



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

**MULTI-STEP BIDDING PROCESS  
FOR  
GENERAL CONTRACTORS**

**Single Project---Short-Listing**

**Request for Submittals**

**January 14, 2010**

**NCAA TRACK AND FIELD FACILITY**

**UTAH VALLEY UNIVERSITY**

**OREM, UTAH**

DFCM Project Number 09026790

King Engineering & Paige Design Group

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Current copies of the following documents are hereby made part of these contract documents by reference. These documents are available on the DFCM web site at <http://dfcm.utah.gov/StdDocs/index.html> "Standard Documents" – "Reference Documents I" – "Item 6. Supplemental General Conditions" or are available upon request from DFCM:

**DFCM Supplemental General Conditions dated July 1, 2009 \***

DFCM Supplemental General Conditions dated July 15, 2008

DFCM General Conditions dated May 25, 2005

**\* NOTE: THE NEW SUPPLEMENTAL GENERAL CONDITIONS EFFECTIVE JULY 1, 2009 ADDRESSING HEALTH INSURANCE AND IMMIGRATION ARE REFERENCED AT THE LINK ABOVE.**

The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at <http://dfcm.utah.gov>

# NOTICE TO CONTRACTORS

The State of Utah - Division of Facilities Construction and Management (DFCM) is requesting submissions for the following project:

**Project Name:** NCAA Track & Field Facility  
Utah Valley University – Orem, Utah

**Project No.** 09026790

**Project Description:** Construct new NCAA certified Track & Field Facility as per drawings and specifications. This project is considered highly specialized; extremely tolerances have been set for both the substrate and the finish track surface.

**Cost Estimate:** \$2,350,000

DFCM is entering into a Multi-Step Bidding Process for Construction services. A short-listing of contractors will be based on the selection criteria outlined in the bidding documents contained herein. Short-listed contractors will be invited to submit bids on the project described above. **The only contractors allowed to bid on this project will be contractors short-listed by the selection committee.**

All contractors responding to this procurement must comply with and require all of their subcontractors to comply with the license laws as required by the State of Utah.

The bidding documents including plans and specification, short-listing requirements and schedule will be available at **2:00 PM on January 14, 2010** on the DFCM web page at <http://dfcm.utah.gov> and from DFCM, 4110 State Office Building, Salt Lake City, Utah 84114, telephone 801-538-3018. For questions regarding this solicitation, please contact **Michael Ambre**, DFCM, at 801-209-9104. No others are to be contacted regarding this solicitation.

A **mandatory** pre-submittal meeting to discuss the multi-step bidding process will be held at **11:30 AM on January 20, 2010** at the DFCM Office, 4110 State Office Building, Salt Lake City, Utah.

When bidding on this project, short-listed contractors will be required to submit a Bid Bond in the amount of five percent (5%) of the bid amount, made payable to the Division of Facilities Construction and Management on DFCM's Bid Bond Form. A Bid Bond must accompany each bid.

The Division of Facilities Construction & Management reserves the right to reject any or all submittals/bids or to waive any formality or technicality in any submittal/bid in the interest of the State.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT  
JOANNA REESE, CONTRACT COORDINATOR  
4110 State Office Bldg., Salt Lake City, Utah 84114

## DESCRIPTION OF WORK

The only contractors allowed to bid on this project will be contractors short-listed by the selection committee.

### **Project Description:**

Construct new NCAA certified Track & Field Facility as per drawings and specifications. This project is considered highly specialized; extremely tolerances have been set for both the substrate and the finish track surface.

Individual contractors or alliances between two or more contractors are allowed in this process to form a team. However, one contractor or firm MUST be declared as the lead firm representing the team. If the team is short-listed through this multi-step process, the state will only enter into contracts with the lead contractor or firm. The lead contractor or firm must be licensed by the State of Utah and comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

# MULTI-STEP BIDDING PROCESS

## SHORT-LISTING OF GENERAL CONTRACTORS

The short-listing of contractors will be based on the selection criteria outlined in this document.

