperature).

2.7 EMULSIFIED ASPHALT

A. Petroleum asphalt uniformly emulsified with water, homogeneous throughout, and when stored, shows no separation within 30 days after delivery. Frozen emulsions not accepted.
   1. Anionic, ASTM D 977 (breaks by evaporation).
   2. Cationic, ASTM D 2397 (breaks chemically).

2.8 RECYCLE ASPHALT (RA)

A. Petroleum asphalt that complies with ASTM D 4552 (homogeneous, free-flowing at pumping temperature made from maltene fractions of asphalt cement for surface revitalization or from tar products to make Pavements resistant to fuel spillage.
   1. RA-1, RA-5, RA-25 or RA-75 for recycling RAP when less than 30 percent virgin aggregate is added.
   2. RA-250 or RA-500 when more than 30 percent virgin aggregate is added to the RAP.

END OF SECTION

SECTION 32 12 05

ASPHALT CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Composition of asphalt - aggregate mix.
B. This specification does not apply to polymer modified asphalt concrete.

1.2 REFERENCES

A. AI Manual Series No. 2: Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.
B. AASHTO T 324: Hamburg Wheel-track Testing of Compacted Hot- Mix Asphalt (HMA).
C. ASTM C 29: Standard Test Method for Unit Weight and Voids in Aggregate.
D. ASTM C 88: Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
E. ASTM C 117: Standard Test Method for Materials Finer Than 0.075mm (No. 200) Sieve in Mineral Aggregates by Washing.
F. ASTM C 131: Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
G. ASTM C 136: Standard Method for Sieve Analysis of Fine and Coarse Aggregate.
H. ASTM C 142: Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
I. ASTM D 75: Standard Practice for Sampling Aggregates.
J. ASTM D 140: Standard Practice for Sampling Bituminous Materials.
K. ASTM D 242: Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
L. ASTM D 979: Standard Methods for Sampling Bituminous Paving Mixtures.
M. ASTM D 2419: Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
N. ASTM D 3203: Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.
O. ASTM D 3381: Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
P. ASTM D 3515: Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
Q. ASTM D 3665: Standard Practice for Random Sampling of Construction Materials.
R. ASTM D 3666: Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials.
S. ASTM D 4318: Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
T. ASTM D 4552: Standard Practice for Classifying Hot-Mix Recycling Agents.
U. ASTM D 4791: Standard Test Method for Flat or Elongated Particles in Coarse Aggregate.
V. ASTM D 4867: Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures.
W. ASTM D 5444: Standard Test Method for Mechanical Size Analysis of Extracted Aggregate.
X. ASTM D 5581: Standard Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus (6-jnch_Diameter Specimen)
Y. ASTM D 5821: Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate.
Z. ASTM D 6307: Standard Test Method for Determining Asphalt Content of Hot-Mix Asphalt by Ignition Method.
AA. ASTM D 6373: Standard Specification for Performance Graded Asphalt Binder.

1.3 DEFINITIONS

A. Asphalt-Aggregate Designator: Alpha-numeric code that indicates type and grade of asphalt, and type and grade of aggregate in an asphalt-aggregate mix. For example;
   1. "AC-20-DM-3/4" means asphalt-aggregate mix shall be composed of AC-20 type and grade asphalt cement and DM-3/4 type and grade aggregate.
   2. "RA-1-DM-1" means asphalt-aggregate mix shall be composed of RA-1 type and grade asphalt recycling agent and DM-1 type and grade aggregate.
   3. "RS-1-SS-II" means asphalt-aggregate mix shall be composed of RS-1 type and grade asphalt emulsion and SS-II type and grade aggregate.

B. Mean of Deviations: Defined in Section 32 11 23.

1.4 SUBMITTALS

A. Quality Assurance: Submit names, certification levels, and years of experience of testing agency's field technicians that are assigned to the Work. Verify laboratory complies with ASTM standards.

B. Mix Design: Submit.
   1. Date of mix design. If older than 365 days, recertify mix design.
   2. Asphalt cement source, type and chemical composition.
   3. Aggregate gradation target.
   4. Asphalt cement target, dust to asphalt ratio, moisture sensitivity (tensile strength) stability, flow and voids in the bituminous mix.
   5. Paving asphalt grade if RAP is used in the mix.
   6. RAP, mineral filler, antistrip, and recycle agent percentages.

C. Pre-approved mix design, submit name and address of Supplier.

D. Before changing mix design, submit a new design and give ENGINEER 10 days to evaluate the changes.

E. Source Quality Control Inspections and Testing Report: If requested, submit report describing CONTRACTOR's and Supplier's quality control activities and test results.

1.5 QUALITY ASSURANCE

A. Use a laboratory that follows and complies with ASTM D 3666.

B. Do not change aggregate source or paving asphalt source without ENGINEER's written approval. Do not use non-complying sources.

1.6 ACCEPTANCE

A. General:
   1. Acceptance is by Lot. One Lot is one day's production.
   2. If non-complying material has been installed and no price for the material is specified, apply price adjustment against cost of work requiring material as part of its installation.

B. Installation: Accepted as specified in Section 32 12 16.

C. Materials:
   1. At the Source:
      a. Aggregate: Verify gradation. Collect sample from conveyor belt or stockpile if belt is not accessible.
      b. Paving Asphalt: See Section 32 12 03 provisions.
      c. Mix: 325 deg. F. maximum in transport vehicle.
   2. At the Site:
      a. One sub-lot is 500 tons.

b. Sampling: Two random samples per sub-lot. Location as follows.
   1. Behind paver before compaction, or
   2. Where sub-lot exhibits non-uniform appearance.

3. At the Laboratory:
   a. Air Voids:
      1. Basis of evaluation is laboratory compacted samples (not field compacted samples).
      2. If test results are not within this Section's limits, options include correction of production procedures or alternate mix design acceptable to ENGINEER.
   b. Dust to asphalt ratio.
   c. Asphalt Content, Aggregate Gradation: Lot is acceptable if test deviations are within pay factor 1.00 limits. At ENGINEER's discretion, a Lot with a sub-lot test deviation greater than pay factor 0.85 limits may stay in place at 50 percent cost.

Table 1 – Pay Factors for Non-complying Materials

Criteria	Pay Factor	Range of Mean of Deviations of Tests Results from the Design Mix Target in Percentage Points				
		500 Tons	1,000 Tons	1,500 Tons	2,000 Tons	≥2,500 Tons
Asphalt Content	1.00	0.00–0.70	0.00–0.54	0.00–0.46	0.00–0.41	0.00–0.38
	0.975	0.71–0.80	0.55–0.61	0.47–0.52	0.42–0.46	0.39–0.43
	0.95	0.81–0.90	0.62–0.68	0.53–0.58	0.47–0.52	0.44–0.47
	0.90	0.91–1.00	0.69–0.75	0.59–0.64	0.53–0.56	0.48–0.52
	0.85	1.01–1.10	0.76–0.82	0.65–0.69	0.57–0.61	0.53–0.56
1/2" and larger Sieve	1.00	0.0–10.9	0.0–7.3	0.0–6.5	0.0–5.6	0.0–5.2
	0.975	11.0–12.9	7.4–8.3	6.4–7.1	5.7–6.3	5.3–5.8
	0.95	13.0–13.9	8.4–9.3	7.2–7.9	6.4–7.0	5.9–6.4
	0.90	14.0–14.9	9.4– 10.3	8.0–8.7	7.1–7.7	6.5–7.1
	0.85	15.0–16.0	10.4–11.3	8.8–9.5	7.8–8.4	7.2–7.7
3/8" Sieve	1.00	0.0–9.9	0.0–6.9	0.0–5.9	0.0–5.3	0.0–4.9
	0.975	10.0–10.9	7.0–7.8	6.0–6.6	5.4–6.9	5.0–5.5
	0.95	11.0–11.9	7.9–8.7	6.7–7.3	6.0–6.6	5.6–6.1
	0.90	12.0–13.9	8.8–9.6	7.4–8.0	6.7–7.2	6.2–6.6
	0.85	14.0–15.0	9.7–10.5	8.1–8.9	7.3–7.9	6.7–7.2
No. 4 Sieve	1.00	0.0–9.9	0.0–6.7	0.0–5.7	0.0–5.2	0.0–4.8
	0.975	10.0–11.0	6.8–7.6	5.8–6.3	5.3–5.8	4.9–5.4
	0.95	11.1–11.9	7.7–8.5	6.4–6.9	5.9–6.4	5.5–5.9
	0.90	12.0–12.9	8.6–9.4	7.0–7.5	6.5–7.0	6.0–6.5
	0.85	13.0-14.0	9.5–10.2	7.6–8.0	7.1–7.6	6.6–7.0
No. 8 Sieve	1.00	0.0–7.9	0.0–5.6	0.0–4.8	0.0–4.3	0.0–4.0
	0.975	8.0–8.9	5.7–6.3	4.9–5.4	4.4–4.8	4.1–4.5
	0.95	9.0–9.9	6.4–7.0	5.5–6.0	4.9–5.3	4.6–4.9
	0.90	10.0–10.9	7.1–7.7	6.1–6.6	5.4–5.8	5.0–5.4
	0.85	11.0–12.0	7.8–8.5	6.7–7.2	5.9–6.4	5.5–5.8
No. 16 Sieve	1.00	0.0–7.9	0.0–5.2	0.0–4.6	0.0–4.2	0.0–3.9
	0.975	8.0–8.9	5.3–5.8	4.7–5.1	4.3–4.6	4.0–4.3
	0.95	9.0–9.9	5.9–6.4	5.2–5.6	4.7–5.1	4.4–4.7
	0.90	10.0–10.9	6.5–7.0	5.7–6.1	5.2–5.5	4.8–5.1
	0.85	11.0–12.0	7.1–7.6	6.2–6.6	5.6–5.9	5.2–5.4

No. 50 Sieve	1.00	0.0–6.9	0.0–4.3	0.0–3.8	0.0–3.4	0.0–3.2
	0.975	7.0–7.9	4.4–4.8	3.9–4.1	3.5–3.8	3.3–3.5
	0.95	8.0–8.9	4.9–5.3	4.2–4.5	3.9–4.1	3.6–3.8
	0.90	9.0–9.9	5.4–5.8	4.6–4.9	4.2–4.4	3.9–4.1
	0.85	10.0–11.0	5.9–6.4	5.0–5.5	4.5–4.9	4.2–4.5
No. 200 Sieve	1.00	0.0–3.0	0.0–2.4	0.0–2.0	0.0–1.8	0.0–1.7
	0.975	3.1–3.5	2.5–2.7	2.1–2.2	1.9–2.0	1.8–1.9
	0.95	3.6–4.0	2.8–3.0	2.3–2.4	2.1–2.2	2.0–2.1
	0.90	4.1–4.5	3.1–3.3	2.5–2.7	2.3–2.4	2.2–2.3
	0.85	4.6–5.0	3.4–3.6	2.8–3.0	2.5–2.6	2.4–2.5
NOTES (a) Test paving asphalt content using a burn-off oven, ASTM D 6307. (b) Determine aggregate gradation be extraction, ASTM D 5444.						

PART 2 - PRODUCTS

2.1 PAVING ASPHALT

A. Asphalt Cement: Section 32 12 03. Substitutes for asphalt cement are as follows.

ASTM D 3381	ASTM D 6373
AC 10	PG 64-22 or PG 70-28
AC 20	PG 70-28

B. Recycle Asphalt: Section 32 01 16.

2.2 AGGREGATE

A. Material: Clean, hard, durable, angular, sound, consisting of crushed stone, crushed gravel, slag, sand, or combination.
B. Source: Use the following requirements to determine suitability of aggregate source and not for project control.
   1. Coarse Aggregate:
      a. Angularity (fractured faces), ASTM D 5821: 50 percent maximum by weight of particles with at least 2 fractured faces.
      b. Hardness (toughness), ASTM C 131: 40 percent minimum wear of aggregate retained above the No. 4 sieve unless specific aggregates having higher values are known to be satisfactory.
      c. Flat or Elongated Particles, ASTM D 4791: 20 percent maximum retained above 3/8 inch sieve has a 3:1 length to width ratio.
   2. Fine Aggregate:
      a. Friable Particles, ASTM C 142: 2 percent maximum passing No. 4 sieve.
      b. Plasticity, ASTM D 4318: Aggregate passing No. 40 sieve is non-plastic even when filler material is added to the aggregate.
         1. Liquid limit: Less than 25.
         2. Plastic limit: Less than 6.

2.3 ADMIXTURES

A. Reclaimed Asphalt Pavement (RAP) Aggregate: Restrictions include.
   1. 15 percent by weight maximum providing grading and voids in the bituminous mix are met.

2. Greater than 15 percent requires separate mix design.

B. Mineral Filler: ASTM D 242.
C. Recycle Agent: ASTM D 4552.
D. Antistrip: Heat stable cement slurry or lime slurry.

2.4 MIX DESIGN

A. Selection of Materials:
1. Paving Asphalt, Section 32 12 03:
a. AC-10 or AC-20: Light traffic pavement.
b. AC-20: Medium traffic pavement.
c. RA: For hot-laid recycled asphalt pavement. Choice by CONTRACTOR.
2. Aggregate: This Section Article 2.2.

B. Selection of Design Aggregate Structure:
1. Gradation: Maximum particle size is 1/2 compacted lift thickness.
a. Target Gradation Curve must lie within one of the Master Grading Bands in the following table, or
b. If acceptable to ENGINEER, use fractionated proportioning to select or adjust gradation.

Table 2 – Master Grading Bands

Sieve Size	Dense				Open	Friction	
	DM-1	DM-3/4N	DM-3/4	DM-1/2	OM-1/2	FM-1	FM-2
1 inch	100						
3/4 inch		100	100			100	
1/2 inch	75 – 91	74 – 99		100	100	90 –100	100
3/8 inch		69 – 91	75 – 91		93 – 100	60 – 100	90 – 100
No. 4	47 – 61	49 – 65	46 – 62	60 – 80	36 – 44	15 – 40	30 – 50
No. 8		33 – 47			14 – 21	4 – 12	5 – 15
No. 16	23 – 33	21 – 35	22 – 34	28 – 42			
No. 50	12 – 22	6 – 18	11 – 23	11 – 23			
No.200	3 – 7	2 – 6	3 – 7	3 – 7	2 – 4	2 – 5	2 – 5

NOTES
(a) Gradation expressed in percent passing by weight, ASTM C 136.
(b) It is assumed fine and coarse aggregate have same bulk specific gravity.
(c) Friction Mixture: See ASTM D 3515.
(d) DM -3/4N is 100% crushed.
(e) Percentage of fines passing No. 200 sieve determined by washing, ASTM C 117.

2. Aggregate Blend:
a. Dry-rodded Unit Weight, ASTM C 29: 75 pounds per cubic foot minimum.

b. Weight Loss (soundness), ASTM C 88: 16 percent maximum using sodium sulfate.
c. Clay Content (cleanliness), ASTM D 2419: Sand equivalent value after going through the dryer or prior to the drum mixer.
1. 45 percent minimum if Medium Traffic Classification.
2. 60 percent minimum if Heavy Traffic Classification. The sand equivalent requirement is waived for the RAP aggregate but applies to the remainder of the aggregate blend.

C. Selection of Admixture: CONTRACTOR's choice.

1. RAP: Adjust paving asphalt grade to account for RAP binder viscosity.
2. Cement or Hydrated Lime: Add if mix is moisture sensitive.

