



Purchasing Division

## Invitation for Bid

IFB-5279-23-DD

### Westlake Park Irrigation System Construction

#### Responses Due:

August 29, 2023, Prior to 2:00 PM

**Accepting Electronic Responses Only**  
**Responses Only Submitted Through the Rocky Mountain E-Purchasing**  
**System (RMEPS)**

[www.bidnetdirect.com/colorado](http://www.bidnetdirect.com/colorado)

(Purchasing Representative does not have access or control of the vendor side of RMEPS. If website or other problems arise during response submission, vendor **MUST** contact RMEPS to resolve issue prior to the response deadline. 800-835-4603)

**NOTE: All City solicitation openings will continue to be held virtually.**

#### **Purchasing Representative:**

Dolly Daniels, Senior Buyer

[dollyd@gjcity.org](mailto:dollyd@gjcity.org)

970-256-4048

# **Invitation for Bids**

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A: Irrigation Site Plan

# **1. Instructions to Bidders**

**NOTE:** It is the Contractor's responsibility to read and review all solicitation documentation in its entirety, and to ensure that it has a clear and complete understanding of not only the scope, specifications, project requirements, etc., but also all other requirements, instructions, rules, regulations, laws, conditions, statements, procurement policies, etc. that are associated with the solicitation process and project/services being solicited.

- 1.1 Issuing Office:** This Invitation for Bid (IFB) is issued by the City of Grand Junction. All contact regarding this IFB is to be directed to:

Dolly Daniels; Senior Buyer  
[dollyd@gjcity.org](mailto:dollyd@gjcity.org)

With the exception of Pre-Bid or Site Visit Meeting(s) all questions, inquiries, comments, or communication pertaining to this solicitation (whether process, specifications, scope, etc.) must be directed (in writing) to the Purchasing Agent. Other communication may result in disqualification.

- 1.2 Non-Mandatory (Optional) Pre-Bid Meeting:** Prospective bidders are encouraged to attend a non-mandatory pre-bid meeting on August 11, 2023, at 10:00 AM. Meeting location shall be at Westlake Park, 325 W. Orchard, Grand Junction CO 81501. The purpose of this visit will be to clarify the contents of this Invitation for Bids (IFB).
- 1.3 Purpose:** The City of Grand Junction is soliciting competitive bids from qualified and interested Contractors for all labor, equipment, and materials required for the Westlake Park Irrigation System Construction. All dimensions and Scope of Work shall be verified by Contractors prior to submission of bids.
- 1.4 The Owner:** The Owner is the City of Grand Junction, Colorado and is referred to throughout this Solicitation. The term Owner means the Owner or its authorized representative.
- 1.5 Compliance:** All Bidders, by submitting a bid, agree to comply with all conditions, requirements, and instruction of this IFB as stated or implied herein. Should the Owner omit anything which is necessary to clear understanding of the requirements, or should it appear that various instructions are in conflict, the Bidder(s) shall secure instructions from the Purchasing Agent prior to submittal deadline.
- 1.6 Procurement Process:** The most current version of the City of Grand Junction [Purchasing Policy and Procedure Manual](#) is contacting.
- 1.7 Submission:** Each proposal shall be submitted in electronic format only, and only through the Rocky Mountain E-Purchasing website ([www.bidnetdirect.com/colorado](http://www.bidnetdirect.com/colorado)). This site offers both "free" and "paying" registration options that allow for full access of the Owner's documents and for electronic submission of proposals. (Note: "free" registration may take up to 24 hours

*to process. Please Plan accordingly.)* Please view our “**Electronic Vendor Registration Guide**” at <https://co-grandjunction.civicplus.com/501/Purchasing-Bids> for details. (Purchasing Representative does not have access or control of the vendor side of RMEPS. If the website or other problems arise during response submission, the vendor **MUST** contact RMEPS to resolve the issue prior to the response deadline **800-835-4603**).

### **Bid Opening Westlake Park Irrigation System Construction**

**Aug 29, 2023, 2:00 – 2:30 PM (America/Denver)**

Please join my meeting from your computer, tablet or smartphone.

<https://meet.goto.com/701013357>

You can also dial in using your phone.

**Access Code:**

**701-013-357**

**United States:**

**[+1 \(646\) 749-3122](tel:+16467493122)**

Join from a video-conferencing room or system.

**Meeting ID:**

**701-013-357**

**Dial in or type:**

**67.217.95.2 or [inroomlink.goto.com](https://inroomlink.goto.com)**

**Or dial directly:**

**701013357@67.217.95.2 or 67.217.95.2##701013357**

Get the app now and be ready when your first meeting starts:

<https://meet.goto.com/install>

- 1.8 Modification and Withdrawal of Bids Before Opening** Bids may be modified or withdrawn by an appropriate document stating such, duly executed and submitted to the place where Bids are to be submitted at any time prior to Bid Opening.
- 1.9 Form for Price Bid:** All Price Bids must be made upon the Price Bid Schedule attached and should give the amounts both in words and in figures and must be signed and acknowledged by the Bidder.

The Bidder shall specify a unit price in figures for each pay item for which a quantity is given and shall provide the products (in numbers) of the respective unit prices and quantities in the Extended Amount column. The total Bid price shall be equal to the sum of all extended amount prices. When an item in the Price Bid Schedule provides a choice to be made by the Bidder, Bidder's choice shall be indicated in accordance with the specifications for that particular item and thereafter no further choice shall be permitted.

Where the unit of a pay item is lump sum, the lump sum amount shall be shown in the "extended amount" column and included in the summation of the total Bid.

All blank spaces in the Price Bid Schedule must be properly filled out.

Bids by corporations must be executed in the corporate name by the president or vice president or other corporate office accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown below the signature.

Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.

All names must be typed or printed below the signature.

The Bidder's Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Contractor's Bid Form.

The contact information to which communications regarding the Bid are to be directed must be shown.

- 1.10 Exclusions:** No oral, telephonic, emailed, or facsimile bid will be considered.
- 1.11 Contract Documents:** The complete IFB and Bidder's response compose the Contract Documents. Copies of bid documents can be obtained from the City Purchasing website, <https://co-grandjunction.civicplus.com/501/Purchasing-Bids> .
- 1.12 Additional Documents:** The July 2010 edition of the "City Standard Contract Documents for Capital Improvements Construction", Plans, Specifications and other Bid Documents are available for review or download on the Purchasing Bids page at <https://co-grandjunction.civicplus.com/501/Purchasing-Bids>.
- 1.13 Definitions and Terms:** See Article I, Section 3 of the General Contract Conditions in the *Standard Contract Documents for Capital Improvements Construction*.
- 1.14 Examination of Specifications:** Bidders shall thoroughly examine and be familiar with the project Statement of Work. The failure or omission of any Bidder to receive or examine any form, addendum, or other document shall in no way relieve any Bidder from any obligation with respect to its bid. The submission of a bid shall be taken as evidence of compliance with this section. Prior to submitting a bid, each Bidder shall, at a minimum:
- a. Examine the *Contract Documents* thoroughly.
  - b. Visit the site to familiarize itself with local conditions that may in any manner affect cost, progress, or performance of the Work;
  - c. Study and carefully correlate Bidder's observations with the *Contract Documents*, and;
  - d. Notify the Purchasing Agent of all conflicts, errors, ambiguities, or discrepancies in or among the *Contract Documents* within the designated inquiry period.

On request, the Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of a Bid. It shall be the Bidder's responsibility to make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (including without limitation, surface, subsurface and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress or performance of the Work and which the Bidder deems necessary to determine

its Bid for performing the Work in accordance with the time, price and other terms and conditions of the Contract Documents. Location of any excavation or boring made by Bidder shall be subject to prior approval of Owner and applicable agencies. Bidder shall fill all holes, restore all pavements to match the existing structural section and shall clean up and restore the site to its former condition upon completion of such exploration. The Owner reserves the right to require the Bidder to execute an access agreement with the Owner prior to accessing the site.

The lands upon which the Work is to be performed, rights of way, and access thereto, and other lands designated for use by Contractor in performing the Work, are identified on the Drawings.

Information and data reflected in the *Contract Documents* with respect to underground utilities at or contiguous to the site are based upon information and data furnished to the Owner and the Engineer by the owners of such underground utilities or others, and the Owner does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the *Contract Documents*.

By submission of a Bid, the Bidder shall be conclusively presumed to represent that the Bidder has complied with every requirement of these Instructions to Bidders, that the *Contract Documents* are not ambiguous and are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

- 1.15 Questions Regarding Statement of Work:** Any information relative to interpretation of Scope of Work or specifications shall be requested of the Purchasing Agent, in writing, in ample time, prior to the inquiry deadline.
- 1.16 Addenda & Interpretations:** If it becomes necessary to revise any part of this solicitation, a written addendum will be posted electronically on the City's website at <https://co-grandjunction.civicplus.com/501/Purchasing-Bids>. The Owner is not bound by any oral representations, clarifications, or changes made in the written specifications by Owner, unless such clarification or change is provided in written addendum form from the City Purchasing Representative.
- 1.17 Taxes:** The Owner is exempt from State, County, and Municipal Sales Tax and Federal Excise Tax, therefore, all fees/bids should not include taxes.
- 1.18 Sales and Use Taxes:** The Contractor and all Subcontractors are required to obtain exemption certificates from the Colorado Department of Revenue for sales and use taxes in accordance with the provisions of the General Contract Conditions, Section XVI "Taxes". Bids shall reflect this method of accounting for sales and use taxes on materials, fixtures, and equipment.
- 1.19 Offers Binding 60 Days:** Unless additional time is required by the Owner, or otherwise specified, all formal offers submitted shall be binding for sixty (60) calendar days following opening date, unless the Bidder, upon request of the Purchasing Agent, agrees to an extension.

- 1.20 Exceptions and Substitutions:** All bids meeting the intent of this IFB shall be considered for award. A Bidder taking exception to the specifications does so at the Bidder's risk. The Owner reserves the right to accept or reject any or all substitutions or alternatives. When offering substitutions and/or alternatives, Bidder must state any exception(s) in the section to which the exception(s) pertain. Exception/substitution, if accepted, must meet, or exceed the stated intent and/or specifications. The absence of stated exception(s) indicates that the Bidder has not taken exception, and if awarded a Contract shall hold the Bidder responsible to perform in strict accordance with the specifications or scope of the bid and Contract Documents.
- 1.21 Collusion Clause:** Each Bidder by submitting a bid certifies that it is not party to any collusive action or any action that may be in violation of the Sherman Antitrust Act. Any and all bids shall be rejected if there is evidence or reason for believing that collusion exists among Bidders. The Owner may, or may not, accept future bids for the same Work or commodities from participants in such collusion.
- 1.22 Disqualification of Bidders:** A Bid will not be accepted from, nor shall a Contract be awarded to, any person, Contractor, or corporation that is in arrears to the Owner, upon debt or Contract, or that has defaulted, as surety or otherwise, upon any obligation to the Owner, or that is deemed irresponsible or unreliable.

Bidders may be required to submit satisfactory evidence of responsibility, have a practical knowledge of the project bid upon and that has the necessary financial and other resources to complete the proposed Work.

Either of the following reasons, without limitation, shall be considered sufficient to disqualify a Bidder and Bid:

- a. More than one Bid is submitted for the same Work from an individual, Contractor, or corporation under the same or different name: and
  - b. Evidence of collusion among Bidders. Any participant in such collusion shall not receive recognition as a Bidder for any future Work of the Owner until such participant has been reinstated as a qualified Bidder.
- 1.23 Public Disclosure Record:** If the Bidder has knowledge of its employee(s) or sub-contractors having an immediate family relationship with an Owner employee or elected official, the Bidder must provide the Purchasing Agent with the name(s) of the individuals. The individuals are required to file a "Public Disclosure Record", a statement of financial interest, before conducting business with the Owner.

## **2. General Contract Conditions for Construction Projects**

- 2.1 The Contract:** This Invitation for Bid, submitted documents, and any negotiations, when properly accepted by the Owner, shall constitute an enforceable agreement equally binding between the Owner and Contractor. The Contract represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral including the bid

documents. The Contract may be amended or modified with Change Orders, Field Orders, or Addendums.

- 2.2. The Work:** The term Work includes all labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in such construction.
- 2.3. Execution, Correlation, Intent, and Interpretations:** The Contract Documents shall be signed by the Owner and Contractor. By executing the Contract, the Contractor represents that it has familiarized itself with the local conditions under which the Work is to be performed and correlated its observations with the requirements of the Contract Documents. The Contract Documents are complementary, and what is required by anyone, shall be as binding as if required by all. The intention of the Contract Documents is to include all labor, materials, equipment, services, and other items necessary for the proper execution and completion of the Scope of Work as defined in the technical specifications and drawings contained herein. All drawings, specifications and copies furnished by the Owner are, and shall remain, Owner property. It is not to be used on any other project.
- 2.4. The Owner:** The Owner is the City of Grand Junction, Colorado and is referred to throughout the Contract Documents. The term Owner means the Owner or its authorized representative. The Owner shall, at all times, have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access. The Owner will make periodic visits to the site to familiarize itself generally with the progress and quality of Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Based on such observations and the Contractor's Application for Payment, the Owner will determine the amounts owing to the Contractor and will issue Certificates for Payment in such amounts, as provided in the Contract. The Owner will have authority to reject Work which does not conform to the Contract Documents. Whenever, in its reasonable opinion, it considers it necessary or advisable to ensure the proper implementation of the intent of the Contract Documents, it will have authority to require the Contractor to stop the Work or any portion, or to require special inspection or testing of the Work, whether or not such Work can be then be fabricated, installed, or completed. The Owner will not be responsible for the acts or omissions of the Contractor, and Sub-Contractor, or any of its agents or employees, or any other persons performing any of the Work.
- 2.5. Contractor:** The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents. The term Contractor means the Contractor or its authorized representative. The Contractor shall carefully study and compare the General Contract Conditions of the Contract, Specification and Drawings, Scope of Work, Addenda and Modifications and shall at once report to the Owner any error, inconsistency, or omission it may discover. Contractor shall not be liable to the Owner for any damage resulting from such errors, inconsistencies, or omissions. The Contractor shall not commence Work without clarifying Drawings, Specifications, or Interpretations.
- 2.6. Sub-Contractors:** A Sub-Contractor is a person or organization who has a direct Contract with the Contractor to perform any of the Work at the site. The term Sub-

Contractor is referred to throughout the Contract Documents and means a Sub-Contractor or its authorized representative.

- 2.7. Award of Sub-Contractors & Other Contracts for Portions of the Work:** Contractor shall submit with its bid response to the Owner, in writing for acceptance, a list of the names of the sub-contractors or other persons or organizations proposed for such portions of the Work as may be designated in the proposal requirements, or, if none is so designated, the names of the sub-contractors proposed for the principal portions of the Work. Prior to the award of the Contract, the Owner shall notify the successful Contractor in writing if, after due investigation, has reasonable objection to any person or organization on such list. If, prior to the award of the Contract, the Owner has a reasonable and substantial objection to any person or organization on such list and refuses in writing to accept such person or organization, the successful Contractor may, prior to the award, withdraw its proposal without forfeiture of proposal security. If the successful Contractor submits an acceptable substitute with an increase in the proposed price to cover the difference in cost occasioned by the substitution, the Owner may, at its discretion, accept the increased proposal or may disqualify the Contractor. If, after the award, the Owner refuses to accept any person or organization on such list, the Contractor shall submit an acceptable substitute and the Contract sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued. However, no increase in the Contract sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting a name with respect thereto prior to the award.
- 2.8. Quantities of Work and Unit Price:** Materials or quantities stated as unit price items in the Bid are supplied only to give an indication of the general scope of the Work, and are as such, estimates only. The Owner does not expressly or by implication agree that the actual amount of Work or material will correspond therewith and reserves the right after award to increase or decrease the quantity of any unit item of the Work without a change in the unit price except as set forth in Article VIII, Section 70 of the *General Contract Conditions*. The City also reserves the right to make changes in the Work (including the right to delete any bid item in its entirety or add additional bid items) as set forth in Article VIII, Sections 69 through 71 of the *General Contract Conditions*.
- 2.9. Substitutions:** The materials, products and equipment described in the *Solicitation Documents* shall be regarded as establishing a standard of required performance, function, dimension, appearance, or quality to be met by any proposed substitution. No substitution will be considered prior to receipt of Bids unless the Bidder submits a written request for approval to the Purchasing Agent at least ten (10) days prior to the date for receipt of Bids. Such requests for approval shall include the name of the material or equipment for which substitution is sought and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for evaluation, including samples if requested. The Bidder shall set forth changes in other materials, equipment, or other portions of the Work including changes of the Work of other Contracts, which incorporation of the proposed substitution would require to be included. The Owner's decision of approval or disapproval of a proposed substitution shall be final. If the Owner approves a proposed substitution before receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

- 2.10. Supervision and Construction Procedures:** The Contractor shall supervise and direct the Work, using its best skill and attention. It shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work under the Contract.
- 2.11. Warranty:** The Contractor warrants to the Owner that all materials and equipment furnished under this Contract will be new unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these standards may be considered defective. If required by Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. If within ten (10) days after written notice to the Contractor requesting such repairs or replacement, the Contractor should neglect to make or undertake with due diligence to the same, the City may make such repairs or replacements. All indirect and direct costs of such correction or removal or replacement shall be at the Contractor's expense. The Contractor will also bear the expenses of making good all Work of others destroyed or damaged by the correction, removal, or replacement of its defective Work.
- 2.12. Permits, Fees, & Notices:** The Contractor shall secure and pay for all permits, governmental fees, and licenses necessary for the proper execution and completion of the Work. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations, and orders of any public authority, including the City, bearing on the performance of the Work. If the Contractor observes that any of the Contract Documents are at variance in any respect, it shall promptly notify the Purchasing Agent in writing, and any necessary changes shall be adjusted. If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules, and regulations, and without such notice to the Owner, it shall assume full responsibility and shall bear all costs attributable to the non-conforming Work.
- 2.13. Responsibility for Those Performing the Work:** The Contractor shall be responsible to the Owner for the acts and omissions of all its employees and all sub-contractors, its agents and employees, and all other persons performing any of the Work under a Contract with the Contractor.
- 2.14. Use of the Site:** The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents, and shall not unreasonably encumber the site with any materials or equipment.
- 2.15. Cleanup:** The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by its operations. At the completion of Work, it shall remove all its waste materials and rubbish from and about the project, as well as all its tools, construction equipment, machinery, and surplus materials.
- 2.16. Insurance Requirements:** The selected Contractor agrees to procure and maintain, at its own cost, policy(s) of insurance sufficient to insure against all liability, claims, demands, and other obligations assumed by the Contractor pursuant to the Contract. Such insurance shall be in addition to any other insurance requirements imposed by this Contract or by law. The Contractor shall not be relieved of any liability, claims, demands,

or other obligations assumed pursuant to the Contract by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

Contractor shall procure and maintain and, if applicable, shall cause any Sub-contractor of the Contractor to procure and maintain insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to Owner. All coverage shall be continuously maintained to cover all liability, claims, demands, and other obligations assumed by the Contractor pursuant to the Contract. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage. Minimum coverage limits shall be as indicated below unless specified otherwise in the Special Conditions:

(a) Worker Compensation: Contractor shall comply with all State of Colorado Regulations concerning Workers' Compensation insurance coverage.

(b) General Liability insurance with minimum limits of:

FIVE HUNDRED THOUSAND DOLLARS (\$500,000) each occurrence and  
FIVE HUNDRED THOUSAND DOLLARS (\$500,000) per job aggregate.

The policy shall be applicable to all premises, products, and completed operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations), personal injury (including coverage for contractual and employee acts), blanket contractual, products, and completed operations. The policy shall include coverage for explosion, collapse, and underground (XCU) hazards. The policy shall contain a severability of interests' provision.

(c) Comprehensive Automobile Liability insurance with minimum limits for bodily injury and property damage of not less than:

FIVE HUNDRED THOUSAND DOLLARS (\$500,000) each occurrence and  
FIVE HUNDRED THOUSAND DOLLARS (\$500,000) aggregate

(d) Professional Liability & Errors and Omissions Insurance policy with a minimum of:

FIVE HUNDRED THOUSAND DOLLARS (\$500,000) per claim

This policy shall provide coverage to protect the City against liability incurred as a result of the professional Services performed as a result of responding to this Solicitation.

With respect to each of Contractors owned, hired, or non-owned vehicles assigned to be used in performance of the Work. The policy shall contain a severability of interest provision.

**2.16.1 Additional Insured Endorsement:** The policies required by paragraphs (b), and (c) above shall be endorsed to include Grand Junction, its Elected and Appointed Officials, Employees and Volunteers as Additional Insured. Every required policy above shall be primary insurance, and any insurance carried by the Owner, its officers, or its employees, or carried by or provided through any insurance pool of the Owner, shall be excess and not contributory insurance to that provided by the Contractor. The

Contractor shall be solely responsible for any deductible losses under any policy required above.

- 2.17. Indemnification:** The Contractor shall defend, indemnify and save harmless the Owner, and all its officers, employees, insurers, and self-insurance pool, from and against all liability, suits, actions, or other claims of any character, name and description brought for or on account of any injuries or damages received or sustained by any person, persons, or property on account of any negligent act or fault of the Contractor, or of any Contractor's agent, employee, Sub-Contractor or supplier in the execution of, or performance under, any Contract which may result from proposal award. Contractor shall pay any judgment with cost which may be obtained by and/or against the Owner growing out of or under the performance.
- 2.18. Miscellaneous Conditions: Material Availability:** Contractors must accept responsibility for verification of material availability, production schedules, and other pertinent data prior to submission of bid. It is the responsibility of the Bidder to notify the Owner immediately if materials specified are discontinued, replaced, or not available for an extended period of time.
- 2.19. Time:** Time is of the essence with respect to the time of completion of the Project and any other milestones or deadline which are part of the Contract. It will be necessary for each Bidder to satisfy the City of its ability to complete the Work within the Contract time set forth in the Contract Documents. The Contract time is the period of time allotted in the Contract Documents for completion of the Work. The date of commencement of the Work is the date established in a Notice to Proceed. If there is no Notice to Proceed, it shall be the date of the Contract, or such other date as may be established therein, or as established as entered on the Bid Form. The Date of Final Completion of the Work is the date certified by the Owner when all construction, and all other Work associated to include, but not be limited to: testing, QA/QC, receipt of required reports and/or forms, grant requirements (if applicable), punch list items, clean-up, receipt of drawings and/or as-builts, etc., is fully complete, and in accordance with the Contract Documents.
- 2.20. Progress & Completion:** The Contractor shall begin the Work on the Commencement Date as noted on the Notice to Proceed and perform the Work expeditiously with adequate forces to complete the Work within the Contract time/by the Completion date.
- 2.21. Payment & Completion:** The Contract Sum is stated in the Contract and is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents. Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of application for payment, the Owner's Project Manager will promptly make such inspection and, when it finds the Work acceptable under the Contract Documents and the Contract fully performed, the Owner shall make payment in the manner provided in the Contract Documents.
- 2.22. Bid Bond:** Each Bid shall as a guaranty of good faith on the part of the Bidder be accompanied by a Bid Guaranty consisting of a certified or cashier's check drawn on an approved national bank or trust company in the state of Colorado and made payable without condition to the City; or a **Bid Bond** written by an approved corporate surety in favor of the City. The amount of the Bid Guaranty shall not be less than 5% of the total Bid

amount. Once a Bid is accepted and a Contract is awarded, the apparent successful Bidder has ten calendar days to enter into a Contract in the form prescribed and to furnish the bonds with a legally responsible and approved surety. Failure to do so will result in forfeiture of the Bid Guaranty to the City as Liquidated Damages.

Each Bidder shall guaranty its total bid price for a period of sixty (60) Calendar Days from the date of the bid opening.

- 2.23. Performance & Payment Bonds:** Contractor shall furnish a Performance and a Payment Bond, each in an amount at least equal to that specified for the Contract amount as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. The bonds shall remain in effect for the duration of the Warranty Period (as specified in the Special Conditions). Contractor shall also furnish other bonds as required by the Special Conditions. All bonds shall be in the forms prescribed by the Contract Documents and be executed by such sureties as (1) are licensed to conduct business in the State of Colorado and (2) are 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 Circular 570 (amended) by the Audit Staff, Bureau of Accounts, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of the Authority Act. If the surety on any bond furnished by the Contractor is declared bankrupt, or becomes insolvent, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements of clauses (1) and (2) of this section, Contractor shall within five (5) days thereafter substitute another bond and surety, both of which shall be acceptable to the City.
- 2.24. Retention:** The Owner will deduct money from the partial payments in amounts considered necessary to protect the interest of the Owner and will retain this money until after completion of the entire Contract. The amount to be retained from partial payments will be five (5) percent of the value of the completed Work, and not greater than five (5) percent of the amount of the Contract. When the retainage has reached five (5) percent of the amount of the Contract no further retainage will be made and this amount will be retained until such time as final payment is made.
- 2.25. Liquidated Damages for Failure to Enter Into Contract:** Should the Successful Bidder fail or refuse to enter into the Contract within ten Calendar Days from the issuance of the Notice of Award, the City shall be entitled to collect the amount of such Bidder's Bid Guaranty as Liquidated Damages, not as a penalty but in consideration of the mutual release by the City and the Successful Bidder of all claims arising from the City's issuance of the Notice of Award and the Successful Bidder's failure to enter into the Contract and the costs to award the Contract to any other Bidder, to readvertise, or otherwise dispose of the Work as the City may determine best serves its interest.
- 2.26. Liquidated Damages for Failure to Meet Project Completion Schedule:** If the Contractor does not achieve Final Completion by the required date, whether by neglect, refusal or any other reason, the parties agree and stipulate that the Contractor shall pay liquidated damages to the City for each such day that final completion is late. As provided elsewhere, this provision does not apply for delays caused by the City. The date for Final Completion may be extended in writing by the Owner.

The Contractor agrees that as a part of the consideration for the City's awarding of this Contract liquidated damages in the daily amount of **\$350.00** is reasonable and necessary to pay for the actual damages resulting from such delay. The parties agree that the real costs and injury to the City for such delay include hard to quantify items such as: additional engineering, inspection and oversight by the City and its agents; additional Contract administration; inability to apply the efforts of those employees to the other Work of the City; perceived inefficiency of the City; citizens having to deal with the construction and the Work, rather than having the benefit of a completed Work, on time; inconvenience to the public; loss of reputation and community standing for the City during times when such things are very important and very difficult to maintain.

The Contractor must complete the Work and achieve final completion included under the Bid Schedule in the number of consecutive calendar days after the City gives is written Notice to Proceed. When the Contractor considers the entire Work ready for its intended use, Contractor shall certify in writing that the Work is fully complete. Final Completion date is the date by which the Contractor shall have fully completed all clean-up, and all items that were identified by the City in the inspection for final completion. Unless otherwise stated in the Special Conditions, for purposes of this liquidated damages clause, the Work shall not be finished, and the Contract time shall continue to accrue until the City gives its written Final Acceptance.

If the Contractor shall fail to pay said liquidated damages promptly upon demand thereof after having failed to achieve Final Completion on time, the City shall first look to any retainage or other funds from which to pay said liquidated damages; if retainage or other liquid funds are not available to pay said liquidated damages amounts, the Surety on the Contractor's Performance Bond and Payment Bond shall pay such liquidated damages. In addition, the City may withhold all, or any part of, such liquidated damages from any payment otherwise due the Contractor.

Liquidated damages as provided do not include any sums to reimburse the City for extra costs which the City may become obligated to pay on other Contracts which were delayed or extended because of the Contractor's failure to complete the Work within the Contract Time. Should the City incur additional costs because of delays or extensions to other Contracts resulting from the Contractor's failure of timely performance, the Contractor agrees to pay these costs that the City incurs because of the Contractor's delay, and these payments are separate from and in addition to any liquidated damages.

The Contractor agrees that the City may use its own forces or hire other parties to obtain Final Completion of the Work if the time of completion has elapsed and the Contractor is not diligently pursuing completion. In addition to the Liquidated Damages provided for, the Contractor agrees to reimburse the City for all expenses thus incurred.

**2.27. Contingency/Force Account/Minor Contract Revisions:** Contingency/Force Account/Minor Contract Revisions Work will be authorized by the Owner's Project Manager and is defined as minor expenses to cover miscellaneous or unforeseen expenses related to the project. The expenses are not included in the Drawings, Specifications, or Scope of Work and are necessary to accomplish the scope of this Contract. Contingency/Force Account/Minor Contract Revisions Authorization will be directed by the Owner through an approved form. Contingency/Force Account/Minor Contract Revisions funds are the property of the Owner and any Contingency/Force

Account/Minor Contract Revisions funds, not required for project completion, shall remain the property of the Owner. Contractor is not entitled to any Contingency/Force Account/Minor Contract Revisions funds, that are not authorized by Owner or Owner's Project Manager.

- 2.28. Protection of Persons & Property:** The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public authority having jurisdiction for the safety of persons or property or to protect it from damage, injury, or loss. Contractor shall erect and maintain, as required by existing safeguards for safety and protection, and all reasonable precautions, including posting danger signs or other warnings against hazards promulgating safety regulations and notifying owners and users of adjacent utilities. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct by the Contractor in the execution of the Work, or in consequence of the non-execution thereof by the Contractor, it shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or it shall make good such damage or injury in an acceptable manner.
- 2.29. Changes in the Work:** The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract sum and the Contract time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order and shall be executed under the applicable conditions of the contract documents. A Change Order is a written order to the Contractor signed by the Owner issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the contract sum or the Contract time. The Contract sum and the Contract time may be changed only by Change Order.
- 2.30. Claims for Additional Cost or Time:** If the Contractor wishes to make a claim for an increase in the Contract sum or an extension in the Contract time, it shall give the Owner written notice thereof within a reasonable time after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall precede in accordance with the regulations on safety. No such claim shall be valid unless so made. Any change in the Contract sum or Contract time resulting from such claim shall be authorized by Change Order.
- 2.31. Minor Changes in the Work:** The Owner shall have authority to order minor changes in the Work not involving an adjustment in the Contract sum or an extension of the Contract time and not inconsistent with the intent of the Contract Documents.
- 2.32. Field Orders:** The Owner may issue written Field Orders which interpret the Contract Documents in accordance with the specifications, or which order minor changes in the Work in accordance with the agreement, without change in the Contract sum or time. The Contractor shall carry out such Field Orders promptly.
- 2.33. Uncovering & Correction of Work:** The Contractor shall promptly correct all Work rejected by the Owner as defective or as failing to conform to the Contract Documents whether observed before or after substantial completion and whether or not fabricated

installed or competed. The Contractor shall bear all costs of correcting such rejected Work, including the cost of the Owner's additional services thereby made necessary. If within one (1) year after the date of completion or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any of the Work found to be defective or not in accordance with the Contract documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of condition. All such defective or non-conforming Work under the above paragraphs shall be removed from the site where necessary and the Work shall be corrected to comply with the Contract Documents without cost to the Owner. The Contractor shall bear the cost of making good all Work of separate Contractors destroyed or damaged by such removal or correction. If the Owner prefers to accept defective or non-conforming Work, it may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect an appropriate reduction in the payment or Contract sum, or, if the amount is determined after final payment, it shall be paid by the Contractor.