**1. Multi-Step Bidding Documents**

The Multi-Step bidding documents consist of all of the information contained in this solicitation and all documents listed in the Table of Contents. All said documents are incorporated in this document by reference.

**2. Availability of Documents**

Bidding documents are available free of charge at the locations stated on the Schedule. The bidding documents are also available at DFCM's internet web site at <http://dfcm.utah.gov>.

**3. Drawings and Specifications and Interpretations**

Drawings, specifications and other contract documents may be obtained as stated in the Notice to Contractors. If any firm is in doubt as to the meaning or interpretation of any part of the drawings, specifications, scope of work or contract documents, they shall submit, in writing, a request for interpretation to the authorized DFCM representative by the deadline identified in the schedule. Answers to questions and interpretations will be made via addenda issued by DFCM. Neither DFCM nor the designer shall be responsible for incorrect information obtained by contractors from sources other than the official drawings/specifications and addenda issued by DFCM.

**4. Contact Information**

Except as authorized by the DFCM Representative or as otherwise stated in the bidding documents or the pre-submittal meeting, communication during the multi-step bidding process shall be directed to the specified DFCM's Representative. In order to maintain the fair and equitable treatment of everyone, contractors shall not unduly contact or offer gifts or gratuities to owners, users or selection committee members in an effort to influence the selection process or in a manner that gives the appearance of influencing the selection process. This prohibition applies before the bidding documents are issued as the project is developed, and extends through the award of a contract. Failure to comply with this requirement may result in a disqualification from the multi-step bidding process. Contractors should be aware that selection committee members will be required to certify that they have not been contacted by any of the contractors in an attempt to influence the selection process.

**5. Requests for Information**

All requests for information shall be in writing and directed to:

**Project Manager Michael Ambre**  
Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
**E-mail: mambre@utah.gov**  
**Phone: 801-209-9104**  
Facsimile: 801-538-3267

6. **Schedule**

The Schedule lists the important events, dates, times and locations of meetings and submittals that must be met by the contractor.

7. **Pre-Submittal Meeting**

A **mandatory** pre-submittal meeting will be held on the date and time and at the location listed on the Schedule. During the meeting, questions will be answered about the multi-step bidding process. Questions about the project, plans and specifications will also be addressed. Attendance at this meeting is mandatory for General Contractors.

8. **Submittal Due Dates and Times**

All required submittals must be delivered to, and received by, the Division of Facilities Construction and Management by the time deadline established in the Schedule. Submittals received after the specified time deadline will not be accepted. Please allow adequate time for delivery. If using a courier service, the contractor is responsible for ensuring that delivery will be made directly to the required location prior to the deadline.

9. **Last Day to Submit Questions**

Questions must be submitted in writing to the DFCM project manager by the deadline listed on the Schedule.

10. **Addendum**

All clarifications will be in writing and issued as addenda to the RFS. Addenda will be posted on DFCM's web site at <http://dfcm.utah.gov>. **Contractors are responsible for obtaining information contained in the addenda from the web site. Any addenda issued prior to the submittal deadline shall become part of the multi-step bidding process and any information required must be included in the contractor's submittal.** Addenda issued prior to the submittal deadline shall become part of the bidding process and must be acknowledged on the bid form. Failure to acknowledge addenda may result in disqualification from bidding. DFCM shall not be responsible for incorrect information obtained by contractors from sources other than official addenda issued by DFCM.