D. Selection of Mix Properties: Use AI Manual Series No. 2 procedure for stability, flow and voids.

Table 3 – Stability, Flow, Voids Limits

Criteria	Traffic Classifications		
	Light	Medium	Heavy
Number of compaction blows each end of specimen	50	75	112
Stability, lbs., minimum	750	1200	1800
Flow, in 0.01 inch units	10 – 18	10 – 18	10 – 18
Voids in Mineral Aggregate (VMA), percent minimum			
1" nominal maximum particle size	13	13	13
3/4" nominal maximum particle size	14	14	14
1/2" nominal maximum particle size	15	15	15
3/8" nominal maximum particle size	16.5	16.5	16.5
Voids in Bituminous Mix, percent	3 – 5	3 – 5	3 – 5

NOTES
(a) Traffic Classifications:
Light: (ESAL <104 per year)
Class I: Parking lots, Driveways, light traffic residential streets, light traffic farm roads.
Medium: (ESAL between 104 and 106 per year)
Class II: Residential streets, rural farm and residential roads.
Class III: Urban minor collector streets, rural minor collector roads.
Heavy: (ESAL >106 per year)
Class IV: Urban minor arterial and light industrial and light industrial streets, rural major collector and minor arterial highways.
Class V: Urban major arterial and heavy industrial streets, freeways, expressways, arterial highways, rural interstate and other principal arterial highways.
(b) Stability, Flow, Voids: ASTM D 5581.
(c) VMA: ASTM D 3203
(d) Nominal maximum particle size is the largest sieve size listed in this Section upon which any material is retained.

1. Stability, Flow Voids: If traffic classification is not specified elsewhere, use Medium Traffic Classification.

2. Dust to Asphalt Ratio: 0.8 to 1.6.
3. Moisture Sensitivity, ASTM D 4867: Tensile strength ratio less than 0.80 using freeze-thaw conditioning. Test specimen shall be 150 mm in diameter and 95 mm in height and compacted at 7 percent plus or minus 1 percent air voids)
4. Rut Susceptibility, AASHTO T 324: Maximum rut depth is 10 mm at 20,000 passes.

2.5 SOURCE QUALITY CONTROL

A. General: Collect samples, ASTM D 3665. Do not change sampling points.
1. Aggregate sampling, ASTM D 75.
2. Paving asphalt sampling, ASTM D 140. Test for viscosity and penetration.

B. Asphalt-Aggregate Mix: Sample, ASTM D 979. Test for the following.
1. Air voids, ASTM D 3203 or ASTM D 5581.
2. Paving asphalt content, ASTM D 6307.

3. Aggregate gradation, ASTM D 5444.
4. Tensile strength of bitumen-aggregate mixtures, ASTM D 4867.

C. Mixing Plant: ASTM D 3515.

END OF SECTION

SECTION 32 12 14

TACK COAT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Application of asphaltic material to existing asphalt concrete or Portland cement concrete surfaces preparatory to placing an asphalt concrete Pavement.

1.2 SUBMITTALS

A. Certificate showing asphaltic material complies with Section 32 12 03.
   1. Identify water/asphalt dilution ratio.
   2. Identify tack coat application rate.
B. Identify asphalt material recommended by fabric manufacturer.

1.3 WEATHER

A. Apply tack coat only when air and roadbed temperatures in the shade are greater than 40 deg. F. The temperature restrictions may be waived only upon written authorization from OWNER.
B. Do not apply tack coat during rain, fog, dust, or other unsuitable weather. Do not apply coat to wet surfaces.

1.4 NOTICE

A. Send written notice to residents or business owners 24 hours prior to applying coat.

PART 2 - PRODUCTS

2.1 ASPHALT MATERIAL

A. Select from the following.
   1. Emulsified Asphalt: Grade MS-1, SS-1 or SS-1h, Section 32 12 03.
   2. Cationic Emulsified Asphalt: Grade CSS-1 or CSS-1h, Section 32 12 03.
   3. Rapid Cure Cutback Asphalt: Grade RC-70, Section 32 12 03.

PART 3 - EXECUTION

3.1 PREPARATION

A. Select and advise OWNER of the type of tack material to be used.
B. Clean the surface to be treated free of dust and other foreign material. If flushed, allow surface to dry. If leaves from trees, blow clean.
C. Provide surface for pedestrian access across tack coat.
D. Prevent pedestrians, vehicles, pets, etc., access to tack surfaces.

3.2 APPLICATION

A. General:
   1. Triple coverage by spray bar required. Stop application if any nozzle is not working properly.
   2. Apply tack only to area covered with asphalt concrete in the same day.
B. Application rate: Typically as follows.
   1. Emulsions, 0.05 to 0.15 gallons per square yard.
   2. Cutback, CONTRACTOR's choice.
C. Tack Substrate for Fabric Application: Comply with manufacturer's recommendation. If none, then as follows.
   1. Dry Pavement surface, 0.20 to 0.30 gallons per square yard. Within street intersections, on steep grades and in zones where vehicle speed changes are commonplace reduce the application rate to no less than 0.20 gallons per square yard.
   2. Heavy duty fabrics, 0.30 to 0.40 gallons per square yard.

3.3 PROTECTION

A. Protect all surfaces exposed to public view from being spattered or marred. Remove any spattering, over-coating, or marring.
B. Do not discharge bituminous material into borrow pits or gutters.

3.4 OPENING TO TRAFFIC AND MAINTENANCE

A. Do not permit traffic to travel over the tacked surface until bituminous tack coat has cured or is not picked up by traffic.
B. If detours cannot be provided, restrict operations to a width suitable at least for one-way traffic over the remaining portion of the road.
C. If one-way traffic is provided, control traffic appropriately.

END OF SECTION

SECTION 32 12 16

PLANT MIX - ASPHALT PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Place Superpave or plant-mix asphalt concrete in base, leveling and surface courses, or overlay.

1.2 REFERENCES

A. AASHTO T 324: Hamburg Wheel-track Testing of Compacted Hot- Mix Asphalt (HMA).
B. ASTM D 979: Standard Practice for Sampling Bituminous Paving Mixtures.
C. ASTM D 2041: Standard Test Method for Theoretical Maximum Specific Gravity of Bituminous Paving Mixtures.
D. ASTM D 3549: Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
E. ASTM D 3665: Standard Practice for Random Sampling of Construction Materials.
F. ASTM E 950: Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference.
G. ASTM E 1274: Standard Test Method for Measuring Pavement Roughness Using a Profilograph.

1.3 SUBMITTALS

A. Before Delivery:
    1. Traffic control plan
    2. Type and number of rollers.
    3. Manufacturer's certificate of compliance for paving geotextiles, Refer to Section 31 05 19.
    4. Location and name of asphalt concrete production facility.
    5. Proof of profilograph and profilograph operator certification.
B. At Delivery: Supply batch ticket identifying.
    1. Serial number of ticket.
    2. Date and truck number.
    3. Job name, location, and mix identification.
    4. Type, grade, and weight of asphalt.
    5. Type, grade, and weight of aggregate.
    6. Mix design method.
C. After Delivery:
    1. Profile deviation report.
    2. Profile roughness index report.
    3. Quality Control Inspections and Testing Report: Upon OWNER's request, submit report describing source and field quality control activities and test results performed by CONTRACTOR and CONTRACTOR's Suppliers.

1.4 QUALITY ASSURANCE

A. Do not change asphalt or aggregate sources until OWNER accepts new source and new mix design.

B. Reject product and work that does not meet requirements of this Section.
C. Remove product found defective after installation and install acceptable product at no additional cost to OWNER.
D. Foreman of paving crew has completed at least three (3) projects of similar size and nature.

1.5 WEATHER

A. Do not pave until air temperature is 45 deg F. and rising.
B. Cease paving if air temperature falls below 50 deg F.
C. Do not pave if surface is wet or weather is unsuitable.
D. Do not pave if wind or ground cools mix material before compaction.

1.6 NOTICE

A. Send written notice to residents and businesses within affected area at least 3 days before start of paving.
B. Indicate paving time and when new surface can be used.
C. Warn of potential vehicle tow away and other construction issues affecting neighborhood.
D. Should work not occur on specified day, send a new notice.

1.7 ACCEPTANCE

A. General:
    1. Acceptance is by Lot. Lot size is specified below.
    2. Opening a paved surface to traffic does not constitute acceptance.
B. Mix: Accepted as specified in Section 32 12 05, or Section 32 12 06.
C. Installation:
    1. Mix Temperature:
        a. Reject mixes exceeding 325 deg F. in transport vehicle.
        b. Dispose of cold mix in paver hopper as thin spread underlay.
    2. Compaction and Thickness:
        a. Lot size is 1,000 square yards or part thereof.
        b. Verify with at least 2 tests per Lot.
        c. Select test locations by ASTM D 3665 and sample per ASTM D 979 after compaction.
        d. Compaction determinations are full core depth or overlay depth in overlay construction.
        e. Thickness measurement will not apply in overlay construction.
        f. Based upon core samples, compaction and thickness is acceptable if test deviations are within pay factor 1.00 limits. At OWNER's discretion, a Lot with a sub-lot test deviation greater than Reject may stay in place at 50 percent cost.

Table 1 – Compaction Pay Factors

Pay Factor	Density, in Percent (ASTM D 2041)	
	Average	Lowest Test
0.70	More than 96	–
1.00	92 to 96	89 or greater
0.90	92 to 96	Less than 89
Reject	Less than 92	–

NOTES
(a) At CONTRACTOR's discretion and expense, do Hamburg wheel track test (AASHTO T 324) on 3 additional random core samples from a non-complying sub-lot. The sub-lot will be accepted if average rut depth is less than 10 mm at 20,000 passes.

Table 2 – Thickness Pay Factor	
Pay Factors	**Thickness Deficiency, in Inches (ASTM D 3549)**
1.00	0.00 to 0.25
0.90	0.26 to 0.50
0.70	0.51 to 0.75
Reject	0.76 to 1.00

3. Grade, Cross Slope: Verify tolerance is not exceeded.
4. Roughness: Verify "must grind" bumps are removed and tolerance for profile roughness index is not exceeded.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asphalt concrete, Section 32 12 05.
B. Tack coat, Section 32 12 14.

PART 3 - EXECUTION

3.1 CONSTRUCTION EQUIPMENT

A. Lay Down Machine: Use track equipment when operating on fabrics, geogrids or Pavement mats hotter than 180 deg. F.
B. Compactors: Steel wheel static or vibratory. Use pneumatic tire roller for intermediate rolling only.

3.2 PREPARATION

A. General:
   1. Coordinate utility location. Contact utility companies and other agencies, for dangerous concentration of combustible, flammable, or explosive matter.
   2. Lower Street Fixtures if paving machine is not capable of passing over the fixtures.
   3. Remove vegetation from cracks, edges and joints. Sweep surface clean. Blow cracks clean. Remove leaves.
   4. Fill cracks and fix Potholes
   5. Stabilize concrete Subgrade slabs.

B. Trees, Plants, Ground Cover:
   1. Protect trees, plants and other ground cover from damage.
   2. Prune trees to allow equipment passage underneath. Repair tree damage at no additional cost to OWNER.
C. Traffic Control:
   1. Provide worker and public safety
   2. Apply temporary traffic and lane marking tape or paint after layout has been verified with OWNER.
D. Aggregate Base Course:
   1. Verify base course is placed to grade and compacted.
E. Tack Coat: Apply tack coat, Section 32 12 14 if inlay or subbase Pavement surface is dirty or older than 24 hours.

3.3 TEMPORARY SURFACING

A. Place, roll, maintain, remove and dispose of temporary surfaces.
B. In sidewalk areas construct temporary Pavements at least 1 inch thick and in all other areas at least 2 inches thick. At major intersections and other critical locations a greater thickness may be required.

3.4 PLACE PAVEMENT MIXTURE

A. General:
   1. Provide continuous forward movement such that minimum temperature 10 feet behind paver is as follows.

Table 3 – Minimum Temperature, Degrees F.

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

   2. Do not leave unsafe butt joints if paving operation stops.
   3. Barricade or eliminate fall off edges.
B. Overlays or Subsequent Lifts:
   1. Allow new base Pavement or new inlay Pavement to harden (cure) prior to placing overlays.
   2. Apply tack coat per Section 32 12 14 if inlay or sub-base pavement surface is dirty or older than 24 hours.
C. Irregular Areas: Handwork is acceptable if specified grades, slopes, compaction and smoothness is achieved.
D. Compaction:
   1. Do not over compact or under compact.
   2. Complete compaction before temperature drops to 180 deg. F.
E. Joints:

1. Construct joints to have same texture, density and smoothness as other sections of new Pavement course.
2. Clean contact surfaces and apply tack coat. Ensure continuous bond between old and new Pavements, or between successive day's work.
3. Offset longitudinal joints a minimum of 12 inches in succeeding courses and at least 6 feet transversely to avoid a vertical joint through more than one course. In the top course restrict longitudinal joint to 1 foot either side of lane lines.
4. Prevent traffic, including construction traffic, from crossing vertical edges. Apply tack coat to vertical edges prior to making another pass with the paver if the mix has cooled to 90 deg. F.

3.5 TOLERANCES

A. Compaction: 94 percent plus or minus 2 percent of theoretical maximum specific gravity, ASTM D 2041 (Rice Method).
B. Lift Thickness:
   1. Not less than 2 times the maximum aggregate size in compacted asphalt concrete mixes.
   2. Not less than 4 times the nominal maximum aggregate size in compacted SUPERPAVE mixes.
   3. Not more than limits established by pneumatic or vibratory compactor equipment manufacturer.
C. Grade: 1/8 inch in 10 feet parallel to centerline.
D. Cross Slope: 1/4 inch in 10 feet perpendicular to centerline except at cross section grade breaks.
E. Roughness:

Table 4 – Roughness Tolerance

Speed and Traffic Class		Profile Roughness Index, (PRI) Inches / Mile				Profile Deviation Inches/25 feet Maximum
		IRI		PI		
		Min	Max	Min	Max	
0 to 29 mph	I or II	–	–	–	–	0.4
	III or IV	129	177	46	66	0.4
30 to 44 mph	I or II	90	115	35	50	0.4
	III or IV	70	90	21	35	0.4
45 mph +	All Classes	–	70	–	21	0.3

NOTES
(a) Use a zero blanking band.
(b) As a minimum, trace right wheel path in direction of travel
(c) Traffic class is defined in Table 3 of Section 32 12 05.
(d) IRI (International Roughness Index), ASTM E 950
(e) PI (Profile Index), ASTM E 1274.

1. Profile Deviation: Begin traces 50 feet before edge of new pavement and end traces 50 feet after edge of new pavement. Areas exceeding profile deviation tolerance are “must grind” areas.
2. Profile Roughness Index: (PRI)

a. Lot is 0.1 lane mile (528 feet long one lane wide). Add segments shorter than 250 feet to preceding Lot. Treat partial segments longer than 250 feet as a Lot.
b. Exclude from the Lot are turn lanes, parking lanes, medians, Street Fixtures, crowns of intersecting streets, bridge decks, grades greater than 8 percent, and vertical curves less than 1,000 feet radius (including super-elevation transitions).

3.6 PROTECTION AND REPAIR

A. General: All expenses are at no cost to OWNER.
B. Protection.
    1. Protect all structures, including curb, gutter, sidewalks, guard rails and guide posts.
    2. Remove spatter, over-coat, or mar.
    3. Do not discharge bituminous materials into borrow pits or gutters.
    4. Protect hot pavement from traffic until mixture has cooled enough not to become marked.
    5. Protect neighborhood, storm drains and down-stream fish habitat.
C. Repair.
    1. Corrective Action for Profile Deviations ("Must Grinds"): Grinding is acceptable. Apply cationic or anionic emulsion and sand friction blotter over grind areas.
    2. Corrective Action for Profile Roughness Index: Grinding is acceptable. Skin patch for depressions is not acceptable. Raise depressions by milling and inlay. Re-profile corrected segments to verify index meets tolerance. Apply a cationic or anionic emulsion and sand friction blotter over grind areas.
    3. When thickness is deficient, place additional material over deficient areas. DO NOT skin patch. Mill for inlay if necessary.
    4. Defective Joints, Seams, Edges: Repair.
    5. Unacceptable Paving: Remove and replace.

END OF SECTION

SECTION 32 16 14

CURB RAMP

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Concrete flatwork for curb cut assemblies.