- 2.34 Amendment:** No oral statement of any person shall modify or otherwise change, or affect the terms, conditions or specifications stated in the resulting Contract. All amendments to the Contract shall be made in writing by the Owner.
- 2.35 Assignment:** The Contractor shall not sell, assign, transfer or convey any Contract resulting from this IFB, in whole or in part, without the prior written approval from the Owner.
- 2.36 Compliance with Laws:** Bids must comply with all Federal, State, County, and local laws governing the Work and the fulfillment of the Work for and on behalf of the public. Contractor hereby warrants that it is qualified to assume the responsibilities and render the Work described herein and has all requisite corporate authority and professional licenses in good standing required by law.
- 2.37 Confidentiality:** All information disclosed by the Owner to the Contractor for the purpose of the Work to be done or information that comes to the attention of the Contractor during the course of performing such Work is to be kept strictly confidential.
- 2.38 Conflict of Interest:** No public official and/or City/County employee shall have interest in any Contract resulting from this Invitation for Bid.
- 2.39 Contract Termination:** This Contract shall remain in effect until any of the following occurs: (1) Contract expires; (2) completion of Work; (3) final acceptance of Work or, (4) for convenience terminated by either party with a written *Notice of Cancellation* stating therein the reasons for such cancellation and the effective date of cancellation at least thirty (30) days past notification.
- 2.40 Employment Discrimination:** During the performance of any work per agreement with the Owner, the Contractor, by submitting a Bid, agrees to the following conditions:

- 2.40.1** The Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age, handicap, or national origin except when such condition is a legitimate occupational qualification reasonably necessary for the normal operations of the Contractor. The Contractor agrees to post in conspicuous places, visible to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- 2.40.2** The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, shall state that such Contractor is an Equal Opportunity Employer.
- 2.40.3** Notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- 2.41 Affirmative Action:** In executing a Contract with the City, the Contractor agrees to comply with Affirmative Action and Equal Employment Opportunity regulations presented in the General Contract Conditions Section 9 "Affirmative Action/EEO.
- 2.42. Immigration Reform and Control Act of 1986 and Immigration Compliance:** The Contractor certifies that it does not and will not during the performance of the Contract employ workers without authorization or otherwise violate the provisions of the Federal Immigration Reform and Control Act of 1986 and/or laws regulating immigration compliance.
- 2.43. Ethics:** The Contractor shall not accept or offer gifts or anything of value nor enter into any business arrangement with any employee, official, or agent of the Owner.
- 2.44. Failure to Deliver:** In the event of failure of the Contractor to perform in accordance with the Contract Documents, the Owner, after due oral or written notice, may procure the Work from other sources and hold the Contractor responsible for any costs resulting in additional Work, materials and/or administration services necessary to perform the Work. This remedy shall be in addition to any other remedies that the Owner may have.
- 2.45. Failure to Enforce:** Failure by the Owner at any time to enforce the provisions of the Contract shall not be construed as a waiver of any such provisions. Such failure to enforce shall not affect the validity of the Contract or any part thereof or the right of the Owner to enforce any provision of the Contract Documents at any time in accordance with the terms thereof.
- 2.46. Force Majeure:** The Contractor shall not be held responsible for failure to perform the duties and responsibilities imposed by the Contract due to legal strikes, fires, riots, rebellions, and acts of God beyond the control of the Contractor, unless otherwise specified in the Contract.
- 2.47. Independent Contractor:** The Contractor shall be legally considered an Independent Contractor and neither the Contractor nor its employees shall, under any circumstances, be considered servants or agents of the Owner. The Owner shall be at no time legally responsible for any negligence or other wrongdoing by the Contractor, its servants, or

agents. The Owner shall not withhold from the Contract payments to the Contractor any federal or state unemployment taxes, federal or state income taxes, Social Security, or any other amounts for benefits to the Contractor. Further, the Owner shall not provide to the Contractor any insurance coverage or other benefits, including Workers' Compensation, normally provided by the Owner for its employees.

**2.48. Nonconforming Terms and Conditions:** A bid that includes terms and conditions that do not conform to the terms and conditions of this Invitation for Bid is subject to rejection as non-responsive. The Owner reserves the right to permit the Contractor to withdraw nonconforming terms and conditions from its bid prior to a determination by the Owner of non-responsiveness based on the submission of nonconforming terms and conditions.

Items for non-responsiveness may include, but not be limited to:

- a. Submission of the Bid on forms other than those supplied by the City;
- b. Alteration, interlineation, erasure, or partial detachment of any part of the forms which are supplied herein;
- c. Inclusion of unauthorized additions conditional or alternate Bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning;
- d. Failure to acknowledge receipt of any or all issued Addenda;
- e. Failure to provide a unit price or a lump sum price, as appropriate, for each pay item listed except in the case of authorized alternative pay items;
- f. Failure to list the names of Subcontractors used in the Bid preparation as may be required in the Solicitation Documents;
- g. Submission of a Bid that, in the opinion of the Owner, is unbalanced so that each item does not reasonably carry its own proportion of cost or which contains inadequate or unreasonable prices for any item;
- h. Tying of the Bid with any other bid or Contract; and
- i. Failure to calculate Bid prices as described herein.

**2.49. Evaluation of Bids and Bidders:** The Owner reserves the right to:

- reject any and all Bids,
- waive any and all informalities,
- take into account any prompt payment discounts offered by Bidder,
- negotiate final terms with the Successful Bidder,
- take into consideration past performance of previous awards/Contracts with the Owner of any Contractor, Vendor, Contractor, Supplier, or Service Provider in determining final award. and
- disregard any and all nonconforming, nonresponsive, or conditional Bids.

Discrepancies between words and figures will be resolved in favor of words. Discrepancies between Unit Prices and Extended Prices will be resolved in favor of the Unit Prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. The corrected extensions and totals will be shown in the tabulation of Bids.

The Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted. Operating costs, maintenance considerations performance data, and guarantees of materials and equipment may also be considered by the Owner.

The Owner will conduct such investigations as deemed necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of the Bidder, proposed Subcontractors and other persons and organizations to do the Work in accordance with the *Contract Documents* to the City's satisfaction within the Contract Time.

The Bidder shall furnish the Owner all information and data requested by the Owner to determine the ability of the Bidder to perform the Work. The Owner reserves the right to reject the Bid if the evidence submitted by, or investigation of such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

By submitting a Bid, each Bidder authorizes the Owner to perform such investigation of the Bidder as the Owner deems necessary to establish the responsibility, qualifications, and financial ability of the Bidder and, by its signature thereon, authorizes the Owner to obtain reference information concerning the Bidder and releases the party providing such information and the Owner from any and all liability to the Bidder as a result of such reference information so provided.

The Owner reserves the right to reject the Bid of any Bidder who does not pass any evaluation to the Owner's satisfaction.

If the Contract is to be awarded, it will be awarded to the Bidder who, by evaluation, the Owner determines will best meet the Owner's interests.

The Owner reserves the right to accept or reject the Work contained in any of the Price Bid Schedules or alternates, either in whole or in part.

**2.50. Award of Contract:** Unless otherwise indicated, a single award will be made for all the bid items in an individual bid schedule. In the event that the Work is contained in more than one Bid Schedule, the City may award Schedules individually or in combination. In the case of two Bid Schedules which are alternative to each other, only one of such alternative Schedules will be awarded. Within forty-five (45) Calendar Days of Bid Opening, the City will issue a Notice of Award to the Successful Bidder which will be accompanied by a Contract electronically submitted via DocuSign for digital signature. Within ten (10) Calendar Days thereafter, the Successful Bidder shall sign and deliver the digitally executed Contract via DocuSign. Performance Bond, Payment Bond, and Certificate of Insurance shall be submitted to the City within ten (10) days of Contract

execution. No Contract shall exist between the Successful Bidder and the City and the Successful Bidder shall have no rights at law or in equity until the Contract has been duly executed by the City.

The Successful Bidder's failure to sign and submit a Contract and other documents set forth in this Paragraph within the prescribed time shall be just cause of annulment of the award, and forfeiture of the Bid Guaranty. The award of Contract may then be made to the next qualified Bidder in the same manner as previously prescribed.

- 2.51. Ownership:** All plans, prints, designs, concepts, etc., shall become the property of the Owner.
- 2.52. Oral Statements:** No oral statement of any person shall modify or otherwise affect the terms, conditions, or specifications stated in this document and/or resulting agreement. All modifications to this request and any agreement must be made in writing by the Owner.
- 2.53. Patents/Copyrights:** The Contractor agrees to protect the Owner from any claims involving infringements of patents and/or copyrights. In no event shall the Owner be liable to the Contractor for any claims, damages, awards and/or costs of defense arising on the grounds of patent(s)/copyright(s) infringement. Patent/copyright infringement shall null and void any agreement resulting from response to this Invitation For Bid.
- 2.54. Remedies:** The Contractor and Owner agree that both parties have all rights, duties, and remedies available as stated in the Uniform Commercial Code.
- 2.55. Venue:** Any agreement as a result of responding to this Invitation For Bid shall be deemed to have been made in, and shall be construed and interpreted in accordance with, the laws of the City of Grand Junction, Mesa County, Colorado.
- 2.56. Expenses:** Expenses incurred in preparation, submission, and presentation of a response to this Invitation For Bid are the responsibility of the Bidder and cannot be charged to the Owner.
- 2.57. Sovereign Immunity:** The Owner specifically reserves its right to sovereign immunity pursuant to Colorado law as a defense to any action arising out of this Contract.
- 2.58. Public Funds/Non-Appropriation of Funds:** Funds for payment have been provided through the Owner's budget approved by the City Council/Board of County Commissioners for the stated fiscal year only. State of Colorado prohibits the obligation and expenditure of public funds beyond the fiscal year for which a budget has been approved. Therefore, anticipated orders or other obligations that may arise past the end of the stated Owner's fiscal year shall be subject to budget approval. The Contract, if any, will be subject to and must contain a non-appropriation of funds clause/limitation on multi-year fiscal obligations as required by Art X, Section 20 of the Colorado Constitution, and other applicable law(s).
- 2.59. Cooperative Purchasing:** Purchases as a result of this solicitation are primarily for the City/County. Other governmental entities may be extended the opportunity to utilize the resultant Contract award with the agreement of the successful provider and the

participating agencies. All participating entities will be required to abide by the specifications, terms, conditions, and pricings established in this Bid. The quantities furnished in this bid document are for only the City/County. It does not include quantities for any other jurisdiction. The City or County will be responsible only for the award for its jurisdiction. Other participating entities will place its own awards on its respective Purchase Orders through its purchasing office or use its purchasing card for purchase/payment as authorized or agreed upon between the provider and the individual entity. The Owner accepts no liability for payment of orders placed by other participating jurisdictions that choose to "piggy-back" on Owner's solicitation. Orders placed by participating jurisdictions under the terms of this solicitation will indicate its specific delivery and invoicing instructions.

**2.60. Keep Jobs in Colorado Act:** Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, Colorado Revised Statutes (C.R.S.) requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a). If Contractor claims it is entitled to a waiver pursuant to C.R.S. §8-17-101(1), Contractor shall state that there is insufficient Colorado labor to perform the Work such that compliance with Article 17 would create an undue burden that would substantially prevent a project from proceeding to completion and shall include evidence demonstrating the insufficiency and undue burden in its response.

Unless expressly granted a waiver by the Owner pursuant to C.R.S. §8-17-101(1), Contractor shall be responsible for ensuring compliance with Article 17 of Title 8, C.R.S. requiring 80% Colorado labor to be employed on public works. Contractor shall, upon reasonable notice provided by the Owner, permit the Owner to inspect documentation of identification and residency required by C.R.S. §8-17-101(2)(a).

**2.60.1.** "Public project" is defined as:

- (a) any construction, alteration, repair, demolition, or improvement of any land, building, structure, facility, road, highway, bridge, or other public improvement suitable for and intended for use in the promotion of the public health, welfare, or safety and any maintenance programs for the upkeep of such projects.
- (b) for which appropriate or expenditure of moneys may be reasonably expected to be \$500,000.00 or more in the aggregate for any fiscal year
- (c) except any project that receives federal moneys.

### **3. Statement of Work**

**3.1 GENERAL:** The City of Grand Junction is soliciting competitive bids from qualified and interested Contractors for all labor, equipment, and materials required to install adequate irrigation at Westlake Park for the purposes of watered grass and native vegetation. All dimensions and scope of work should be verified by Contractors prior to submission of bids. NOTE: The descriptions of the pay items listed in the Price Bid Schedule for this Project may not agree with those listed in the Standard Specifications. Payment for all Work performed, as required in the Contract Documents will be in accordance with the items and unites listed in the Price Bid Schedule. The performance of the Work for this Project shall conform to the General Contract conditions presented in the City of Grand Junction's Standard Contract Documents for Capital Improvements

Construction, revised July 2010, except as specifically modified or supplemented herein or on the Construction Drawings.

**3.2 PROJECT DESCRIPTION:** The goal of the Westlake Park Irrigation System Project is to replace the entire irrigation system. This Project will replace all mainline, lateral line, communication lines, valve, and sprinklers in the park to provide even and efficient water distribution to the existing grass and the future improvements of the park. This Project includes the material sourcing and installation of the communication system, the filtration system, the drip system, and sprinkler systems, while installing and maintaining the tree protection zones provided in the plan set. During this Project's work, the sidewalks, playgrounds and skateparks are to stay open and clean. The disk golf course will be closed. Open trenches will be made obvious to park users and back filled/water settled once pipe is installed. The pump house will be reconfigured using the existing pump. At completion of the Project, the selected Contractor will provide the City with an accurate as built document and GPS coordinates for valves, mainlines (every 20'), and the communication path (every 20'). The Contractor will provide a warrantee on all work for 1 year after the date of completion.

**3.3. SPECIAL CONDITIONS & PROVISIONS:**

**3.3.1 Non-Mandatory (Optional) Pre-Bid Meeting: Prospective bidders are encouraged to attend a non-mandatory pre-bid meeting on August 11, 2023, at 10:00 AM.** Meeting location shall be Westlake Park, 325 W. Orchard, Grand Junction CO 81501. The purpose of this visit will be to clarify the contents of this Invitation for Bids (IFB).

**3.3.2 QUESTIONS REGARDING SOLICITATION PROCESS/SCOPE OF WORK:**

Dolly Daniels; Senior Buyer  
City of Grand Junction  
[dollyd@gjcity.org](mailto:dollyd@gjcity.org)

**3.3.3 Project Manager:** The Project Manager for the Project is Joe Brown, who can be reached at (970) 254-3843. During Construction, all notices, letters, submittals, and other communications directed to the City shall be addressed and emailed or delivered to:

City of Grand Junction  
Parks and Recreation  
Attn: Joe Brown, Horticulture, Irrigation, and Turf Parks Supervisor  
2529 High Country Court  
Grand Junction, CO 81501  
[joeb@gjcity.org](mailto:joeb@gjcity.org)

**3.3.4 Contract Administrator:** The Contract Administrator for the Project is Duane Hoff Jr., Contract Administrator, who can be reached at (970)244-1545. During Construction, Contract related inquiries, issues, and other communications shall be directed to:

Duane Hoff Jr., Contract Administrator  
[duaneh@gjcity.org](mailto:duaneh@gjcity.org)

**3.3.5 Affirmative Action:** The Contractor is not required to submit a written Affirmative Action Program for this Project.

**3.3.6 Pricing:** Pricing shall be all inclusive to include but not be limited to: all labor, equipment, supplies, materials, freight (F.O.B. Destination – Freight Pre-paid and Allowed to each site), travel, mobilization costs, fuel, set-up and take down costs, and full-time inspection costs, and all other costs related to the successful completion of the project.

The Owner shall not pay nor be liable for any other additional costs including but not limited to taxes, shipping charges, insurance, interest, penalties, termination payments, attorney fees, liquidated damages, etc.

**3.3.7 Freight/Shipping:** All freight/shipping shall be F.O.B. Destination – Freight Pre-Paid and Allowed to the project site(s), Grand Junction, CO. Contractor must meet all federal, state, and local rules, regulations, and requirements for providing such services.

**3.3.8 Contract:** A binding Contract shall consist of: (1) the IFB and any amendments thereto, (2) Additional Documents as stated in Section 1.10, (3) the Bidder's response (bid) to the IFB, (4) clarification of the bid, if any, and (5) the City's Purchasing Department's acceptance of the bid by "Notice of Award" or by "Purchase Order". All Exhibits and Attachments included In the IFB shall be incorporated into the Contract by reference.

A. The Contract expresses the complete agreement of the parties and, performance shall be governed solely by the specifications and requirements contained therein.

B. Any change to the Contract, whether by modification and/or supplementation, must be accomplished by a formal Contract amendment signed and approved by and between the duly authorized representative of the Bidder and the City Purchasing Division or by a modified Purchase Order prior to the effective date of such modification. The Bidder expressly and explicitly understands and agrees that no other method and/or no other document, including acts and oral communications by or from any person, shall be used or construed as an amendment or modification to the Contract.

**3.3.9 Time of Completion:** The scheduled time of Completion for the Project is **80 Calendar Days** from the starting date specified in the Notice to Proceed.

Completion is achieved when site cleanup and all punch list items (resulting from the final inspection) have been completed. Completion shall have the meaning set forth in Article I, Section 3 (Definitions and Terms) of the General Contract Conditions.

**3.3.10 Working Days and Hours:** The working days and hours shall be as stated in the General Contract Conditions or as mutually agreed upon in the preconstruction meeting with the following exception:

All Work shall be performed between the hours of 7:00 AM to 5:00 PM, Monday through Friday.

**3.3.11 Licenses and Permits:** Contractor is responsible for obtaining all necessary licenses and permits required for Construction, at Contractors expense. See Section 2.12. Contractor shall supply to Owner all copies of finalized permits.

**3.3.12 Permits:** The following permits are required for the Project and will be obtained by the City at no cost to the Contractor:

NONE

The following permits are required for the Project and shall be obtained and paid for by the Contractor with the costs included in the total bid price for the Project:

NONE

**3.3.13 City Furnished Materials:** The City will furnish the following materials for the Project:

- Previous landscape and irrigation construction plans from Westlake Park.
- The new irrigation design of the park.
- Signage at each entrance indicating aspects of the park will be closed.

**3.3.14 Project Communications:** Prior to construction, the Contractor will meet with the irrigation supervisor to discuss public facing communication. During construction, the selected Contractor will meet with the irrigation supervisor to discuss timelines, challenges, and updates on progress. At completion of the construction, the Contractor will provide all the material specifications, instruction, and maintenance requirements of all the components of the system. The selected Contractor will turn on and audit the system in its entirety with a representative from the park operations staff in the spring to ensure work has been completed to industry standards,

**3.3.15 Project Sign:** Project Signs, if any, will be furnished and installed by the City.

**3.3.16 Authorized Representatives of the City:** Those authorized to represent the City shall include Purchasing Agent, Engineers, and Inspectors employed by the City, only.

**3.3.17 Stockpiling Materials and Equipment:** All stockpiling/storage shall be in accordance with General Contract Condition Section 51.

**3.3.18 Clean-Up:** The Contractor is responsible for cleaning up all loose materials that have been deposited or swept into gutters, and onto sidewalks and driveways as a result of sidewalk operations. The costs for all clean-up work shall be considered incidental and will not be paid for separately.

**3.3.19 Schedule of Submittals:** Contractor shall deliver these submittals at least two days prior to the pre-construction meeting:

- Project Schedule
- All materials
- All manufactured components such as pipe, valves, and communication system

**3.3.20 Excess Material:** All excess materials shall be disposed in accordance with General Contract Condition Section 50.

**3.3.21 Incidental Items:** Any item of Work not specifically identified or paid for directly which is necessary for the completion of any paid items of Work, will be considered as incidental to those items, and will be included in the cost of those items.

**3.3.22 Work to be Performed by the City (Prior to Construction):**

- None
- The City reserves the right to self-perform portions of the work.

**3.4 SCOPE OF WORK: This Project is for irrigation improvements only and not to include landscaping unless specifically requested.** The goal of the Westlake Park Irrigation System Project is to replace the entire irrigation system. This Project will replace all mainline, lateral line, communication lines, valve, and sprinklers in the park to provide even and efficient water distribution to the existing grass and the future improvements of the park. This Project includes the material sourcing and installation of the communication system, the filtration system, the drip system, and sprinkler systems, while installing and maintaining the tree protection zones provided in the plan set. During this Project's work, the sidewalks, playgrounds and skateparks are to stay open and clean. The disk golf course will be closed. Open trenches will be made obvious to park users and back filled/water settled once pipe is installed. The pump house will be reconfigured using the existing pump. At completion of the Project, the selected Contractor will provide the City with an accurate as built document and GPS coordinates for valves, mainlines (every 20'), and the communication path (every 20'). The Contractor will provide a warrantee on all work for 1 year after the date of completion.

**3.5 Attachments:**

- A: Price Bid Schedule
- B: Irrigation Plan

**3.6 Contractor Bid Documents:** For Contractor's convenience, the following is a list of forms/items to be submitted with the Contractor's bid response. However, should a form/item not be listed in this section, but required in the solicitation documents, it is the Contractor's responsibility to ensure all forms/items are submitted.

- **Contractor's Bid Form**
- **Price Bid Schedule**

**3.7 IFB TENTATIVE TIME SCHEDULE:**

Invitation For Bids available on	August 2, 2023
Non-Mandatory Pre-Bid Meeting	August 11, 2023, 10:00 AM
Inquiry deadline, no questions after this date	August 17, 2023
Addendum Posted	August 18, 2023
Submittal deadline for proposals	August 29, 2023, 2:00 PM
Notice of Award & Contract execution	August 30, 2023
Bonding & Insurance Cert due	September 8, 2023
Preconstruction meeting	September 12, 2023

Work begins no later than  
Final Completion  
Holidays:  
    Labor Day  
    Veterans Day  
    Thanksgiving

September 13, 2023  
November 30, 2023  
  
September 4, 2023  
November 10, 2023  
November 23 & 24, 2023

## 4. Contractor's Bid Form

**Bid Date:** \_\_\_\_\_

**Project:** IFB-5279-23-DD "Westlake Park Irrigation System Construction"

**Bidding Company:** \_\_\_\_\_

**Name of Authorized Agent:** \_\_\_\_\_

**Email** \_\_\_\_\_

**Telephone** \_\_\_\_\_ **Address** \_\_\_\_\_

**City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

The undersigned Bidder, in compliance with the Invitation for Bids, having examined the Instruction to Bidders, General Contract Conditions, Statement of Work, Specifications, and any and all Addenda thereto, having investigated the location of, and conditions affecting the proposed Work, hereby proposes to furnish all labor, materials and supplies, and to perform all Work for the Project in accordance with Contract Documents, within the time set forth and at the prices stated below. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this Contractor's Bid Form is a part.

The undersigned Contractor does hereby declare and stipulate that this offer is made in good faith without collusion or connection to any person(s) providing an offer for the same Work, and that it is made in pursuance of, and subject to, all terms and conditions of the Instructions to Bidders, the Specifications, and all other Solicitation Documents, all of which have been examined by the undersigned.

The Contractor also agrees that if awarded the Contract, to provide insurance certificates within ten (10) working days of the date of Notification of Award. Submittal of this offer will be taken by the Owner as a binding covenant that the Contractor will be prepared to complete the project in its entirety.

The Owner reserves the right to make the award on the basis of the offer deemed most favorable, to waive any formalities or technicalities and to reject any or all offers. It is further agreed that this offer may not be withdrawn for a period of sixty (60) calendar days after closing time. Submission of clarifications and revised offers automatically establish a new thirty day (30) period.

Prices in the bid proposal have not knowingly been disclosed with another provider and will not be prior to award.

- Prices in this bid proposal have been arrived at independently, without consultation, communication or agreement for the purpose of restricting competition.
- No attempt has been made nor will be to induce any other person or Contractor to submit a bid proposal for the purpose of restricting competition.
- The individual signing this bid proposal certifies they are a legal agent of the Bidder, authorized to represent the Bidder and is legally responsible for the offer with regard to supporting documentation and prices provided.
- Direct purchases by the City of Grand Junction are tax exempt from Colorado Sales or Use Tax. Tax exempt No. 98-03544. The undersigned certifies that no Federal, State, County or Municipal tax will be added to the above quoted prices.
- City of Grand Junction payment terms shall be Net 30 days.
- Prompt payment discount of \_\_\_\_\_ percent of the net dollar will be offered to the Owner if the invoice is paid within \_\_\_\_\_ days after the receipt of the invoice. The Owner reserves the right to take into account any such discounts when determining the bid award that are no less than Net 10 days.

RECEIPT OF ADDENDA: the undersigned Contractor acknowledges receipt of Addenda to the Solicitation, Specifications, and other Contract Documents.

State number of Addenda received: \_\_\_\_\_.

It is the responsibility of the Bidder to ensure all Addenda have been received and acknowledged.

*By signing below, the Undersigned agree to comply with all terms and conditions contained herein.*

**Company:** \_\_\_\_\_

**Authorized Signature:** \_\_\_\_\_

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

The undersigned Bidder proposes to subcontract the following portion of Work:

<u>Name &amp; address of Sub-Contractor</u>	<u>Description of Work to be performed</u>	<u>% of Contract</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The undersigned Bidder acknowledges the right of the City to reject any and all Bids submitted and to waive informalities and irregularities therein in the City's sole discretion.

By submission of the Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to its own organization, that this Bid has been arrived at independently, without collusion, consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

**Bid Schedule: Westlake Park Irrigation System Construction**  
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Item No.	Description	Quantity	Units	Unit Price	Total Price
<b><u>IRRIGATION</u></b>					
1	Pump Assembly		Lump Sum	---	\$ _____
2	4' X 8' X ½" Plywood for Pump Room	8	EA	\$ _____	\$ _____
3	3 Ph Variable Frequency Drive		Lump Sum	---	\$ _____
4	Filters and Control Box		Lump Sum	---	\$ _____
5	Fertigation Tank	1	EA	\$ _____	\$ _____
6	Electrical Allowance		Lump Sum	---	\$ _____
7	Rainbird Esp-Lxivm 2-Wire Controller	1	EA	\$ _____	\$ _____
8	Munro Pump Relay	1	EA	\$ _____	\$ _____
9	Rainbird Smrt-Y Soil Moisture Sensor	1	EA	\$ _____	\$ _____
10	Rainbird Wr2 Series Wireless Rain + Freeze Sensor	1	EA	\$ _____	\$ _____
11	Rainbird Model 7 Quick Coupling Valve	11	EA	\$ _____	\$ _____
12	4" Sch 40 Mainline and Fittings	2,300	LF	\$ _____	\$ _____
13	12-gauge 2 Wire and Connectors	2,500	LF	\$ _____	\$ _____
14	8'L Copper Grounding Rod, Clamp, 7" Round Box		Lump Sum	---	\$ _____
15	4" Brass Gate Valves	22	EA	\$ _____	\$ _____
16	7" Round Irrigation Boxes	33	EA	\$ _____	\$ _____
17	Jumbo Irrigation Boxes	24	EA	\$ _____	\$ _____
18	4" Diameter Sleeves	140	LF	\$ _____	\$ _____
19	Tree Protection	55	EA	\$ _____	\$ _____
20	Hunter Staking Kit	100	EA	\$ _____	\$ _____
21	3'L X ½" Rebar	100	EA	\$ _____	\$ _____
<b><u>ZONE 1</u></b>					
22	Zone A Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
23	Zone A Spray 2" Lateral PVC Pipe	125	LF	\$ _____	\$ _____
24	Zone A Spray 1.5" Lateral PVC Pipe	235	LF	\$ _____	\$ _____
25	Zone A Spray Misc. Fittings	36	EA	\$ _____	\$ _____
26	Zone A Spray RB Series Rotor	7	EA	\$ _____	\$ _____
27	Zone B Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

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**ZONE 2**

28	Zone A Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
29	Zone A Spray 2" Lateral PVC Pipe	293	LF	\$ _____	\$ _____
30	Zone A 1.5" Spray Lateral PVC Pipe	148	LF	\$ _____	\$ _____
31	Zone A Spray Misc. Fittings	44	EA	\$ _____	\$ _____
32	Zone A Spray RB Falcon 6504 Pop-Up Rotor	8	EA	\$ _____	\$ _____

**ZONE 3**

33	Zone A Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
34	Zone A Spray 2" Lateral PVC Pipe	150	LF	\$ _____	\$ _____
35	Zone A Spray 1.5" Lateral PVC Pipe	300	LF	\$ _____	\$ _____
36	Zone A Spray Misc. Fittings	45	EA	\$ _____	\$ _____
37	Zone B Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 4**

38	Zone A Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
39	Zone A Spray 2" Lateral PVC Pipe	71	LF	\$ _____	\$ _____
40	Zone A Spray 1.5" Lateral PVC Pipe	126	LF	\$ _____	\$ _____
41	Zone A Spray Misc. Fittings	20	EA	\$ _____	\$ _____
42	RB 700 Series Rotor	4	EA	\$ _____	\$ _____

**ZONE 5**

43	Zone 5 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
44	Zone 5 Spray 2" Lateral PVC Pipe	56	LF	\$ _____	\$ _____
45	Zone 5 Spray 1.5" Lateral PVC Pipe	96	LF	\$ _____	\$ _____
46	Zone 5 Spray Misc. Fittings	15	EA	\$ _____	\$ _____
47	Zone 5 Spray RB 700 Series Rotor	4	EA	\$ _____	\$ _____
48	Zone 5 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 6**

49	Zone 6 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
50	Zone 6 Spray 2" Lateral PVC Pipe	245	LF	\$ _____	\$ _____
51	Zone 6 Spray 1.5" Lateral PVC Pipe	160	LF	\$ _____	\$ _____
52	Zone 6 Spray Misc. Fittings	41	EA	\$ _____	\$ _____
53	Zone 6 Spray RB 700 Series Rotor	6	EA	\$ _____	\$ _____
54	Zone 6 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

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**ZONE 7**

55	Zone 7 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
56	Zone 7 Spray 2" Lateral PVC Pipe	60	LF	\$ _____	\$ _____
57	Zone 7 Spray 1.5" Lateral PVC Pipe	104	LF	\$ _____	\$ _____
58	Zone 7 Spray Misc. Fittings	16	EA	\$ _____	\$ _____
59	Zone 7 Spray RB Falcon 6504 Pop-Up Rotor	5	EA	\$ _____	\$ _____
60	Zone 7 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 8**

61	Zone 8 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
62	Zone 8 Spray 2" Lateral PVC Pipe	50	LF	\$ _____	\$ _____
63	Zone 8 Spray 1.5" Lateral PVC Pipe	202	LF	\$ _____	\$ _____
64	Zone 8 Spray Misc. Fittings	25	EA	\$ _____	\$ _____
65	Zone 8 Spray RB 700 Series Rotor	5	EA	\$ _____	\$ _____

**ZONE 9**

66	Zone 9 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
67	Zone 9 Spray 2" Lateral PVC Pipe	136	LF	\$ _____	\$ _____
68	Zone 9 Spray 1.5" Lateral PVC Pipe	274	LF	\$ _____	\$ _____
69	Zone 9 Spray Misc. Fittings	41	EA	\$ _____	\$ _____
70	Zone 9 Spray RB Falcon 6504 Pop-up Rotor	15	EA	\$ _____	\$ _____
71	Zone 9 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 10**

72	Zone 10 Drip 2" RESB Valve	1	EA	\$ _____	\$ _____
73	Zone 10 Drip 1.5" Lateral PVC Pipe	40	LF	\$ _____	\$ _____
74	Zone 10 Drip RB Root Watering System	10	EA	\$ _____	\$ _____
75	Zone 10 Drip ½" Drip Line	400	LF	\$ _____	\$ _____
76	Zone 10 Drip Flush End Cap	1	EA	\$ _____	\$ _____
77	Zone 10 Drip 7" Round Irrigation Box	1	EA	\$ _____	\$ _____
78	Zone 10 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 11**

79	Zone 11 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
80	Zone 11 Spray 1.5" Lateral PVC Pipe	202	LF	\$ _____	\$ _____
81	Zone 11 Spray Misc. Fittings	20	EA	\$ _____	\$ _____

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82	Zone 11 Spray RB 700 Series Rotor	5	EA	\$ _____	\$ _____
<b><u>ZONE 12</u></b>					
83	Zone 12 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
84	Zone 12 Spray 2" Lateral PVC Pipe	12	LF	\$ _____	\$ _____
85	Zone 12 Spray 1.5" Lateral PVC Pipe	13	LF	\$ _____	\$ _____
86	Zone 12 Spray 1" Lateral PVC Pipe	205	LF	\$ _____	\$ _____
87	Zone 12 Spray Misc. Fittings	23	EA	\$ _____	\$ _____
88	Zone 12 RB 1800 4" Pop-Up Spray Head	19	EA	\$ _____	\$ _____
89	Zone 12 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>Zone 13</u></b>					
90	Zone 13 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
91	Zone 13 Spray 2" Lateral PVC Pipe	312	LF	\$ _____	\$ _____
92	Zone 13 Spray 1.5" Lateral PVC Pipe	365	LF	\$ _____	\$ _____
93	Zone 13 Spray Misc. Fittings	68	EA	\$ _____	\$ _____
94	Zone 13 Spray RB Falcon 6504 Pop-Up Rotor	18	EA	\$ _____	\$ _____
95	Zone 13 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 14</u></b>					
96	Zone 14 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
97	Zone 14 Spray 2" Lateral PVC Pipe	67	LF	\$ _____	\$ _____
98	Zone 14 Spray 1.5" Lateral PVC Pipe	261	LF	\$ _____	\$ _____
99	Zone 14 Spray Misc. Fittings	33	EA	\$ _____	\$ _____
100	Zone 14 Spray RB Falcon 6504 Pop-Up Rotor	10	EA	\$ _____	\$ _____
101	Zone 14 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 15</u></b>					
102	Zone 15 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
103	Zone 15 Spray 2" Lateral PVC Pipe	200	LF	\$ _____	\$ _____
104	Zone 15 Spray 1.5" Lateral PVC Pipe	120	LF	\$ _____	\$ _____
105	Zone 15 Spray Misc. Fittings	32	EA	\$ _____	\$ _____
106	Zone 15 Spray RB 700 Series Rotor	4	EA	\$ _____	\$ _____
107	Zone 15 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