11. **Bid Bond Requirements**

A bid bond properly signed by a qualified surety, as indicated on the DFCM Bid Bond form provided along with this Instruction to Bidders, in the amount of 5% of the bid, shall accompany the bid submission to DFCM. **THIS BID BOND MUST BE ON THE DFCM BID BOND FORM PROVIDED WITH THIS INSTRUCTION TO BIDDERS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID** unless only one bid is received by DFCM, or the failure to comply with the bid bond requirements is determined by the Director of DFCM to be nonsubstantial based on the following:

- (a) the bid bond is submitted on a form other than DFCM's required Bid Bond form and the bid bond meets all other requirements including being issued by a surety firm authorized to do business in the State of Utah and be listed in the U.S. Department of the Treasury Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies for an amount not less than the amount of the bond to be issued. A co-surety may be utilized to satisfy this requirement; and

- (b) the contractor provides a bid bond properly signed by a qualified surety and on the required DFCM Bid Bond form by the close of business of the next succeeding business day after the DFCM notifies the bidder of the defective bid bond.

**12. Performance and References**

DFCM will rate each firm's performance on every project worked on (rating scale: 1 = low; 5 = high). The rating may include comments from agencies. The firm will have an opportunity to review and comment on their ratings. Ratings on DFCM projects over the previous five years will be provided to the selection committee for their consideration in evaluating and scoring the past performance of each firm. If a firm has not completed at least three DFCM projects in the last five years, they shall provide by the time indicated on the Schedule, a list of references on additional projects for a total of five projects. References should include: (a) name and address of the project; (b) name and phone number of the person able to answer questions about the project; (c) date of when the work was completed; (d) the cost of the project and the type of project (school, office, warehouse, etc).

**13. Statement of Qualifications**

The Contractor (firm) shall provide five copies of a statement of qualifications by the time indicated on the Schedule. The statement should describe: (a) the financial viability of your firm; (b) the experience, skill level and qualifications of your firm - identify the specific project manager and site superintendent that will be assigned to this project; (c) provide examples of similar projects completed by your firm and the specific project manager and site superintendent that will be assigned to this project; (d) describe your firm's areas of expertise and other special qualifications as they pertain to this project; (e) document your firm's track record of completing projects on time and within budget; (f) explain your firm's reputation and commitment to high-quality workmanship; and (g) document your firm's ability to comply with the bonding requirements outlined earlier in this document. The statement of qualifications should be concise (**limit three pages**) yet contain sufficient information for evaluation by the selection committee. Note: If multiple firms combine to form a team, only the lead contractor or firm will be allowed to bid on projects. In addition, if any member of the team (contractor or firm) withdraws from the team, the entire team is disqualified and will not be allowed to bid.

**14. Termination or Debarment Certification**

Each firm must submit a certification that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from soliciting work by any governmental department or agency. The firm must also certify that neither the firm nor its principals have been terminated during the performance of a contract or withdrew from a contract to avoid termination. If the firm cannot certify to these statements, the firm shall submit a written explanation. Firms are to submit the certifications with their Statement of Qualifications.

**15. Project Management Plan**

Each Contractor (firm) shall provide five copies of a document describing their management plan by the time indicated on the Schedule. The document should include: (a) the process used for selecting and managing subcontractors; (b) a description of how the your firm is organized - pertaining to this project, document who will be in charge with decision making authority; (c) a project schedule detailing your firm's plan to ensure that the project will be completed on time (include timeline for ordering long lead materials and equipment); (d) a description of the process (action plan) your firm will take to bring the project back on schedule if it falls behind; (e) the procedures your firm has in place to minimize change

orders; (f) the methodology used to ensure the accuracy of your bid; (g) your firm's approach to site security and project safety; (h) your firm's understanding of DFCM's construction general conditions and contract requirements; and (i) any other information that will assist the selection committee in evaluating your firm's approach to project management.

Include an organization chart of key personnel and a description of their duties. The management plan document should be concise (**limit three pages**) yet contain sufficient information for evaluation by the selection committee. The organization chart is a separate document and is not counted as one of the three pages.

**16. Selection Committee**

The selection committee will evaluate and score each firm/team. Committee members may include individuals from DFCM, User Agency/Institution, and a representative from the design or construction disciplines.