1.2 REFERENCES

A. American Public Works Association (Utah Chapter).
   1. Plan 235: Corner Curb Cut Assembly.
   2. Plan 236: Tangent Curb Cut Assembly.
   3. Plan 237: Islands and Median.
   4. Plan 238: Detectable Warning Surface.
   5. Or as specified on the drawings.
B. Work Zone Traffic Control Guide: Publication of the Utah LTAP Center.

1.3 DEFINITIONS

A. Clear Space: A 4 feet minimum by 4 feet minimum surface located within the width of the crosswalk and adjacent to a curb cut.
B. Cross Slope: Grade perpendicular to the direction of pedestrian travel usually expressed in percent.
C. Running Slope: Grade parallel to the direction of pedestrian travel usually expressed in percent.
D. Ramp: A flat surface with a maximum Running Slope of 1:12 (8.33 percent) and a maximum Cross Slope of 1:48 (2 percent) with sides perpendicular to its ends and ends parallel to each other.
E. Curb Ramp: A Ramp that cuts through a curb.
F. Detectable Warning Surface: A surface of truncated domes aligned in a square or radial grid pattern.
G. Cross Width: Distance perpendicular to the direction of pedestrian travel usually expressed in lineal measure.
H. Running Width: Distance parallel to the direction of pedestrian travel usually expressed in lineal measure.

1.4 SUBMITTALS

A. Traffic control plan
B. Concrete mix design
C. Batch ticket
D. Detectable Warning Surface product data sheet.

1.5 ACCEPTANCE

A. Clear Space: Running Slope.
B. Flow-line: No standing water, no trip hazard.
C. Detectable Warning Surface:
   1. Color contrast, dome geometry, joints between units.
   2. Cross Width, Running Width.

D. Curb Cut: Cross Width (appropriate to number of crosswalks served).
E. Landing: Running Slope, Cross Slope, dimensions.
F. Ramp: Running Slope, Cross Slope, Cross Width, transition ends.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cast-in-place Concrete: Class 4000, Section 03 30 00.
B. Pavers:
    1. Concrete
    2. Brick
C. Other Materials: CONTRACTOR's choice.

PART 3 - EXECUTION

3.1 PREPARATION

A. Refer to Work Zone Traffic Control Guide.
B. Refer to Plan 235, 236, 237, and 238.

3.2 TRAFFIC CONTROL

A. Provide safe passage for pedestrians and vehicles.
B. Assist visually impaired and wheel chair users.
C. Provide continuous access to fire hydrants.
D. Keep passage ways free of construction materials, trash and debris.
E. Remove graffiti immediately.

3.3 LAYOUT

A. Curb Cut excluding flare or curb radius measurement):
    1. Cross Width at Curb Ramp.
        a. 4 feet minimum serving one crosswalk.
        b. 8 feet minimum serving two or more crosswalks.
    2. Cross Slope at Curb Ramp: 2 percent maximum.
B. Detectable Warning Surface:
    1. Running Length: 2 feet minimum.
    2. Cross Width:
        a. 4 feet minimum serving one crosswalk.
        b. 8 feet minimum serving two or more crosswalks.
    3. Joint Between Units: 3/16 inch maximum or manufacturer's recommendation
C. Landing: Determine landing position and elevation so ramps that slope to and from the landing meet ramp slope requirements.
D. Ramp:
    1. Do not exceed maximum slope or 15 feet length.
    2. It may be necessary to include a transition zone between a curb cut and ramp.
E. Curb Wall: Set top of curb wall equal to elevation of extended lateral lines of sidewalk.

3.4 INSTALLATION

A. Pour concrete
B. Install Detectable Warning Surface full length and full width across the pedestrian access route.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Paints for Pavement striping.
B. Words and other markings in paint or plastic film.
C. One or two-way prismatic reflectors for Pavement marking.

1.2 REFERENCES

A. AASHTO M 237: Standard Specification and Recommended Practice for Epoxy Resin Adhesive for Bonding Traffic Markers to Hardened Concrete.
B. AASHTO M 247: Standard Specification for Glass Beads Used in Traffic Paint.
C. AASHTO M 248: Standard Specification for Ready-Mixed White and Yellow Traffic Paints.
D. AASHTO M 249: Standard Specification for White and Yellow Reflective Thermoplastic Striping Material (Solid Form).
E. ASTM D 638: Standard Test Method for Tensile Properties of Plastics.
F. ASTM E 303: Standard Method for Measuring Surface Frictional Properties Using the British Pendulum Tester.
G. FS L-S-300: Sheeting and Tape, Reflective: Nonexposed Lens.
H. Federal Standard 141: Paint, Varnish, Lacquer and Related Materials, Methods of Inspection, Sampling, and Testing.
I. Federal Standard 370: Instrumental Photometric Measurements of Retroflective Materials and Retroreflective Devices.
J. MUTCD: Manual on Uniform Traffic Control Devices for Streets and Highways.

1.3 SUBMITTALS

A. Specifications of primer to be used for tape applications.
B. Manufacturer's affidavit certifying paint products meet or exceed material requirements of this section.
C. Sample of prismatic reflector to be used along with manufacturer's statement of the reflector's minimum reflective area and specific intensity at the 0.2 degree observation angle.
D. Manufacturer's recommendation for type of epoxy to be used when installing prismatic reflectors and markers.
E. Samples of each thermoplastic or preformed plastic Pavement markings along with a statement of how the materials will be applied.

PART 2 - PRODUCTS

2.1 ALKYD RESIN PAINT

A. White or yellow Type F (Fast dry) ready-mixed, AASHTO M 248.

2.2 THERMOPLASTIC PAINT

A. White or yellow, AASHTO M 249.

2.3 GLASS BEADS

A. Type 1, AASHTO M 247.

2.4 REFLECTIVE TAPE

A. Type II white or yellow with a Class 1 (pressure-sensitive) adhesive, FS L-S-300.

2.5 REFORMED PLASTIC FILM MATERIALS

A. Film: A retroflective pliant polymer with white or yellow pigments selected and blended to conform to standard highway colors throughout the expected life of the film and glass beads distributed throughout its base cross-sectional area, with a reflective layer of beads bonded to the top surface and composed of the following materials.

Materials	Minimum Percent By Weight
Resin and Plasticizers	20
Pigments and Extenders	30
Graded Glass Beads	33

1. Type 1: Subjected to high traffic volume and severe wear conditions such as repeated shear action from crossover, encroachment on edge and channelization lines, and stop, start, or turn movements.
    a. Class 1: Without precoated adhesive, for application with epoxy cement.
    b. Class 2: With precoated pressure sensitive adhesive.
2. Type 2: Subjected to lower traffic volumes and less severe wear action such as most highway edge lines, markings on rural highways, lane lines in well-channelized areas and transverse and word/symbols subjected primarily to free rolling traffic.
    a. Class 1: Without precoated adhesive, for application with epoxy cement.
    b. Class 2: With precoated pressure sensitive adhesive

B. Tensile Strength: Sample 6 x 1 x 0.06 inches at a temperature between 70 deg. F. and 80 deg. F. using a jaw speed of 10 inches to 12 inches per minute tested per ASTM D 638 requirements.
    1. Type 1: 150 pounds per square inch of cross-section.
    2. Type 2: 40 pounds per square inch of cross-section.

C. Elongation: 75 percent minimum at break when tested per ASTM D 638 requirements using a Sample 6 x 1 x 0.06 inches at a jaw speed of 10 inches to 12 inches per minute.

D. Skid Resistance: Initial minimum skid resistance values are 35 BPN as measured by the British Portable Skid Test, ASTM E 303 requirements.

E. Reflectance: Minimum reflectance values at 0.2 degrees and 0.5 degrees observation angles and 86.0 degrees entrance angle as measured per the testing procedures of Federal Standard 370.

Film Type	Observation Angles			
	White		Yellow	
	0.2o	0.5o	0.2o	0.5o
Type 1: SL (mcd/sf/fc) Type 2: SL (mcd/sf/fc)	550 960	380 760	410 680	250 510

1. The photometric quantity is measured in specific luminance (SL), and expressed as millicandelas per square foot per footcandle (mcd/sf/fc).

2. Use a test distance 50 feet and a Sample size of 2. x 2.5 feet.
3. Use an angular aperture of both the photoreceptor and light projector of 6 minutes of arc.
4. The reference center is the geometric center of the Sample, and the reference axis is taken perpendicular to the test Sample.

F. Film Reflectivity Retention: Not more than 15 percent of the beads lost due to popout and the predominate mode of Failure is "wear down" of the beads, when subjected to 200 cycles of a Taber Abraser Simulation test using an H-18 wheel and 125 gram load.

G. Thickness: 0.06 inch without adhesive.

H. Effective Performance Life: The film, when applied according to the recommendations of the manufacturer, will provide a neat, durable marking that will not flow or distort due to temperature if the Pavement surface remains stable. Although reflectivity is apply wear, the pliant polymer will provide a cushioned, resilient substrate that reduces bead crushing and loss. Use a film that shows no appreciable fading, lifting, or shrinkage throughout the useful life of the marking, and shows no significant tearing, roll back, or other signs of poor adhesion.

I. Abrasion Resistance: Use a material that when tested will not wear through to the conformable backing surface in less than 5,000 cycles when tested per Federal Standard 141, Method 6192, using a CS-17 wheel and a 1,000 gram load.

J. Acid Resistance: Use a material that will show resistance to etching, hazing, or delamination of bead surface after exposure to a 1 percent solution of sulfuric acid.

2.6 PRISMATIC REFLECTORS

A. Unless indicated otherwise, provide single lens snowplow resistant reflectors of the color indicated.
   1. With a cast iron housing and acrylic prismatic reflector.
   2. With an overall size not less than 9 inches long, 5 inches wide, and 1-3/4 inch thick with a 7/16 inch maximum projection above the roadway.
   3. With a minimum reflective area of 1.6 square inches per face.

B. Reflector Specific Intensity:

Color	Intensity at 0.2 Degree Observation Angle	
	0 Degree Entrance Angle	20 Degree Entrance Angle
White	3.	1.2
Yellow	1.8	0.72

2.7 EPOXY ADHESIVE

A. Epoxy, AASHTO M 237 requirements and as recommended by the manufacturer of the reflector. Provide a minimum adhesion value of 1.1 pounds per inch width.

PART 3 - EXECUTION

3.1 CONSTRUCTION EQUIPMENT

A. Use equipment manufactured for Pavement marking. Use workers experienced in operating such equipment.

B. Use equipment capable of applying a strip, or strips with a width tolerance of plus or minus 1/4 inch. Equip the machine with an automatic skip control giving a 10 feet long marked segment and a 30 feet long gap within a linear tolerance of 6 inches over that cycle.
C. If applying glass beads, locate bead applicator directly behind and synchronized with marking applicator.
D. For thermoplastic paint materials, use equipment that is designed to agitate the paint to prevent scorching, discoloration, or excessive high temperatures.

3.2 PREPARATION

A. Broom or flush the surface to remove dirt, loose stones, or other foreign material immediately prior to applying.
B. Prior to applying, mark roadway between control points established by OWNER. OWNER will establish points on tangent at least every 100 feet and at 25 feet long intervals on curves. Maintain the line within 1 inch of the established control points. OWNER may also designate other Pavement striping locations such as stop bars, crosswalks, zebra striping, etc.
C. Markings that adhere to asphalt concrete or Portland cement concrete by either a pressure sensitive precoated adhesive or an epoxy cement shall mold to the Pavement contours by traffic action at normal Pavement temperatures and shall be ready for traffic immediately after application.
D. Begin Pavement painting and marking operations not later than 24 hours after receipt of written order by OWNER.
E. Apply striping and markings per MUTCD requirements.
F. Apply all materials in accordance with manufacturer's and OWNER's directions.

3.3 APPLICATION

A. Apply Pavement paintings and markings only when Pavement surface is dry and air temperature is above 40 deg. F. during daylight hours.
B. Do not apply paints and markings when rain is anticipated within 12 hours.

3.4 ALKYD RESIN PAINT STRIPING

A. Adjust Pavement striping machine to apply paint at rate recommended by paint manufacturer.
B. Glass Bead Application Rate: 5.9 to 6.1 pounds per gallon of paint.
C. Protect the markings until dry by placing approved guarding or warning device wherever necessary. Remove any markings not authorized or smeared or otherwise damaged, or correct as approved by OWNER.

3.5 THERMOPLASTIC PAINT STRIPING

A. Clean off dirt, glaze, and grease before prestriping.
B. Prestripe the application area with a binder material that will form, when sprayed, a continuous film over the Pavement surface, and will dry rapidly and mechanically adhere to the Pavement surface. Install the material in varying widths if indicated.
C. Extrude the thermoplastic material at a temperature of 412 plus or minus 12 deg. F. from approved equipment to produce a line 1/8 inch to 3/16 inch thick, continuous and uniform in shape, and have clean and sharp dimensions.
D. Do not use material which produce fumes that are toxic, obnoxious, or injurious to persons or property.
E. Apply so that finished lines have well-defined edges free of waviness.
F. Glass Beads Application Rate: 6 pounds of glass beads to every 100 square feet of marking.

3.6 TAPE STRIPING

A. Apply Pavement marking tape as indicated or directed. OWNER will establish control points.
B. Apply the tape only on surfaces that are dry and free of oils, grease, dust and dirt, and primed at the rate of approximately 1 quart per 60 feet with an approved primer material.

C. Maintain the line on established control points. Apply intermittent Pavement marking tape 24 inches long, spaced approximately 100 feet on tangents, and approximately 25 feet on curves unless otherwise directed. The OWNER will designate other Pavement striping locations such as stop bars, crosswalks, zebra striping, etc.
D. Press down the tape immediately after application until it adheres and conforms to the surface of the Pavement.
E. Completely remove all tape on sections where tape conflicts with revised traffic lanes prior to opening new lanes to traffic.

3.7 PAVEMENT MARKING FILMS

A. Use Pavement marking films that are capable of being applied to new, dense, and open-graded asphalt concrete wearing courses during the paving operation in accordance manufacturer's instructions, and that are capable of conforming to Pavement contours through the action of traffic at normal Pavement temperatures.
B. Use a Pavement marking film that is capable of use for patching worn areas of the same type film.
C. Apply before traffic is allowed on the freshly paved surface.
D. Unless indicated otherwise, provide Type C, Class II, polymer film markings in specified widths and shapes. Provide and layout words and marking symbol configurations per MUTCD requirements and as indicated.
E. When indicated, inlay the markings in fresh asphalt surface by a compaction roller during the paving operation.
F. Apply all markings in accordance with manufacturer's recommendations.

3.8 PRISMATIC REFLECTOR INSTALLATION

A. Install reflectors by cutting Pavement and partially filling cut area with epoxy adhesive. Place reflector housing in the adhesive and apply pressure to properly seat. Allow epoxy to completely set before allowing traffic on markers.
B. Install marker so that housing edges are flush with Pavement and so that the angle formed by the longitudinal axis of the marker and the adjacent Pavement stripe does not exceed 5 degrees.

3.9 WORDS AND OTHER MARKINGS

A. Wet sandblast existing or temporary Pavement markings that may be confusing. Removal of markings by high-pressure water may be used if approved by OWNER.
B. Apply word markings, letters, numerals and symbols with indicated stencils and templates. In the absence of such information all stencils and templates shall be identical to those currently used by OWNER.

3.10 TEMPORARY PAVEMENT MARKINGS

A. Renew when stripes and markings have lost 50 percent of their original visual effectiveness.

END OF SECTION

SECTION 32 8000

LANDSCAPE IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall construct an automatic irrigation system, complete and operable, in accordance with the requirements of the Contract Documents.

B. Said irrigation system shall include but not be limited to all pipes, fittings, irrigation heads, valves, pump assemblies, automatic control valves, controller, valve boxes, drain valves, quick coupler valves, operating wrenches, riser assemblies, direct burial wires, electrical connections, filter, wiring and other appurtenances, piping, connections, testing, cleaning-up, maintenance and adjustments necessary for a complete operating system, ready for immediate use upon completion. Minor items necessary for proper construction and functional operation of this system, not specifically described in the Contract Documents, shall be included as a part of the work of this Section.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. **Codes**: All codes, as referenced herein, are as specified in Division 01.