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**ZONE 16**

108	Zone 16 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
109	Zone 16 Spray 2" Lateral PVC Pipe	73	LF	\$ _____	\$ _____
110	Zone 16 Spray 1.5" Lateral PVC Pipe	98	LF	\$ _____	\$ _____
111	Zone 16 Spray Misc. Fittings	17	EA	\$ _____	\$ _____
112	Zone 16 Spray RB Falcon 6504 Pop-Up Rotor	5	EA	\$ _____	\$ _____

**ZONE 17**

113	Zone 17 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
114	Zone 17 Spray 2" Lateral PVC Pipe	51	LF	\$ _____	\$ _____
115	Zone 17 Spray 1.5" Lateral PVC Pipe	210	LF	\$ _____	\$ _____
116	Zone 17 Spray Misc. Fittings	26	EA	\$ _____	\$ _____
117	Zone 17 Spray RB 700 Series Rotor	5	EA	\$ _____	\$ _____
118	Zone 17 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 18**

119	Zone 18 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
120	Zone 18 Spray 2" Lateral PVC Pipe	182	LF	\$ _____	\$ _____
121	Zone 18 Spray 1.5" Lateral PVC Pipe	156	LF	\$ _____	\$ _____
122	Zone 18 Spray Misc. Fittings	34	EA	\$ _____	\$ _____
123	Zone 18 Spray RB 700 Series Rotor	7	EA	\$ _____	\$ _____

**ZONE 19**

124	Zone 19 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
125	Zone 19 Spray 2" Lateral PVC Pipe	102	LF	\$ _____	\$ _____
126	Zone 19 Spray 1.5" Lateral PVC Pipe	330	LF	\$ _____	\$ _____
127	Zone 19 Spray Misc. Fittings	43	EA	\$ _____	\$ _____
128	Zone 19 Spray RB Falcon 6504 Pop-Up Rotor	10	EA	\$ _____	\$ _____
129	Zone 19 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

**ZONE 20**

130	Zone 20 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
131	Zone 20 Spray 2" Lateral PVC Pipe	82	LF	\$ _____	\$ _____
132	Zone 20 Spray 1.5" Lateral PVC Pipe	171	LF	\$ _____	\$ _____
133	Zone 20 Spray Misc. Fittings	25	EA	\$ _____	\$ _____
134	Zone 20 Spray RB Falcon 6504 Pop-Up Rotor	6	EA	\$ _____	\$ _____

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135	Zone 20 Drip 2" RB PESV Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 21</u></b>					
136	Zone 21 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
137	Zone 21 Spray 2" Lateral PVC Pipe	130	LF	\$ _____	\$ _____
138	Zone 21 Spray 1.5" Lateral PVC Pipe	191	LF	\$ _____	\$ _____
139	Zone 21 Spray Misc. Fittings	32	EA	\$ _____	\$ _____
140	Zone 21 Spray RB 700 Series Rotor	5	EA	\$ _____	\$ _____
<b><u>ZONE 22</u></b>					
141	Zone 22 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
142	Zone 22 Drip 1" Lateral PVC Pipe	132	LF	\$ _____	\$ _____
143	Zone 22 RB Root Watering System	7	EA	\$ _____	\$ _____
144	Zone 22 Drip ½" Drip Line	120	LF	\$ _____	\$ _____
145	Zone 22 Drip Flush End Cap	1	EA	\$ _____	\$ _____
146	Zone 22 Drip 7" Round Irrigation Box	1	EA	\$ _____	\$ _____
<b><u>ZONE 23</u></b>					
147	Zone 23 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
148	Zone 23 Drip 1" Lateral PVC Pipe	230	LF	\$ _____	\$ _____
149	Zone 23 Drip RB Root Watering System	4	EA	\$ _____	\$ _____
150	Zone 23 Drip ½" Drip Line	70	LF	\$ _____	\$ _____
151	Zone 23 Drip Flush End Cap	1	EA	\$ _____	\$ _____
152	Zone 23 Drip 7" Round Irrigation Box	1	EA	\$ _____	\$ _____
<b><u>ZONE 24</u></b>					
153	Zone 24 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
154	Zone 24 Spray 2" Lateral PVC Pipe	344	LF	\$ _____	\$ _____
155	Zone 24 Spray 1.5" Lateral PVC Pipe	342	LF	\$ _____	\$ _____
156	Zone 24 Spray Misc. Fittings	69	EA	\$ _____	\$ _____
157	Zone 24 Spray RB Falcon 6504 Pop-Up Rotor	18	EA	\$ _____	\$ _____
158	Zone 24 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 25</u></b>					
159	Zone 25 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
160	Zone 25 Spray 2" Lateral PVC Pipe	182	LF	\$ _____	\$ _____

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161	Zone 25 Spray 1.5" Lateral PVC Pipe	212	LF	\$ _____	\$ _____
162	Zone 25 Spray Misc. Fittings	39	EA	\$ _____	\$ _____
163	Zone 25 Spray RB 1800 4" Pop-Up Spray Head	23	EA	\$ _____	\$ _____
<b><u>ZONE 26</u></b>					
164	Zone 26 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
165	Zone 26 Spray 2" Lateral PVC Pipe	102	LF	\$ _____	\$ _____
166	Zone 26 Spray 1.5" Lateral PVC Pipe	285	LF	\$ _____	\$ _____
167	Zone 26 Spray Misc. Fittings	39	EA	\$ _____	\$ _____
168	Zone 26 Spray RB 1800 4" Pop-Up Spray Head	32	EA	\$ _____	\$ _____
169	Zone 26 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 27</u></b>					
170	Zone 27 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
171	Zone 27 Spray 2" Lateral PVC Pipe	162	LF	\$ _____	\$ _____
172	Zone 27 Spray 1.5" Lateral PVC Pipe	403	LF	\$ _____	\$ _____
173	Zone 27 Spray Misc. Fittings	57	EA	\$ _____	\$ _____
174	Zone 27 Spray RB Falcon 6504 Pop-Up Rotor	14	EA	\$ _____	\$ _____
175	Zone 27 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 28</u></b>					
176	Zone 28 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
177	Zone 28 Spray 2" Lateral PVC Pipe	418	LF	\$ _____	\$ _____
178	Zone 28 Spray 1.5" Lateral PVC Pipe	411	LF	\$ _____	\$ _____
179	Zone 28 Spray Misc. Fittings	83	EA	\$ _____	\$ _____
180	Zone 28 Spray RB Falcon 6504 Pop-Up Rotor	18	EA	\$ _____	\$ _____
181	Zone 28 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 29</u></b>					
182	Zone 29 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
183	Zone 29 Spray 2" Lateral PVC Pipe	40	LF	\$ _____	\$ _____
184	Zone 29 Spray 1.5" Lateral PVC Pipe	231	LF	\$ _____	\$ _____
185	Zone 29 Spray Misc. Fittings	27	EA	\$ _____	\$ _____
186	Zone 29 Spray RB Falcon 6504 Pop-Up Rotor	8	EA	\$ _____	\$ _____
187	Zone 29 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____

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<b><u>ZONE 30</u></b>					
188	Zone 30 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
189	Zone 30 Spray 2" Lateral PVC Pipe	22	LF	\$ _____	\$ _____
190	Zone 30 Spray 1.5" Lateral PVC Pipe	146	LF	\$ _____	\$ _____
191	Zone 30 Spray Misc. Fittings	17	EA	\$ _____	\$ _____
192	Zone 30 Spray RB Falcon 6504 Pop-Up Rotor	5	EA	\$ _____	\$ _____
193	Zone 30 Drip 2" RB PESB Valve	1	EA	\$ _____	\$ _____
<b><u>ZONE 31</u></b>					
194	Zone 31 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
195	Zone 31 Spray 2" Lateral PVC Pipe	224	LF	\$ _____	\$ _____
196	Zone 31 Spray 1.5" Lateral PVC Pipe	343	LF	\$ _____	\$ _____
197	Zone 31 Spray Misc. Fittings	57	EA	\$ _____	\$ _____
198	Zone 31 Spray RB Falcon 6504 Pop-Up Rotor	14	EA	\$ _____	\$ _____
<b><u>ZONE 32</u></b>					
199	Zone 32 Spray 2" RB PESB Valve	1	EA	\$ _____	\$ _____
200	Zone 32 Spray 2" Lateral PVC Pipe	118	LF	\$ _____	\$ _____
201	Zone 32 Spray 1.5" Lateral PVC Pipe	340	LF	\$ _____	\$ _____
202	Zone 32 Spray Misc. Fittings	46	EA	\$ _____	\$ _____
203	Zone 32 Spray RB Falcon 6504 Pop-Up Rotor	14	EA	\$ _____	\$ _____
204	Zone 32 Drip RB PESB Valve	1	EA	\$ _____	\$ _____
MCR	Minor Contract Revisions	---	---	---	\$ <u>10,000.00</u>

**Bid Amount**      \$ \_\_\_\_\_

**Bid Amount Written** \_\_\_\_\_ dollars

**Add Alternate #1 Overseeding the Entire Park**      \$ \_\_\_\_\_

**Add Alt #1 Written** \_\_\_\_\_ dollars

**Add Alternate #2 Seeding in Trench Scars**      \$ \_\_\_\_\_

**Add Alt #2 Written** \_\_\_\_\_ dollars

Total Bid Amount w/ Add Alternates 1 & 2      \$ \_\_\_\_\_

**Total Written w/ Add Alternates** \_\_\_\_\_ dollars

## Soil Testing & Analysis

SAMPLING TOOLS, AN APPLE CORER / SMALL GARDEN SPADE / SOIL SAMPLER, RESEALABLE PLASTIC BAG, PERMANENT MARKER, CLEAN BUCKET, ORDER FORM

TAKING A CORE SAMPLE (TECHNIQUE FOR SAMPLING SOIL)  
REMOVE ANY TOP DEBRIS AND INSERT AN APPLE CORER TO A DEPTH OF 3 INCHES OR AS DEEP AS YOU CAN GO. TWIST AND PULL OUT A SOIL CORE. PLACE IT INTO A RESEALABLE PLASTIC BAG OR BUCKET DEPENDING ON YOUR SCENARIO.

\*IF YOU CAN'T PENETRATE THE SOIL TO A DEPTH OF 3 INCHES, AND, SAY, ONLY CAN GO 2 INCHES DEEP, TAKE ALL OF THE CORES IN THIS SAMPLE AT 2 INCHES. YOU MAY NEED TO TAKE ADDITIONAL CORES TO GET THE 3 OZ / 100 G SAMPLE VOLUME IN THIS CASE.

A 3-INCH CORE SAMPLE SHOULD BE TAKEN FROM WITHIN THE FIRST 3-4 INCHES OF THE SOIL. FOOD WEBS IN THAT TOP 3-4 INCHES IS PRETTY REPRESENTATIVE OF THE WHOLE ROOT SYSTEM THAT GOES DEEPER. IF SOIL IS COMPACTED, ROOTS GO SIDEWAYS INSTEAD OF DOWN. COMPACTION FROM THE RAIN DROPS HITTING THE SOIL TYPICALLY STARTS AT 4-6 INCHES, AND THERE CAN BE OTHER COMPACTION LAYERS CAUSED BY ANIMALS OR HEAVY EQUIPMENT. IN THIS CASE, TAKING A SAMPLE DEEPER THAN 3-4 INCHES WILL ONLY SHOW THE BIOLOGY OF SOME OF THE COMPACTION LAYERS (MOST LIKELY AN OUTRAGEOUS AMOUNT OF ANAEROBIC BACTERIA ALONG WITH ANAEROBIC PROTOZOA) INSTEAD OF THE BIOLOGY IN THE RHIZOSPHERE.

BARE SOIL, PASTURE OR LAWN  
(e.g. IN A FIELD THAT WAS RECENTLY TILLED AND NOT YET PLANTED)

- DRAW A MAP OF THE AREA YOU WANT TO SAMPLE.
- SELECT RANDOMLY 5-6 AREAS PER ACRE ENSURING THAT THEY ARE WELL DISTRIBUTED OVER THE AREA OF THE FIELD. AVOID AREAS NEAR BOUNDARIES AND ANY AREAS THAT ARE NOT REPRESENTATIVE OF THE FIELD (E.G. A RIDGE LINE OR DEPRESSION). MARK THESE AREAS ON THE MAP SO THAT YOU CAN REPEAT ASSESSMENTS IN THE SAME LOCATIONS IN THE FUTURE.
- TAKE 3-4 CORE SAMPLES FROM EACH OF THESE 5-6 AREAS PER ACRE.
- YOU MAY 1) PLACE CORES FROM EACH AREA IN AN INDIVIDUAL BAG AND SUBMIT THEM SEPARATELY (5-6 BAGS PER ACRE) OR 2) SUBSEQUENTLY COMBINE AND GENTLY MIX ALL SAMPLES IN A CLEAN BUCKET AND PLACE ABOUT 3 OZ (100G) OF THE MIX IN A RESEALABLE BAG WITHOUT FURTHER MIXING AND DISTURBING.
- PLEASE ENSURE THAT YOU DO NOT FILL THE BAG MORE THAN HALF-WAY WITH THE MATERIAL. SEAL THE BAG WITH THE AIR LEFT INSIDE - DO NOT EXPEL THE AIR FROM THE BAG, AS THIS MAY RESULT IN ANAEROBIC CONDITIONS BEING FORMED. LABEL THE BAG WITH THE SAMPLE NAME (E.G. "LAWN: WEEDY PATCHES") AND DATE ON THE OUTSIDE\* USING A PERMANENT MARKER OR AN AFFIXED LABEL. WRITE THIS INFORMATION ON THE ORDER FORM AS WELL.

CONTACT VERITERRA LAB: VERA DORZHINOVA, 2010 EL CAMINO REAL # 1207 SANTA CLARA, CA 95050  
CONTACT@VERITERRALAB.COM (669) 696-3655

## General Demolition Notes

### CLEARING AND GRUBBING DESCRIPTION

A. NO WORK SHALL BE CONDUCTED OUTSIDE OF THE PROPERTY LINES. SURVEY PRIOR TO CONSTRUCTION AND MARK LINE CLEARLY WITH STAKES AND BRIGHT COLORED FLAGGING TAPE.  
B. THIS WORK CONSISTS OF CLEARING, GRUBBING, REMOVING, AND DISPOSING OF VEGETATION AND DEBRIS WITHIN THE LIMITS OF THE PROJECT, EASEMENT AREAS, BORROW PITS, AND OTHER AREAS SHOWN ON THE PLAN. VEGETATION AND OBJECTS DESIGNATED TO REMAIN SHALL BE PRESERVED FREE FROM INJURY OR DEFAACEMENT (IF APPLICABLE).

### CONSTRUCTION REQUIREMENTS

- ALL TREES, SHRUBS, PLANTS, AND OTHER OBJECTS TO REMAIN ARE INDICATED ON THE IRRIGATION PLANS. EVERY OBJECT THAT IS DESIGNATED TO REMAIN AND IS DAMAGED SHALL BE REPAIRED OR REPLACED AS DIRECTED, AT THE CONTRACTOR'S EXPENSE.
- CLEARING AND GRUBBING SHALL EXTEND TO THE TOE OF FILL OR THE TOP OF CUT SLOPES, UNLESS OTHERWISE DESIGNATED.
- ALL SURFACE OBJECTS, TREES, STUMPS, ROOTS, AND OTHER PROTRUDING OBSTRUCTIONS NOT DESIGNATED TO REMAIN SHALL BE CLEARED AND GRUBBED. IN AREAS TO BE ROUNDED AT THE TOPS OF BACKSLOPES, STUMPS SHALL BE REMOVED TO AT LEAST 2 FEET BELOW THE SURFACE OF THE FINAL SLOPE LINE.
- EXCEPT IN AREAS TO BE EXCAVATED, ALL HOLES RESULTING FROM THE REMOVAL OF OBSTRUCTIONS SHALL BE BACKFILLED WITH NATIVE SOIL AND COMPACTED TO MATCH THE NATIVE CONDITION.
- BURNING OF PERISHABLE MATERIAL WILL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE CITY OF GRAND JUNCTION FIRE DEPARTMENT. IF PERMITTED, PERISHABLE MATERIAL SHALL BE BURNED UNDER THE CONSTANT CARE OF THE CONTRACTOR, AT TIMES AND IN A MANNER THAT WILL NOT ENDANGER THE SURROUNDING VEGETATION, ADJACENT PROPERTY, OR OBJECTS DESIGNATED TO REMAIN. BURNING SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE LAWS AND ORDINANCES.
- NO MATERIAL OR DEBRIS SHALL BE DISPOSED OF WITHIN THE PROJECT LIMITS WITHOUT THE WRITTEN PERMISSION OF THE CITY OF GRAND JUNCTION. MATERIAL OR DEBRIS THAT IS DISPOSED OF WITHIN THE PROJECT LIMITS SHALL BE BURIED TO A DEPTH OF AT LEAST 2 FEET AND THE SURFACE SHALL BE RESHAPED TO MATCH THE ADJACENT GROUND LINE. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS TO OBTAIN WRITTEN PERMISSION FROM PROPERTY OWNERS FOR DISPOSAL. LOCATIONS OUTSIDE THE LIMITS AND VIEW OF THE PROJECT. COPIES OF THIS WRITTEN AGREEMENT SHALL BE FURNISHED TO THE LANDSCAPE ARCHITECT BEFORE THE DISPOSAL AREA IS USED.
- ALL CLEARED MERCHANTABLE TIMBER SHALL BE REMOVED FROM THE PROJECT AND SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL CLEAR AND GRUB THE AREAS WITHIN THE PROPOSED GRASS AREAS AND SHALL INCLUDE THE REMOVAL FROM THE GROUND OF BRUSH, ROOTS, SOD, GRASS, WEEDS, SAWDUST, AND OTHER VEGETATIVE MATTER.

## Tall Grass



### Sage Grasses

Seeding Rate: 2 lbs per 1,000 sq.ft. or 25 lbs per acre

- 25 % *Pseudoroegneria spicata* (Bluebunch Wheatgrass)
  - 25 % *Festuca Idahoensis* (Idaho Fescue)
  - 15 % *Elymus lanceolatus psammophilus* (Sodar Wheatgrass)
  - 15 % *Pascopyrum smithii* (Western Wheatgrass)
  - 10 % *Achnatherum hymenoides* (Indian Ricegrass)
  - 5 % *Poa secunda* (Sandberg's Bluegrass)
  - 3 % *Elymus elymoides* (Bottlebrush Squirreltail)
  - 2 % *Hesperostipa comata* (Needle & Thread)
- <https://westernnativeseed.com>

GENERAL PLANTING INSTRUCTIONS:  
FALL PLANTING (AFTER THE FIRST FROST, BUT BEFORE THE GROUND IS FROZEN) IS RECOMMENDED. FOR WILDFLOWER MIXES AND A SPRING PLANTING (APRIL TO JUNE DEPENDING ON ELEVATION) FOR GRASS MIXES. FOR MIXES WITH BOTH WILDFLOWERS AND GRASSES, A FALL PLANTING IS RECOMMENDED. PREPARE THE SEED BED BY ROUGHENING THE SURFACE WITH A RAKE IN ORDER TO CREATE FURROWS APPROXIMATELY 1/8 - 1/4 INCH DEEP. MANY OF OUR SEEDS ARE HAIRY AND ARE EASIEST TO HAND BROADCAST RATHER THAN USING A TYPICAL LAWN SEEDER. HAND BROADCAST HALF OF THE SEED WHILE WALKING IN ONE DIRECTION (E.G. NORTH TO SOUTH) AND THE OTHER HALF IN A PERPENDICULAR DIRECTION (E.G. EAST TO WEST). AFTER HAND BROADCASTING, RAKE THE AREA AGAIN AND GENTLY COMPACT THE SOIL USING A LAWN ROLLER OR SIMILAR DEVICE. LIGHT COMPACTION WILL GREATLY IMPROVE GERMINATION BY PROVIDING SEED-TO-SOIL CONTACT AND IMPROVED MOISTURE ABSORPTION. MULCH MAY BE USED AND CAN GREATLY IMPROVE GERMINATION FOR PLANTINGS ON DRY SITES. USE MULCH THAT IS WEED FREE AND USE SPARINGLY. IN THE SPRING, WATER THE SOIL LIGHTLY (THE SOIL SHOULD BE KEPT MOIST BUT NOT SOAKED) AT REGULAR INTERVALS UNTIL THE SEEDLINGS HAVE AT LEAST 2 SETS OF LEAVES. YOU MAY NEED TO DO THIS FOR 4-6 WEEKS. NEXT, WATER DEEPLY AND LESS FREQUENTLY TO PROMOTE DEEP ROOT GROWTH, APPROXIMATELY 1-2 INCHES EVERY WEEK OR TWO. SANDY SOIL SHOULD BE WATERED MORE FREQUENTLY THAN CLAYEY SOIL. PLEASE REMEMBER THAT A GARDEN OF NATIVE PERENNIALS MAY TAKE A WHILE TO FULLY MATURE (UP TO 3 YEARS).

## Turf Grass



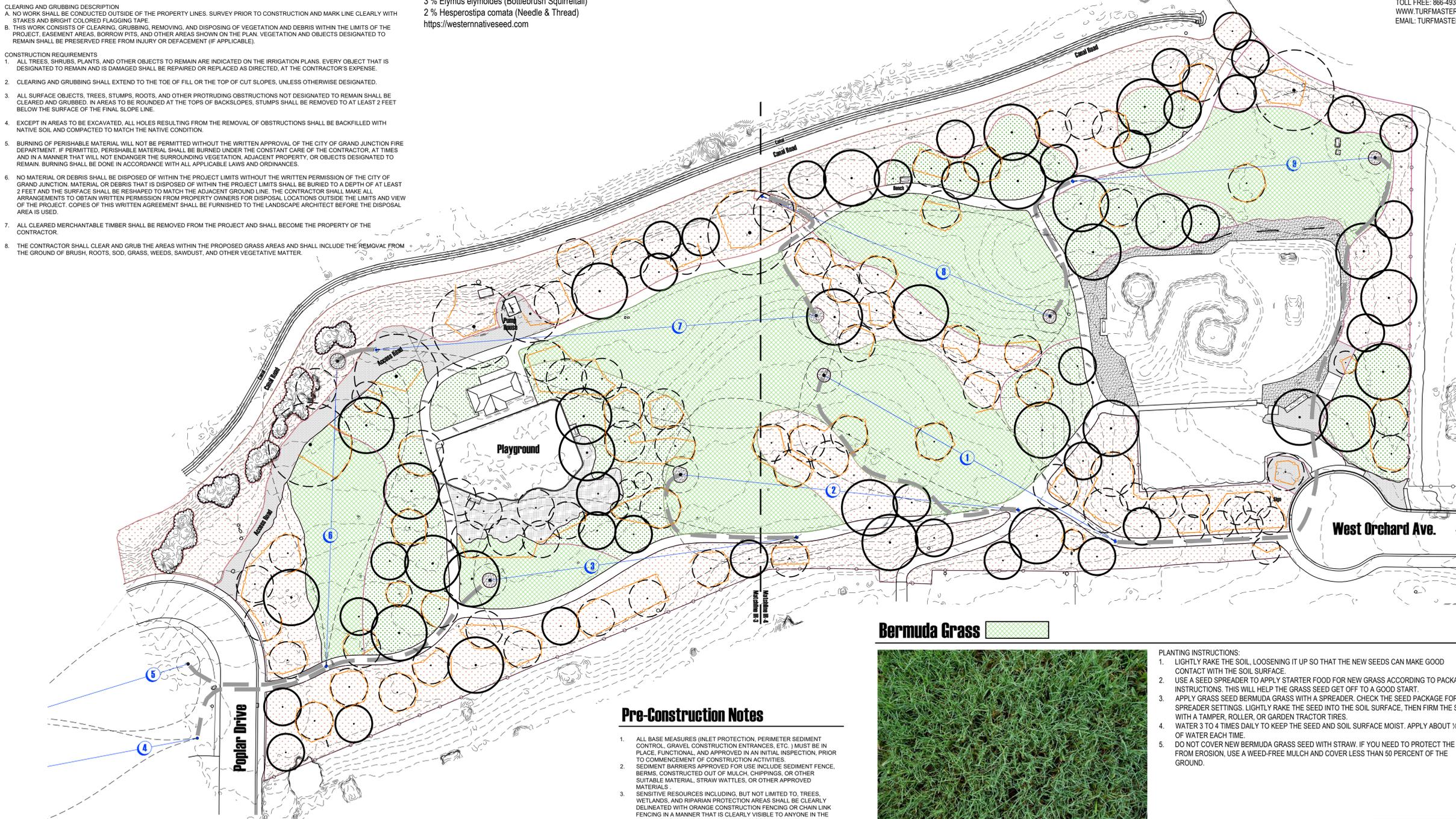
### TURF MASTER ENVIROTURF (TM)

#### MAINTENANCE

#### WATERING:

- WEEK 1: IT IS CRITICAL TO WATER NEW TURF THE FIRST 7 DAYS. NEW SOD REQUIRES 2" OR MORE OF WATER PER DAY FOR THE FIRST 7 DAYS. TOTAL AMOUNT SHOULD BE SPLIT UP OVER 4 OR 5 WATERING PERIODS EACH DAY.
- THE WARMER THE TEMPERATURE (OVER 90°) THE MORE WATER YOU NEED TO APPLY!
- WEEK 2: AFTER THE FIRST 7 DAYS, WATER AT THE RATE OF 2" PER DAY FOR 7 DAYS. SPLIT UP OVER 2 TO 3 WATERING PERIODS PER DAY.
- WEEK 3: IF WATERING RESTRICTIONS ALLOW, WATER 1-2" PER DAY EVERY OTHER DAY FOR 7 DAYS. AFTER THE FIRST TWO OR THREE WEEKS, REVERT TO WATERING 2 TIMES PER WEEK AS LOCAL WATERING RESTRICTIONS ALLOW.
- WEEK 4 THROUGH FIRST SEASON: WATER AS NEEDED WITH HOSE AND HAND SPRINKLER. DO NOT ALLOW DRYING THE FIRST YEAR. TURF IS NOT FULLY ESTABLISHED UNTIL AFTER THE FIRST SEASON SANDY SOIL REQUIRES MORE FREQUENT WATERING THAN CLAY SOIL. SPECIAL ATTENTION SHOULD BE PAID TO SLOPES AND MOUNDS WHERE RUNOFF OCCURS. MORE FREQUENT, SHORTER WATERING MAY BE NECESSARY IN SUCH LOCATIONS.
- FERTILIZATION: APPLY TURFMASTER HIGH PHOSPHOROUS FERTILIZER AT TIME OF INSTALLATION TO PROMOTE ROOT PRODUCTION. FOLLOW UP WITH TURFMASTER BLENDED FERTILIZERS 2 TO 3 TIMES PER YEAR. LIGHT GREEN IS AN INDICATION THAT YOUR LAWN NEEDS FERTILIZER.
- MOWING: MOW 10 DAYS TO 2 WEEKS AFTER INSTALLATION. MOW TO A HEIGHT OF 2 TO 3 1/2 INCHES. TURF MASTER ENVIROTURF TM SHOULD BE MOWED ABOUT ONCE A WEEK. NEVER MOW MORE THAN ONE-THIRD OF THE BLADE AT ONE TIME, AS IT MAY INjure THE PLANT. DISEASES & INSECTS: TURF MASTER ENVIROTURF TM IS HIGHLY RESISTANT TO COMMON DISEASE AND INSECT PROBLEMS. THE ENDOPHYTES IN THE CROWN PRODUCES TOXINS THAT KILL OR REPEL INSECTS THAT FEED ON TURF. THE APPEARANCE OF BROWN SPOTS MAY BE A RESULT OF A WATERING PROBLEM. IF BROWN SPOTS REMAIN AFTER ADJUSTING YOUR WATERING ROUTINE, A DISEASE MAY BE PRESENT.

AVAILABLE FROM:  
TURF MASTER LLC  
3327 CIDDINGS RD • FT. COLLINS, CO 80524  
PHONE: 970-493-8311 • FAX: 970-224-3547  
324 AYERS RD • WHEATLAND, WY 82201  
TOLL FREE: 866-493-8311 • FAX: 970-224-3547  
WWW.TURFMASTERSOD.COM  
EMAIL: TURFMASTER@TURFMASTERSOD.COM



## Pre-Construction Notes

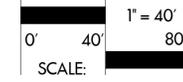
- ALL BASE MEASURES (INLET PROTECTION, PERIMETER SEDIMENT CONTROL, GRAVEL CONSTRUCTION ENTRANCES, ETC.) MUST BE IN PLACE, FUNCTIONAL, AND APPROVED IN AN INITIAL INSPECTION PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- SEDIMENT BARRIERS APPROVED FOR USE INCLUDE SEDIMENT FENCE, BERMS, CONSTRUCTED OUT OF MULCH, CHIPPINGS, OR OTHER SUITABLE MATERIAL, STRAW WATTLES, OR OTHER APPROVED MATERIALS.
- SENSITIVE RESOURCES INCLUDING, BUT NOT LIMITED TO, TREES, WETLANDS, AND RIPARIAN PROTECTION AREAS SHALL BE CLEARLY DELINEATED WITH ORANGE CONSTRUCTION FENCING OR CHAIN LINK FENCING IN A MANNER THAT IS CLEARLY VISIBLE TO ANYONE IN THE AREA. NO ACTIVITIES ARE PERMITTED TO OCCUR BEYOND THE CONSTRUCTION BARRIER.

## Bermuda Grass



### PLANTING INSTRUCTIONS:

- LIGHTLY RAKE THE SOIL, LOOSENING IT UP SO THAT THE NEW SEEDS CAN MAKE GOOD CONTACT WITH THE SOIL SURFACE.
- USE A SEED SPREADER TO APPLY STARTER FOOD FOR NEW GRASS ACCORDING TO PACKAGE INSTRUCTIONS. THIS WILL HELP THE GRASS SEED GET OFF TO A GOOD START.
- APPLY GRASS SEED BERMUDA GRASS WITH A SPREADER. CHECK THE SEED PACKAGE FOR SPREADER SETTINGS. LIGHTLY RAKE THE SEED INTO THE SOIL SURFACE, THEN FIRM THE SOIL WITH A TAMPER, ROLLER, OR GARDEN TRACTOR TIRES.
- WATER 3 TO 4 TIMES DAILY TO KEEP THE SEED AND SOIL SURFACE MOIST. APPLY ABOUT 1/4 INCH OF WATER EACH TIME.
- DO NOT COVER NEW BERMUDA GRASS SEED WITH STRAW. IF YOU NEED TO PROTECT THE AREA FROM EROSION, USE A WEED-FREE MULCH AND COVER LESS THAN 50 PERCENT OF THE GROUND.