**17. Interviews**

If interviews are required, firms will be notified of the date and time of their interview. Otherwise, the selection committee reserves the right to short-list firms/teams based on their submitted past performance ratings/references, statement of qualifications and project management plan.

If necessary, interviews will be conducted with all responsive and responsible contractors. Firms that are late or do not appear for the interview may be disqualified by the committee. The evaluation will be made using the selection criteria contained in this document. Information provided by the past performance/references, statement of qualifications, project management plan and the interview will be evaluated using the selection criteria as the basis for the selection. The purpose of the interview is to allow contractors an opportunity to present their qualifications, discuss past performance/references and describe their project management plan. It will also provide an opportunity for the selection committee to ask questions about these items. Firms may elect to have management personnel, project managers and superintendents in attendance. Attendance of subcontractors is at the discretion of the contractor. The method of presentation is at the discretion of the contractor.

**18. Selection Criteria**

The following criteria and weighting will be used in evaluating each firm/team. The selection committee will consider all criteria in performing a comprehensive evaluation of each firm/team. Each firm/team will be scored by each selection committee member in the categories listed below.

- A. Performance Rating/References.** The committee will receive a past performance rating and/or reference score for each firm/team. DFCM will compute the score for each firm/team based upon the information outlined earlier in this document. **Possible Points: 20**
- B. Statement of Qualifications.** The committee will evaluate and score each firm's/team's qualifications in accordance with the information outlined earlier in this document as well as additional information about the firm's/team's qualifications presented during the interview. **Possible Points: 40**

- C. **Project Management Plan.** The committee will evaluate and score each firm's/team's project management approach in accordance with the information outlined earlier in this document as well as additional information about the firm's/team's project management approach presented during the interview. **Possible Points: 40**

**TOTAL POINTS = 100 POINTS**

**19. Short-Listing**

DFCM will **short-list up to six firms** receiving the highest score above the minimum score of 85 points from the selection committee. No firms receiving fewer than 85 points will be short-listed. Only short-listed firms will be invited to bid on this project. During the bidding process, the final contractor selection will be based on the lowest responsive and responsible bidder.

**20. Product Approvals**

Where reference is made to one or more proprietary products in the contract documents, but restrictive descriptive materials of one or more manufacturer(s) is referred to in the contract documents, the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the drawings and specifications and are compatible with the intent and purpose of the design, subject to the written approval of the Designer. Such written approval must occur prior to the deadline established for the last scheduled addendum to be issued. The Designer's written approval will be included as part of the addendum issued by DFCM. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design as determined by the Designer.

**21. Trade Secrets or Confidential Matters**

Any submitter may designate those portions of the submittals which contain trade secrets or other confidential matters that the Governmental Records and Access Management Act (GRAMA) would allow to be a protected record. Any disclosure of submittals or portions thereof shall be in accordance with GRAMA and State law.

**22. Financial Responsibility of Contractors, Subcontractors and Sub-subcontractors**

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the Contractor, Subcontractor or Sub-subcontractor. Failure to respond may result in the Contractor (firm) receiving a poor performance rating on this project.

**23. Licensure**

The Contractor shall comply with and require all of its Subcontractors to comply with the license laws as required by the State of Utah.

**24. Permits**

In concurrence with the requirements for permitting in the General Conditions, it is the responsibility of the Contractor to obtain the fugitive dust plan requirements from the Utah Division of Air Quality and the SWPPP requirements from the Utah Department of Environmental Quality and submit the

completed forms and pay any permit fee that may be required for this specific project. Failure to obtain the required permit may result in work stoppage and/or fines from the regulating authority that will be the sole responsibility of the Contractor. Any delay to the project as a result of any such failure to obtain the permit or noncompliance with the permit shall not be eligible for any extension in the Contract Time.

**25. Time is of the Essence**

Time is of the essence in regard to all the requirements of the contract documents.