B. Commercial Standards:

ASTM B 3	Specification for Soft or Annealed Copper Wire
ASTM D2564	Specification for Solvent Cements for Poly (VinylChloride) (PVC) Plastic Pipe and Fittings
AWWA C 500	Gate Valves for Water and Sewerage Systems

1.3 CONTRACTOR SUBMITTALS

A. Manufacturer's literature, samples (where requested by the Owner) and installation instructions shall be submitted in accordance with Division 01 Section “Contractor Submittals."

B. Record drawings, showing actual locations of all valves, pipes (lines), heads, dimensions, controllers, control lines, and electrical wires shall be submitted prior to final inspection. <u>Diagrammatic location of irrigation system components is not acceptable when submitting record drawings – actual location of irrigation system equipment is required for locating in the field</u>

1. Actual routing of mainline with dimensions from fixed points.
2. Actual routing of control wiring with dimensions from fixed points.
3. Location of wire splices (must be placed in valve box and only use splices in approved locations)
4. Actual routing of lateral lines and head locations
5. Actual location of valve boxes with notes on type of valve used at each location.
6. Actual location of sleeves with dimensions from fixed points.
7. Actual location of stubbed mainlines or lateral lines (if applicable)
8. Provide legend of symbols/notes used on record drawings.
9. Any other notes as necessary to enable the owner to understand and locate irrigation system equipment in the field upon completion of the project.

C. Controller literature, specifications, installation wiring diagram, and circuit breaker information shall be submitted to the OWNER for review prior to ordering.

D. **Equipment for Operation**: The CONTRACTOR shall **provide the following** equipment, in addition to what is indicated on the Drawings.
   1. Two keys for locking automatic controller door.
   2. One Gate valve key.
   3. Two keys for locking valve boxes.
   4. 2 Valve Keys for Quick Coupler – coordinate with Owner.
   5. One Valve Key for Manual Drain Valve.

E. A reduced copy of the irrigation plan shall be laminated and mounted in the controller.

1.4 QUALITY ASSURANCE

A. In addition to other inspections, as provided by the OWNER, the CONTRACTOR shall give at least 72 hours' notice to the OWNER for scheduling the following special inspections:
   1. Layout of the system
   2. Inspection of trenches, backfilling, and equipment.
   3. Pressure tests
   4. Coverage adjustment
   5. Automatic operation

B. The CONTRACTOR shall notify the OWNER at least 72 hours prior to performing the tests. All tests shall be performed in the presence of the owner's representative. Test requirements shall be as follows:
   1. After assembly and installation, all water pipes, fittings, automatic equipment, and appurtenances shall be tested at a hydrostatic pressure of 150 psi at the lowest point of the system for not less than 60 minutes.
   2. The first test shall be made in such a manner that all valves in the new water pipe irrigation lines will be tested for watertight closure. Valves may be tested in groups or singly while subjected to 150 psi water pressure for a period of not less than 60 minutes.
   3. The second test shall be made by forcing all air from the pipes with water and capping or plugging pipe risers. After the pipe risers have been plugged or capped, all line valves shall be fully opened and the pipe lines subjected to the full static water pressure for a period of not less than 120 minutes. Pressure pipelines 150 PSI).
   4. The third test required that lateral lines be tested at 100 psi for 120 minutes.
   5. The fourth test requires that all pressure lines be tested at 120 psi for 24 hours.
   6. Water lines and valves which show evidence of leakage or fail to be watertight shall be repaired or replaced. After all repairs or replacements have been made, the above-required tests shall be performed again.
   7. When the irrigation system is completed, the CONTRACTOR, in the presence of the OWNER, shall perform test coverage of water afforded the lawn and planting areas. The CONTRACTOR shall furnish all material and perform all work required to correct any inadequacies of coverage disclosed. The CONTRACTOR shall inform the OWNER of any deviation from the Drawings required due to wind, planting, soil, or site conditions that bear on proper coverage.
   8. Upon completion of each phase of the work, the CONTRACTOR shall check and adjust each irrigation head to meet the site requirements and the requirements of the Contract Documents.

(Testing as noted above is at the owner's option, and generally will not be required unless verification of the contractor's workmanship and quality is required.)

C. All General laborers or workers on the Project shall be previously trained and familiar with sprinkler installation, and have a minimum of one-year experience.

1.5 INSTRUCTION

A. The CONTRACTOR shall, upon completion of the maintenance period of the irrigation instruct the OWNER and the OWNER'S personnel as to the proper operation and maintenance of the system.

1.6 EXISTING UTILITIES AND CONDITIONS

A. Prior to cutting into the soil, the CONTRACTOR shall locate all cables, conduits, sewers, septic tanks, and other such underground utilities, and shall take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the CONTRACTOR shall promptly notify the OWNER

B. The CONTRACTOR shall be responsible for coordinating its work with the operation of existing utilities and new utilities on the Project. The CONTRACTOR shall notify the OWNER or its representative when utilities which are in operation require shut-off.

C. Due to the scale of Drawings, it is not possible to indicate all offset, fittings, etc., which may be required. The CONTRACTOR shall carefully investigate the structural and finished conditions affecting all its work, and plan its work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. The Contract Documents are generally diagrammatic and indicative of the work to be installed. The work shall be installed in the most direct and workmanlike manner, so that conflicts between irrigation systems, planting, structures, piping, and etc. will be avoided.

D. The CONTRACTOR shall verify the water pressure available at the site before installation of the system to make sure there is adequate pressure (design pressure 30 to 40 psi) to properly operate irrigation heads and valves, and shall also provide pressure reducing valves if required before commencement of any work. Minor additions and adjustments of heads, piping, and circuits shall be made at no additional cost to OWNER where it is necessary to make the irrigation system operate properly.

1.7 STORAGE OF MATERIALS

A. The CONTRACTOR shall be responsible for storage of materials and for damage to the WORK covered by these Contract Documents before final acceptance of its work. The CONTRACTOR shall securely cover openings into the system, and shall cover all apparatus, equipment, and appliances both before and after being set in place to prevent obstruction in the pipes and the breakage, misuse, or disfigurement of said apparatus, equipment, or appliances.

1.8 SCHEDULING AND COORDINATION

A. The CONTRACTOR shall be responsible for making arrangements for the coordination of its construction operations with those of all others on the job. The CONTRACTOR shall permit others engaged in work to accomplish their portion of the WORK without undue interference or delay.

B. The CONTRACTOR shall be responsible for the scheduling and coordination of the electrical and water connections and the installation of the piping and equipment in a manner that will affect the earliest completion of the WORK in conformance with the construction progress schedules.

C. If electrical service is not already in place, the Contractor will be required to make all necessary arrangements with the power utility company including, but not limited to, paying fees, making power connections, providing poles, weatherhead and meter, etc., as specified on the plans. All permits, fees, and compliance with electrical company requirements, shall be the Contractor's responsibility.

1.9 GUARANTEE/WARRANTY OF THE IRRIGATION SYSTEM

A. The CONTRACTOR shall guarantee the complete irrigation system to be free from leaks or breakage due to defective material or workmanship <u>for a period of one year</u> from the date of acceptance of the complete work by the OWNER. Damage due to sabotage and/or vandalism is specifically excepted from this guarantee.

B. Other items of the required guarantee shall be as specified in the Division 32 Section “Landscape Planting”.

C. The CONTRACTOR shall repair any settling of backfilling trenches occurring during a one year period after final acceptance without expense to the OWNER including complete restoration of all damaged planting, paving, or other improvements of any kind.

D. The CONTRACTOR shall provide winterization of the irrigation system during the one year guarantee period.

E. When defective material or workmanship is discovered which will require repair or replacement, all such repair work or replacement work shall be done by the CONTRACTOR at its own expense within 24 hours after written notification is given to the CONTRACTOR by the OWNER of such required repairs. However, if the CONTRACTOR fails to comply with the requirements of the above guarantee within the 24 hours after notification is given, the OWNER shall proceed to have the repairs made by others at the CONTRACTOR'S expense.

<u>PART 2 - PRODUCTS</u>

2.1 GENERAL

A. Brand names specified for materials are supplied for the purpose of describing the type, size, quality, and performance of materials in the Irrigation Schedule. The CONTRACTOR may propose other manufacturers and models, as substitutions for those other than indicated in the Irrigation Schedule, if the materials are of equal quality and performance to the OWNER for review in accordance with Division 01 Section "Contractor Submittals." Any proposed irrigation equipment submitted by the contractor for approval as proposed substitution shall hydraulically match the originally specified equipment in the Drawings (i.e. flow rate, precipitation rate, friction loss, etc.)

B. The CONTRACTOR shall furnish, at no additional charge, all samples necessary for testing as outlined in the Specifications or, when requested, certified evidence of off-site testing

C. Equipment compatibility: automatic controller and automatic (remote) control valves shall be products of the same manufacturing company.

D. The electrical point of connection for the irrigation system automatic controller shall be 120-volt electrical supply or as per manufacturer's recommendations.

2.2 PLASTIC PIPE AND FITTINGS

A. Pipe shall be continuously and permanently marked with the following information: manufacturer's name, nominal pipe size, PVC type, pressure rating, and extrusion date.

B. All plastic pipes for lateral lines shall be PVC (polyvinyl chloride) SDR 21, Schedule 40, NSF approved.

C. Materials for pressure main lines shall be PVC (polyvinyl chloride) SDR 21, Schedule 40, NSF approved, or galvanized steel pipe.

D. Pipe and Fittings Table:

Size	Mainline Piping	Mainline Fittings	Lateral Piping	Lateral Fittings
1"	SCH 40	SCH 40	SCH 40	SCH 40
1-1/4"	SCH 40	SCH 40	SCH 40	SCH 40
1-1/2"	SCH 40	SCH 40	SCH 40	SCH 40
2"	SCH 40	SCH 80	SCH 40	SCH 80
2-1/2"	SCH 40	SCH 80	SCH 40	SCH 80
3"	SCH 40	Mechanical Joint Restraint System Fittings	SCH 40	Mechanical Joint Restraint System Fittings
4"	PVC Class 200 Gasketed	Mechanical Joint Restraint System Fittings	PVC Class 200 Gasketed	Mechanical Joint Restraint System Fittings
6"	PVC Class 200 Gasketed	Mechanical Joint Restraint System Fittings	PVC Class 200 Gasketed	Mechanical Joint Restraint System Fittings

E. Ductile iron fitting shall be grade 65-45-12 in accordance with ASTM A-536. Fitting shall be deep bell push-on joints with gaskets meeting ASTM F-477. Fittings shall be Harco Deep Bell or approved equal. Transition gaskets are not allowed.

a. Any and all Ductile Iron fittings shall include Joint Restraints at each fitting.

b. All Ductile Iron fittings shall come from a manufacturer offering a 10 year warranty on products and replacement labor costs. Prior to install, Contractor shall provide OAR documentation from the manufacturer shall provide documentation stating the above warranty information, including the labor reimbursement hourly rate.

c. All Ductile Iron fittings and joint restraints shall have a fusion bonded epoxy coating on interior and exterior of the product surface, average of 10-12mm thickness. Epoxy coating shall conform to the requirements of CSA Z245.20-20 and NSF 61 for water services. Tar/bitumen coating will not be approved.

d. All bolts used in fittings to be stainless steel.

F. Swing joint ells and nipples shall be Schedule 80 PVC or galvanized as noted on Drawings.

G. Control wiring conduit
1. rigid non-metallic schedule 40 PVC
2. UL listed: meets requirements of UL 651
3.

2.3 VALVES

A. Gate valves shall be shall be as indicated on the Drawings.

B. Isolation valves for valve manifolds shall be shall be as indicated on the Drawings.

C. Remote Control Valves shall be as indicated on the Drawings.
1. Each group of remote control valve shall be housed in a poly plastic valve box with locking lid and gravel base.

D. Quick-coupling valves shall be as indicated on the Drawings.

E. Manual drain valves shall be as indicated on the Drawings.

2.4 AUTOMATIC CONTROLLER

A. The automatic controller shall be electrically-timed devices for automatically opening and closing remote control valves. All controllers and remote control valves supplied under this contract shall be of the same manufacturer and have similar operational and adjustment

B. Controller shall be shall be as indicated on the Drawings.

C. Provide grounding and surge protection as recommended by the controller manufacturer. Refer to details on the Drawings.

2.5 IRRIGATION HEADS

A. Irrigation heads shall be the model and type indicated on the Drawings.

2.6 CONTROL WIRING

A. All splices shall be made with wire connectors, such as manufactured by 3M DBY or approved equal.

B. Electric Control Wire shall be Polyethylene (PE) UF DIRECT BURIAL type. Wire which is routed from the Electric Remote Control valve to the controller shall be #14 AWG.

2.7 PVC SOLVENT CEMENT AND PRIMERS

A. Solvent Cement shall be NSF approved and shall meet requirements of ASTM D 2564.

B. Primer shall be NSF approved and shall be Weld-On, P-70 Industrial Polychemical Service or approved equal.

2.8 VALVE AND CONTROLLER BOXES

A. Boxes for valves shall be heavy duty plastic Rain Bird, Carson-Brooks, complete with locking lids, or approved equal.

B. Boxes and lids shall be tan color.

2.9 OTHER MATERIALS

A. Other materials required or necessary shall be as shown and/or as required for best quality work.

PART 3 - EXECUTION

3.1 GENERAL

A. Finish grading must be approved prior to installation of the irrigation system. Landscaping to be installed following irrigation system installation.

B. All valves, fittings, heads, and piping shall be installed as indicated on the Drawings and all connections made to permit the irrigation system to function properly through its entire length.

C. All materials and equipment shall be installed in strict accordance with manufacturer's written instructions and recommendations and all local and state codes, laws, ordinances, and regulations.

D. Before proceeding with the installation of any section or unit of the irrigation system, the CONTRACTOR shall check and verify the correlation between ground measurements and Drawings and shall advise the OWNER of any discrepancies.

E. The total number of irrigation heads and circuits and size of pipes shall be not less than shown unless otherwise approved. The stated maximum spacing for each type of irrigation head shall not be exceeded.

3.2 EXCAVATION

A. Trenches shall be dug as wide and as deep as necessary to properly install the irrigation pipe.

B. Pipe trenches shall be straight, or "snaked" slightly allowing for expansion and contraction of PVC pipe.

C. Subsoil shall be kept separate from topsoil, where possible.

D. Minimum cover depth shall be as follows:
   1. Supply pressure lines from water source to control valves: 18 inches unless otherwise indicated on the Drawings.
   2. Lateral lines from control valves to irrigation heads; 8 and 16 inches unless otherwise indicated on the Drawings. Lateral lines under paving, roadways, and driveways shall have 18 inches of cover and located in Schedule 40 PVC sleeves
   3. Trenches for control wire only shall be 18 inches deep unless otherwise indicated on the Drawings. Control wires under concrete walks and slabs, paving, roadways, and driveways shall be installed in Schedule 40 PVC sleeves.

E. A trench of sufficient width shall be provided to allow for proper tamping around pipe.

3.3 PIPING-GENERAL

A. Piping shall be laid out and installed in accordance with manufacturer's printed recommendations and industry standards. Substantial support shall be provided at all points, and pipes shall be snaked slightly allowing for expansion and contraction.

B. Minimum 1-inch vertical clearance shall be between lines crossing at angles greater than 45 degrees.

C. Minimum 3 inches horizontal and vertical clearances shall be between all other lines.

D. All swing or swivel joints shall provide a leak-resistant joint with freedom of movement.

E. Teflon thread sealant 3/4-inch wide (tape or liquid), or approved equal shall be used at all threaded joints.

F. Galvanized steel pipes shall have clean standard threads of standard lengths. Joints shall be made up with pipe compound applied to male threads only and not more than 2 threads shall show at the joints when connected.

G. Pipe sleeves shall be provided under all paving and where necessary for passage under finish surface material, future replacement, and for protection of PVC piping and control wire.