**Bid Set**  
Approved By Owner for  
Bidding Purposes Only

Project Name:  
**Westlake Park**  
325 W Orchard Ave.  
Grand Junction, Colorado 81505

Client:  
Joe Brown  
City of Grand Junction Parks and Recreation  
Parks Supervisor  
Horticulture, Irrigation and Turf  
Phone: 970-254-3843 | JoeB@gjcity.org  
2529 High Country Court  
Grand Junction, CO 81501

Landscape Architect:  
**VISION DESIGN STUDIO, INC.**  
477 25 Road Grand Junction, CO 81505  
Phone: 970.210.2155 Email: rb@vdsi.biz  
Web: www.vdsi.biz  
Landscape Architecture | Visual Simulation | Graphic Design



## Legend

- 11,631 SF Tall Grass
- 48,787 SF Turf Grass
- 63,462 SF Bermuda Grass
- 4,571 SF Wood Chips
- 8,060 SF 1/2" Black & Blue Basalt  
12" BLACK & BLUE BASALT ROCK MULCH 3" OVER DEWITT PROS FABRIC
- 6,981 SF Decomposed Granite  
2" MINUS 1/4" DECOMPOSED GRANITE ROCK MULCH 3" OVER DEWITT PROS FABRIC
- Existing Tree
- Future Tree (NOT IN CONTRACT-FOR REFERENCE ONLY)
- 8 Disc Golf Hole
- Disc Golf Basket/DG
- Disc Golf Path
- Disc Golf Flight Zone

## Grass & Mulch Plan

Project: Westlake  
Date: July 31, 2023  
Scale: 1" = 40'  
Sheet: GP  
of 10 Sheets

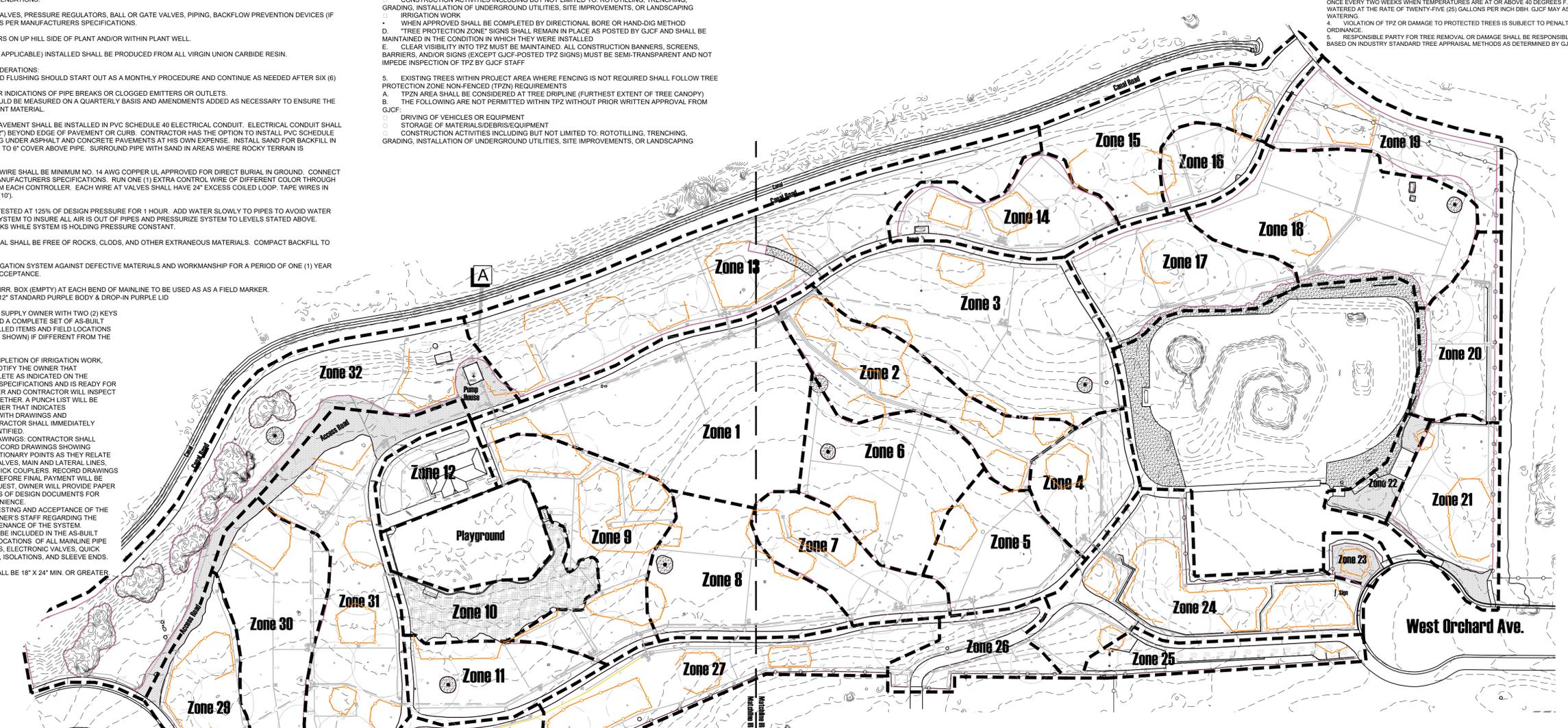
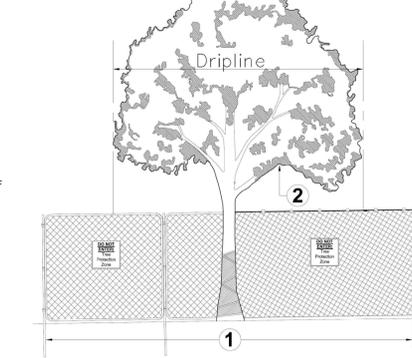
# Irrigation Notes

- VERIFY OPERATING PRESSURE AT POINT OF CONNECTION PRIOR TO INSTALLATION OF THE IRRIGATION SYSTEM. NOTIFY PLAN PREPARER IF MEASURED PRESSURE IS MORE THAN 110 P.S.I. OR LESS THAN 60 P.S.I. THE SYSTEM IS DESIGNED FOR AN OPERATING PRESSURE OF 110 P.S.I. AND A FLOW RATE AT INLET PIPE OF 120 GPM. VERIFY ALL FLOW RATES AND PRESSURES ON-SITE PRIOR TO INSTALLATION OF THE SYSTEM.
- NOTIFY LANDSCAPE ARCHITECT SIX (6) DAYS PRIOR TO INSTALLATION FOR A PRE-INSTALLATION CONFERENCE AND FIELD REVIEW COORDINATION FOR TRENCH DEPTHS, ASSEMBLY REVIEW, PRESSURE TESTS, PRESSURE TESTS, PRE-MAINTENANCE AND FINAL REVIEWS.
- A CONTINUITY TEST WILL BE REQUIRED FOR CONTROL WIRE STUBOUTS. NO SUBSTITUTIONS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL FROM THE PLAN PREPARER.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL CODES, MANUFACTURERS AND INSTRUCTIONS. AVOID ANY CONFLICTS BETWEEN SPRINKLER SYSTEM, PLANTING AND ARCHITECTURAL FEATURES. NOTIFY PLAN PREPARER PRIOR TO INSTALLATION OF ANY AREA OF GRADE DIFFERENCES OR OBSTRUCTIONS NOT INDICATED ON THE PLANS.
- PRIOR TO CUTTING INTO SOIL, LOCATE ALL CABLES, CONDUITS, SEWERS, AND OTHER UTILITIES OR ARCHITECTURAL FEATURES THAT ARE COMMONLY ENCOUNTERED UNDERGROUND AND TAKE PROPER PRECAUTIONS NOT TO DAMAGE OR DISTURB SUCH IMPROVEMENTS. ANY DAMAGE MADE DURING THE INSTALLATION OF THE IRRIGATION SYSTEM OF THE FOREMENTIONED ITEMS SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL EXPENSE TO THE OWNER.
- LOCATION OF CONTROLLER TO BE DETERMINED AT JOBSITE BY OWNER AND CONTRACTOR (IF APPLICABLE). CONNECT TO EXISTING 120 VOLT ELECTRICAL SYSTEM. USE THIN WALL METAL CONDUIT ABOVE GRADE. INSTALL PER MANUFACTURERS SPECIFICATIONS. PROVIDE AND INSTALL RECHARGEABLE BATTERY BACK-UP FOR CONTROLLERS. CONTROLLERS SHALL BE PROPERLY GROUNDED PER ARTICLE 250 OF THE NATIONAL ELECTRIC CODE AND CONFORM TO LOCAL REGULATIONS. INSTALL AS DETAIL. SEAL ALL CONDUIT HOLES WITH SILICONE OR EQUAL. PROGRAM CONTROLLERS TO IRRIGATE SLOPES USING MULTIPLE REPEAT CYCLES OF SHORT DURATIONS. CARE SHALL BE TAKEN TO PREVENT RUNOFF OF WATER AND SOIL EROSION DUE TO PROLONGED APPLICATIONS OF WATER.
- USE APPROPRIATE SOLVENT AND APPLICATOR, AND PRIMER IF REQUIRED, FOR PIPE SIZE AND TYPE APPLICATIONS. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
- INSTALL ALL ELECTRIC VALVES, PRESSURE REGULATORS, BALL OR GATE VALVES, PIPING, BACKFLOW PREVENTION DEVICES (IF APPLICABLE), CONTROLLERS PER MANUFACTURER'S SPECIFICATIONS.
- INSTALL FLOOD BUBBLERS ON UP HILL SIDE OF PLANT AND/OR WITHIN PLANT WELL.
- POLYETHYLENE PIPE (IF APPLICABLE) INSTALLED SHALL BE PRODUCED FROM ALL VIRGIN UNION CARBIDE RESIN.
- MAINTENANCE CONSIDERATIONS:
  - FILTER CLEANING AND FLUSHING SHOULD START OUT AS A MONTHLY PROCEDURE AND CONTINUE AS NEEDED AFTER SIX (6) MONTHS.
  - VISUALLY CHECK FOR INDICATIONS OF PIPE BREAKS OR CLOGGED EMITTERS OR OUTLETS.
  - WATER QUALITY SHOULD BE MEASURED ON A QUARTERLY BASIS AND AMENDMENTS ADDED AS NECESSARY TO ENSURE THE SURVIVAL RATE OF THE PLANT MATERIAL.
- ALL WIRING UNDER PAVEMENT SHALL BE INSTALLED IN PVC SCHEDULE 40 ELECTRICAL CONDUIT. ELECTRICAL CONDUIT SHALL EXTEND TWELVE INCHES (12") BEYOND EDGE OF PAVEMENT OR CURB. CONTRACTOR HAS THE OPTION TO INSTALL PVC SCHEDULE 40 SLEEVING FOR ALL PIPING UNDER ASPHALT AND CONCRETE PAVEMENTS AT HIS OWN EXPENSE. INSTALL SAND FOR BACKFILL IN ASPHALT PAVEMENT AREAS TO 6" COVER ABOVE PIPE. SURROUND PIPE WITH SAND IN AREAS WHERE ROCKY TERRAIN IS ENCOUNTERED.
- ALL VALVE CONTROL WIRE SHALL BE MINIMUM NO. 14 AWG COPPER UL APPROVED FOR DIRECT BURIAL IN GROUND. CONNECT WIRES AS DETAILED PER MANUFACTURER'S SPECIFICATIONS. RUN ONE (1) EXTRA CONTROL WIRE OF DIFFERENT COLOR THROUGH ALL VALVE LOCATIONS FOR EACH CONTROLLER. EACH WIRE AT VALVES SHALL HAVE 24" EXCESS COILED LOOP. TAPE WIRES IN BUNDLES EVERY TEN FEET (10').
- ALL PIPES SHALL BE TESTED AT 125% OF DESIGN PRESSURE FOR 1 HOUR. ADD WATER SLOWLY TO PIPES TO AVOID WATER HAMMER DAMAGE. BLEED ALL AIR OUT OF PIPES AND PRESSURIZE SYSTEM TO LEVELS STATED ABOVE. VISUALLY INSPECT FOR LEAKS WHILE SYSTEM IS HOLDING PRESSURE CONSTANT.
- ALL BACKFILL MATERIAL SHALL BE FREE OF ROCKS, CLODS, AND OTHER EXTRANEIOUS MATERIALS. COMPACT BACKFILL TO ORIGINAL DENSITY OF SOIL.
- GUARANTEE THE IRRIGATION SYSTEM AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- INSTALL 12" Ø ROUND IRR. BOX (EMPTY) AT EACH BEND OF MAINLINE TO BE USED AS A FIELD MARKER.
  - RAINBIRD PVBSTDP; 12" STANDARD PURPLE BODY & DROP-IN PURPLE LID
- AT JOB COMPLETION, SUPPLY OWNER WITH TWO (2) KEYS FOR EACH CONTROLLER AND A COMPLETE SET OF AS-BUILT PLANS SHOWING ALL INSTALLED ITEMS AND FIELD LOCATIONS (WITH CRITICAL DIMENSIONS SHOWN) IF DIFFERENT FROM THE PLANS.
  - PUNCH LIST: UPON COMPLETION OF IRRIGATION WORK, CONTRACTOR SHALL NOTIFY THE OWNER THAT INSTALLATION IS COMPLETE AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS AND IS READY FOR INSPECTION. THE OWNER AND CONTRACTOR WILL INSPECT THE INSTALLATION TOGETHER. A PUNCH LIST WILL BE PREPARED BY THE OWNER THAT INDICATES NON-CONFORMANCES WITH DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL IMMEDIATELY CORRECT ERRORS IDENTIFIED.
  - RECORD (AS-BUILT) DRAWINGS: CONTRACTOR SHALL PROVIDE ACCURATE RECORD DRAWINGS SHOWING DIMENSIONS FROM STATIONARY POINTS AS THEY RELATE TO ITEMS INCLUDING VALVES, MAIN AND LATERAL LINES, CONTROLLERS, AND QUICK CLOSERS. RECORD DRAWINGS SHALL BE SUBMITTED BEFORE FINAL PAYMENT WILL BE APPROVED. UPON REQUEST, OWNER WILL PROVIDE PAPER OR ELECTRONIC COPIES OF DESIGN DOCUMENTS FOR CONTRACTOR'S CONVENIENCE.
  - AFTER COMPLETION, TESTING AND ACCEPTANCE OF THE SYSTEM, INSTRUCT OWNER'S STAFF REGARDING THE OPERATION AND MAINTENANCE OF THE SYSTEM.
  - GPS LOCATIONS SHALL BE INCLUDED IN THE AS-BUILT DOCUMENT FOR THE LOCATIONS OF ALL MAINLINE PIPE BENDS, MANUAL VALVES, ELECTRONIC VALVES, QUICK CLOSERS, JUNCTIONS, ISOLATIONS, AND SLEEVE ENDS.
- ALL VALVE BOXES SHALL BE 18" X 24" MIN. OR GREATER.

# Tree Protection Specifications

GRAND JUNCTION CITY FORESTER (GJCF) TREE PROTECTION SPECIFICATIONS

- PRIOR TO COMMENCEMENT OF ANY SETUP WORK OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL MEET WITH GJCF AND COMPLETE AN ON-SITE TREE PROTECTION WALK-THROUGH
- ALL EXISTING TREES IN PUBLIC RIGHTS OF WAY (ROW), PARKS, AND OTHER PUBLIC PLACES SHALL BE PROTECTED PER GJCF STANDARDS AND PRACTICES
- TREE PROTECTION FENCING SHALL BE:
  - INSTALLED WHERE DEEMED NECESSARY BY GJCF STAFF PRIOR TO COMMENCEMENT OF DEMOLITION AND/OR CONSTRUCTION ACTIVITIES
  - INSPECTED AND APPROVED BY GJCF STAFF
  - REMAIN IN PLACE AND AS APPROVED UNTIL CERTIFICATE OF OCCUPANCY OR SUBSTANTIAL COMPLETION AND FINAL ACCEPTANCE IS ISSUED
  - BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE ENTIRETY OF THE PROJECT
- TREE PROTECTION FENCING REQUIREMENTS:
  - TREES IN NEED OF FENCING PROTECTION SHALL BE IDENTIFIED AS TREE PROTECTION ZONE (TPZ) TREES AND FENCING SHALL BE INSTALLED AT THE DRIPLINE, FURTHEST EXTENT OF TREE CANOPY, OR IS EQUAL TO TWELVE INCHES RADIALY FROM THE TREE FOR EVERY ONE INCH OF TRUNK DIAMETER AT BREAST HEIGHT (DBH = 4.5" ABOVE SOIL LINE), WHICHEVER IS GREATER
  - REDUCED TPZ AREAS MUST BE APPROVED BY GJCF
  - INSTALL SIX FOOT (6') CHAIN LINK FENCING PRIOR TO COMMENCEMENT OF PROJECT CONSTRUCTION ACTIVITIES
  - WITH APPROVAL OF GJCF, 4' ORANGE CONSTRUCTION FENCING MAY BE ACCEPTABLE IN PLACE OF CHAIN LINK DEPENDING ON POTENTIAL IMPACTS OF ACTIVITY (MUST BE MAINTAINED AT ALL TIMES)
  - ONCE TPZ IS IN PLACE, THE FOLLOWING ARE NOT PERMITTED WITHIN TPZ WITHOUT PRIOR WRITTEN APPROVAL FROM GJCF:
    - ENTRANCE AND/OR ACCESS
    - MOVING, RESIZING, REMOVING, OR ALTERING IN ANY MANNER
    - STORAGE OF MATERIALS/DEBRIS/EQUIPMENT
    - CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO: ROTOTILLING, TRENCHING, GRADING, INSTALLATION OF UNDERGROUND UTILITIES, SITE IMPROVEMENTS, OR LANDSCAPING
    - IRRIGATION WORK
  - WHEN APPROVED SHALL BE COMPLETED BY DIRECTIONAL BORE OR HAND-DIG METHOD
  - "TREE PROTECTION ZONE" SIGNS SHALL REMAIN IN PLACE AS POSTED BY GJCF AND SHALL BE MAINTAINED IN THE CONDITION IN WHICH THEY WERE INSTALLED
  - CLEAR VISIBILITY INTO TPZ MUST BE MAINTAINED. ALL CONSTRUCTION BANNERS, SCREENS, BARRIERS, AND/OR SIGNS (EXCEPT GJCF-POSTED TPZ SIGNS) MUST BE SEMI-TRANSPARENT AND NOT IMPEDE INSPECTION OF TPZ BY GJCF STAFF
- EXISTING TREES WITHIN PROJECT AREA WHERE FENCING IS NOT REQUIRED SHALL FOLLOW TREE PROTECTION ZONE NON-FENCED (TPZN) REQUIREMENTS
  - TPZN AREA SHALL BE CONSIDERED AT TREE DRIPLINE (FURTHEST EXTENT OF TREE CANOPY)
  - THE FOLLOWING ARE NOT PERMITTED WITHIN TPZ WITHOUT PRIOR WRITTEN APPROVAL FROM GJCF:
    - DRIVING OF VEHICLES OR EQUIPMENT
    - STORAGE OF MATERIALS/DEBRIS/EQUIPMENT
    - CONSTRUCTION ACTIVITIES INCLUDING BUT NOT LIMITED TO: ROTOTILLING, TRENCHING, GRADING, INSTALLATION OF UNDERGROUND UTILITIES, SITE IMPROVEMENTS, OR LANDSCAPING



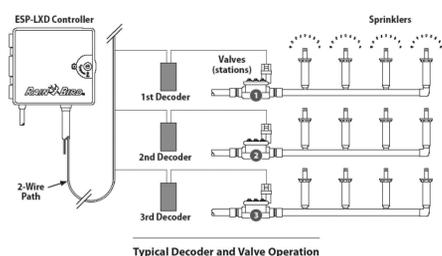
## Two-Wire Decoder System Notes

1. THIS IRRIGATION SYSTEM IS DESIGNED WITH A TWO-WIRE DECODER SYSTEM.

**DECODER OVERVIEW**  
A DECODER CONTROLLER CONTROLS LARGE IRRIGATION SYSTEMS COMPARABLE TO THE TRADITIONALLY WIRED IRRIGATION CONTROLLER. THE DIFFERENCE IS DECODERS DIRECTLY POWER THE SOLENOIDS FROM THE 2-WIRE PATH. A DECODER CONTROLLER IS PROGRAMMED SIMILAR TO A TRADITIONAL WIRED CONTROLLER. THE DIFFERENCE IS DECODER ADDRESSES MUST BE PROGRAMMED INTO THE CONTROLLER. THE DECODER ADDRESS REPRESENTS A CONTROL VALVE FOR AN IRRIGATION ZONE. FLOW OR WEATHER SENSOR, MASTER VALVE OR PUMP START RELAY AS IRRIGATION PROGRAMS EXECUTE. COMMANDS ARE COMMUNICATED TO THE DECODERS IN THE FIELD. THIS COMMUNICATION IS CARRIED THROUGH A LOW-VOLTAGE TWO-WIRE COMMUNICATION PATH TO THE NUMEROUS DECODERS LOCATED THROUGHOUT THE SITE. THE DECODERS RESPOND TO A THREE, FOUR OR FIVE-DIGIT ADDRESS. THE DECODERS WILL DIRECTLY ACTIVATE THE SOLENOIDS ON THE VALVES.

**LAYOUT**  
THE DESIGN OF A DECODER CONTROLLER SYSTEM REQUIRES CAREFUL CONSIDERATION TO THE LAYOUT OF THE DECODERS ON THE 2-WIRE PATH. SINCE A DECODER SYSTEM POWERS THE ELECTRIC SOLENOIDS THROUGH THE 2-WIRE PATH, THE 2-WIRE PATH MUST BE ABLE TO PROVIDE ENOUGH VOLTAGE TO POWER THE SOLENOIDS. THERE ARE DESIGN SPECIFICATIONS LIMITING THE LENGTH OF THE TWO-WIRE CRITICAL PATH, THE NUMBER OF DECODER ADDRESSES ON A GIVEN TWO-WIRE PATH, AND THE NUMBER OF SIMULTANEOUS, WHICH MUST BE FOLLOWED CAREFULLY.

**TWO-WIRE PATH LAYOUT**  
THERE ARE TWO TYPES OF CONFIGURATIONS THAT CAN BE USED FOR THE LAYOUT OF THE 2-WIRE PATHS. THE 2-WIRE PATH CAN BE INSTALLED AS A STAR CONFIGURATION, OR AS A LOOP CONFIGURATION. THE DECODER CONTROLLER WILL SUPPLY UP TO FOUR SEPARATE TWO-WIRE PATHS. OF THE STAR CONFIGURATION AND UP TO TWO SEPARATE 2-WIRE PATHS. OF THE LOOP CONFIGURATION FOR DECODERS. DEPENDING UPON THE DESIGN OF THE SITE, IT IS TYPICALLY PREFERABLE TO SEPARATE THE 2-WIRE PATHS INTO MULTIPLE WIRE RUNS RATHER THAN INSTALL A SINGLE TWO-WIRE PATH THROUGHOUT THE SITE. THESE WIRE PATHS CAN BE CONFIGURED IN EITHER THE STAR OR LOOP LAYOUTS OR A COMBINATION OF THE TWO TYPES. FOR EASE OF TROUBLESHOOTING, THE STAR CONFIGURATION IS THE RECOMMENDED LAYOUT FOR THE 2-WIRE PATH.



Scale: 1" = 40'

0' 40' 80'

**Bid Set**  
Approved By Owner for Bidding Purposes Only

ANY WORK IN THESE AREAS REQUIRE APPROVAL FROM GRAND JUNCTION CITY FORESTER (GJCF) PRIOR TO ACTIVITY. CONTACT GJCF FOR INSTRUCTION

AREA 1: TREE PROTECTION ZONE AND CRITICAL ROOT ZONE PROTECTION  
- THE TREE PROTECTION ZONE (TPZ) SHALL BE EQUAL TO DRIPLINE OR 1.5 FEET RADIALY FROM THE TREE FOR EVERY ONE INCH OF TRUNK DIAMETER AT BREAST HEIGHT (DBH = 4.5" ABOVE SOIL LINE), WHICHEVER IS GREATER.  
- THE CRITICAL ROOT ZONE (CRZ) SHALL BE EQUAL TO ONE FOOT RADIALY FROM THE TREE FOR EVERY ONE INCH OF TRUNK DIAMETER AT BREAST HEIGHT.

A MINIMUM 6" IN HEIGHT STEEL CHAIN LINK FENCE IS REQUIRED UNLESS OTHERWISE APPROVED BY THE GJCF. STEEL CHAIN LINK FENCE PANELS OR ROLLS ARE ACCEPTABLE.  
- WHEN CHAIN LINK ROLLS ARE INSTALLED, IT SHALL BE FASTENED TO HEAVY DUTY STEEL POSTS WITH SAFETY CAPS AT MINIMUM FIVE (5) ATTACHMENT POINTS WITH 12-GAUGE WIRE, INCLUDING POINTS AT TOP AND BOTTOM. WEAVE WIRE THROUGH TOP OF ROLL TO ELIMINATE SAG.  
- POSTS SHALL BE DRIVEN 2" TO 3" BELOW GRADE AND SPACED AT MAX. FIVE TO TEN FOOT (5' - 10') O.C. INTERVALS. FENCING MUST BE KEPT TAUT AT ALL TIMES.  
- "TREE PROTECTION ZONE" SIGNS SHALL BE PLACED ONE (1) PER EACH TREE PROTECTION ZONE MINIMUM OR MORE PER DIRECTION OF GJCF. MAINTAIN IN THE LOCATION AND CONDITION IN WHICH APPROVED.  
- TPZ, INCLUDING SIGNAGE, SHALL BE MAINTAINED IN THE LOCATION AND CONDITION IN WHICH APPROVED.

AREA 2: CANOPY PROTECTION  
CONTACT GJCF IF POTENTIAL FOR DAMAGE EXISTS AND/OR IF PRUNING IS NEEDED FOR ANY CLEARANCE ISSUES PRIOR TO PERFORMING WORK.

NOTES  
1. GJCF TREE PROTECTION SPECIFICATIONS SHALL BE FOLLOWED THROUGHOUT DURATION OF WORK.  
2. AFTER TPZ IS APPROVED:  
- TPZ SHALL NOT BE RESIZED, MODIFIED, REMOVED, OR ALTERED IN ANY MANNER WITHOUT PRIOR WRITTEN APPROVAL. TPZ SHALL BE MAINTAINED IN PLACE AS APPROVED UNTIL REMOVAL IS AUTHORIZED BY GJCF.  
- ENTRANCE ACCESS TO THE TPZ IS NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE GJCF.  
- NO MATERIALS, DEBRIS, EQUIPMENT, OR SITE AMENITIES SHALL BE STORED WITHIN THE TPZ WITHOUT PRIOR WRITTEN APPROVAL FROM THE GJCF.  
- WHILE TPZ FENCING IS IN PLACE, TREES SHALL BE DEEP-ROOT WATERED AT AN INTERVAL OF ONCE EVERY TWO WEEKS WHEN TEMPERATURES ARE AT OR ABOVE 40 DEGREES F. TREES SHALL BE WATERED AT THE RATE OF TWENTY-FIVE (25) GALLONS PER INCH DBH. GJCF MAY ASK FOR PROOF OF WATERING.  
- VIOLATION OF TPZ OR DAMAGE TO PROTECTED TREES IS SUBJECT TO PENALTY PER CITY ORDINANCE.  
- RESPONSIBLE PARTY FOR TREE REMOVAL OR DAMAGE SHALL BE RESPONSIBLE FOR LOST VALUE BASED ON INDUSTRY STANDARD TREE APPRAISAL METHODS AS DETERMINED BY GJCF.

Project Name:  
**Westlake Park**  
325 W Orchard Ave.  
Grand Junction, Colorado 81505

Client:  
Joe Brown  
City of Grand Junction Parks and Recreation  
Parks Supervisor  
Horticulture, Irrigation and Turf  
Phone: 970-254-3843 | JoeB@gjcity.org  
2529 High Country Court  
Grand Junction, CO 81501

Landscape Architect:  
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677 25 Road Grand Junction, CO 81505  
Phone: 970.210.2155 Email: rb@vnsd.biz  
Web: www.vd12.biz  
Landscape Architecture | Visual Simulation | Graphic Design

Registration:  
Robert A. Bredon  
LA 462  
05/11/2008  
Professional Seal of Licensure  
STATE OF COLORADO  
LICENSED LANDSCAPE ARCHITECT

**Legend**

- Zone 6: IRRIGATION ZONE BOUNDARY
- Zone 6: IRRIGATION ZONE NUMBER
- Zone 6: TREE PROTECTION FENCING
- Zone 6: SEE SPECS THIS SHEET

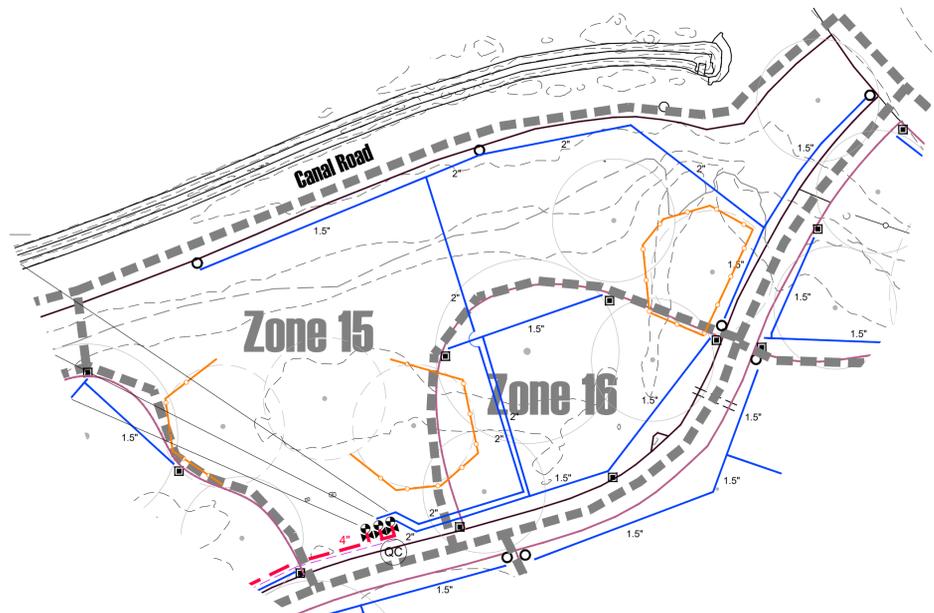
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**Irrigation Zone Diagram**

Project: Westlake

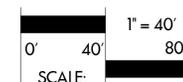
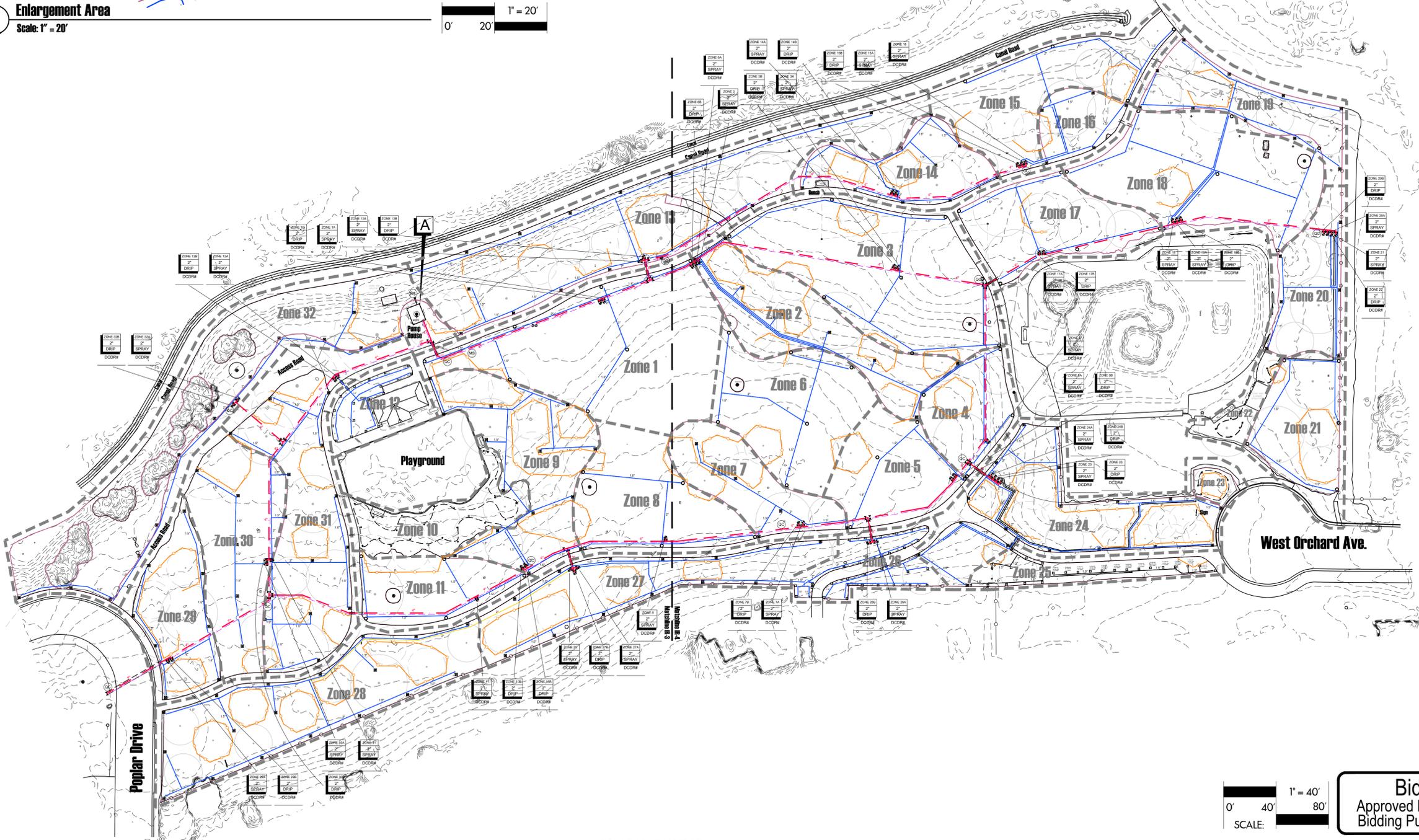
Date: July 31, 2023