**26. Bids**

Before submitting a bid, each bidder shall carefully examine the contract documents; shall visit the site of the work; shall fully inform themselves as to all existing conditions and limitations; and shall include in the bid the cost of all items required by the contract documents including those added via addenda. If the bidder observes that portions of the contract documents are at variance with applicable laws, building codes, rules, regulations or contain obvious erroneous or uncoordinated information, the bidder shall promptly notify the DFCM Project Manager. Changes necessary to correct these issues will be made via addenda issued by DFCM.

The bid, bearing original signatures, must be typed or handwritten in ink on the Bid Form provided in the procurement documents and submitted in a sealed envelope at the location specified by the Notice to Contractor's prior to the published deadline for the submission of bids.

Bid bond security, in the amount of five percent (5%) of the bid, made payable to the Division of Facilities Construction and Management, shall accompany bid. **THE BID BOND MUST BE ON THE BID BOND FORM PROVIDED IN THE PROCUREMENT DOCUMENTS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID.**

If the bid bond security is submitted on a form other than the Owner's required bid bond form, and the bid security meets all other legal requirements, the bidder will be allowed to provide an acceptable bid bond by the close of business on the next business day following notification by DFCM of submission of a defective bid bond security. **A cashier's check cannot be used as a substitute for a bid bond.**

**27. Listing of Subcontractors**

Listing of Subcontractors shall be as summarized in the "Instructions and Subcontractors List Form", included as part of the contract documents. The Subcontractors List shall be delivered to DFCM or faxed to DFCM at (801)538-3677 within 24 hours of the bid opening. Requirements for listing additional subcontractors will be listed in the contract documents.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements may receive a poor performance rating on this project.

**28. Contract and Bond**

The Contractor's Agreement will be in the form found in the specifications. The contract time will be as indicated in the bid. The successful bidder, simultaneously with the execution of the Contract Agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the procurement documents. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the Contract Sum and secured from a company that meets the requirements specified in the requisite forms. Any bonding requirements for Subcontractors will be specified in the Supplementary General Conditions.

**29. Award of Contract**

The Contract will be awarded as soon as possible to the lowest, responsive and responsible bidder, based on the lowest combination of base bid and acceptable prioritized alternates, provided the bid is reasonable, is in the interests of DFCM to accept and after applying the Utah Preference Laws in U.C.A. Title 63, Chapter 56. DFCM reserves the right to waive any technicalities or formalities in any bid or in the bidding. Alternates will be accepted on a prioritized basis with Alternate 1 being highest priority, Alternate 2 having second priority, etc.

**30. Right to Reject Bids**

DFCM reserves the right to reject any or all Bids.

**31. Withdrawal of Bids**

Bids may be withdrawn on written request received from bidders within 24 hours after the bid opening if the contractor has made an error in preparing the bid.