3.4 PLASTIC PIPE

A. The pipe shall be guaranteed by the manufacturer to be suitable for operation under the conditions of this installation and shall be guaranteed free from defects in workmanship and quality.

B. The pipe shall be connected by O-ring type or by solvent-weld joints as outlined below. Joints shall be made in strict accordance with the manufacturer's printed recommendation.

C. The plastic pipe sections shall be placed accurately to line and grade in the prepared trenches. The inside of all pipe shall be clean and free from foreign matter and shall be end-reamed to remove burrs and provide full inside diameter of the nine end.

D. Pipe assembly shall have a firm, uniform bearing for the entire length of each pipeline to prevent uneven settlement. All adjustments to grade shall be made by scraping away or filling in with clean earth backfill material, well compacted under the body of the pipe.

Wedging of pipe will not be permitted. The inside of all pipes shall be clean and free from foreign materials before joints are assembled.

E. Change of direction to pipe runs shall be done with fittings. Only gradual bends in pipe runs shall be accepted.

F. Sealant tape shall be used on all threaded joints.

G. All pipeline open ends upon which the WORK has been stopped shall be closed at the end of each day's construction work with a suitable temporary plug to prevent entrance of any foreign materials into the assembled pipeline.

H. Pressure pipe shall be defined as all piping lying "upstream" from remote control valves and quick-coupling lines.

I. Joint Restraint System

1. All ductile iron pipe fittings and mainline gate valves shall be restrained by the joint restraint system. Fittings shall require a 'fitting to pipe restraint' and mainline gate valves shall require a 'valve to pipe' restraint. When required by manufacturer, gasket bell ends of pipe shall require a 'pipe to pipe' restraint.
2. **Concrete thrust blocks shall not be used.**
3. Joint restraints are needed on pipe sized 3" and larger, wherever the main pipe line:
   a. Changes any direction at tees, angles, and crosses vertical and horizontal.
   b. Changes size at reducers.
   c. Stops at a dead-end.
   d. Valves at which thrust develops when closed.
4. **The size and type of joint restraint system depends on a number of factors, including: pressure, pipe size, kind of soil, and type of fitting. Refer to detail table, as well as manufacturer's recommendations for proper sizing and types.**

J. All pipes, lines, and risers shall be flushed thoroughly with water before installation of any heads. All debris and rocks found at that time shall be removed from the area as soon as possible.

K. The areas noted on the details table shall be measured in a place perpendicular to the longitudinal axis of the pipe or to the longitudinal axis of the thrust developed. The thrust block bearing area shall be against undisturbed around.

3.5 VALVES

A. Piping systems shall be supplied with valves at all points as indicated on the Drawings or specified herein so arranged to give complete regulating control throughout. Automatic control valves and gate valves shall be as detailed in the Contract Documents or as otherwise directed by the OWNER.

B. Valves shall be the full size of the line in which they are installed, unless otherwise indicated on the Drawings.

C. Remote control valves shall be adjusted so the most remote irrigation heads operate at the pressure recommended by the head manufacturer. Remote control valves shall be

adjusted so a uniform distribution of water is applied by the irrigation heads to the planting areas for each individual valve system. A union fitting shall be provided on the discharge side of the control valve. They shall be wired to operate in the order as shown. They shall be capable of being operated manually entirely independent of the controller.

D. Isolation shall be installed as indicated on the Drawings.

E. Manual Drain valves shall be shall be installed where indicated on the Drawings.

F. Quick-coupling valves shall be provided, located, and installed as indicated on the Drawings.

3.6 VALVE BOXES

A. All valve assemblies shall be installed as indicated on the Drawings.

B. Install all Valve Boxes no closer than three feet from sidewalks, curbs, and all hard surfaced areas. Where three feet clearance from hardscape is not possible, locate the valve box as far as practical from areas of vehicle traffic. Do not install Valve Boxes at the low point of the landscaping.

C. One valve per valve box unless approved by owner

3.7 IRRIGATION HEADS

A. All nozzles shall be tightened after installation. All irrigation heads having an adjustment stem shall be adjusted on a lateral line for the proper radius diameter and/or flow

B. All irrigation heads shall be set perpendicular to finished grades and at finish ground level.

C. All irrigation heads shall be installed as detailed on the Drawings.

D. The irrigation system shall be thoroughly flushed remove all possible foreign material prior to installation of the irrigation heads.

E. The CONTRACTOR shall protect against re-entry of contaminated water into risers or piping. After flushing, the CONTRACTOR shall immediately install irrigation heads or cap risers until irrigation heads are installed.

3.8 CONTROLLER

A. The CONTRACTOR shall install controller as indicated on the Drawings complete with required waterproof circuit breaker type disconnect switch, per manufacturer's printed recommendations.

B. Controller location is essentially diagrammatic, and the actual installation shall be as specifically located by the OWNER.

C. All local and applicable codes shall be followed in furnishing and/or connecting a 120-volt electrical service to the controller.

D. The controller shall be mounted as indicated on the Drawings, in such a manner that all normal adjustments can be conveniently reached by the operator while in a standing position.

E. The controller shall be grounded as indicated on the Drawings and as recommended by the manufacturer.

F. Provide surge protection measures as recommended by the manufacturer.

G. Adjustment of the controller shall be such that each control valve in the circuit will remain open for a readily adjustable period of 5 or less minutes to 60 minutes. Readily made field adjustments shall include a provision whereby any number of days in a week can be skipped and whereby one or more positions on the controller may be skipped. When any or all of the above adjustments have been made, the controller shall continue to operate automatically as set until further adjustments are made. Provision shall be made for conveniently resetting the start of the irrigation cycle at any time and also for advancing from one position to any other position at will..

H. Timing, sequence and period will be supplied to the CONTRACTOR by the OWNER. At this time, the CONTRACTOR shall adjust the controller for normal operation.

I. The controller shall be single-phase; 120-volt (approx.) ac operated and shall contain an "On-Off" switch and fuse assembly. The controllers shall be equipped with a transformer to reduce voltage to a 24-volt system. Controller station shall be provided as indicated on the Drawings.

3.9 WIRING AND ELECTRICAL WORK

A. All electrical equipment and wiring shall comply with local and state codes and shall be installed by those skilled and licensed in the trade. Unless the governing codes specify otherwise, low voltage control wire may be installed by the CONTRACTOR when code allows.

B. All 110-volt wire shall be installed in conduit and taken from appropriate sources as indicated on the Drawings. CONTRACTOR shall coordinate manufacturer and installer

C. The CONTRACTOR shall provide low voltage, 24-volt direct burial wires. Wire size shall be as shown but shall be not less than No. 14. Where sizes are not shown, they shall be sized per wire manufacturer's sizing charts and specifications.

D. The CONTRACTOR shall provide all wiring, conduits, sleeves, and connection for the low voltage electrical system between controller and valves, and where else shown and necessary for a complete and operable irrigation system.

E. All splices shall be moisture proof using specified electrical connectors.

F. An expansion curl should be provided within 3 ft of each wire connection and at pull box locations. Provide three feet of extra wire in each valve box.

G. All conduits and sleeves necessary for running wires under concrete, walks, and paving shall be furnished and installed before said concrete, walks, and paving work is installed.

H. Wire shall be continuous without splices except at control valves, and shall be routed in main line trench whenever possible.

I. Install 2 extra wires (blue) to the last valve box in each run.

J. Wiring color:
   1. Common: white
   2. Valve: red
   3. Spare: blue

3.10 PIPE TRENCH BACKFILL

A. After pipe and wires have been installed and approved by the Owner's inspection, the trenches shall be backfilled. The backfill operation must provide a firm continuous support for the pipe.

B. Backfill material shall be free of rocks and other materials that may damage the piping.

C. Bottom of trenches shall be smooth and free of sharp rocks and other object that may damage pipe.

D. The initial backfill shall be accomplished by carefully tamping selected material (from material excavated from the trench) under the pipe and between the pipe and the trench.

E. The pipes shall be filled with water and pressurized during backfilling operations if necessary, to prevent drainage to piping.

F. The backfill shall be carefully installed around and over the pipe to approximately 10 inches of the ground surface, then water shall be allowed to flow in the trench. After this puddling operation has been completed and allowed to stand for 24 hours, the balance of the materials shall be placed in the trench to the sub-grade line (leaving room for topsoil) Rocks and other materials found in the backfill shall be removed. The backfill shall be compacted carefully and thoroughly.

G. Couplings and fittings shall be left exposed until leakage tests have been completed.

H. Topsoil shall be installed prior to planting.

I. Install detectable warning tape as indicated on the Drawings.

3.11 TESTING AND ADJUSTMENTS

A. The OWNER shall be notified by the CONTRACTOR prior to performing hydrostatic tests on the irrigation system in place. This test shall be done by the CONTRACTOR in the presence of the OWNER. The test results will be acceptable to the OWNER when no leakage or loss of pressure is evident during the test period. Defects shall be detected and repaired prior to retesting.

B. The irrigation heads shall be adjusted and balanced for optimum and uniform coverage without excessive fogging and overthrow on walks, paving, and structures. The height and elevations of risers and irrigation heads shall be adjusted.

C. Following adjusting and balancing of the irrigation heads, an operating test of the entire system shall be performed by the CONTRACTOR in the presence of the OWNER at normal operating pressures. The test will be considered as acceptable if the system operates in a satisfactory manner providing uniform coverage of irrigated areas for a one week period of automatic operation with no leaks.

3.12 RECORD DRAWINGS

A. Record Drawings shall be furnished to the OWNER at the time of the irrigation system inspection and before acceptance of the operating system by the OWNER.

3.13 ACCEPTANCE AND OPERATION BY OWNER

A. Upon substantial completion of the work and acceptance by the Owner, the OWNER will issue a date of substantial completion letter to the contractor. Contractor shall be responsible for the training of the owner’s maintenance staff in the operation of the system (provide minimum 48 hours written notice in advance of test). The Contractor shall furnish, in addition to the Record Drawings and operational manuals, copies of all available specification sheets and catalog sheets to the Owner's personnel responsible for the operation of the irrigation system. The Contractor shall guarantee all parts and labor for a minimum period of one (1) year from date of substantial completion.

B.

END OF SECTION

SECTION 32 9119
LANDSCAPE GRADING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Landscaping grading requirements.

B. Backfill materials.

1.2 SUBMITTALS

A. Submit maximum laboratory dry density and optimum laboratory moisture content for:

1. Subgrade material, and
2. Each type of fill to be used.

B. Upon OWNER's request, submit a written quality control Inspections and testing report describing source and field quality control activities performed by CONTRACTOR and its Suppliers.

1.3 QUALITY ASSURANCE

A. Do not change material sources, or aggregate without OWNER's knowledge.

B. Reject backfill material that does not comply with requirements specified in this section.

C. Landscape grading is aesthetic by nature and subject to continual monitoring and modification during the backfilling process. Work closely with OWNER particularly when grading and construction berms, channels, or other aesthetic considerations.

1.4 STORAGE

A. Safely stockpile backfill materials.

B. Separate differing materials, prevent mixing, and maintain optimum moisture content of backfill materials.

C. Avoid displacement of and injury to project site/constructed areas while compacting or operating equipment.

D. Movement of construction machinery over project site/constructed areas at any stage of construction is solely at CONTRACTOR's risk.

1.5 SITE CONDITIONS

A. Do not place, spread, or roll any backfill material over material that is damaged by water. Remove and replace damaged material at no additional cost to OWNER.

B. Control traffic and erosion. Keep area free of trash and debris. Repair settled, eroded, and rutted areas.

C. Reshape and compact damaged structural section to required density.

1.6 ACCEPTANCE

A. Native material may be wasted if there is no additional cost to substitute material acceptable to OWNER.

B. For material acceptance refer to.

1. Common fill, Section 31 20 00.

2. Crushed aggregate base, Section 31 20 00.

3. Cement treated fill, Section 31 20 00.

1.7 WARRANTY

A. Any settlement noted in landscaped surfaces will be considered to be caused by improper compaction methods and shall be corrected at no cost to the OWNER.

B. Restore incidentals damaged by settlement at no additional cost to OWNER.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS

A. Common fill, Section 31 2000.

B. Crushed aggregate base, Section 31 1123.

2.2 ACCESSORIES

A. Water: Make arrangements for sources of water during construction and make arrangements for delivery of water to site. Comply with local Laws and Regulations at no additional cost to OWNER when securing water from water utility company.

PART 3 - EXECUTION

3.1 PREPARATION

A. Identify required line, levels, contours, and datum.

B. Stake and flag locations of underground utilities.

C. Upon discovery of unknown utility or concealed conditions, notify OWNER.

D. Verify stockpiled fill meets gradation requirements, areas to be backfilled are free of debris, snow, ice or water, and ground surface is not frozen.

E. If subgrade is not readily compactable secure written authorization for extra excavation and backfill. Refer to Section 31 20 00.

3.2 PROTECTION

A. Protect existing trees, shrubs, lawns, existing structures, fences, roads, sidewalks, paving, curb and gutter and other features.

B. Protect above or below grade utilities. Contact utility companies to repair damage to utilities. Pay all cost of repairs.

C. Protect Subgrade from desiccation, flooding and freezing.

D. Do not fill adjacent to structures until Excavation is checked by OWNER.

E. Do not use compaction equipment adjacent to walls or retaining walls that may cause wall to become over-stressed or moved from alignment.

F. Do not disturb or damage foundation perimeter drainage, foundation, damp-proofing, foundation waterproofing and protective cover, or utilities in Trenches.

G. Restore any damaged structure to its original strength and condition.

3.3 LAYOUT

A. Maintain all benchmarks, control monuments and stakes, whether newly established by surveyor or previously existing. Protect from damage and dislocation.

B. If discrepancy is found between Contract Documents and site, OWNER shall make such minor adjustments in the Work as necessary to accomplish the intent of Contract Documents without increasing the Cost of the Work to CONTRACTOR or OWNER.

3.4 GRADING

A. Grading Intent: Spot elevations and contours indicated are based on the best available data. The intent is to maintain constant slopes between spot elevations. If a spot elevation is determined to be in error, or the difference in elevation between points change, then the minimum percentage of slope as a result of field adjustment of specific spot elevations is as follows:

1. Pavement Areas: 1 percent.
2. Concrete or Brick Areas: 0.30 percent.
3. Lawn or Planted Area: 0.75 percent.

B. Conduct Work in an orderly manner. Do not create a nuisance. Do not permit soil accumulation on streets or sidewalks. Do not allow soil to be washed into sewers and storm drains.

C. Grade slopes to provide adequate drainage after compaction. Do not create water pockets or ridges. Use all means necessary to prevent erosion of freshly graded areas during construction until surfaces have been constructed and landscaping areas have taken hold.

D. Remove surface stones greater than 1 inch from finished grading.

E. In planting areas, provide a finished grade that conforms to Section 32 9300.

3.8 SURFACE RESTORATION

A. Finish landscaped areas as indicated on drawings.

1. Backfill areas to contours and elevations indicated. Do not use frozen materials.
2. Make smooth changes in grade. Blend slopes into level areas.
3. Remove surplus backfill materials from site.
4. Leave stockpile areas completely free of excess fill materials.
5. Slope grade away from building at a minimum of 3 inches in 10 feet unless specified otherwise.

3.9 CLEANING

A. Remove stockpiles from the site. Grade site surface to prevent free standing surface water.

B. Leave borrow areas clean and neat.

END OF SECTION

SECTION 32 92 00

TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Sodding

1.2 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

F. Substantial Completion: The point in time when the Work is sufficiently complete, in accordance with the Contract Documents, that the City can occupy or use the Work for its intended purpose.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
   1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by City for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
   1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
   2. Experience: Three years' experience in turf installation.
   3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
      a. Landscape Industry Certified Technician - Exterior.
      b. Landscape Industry Certified Lawncare Manager.
      c. Landscape Industry Certified Lawncare Technician.
   5. Pesticide Applicator: State licensed, commercial.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk materials with appropriate certificates.