Scale: 1" = 40'

Sheet:  
North  
IRI  
of 10 Sheets



**1 Enlargement Area**  
Scale: 1" = 20'

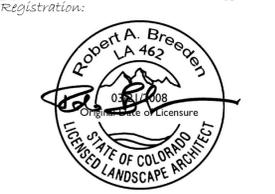


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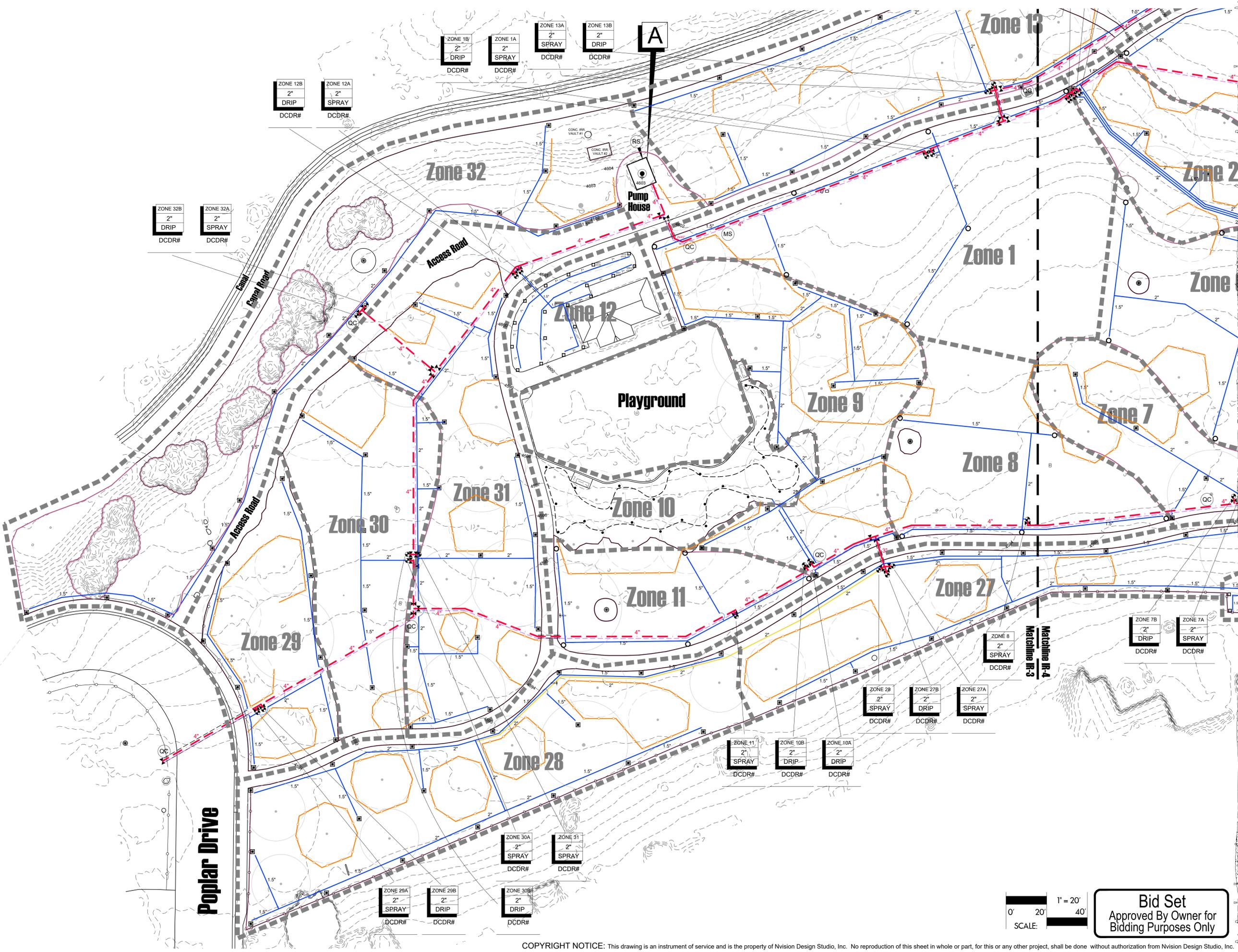


- Legend**
- POINT OF CONNECTION
  - A RAINBIRD ESP-LXIVM 2-WIRE CONTROLLER
  - TWO-WIRE PATH DOUBLE JACKETED AND INSULATED, SOLID COPPER CORE, PE COATED 12 GA WIRE - CONNECT WITH DBRY-6 CONNECTORS OR EQUIVALENT
  - 1" VALVE STATION NUMBER
  - SPRAY VALVE SIZE
  - DCDR# TYPE OF IRRIGATION DECODER NUMBER (TO BE FILLED IN BY CONTRACTOR)
  - ⊕ ELECTRIC REMOTE CONTROL VALVE FOR SPRAY ZONES - RAIN BIRD 200-PE58 (DIRTY WATER)
  - ⊖ ELECTRIC REMOTE CONTROL VALVE W/ WYE STRAINER FOR DRIP ZONES - RAIN BIRD 200-PE58 (DIRTY WATER)
  - ⊗ BRASS GATE VALVE
  - ⊙ RAIN BIRD SLRC QUICK COUPLING VALVE
  - ⊙ RAIN BIRD SMRT-Y SOIL MOISTURE SENSOR
  - ⊙ RAIN BIRD WR2 SERIES WIRELESS RAIN + FREEZE SENSOR
  - PRESSURIZED RAW WATER IRR MAIN PIPE & SIZE (PVC SCHEDULE 40 PIPE)
  - LATERAL PIPE & SIZE (PVC SCHEDULE 40 PIPE)
  - 6" PVC SLEEVE (UNLESS NOTED OTHERWISE)
  - TREE PROTECTION FENCING - SEE SPECS ON SHEET IR1
  - RAINBIRD 1800 4" POP-UP SPRAY HEAD FLOW=3 GPM (MODEL 1804-15-VAN) USE VARIABLE ARC NOZZLES FOR ALL POP-UP HEADS
  - RAINBIRD FALCON 6504 POP-UP ROTOR (#41R) #4 NOZZLE 50 PSI FLOW=3.7GPM (MODEL 6504-PC-NP-14-P)
  - RAINBIRD 700 SERIES ROTOR W/ #40 ORANGE NOZZLE PRESSURE = 70 PSI RADIUS = 71 FEET FLOW=29.8 GPM (MODEL A-700-SAM-70-40)
  - RAIN BIRD ROOT WATERING SYSTEM - RWS-B-C-1404
  - ⊥ 1/2" DRIP LINE W/ MANUAL FLUSH VALVE AT END OF RUN

Sheet Title:  
**Irrigation Plan**

Project: Westlake  
Date: July 31, 2023  
Scale: 1" = 40'

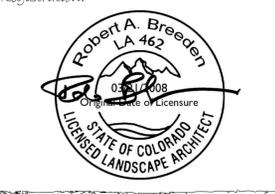
Sheet:  
IR2  
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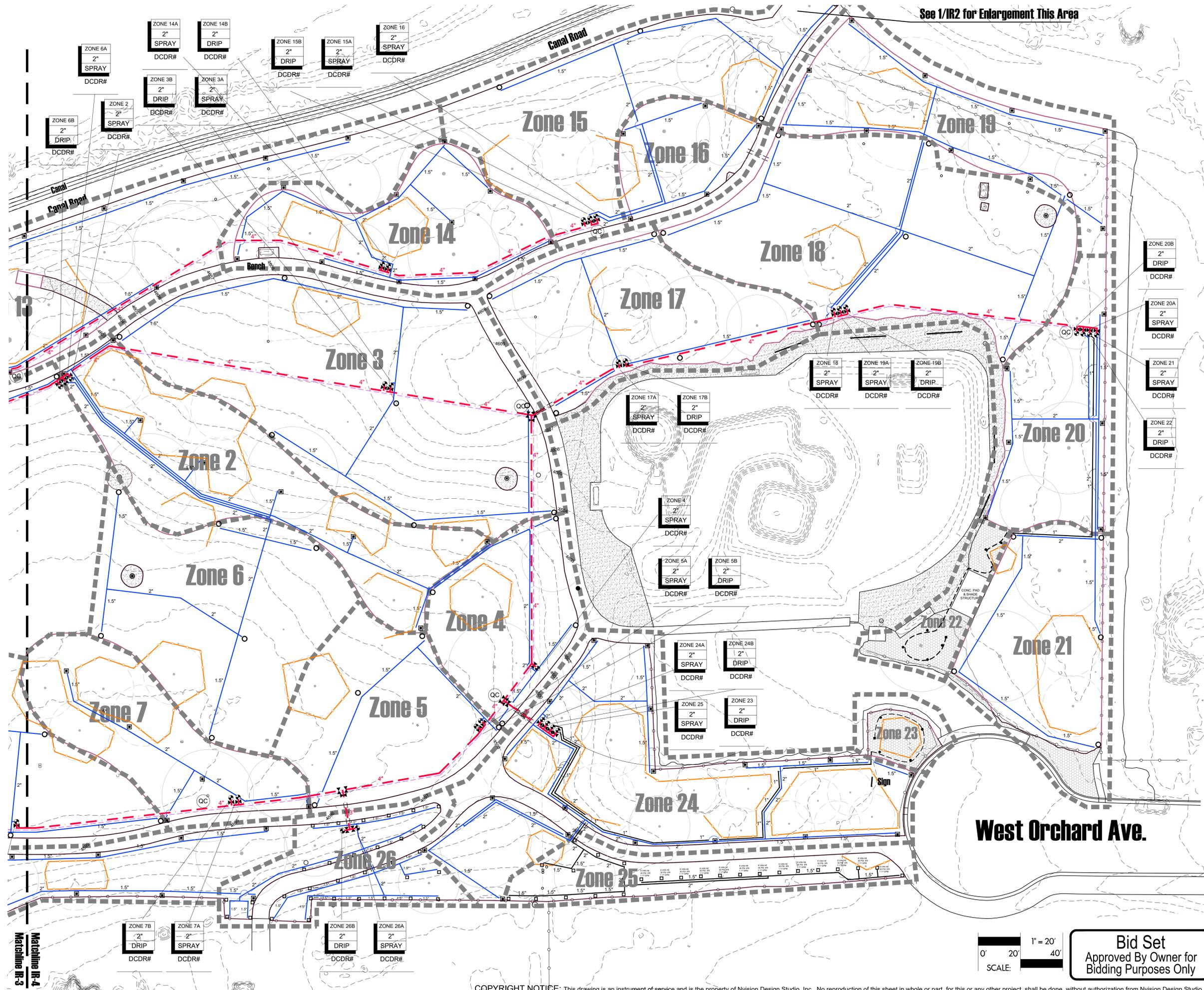
- Legend**
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  - TWO-WIRE PATH DOUBLE JACKETED AND INSULATED, SOLID COPPER CORE, PE COATED 12 GA WIRE - CONNECT WITH DRY-4 CONNECTORS OR EQUIVALENT
  - 1" VALVE STATION NUMBER
  - SPRAY TYPE OF IRRIGATION
  - DCDR# DECODER NUMBER (TO BE FILLED IN BY CONTRACTOR)
  - ⊕ ELECTRIC REMOTE CONTROL VALVE FOR SPRAY ZONES - RAIN BIRD 200-PE5B (DIRTY WATER)
  - ⊖ ELECTRIC REMOTE CONTROL VALVE W/ WYE STRAINER FOR DRIP ZONES - RAIN BIRD 200-PE5B (DIRTY WATER)
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Sheet Title:  
**Irrigation Plan**

Project: Westlake Sheet: 13  
 Date: July 31, 2023  
 Scale: 1" = 20'  
 of 10 Sheets

0' 20' 40'  
 SCALE: 1" = 20'

**Bid Set**  
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See 1/IR2 for Enlargement This Area

Project Name:  
**Westlake Park**  
 325 W Orchard Ave.  
 Grand Junction, Colorado 81505

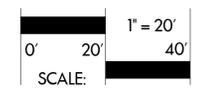
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**West Orchard Ave.**



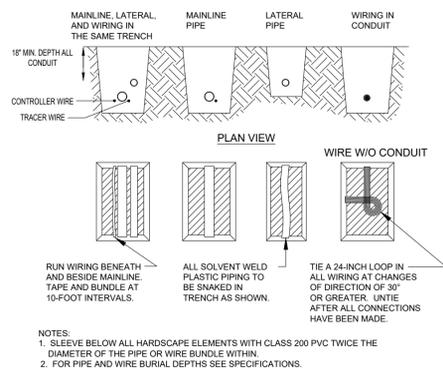
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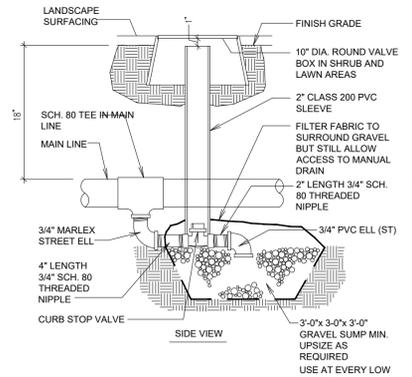
Project: Westlake Sheet: 1 of 10 Sheets

Date: July 31, 2023

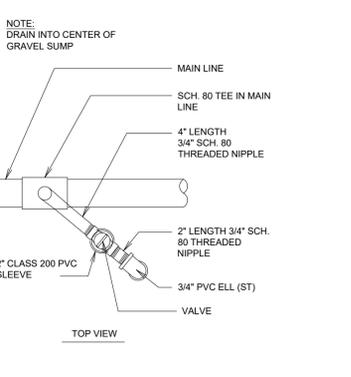
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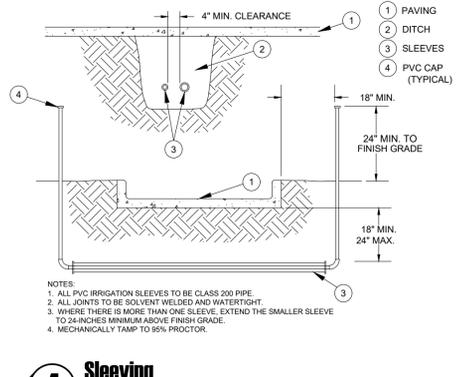
**1 Trench Section**  
NTS



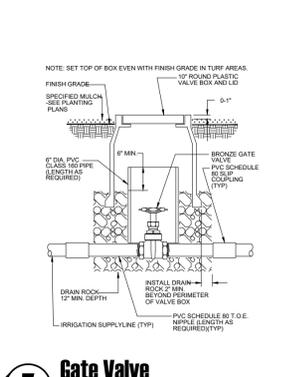
**2 Main Line Manual Drain Valve**  
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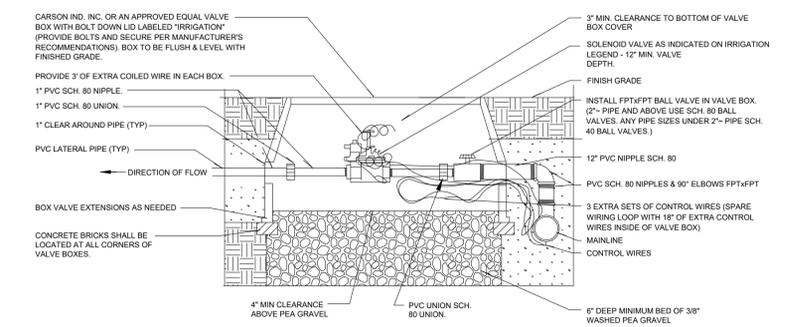
**3 Quick Coupling Valve**  
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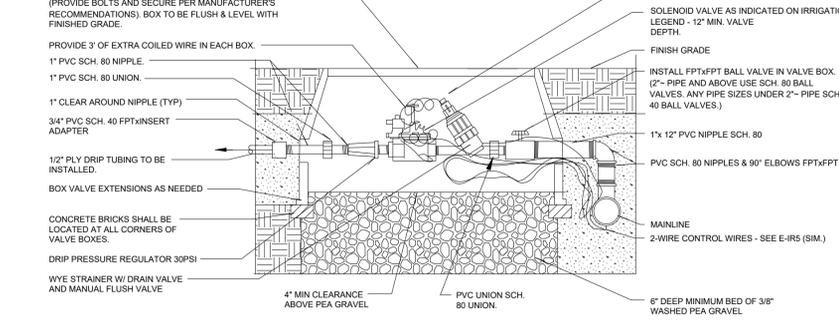
**4 Sleeving**  
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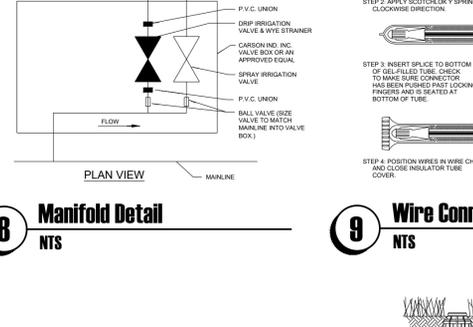
**5 Gate Valve**  
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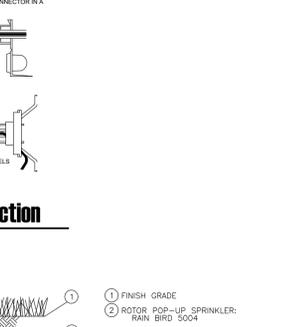
**6 Spray Valve**  
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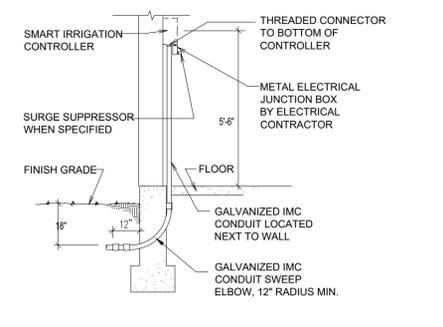
**7 Drip Valve**  
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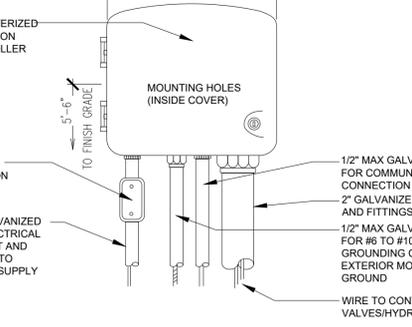
**8 Manifold Detail**  
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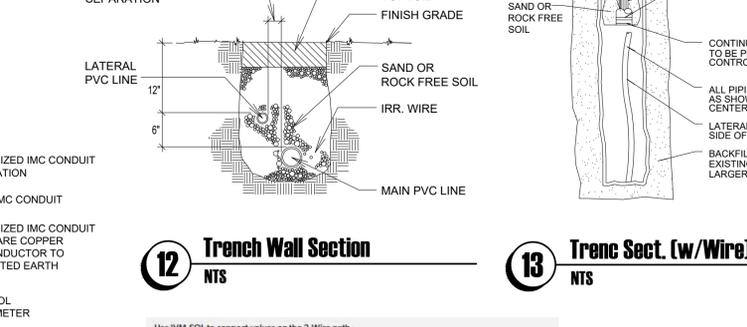
**9 Wire Connection**  
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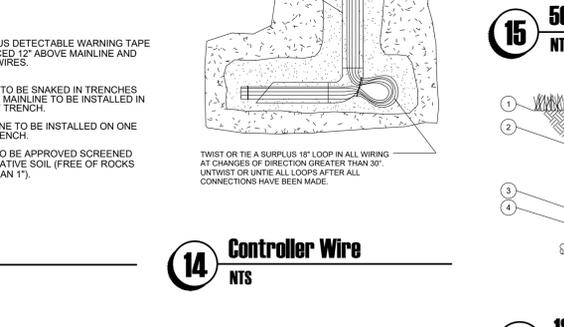
**10 Irrigation Controller (Interior Mount)**  
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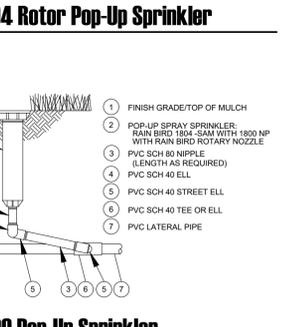
**11 Smart Controller**  
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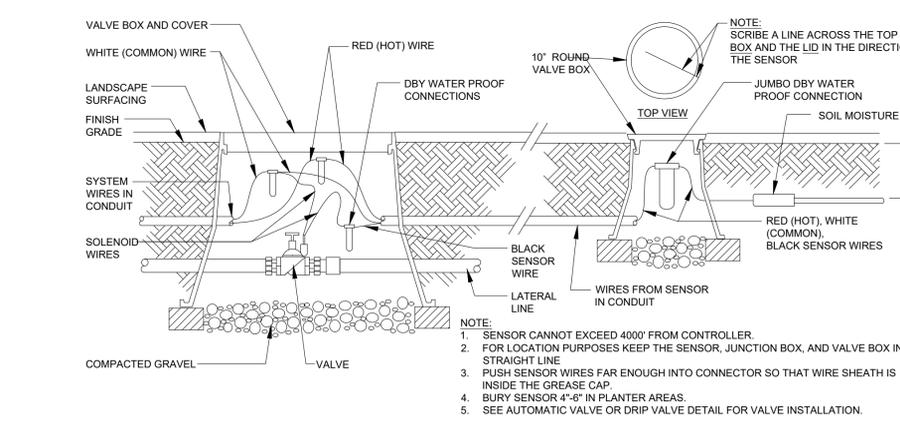
**12 Trench Wall Section**  
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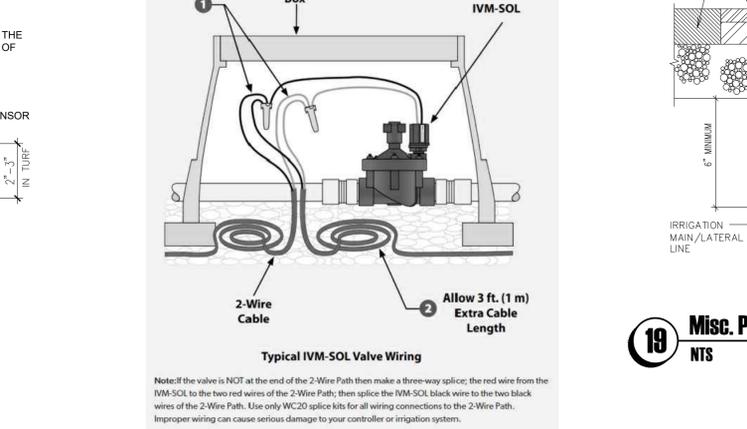
**13 Trench Sect. (w/Wire)**  
NTS



**14 Controller Wire**  
NTS



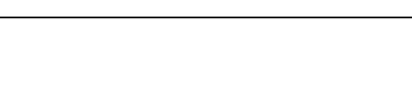
**15 5004 Rotor Pop-Up Sprinkler**  
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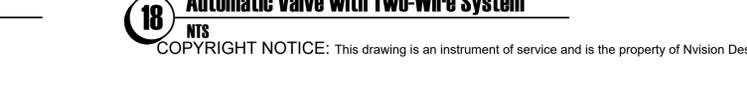
**16 1800 Pop-Up Sprinkler**  
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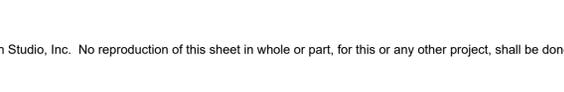
**17 Soil Moisture Sensor**  
NTS



**18 Automatic Valve with Two-Wire System**  
NTS



**19 Misc. Pipe Trench Detail Exist. Pavement Areas**  
NTS



**20 Misc. Pipe Trench Detail New Pavement Areas**  
NTS

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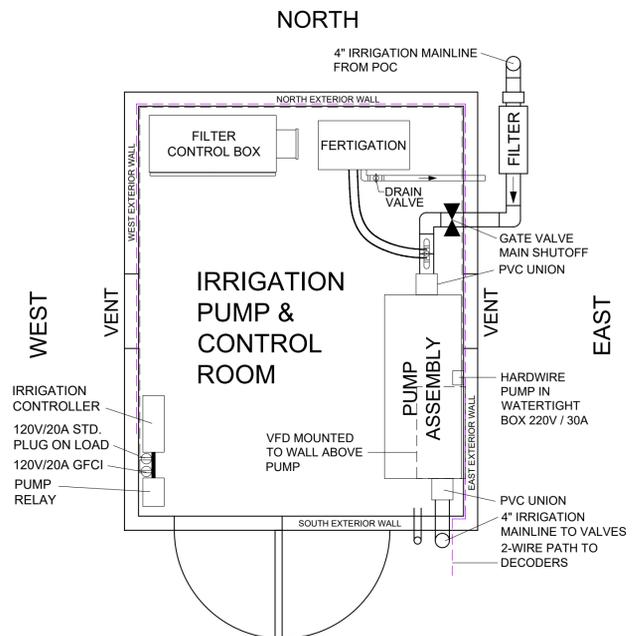
Registration:  
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Sheet Title:  
**Irrigation Details**

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Sheet: 1 of 10 Sheets

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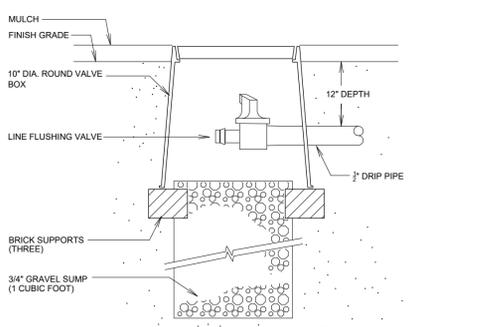
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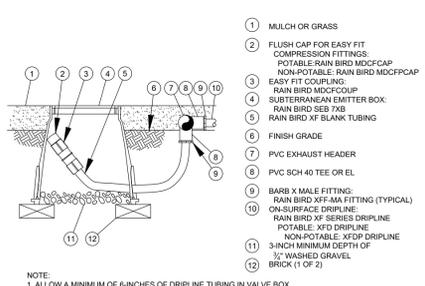
**1 Pump House Plan Layout**  
1/2" = 1'-0"



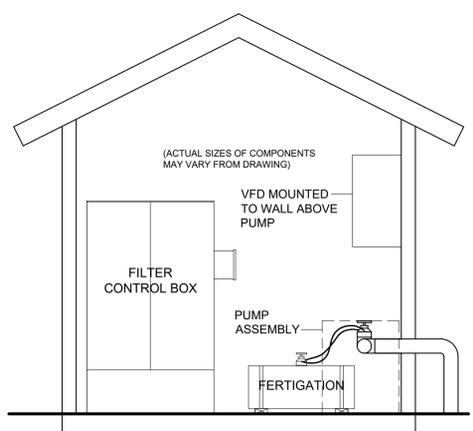
**5 Fertilization Tank**  
NTS



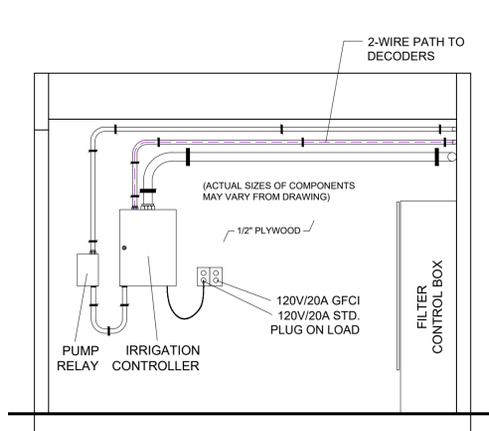
**9 Manual Drip Flush Valve**  
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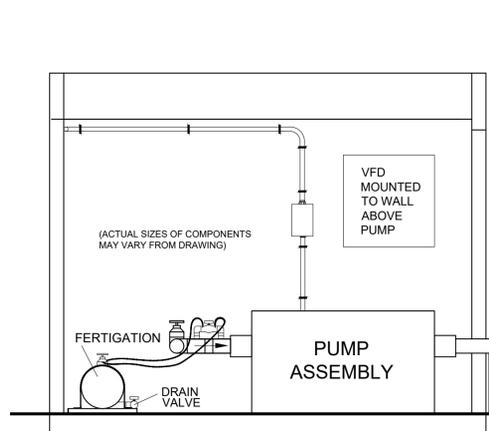
**14 Drip Line Flush End Cap**  
NTS



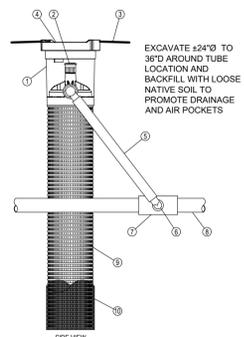
**2 Pump House - North Interior Wall Elevation**  
1/2" = 1'-0"



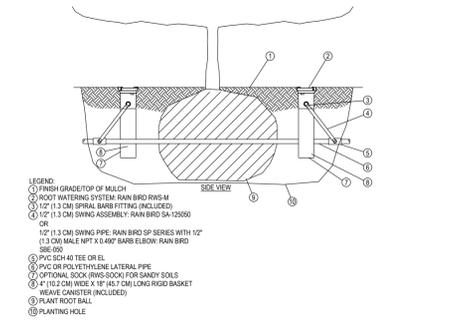
**3 Pump House - West Interior Wall Elevation**  
1/2" = 1'-0"



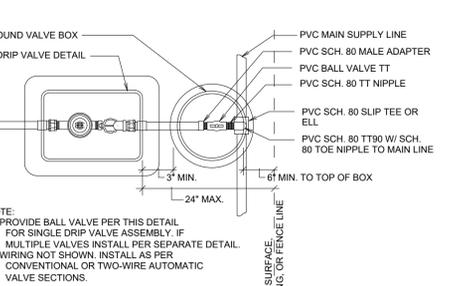
**4 Pump House - East Interior Wall Elevation**  
1/2" = 1'-0"



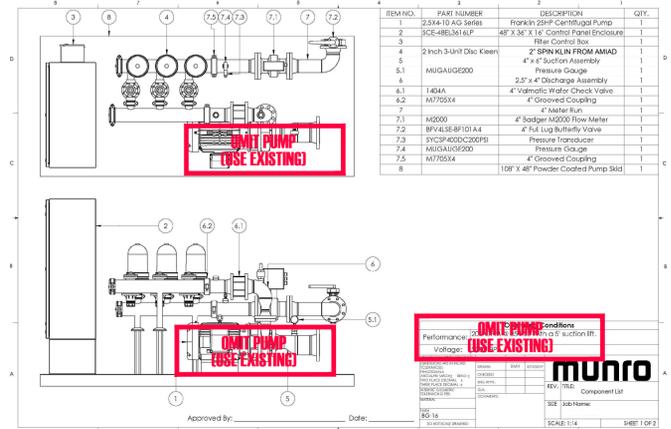
**6 Root Watering System**  
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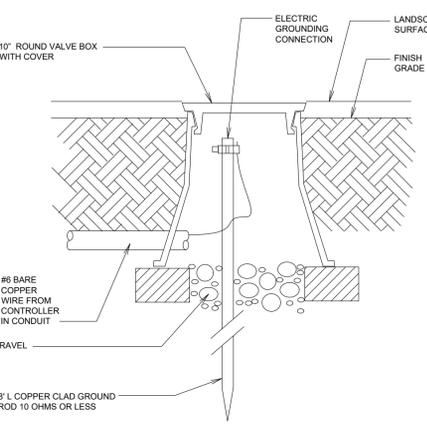
**10 Root Watering System - Tree Installation**  
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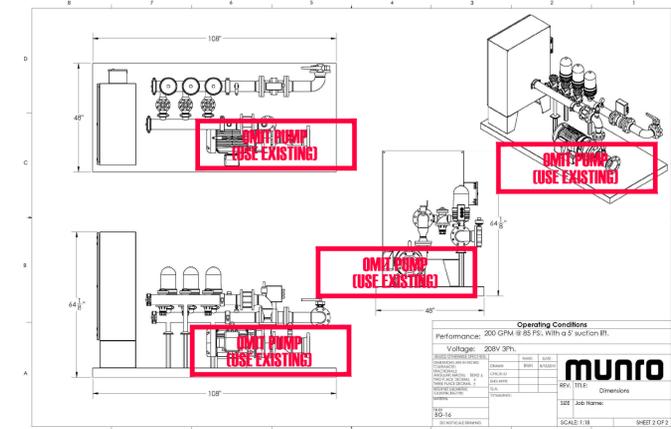
**15 Drip Valve Assembly**  
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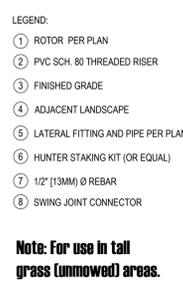
**7 Pump & Filter Components**  
NTS



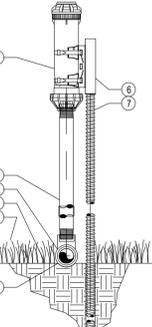
**11 Lightning Grounding Rod**  
NTS



**8 Pump Dimensions**  
NTS



**12 Rotor Riser at Grade**  
NTS



**13 Rotor Pop-Up Sprinkler**  
Rainbird Falcon 6504

Project Name:  
**Westlake Park**  
325 W Orchard Ave.  
Grand Junction, Colorado 81505

Client:  
Joe Brown  
City of Grand Junction Parks and Recreation  
Parks Supervisor  
Horticulture, Irrigation and Turf  
Phone: 970-254-3843 | JoeB@gcity.org  
2529 High Country Court  
Grand Junction, CO 81501

Landscape Architect:  
**VISION DESIGN STUDIO, INC.**  
477 25 Road Grand Junction, CO 81505  
Phone: 970.210.2155 Email: rb@vizstz.biz  
Web: www.vizstz.biz  
Landscape Architecture | Visual Simulation | Graphic Design



Sheet Title:  
**Irrigation Details**

Project: Westlake  
Date: July 31, 2023  
Scale: 1/8" = 1'-0"

Sheet:  
North  
**IR6**  
of 10 Sheets

**Bid Set**  
Approved By Owner for  
Bidding Purposes Only

## Landscape Specifications - Page 1

MASTER SPECIFICATIONS  
DIVISION 32 – EXTERIOR IMPROVEMENTS  
NVISION DESIGN STUDIO, INC.