**MULTI-STEP PROJECT SCHEDULE**

<b>PROJECT NAME:</b>		NCAA Track & Field Facility – Utah Valley University – Orem, Utah		
<b>DFCM PROJECT NO. :</b>		09026790		
Event	Day	Date	Time	Place
Document Available, including Plans and Specifications	Thursday	January 14, 2010	2:00 PM	DFCM 4110 State Office Building SLC, UT and DFCM web site*
<b>Mandatory</b> Pre-Submittal Meeting	Wednesday	January 20, 2010	11:30 AM	DFCM 4110 State Office Building SLC, UT
Last Day to Submit Questions on Shortlisting (In Writing)	Monday	January 25, 2010	4:00 PM	<i>Michael Ambre</i> - DFCM E-mail: <a href="mailto:mambre@utah.gov">mambre@utah.gov</a> Fax 801-538-3267
Addendum on Shortlisting	Thursday	January 28, 2010	3:00 PM	DFCM web site*
List of References, Statement of Qualifications, Project Management Plan, and Termination/Debarment Certification Due	Tuesday	February 2, 2010	12:00 NOON	DFCM 4110 State Office Building SLC, UT
Interviews by Selection Committee (if necessary)	Tuesday	February 9, 2010	To Be Announced	
Short-List Announced	Wednesday	February 10, 2010	2:00 PM	
<b>Notice: Only Short-Listed Firms Will Be Allowed To Bid On This Project</b>				
Last Day to Submit Questions (In Writing)	Monday	February 15, 2009	12:00 PM	<i>Michael Ambre</i> - DFCM E-mail <a href="mailto:mambre@utah.gov">mambre@utah.gov</a> Fax 801-538-3267
Final Addendum (exception for bid delays)	Wednesday	February 17, 2010	2:00 PM	DFCM web site*
Prime Contractors Turn in Bid and Bid Bond/Bid Opening in DFCM Conference Room	Monday	February 22, 2010	2:30 PM	DFCM 4110 State Office Building SLC, UT
Subcontractors List Due	Tuesday	February 23, 2010	2:30 PM	DFCM 4110 State Office Building SLC, UT Fax 801-538-3677
Project Completion Date	Thursday	September 30, 2010	5:00 PM	

\* DFCM’s web site address is <http://dfcm.utah.gov>



## BID FORM

NAME OF BIDDER \_\_\_\_\_ DATE \_\_\_\_\_

To the Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Instructions to Bidders", in compliance with your invitation for bids for the NCAA Track & Field Facility – Utah Valley University – Orem, Utah – DFCM Project No. 09026790 and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: \_\_\_\_\_

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_)

(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by September 30, 2010 should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$500.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of \_\_\_\_\_

The undersigned Contractor's License Number for Utah is \_\_\_\_\_.

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable 100% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization:

\_\_\_\_\_  
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

\_\_\_\_\_

Respectfully submitted,

\_\_\_\_\_  
Name of Bidder

ADDRESS:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

# BID BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

## KNOW ALL PERSONS BY THESE PRESENTS:

That \_\_\_\_\_ hereinafter referred to as the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_ and authorized to transact business in this State and U. S. Department of the Treasury Listed, (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the STATE OF UTAH, hereinafter referred to as the "Obligee," in the amount of \$\_\_\_\_\_ (5% of the accompanying bid), being the sum of this Bond to which payment the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH** that whereas the Principal has submitted to Obligee the accompanying bid incorporated by reference herein, dated as shown, to enter into a contract in writing for the \_\_\_\_\_ Project.

**NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH**, that if the said principal does not execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the principal, then the sum of the amount stated above will be forfeited to the State of Utah as liquidated damages and not as a penalty; if the said principal shall execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the Principal, then this obligation shall be null and void. It is expressly understood and agreed that the liability of the Surety for any and all defaults of the Principal hereunder shall be the full penal sum of this Bond. The Surety, for value received, hereby stipulates and agrees that obligations of the Surety under this Bond shall be for a term of sixty (60) days from actual date of the bid opening.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the above bounden parties have executed this instrument under their several seals on the date indicated below, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

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

**Principal's name and address (if other than a corporation):**

**Principal's name and address (if a corporation):**

\_\_\_\_\_

\_\_\_\_\_

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

By \_\_\_\_\_

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

Title: \_\_\_\_\_  
(Affix Corporate Seal)

**Surety's name and address:**

\_\_\_\_\_

\_\_\_\_\_

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ ) ss.