1.7 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial establishment periods to provide required maintenance from date of planting completion.
   1. Spring Planting: 15 March.
   2. Fall Planting: 15 October.
   3. Days considered for the establishment period must be conducive to the growth and establishment of the sod and not non-growing seasonal months.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be

obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 TURFGRASS SOD

A. Turfgrass Sod: The sod supplied by the Contractor shall be grown by a sod grower, well established, pest and weed free, one (1) and one quarter (1-1/4") inches thick, and supplied in rolls or sheets of the industry size. Sod shall be the current year's crop, guaranteed by the supplier as follows:
   1. Bioplay, by BioGrass Sod Farms (801-562-9090).
   2. Or approved equal

B. Turfgrass Sod: Certified, approved, Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.

C. Turfgrass Species: Bluegrass Sod
   1. Sod specifications include but are not limited to:
      a. Shall be grown from a 10 seed blend utilizing at least 6 highly-rhizomatous cultivars that exceed normally accepted industry criterion. Shall be rated highly wear-tolerant, have strong living color, be disease resistant, with strong leaf texture and early spring and late fall green color.
      b. Shall contain no rye grass cultivars.
      c. Shall have a maximum 50# per acre seeding rate.
      d. Shall have a minimum one year root base with strong rhizome development.
      e. Shall be certified noxious weed free.
      f. Shall be Water Wise TurfTM as grown by a Water Wise CertifiedTM grower.
         1) Shall require no more than 30" annual supplemental water during establishment and no more than 20" annual supplemental water after establishment.
         2) Shall contain a strong root base capable of root penetration to a minimum depth of 8" into landscape soil.
      g. Growing medium shall be a sandy soil (75% sand, 17% silt, 8% clay) with low clay content.
      h. Shall be grown without netting.
      i. Shipping mow height shall be 1-1/2".

2.2 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
   1. Fertilizer shall be a complete mixture, analyzing sixteen (16)% Nitrogen; sixteen (16)% Phosphoric Acid; and eight (8)% Pot Ash, of commercial type and applied at a rate of six (6) pounds per thousand (1000) square feet of area.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
   1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
   2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.3 SOIL AMENDMENTS

A. Soil amendment shall be dairy based organic compost material. Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content of 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
   1. Organic Matter Content: 35-50 percent of dry weight.
   2. Sod lawn areas apply at a rate recommended by Soils Report.
   3. Seed areas apply at a rate recommended by Soils Report.
   4. Rototil compost with native soil and mix thoroughly to a minimum depth of six (6”) inches.

2.4 PESTICIDES

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

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Project Manager and replace with new planting soil.

3.2 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
   2. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. Irrigation system must be fully operational before commencement of planting operations.

B. All areas of fill, i.e., trenches, mounds, etc., shall be compacted and settled as specified in the Grading and excavation of sprinkler irrigation sections of this project before any topsoil is placed on areas to be sodded.

C. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

D. Before topsoil is spread, the sub-grade shall be scarified to a depth of four (4) inches to ensure proper bonding with applied topsoil if it has been compacted due to weather or equipment. The area shall be leveled, weeded and raked free of stones larger than one half (1/2") inch in diameter and other debris.

E. Topsoil shall be spread to a depth of four (4) inches or as directed by the Project Manager.

F. Any existing topsoil used in sodded areas shall be loosened and pulverized to a depth of four (4) inches and all stones over one (1) inch in any dimension, sticks, roots, rubbish, or other extraneous matter, shall be removed from the premises. The surface will be fine graded so that when settled, the surface is free from depressions or ridges and will conform to the required grades indicated. The surface shall be smooth, loose, and of uniformly fine texture at the time of installation.

G. Any areas containing new topsoil shall be rolled by a hand roller on small areas. After rolling at a weight of 150-200 pounds per linear foot of roller, the bed shall again be graded to the specified grade with a smooth surface. Large areas shall be final graded by passing a land plane in three different directions over the entire area to be planted.

H. New turf shall be installed so that the finished grade shall be one-half (1/2) inch below the top of adjacent paving or meeting exactly the grade of existing lawn.

I. The Contractor shall prepare no more ground than can be sodded in a twenty-four (24) hour period. Sod shall be placed within 24 hours of ground preparation. The ground shall be re-prepared if weather or traffic has compromised the friability of the prepared area.

J. No sodding shall be done immediately after a rain storm of if a prepared surface has been compacted without first loosening the surface to a smooth, loose, uniformly fine texture just prior to sodding.

K. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

L. The specified fertilizer shall be applied and incorporated into the upper four (4) inches of topsoil at a rate of six (6) pounds per thousand (1000) square feet.

M. Before planting, obtain Project Manger's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SOD AVAILABILITY AND CONDITION

A. The Contractor shall satisfy himself as to the existing conditions prior to any construction. The Contractor shall be fully responsible to furnish and lay all sod required on the plans. He shall furnish new sod as specified above and lay it so as to completely satisfy the intent and meaning of the plans and specifications at no extra cost to the City.

B. In the case of any discrepancy in amount of sod to be removed or amount to be used, it shall be the contractor's responsibility to report such to the Project Manager prior to commencing the work.

C. Any condition of the sod that shall prevent it from being lifted shall also be reported to the Project Managers. This shall not relieve the Contractor of the responsibility of removing the sod necessary to complete the project.

3.5 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy. No sod shall be stored on the site for longer than two (2) days. Sod that becomes yellow, dry, or broken, shall be removed from the site by the Contractor at his expense.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. No partial strip or pieces will be accepted. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. All work shall be done from boards laid on top of the prepared surface or on already laid sod. Care shall be taken to prevent foot prints or other disturbances to the prepared bed, other than absolutely necessary. Any such disturbances shall be promptly repaired so that the sod will be laid on a proper bed to insure the necessary bonding between it and the sod.
2. Lay sod across slopes exceeding 1:3.
3. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. See table below for recommended watering amounts for the first month after installation:

Week	1st	2nd	3rd	4th
How often to water	Every Day	Every Other Day	Every Third Day	Every Fourth Day
April	*			

May	*	1/3	1/2	2/3
June	1/4	1/2	2/3	3/4
July	1/4	1/2	2/3	3/4
August	1/4	1/2	3/4	1
September	*	1/3	1/2	2/3
October	*			
	*Apply ¼ of an inch as needed			

3.6 SOD LIFTING

A. All sod shall be removed from areas of construction (i.e., where walks, concrete slabs, buildings, etc., will be built) prior to excavation and other operations or when sod lifting is specified.

B. Prior to beginning to lift any large quantities of sod, the Contractor shall notify the Project Manager in sufficient time for notification of the Park Maintenance Personnel, so that they can schedule the removal of the sod from the site to lay at another park site.

C. When the sod is to be used by the Park Maintenance Personnel, as specified on the plans, the sod pieces shall be cut by a mechanical sod cutter into uniform pieces with square comers. Individual pieces shall not exceed sixteen (16) inches wide and forty-eight (48) inches long or the current standards size of the sodding industry. All sod shall be cut to a thickness of no more than one and one-quarter (1-1/4) inches, but no less than the sodding industry standards.

3.7 TOP DRESSING

A. All areas which are sodded shall be top dressed with the top dressing specified above during or at the end of the establishment period to fill in noticeable gaps between seams. The top dressing shall be first applied by spreading it over the sod and then carefully working it into the joints with a stiff brush or mat.

B. All sodded areas shall be thoroughly watered after the top dressing is applied. Watering must be done carefully so as to avoid puddling or washing. Further work shall be curtailed until the area is dried sufficiently to allow sodding continuance without damage to already laid sod or the prepared bed.

3.8 TURF ESTABLISHMENT

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, re-grade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
   1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
   2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
   3. The Contractor shall submit a watering schedule to the Project Manager.

C. Mow turf as soon as top growth is tall enough to cut, no higher than 3 inches. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
   1. Mow Kentucky bluegrass to a height of to 2 inches.

D. Turf Post-fertilization: Apply commercial fertilizer after initial mowing and when grass is dry.
   1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

E. Turf Establishment Service: Provided by skilled employees of landscape Installer. Maintain as required in "Acceptable Turf Establishment," article 3.13. Begin establishment services immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
   1. Seeded Turf: 60 days from date of planting completion.
      a. When initial establishment period has not elapsed before end of planting season, or if turf is not fully established, continue establishment during next planting season.
   2. Sodded Turf: 30 days from date of planting completion.

3.9 ACCEPTABLE TURF ESTABLISHMENT

A. The Contractor shall be responsible for all sodded and seeded areas during the Turf Establishment period. The Establishment Period shall begin at the time sodding or seeding for the entire project is completed and continues until all turf meets establishment criteria.

B. Turf installations shall meet the following criteria as determined by the Project Manager before Acceptance of Turf and Substantial Completion will be issued in writing:
   1. Acceptable Seeded Turf: Turf Establishment shall be achieved when the turf is a healthy, uniform, close stand of grass, free of weeds and surface irregularities, with coverage exceeding 95 percent over any 10 square foot area and bare spots not exceeding 4 by 4 inches.
   2. Acceptable Sodded Turf: Turf Establishment shall be achieved when the turf is healthy, well-rooted, even-colored, viable turf, free of weeds, open joints, bare areas, and surface irregularities.

C. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

D. Written notice requesting establishment inspection shall be submitted to the Project Manager at least three (3) days prior to the anticipated inspection date.

3.10 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with City's operations and others in proximity to the Work. Notify Project Manager before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.11 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off City's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Remove non-degradable erosion-control measures after grass establishment period.

END OF SECTION

SECTION 32 9300
LANDSCAPE PLANTING

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall perform all the landscaping and all appurtenant work, complete, in accordance with the requirements of the Contract Documents.

B. **Scope of Work**: Landscaping as referred to herein shall include, but not be limited to the following work: soil preparation, weed control, finish grading, furnishing and installing plant materials, tree staking and tying, cleanup, maintenance, and guarantee.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Federal Specifications:

1. FS O-F-241 D Fertilizer, Mixed, Commercial

B. Commercial Standards:

1. ANSI/ASTM D 422 Method for Particle-Size Analysis of Soils
2. ANSI Z601 Nursery Stock
3. American Association of Rules and Grading Provisions Nurserymen, Inc.

1.3 CONTRACTOR SUBMITTALS

A. **General**: The CONTRACTOR shall furnish a certificate with each delivery or bulk material delivery, stating source, quantity, and type of material. All materials shall conform to specification requirements. All certificates shall be delivered to the OWNER at time of each delivery. All bulk delivered materials shall be delivered with level load volume plainly marked on the truck bed.

B. Submittals required:

1. Existing Topsoil Report (including amendment recommendations)
2. Literature on Fertilizers and additives
3. Bark Mulch
4. Rock Mulch
5. Weed Barrier Fabric
6. Literature on staking materials

1.4 QUALITY ASSURANCE

A. **General:** All plants furnished by the CONTRACTOR shall be true to type or name as shown in the Contract Documents and shall be tagged in accordance with the standard practice recommended by the Agricultural Code of the State of Utah; however, determination of plant species or variety will be made by the OWNER.

B. All plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and certificates shall be delivered to the OWNER.

C. All inspections herein specified will be made by the OWNER or its representative. The CONTRACTOR shall request inspection at least 24 hours in advance of the time inspection is required. Inspection will be required on the following stages of the WORK:

1. During preliminary grading, soil preparation, and initial weeding.
2. When trees are spotted for planting, but before planting holes have been excavated.
3. When finish grading has been completed.
4. When all specified work, except the maintenance period has been completed.
5. Final inspection at the completion of the maintenance period.

D. Plants shall be subject to inspection and approval or rejection by the OWNER at place of growth and upon delivery to the site at any time before or during progress of the WORK and according to:

1. Quantity, quality, size, and variety;
2. Ball and root condition; and
3. Latent defects and injuries resulting from handling, disease, and insects.

E. Plants approved at pre-planting inspection shall still be subject to rejection during planting if found to be below Specifications.

F. Rejected plants shall be identified in an obvious manner, promptly removed from the site and replaced with acceptable equals.

G. Plants shall have been grown in nurseries which have been inspected by the governing authorities. Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the CONTRACTOR, who shall have secured permits or certificates prior to delivery of plants to site.

1.5 CLEANUP

A. Upon completion of all planting operations, the portion of the project site used for a work or storage area by the CONTRACTOR shall be cleaned of all debris, superfluous materials, and equipment. All such materials and equipment shall be entirely removed from the project site as specified in Division 01 Section “Project Closeout”.

B. All walks or pavement shall be swept or washed clean upon completion of the work of this Section.

C. During the entire Contract period, plant containers that have been cut or removed from plant materials shall be removed from the project site daily, in accordance with the provisions for maintenance and guarantee as specified in Division 01 Section “Project Closeout”.

1.6 MAINTENANCE OF LANDSCAPE PLANTING PRIOR TO ACCEPTANCE OF PROJECT

A. **General**: The CONTRACTOR shall be responsible for protecting, watering, and maintaining all planting and irrigation systems until final acceptance of all work under the contract.

B. At time of acceptance of the complete project, the lawn shall be totally established with no bare spots, mowed a minimum of 2 times, and the grass shall be at least 1-1/4 to 2 inches in height.

C. **Watering**: Trees and shrubs shall be thoroughly soaked after planting and provided with additional water at intervals as necessary to provide for good health and growth of the planting.

D. **Upon completion** of lawn sodding, the entire area shall be soaked to saturation by a fine spray. The new planting shall be kept watered by the irrigation system existing on the site

during dry weather or whenever necessary for proper establishment of the lawn. Care shall be taken to avoid excessive washing or puddling on the surface and any such damage caused thereby shall be repaired by the CONTRACTOR at its own expense.

E. **Protection**: The CONTRACTOR shall provide adequate protection to all newly planted areas including the installation of approved temporary fences to prevent trespassing and damage, as well as erosion control, until acceptance.

F. The CONTRACTOR shall replace any materials or equipment it has damaged or which has been damaged by its employees or subcontractors.

G. Partial utilization of the project shall not relieve the CONTRACTOR of any of the requirements contained in the Contract Documents.

H. **Mowing of Lawn Areas**: First mowing of lawn areas shall begin as soon as the grass has reached a height of 3 inches and subsequent mowing shall be at least once a week, or as often as necessary to maintain all lawn areas at a uniform height of 1-1/2 to 2 inches.

I. All lawns shall be fertilized every 3 weeks with 6 lb of 16-8-8 commercial fertilizer per 1000 sq ft for the first 7 weeks and fertilized thereafter once each 5 months prior to acceptance.

J. Plants shall be maintained in a vigorous, thriving condition by watering, cultivating, weeding, pruning, leaf removal, spraying, and other operations necessary. No trees or shrubs will be accepted unless they are healthy and show satisfactory foliage conditions.

K. All planted areas shall be cultivated at least every 2 weeks and raked smooth, to present a neat appearance and additional mulch shall be added where necessary.

L. Maintenance shall include, in addition to the foregoing, cleaning, edging, repairs to stakes, wire, and wrappings, the repair of erosion, and all other necessary work of maintenance. Sidewalks and other paved areas shall be kept clean while planting and maintenance are in progress.

M. Any and all irrigation lines broken or disrupted during this construction shall be replaced to proper working order prior to contract work and be acceptable to the OWNER.

1.7 FINAL INSPECTION AND GUARANTEE

A. Inspection of work of lawns and planting will be made at conclusion of maintenance.

B. Written notice requesting inspection shall be submitted to the OWNER at least 10 days prior to the anticipated inspection date.

C. Final acceptance of the WORK prior to guarantee period of the contract will be accepted upon written approval by the OWNER, on the satisfactory completion of all work, including maintenance, but exclusive of the replacement of plant material.

D. Any delay in the completion of any item of work in the planting operation which extends the planting into more than one season shall extend the guarantee in accordance with the date of completion given above.

E. The CONTRACTOR shall replace, as soon as weather conditions permit, all dead plants and all plants not in a vigorous, thriving condition which are noted at the end of the one year guarantee period.