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MASTER SPECIFICATIONS: DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION #	TITLE
32	8400 PLANTING IRRIGATION
32	9200 TURF AND NATIVE/ADAPTIVE PLANTINGS
32	9300 PLANTS
32	9311 SOIL AMENDMENTS

### SECTION 32 8400 – PLANTING IRRIGATION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT AS NECESSARY TO COMPLETE ALL WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.
- B. THIS SECTION INCLUDES:
  1. IRRIGATION SYSTEMS.
  - C. SUGGESTED DIVISION OF WORK: SLEEVES UNDER ROADS SHALL BE INSTALLED BY EXCAVATION CONTRACTOR AND COORDINATED WITH IRRIGATION CONTRACTOR.
  - D. THIS IRRIGATION SYSTEM GUIDELINE IS FOR DESIGN-BUILD SYSTEM AS WELL AS DESIGNED SYSTEMS, AND IS CONSIDERED MINIMUM STANDARDS FOR NVISION DESIGN STUDIO, INC.
  - E. WORK SPECIFIED OR CALLED FOR ON THE DRAWINGS, SHALL BE EXECUTED IN ACCORDANCE WITH GOVERNING ORDINANCES, LAWS, AND REGULATIONS AND SHALL MEET LOCAL CODES AND CONDITIONS. CHANGES OR ADDITIONS IN THE WORK NECESSARY TO MEET ORDINANCES, REGULATIONS, AND/OR CONDITIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF NVISION DESIGN STUDIO, INC.

##### 1.2 SUBMITTALS

- A. CONTRACTOR SHALL FURNISH SAMPLES, MANUFACTURER'S PRODUCT DATA, TEST REPORTS, AND MATERIALS.

##### 1.3 DESIGN CONSIDERATIONS

- A. THE DESIGN OF THE SYSTEM SHALL BE ACCORDING TO STANDARD PRACTICES OF THE IRRIGATION ASSOCIATION, AND STATE OF COLORADO, MESA COUNTY, AND LOCAL CODES.
- B. IRRIGATION SHOULD CONTAIN RAIN-SENSORS, SOIL MOISTURE SENSORS, SOLAR CLOCKS WHERE APPLICABLE AND/OR OTHER SUSTAINABLE FRIENDLY MEASURES.
- C. MAXIMUM VELOCITY OF WATER THROUGH PIPING AND EQUIPMENT = 5FT PER SECOND ALL PIPING SHALL NOT EXCEED 75% OF IT RATED GPM OR PSI CAPACITY. METALLIC PIPE FOR ANY EXPOSED PIPING, PVC PIPE SCH40 1-1/2-INCH AND SMALLER SDR21 FOR 2-INCH AND LARGER 1-INCH

TO 1-1/2-INCH POLYETHYLENE MAY BE USED FOR LATERAL PIPING.

- D. ROTARY HEADS ARE ONLY ALLOWED ON AREAS EXCEEDING 16' SPACING. REFER TO IRRIGATION LEGEND FOR EXACT HEADS.
- E. POP-UP SPRAY HEADS ONLY. USE 4-INCH POP-UPS FOR TURF AREAS AND 12-INCH POP-UPS FOR PLANTINGS.
- F. THE ANGLE OF TRAJECTORY OF THE SPRINKLER HEAD SHOULD BE CALCULATED SO THAT THE SPRAY WILL BE ABOVE THE EXPECTED MATURE PLANT ELEVATION.
- G. PLANTING BEDS AND TURF AREAS MUST BE LOCATED ON SEPARATE ZONES. PLANTING BEDS SHALL BE IRRIGATED WITH DOMESTIC WATER AND LARGE TURF OR GRASSY AREAS SHALL BE IRRIGATED WITH DITCH WATER.
- H. ALL SPRINKLER HEADS WITHIN A ZONE TO OPERATE AT NO MORE THAN A MAXIMUM LOSS OF 3 PSI FROM SOLENOID VALVE TO FARTHEST SPRINKLER HEAD. THE ZONE TO HAVE 25% AVAILABLE CAPACITY FOR HIGHER GPM NOZZLES OR ADDITIONAL SPRINKLERS.
- I. THE SPRAY OF THE SPRINKLERS SHALL NOT INTENTIONALLY REACH OR SPRAY OVER WALK OR PAVEMENT. SPRINKLER HEAD SPACING: ONLY TRIANGULAR OR SQUARE SPRINKLER HEAD SPACING IS TO BE USED (SIGNAL ROW SPACING IS NOT ALLOWED); 8' MAXIMUM SPACING FOR LANDSCAPE PLANTING AREAS. DETAIL ALL PIPE SIZES FROM THE POINT OF CONNECTION AND ALL IRRIGATION PIPE SIZES. INCLUDE A MINIMUM OF ONE QUICK COUPLER VALVE PER 70' HOSE CAN REACH ALL AREAS (CONFIRM WITH OWNER).
- J. IRRIGATION CONTROLLER TO BE HOUSED IN A STAINLESS ENCLOSURE AND UL LISTED. CONTROLLER TO BE INTERNET BASED WITH ALL EQUIPMENT INCLUDING ADDED LIGHTNING PROTECTION AND FLOW METERS TO MONITOR ALL ZONES AND TO INCLUDE STARTING AT ACCEPTANCE 1 YEAR OF INTERNET CONTROL PROGRAMMING COMMUNICATION OF SERVICE.
- K. SHOW ALL DETAILS OF TAP, METER, METER PIT, RPZ VALVE, RPZ ENCLOSURE, BLOWOUT CONNECTION AND ALL OTHER RELATED DETAILS. GIVE A DETAILED DESCRIPTION OF WINTERIZATION PROCEDURES AND SPRING START-UP, THE DESCRIPTION SHALL BE DETAILED SO NVISION DESIGN STUDIO, INC. CAN EVALUATE THESE PROCEDURES.
- L. PIPE DEPTH – MINIMUM FINISHED GRADE TO TOP OF PIPE:
  1. LATERAL 18-INCHES.
  2. MAINLINE 24-INCHES.
- M. SLEEVES: PIPES UNDER WALKS OR PAVEMENT TO BE SLEEVED WITH SOLID RIGID PVC PIPE. THE SLEEVE SHALL BE 2 TIMES LARGER THAN THE PIPE SIZE ALL WIRE SHALL BE IN A SEPARATE CONDUIT OR SLEEVE.
  1. MINIMUM SLEEVE DEPTH FOR WALKS: 18-INCHES.
  2. FOR PAVEMENT WITH VEHICLE TRAFFIC: 24-INCHES.

##### 1.5 SUBMITTALS

- A. SUBMITTALS: SHOP DRAWINGS AND SUBMITTALS ARE REQUIRED AND SHALL BE SUBMITTED AND APPROVED PRIOR TO STARTING WORK. DESIGN DRAWINGS AND SUBMITTALS ARE TO BE PREPARED BY A COLORADO REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT OR LICENSED PLUMBING CONTRACTOR DETAILING THE ENTIRE LAYOUT OF THE PLANNED IRRIGATION SYSTEM.
  1. MINIMUM REQUIREMENTS INCLUDE CHARACTERISTICS OF THE SYSTEM INCLUDING PIPE TYPE, PIPE SIZE, MANUFACTURES, PART

NAMES, PART NUMBERS, MODEL NUMBERS, EQUIPMENT TYPE AND LAYOUT, AND FABRICATION.

2. THE DESIGN SHALL INCLUDE CALCULATIONS INDICATING GALLONS PER MINUTE, PRESSURE ALL WATER CALCULATIONS ARE TO BE INDICATED AT POINT OF CONNECTION SOLENOID VALVES, SPRINKLER HEADS AND ANY OTHER PERTINENT EQUIPMENT.
3. A COLORADO REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT OR COLORADO LICENSED PLUMBING CONTRACTOR SHALL STAMP AND PUT HIS OR SIGNATURE WITH IDENTIFYING LICENSE NUMBER ON EACH DESIGN DRAWING AND SUBMITTAL.

##### 1.6 QUALITY ASSURANCE

- A. APPROVED INSTALLATION CONTRACTORS:
  1. LIST OF PREVIOUSLY APPROVED CONTRACTORS WHO ARE CERTIFIED TO INSTALL HDPE PIPE AND THE FUSION JOINTING OF FITTINGS TO HDPE PIPE
  - B. COORDINATION: CONTRACTOR SHALL COORDINATE IRRIGATION AND EXCAVATION WORK, AND COORDINATE WITH NVISION DESIGN STUDIO, INC. FOR THE INSTALLATION OF MAINLINE, SLEEVES AND OWNER PROVIDED ITEMS.
  - C. WEEKLY CONSTRUCTION MEETINGS WITH IRRIGATION CONTRACTOR, NVIZ STAFF AND THE PROJECT REPRESENTATIVE WILL BE HELD TO COORDINATE WORK AND INSTALLATION SEQUENCE. ATTENDANCE AT MEETINGS IS MANDATORY.

##### 1.7 SEQUENCING AND SCHEDULING

- A. THE OWNER WILL CONTRACT SEPARATELY FOR THE REMOVAL AND REPLACEMENT OF PAVEMENT SURFACES, THE INSTALLATION OF SLEEVES AS INDICATED ON DRAWINGS.
- B. THE OWNER WILL INSTALL ELECTRIC POWER FOR IRRIGATION SYSTEM, BOOSTER PUMPS AND IRRIGATION CONTROLLERS.
- C. SHOULD EXISTING VALVES REQUIRE REPLACEMENT, THE OWNER WILL PERFORM THAT WORK. CONTRACTOR SHALL REMOVE THE EXISTING PIPING DOWNSTREAM OF VALVE AND CONNECT THE NEW PIPING TO THE VALVE.

##### 1.8 WARRANTY

- A. FOR A PERIOD OF 1 YEAR FROM THE DATE OF FINAL ACCEPTANCE, CONTRACTOR SHALL PROVIDE A LABOR WARRANTY TO PROMPTLY FURNISH AND INSTALL, WITHOUT COST TO THE OWNER, AND ALL PARTS WHICH PROVE DEFECTIVE IN MATERIAL OR WORKMANSHIP.
- B. IF IRRIGATION SYSTEM FAILS AS A RESULT OF DEFECTIVE WORKMANSHIP OR MATERIALS, AND THE FAILURE CAUSES DAMAGE TO LANDSCAPE OR SITE FEATURES AND FINISHES, THEN REPAIR OF THE IRRIGATION SYSTEM SHALL INCLUDE REPAIRING OR REPLACING THE DAMAGED LANDSCAPE AND SITE FEATURES. REPAIR OF THE IRRIGATION SYSTEM AND COSTS TO REPAIR LANDSCAPE AND SITE FEATURES SHALL BE AT CONTRACTOR'S EXPENSE.
- C. PIPE WARRANTY INSTALLATION DATA FORM SHALL BE FILLED OUT AND FORWARDED TO THE COMPANY AND WARRANTY PRESENTED TO THE OWNER AFTER COMPLETION AND PRIOR TO PAYMENT.

##### 1.9 MAINTENANCE

- A. OWNER WILL WINTERIZE THE SYSTEM.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- A. RAINBIRD.

##### 2.2 POLYETHYLENE PIPE

- A. LINES 1-1/4-INCH AND SMALLER SHALL BE HIGH-DENSITY (HD) FLEXIBLE, NON-TOXIC POLYETHYLENE PIPE MADE FROM 100% VIRGIN POLYETHYLENE MATERIAL, NSF APPROVED. ALL SIZES SHALL HAVE A MINIMUM 100 PSI WORKING PRESSURE RATING (ASTM F239), CONFORMING TO

NSF STANDARD FOR THERMOPLASTIC PIPE DIMENSIONS RATIO OF SDR-15.

- B. 2-INCH AND LARGER (WHERE SPECIFIED ON DRAWINGS AS HDPE) SHALL BE HIGH-DENSITY, FLEXIBLE, NON-TOXIC POLYETHYLENE PIPE (HDPE) MADE FROM 100% VIRGIN POLYETHYLENE MATERIAL, NSF APPROVED. ALL SIZES SHALL HAVE A MINIMUM 100 PSI WORKING PRESSURE RATING (ASTM F239), CONFORMING TO NSF STANDARD FOR THERMOPLASTIC PIPE DIMENSIONS RATIO OF DR-11.
- C. POLYETHYLENE PIPE SHALL BE CONTINUOUSLY AND PERMANENTLY MARKED WITH THE MANUFACTURER'S NAME, MATERIAL, SIZE AND SCHEDULE.
- D. PIPE SHALL CONFORM TO THE US DEPARTMENT OF COMMERCE COMMERCIAL STANDARD CS255-63-PE-3408 OR LATEST VERSION THEREOF. PIPE SHALL BE SUITABLE FOR POTABLE WATER AND SHALL BEAR THE NSF TRADEMARK.

##### 2.3 PVC PIPE

- A. LINES 1-1/2-INCH AND LARGER SHALL BE VIRGIN, HIGH-IMPACT POLYVINYL CHLORIDE (PVC-1120), CONFORMING TO NSF STANDARD 14 AND ASTM D2241 FOR THERMOPLASTIC PIPE WITH A MINIMUM 160 PSI TEST STRENGTH.
- B. PIPE SHALL HAVE STANDARD THERMOPLASTIC PIPE DIMENSION RATIO OF SDR-26 AND SHALL BE CONTINUOUSLY AND PERMANENTLY MARKED WITH THE MANUFACTURER'S NAME, MATERIAL, SIZE AND SCHEDULE.

##### 2.4 POLYETHYLENE PIPE FITTINGS

- A. ALL FITTINGS 1-1/4-INCH AND SMALLER, DOWNSTREAM OF CONTROL VALVE, SHALL BE PLASTIC HIMAX BARBED INSERT FITTINGS.
- B. FITTINGS FOR HDPE PIPE SHALL BE FUSION JOINED.

- C. JOINTS SHALL BE CLAMPED WITH ALL STAINLESS STEEL WORM GEAR CLAMPS.

##### 2.5 PVC PIPE FITTINGS

- A. FITTINGS 1-1/2-INCH THROUGH 3-INCH SHALL BE SCHEDULE 40 PVC SOLVENT WELD, TYPE 1, MEETING THE REQUIREMENTS OF ASTM D2466. NO SADDLES ALLOWED.
- B. 4-INCH FITTINGS SHALL BE GASKETED JOINT HARCO PVC CLASS 200, MEETING ASTM D1784 DR21 REQUIREMENTS. BELL SHALL BE GASKET JOINT CONFORMING TO ASTM D3139 WITH GASKETS CONFORMING TO ASTM F477.
- C. 6-INCH AND LARGER FITTINGS SHALL BE HARCO DUCTILE IRON FITTINGS, MANUFACTURED WITH A GRADE OF 65-45-12 IN ACCORDANCE WITH ASTM A536. FITTINGS SHALL HAVE DEEP PUSH-ON JOINTS WITH GASKETS MEETING ASTM F477 REQUIREMENTS.

##### 2.6 VALVES AND VALVE BOXES

- A. ISOLATION VALVES:
  1. MANUAL VALVES 2-INCH AND SMALLER SHALL BE BRASS GATE VALVES.
  2. MANUAL VALVES 2-1/2-INCH AND LARGER SHALL BE MATCO 10RT- GATE VALVE KEY OPERATED.
- B. AUTOMATIC VALVES: AS INDICATED ON DRAWINGS.
- C. QUICK COUPLERS: AS INDICATED ON DRAWINGS.
- D. VALVE BOXES: CARSON BOX OR EQUAL.
  1. MANUFACTURER: [ COORDINATE WITH OWNER ]
  2. VALVES SHALL BE PROTECTED BY A 2-PIECE OR 3-PIECE VALVE BOX ASSEMBLY CONSISTING OF A REMOVAL COVER, BOX AND EXTENSION (IF REQUIRED). THE ENCLOSURE SHALL BE RIGID PLASTIC MATERIAL COMPOSED OF FIBROUS COMPONENTS CHEMICALLY INERT AND UNAFFECTED BY MOISTURE, CORROSION AND TEMPERATURE CHANGES.
3. BOX SIZES:
  - A. 6-INCH DIAMETER FOR QUICK COUPLERS.
  - B. 10-INCH DIAMETER FOR ALL AUTOMATIC VALVES, BALL VALVES AND SPLICE LOCATIONS.
  - C. SIDE WALLS TO EXTEND TO AT LEAST 2 INCHES BELOW THE BOTTOM OF THE VALVE BODY; FOR DEEP MAINLINE, APPROPRIATE EXTENSIONS SHALL BE USED TO REACH DEPTH OF VALVE. VALVE BOX SHALL NOT BEAR DIRECTLY ON PIPE.
  - D. 10 INCH X 12 INCH RECTANGULAR BOX WITH LOCKING LID FOR GATE VALVES AND DRIP ZONE VALVE ASSEMBLY.
4. VALVE BOX SHALL BE SUPPORTED ON ALL SIDES WITH A 2-INCH X 4-INCH X 8-INCH CONCRETE BRICK; OR APPROVED EQUAL.

##### 2.7 SWING JOINTS

- A. SPRINKLERS WITH THE BODY OF THE UNIT BURIED IN SOIL SHALL BE ATTACHED TO THE PIPING WITH 2-ELBOW JOINTS CONSISTING OF 3/8-INCH FLEXIBLE PIPE WITH COORDINATING HIMAX BARBED ELBOWS.
- B. QUICK COUPLING VALVES SHALL BE INSTALLED USING A SPEARS SWING JOINT WITH BRASS ASSEMBLY, MODEL #5815-01018. SIZE SHALL MATCH INLET SIZE OF QUICK COUPLING VALVE.

##### 2.8 COMMUNICATION CIRCUITRY - ELECTRIC

- A. WIRE SHALL BE 600-VOLT SOFT ANNEALED COPPER, PVC INSULATED, UL APPROVED, DIRECT BURIAL UF. WIRE INSULATION COLOR SHALL BE OF A DIFFERENT COLOR THAN THE WIRES USED ON THE 115 VOLT A.C.
- B. MINIMUM WIRE SIZE:
  1. 0 TO 500 LINEAL FOOT RUNS: NO. 16 SINGLE STRAND.
  2. 500 TO 2,000 LINEAL FOOT RUNS: NO. 14 SINGLE STRAND.
  3. OVER 2,000 LINEAL FOOT RUNS: NO. 12 SINGLE STRAND.
  4. 18 GAUGE (SPECIFY QUANTITY OF CONDUCTORS) CONDUCTOR MULTI-STRAND AND COLOR WIRE. PROVIDE NO. 14 SINGLE STRAND WIRE FOR GROUND WIRE.
- C. SPLICE WIRES ONLY AT VALVE BOXES. JOIN WIRES WITH WIRE NUTS AND 3M SCOTCHPACK SEALING KIT OR 3M DBR/Y DIRECT BURY SPLICE KIT.

##### 2.9 SPRINKLER HEADS

- A. HEADS IN LANDSCAPE BEDS MUST BE 12 INCH BOTTOM-FEED POP-UP TYPE.
- B. HEADS IN TURF AREAS MUST BE A 4 INCH OR 6 INCH POP-UP, 5 INCH ROTOR, OR 12 INCH ROTOR.

##### 2.10 CONTROLLERS

- A. AS INDICATED ON DRAWINGS.
- B. MUST BE COMPATIBLE WITH RAINBIRD CENTRAL CONTROL SYSTEM.
- C. MUST INCLUDE AN IN-LINE FLOW SENSOR WHICH IS CAPABLE OF REPORTING TO CENTRAL CONTROL SYSTEM.

##### 2.11 BACK FLOW PREVENTION DEVICE

- A. AS INDICATED ON DRAWINGS.

##### 2.12 SLEEVES

- A. ALL SLEEVES TO BE SIZED AT 6" WHICH SHALL BE A MINIMUM PVC 160 OR SCHEDULE 40 DWV PIPE. SLEEVES TO BE INSTALLED PERPENDICULAR TO HARD SURFACE WITH WHICH IT PASSES UNDER UNLESS OTHERWISE SPECIFIED BY OWNER.
- B. MARKER BALL SHALL BE USED TO MARK AT LEAST ONE END OF SLEEVE UNLESS SLEEVE CROSSES HARD SURFACE IN DISTANCE GREATER THAN 25' THEN MARKER BALLS TO BE ATTACHED TO BOTH ENDS.

A. SOLVENT SHALL BE USED AS IS FROM ORIGINAL CONTAINER. NO THINNER SHALL BE ADDED TO THE SOLVENT TO CHANGE ITS VISCOSITY. IF VISCOSITY OR CONSISTENCY IS UNSUITABLE, THE SOLVENT SHALL NOT BE USED.

#### PART 3 - EXECUTION

##### 3.1 PREPARATION

A. CONTRACTOR SHALL CONTACT UTILITY-LOCATOR SERVICE (8-1-1) FOR AREA WHERE PROJECT IS LOCATED BEFORE EXCAVATING. A PRIVATE UTILITY LOCATING SERVICE MAY BE REQUIRED FOR NON-PUBLIC UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITIES DAMAGED WITHIN 3 FEET ON EITHER SIDE OF THE STAKED ROUTE. IT SHALL BE THE RESPONSIBILITY OF CONTRACTOR TO MAINTAIN THE STAKED ROUTE THROUGHOUT CONSTRUCTION.

##### 3.2 GENERAL

- A. PLACE SLEEVES UNDER PAVEMENT SYSTEMS, WITH THE TOP OF PIPE 18 INCHES BELOW THE FINISHED SURFACE. SLEEVES FOR DRIP LINES ONLY CROSSING PEDESTRIAN SIDEWALKS MAY BE INSTALLED DIRECTLY BELOW THE BOTTOM OF CONCRETE LEVEL.
- B. INSTALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- C. EXCAVATION AND BACKFILL: IN ACCORDANCE WITH DIVISION 31 SECTION "EARTH MOVING."
- D. CONTRACTOR SHALL BE RESPONSIBLE FOR FULL AND COMPLETE COVERAGE OF IRRIGATED AREAS AND WILL BE REQUIRED TO MAKE NECESSARY MINOR ADJUSTMENTS AT NO ADDITIONAL COST TO THE OWNER.

##### 3.3 LAYOUT AND STAKING

A. PIPING INDICATED ON THE DRAWINGS IS GENERALLY DIAGRAMMATIC, HOWEVER, THE MAIN LINE LOCATION ON THE DRAWINGS IS INDICATED WHERE THE OWNER WOULD PREFER TO SEE THE ROUTE BECAUSE OF TREE ROOTS AND OTHER OBSTACLES. CONTRACTOR AND OWNER SHALL TOGETHER FIELD VERIFY THE PRECISE LOCATION OF THE MAIN LINE, VALVES, AND QUICK COUPLERS. CONTRACTOR SHALL LAY THE SYSTEM OUT FOR OWNER APPROVAL.

##### 3.4 TRENCHING

- A. TRENCHES SHALL BE EXCAVATED SO THAT THE IRRIGATION LINES ARE INSTALLED WITH THE FOLLOWING MINIMUM DEPTHS FOR PIPE COVER:
  1. POLYETHYLENE LATERAL PIPE: MINIMUM DEPTH 12 INCHES.
  2. PVC LATERAL PIPE 1-INCH: MINIMUM DEPTH 12 INCHES.
  3. PVC PIPE:
    - A. 1-1/2-INCH TO 2-INCH PIPE SIZE: 16-INCH COVER.
    - B. 2-1/2-INCH TO 4-INCH PIPE SIZE: 20-INCH COVER.
    - C. 6-INCH TO 8-INCH PIPE SIZE: 24-INCH COVER.

WHERE THE OWNER WOULD PREFER TO SEE THE ROUTE BECAUSE OF TREE ROOTS AND OTHER OBSTACLES. CONTRACTOR AND OWNER SHALL TOGETHER FIELD VERIFY THE PRECISE LOCATION OF THE MAIN LINE, VALVES, AND QUICK COUPLERS. CONTRACTOR SHALL LAY THE SYSTEM OUT FOR OWNER APPROVAL.

- B. PVC PIPING SHALL BE TRENCHED. PVC PIPE 2-1/2-INCH AND SMALLER MAY BE PULLED PROVIDED DEPTH OF PIPE IS MAINTAINED AT A MINIMUM OF 20-INCH COVER.
- C. POLYETHYLENE DISTRIBUTION PIPE MAY BE PULLED PROVIDED A 12-INCH MINIMUM DEPTH IS MAINTAINED.
- D. TRENCH EXCAVATION IN EXCESS OF REQUIRED DEPTH SHALL HAVE THE BOTTOM GRADED AND TAMPED PRIOR TO PLACEMENT OF PIPE.
- E. WHERE TRENCHING OF PVC OR POLYETHYLENE PIPE LINES IS NOT POSSIBLE BECAUSE OF ADVERSE SOIL CONDITIONS OR OBSTRUCTIONS, AND BACKHOE OPERATIONS IS REQUIRED, PROVIDE LABOR, MATERIALS AND EQUIPMENT FOR THIS OPERATION.

(CONTINUED ON NEXT SHEET)

Project Name:

**Westlake Park**  
325 W Orchard Ave.  
Grand Junction, Colorado 81505

Client:

Joe Brown  
City of Grand Junction Parks and Recreation  
Parks Supervisor  
Horticulture, Irrigation and Turf  
Phone: 970-254-3843 | JoeB@gjcity.org  
2529 High Country Court  
Grand Junction, CO 81501

Landscape Architect:



Registration:



Sheet Title:

**Irrigation Specifications**

Project: Westlake

Date: July 31, 2023

Scale:

Sheet:

1

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**Bid Set**  
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## Landscaping Specifications - Page 2

F. EXISTING SOILS MAY BE ASSUMED TO BE ADEQUATE TO SUPPORT PIPE AS BEDDING AND EXCAVATED SOILS SHALL BE USED AS BACKFILL. IN ALL LAWN AREAS, BACKFILL MATERIAL SHALL BE FREE FROM DEBRIS, INCLUDING ROCKS, LARGE STONES, CLAY CLUMPS OR OTHER UNSUITABLE SUBSTANCES. CARE SHALL BE TAKEN TO PREVENT SETTLING AND DAMAGE TO PIPE DURING AND AFTER BACKFILLING OPERATIONS. NEW PIPING 4-INCH AND 6-INCH DIAMETER SHALL BE LAID ON A LEVELING BED COMPACTED TO MAXIMUM THICKNESS OF 6 INCHES. IF EXISTING EXCAVATED ONSITE SOILS ARE FOUND TO BE UNACCEPTABLE FOR PIPE BEDDING OR BACKFILL, THE OWNER SHALL PROVIDE AND DELIVER TO THE PROJECT SITE, SAND TO BE USED BY CONTRACTOR FOR BACKFILL. CONTRACTOR SHALL REVIEW SUCH CONDITIONS WITH THE PROJECT REPRESENTATIVE AND SAND BACKFILL WILL BE DELIVERED WITHIN 48 HOURS OF SUCH DETERMINATION. CONTRACTOR SHALL PROVIDE EQUIPMENT TO HAUL SOILS FROM ONSITE STOCKPILE SITE TO WORK AREA. EXCESS SOILS SHALL BE HAULED BY CONTRACTOR TO AN NU DISPOSAL AREA AS DIRECTED BY THE PROJECT REPRESENTATIVE. DIG HOLES IN BEDDING FOR BELLS AND FITTINGS SO PIPE BEARS UNIFORMLY ALONG ITS LENGTH. HAND COMPACT THE HAUNCHING UNDER THE SPRING LINE OF THE PIPE. TAKE EXTRA CARE TO CONTROL THE DENSITY OF THE HAUNCHING ON PLASTIC PIPE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WHEN BACKFILLING, SOIL SHALL BE TAMPED IN 6-INCH LAYERS WITH A MINIMUM OF 6 INCHES OF ACCEPTABLE SOIL.

G. PAVEMENT:

- NO PAVEMENT SHALL BE REMOVED TO INSTALL SLEEVES WITHOUT APPROVAL OF THE OWNER.
- IF CONTRACTOR DETERMINES THAT PAVEMENT MUST BE REMOVED, THE PAVEMENT SHALL INCLUDE THE ENTIRE FLAG OF CONCRETE PAVING OR 24 INCHES ON EACH SIDE OF THE TRENCH FOR BITUMINOUS PAVED AREAS. REPLACEMENT PAVING SHALL MATCH OWNER'S SPECIFICATIONS AND BE INSTALLED BY THE OWNER'S UNIT COST CONTRACTOR. THE COST FOR REMOVING AND REPLACING PAVEMENT SHALL BE AT THE IRRIGATION CONTRACTOR'S EXPENSE.

### 3.5 PIPING INSTALLATION

A. NO WORK WILL BE PERMITTED WITHIN THE DRIP-LINE OF TREES WITHOUT APPROVAL OF THE PROJECT REPRESENTATIVE.

B. PVC PIPE SHALL BE LAID ON SOLID UNDISTURBED SOIL OR ON THOROUGHLY COMPACTED FULL BED OF SAND. MAINTAIN PROPER ALIGNMENT AND MINIMUM SLOPE FOR DRAINAGE.

C. POLYETHYLENE PIPE CONNECTIONS SHALL BE MADE WITH INSERT FITTINGS HELD TIGHTLY IN PLACE WITH WORM GEAR DRIVEN STAINLESS STEEL CLAMPS AND SCREWS AT FERRULES. PIPE SIZED 1/4-INCH SHALL BE DOUBLE CLAMPED.

D. PVC PIPE ENDS AND PVC FITTINGS SHALL BE THOROUGHLY CLEANED FOR FULL DEPTH OF FITTING WITH LIQUID CLEANER CEMENT. METHOD OF APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR SOLVENT WELD CONNECTIONS.

E. AT WALL PENETRATIONS, PACK THE OPENING AROUND PIPE WITH NON-SHRINK GROUT. AT EXTERIOR FACE, LEAVE PERIMETER SLOT APPROXIMATELY 1/2-INCH WIDE BY 4/5-INCH DEEP. FILL THIS SLOT WITH BACKER ROD AND ACCEPTABLE ELASTOMERIC SEALANT.

F. INSTALL PVC PIPE DURING DRY WEATHER WHEN TEMPERATURE IS ABOVE 40 DEGREES F (4 DEGREES C), IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALLOW JOINTS TO CURE AT LEAST 24 HOURS AT TEMPERATURES ABOVE 40 DEGREES F.

### 3.6 CONNECTION TO WATER SOURCE

A. POINT OF CONNECTION SHALL BE AS INDICATED ON DRAWINGS. CONTRACTOR SHALL VERIFY POINT OF CONNECTION WITH THE PROJECT REPRESENTATIVE.

### 3.7 CROSS CONNECTION PROTECTION

A. INSTALL ACCORDING TO STATE AND LOCAL PLUMBING CODES. PIPING SHALL BE GALVANIZED STEEL PIPE OR COPPER PIPE.

### 3.8 SPRINKLER HEADS

A. FLUSH CIRCUIT LINES WITH FULL HEAD OF WATER AND INSTALL HEADS AFTER FLUSHING IS COMPLETE.

- INSTALL LAWN HEADS AT MANUFACTURER'S RECOMMENDED HEIGHTS.
- INSTALL HIGH POP RISERS FLUSH WITH GRADE OR AS INDICATED ON DRAWINGS.
- LOCATE PART-CIRCLE HEADS TO MAINTAIN MINIMUM DISTANCE OF 4 INCHES FROM WALLS AND WINDOWS AND 2 INCHES FROM OTHER BOUNDARIES, UNLESS DIRECTED BY THE PROJECT REPRESENTATIVE.
- IRRIGATION HEADS SHALL BE INSTALLED ON SWING JOINTS, FUNNY PIPE, OR AS INDICATED ON DRAWINGS.
- NOZZLES SHALL MATCH SPRINKLER HEAD MANUFACTURER.

### 3.9 DIELECTRIC PROTECTION

A. USE DIELECTRIC FITTINGS AT CONNECTIONS WHERE PIPES OF DISSIMILAR METALS ARE JOINED.

### 3.10 THRUST BLOCK

A. PROVIDE CONCRETE THRUST BLOCKS ON THRUST SIDE OF MAINLINE PIPE WHEREVER PIPE CHANGES DIRECTION AT TEES, BENDS, OR DEAD ENDS AND AT OTHER LOCATIONS WHERE THRUST IS TO BE EXPECTED. THRUST BLOCKS ON 4-INCH OR LARGER PIPES.

B. REFER TO PIPE MANUFACTURER'S RECOMMENDATIONS OF TYPE AND METHOD OF THRUST BLOCKS.

### 3.11 AUTOMATIC CONTROLLERS AND FLOW

#### METERS

A. INSTALL CONTROLLER ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND AS INDICATED ON DRAWINGS. ELECTRIC POWER FOR CONTROLLER WILL BE PROVIDED BY OWNER.

B. CONNECT REMOTE CONTROL VALVES TO CONTROLLER IN THE SEQUENCE AS INDICATED ON DRAWINGS.

C. 2-INCH PVC PIPE (OR SIZE AS REQUIRED FOR LARGER WIRE BUNDLE) SHALL BE USED AS A CONDUIT FOR CONTROL WIRES FROM 6 INCHES BELOW GROUND AT THE MAIN LINE TO THE CONTROL BOX. SECURE THE PVC PIPE WITH METAL BRACKETS BOLTED TO THE BUILDING WITH PROPER ANCHORS.

D. INSTALL FLOW METER NO LESS THAN 5 TIMES THE METER'S DIAMETER AWAY FROM THE LAST OBSTRUCTION (T, ELBOW, VALVE, ETC.) AND 10 TIMES THE METER'S DIAMETER PRIOR TO THE NEXT OBSTRUCTION.

### 3.12 ADJUSTING

A. UPON COMPLETION OF THE SYSTEM, ADJUST SYSTEM COMPONENTS TO PROVIDE OPTIMUM PERFORMANCE. INCLUDING:

- SYNCHRONIZATION OF CONTROLLERS.
- ADJUSTMENT TO PRESSURE REGULATORS AND PRESSURE RELIEF VALVES.
- PART CIRCLE SPRINKLER HEAD.
- INDIVIDUAL STATION ADJUSTMENTS.
- OTHER ADJUSTMENTS NECESSARY TO OBTAIN SATISFACTORY PERFORMANCE OF SYSTEM.

FLUSH LINES AND EVACUATE AIR AND DEBRIS FROM SYSTEM.

### 3.13 FIELD QUALITY CONTROL

A. PUNCH LIST: UPON COMPLETION OF IRRIGATION WORK, CONTRACTOR SHALL NOTIFY THE OWNER THAT INSTALLATION IS COMPLETE AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS AND IS READY FOR INSPECTION. THE OWNER AND CONTRACTOR WILL INSPECT THE INSTALLATION TOGETHER. A PUNCH LIST WILL BE PREPARED BY THE OWNER THAT INDICATES NON-CONFORMANCES WITH DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL IMMEDIATELY CORRECT ERRORS IDENTIFIED.

B. RECORD (AS-BUILT) DRAWINGS: CONTRACTOR SHALL PROVIDE ACCURATE RECORD DRAWINGS SHOWING DIMENSIONS FROM STATIONARY POINTS AS THEY RELATE TO ITEMS INCLUDING VALVES, MAIN AND LATERAL LINES, CONTROLLERS, AND QUICK COUPLERS. RECORD DRAWINGS SHALL BE SUBMITTED BEFORE FINAL PAYMENT WILL BE APPROVED. UPON REQUEST, OWNER WILL PROVIDE PAPER OR ELECTRONIC COPIES OF DESIGN DOCUMENTS FOR CONTRACTOR'S CONVENIENCE.

### 3.14 DEMONSTRATION

A. AFTER COMPLETION, TESTING AND ACCEPTANCE OF THE SYSTEM, INSTRUCT OWNER'S STAFF REGARDING THE OPERATION AND MAINTENANCE OF THE SYSTEM.  
END OF SECTION 32 9200

### SECTION 32 9200 – TURF AND NATIVE/ADAPTIVE PLANTINGS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

B. COMPLY WITH MOST CURRENT EDITION OF THE NVISION DESIGN STUDIO, INC. DESIGN STANDARDS.

##### 1.2 SUMMARY

PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT AS NECESSARY TO COMPLETE ALL WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN. REVIEW SPECIFIC PROJECT REQUIREMENTS WITH NU DURING THE DESIGN PHASE.

B. THIS SECTION INCLUDES:

- TOPSOIL.
- FERTILIZER.
- SEED.
- MULCH.
- SOD.

##### 1.3 SUBMITTALS

A. QUALITY ASSURANCE/CONTROL SUBMITTALS: SUPPLIER'S CERTIFIED ANALYSIS FOR EACH SEED AND FERTILIZER MIXTURE REQUIRED.

##### 1.4 DELIVERY, STORAGE AND HANDLING

A. DELIVER MATERIALS IN ORIGINAL, UNBROKEN, BRAND MARKED CONTAINERS OR WRAPPING INDICATING WEIGHT, ANALYSIS AND MANUFACTURER'S NAME.

B. HANDLE AND STORE MATERIALS IN A MANNER WHICH WILL PREVENT DETERIORATION, DAMAGE, CONTAMINATION WITH FOREIGN MATTER, DAMAGE BY WEATHER OR ELEMENTS, AND IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS.

C. REJECT DAMAGED, DETERIORATED OR CONTAMINATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE SITE. REPLACE REJECTED MATERIALS WITH NEW MATERIALS AT NO ADDITIONAL COST TO NU.

##### 1.5 PROJECT CONDITIONS

A. A CONTRACTOR SHALL OBTAIN AND SUBMIT COPIES TO NVISION DESIGN STUDIO, INC. ALL NECESSARY RELATED CITY AND ENVIRONMENTAL PERMITS (E.G. IRRIGATION – WATER DEPARTMENT PERMITS, USE OF CITY HYDRANTS - CITY HYDRANT PERMIT, ETC.).

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS

A. TOPSOIL:

- NATURAL LOAM TOPSOIL.
- UNIFORM QUALITY.
- FREE OF UNDESIRABLE MATERIAL.
- ORGANIC CONTENT GREATER THAN 6% BY WEIGHT.
- ACIDITY BETWEEN PH 5.0 AND PH 8.0.

B. FERTILIZER:

- DRY FERTILIZER: READY MIXED GRANULAR MATERIAL CONTAINING EQUAL AMOUNTS BY WEIGHT OF AVAILABLE NITROGEN (N), READILY AVAILABLE PHOSPHORIC ACID (P2O5) AND TOTAL AVAILABLE POTASH (K2O), (12-12-12).
- LIQUID FERTILIZER FOR HYDROSEED: 16-32-4 CONTAINING NO CHLORINE.
- MINIMUM 40% FILLER BY WEIGHT.
- SEED.

C. SEED:

- UNIFORM MIXTURES COMPOSED OF SEED OF THE FOLLOWING PROPORTIONS BY WEIGHT:  
A. DRAIN SIDE SLOPES, SPOIL BANKS, AND OTHER DISTURBED AREAS: SEE PLANS.  
B. LAWNS: SEE PLANS. LEGUMES SHALL BE INOCULATED WITH THE PROPER NITROGEN FIXING BACTERIA WITHIN 24 HOURS PRIOR TO SEEDING.
- GERMINATION OF SEEDS SHALL BE 80% MINIMUM.
- PURITY OF SEEDS SHALL BE 90% MINIMUM.

D. MULCH:

- ANCHORING MATERIAL FOR SMALL GRAIN MULCH:

A. NETTING:

- BIODEGRADABLE.
- OPENINGS NOT TO EXCEED 1-1/2 INCHES X 2 INCHES.
- MINIMUM ROLL WIDTH: 35 INCHES.
- ANCHORING STAPLES OR PINS: [STEEL WIRE NOT PERMITTED] [WOOD PEGS] [OR NO. 11 STEEL WIRE] AT LEAST 6 INCHES LONG.

B. HYDROMULCH:

- SLURRY: MINIMUM 60% WOOD FIBER MULCH WITH REMAINING BEING RECYCLED CELLULOSE FIBERS.
- TACKIFIER.
- SYNTHETIC FIBER OR GUM.
- MANUFACTURERS: FINN FIBER PLUS; FINN FIBER GUM; OR EQUAL.

##### 2.2 MULCH:

A. SLURRY: MINIMUM 60% WOOD FIBER MULCH WITH REMAINING BEING RECYCLED CELLULOSE FIBERS.

B. TACKIFIER.

C. SYNTHETIC FIBER OR GUM.

D. MANUFACTURERS: FINN FIBER PLUS; FINN FIBER GUM; OR EQUAL.

#### PART 3 - EXECUTION

##### 3.1 TOPSOIL

A. LAWS:

- COMPLY WITH LOCAL REQUIREMENTS.
- MINIMUM THICKNESS: 6 INCHES.

B. PERENNIALS:

- COMPLY WITH LOCAL REQUIREMENTS.
- MINIMUM THICKNESS: 12 INCHES OF GARDEN MIX.

C. SHRUBS:

- COMPLY WITH LOCAL REQUIREMENTS.
- MINIMUM THICKNESS: 18 INCHES.

D. OTHER AREAS: SPREAD EXISTING TOPSOIL.

##### 3.2 SEEDING

A. SCHEDULING:

- WITHIN 24 HOURS FROM THE TIME THE AREA WAS FIRST DISTURBED.
- CHANNEL BANKS: WITHIN 24 HOURS FROM THE TIME THE AREA WAS FIRST DISTURBED.
- SEASONAL LIMITATIONS:

A. MAY 1 THROUGH NOVEMBER 1.

B. SOIL TEMPERATURES SHALL BE BETWEEN 50°F-65°F.

C. SOWING:

- SOW THE SEED FOLLOWING OR IN CONJUNCTION WITH THE FERTILIZER AND WHILE THE SEED BED IS IN A FRIABLE CONDITION.
- DO NOT SOW SEED THROUGH MULCH.
- APPLICATION RATE:

A. LAWS: SOW SEED AT A MINIMUM RATE OF 100 POUNDS PER ACRE (IF APPLICABLE-SEE PLANS)

B. DITCH BANKS, SPOIL BERMS, AND OTHER AREAS: SOW SEED AT RATE SPECIFIED PER PLANS.

C. METHOD:

- BROADCAST: DO NOT SEED WHEN WIND VELOCITY EXCEEDS 5 MILES PER HOUR.
- MECHANICAL DRILLS.
- HYDROSEEDER.

A. USE ONLY EQUIPMENT SPECIFICALLY DESIGNED FOR HYDRAULIC SEEDING APPLICATION.

B. MIX SEED, FERTILIZER AND PULVERIZED MULCH IN WATER UNTIL UNIFORMLY BLENDED INTO HOMOGENEOUS SLURRY.

C. CONTINUE MIXING DURING APPLICATION.

D. NATIVE SEED MUST BE APPLIED WITH WATER ONLY FOR DIRECT SEED-SOIL CONTACT, NOT WITH PULVERIZED MULCH.

FLUSH LINES AND EVACUATE AIR AND DEBRIS FROM SYSTEM.

FLUSH LINES AND EVACUATE AIR AND DEBRIS FROM SYSTEM.

#### A. INSPECTION:

- VISUALLY INSPECT FOR UNIFORM DISTRIBUTION.
- RESEED AREAS AS REQUIRED TO ESTABLISH A UNIFORM AND STABLE STAND OF GRASS.
- FINISHING: INCORPORATE SEED INTO THE UPPER 1/2-INCH OF SOIL.

#### 3.5 MULCHING

A. SMALL GRAIN MULCH:

- APPLICATION.
- IMMEDIATELY AFTER SEEDING.
- UNIFORM DISTRIBUTION.
- ALLOW SUNLIGHT TO PENETRATE MULCH.

2. APPLICATION RATE:

- TWO TONS PER ACRE (2-1/2 BALES PER 1000 SQUARE FEET).
- TWO TONS PER ACRE FOR DORMANT SEEDING.
- ONE TON PER ACRE (1-1/4 BALES PER 1,000 SQUARE FEET) FOR NATIVE SEEDING.

3. ANCHORING:

A. LEVEL AREAS AND SLOPES FLATTER THAN 3:1 (H:V): MULCH ANCHORING TOOL.

B. SLOPES 3:1 (H:V) OR STEEPER FOR NETTING: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. HYDROMULCH:

- APPLY WITH HYDROSEED.
- APPLICATION RATE: 1,250 POUNDS PER ACRE.
- APPLY AFTER NATIVE SEED HAS BEEN APPLIED WITHOUT MULCH IN SLURRY.

#### 3.6 MAINTENANCE

A. RESEED, RESOD, REFERTILIZE, REMULCH, OR REGRADE AS NECESSARY TO ESTABLISH A UNIFORM AND STABLE GRASSSED AREA.  
END OF SECTION 32 9200

### SECTION 32 9300 – PLANTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

B. COMPLY WITH MOST CURRENT EDITION OF THE NVISION DESIGN STUDIO, INC. DESIGN STANDARDS.

##### 1.2 SUMMARY

A. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT AS NECESSARY TO COMPLETE ALL WORK AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN. REVIEW SPECIFIC PROJECT REQUIREMENTS WITH NU DURING THE DESIGN PHASE.

B. CONTRACTOR SHALL OBTAIN AND SUBMIT COPIES TO NVISION DESIGN STUDIO, INC. ALL NECESSARY RELATED CITY AND ENVIRONMENTAL PERMITS (E.G. IRRIGATION – WATER DEPARTMENT PERMITS, USE OF CITY HYDRANTS - CITY HYDRANT PERMIT, ETC.).

##### C. THIS SECTION INCLUDES:

- PLANTS.
  - TREE STABILIZATION.
  - TREE-WATERING DEVICES.
  - RELATED REQUIREMENTS:
1. SECTION 329200 "TURF AND NATIVE/ADAPTIVE PLANTINGS" FOR MEADOW PLANTING, HYDROSEEDING, AND EROSION-CONTROL MATERIALS.

##### 1.3 DEFINITIONS

A. BACKFILL: THE EARTH USED TO REPLACE OR THE ACT OF REPLACING EARTH IN AN EXCAVATION.

B. BALLED AND BURLAPPED STOCK: PLANTS DUG WITH FIRM, NATURAL BALLS OF EARTH IN WHICH THEY WERE GROWN, WITH A BALL SIZE NOT LESS THAN DIAMETER AND DEPTH RECOMMENDED BY ANSI Z60.1 FOR TYPE AND SIZE OF PLANT REQUIRED; WRAPPED WITH BURLAP, TIED, RIGIDLY SUPPORTED, AND DRUM LACED WITH TWINE WITH THE ROOT FLARE VISIBLE AT THE SURFACE OF THE BALL AS RECOMMENDED BY ANSI Z60.1.

C. CONTAINER-GROWN STOCK: HEALTHY, VIGOROUS, WELL-ROOTED PLANTS GROWN IN A CONTAINER, WITH A WELL-ESTABLISHED ROOT SYSTEM REACHING SIDES OF CONTAINER AND MAINTAINING A FIRM BALL WHEN REMOVED FROM CONTAINER. CONTAINER SHALL BE RIGID ENOUGH TO HOLD BALL SHAPE AND PROTECT ROOT MASS DURING SHIPPING AND BE SIZED ACCORDING TO ANSI Z60.1 FOR TYPE AND SIZE OF PLANT REQUIRED.

D. FINISH GRADE: ELEVATION OF FINISHED SURFACE OF PLANTING SOIL.

E. 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. SOME SOURCES CLASSIFY HERBICIDES SEPARATELY FROM PESTICIDES.

F. 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.

G. PLANTING AREA: AREAS TO BE PLANTED.

H. 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.

I. PLANT, PLANTS: PLANT MATERIAL: THESE TERMS REFER TO VEGETATION IN GENERAL, INCLUDING TREES, SHRUBS, VINES, GROUND COVERS, ORNAMENTAL GRASSES, BULBS, CORMS, TUBERS, OR HERBACEOUS VEGETATION.

J. ROOT FLARE: ALSO CALLED "TRUNK FLARE." THE AREA AT THE BASE OF THE PLANT'S STEM OR TRUNK WHERE THE STEM OR TRUNK BROADENS TO FORM ROOTS; THE AREA OF TRANSITION BETWEEN THE ROOT SYSTEM AND THE STEM OR TRUNK.

K. STEM GIRDLING ROOTS: ROOTS THAT ENCIRCLE THE STEMS (TRUNKS) OF TREES BELOW THE SOIL SURFACE.

L. 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.

##### 1.4 PREINSTALLATION MEETINGS

A. PREINSTALLATION CONFERENCE: CONDUCT CONFERENCE AT PROJECT SITE. CONTRACTOR TO TAKE PHOTOS OF THE EXISTING VEGETATION TO REMAIN. COPIES OF PHOTOS SHALL BE DISTRIBUTED TO FACILITIES MANAGEMENT OPERATIONS AND KEPT IN THE CONSTRUCTION TRAILER FOR REFERENCE AT THE END OF THE PROJECT.

##### 1.5 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT.

- PLANT MATERIALS: INCLUDE QUANTITIES, SIZES, QUALITY, AND SOURCES FOR PLANT MATERIALS.

PLANT PHOTOGRAPHS: INCLUDE COLOR PHOTOGRAPHS IN DIGITAL FORMAT OF EACH REQUIRED SPECIES AND SIZE OF PLANT MATERIAL AS IT WILL BE FURNISHED TO PROJECT. TAKE PHOTOGRAPHS FROM AN ANGLE DEPICTING TRUE SIZE AND CONDITION OF THE TYPICAL PLANT TO BE FURNISHED. INCLUDE A SCALE ROD OR OTHER MEASURING DEVICE IN EACH PHOTOGRAPH. FOR SPECIES WHERE MORE THAN 20 PLANTS ARE REQUIRED, INCLUDE A MINIMUM OF THREE PHOTOGRAPHS SHOWING THE AVERAGE PLANT, THE BEST QUALITY PLANT, AND THE WORST QUALITY PLANT TO BE FURNISHED. IDENTIFY EACH PHOTOGRAPH WITH THE FULL SCIENTIFIC NAME OF THE PLANT, PLANT SIZE, AND NAME OF THE GROWING NURSERY.

#### B. SAMPLES FOR VERIFICATION: FOR EACH OF THE FOLLOWING:

- MULCH: 1-PINT (0.5-L) VOLUME OF EACH ORGANIC MULCH REQUIRED; IN SEALED PLASTIC BAGS LABELED WITH COMPOSITION OF MATERIALS BY PERCENTAGE OF WEIGHT AND SOURCE OF MULCH.

EACH SAMPLE SHALL BE TYPICAL OF THE LOT OF MATERIAL TO BE FURNISHED; PROVIDE AN ACCURATE REPRESENTATION OF COLOR, TEXTURE, AND ORGANIC MAKEUP.

#### 1.6 INFORMATIONAL SUBMITTALS

A. QUALIFICATION DATA: FOR LANDSCAPE INSTALLER. INCLUDE LIST OF SIMILAR PROJECTS COMPLETED BY INSTALLER DEMONSTRATING INSTALLER'S CAPABILITIES AND EXPERIENCE. INCLUDE PROJECT NAMES, ADDRESSES, AND YEAR COMPLETED, AND INCLUDE NAMES AND ADDRESSES OF OWNERS' CONTACT PERSONS.

- SUBMIT QUALIFICATION DATA FOR PESTICIDE APPLIER INCLUDING STATE LICENSEURE FOR SUBSTANCES RESTRICTED BY LAW.
- PRODUCT CERTIFICATES: FOR EACH TYPE OF MANUFACTURED PRODUCT, FROM MANUFACTURER, AND COMPLYING WITH THE FOLLOWING:
  - MANUFACTURER'S CERTIFIED ANALYSIS OF STANDARD PRODUCTS.
  - ANALYSIS OF OTHER MATERIALS BY A RECOGNIZED LABORATORY MADE ACCORDING TO METHODS ESTABLISHED BY THE ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS, WHERE APPLICABLE.
  - SUBMIT MSDS/SDS DOCUMENTATION TO OWNER FOR ALL FERTILIZERS, LIME, HERBICIDES AND PESTICIDES.
- PESTICIDES AND HERBICIDES: PRODUCT LABEL AND MANUFACTURER'S APPLICATION INSTRUCTIONS SPECIFIC TO PROJECT. SUBMIT MSDS/SDS DOCUMENTATION TO OWNER.
- SAMPLE WARRANTY: FOR SPECIAL WARRANTY.

#### 1.7 CLOSEOUT SUBMITTALS

A. MAINTENANCE DATA: RECOMMENDED PROCEDURES TO BE ESTABLISHED BY OWNER FOR MAINTENANCE OF PLANTS DURING A CALENDAR YEAR. SUBMIT BEFORE EXPIRATION OF REQUIRED MAINTENANCE PERIODS.

#### 1.8 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: A QUALIFIED LANDSCAPE INSTALLER WHOSE WORK HAS RESULTED IN SUCCESSFUL ESTABLISHMENT OF PLANTS.

- PROFESSIONAL MEMBERSHIP: INSTALLER SHALL BE A MEMBER IN GOOD STANDING OF EITHER THE PROFESSIONAL LANDSCAPE NETWORK OR THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
- EXPERIENCE: THREE YEARS' EXPERIENCE IN LANDSCAPE INSTALLATION IN ADDITION TO REQUIREMENTS IN SECTION 014000 "QUALITY REQUIREMENTS."
- INSTALLER'S FIELD SUPERVISION: REQUIRE INSTALLER TO MAINTAIN AN EXPERIENCED FULL-TIME SUPERVISOR ON PROJECT SITE WHEN WORK IS IN PROGRESS.
- PERSONNEL CERTIFICATIONS: INSTALLER'S FIELD SUPERVISOR SHALL HAVE CERTIFICATION IN ONE OF THE FOLLOWING CATEGORIES FROM THE PROFESSIONAL LANDSCAPE NETWORK:
  - LANDSCAPE INDUSTRY CERTIFIED TECHNICIAN - EXTERIOR.
  - LANDSCAPE INDUSTRY CERTIFIED INTERIOR.
  - LANDSCAPE INDUSTRY CERTIFIED HORTICULTURAL TECHNICIAN.
  - PESTICIDE APPLICATOR: STATE LICENSED, COMMERCIAL.
  - PROVIDE QUALITY, SIZE, GENUS, SPECIES, AND VARIETY OF PLANTS INDICATED, COMPLYING WITH APPLICABLE REQUIREMENTS IN ANSI Z60.1.

1. SELECTION OF PLANTS PURCHASED UNDER ALLOWANCES IS MADE BY ARCHITECT, WHO TAGS PLANTS AT THEIR PLACE OF GROWTH BEFORE THEY ARE PREPARED FOR TRANSPORTING.

C. MEASUREMENTS: MEASURE ACCORDING TO ANSI Z60.1. DO NOT PRUNE TO OBTAIN REQUIRED SIZES.

- TREES AND SHRUBS: MEASURE WITH BRANCHES AND TRUNKS OR CANES IN THEIR NORMAL POSITION. TAKE HEIGHT MEASUREMENTS FROM OR NEAR THE TOP OF THE ROOT FLARE FOR FIELD-GROWN STOCK AND CONTAINER-GROWN STOCK. MEASURE MAIN BODY OF TREE OR SHRUB FOR HEIGHT AND SPREAD; DO NOT MEASURE BRANCHES OR ROOTS TO TIP. TAKE CALIPER MEASUREMENTS 6 INCHES (150 MM) ABOVE THE ROOT FLARE FOR TREES UP TO 4-INCH (100-MM) CALIPER SIZE, AND 12 INCHES (300 MM) ABOVE THE ROOT FLARE FOR LARGER SIZES.
- OTHER PLANTS: MEASURE WITH STEMS, PETIOLES, AND FOLIAGE IN THEIR NORMAL POSITION.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

A. 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 IF APPLICABLE.

B. BULK MATERIALS:

- DO NOT DUMP OR STORE BULK MATERIALS NEAR STRUCTURES, UTILITIES, WALKWAYS AND PAVEMENTS, OR ON EXISTING TURF AREAS OR PLANTS.
- 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.
- ACCOMPANY EACH DELIVERY OF BULK MATERIALS WITH APPROPRIATE CERTIFICATES.
- DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, WIND BURN, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF PLANTS DURING SHIPPING AND DELIVERY. DO NOT DROP PLANTS DURING DELIVERY AND HANDLING.
- HANDLE PLANTING STOCK BY ROOT BALL.
- STORE BULBS, CORMS, AND TUBERS IN A DRY PLACE AT 60 TO 65 DEG F (16 TO 18 DEG C) UNTIL PLANTING.
- APPLY ANTIDESSICANT TO TREES AND SHRUBS USING POWER SPRAY TO PROVIDE AN ADEQUATE FILM OVER TRUNKS (BEFORE WRAPPING), BRANCHES, STEMS, TWIGS, AND FOLIAGE TO PROTECT DURING DIGGING, HANDLING, AND TRANSPORTATION.

1. IF DECIDUOUS TREES OR SHRUBS ARE MOVED IN FULL LEAF, SPRAY WITH ANTIDESSICANT AT NURSERY BEFORE MOVING AND AGAIN TWO WEEKS AFTER PLANTING.

G. WRAP TREES AND SHRUBS WITH BURLAP FABRIC OVER TRUNKS, BRANCHES, STEMS, TWIGS, AND FOLIAGE TO PROTECT FROM WIND AND OTHER DAMAGE DURING DIGGING, HANDLING, AND TRANSPORTATION.

H. DELIVER PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED, AND INSTALL IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN SIX HOURS AFTER DELIVERY, SET PLANTS AND TREES IN THEIR APPROPRIATE ASPECT (SUN, FILTERED SUN, OR SHADE), PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.

- SET BALLED STOCK ON GROUND AND COVER BALL WITH SOIL, PEAT MOSS, SAWDUST, OR OTHER ACCEPTABLE MATERIAL.
- DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS BEFORE TIME OF PLANTING.
- WATER ROOT SYSTEMS OF PLANTS STORED ON-SITE DEEPLY AND THOROUGHLY WITH A FINE-MIST SPRAY. WATER AS OFTEN AS NECESSARY TO MAINTAIN ROOT SYSTEMS IN A MOIST, BUT NOT OVERLY WET CONDITION.

#### 1.10 FIELD CONDITIONS

- FIELD MEASUREMENTS: VERIFY ACTUAL GRADE ELEVATIONS, SERVICE AND UTILITY LOCATIONS, IRRIGATION SYSTEM COMPONENTS, AND DIMENSIONS OF PLANTINGS AND CONSTRUCTION CONTIGUOUS WITH NEW PLANTINGS BY FIELD MEASUREMENTS BEFORE PROCEEDING WITH PLANTING WORK.
- PLANTING RESTRICTIONS: PLANT DURING ONE OF THE FOLLOWING PERIODS. COORDINATE PLANTING PERIODS WITH MAINTENANCE PERIODS TO PROVIDE REQUIRED MAINTENANCE FROM DATE OF SUBSTANTIAL COMPLETION.
  - SPRING PLANTING: MARCH 15 – MAY 15.
  - FALL PLANTING: SEPTEMBER 15 – NOVEMBER 15.
  - 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 AND WARRANTY REQUIREMENTS.

#### 1.11 WARRANTY

A. SPECIAL WARRANTY: INSTALLER AGREES TO REPAIR OR REPLACE PLANTINGS AND ACCESSORIES THAT FAIL IN MATERIALS, WORKMANSHIP, OR GROWTH WITHIN SPECIFIED WARRANTY PERIOD.

- FAILURES UNUSABLE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
  - DEATH AND INCLUSTE/INTEGRITY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM ABUSE, LACK OF ADEQUATE MAINTENANCE, OR NEGLECT BY OWNER.
  - STRUCTURAL FAILURES INCLUDING PLANTINGS FALLING OR BLOWING OVER.
  - WARRANTY PERIODS: FROM DATE OF SUBSTANTIAL COMPLETION.
    - TREES, SHRUBS, VINES, AND ORNAMENTAL GRASSES: 12 MONTHS.
    - GROUND COVERS, BIENNIALS, PERENNIALS, AND OTHER PLANTS: 12 MONTHS.
    - INCLUDE THE FOLLOWING REMEDIAL ACTIONS AS A MINIMUM.
      - IMMEDIATELY REMOVE DEAD PLANTS AND REPLACE UNLESS REQUIRED TO PLANT IN THE SUCCEEDING PLANTING SEASON.
      - REPLACE PLANTS THAT ARE MORE THAN 25 PERCENT DEAD OR IN AN UNHEALTHY CONDITION AT END OF WARRANTY PERIOD.
      - A LIMIT OF ONE REPLACEMENT OF EACH PLANT IS REQUIRED EXCEPT FOR LOSSES OR REPLACEMENTS DUE TO FAILURE TO COMPLY WITH REQUIREMENTS.
      - PROVIDE EXTENDED WARRANTY FOR PERIOD EQUAL TO ORIGINAL WARRANTY PERIOD, FOR REPLACED PLANT MATERIAL.

#### PART 2 - PRODUCTS

##### 2.1 PLANT MATERIAL

A. GENERAL: FURNISH NURSERY-GROWN PLANTS TRUE TO GENUS, SPECIES, VARIETY, CULTIVAR, STEM FORM, SHEARING, AND OTHER FEATURES INDICATED IN PLANT LIST, PLANT SCHEDULE, OR PLANT LEGEND INDICATED ON DRAWINGS AND COMPLYING WITH ANSI Z60.1; AND WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK, DENSELY FOLIATED WHEN IN LEAF AND FREE OF DISEASE, PESTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.

- TREES WITH DAMAGED, CROOKED, OR MULTIPLE LEADERS; TIGHT VERTICAL BRANCHES WHERE BARK IS SQUEEZED BETWEEN TWO BRANCHES OR BETWEEN BRANCH AND TRUNK ("INCLUDED BARK"); CROSSING TRUNKS; CUT-OFF LIMBS MORE THAN 3/4 INCH (19 MM) IN DIAMETER; OR WITH STEM GIRDLING ROOTS ARE UNACCEPTABLE.
- COLLECTED STOCK: DO NOT USE PLANTS HARVESTED FROM THE WILD, FROM NATIVE STANDS, FROM AN ESTABLISHED LANDSCAPE PLANTING, OR NOT GROWN IN A NURSERY UNLESS OTHERWISE INDICATED.
- PROVIDE PLANTS OF SIZES, GRADES, AND BALL OR CONTAINER SIZES COMPLYING WITH ANSI Z60.1 FOR TYPES AND FORM OF PLANTS REQUIRED. PLANTS OF A LARGER SIZE MAY BE USED IF ACCEPTABLE TO ARCHITECT, WITH A PROPORTIONATE INCREASE IN SIZE OF ROOTS OR BALLS.
- ROOT-BALL DEPTH: FURNISH TREES AND SHRUBS WITH ROOT BALLS MEASURED FROM TOP OF ROOT BALL, WHICH BEGINS AT ROOT FLARE ACCORDING TO ANSI Z60.1. ROOT FLARE SHALL BE VISIBLE BEFORE PLANTING.
- LABELING: LABEL AT LEAST ONE PLANT OF EACH VARIETY, SIZE, AND CALIPER WITH A SECURELY ATTACHED, WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF COMMON NAME AND FULL SCIENTIFIC NAME, INCLUDING GENUS AND SPECIES. INCLUDE NOMENCLATURE FOR HYBRID, VARIETY, OR CULTIVAR, IF APPLICABLE FOR THE PLANT.