F. Plants used for replacement shall be of the same size and variety specified in the plant list. Plants shall be furnished, planted, staked, and mulched as specified.

G. All work done under this contract shall be left in good order to the satisfaction of the OWNER and the CONTRACTOR shall, without additional expense to the OWNER, replace any trees, shrubs, etc., which develop defects or die during the one-year guarantee period.

1.8 GUARANTEE FOLLOWING ACCEPTANCE OF PROJECT

A. General: The CONTRACTOR shall be responsible for a period of one year after date of acceptance of all work under the Contract, for all necessary plant or tree replacements. The CONTRACTOR shall provide a written guarantee to the OWNER from the landscaping subcontractor, embodying the provisions of this Section of the Specifications.

B. The WORK covered by the guarantee portions of these specifications consists of providing all replacements of plants, labor, materials, equipment, and supplies and in performing all operations in connection with guarantees.

C. The CONTRACTOR shall clean-up and remove unused or waste materials from the site and leave the area in a neat condition (satisfactory to the OWNER) whenever it performs work during the guarantee Period.

D. **Final Inspection**: The OWNER and CONTRACTOR shall make a final inspection at the end of the one-year guarantee period. Any plants and materials found defective at time of final inspection shall be replaced within a time agreed upon by both parties. If it is too late in the planting season for replanting, the replacements shall be made during the next planting season even though such planting may run beyond the maintenance and correction period.

PART 2 - PRODUCTS

2.1 GENERAL

A. All landscaping materials for soil conditioning, weed abatement, or planting shall be first-grade, commercial quality and shall have certificates indicating the source of material, analysis, quantity, or weight attached to each sack or container or provided with each delivery. Delivery certificates shall be given to the OWNER as each shipment of material is delivered. A list of the materials used, together with typical certificates of each material, shall be submitted to the OWNER prior to the final acceptance of the job.

2.2 TERMINOLOGY AND QUALIFICATIONS

A. Plants or plant material having characteristics not conforming to terms as defined will not be accepted. The terms "plant material" or "plants" refer to all vegetation, whether trees, shrubs, ground cover, or herbaceous vegetation.

B. Quality refers to structure and form, as evidenced by density and number of canes and branches, compactness, symmetry, and general development without consideration of size or condition. Standard quality indicates the least acceptable quality. Plants shall be typical of the species and variety of good average uniform growth, shall be well formed and uniformly branched, and shall have the minimum number of canes specified, free from irregularities, or shall conform to minimum quality index. Where the number of canes

is not specifically stated in describing this grade, the standards of the "Horticultural Standards" as adopted by the American Association of Nurserymen, shall apply. In this case, the number of canes and other factors for the appropriate classification under "quality definition" in the Horticultural Standards shall be the Quality index. Plant material below this standard will be considered "culls" and are not acceptable. Plants shall be nursery grown.

C. Specimen means an exceptionally heavy, symmetrical, tightly-knit plant, so trained or favored in its development and appearance as to be outstanding, superior in form, number of branches, compactness, and symmetry.

D. Size is the factor controlled by dimensions representing height or spread, or both, without consideration of quality or conditions. For standard quality, a dimension is given for height or container size, or a dimension is given for height as well as container size.

E. Height is usually indicated with a tolerance. The smaller dimension is the minimum acceptable. The larger dimension represents the maximum permissible. The average dimension of all plants must equal the average of the tolerance figures shown on each item

F. Condition is the factor controlled by vitality and ability to survive and thrive and be comparable with normal plants of the same species and variety in the vicinity, at the same season of the year. In addition, plants shall be free from physical damage or adverse conditions that would prevent thriving. Conditions also sometimes refer to state of growth, i.e., whether "dormant condition" or "growing condition" and this state shall be comparable to plants of similar species in the vicinity or leaves, formation of buds, and the like.

G. Cane means a primary stem which starts from the ground, or close to the ground, at a point not higher than 1/4 the height of the plant.

H. Caliper shall be taken 12 inches above the finish grade or ground, as a guide, or where a dimension in trunk appears to form the head of the tree.

I. Foliage line is maximum dimension in case of specimen plants. It measures from ground to lowest part of body of plant.

J. Collected plants shall not be used.

2.3 TOPSOIL

A. Existing topsoil may be used if it meets the same requirements for topsoil borrow listed below.

B. Topsoil shall meet all specifications below for either “Ideal” or “Acceptable” categories. Soil that falls within the “Not-Acceptable” range shall not be used.

TOPSOIL QUALITY*

Category	pH	Soluble Salts dS/m or mmho/cm	Sodium Absorption Ratio (SAR)	Organic Matter %	Sand %	Silt %	Clay %	Texture Class
Ideal	5.5-7.5	<2	<3	≥2.0	<70	<70	<30	Loam (L), Silt Loam (SiL)
Acceptable	5.0-8.2	<4	3 to 7 SiL, SiCL, CL 3 to 10 SCL, SL, L	≥1.0	<70	<70	<30	Sandy Clay Loam (SCL) Sandy Loam (SL) Clay Loam (CL) Silty Clay Loam (SiCL)
Not-Acceptable	<5.0 >8.2	>4	>10	<1.0	≥70	≥70	≥30	Loamy Sand (LS) Sandy Clay (SC) Silty Clay (SiC) Sand (S), Silt (S), Clay (C)

COARSE FRAGMENTS*

Category	%>2 mm (>5.0% exceeds guidelines)	Rocks Present >1.5" (>1.5" exceeds guidelines)
Ideal	□2.0	—
Acceptable	2.1-5.0	—
Not-Acceptable	>5.0	—

TOPSOIL NUTRIENT SPECIFICATION*

	Nitrate Nitrogen ppm	Phosphorus ppm	Potassium ppm	Iron ppm
Ideal / Acceptable	>20	>15	>150	>10

*from “Topsoil Quality Guidelines for Landscaping”, June 2002, AG/SO-02, prepared by Rich Koenig, Utah State University Cooperative Extension Soil Specialist, and Von Isaman, QA Consulting and Testing, LLC.

C. **Mechanical Analysis** shall be performed and shall conform to ANSI/ASTM D 422.

2.4 FERTILIZER AND ADDITIVES

A. Fertilizer and additives shall be determined by the Topsoil Analysis and based on section 2.3.

B. Fertilizer shall be furnished in bags or other standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon.

C. Chemical fertilizers shall be a mixed commercial fertilizer conforming to FS O-F-241 D, Type I, with percentages of nitrogen, phosphoric acid, and potash at 5-10-5 and 16-16-8. The combined N-P-K content shall be following percentages of total weight: 5 percent nitrogen 10 percent phosphoric acid and 5 percent potash. Fertilizers shall be uniform in composition, dry, and free flowing.

D. Tablets shall be 21 grams each 20-10-5 Agriform, Lesslie, or approved equal.

2.5 MULCH

A. Bark Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Shredded wood and bark chips.
2. Size Range: 3 inches maximum, 1/2 inch minimum.
3. Color: Natural.

B. Rock Mulch 1-1/2” minus crushed rock - tan.

2.6 WEED BARRIER FABRIC

A. Weed barrier fabric shall be one of the following:

1. "Dewitt Weed Barrier Pro 5
2. or approved equal.

2.7 PLANT MATERIALS

A. Plants shall meet requirements of the Contract Documents and shall be in accordance with the botanical names and applicable standards of quality, size, condition, and type. They shall be true to name, genera, species, and variety in accordance with reference publications.

B. Plant names are defined in "Standardized Plant Names" and "Bailey's Encyclopedia of Horticulture." When a name is not found in either reference, the accepted name used in the nursery trade shall apply.

C. Plants shall be marked for identification. Each bundle of plants and at least 25 percent of each species and variety of separate plants in any one shipment shall have legible labels securely attached before delivery to the site.

D. All trees and shrubs shall be measured while their branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch or root tip to tip. No trees will be accepted with their leaders cut, or so damaged that cutting is necessary.

E. All plants shall be symmetrical and shall conform to the size, age, and condition as specified on the plant list shown in the Contract Documents. Exceptions are as follows:

1. Plants larger than specified in the plant list may be used if approved by the OWNER, but use of such plants shall not increase the contract price. If the use of larger plants is approved, the spread of roots or ball earth shall be increased in proportion to the size of the plant. Bare root plants furnished in size greater than specified shall be balled and burlaped when required by the OWNER
2. Where caliper or other dimensions of any plant materials are omitted from the Plant List, it shall be understood that such plant materials shall be normal stock for type

F. Plants shall be of sound health, vigorous, and free from plant disease and shall be well-branched, shall have full foliage when in leaf, and shall have a healthy well-developed normal root system. Cold storage plants will not be accepted. Plants that are sensitive to shock from elevation change shall be grown at elevations close enough to site to alleviate any plant damage due to such change for at least 2 years.

G. Bare rooted (BR) plants shall have well-developed branch systems and vigorous root systems. They shall be dug to sufficient depth to insure full recovery and development of the plants. Roots of these plants shall be covered with a uniformly thick coating of mud being puddled immediately after they are dug

H. Balled and burlaped (BB) plants shall have firm, natural balls of earth, or diameter not less than that specified and of sufficient depth to include all the fibrous and feeding roots. No plant moved with a ball will be accepted if the ball is cracked or broken before or during plant operations, except on special approval of the OWNER

I. Roots or balls of all plants shall be adequately protected at all times from sun and drying winds.

J. Plants (indicated to be in marked cans, pots, or other containers on the plant list) shall have been grown in the containers for a minimum of 6 months and a maximum of 2 years. Roots shall fill the containers but show no evidence of being or having been root bound.

K. Trees shall have straight trunks and all old abrasions and cuts shall be completely callused over. In no case shall trees be topped before delivery.

L. Plants shall have been transplanted or root-pruned at least once in the 2 years. Plants shall not be pruned prior to delivery except as authorized by the OWNER.

2.8 STAKING MATERIALS

A. Staking System: As indicated on Drawings

B. Guying System: As indicated on Drawings.

C. Flags: Standard surveyor's plastic flagging tape, white, 8 inches long.

PART 3 - EXECUTION

3.1 GENERAL

A. Irrigation system must be fully operational before commencement of planting operations.

B. The landscape work shall not be performed at any time when it may be subject to damage by climatic conditions.

C. The CONTRACTOR shall verify all dimensions in the Contract Documents. Dimensions and plant locations shown shall be coordinated with OWNER and final location shall be site-oriented by the planter and OWNER. Any discrepancies or inconsistencies discovered shall be brought to the attention of the OWNER.

D. In case of conflict between the plant list totals and total plant count of the Contract Documents, the CONTRACTOR shall provide the higher number of plants.

E. Delivery of materials may begin only after samples and tests have been approved by the OWNER All materials furnished for the work shall be not less than the approved sample.

F. Substitutions for the indicated plant materials may be permitted pursuant to the Contract Documents.

G. The CONTRACTOR shall provide temporary fencing, barricades, covering, or other protections to preserve existing landscaping items indicated to remain and to protect the adjacent properties and other structures when they may be damaged by the landscape work. As indicated on Drawings.

H. Waste materials shall be removed and disposed of off the OWNER's property, unless otherwise indicated.

I. It shall be the responsibility of the CONTRACTOR to avail itself of any information regarding utilities which are in the area of work and to prevent damage to the same. The CONTRACTOR shall provide protection to the utilities as necessary.

J. Burning of combustible materials on the site shall not be permitted.

K. The CONTRACTOR shall provide protection to structures, sidewalks, pavements, and other facilities in areas of work which are subject to damage during landscape work. Open excavations shall be provided with barricades and warning lights which conform to the requirements of governing authorities and the State's OSHA safety requirements from dusk to dawn each day and when needed for safety.

L. Planting areas include all areas to be landscaped unless, specified or shown, otherwise.

3.2 SOIL PREPARATION

A. The landscape work shall not begin until all other trades have repaired all areas of settlement, erosion, rutting, etc., and the soils have been re-established, re-compacted, and refinished to finish grades. The OWNER shall be notified of all areas which prevent the landscape work from being executed.

B. Areas requiring grading by the landscaper including adjacent transition areas shall be uniformly level or sloping between finish elevations to within 0.10-ft above or below required finish elevations.

C. The landscape work shall not proceed until after walks, curbs, pavings, edging, and irrigation systems are in place. The contract operations shall be completed to a point where the landscape areas will not be disturbed. The subgrade shall be cleaned free of waste materials of all kinds.

D. During grading waste materials in the planting areas such as weeds, rocks (1 inches and larger) building materials, rubble, wires, cans, glass, lumber, sticks, etc., shall be removed from the site. Weeds shall be dug out by the roots.

E. Fertilizers, additives, peat, etc. subject to moisture damage shall be kept in a weatherproof storage place in such a manner that they will be kept dry.

F. Finish subgrade and topsoil placement and grading shall consist of:

1. Prepare subgrade by rough grading and removing all irregularities and debris. Dig subgrade down as required in shrub beds and turf areas for the placement of topsoil. Provide laser leveling on large flat areas to create a uniform level subgrade.
2. Planting areas shall have all road base and other debris removed prior to placement of topsoil. Subgrade soil shall be in a loosened and rough surface finish before topsoil is placed over subgrade. (Sub-grade surface shall not be smooth, but a rough surface shall exist for a transition zone of topsoil to subsoil.) If areas of subgrade become compacted before topsoil is placed, subgrade shall be tilled again before topsoil placement.
3. Adding amendments (compost, & fertilizers as recommended by topsoil report) and thoroughly mixing amendments by mechanical means to produce evenly mixed amended topsoil prior to placement topsoil.
4. Till lawn and planting area subsoil's and topsoil's that are compacted.
5. After tilling or placement of topsoil, bring areas to uniform grades by floating and/or hand raking. In large open level areas, perform laser leveling to create uniform level areas.
6. Make minor adjustment of finish grades as directed by the project manager.
7. Remove waste materials over 1" in size such as stones, roots, or other undesirable foreign materials and finish raking, dishing, dragging, and smoothing soil ready for planting.
8. No grading or soil placement shall be undertaken when soils are wet or frozen

G. Any unusual subsoil condition that will require special treatment shall be reported to the OWNER

H. Topsoil shall be uniformly distributed over all areas where required.

I. Surface drainage shall be provided as shown by molding the surfaces to facilitate the natural run-off of water. Low spots and pockets shall be filled with topsoil and graded to drain properly.

J. Finish grade for sodded areas shall be 2 inches below finish grade of adjacent pavement. Finish grade (top of bark mulch) shrub bed areas shall be 1 inches below finish grades of adjacent pavement.

3.3 DELIVERY, STORAGE, AND HANDLING OF PLANT MATERIALS

A. No plants other than the required samples shall be dug or delivered to the site until the required inspections have been made and the plant samples are approved

B. Plants shall not be pruned prior to delivery except upon approval by the OWNER.

C. Plant material shall be planted on the day of delivery if possible. The CONTRACTOR shall protect the stock in a temporary nursery at the project site where it shall be protected from sun and drying winds and shall be shaded, kept moist, and protected with damp soil, moss, or other acceptable material. Plants shall be planted within 2 days after delivery.

D. All balled and burlapped plants which cannot be planted immediately in delivery shall be set on the ground and shall be well protected with soil, wet moss, or other acceptable material. Bare rooted plants, which cannot be planted immediately, shall be planted on heeled-in trenches immediately upon delivery. No material heeled-in more than one week may be used. Bundles of plants shall be opened and the plants separated before the roots are covered. Care shall be taken to prevent air pockets among the roots.

E. During planting operations, bare roots shall be covered with canvas, wet straw, or other suitable materials. No plants shall be bound with wire or rope at any time so as to damage the bark or break branches.

F. Plants shall not be picked up or moved by stem or branches, but shall be lifted the ball or container.

G. Plants shall be lifted and handled from the bottom of the ball or container. Plants with balls cracked or broken before or during planting operations will not be accepted and shall be immediately removed from the site.

3.4 TREE AND PLANT LOCATIONS

A. The CONTRACTOR shall locate and stake all tree and shrub locations and have the locations approved by the OWNER before starting excavation for same. The plant locations shall be observed, and their locations shall be adjusted as directed by OWNER before final approval.

B. No trees shall be located closer than 72 inches to structures unless otherwise shown. Ground covers and shrubs may be planted up to structures or curbs.

3.5 PLANT PITS

A. Plant pits, centered on location stakes, shall be excavated circular pits with vertical sides and flat or saucer shape bottom in accordance with the following sizes unless shown

1. Tree pits shall be at least 3 times greater in diameter than the specific diameter of ball or spread of roots, and at depth of ball or roots.
2. Tree pits shall include drainage sump as indicated on the drawings.
3. Shrubs shall be planted in pits or holes of soil the depth of ball below finished grade, or as much deeper as necessary to properly set the plant at finished grade.

3.6 PREPARED BACKFILL

A. Tree and shrub pit backfilling soil shall consist of topsoil.

B. Tree and shrub pits shall be provided with fertilizer tablets as follows:

1. 1 per one-gallon can plant
2. 3 per 5-gallon can plant
3. 4 per trees

3.7 ROCKS OR UNDERGROUND OBSTRUCTIONS

A. In the event that rock or underground obstructions are encountered in the excavation of plant pits, alternative locations shall be selected by the OWNER. Moving of trees to alternative locations shall not entail additional costs to the OWNER.

3.8 SETTING PLANT MATERIALS

A. The soil shall not be worked when the moisture content is so great that excessive compaction will occur, nor when it is so dry that a dust will form in the air or that clods will not break readily. Water shall be applied if necessary to provide ideal moisture for filling and for planting as herein specified.

B. Plants shall be set in center of pits as shown in the Contract Documents. They shall be set plumb and straight, and at such a level that after settlement that the crown of the plant will be 1 to 2 inches above the finished grade.

C. Balled and burlapped trees shall have planting soil placed and compacted around base of ball to fill all voids. All burlap, ropes or wires shall be removed from the sides and tops of balls.

D. All ground cover plants shall be evenly spaced, staggered in rows, and set at intervals specified, so as to produce a uniform effect. Plants shall be watered immediately after planting operations have been completed.

E. All shrubs and vines shall be pruned to remove damaged branches. All bare root shrubs shall be pruned and shaped to compensate for transplant root loss.

F. Planting soil around roots or balls shall be thoroughly compacted and watered. After planting, the soil in the shrub beds shall be cultivated between shrubs, raked smooth, and neatly outlined. Muddy soil shall not be used for backfilling. All broken or frayed roots shall be properly cut off.

G. Trees and shrubs on slopes steeper than 6 to 1 shall be provided with watering dams or berms at least 6 inches high and 8 inches wider than planting pit (hole) unless specified or shown otherwise.

H. All trees shall be thoroughly watered immediately after planting.

I. Remove all tags and labels when directed by OWNER.

3.9 STAKING AND TREE WRAPPING

A. Staking of trees shall be done immediately after they are planted. Plants shall stand plumb after staking. Staking shall be as indicated on Drawings.

B. Trees 2-inch caliper and less shall be supported by 2 stakes placed diametrically opposite at perimeter line of ball and to sufficient depth to hold tree rigid. Stakes shall be driven vertically and not twisted or pulled. Trees shall be wired to each stake as indicated on Drawings.

C. All deciduous trees greater than 2-inch caliper and all evergreen trees 6'-0" and taller shall be triple staked or guyed as indicated on Drawings.

3.10 PRUNING AND MULCHING

A. Each tree and shrub shall be pruned in accordance with standard horticultural practice to preserve the natural character of the plant in the manner fitting its use in the landscape design. Prune plant material only as approved by the OWNER.

B. All dead wood or suckers and all broken or badly bruised branches shall be removed by thinning out and shortening branches. Deciduous bare-rooted plants shall have not less than 1/3 of their respective leaf surfaces removed. All cuts shall be made just above a healthy bud. Pruning shall be done with clean, sharp tools.

C. Plants shall be mulched after planting and cultivating have been completed. A layer of mulch materials, as hereinbefore specified, shall be spread on finished landscaping grade within all planting areas to depths as indicated on the drawings. The mulch around isolated trees shall be 3 feet in diameter. All shrub and ground cover beds shall be completely covered with the mulch as indicated on the Drawings.

3.11 MISCELLANEOUS ITEMS

A. Mulch shall be placed in the planting areas as shown, spread carefully and evenly to a depths as indicated on the drawings over the entire area. Bark mulch installed in tree rings in turf areas.

B. Rock mulch shall be placed in the landscape areas as noted on plans, spread carefully and evenly to a minimum depth as noted on plans over weed barrier fabric.

C. Install weed barrier fabric only under rock mulch areas – see plans.

END OF SECTION

SECTION 33 05 14

UTILITY GRADE ADJUSTMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Raise, lower, or change slope of Street Fixtures.
B. Install Cover Collars.
C. This section is NOT APPLICABLE to raising and lowering Street Fixtures that withstand internal pressure.

1.2 DEFINITIONS

A. Box: A structure such as a valve box, meter box, monument box, fire hydrant box, electrical pull box, cleanout box or other like structure not intended for human entry.
B. Cover Collar: A concrete filled annular space between metal frames and the adjacent Pavement structural section.
C. Extension Ring: A concrete or metal ring used to adjust surface elevations and surface cross slopes of Street Fixture covers. Metal rings are used between metal frames and metal covers or grates. Concrete rings are used below metal frames or in the concrete structure below.
D. Manhole: A structure designed to permit human entry and working space inside and to confine and control the flow of pipe-conveyed fluids. These structures are collectively referred to as manholes regardless of composition, design, type or depth.
E. Street Fixture: The top of existing structures such as but not limited to Manholes, catch basin, sumps, inlets, valve boxes, meter boxes, monument boxes, and similar structure in a thoroughfare surface.
F. Vault: A structure intended for human entry containing electrical/telephone facilities or other like utilities.

PART 2 - PRODUCTS

2.1 PAVEMENT

A. Asphalt Concrete: AC-20-DM-1/2, Section 32 12 05.
B. Cast-in-place Concrete: Class 4000, Section 03 30 04.

2.2 GROUT

A. Hydraulic cement.

2.3 EXTENSION RINGS

A. Metal: Cast iron or steel.
B. Cast-in-place Concrete: Class 4000, Section 03 30 04.

PART 3 - EXECUTION

3.1 PREPARATION

A. Determine condition of existing incidental structure. Any item not reported damaged prior to construction shall be considered unbroken and must be replaced by CONTRACTOR at no additional cost to OWNER.
B. Provide invert cover over pipe in cleanout box to prevent gravel, concrete, or debris from entering pipeline.
C. Unless indicated otherwise, arrange for utility companies to adjust their own structures.
D. Coordinate all adjustments with requirements of affected utility company.

3.2 ADJUST STRUCTURE TO GRADE

A. Restrict excavation around the structure to a minimum area.
B. At the completion of the structure adjustment, backfill the void around the structure and compact before paving or landscaping.
C. Apply mortar to inside and outside of concrete grade rings used to make adjustments.
D. If the cone is cracked during construction, restack the Manhole with shorter Manhole sections and install a new cone at no additional cost to the OWNER.

3.3 ADJUST COVER IN PAVEMENT SURFACE

A. Method A - Metal Extension Rings:
    1. Use rings that lock together.
    2. Set frame at desired elevation and cross-slope.
    3. Seal joints between Pavement and ring.
B. Method B – Concrete Extension Rings:
    1. Place concrete grade rings under frame or in structure riser shaft.
    2. Set frame at desired elevation and cross-slope.
    3. Provide 100 percent concrete support under frame. Do not use wood, bricks, concrete fragments, blocks or particles as support.
    4. Grout seams between concrete rings and between frame and concrete rings.
C. Method C – Place Concrete:
    1. Set frame at desired elevation and cross-slope.
    2. Place concrete and provide 100 percent concrete support under frame.
D. Method D – Concrete Deck:
    1. Remove existing concrete deck.
    2. Reset steel rebar.
    3. Set frame to grade, set forms.
E. Pour concrete. Provide complete concrete support under Street Fixture.

3.4 INSTALLING COVER COLLAR

A. Open an annular space between pavement and Street Fixture cover. Unless indicated otherwise, provide 12 inches of annular space.
B. Set concrete collar to 1/4 inch minimum to 1/2 inch maximum below asphalt concrete pavement surface and 1/4 inch below Portland cement concrete pavement surface.
C. Trowel finish, Section 03 35 00.

3.5 PAVEMENT SURFACE RESTORATION

A. In new streets or overlays, adjust Street Fixture cover after bituminous paving is complete.
B. Pavement restoration, Section 33 05 25.

END OF SECTION

SECTION 33 41 00

STORM DRAINAGE SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Gravity systems such as irrigation, sub-drains, and storm drains.
B. Pressure systems are indicated in Section 33 12 19.

1.2 REFERENCES

A. ASTM C 478: Standard Specification for Precast Reinforced Concrete Manhole Section.
B. ASTM C 891: Standard Practice for Installation of Underground Precast Concrete Utility Structures.
C. ASTM C 923: Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.

1.3 PERFORMANCE REQUIREMENTS

A. Vertical Cover: 2 feet minimum or as indicated.
B. Remove any section of pipe already placed that is found to be out of alignment tolerance indicated, defective, or damaged. Relay or replace without additional cost to OWNER.

1.4 PROJECT CONDITIONS

A. Minimize neighborhood traffic interruptions. Barricade stockpiles.
B. Provide access to adjacent properties for local traffic and pedestrians, Section 01 31 13.
C. Repair public and private facilities damaged by CONTRACTOR.
D. Prior to Backfilling: Commission pipeline per Section 33 08 00. Provide sizes and types of equipment connections and fittings which match pipe materials when pressure testing system.

1.5 ACCEPTANCE

A. Each storm drain system component must pass applicable requirements in Section 33 08 00.

PART 2 - PRODUCTS

2.1 PIPING AND FITTINGS

A. Provide piping materials and factory fabricated piping products of sizes, types, and classes indicated.
B. Where not indicated, provide proper selection acceptable to ENGINEER to comply with installation requirements.
C. Provide pipe fittings and accessories of same material and weight or class as pipe, with joining method indicated or recommended by manufacturer.

2.2 IN-PLANE WALL DRAINAGE

A. Drainage Core: Manufacturer's standard three-dimensional non-bio- degradable, plastic designed to effectively conduct water to foundation drainage system.
B. Filter Fabric: Manufacturer's standard non-woven geotextile fabric of polypropylene or polyester fibers, or combination.

2.3 SUB DRAIN FILL MATERIALS

A. Sewer Rock, Section 32 11 23 and geotextile, Section 31 05 19.

2.4 MORTAR, GROUT AND CONCRETE

A. Mortar: Cement, Section 04 05 16.
B. Grout: Cement, Section 03 61 00.
C. Concrete:
    1. Cast-in-place: Class 4000, Section 03 30 04.
    2. Precast: Class 5000, Section 03 40 00.

2.5 CLEANOUTS AND MANHOLES

A. Basin: Concrete floor with cast in place concrete walls or ASTM C478 precast requirements.
B. Steps: None.
C. Top: Concentric cone. Concentric flat slab concrete deck allowed only with ENGINEER's permission.
D. Frame and Cover: Asphalt coated, heavy duty, ductile iron; Section 05 56 00 with flat top design meeting load rating H-20 and appropriate utility lettering. Shape, size and lifting device as indicated.
E. Pipe Connectors:
    1. Precast Bases: Resilient, ASTM C 923. Sand mortar grout pipe connections.
    2. Cast in Place or Connections to Existing Manhole with Plastic Pipe: Use rubber Manhole adapter gasket for precast sections. Grout; Section 03 61 00 for cast in place sections.
F. Joints in Sections: Bituminous mastic coating unless indicated otherwise.

2.6 INLETS AND CATCH BASINS

A. Basin: Concrete floor and walls.
B. Frame and Grate:
    1. Asphalt coated, heavy duty, cast iron: Section 05 56 00. Shape and size as indicated.
    2. Galvanized, heavy duty, steel: Sections 05 12 00 and 05 05 10. Shape and size as indicated.
C. Pipe Connectors: Resilient, ASTM C 923. Sand mortar grout.

2.7 OUTFALLS

A. Cast-in-place or precast concrete with reinforced headwall, apron, and tapered sides. Provide riprap, Section 31 37 00, if indicated.

2.8 DRAIN PIPE JOINT SCREENS

A. Heavy mesh burlap, coal-tar saturated felt, 18 to 14 mesh copper screening or synthetic drainage fabric.
B. Plastic or corrosion resistant metal bands.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify Trench Excavation is ready to receive work, and dimensions, and elevations are as indicated.
B. Hand-trim Excavations to required elevations. Backfill over excavations and compact, Section 33 05 05.
C. Remove stones larger than 2 inches or other hard matter that could damage pipe or impede backfilling or compaction.
D. Examine areas and conditions under which materials and products are to be installed. Do not proceed with system installation until unsatisfactory conditions have been corrected in manner acceptable to system installer.
E. Clearly identify and promptly set aside defective or damaged pipe. F. Use pipe cutting tool acceptable to pipe manufacturer.

3.2 INSTALLATION - PIPE AND FITTINGS

A. Place bell or groove end facing upstream.
B. Install gaskets per manufacturer's recommendations.
C. Plug pipeline branches, stubs or other open ends which are not to be immediately connected.
D. Clean interior of pipe of dirt and debris as work progresses.
E. Insulate dissimilar metals from direct contact with each other using neoprene gaskets or asphalt coatings.
F. Meet line and grade tolerance specified in Section 33 08 00.

3.3 INSTALLATION - CLEANOUTS AND MANHOLES

A. Form bottom of Excavation clean and smooth to correct elevation.
B. Place structures in location indicated.
C. Install precast units, ASTM C 891.
D. Provide elevations and pipe inverts for inlets and outlets indicated.
E. Where structures occur in Pavements, mount frame and cover 1/2 inch below finished surface, elsewhere set 3 inches above finished grade. Provide a concrete Cover Collar between the frame and asphalt Pavement.

3.4 INSTALLATION - INLETS OR CATCH BASINS

A. Form bottom of Excavation clean and smooth to correct elevation.
B. Construct with all connecting piping and appurtenances in their final position.
C. Cut all piping parallel to interior surface wall. Grout connection to provide smooth transition inlet into pipe.

3.5 INSTALLATION - SUB DRAIN SYSTEMS

A. Install pipe and fittings per manufacturer's instruction.
B. Open Joint Systems: Loosely butt pipe ends. Place 12 inches wide filter fabric around pipe circumference, centered over joint.
C. Mechanical Joint Perforated Pipe System: Place pipe with perforations facing down.
D. Place drainage pipe on bed of Sewer Rock, Section 31 05 13.

3.6 ABANDONED UTILITIES

A. Use concrete to plug and cap open ends of abandoned underground utilities that are to remain in place.
B. Provide closures to withstand hydrostatic or earth pressure that may result after ends of abandoned utilities have been closed.

3.7 TAP CONNECTIONS

A. Not allowed. Provide a cleanout or Manhole structure.

3.8 BACKFILLING

A. Prior to Backfilling: Commission pipeline, Section 33 08 00. Provide sizes and types of equipment connections and fittings which match pipe materials when pressure testing system.
B. Trenches: Section 33 05 20.
C. Structures or Landscapes: Section 31 23 23.

3.9 CLEANING

A. Remove debris, concrete, or other extraneous material that accumulates in existing piping or structures.
B. Clean all pipelines after testing. Do not flush sand, gravel, concrete, debris or other materials into existing piping system.

3.10 SURFACE RESTORATION

A. Provide temporary paved surfaces where Trenches pass through roadways, Driveways, or sidewalks.
B. Restore paved surfaces, Section 33 05 25.
C. Finish landscaped surfaces as applicable.
    1. With grass; Section 32 92 00 or
    2. Other ground cover; Section 32 93 13.

END OF SECTION