##### 2.2 FERTILIZERS

- PLANTING TABLETS: TIGHTLY COMPRESSED CHIP-TYPE, LONG-LASTING, SLOW-RELEASE, COMMERCIAL-GRADE PLANTING FERTILIZER IN TABLET FORM. TABLETS SHALL BREAK DOWN WITH SOIL BACTERIA, CONVERTING NUTRIENTS INTO A FORM THAT CAN BE ABSORBED BY PLANT ROOTS. SUBMIT MSDS/SDS DOCUMENTATION TO OWNER.
  - SIZE: 5-GRAM TABLETS.
  - NUTRIENT COMPOSITION: 20 PERCENT NITROGEN, 10 PERCENT PHOSPHOROUS, AND 5 PERCENT POTASSIUM, BY WEIGHT PLUS MICRONUTRIENTS.

##### 2.3 MULCHES

A. ORGANIC MULCH: FREE FROM DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING OF TREES AND SHRUBS, CONSISTING OF ONE OF THE FOLLOWING:

- TYPE: LOCAL WOOD CHIPS.
- SIZE RANGE: 3 INCHES (76 MM) MAXIMUM, 1/2 INCH (13 MM) MINIMUM.
- COLOR: BROWN.

##### 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. SUBMIT MSDS/SDS DOCUMENTATION TO OWNER.

- 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 MULLCH LAYER.
- POST-EMERGENT HERBICIDE (SELECTIVE AND NONSELECTIVE): EFFECTIVE FOR CONTROLLING

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#### 2.5 TREE-STABILIZATION MATERIALS

- A. TRUNK-STABILIZATION MATERIALS:

1. UPRIGHT AND GUY STAKES: 6L STEEL T-POSTS

2. GUYS AND TIE WIRES: ASTM A 641/A 641M, CLASS 1, GALVANIZED-STEEL WIRE, TWO-STRAND, TWISTED, 0.106 INCH (2.7 MM) IN DIAMETER.

#### 2.6 TREE-WATERING DEVICES

- A. SLOW-RELEASE WATERING DEVICE: STANDARD PRODUCT MANUFACTURED FOR DRIP IRRIGATION OF PLANTS AND EMPTYING ITS WATER CONTENTS OVER TO THREE WEEKS; MANUFACTURED FROM UV-LIGHT-STABILIZED NYLON-REINFORCED POLYETHYLENE SHEET, PVC, OR HDPE PLASTIC.

1. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

- A. RAINBIRD XERIGATION PRODUCTS.  
B. ENGINEERED WATERING SOLUTIONS; PQ PARTNERS, LLC.  
C. SPECTRUM PRODUCTS, INC.  
2. COLOR: DARK CHOCOLATE OR GREEN.

#### 2.7 MISCELLANEOUS PRODUCTS

- A. WOOD PRESSURE-PRESERVATIVE TREATMENT: AWPA U1, USE CATEGORY UC4A; ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND CONTAINING NO ARSENIC OR CHROMIUM.  
B. ANTIDESICCANT: WATER-INSOLUBLE EMULSION, PERMEABLE MOISTURE RETARDER, FILM FORMING, FOR TREES AND SHRUBS. DELIVER IN ORIGINAL, SEALED, AND FULLY LABELED CONTAINERS AND MIX ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.  
C. BURLAP: NON-SYNTHETIC, BIODEGRADABLE.  
PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. EXAMINE AREAS TO RECEIVE PLANTS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS AND 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. VERIFY THAT PLANTS AND VEHICLES LOADED WITH PLANTS CAN TRAVEL TO PLANTING LOCATIONS WITH ADEQUATE OVERHEAD CLEARANCE.

3. SUSPEND PLANTING OPERATIONS DURING PERIODS OF EXCESSIVE SOIL MOISTURE UNTIL THE MOISTURE CONTENT REACHES ACCEPTABLE LEVELS TO ATTAIN THE REQUIRED RESULTS.

4. UNIFORMLY MOISTEN EXCESSIVELY DRY SOIL THAT IS NOT WORKABLE OR WHICH IS DUSTY.

- B. 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 ARCHITECT AND REPLACE WITH NEW PLANTING SOIL.

- C. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

#### 3.2 PREPARATION

- A. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES AND TURF AREAS AND EXISTING PLANTS FROM DAMAGE CAUSED BY PLANTING OPERATIONS.

- B. INSTALL EROSION-CONTROL MEASURES TO

- PREVENT EROSION OR DISPLACEMENT OF SOILS AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS.

- C. LAY OUT INDIVIDUAL TREE AND SHRUB LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS, STAKE LOCATIONS, OUTLINE AREAS, ADJUST LOCATIONS WHEN REQUESTED, AND OBTAIN ARCHITECT'S ACCEPTANCE OF LAYOUT BEFORE EXCAVATING OR PLANTING. MAKE MINOR ADJUSTMENTS AS REQUIRED.

- D. LAY OUT PLANTS AT LOCATIONS DIRECTED BY ARCHITECT. STAKE LOCATIONS OF INDIVIDUAL TREES AND SHRUBS AND OUTLINE AREAS FOR MULTIPLE PLANTINGS.

#### 3.3 PLANTING AREA ESTABLISHMENT

- A. LOOSEN SUBGRADE OF PLANTING AREAS TO A MINIMUM DEPTH OF 6 INCHES (150 MM). REMOVE STONES LARGER THAN 1 INCH (25 MM) IN ANY DIMENSION AND STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATTER AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.

1. SPREAD TOPSOIL, APPLY SOIL AMENDMENTS AND FERTILIZER ON SURFACE, AND THOROUGHLY BLEND PLANTING SOIL.

- A. DELAY MIXING FERTILIZER WITH PLANTING SOIL IF PLANTING WILL NOT PROCEED WITHIN A FEW DAYS.

2. SPREAD PLANTING SOIL TO A DEPTH OF 6 INCHES (150 MM) BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.

- A. SPREAD APPROXIMATELY ONE-HALF THE THICKNESS OF PLANTING SOIL OVER LOOSENED SUBGRADE. MIX THOROUGHLY INTO TOP 2 INCHES (50 MM) OF SUBGRADE. SPREAD REMAINDER OF PLANTING SOIL.

- B. FINISH GRADING: GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE. REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.

- C. BEFORE PLANTING, OBTAIN LANDSCAPE ARCHITECT'S ACCEPTANCE OF FINISH GRADING; RESTORE PLANTING AREAS IF ERODED OR OTHERWISE DISTURBED AFTER FINISH GRADING.

#### 3.4 EXCAVATION FOR TREES AND SHRUBS

- A. PLANTING PITS AND TRENCHES: EXCAVATE CIRCULAR PLANTING PITS.

1. EXCAVATE PLANTING PITS WITH SIDES SLOPING INWARD AT A 45-DEGREE ANGLE. EXCAVATIONS WITH VERTICAL SIDES ARE UNACCEPTABLE. TRIM PERIMETER OF BOTTOM LEAVING CENTER AREA OF BOTTOM RAISED SLIGHTLY TO SUPPORT ROOT BALL AND ASSIST IN DRAINAGE AWAY FROM CENTER. DO NOT FURTHER DISTURB BASE. ENSURE THAT ROOT BALL WILL SIT ON UNDISTURBED BASE SOIL TO PREVENT SETTLING. SCARIFY SIDES OF PLANTING PIT SMEARED OR SMOOTHED DURING EXCAVATION.

2. EXCAVATE APPROXIMATELY THREE TIMES AS WIDE AS BALL DIAMETER FOR BALLED AND BURLAPPED AND CONTAINER-GROWN STOCK.

3. EXCAVATE AT LEAST 12 INCHES (300 MM) WIDER THAN ROOT SPREAD AND DEEP ENOUGH TO ACCOMMODATE VERTICAL ROOTS FOR BARE-ROOT STOCK.

4. DO NOT EXCAVATE DEEPER THAN DEPTH OF THE ROOT BALL, MEASURED FROM THE ROOT FLARE TO THE BOTTOM OF THE ROOT BALL.

5. IF AREA UNDER THE PLANT WAS INITIALLY DUG TOO DEEP, ADD SOIL TO RAISE IT TO THE CORRECT LEVEL AND THOROUGHLY TAMP THE ADDED SOIL TO PREVENT SETTLING.

6. MAINTAIN ANGLES OF REPOSE OF ADJACENT MATERIALS TO ENSURE STABILITY. DO NOT EXCAVATE SUBGRADES OF ADJACENT PAVING, STRUCTURES, HARDSCAPES, OR OTHER

#### NEW OR EXISTING IMPROVEMENTS.

7. MAINTAIN SUPERVISION OF EXCAVATIONS DURING WORKING HOURS.

8. KEEP EXCAVATIONS COVERED OR OTHERWISE PROTECTED WHEN UNATTENDED BY INSTALLER'S PERSONNEL.

9. IF DRAIN TILE IS INDICATED ON DRAWINGS OR REQUIRED UNDER PLANTING AREAS, EXCAVATE TO TOP OF POROUS BACKFILL OVER TILE.

- B. BACKFILL SOIL: SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS BACKFILL SOIL UNLESS OTHERWISE INDICATED.

- C. OBSTRUCTIONS: NOTIFY ARCHITECT IF UNEXPECTED ROCK OR OBSTRUCTIONS DETRIMENTAL TO TREES OR SHRUBS ARE ENCOUNTERED IN EXCAVATIONS.

- D. HARDPAN LAYER: DRILL 6-INCH- (150-MM-) DIAMETER HOLES, 24 INCHES (600 MM) APART, INTO FREE-DRAINING STRATA OR TO A DEPTH OF 10 FEET (3 M), WHICHEVER IS LESS, AND BACKFILL WITH FREE-DRAINING MATERIAL.

- D. DRAINAGE: NOTIFY ARCHITECT IF SUBSOIL CONDITIONS EVIDENCE UNEXPECTED WATER SEEPAGE OR RETENTION IN TREE OR SHRUB PLANTING PITS.

- E. FILL EXCAVATIONS WITH WATER AND ALLOW TO PERCOLATE AWAY BEFORE POSITIONING TREES AND SHRUBS.

#### 3.5 TREE, SHRUB, AND VINE PLANTING

- A. INSPECTION: AT TIME OF PLANTING, VERIFY THAT ROOT FLARE IS VISIBLE AT TOP OF ROOT BALL ACCORDING TO ANSI Z60.1. IF ROOT FLARE IS NOT VISIBLE, REMOVE SOIL IN A LEVEL MANNER FROM THE ROOT BALL TO EXPOSE THE TOP-MOST ROOT EMERGES FROM THE TRUNK. AFTER SOIL REMOVAL TO THE ROOT FLARE, VERIFY THAT ROOT BALL STILL MEETS SIZE REQUIREMENTS.

- B. ROOTS: REMOVE STEM GIRDLING ROOTS AND KINKED ROOTS. REMOVE INJURED ROOTS BY CUTTING CLEANLY. DO NOT BREAK.

- C. BALLED AND BURLAPPED STOCK: SET EACH PLANT PLUMB AND IN CENTER OF PLANTING PIT OR TRENCH WITH ROOT FLARE 2 INCHES (50 MM) ABOVE ADJACENT FINISH GRADES.

1. BACKFILL: PLANTING SOIL. FOR TREES, USE EXCAVATED SOIL FOR BACKFILL.

2. AFTER PLACING SOME BACKFILL AROUND ROOT BALL TO STABILIZE PLANT, CAREFULLY CUT AND REMOVE BURLAP, ROPE, AND WIRE BASKETS FROM TOPS OF ROOT BALLS AND FROM SIDES, BUT DO NOT REMOVE FROM UNDER ROOT BALLS. REMOVE PALLETES, IF ANY, BEFORE SETTING. DO NOT USE PLANTING STOCK IF ROOT BALL IS CRACKED OR BROKEN BEFORE OR DURING PLANTING OPERATION.

3. BACKFILL AROUND ROOT BALL IN LAYERS, TAMPING TO SETTLE SOIL AND ELIMINATE VOIDS AND AIR POCKETS. WHEN PLANTING PIT IS APPROXIMATELY ONE-HALF FILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE WATER IS ABSORBED.

4. PLACE PLANTING TABLETS EQUALLY DISTRIBUTED AROUND EACH PLANTING PIT WHEN PIT IS APPROXIMATELY ONE-HALF FILLED. PLACE TABLETS BESIDE THE ROOT BALL ABOUT 1 INCH (25 MM) FROM ROOT TIPS; DO NOT PLACE TABLETS IN BOTTOM OF THE HOLE.

- A. QUANTITY: TWO PER PLANT.

5. CONTINUE BACKFILLING PROCESS. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF SOIL.

- D. CONTAINER-GROWN STOCK: SET EACH PLANT PLUMB AND IN CENTER OF PLANTING PIT OR TRENCH WITH ROOT FLARE 1 INCH (25 MM) ABOVE ADJACENT FINISH GRADES.

1. BACKFILL: PLANTING SOIL.

2. CAREFULLY REMOVE ROOT BALL FROM CONTAINER WITHOUT DAMAGING ROOT BALL OR PLANT.

3. BACKFILL AROUND ROOT BALL IN LAYERS, TAMPING TO SETTLE SOIL AND ELIMINATE VOIDS AND AIR POCKETS. WHEN PLANTING PIT IS APPROXIMATELY ONE-HALF FILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE WATER IS ABSORBED.

4. PLACE PLANTING TABLETS EQUALLY DISTRIBUTED AROUND EACH PLANTING PIT WHEN PIT IS APPROXIMATELY ONE-HALF FILLED. PLACE TABLETS BESIDE THE ROOT BALL ABOUT 1 INCH (25 MM) FROM ROOT TIPS; DO NOT PLACE TABLETS IN BOTTOM OF THE HOLE.

- A. QUANTITY: TWO PER PLANT.

5. CONTINUE BACKFILLING PROCESS. WATER AGAIN AFTER PLACING AND TAMPING FINAL LAYER OF SOIL.

- E. SLOPES: WHEN PLANTING ON SLOPES, SET THE PLANT SO THE ROOT FLARE ON THE UPHILL SIDE IS FLUSH WITH THE SURROUNDING SOIL ON THE SLOPE; THE EDGE OF THE ROOT BALL ON THE DOWNHILL SIDE WILL BE ABOVE THE SURROUNDING SOIL. APPLY ENOUGH SOIL TO COVER THE DOWNHILL SIDE OF THE ROOT BALL. SEE DETAIL ON PLANS.

- 3.6 TREE, SHRUB, AND VINE PRUNING

- A. REMOVE ONLY DEAD, DYING, OR BROKEN BRANCHES. DO NOT PRUNE FOR SHAPE.

- B. PRUNE, THIN, AND SHAPE TREES, SHRUBS, AND VINES AS DIRECTED BY ARCHITECT.

- C. PRUNE, THIN, AND SHAPE TREES, SHRUBS, AND VINES ACCORDING TO STANDARD PROFESSIONAL HORTICULTURAL AND ARBORICULTURAL PRACTICES. UNLESS OTHERWISE INDICATED BY ARCHITECT, DO NOT CUT TREE LEADERS; REMOVE ONLY INJURED, DYING, OR DEAD BRANCHES FROM TREES AND SHRUBS; AND PRUNE TO RETAIN NATURAL CHARACTER.

- D. DO NOT APPLY PRUNING PAINT TO WOUNDS.

#### 3.7 TREE STABILIZATION

- A. TRUNK STABILIZATION BY UPRIGHT STAKING AND TYING: INSTALL TRUNK STABILIZATION AS FOLLOWS UNLESS OTHERWISE INDICATED:

1. UPRIGHT STAKING AND TYING: STAKE TREES OF 2- THROUGH 5-INCH (50- THROUGH 125-MM) CALIPER. STAKE TREES OF LESS THAN 2-INCH (50-MM) CALIPER ONLY AS REQUIRED TO PREVENT WIND TIP OUT. USE A MINIMUM OF TWO STAKES OF LENGTH REQUIRED TO PENETRATE AT LEAST 18 INCHES (450 MM) BELOW BOTTOM OF BACKFILLED EXCAVATION AND TO EXTEND TO THE DIMENSION INDICATED ON DRAWINGS ABOVE GRADE. SET VERTICAL STAKES AND SPACE TO AVOID PENETRATING ROOT BALLS OR ROOT MASSES.

2. UPRIGHT STAKING AND TYING: STAKE TREES WITH TWO STAKES FOR TREES UP TO 12 FEET (3.6 M) HIGH AND 2-1/2 INCHES (63 MM) OR LESS IN CALIPER; THREE STAKES FOR TREES LESS THAN 14 FEET (4.2 M) HIGH AND UP TO 4 INCHES (100 MM) IN CALIPER. SPACE STAKES EQUALLY AROUND TREES.

3. SUPPORT TREES WITH BANDS OF FLEXIBLE TIES AT CONTACT POINTS WITH TREE TRUNK. ALLOW ENOUGH SLACK TO AVOID RIGID RESTRAINT OF TREE.

4. SUPPORT TREES WITH TWO STRANDS OF THE WIRE, CONNECTED TO THE BRASS GROMMETS OF TREE-TIE WEBBING AT CONTACT POINTS WITH TREE TRUNK. ALLOW ENOUGH SLACK TO AVOID RIGID RESTRAINT OF TREE.

- 3.8 GROUND COVER AND PLANT PLANTING

- A. SET OUT AND SPACE GROUND COVER AND PLANTS OTHER THAN TREES, SHRUBS, AND VINES AS INDICATED ON DRAWINGS IN EVEN ROWS WITH TRIANGULAR SPACING.

- B. USE PLANTING SOIL FOR BACKFILL.

- C. DIG HOLES LARGE ENOUGH TO ALLOW SPREADING OF ROOTS.

- D. FOR ROOTED CUTTING PLANTS SUPPLIED IN FLATS, PLANT EACH IN A MANNER THAT MINIMALLY DISTURBS THE ROOT SYSTEM BUT TO A DEPTH NOT LESS THAN TWO NODES.

- E. WORK SOIL AROUND ROOTS TO ELIMINATE AIR POCKETS AND LEAVE A SLIGHT SAUCER INDENTATION AROUND PLANTS TO HOLD WATER.

- F. WATER THOROUGHLY AFTER PLANTING, TAKING CARE NOT TO COVER PLANT CROWNS WITH WET SOIL.

- G. PROTECT PLANTS FROM HOT SUN AND WIND; REMOVE PROTECTION IF PLANTS SHOW EVIDENCE OF RECOVERY FROM TRANSPLANTING SHOCK.

#### 3.9 PLANTING AREA MULCHING

- A. MULCH BACKFILLED SURFACES OF PLANTING AREAS AND OTHER AREAS INDICATED.

1. TREES IN MEADOW AREAS: APPLY ORGANIC MULCH RING OF 3-INCH (75-MM) AVERAGE THICKNESS, WITH 36-INCH (900-MM) RADIUS AROUND TRUNKS OR STEMS. DO NOT PLACE MULCH WITHIN 3 INCHES (75 MM) OF TRUNKS OR STEMS.

2. ORGANIC MULCH IN PLANTING AREAS: APPLY 2-INCH (50-MM) AVERAGE THICKNESS OF ORGANIC MULCH OVER WHOLE SURFACE OF PLANTING AREA, AND FINISH LEVEL WITH ADJACENT FINISH GRADES. DO NOT PLACE MULCH WITHIN [3 INCHES (75 MM)] [6 INCHES (150 MM)] OF TRUNKS OR STEMS.

#### 3.10 INSTALLING SLOW-RELEASE WATERING DEVICE

- A. PROVIDE ONE DEVICE FOR EACH TREE.

- B. PLACE DEVICE ON TOP OF THE MULCH AT BASE OF TREE STEM AND FILL WITH WATER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

#### 3.11 PLANT MAINTENANCE

- A. MAINTAIN PLANTINGS BY PRUNING, CULTIVATING, WATERING, WEEDING, FERTILIZING, MULCHING, RESTORING PLANTING SAUCERS, ADJUSTING AND REPAIRING TREE-STABILIZATION DEVICES, RESETTling TO PROPER GRADES OR VERTICAL POSITION, AND PERFORMING OTHER OPERATIONS AS REQUIRED TO ESTABLISH HEALTHY, VIABLE PLANTINGS.

- B. FILL IN, AS NECESSARY, SOIL SUBSIDENCE THAT MAY OCCUR BECAUSE OF SETTLING OR OTHER PROCESSES. REPLACE MULCH MATERIALS DAMAGED OR LOST IN AREAS OF SUBSIDENCE.

- C. APPLY TREATMENTS AS REQUIRED TO KEEP PLANT MATERIALS, PLANTED AREAS, AND SOILS FREE OF PESTS AND PATHOGENS OR DISEASE. USE INTEGRATED PEST MANAGEMENT PRACTICES WHEN POSSIBLE TO MINIMIZE USE OF PESTICIDES AND REDUCE HAZARDS. TREATMENTS INCLUDE PHYSICAL CONTROLS SUCH AS HOSING OFF FOLIAGE, MECHANICAL CONTROLS SUCH AS TRAPS, AND BIOLOGICAL CONTROL AGENTS.

#### 3.12 PESTICIDE APPLICATION

- A. APPLY PESTICIDES AND OTHER CHEMICAL PRODUCTS AND BIOLOGICAL CONTROL AGENTS ACCORDING TO AUTHORITIES HAVING JURISDICTION AND MANUFACTURER'S WRITTEN RECOMMENDATIONS. COORDINATE APPLICATIONS WITH OWNER'S OPERATIONS AND OTHERS IN PROXIMITY TO THE WORK. NOTIFY OWNER BEFORE EACH APPLICATION IS PERFORMED.

- B. PRE-EMERGENT HERBICIDES (SELECTIVE AND NONSELECTIVE): APPLY TO TREE, SHRUB, AND GROUND-COVER AREAS ACCORDING TO MANUFACTURER'S WRITTEN RECOMMENDATIONS. DO NOT APPLY TO SEEDED AREAS.

- C. POST-EMERGENT HERBICIDES (SELECTIVE AND NONSELECTIVE): APPLY ONLY AS NECESSARY TO TREAT ALREADY-GERMINATED WEEDS AND ACCORDING TO MANUFACTURER'S WRITTEN RECOMMENDATIONS.

#### 3.13 REPAIR AND REPLACEMENT

- GENERAL: REPAIR OR REPLACE EXISTING OR NEW TREES AND OTHER PLANTS THAT ARE DAMAGED BY CONSTRUCTION OPERATIONS, IN A MANNER APPROVED BY ARCHITECT.

1. SUBMIT DETAILS OF PROPOSED PRUNING AND REPAIRS.

2. PERFORM REPAIRS OF DAMAGED TRUNKS, BRANCHES, AND ROOTS WITHIN 24 HOURS, IF APPROVED.

3. REPLACE TREES AND OTHER PLANTS THAT CANNOT BE REPAIRED AND RESTORED TO FULL-GROWTH STATUS, AS DETERMINED BY ARCHITECT.

- B. REMOVE AND REPLACE TREES THAT ARE MORE THAN 25 PERCENT DEAD OR IN AN UNHEALTHY CONDITION BEFORE THE END OF THE CORRECTIONS PERIOD OR ARE DAMAGED DURING CONSTRUCTION OPERATIONS THAT ARCHITECT DETERMINES ARE INCAPABLE OF RESTORING TO NORMAL GROWTH PATTERN. REPLACEMENT TREES SHALL BE OF SAME SIZE AND SPECIES.

#### 3.14 CLEANING AND PROTECTION

- A. DURING PLANTING, KEEP ADJACENT PAVING AND CONSTRUCTION CLEAN AND WORK AREA IN AN ORDERLY CONDITION. CLEAN WHEELS OF VEHICLES BEFORE LEAVING SITE TO AVOID TRACKING SOIL ONTO ROADS, WALKS, OR OTHER PAVED AREAS.

- B. REMOVE SURPLUS SOIL AND WASTE MATERIAL INCLUDING EXCESS SUBSOIL, UNSUITABLE SOIL, TRASH, AND DEBRIS AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.

- C. PROTECT PLANTS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS AND OPERATIONS OF OTHER CONTRACTORS AND TRADES. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED PLANTINGS.

- D. AFTER INSTALLATION AND BEFORE SUBSTANTIAL COMPLETION, REMOVE NURSERY TAGS, NURSERY STAKES, TIE TAPE, LABELS, WIRE, BURLAP, AND OTHER DEBRIS FROM PLANT MATERIAL, PLANTING AREAS, AND PROJECT SITE.

- E. AT TIME OF SUBSTANTIAL COMPLETION, VERIFY THAT TREE-WATERING DEVICES ARE IN GOOD WORKING ORDER AND LEAVE THEM IN PLACE. REPLACE IMPROPERLY FUNCTIONING DEVICES.

#### 3.15 MAINTENANCE SERVICE

- A. MAINTENANCE SERVICE FOR TREES AND SHRUBS: PROVIDE MAINTENANCE BY SKILLED EMPLOYEES OF LANDSCAPE INSTALLER, MAINTAIN AS REQUIRED IN "PLANT MAINTENANCE" ARTICLE. BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTS ARE INSTALLED AND CONTINUE UNTIL PLANTINGS ARE ACCEPTABLY HEALTHY AND WELL ESTABLISHED, BUT FOR NOT LESS THAN MAINTENANCE PERIOD BELOW:

1. MAINTENANCE PERIOD: 12 MONTHS FROM DATE OF SUBSTANTIAL COMPLETION.

- B. MAINTENANCE SERVICE FOR GROUND COVER AND OTHER PLANTS: PROVIDE MAINTENANCE BY SKILLED EMPLOYEES OF LANDSCAPE INSTALLER, MAINTAIN AS REQUIRED IN "PLANT MAINTENANCE" ARTICLE. BEGIN MAINTENANCE IMMEDIATELY AFTER PLANTS ARE INSTALLED AND CONTINUE UNTIL PLANTINGS ARE ACCEPTABLY HEALTHY AND WELL ESTABLISHED, BUT FOR NOT LESS THAN MAINTENANCE PERIOD BELOW:

1. MAINTENANCE PERIOD: SIX MONTHS OR THROUGH THE END OF THE NEXT GROWING SEASON, WHICHEVER IS LONGER, FROM DATE OF SUBSTANTIAL COMPLETION.

- END OF SECTION 32 9300

#### SECTION 329113 SOIL PREPARATION

##### PART 1 GENERAL

- 1.1 SUMMARY

- A. SECTION INCLUDES:

1. COMPONENTS OF PLANTING MEDIUMS.

2. TESTING AND CERTIFICATION OF COMPONENTS.

3. MIXING OF PLANTING MEDIUMS.

4. TRANSPORTING OF MEDIUMS.

5. SOIL AND SOIL AMENDMENTS PRODUCTS INCLUDING ALL IMPORTED LANDSCAPE SOIL AS REQUIRED TO MAKE UP DEFICIENCIES IN QUANTITY OF STOCKPILED NATIVE TOPSOIL AVAILABLE ON SITE.

##### 1.2 DEFINITIONS

- A. BACKFILL: THE EARTH USED TO REPLACE OR THE ACT OF REPLACING EARTH IN AN EXCAVATION.

- B. FINISH GRADE: ELEVATION OF FINISHED SURFACE OF PLANTING SOIL.

- C. SUBGRADE: SURFACE OR ELEVATION OF SUBSOIL REMAINING AFTER COMPLETING EXCAVATION, OR TOP SURFACE OF A FILL OR BACKFILL, BEFORE PLACING PLANTING SOIL.

- D. TOPSOIL: SOIL WITH ORGANIC CONTENT SUITABLE FOR SUSTAINING THE GROWTH OF A SOIL STABILIZING GROUND COVER SUCH AS TURF. TOPSOIL IS SPREAD OVER PREPARED SUBGRADE.

1. STOCKPILED NATIVE TOPSOIL: TOPSOIL STRIPPED FROM THE SITE PRIOR TO ROUGH GRADING WORK TO BE SPREAD AND AMENDED AS SPECIFIED (WHEN AVAILABLE). NO ONSITE SOIL MAY BE USED AS TOPSOIL UNLESS APPROVED BY LANDSCAPE ARCHITECT. SOIL CUT FROM NON ORGANIC LAYERS WILL NOT BE CONSIDERED FOR USE AS TOPSOIL.

2. IMPORTED LANDSCAPE TOPSOIL: OFF SITE TOPSOIL IMPORTED AND STOCKPILED TO BE SPREAD AND AMENDED AS SPECIFIED.

##### 1.3 SUBMITTALS

- A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED, FURNISH MANUFACTURER'S LITERATURE, CERTIFICATIONS, SOURCES, SAMPLES, AND LABORATORY ANALYTICAL DATA.

1. ORGANIC AMENDMENTS.

2. TOPSOIL.

3. SAND.

4. MULCH.

5. PLANT BED MIX.

6. FERTILIZER.

7. SOIL AMENDMENTS.

8. PRE EMERGENT HERBICIDE.

##### 1.4 QUALITY ASSURANCE

- A. TESTING: SOIL TESTING LABORATORY SHALL BE APPROVED BY OWNER. SOILS LABORATORY SHALL BE CAPABLE OF PROVIDING ALL TESTS OUTLINED IN THIS SECTION AND SHALL PROVIDE RECOMMENDATIONS AND RATES OF APPLICATIONS PER 1000 SQ. FT. FOR SOIL AMENDMENTS, SOIL CHEMISTRY, AND SOIL PLACEMENT.

1. ALL COSTS FOR TESTING SHALL BE PAID FOR BY CONTRACTOR.

2. MATERIALS TO BE TESTED:

- a. STOCKPILED NATIVE TOPSOIL 3 SAMPLES MINIMUM FROM AT LEAST 3 DIFFERENT LOCATIONS WITHIN THE STOCKPILE.

- b. IMPORTED LANDSCAPE SOILS 3 SAMPLES MINIMUM FROM AT LEAST 3 DIFFERENT LOCATIONS WITHIN THE STOCKPILE.

3. AGRICULTURAL TEST REPORTS: STOCKPILED NATIVE TOPSOIL, IMPORTED LANDSCAPE SOILS, AND SUBGRADE SOIL SHALL BE TESTED AS FOLLOWS:

- a. FERTILITY (AS EXPRESSED IN MEASURES OF PH, SALINITY, NITRATES, AMMONIUM, PHOSPHATE, POTASSIUM, CALCIUM, AND MAGNESIUM).

- b. AGRICULTURAL SUITABILITY (SODIUM ABSORPTION RATIO, SODIUM ACETATE AND EXTRACTABLE CALCIUM).

- c. PARTICLE SIZE: CLASSIFY THE SOIL BY USDA STANDARDS INCLUDING PARTICLE SIZE AND ORGANIC CONTENT NOTATIONS. LAB REPORTS TO CONFORM TO MATERIAL SPECIFICATION DESCRIPTION FOR SIZE SIZES.

- e. HEAVY METALS (CADMIUM, LEAD, ARSENIC, ALUMINUM).

- e. SOILS LAB MAY REQUIRE ADDITIONAL TESTS DUE TO FIELD CONDITIONS. FERTILITY CONSIDERATIONS: IN THE EVENT OF NUTRIENT INADEQUACIES, PROVISIONS SHALL BE MADE TO ADD REQUIRED MATERIALS IN SOILS TO OVERCOME INADEQUACIES PRIOR TO PLANTING.

4. IMPORTED LANDSCAPE TOPSOIL: TEST FOR HERBICIDE CONTAMINATION.

5. CERTIFICATES: CERTIFY STRICT COMPLIANCE WITH ACCEPTED SOIL MIXES AND AMENDMENTS, INCLUDING RATE OF APPLICATION.

##### PART 2 PRODUCTS

- 2.1 NATIVE LANDSCAPE TOPSOIL

- A. STOCKPILED NATIVE TOPSOIL

1. QUANTITY: APPROXIMATE QUANTITY OF STOCKPILED NATIVE TOPSOIL WILL NOT BE KNOWN UNTIL

- DEMOLITION AND ROUGH GRADING HAVE BEEN COMPLETED UNDER CIVIL WORK.

2. STOCKPILING: STOCKPILE STRIPPED TOPSOIL ONSITE.

3. COMPOSITION: FERTILE, FRIABLE, WELL DRAINED SOIL, OF UNIFORM QUALITY, FREE OF STONES OVER 1

- INCH DIAMETER, STICKS, OILS, CHEMICALS, PLASTER, CONCRETE AND OTHER DELETERIOUS MATERIALS.

4. ANALYSIS: OBTAIN AN AGRICULTURAL SUITABILITY ANALYSIS OF THE PROPOSED TOPSOIL FROM AN

- ACCEPTED, ACCREDITED TESTING AGENCY AT CONTRACTOR'S COST.

5. TEST RESULTS: REQUEST TESTING AGENCY TO SEND ONE (1) COPY OF TEST RESULTS DIRECTLY TO

- LANDSCAPE ARCHITECT AND ONE (1) COPY TO THE OWNER. IMPORTED TOPSOIL SHALL BE AMENDED

- PER SOILS ANALYSIS REPORT.

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