By: \_\_\_\_\_  
Attorney-in-Fact (Affix Corporate Seal)

On this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

My Commission Expires: \_\_\_\_\_

Resides at: \_\_\_\_\_

\_\_\_\_\_

NOTARY PUBLIC

Agency: \_\_\_\_\_  
Agent: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General



## INSTRUCTIONS AND SUBCONTRACTORS LIST FORM

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of **ALL** first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, based on the following:

### **DOLLAR AMOUNTS FOR LISTING**

**PROJECTS UNDER \$500,000: ALL FIRST-TIER SUBS \$20,000 OR OVER MUST BE LISTED**  
**PROJECTS \$500,000 OR MORE: ALL FIRST-TIER SUBS \$35,000 OR OVER MUST BE LISTED**

- Any additional subcontractors identified in the bid documents shall also be listed.
- The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
- List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
- Bidder may not list more than one subcontractor to perform the same work.
- If there are no subcontractors for the job that are required to be reported by State law (either because there are no subcontractors that will be used on the project or because there are no first-tier subcontractors over the dollar amounts referred to above), then you do not need to submit a sublist. If you do not submit a sublist, it will be deemed to be a representation by you that there are no subcontractors on the job that are required to be reported under State law. At any time, DFCM reserves the right to inquire, for security purposes, as to the identification of the subcontractors at any tier that will be on the worksite.

### **LICENSURE:**

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

### **'SPECIAL EXCEPTION':**

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A. Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

### **GROUND FOR DISQUALIFICATION:**

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM  
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such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

**CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:**

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

- (1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
- (2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
- (3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
- (4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
- (5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
- (6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

**EXAMPLE:**

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONTRACTOR LICENSE #
ELECTRICAL	ABCD Electric Inc.	\$350,000.00	123456789000
LANDSCAPING	"Self" *	\$300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	\$298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: \$350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

\* Bidders may list "self", but it is not required.

**PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.**



### CONTRACTOR'S AGREEMENT

FOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

THIS CONTRACTOR'S AGREEMENT, made and entered into this \_\_ day of \_\_\_\_\_, 2006, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and \_\_\_\_\_, incorporated in the State of Utah and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is \_\_\_\_\_ Utah \_\_\_\_\_.

WITNESSETH: WHEREAS, DFCM intends to have \_\_\_\_\_ Work performed at \_\_\_\_\_

WHEREAS, Contractor agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and Contractor for the consideration provided in this Contractor's Agreement, agree as follows:

**ARTICLE 1. SCOPE OF WORK.** The Work to be performed shall be in accordance with the Contract Documents prepared by \_\_\_\_\_ and entitled "\_\_\_\_\_."

The DFCM General Conditions ("General Conditions") dated May 25, 2005 and Supplemental General Conditions dated July 15, 2008 and July 1, 2009 (also referred to as "General Condition"), on file at the office of DFCM and available on the DFCM website, are hereby incorporated by reference as part of this Agreement and are included in the specifications for this Project. All terms used in this Contractor's Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions.

The Contractor Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the Contractor to the DFCM hereunder is that of an independent Contractor.

**ARTICLE 2. CONTRACT SUM.** The DFCM agrees to pay and the Contractor agrees to accept in full performance of this Contractor's Agreement, the sum of \_\_\_\_\_ **DOLLARS AND NO CENTS (\$\_\_\_\_\_)**, which is the base bid, and includes the cost of a 100%

CONTRACTOR'S AGREEMENT  
PAGE NO. 2

Performance Bond and a 100% Payment Bond as well as all insurance requirements of the Contractor. Said bonds have already been posted by the Contractor pursuant to State law. The required proof of insurance certificates have been delivered to DFCM in accordance with the General Conditions before the execution of this Contractor's Agreement.

**ARTICLE 3. TIME OF COMPLETION AND DELAY REMEDY.** The Work shall be Substantially Complete by \_\_\_\_\_ after the date of the Notice to Proceed. Contractor agrees to pay liquidated damages in the amount of \_\_\_\_\_ per day for each day after expiration of the Contract Time until the Contractor achieves Substantial Completion in accordance with the Contract Documents, if Contractor's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Contractor's Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No action shall be maintained by the Contractor, including its or Subcontractor or suppliers at any tier, against the DFCM or State of Utah for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions. The Contractor may receive a written extension of time, signed by the DFCM, in which to complete the Work under this Contractor's Agreement in accordance with the General Conditions.

**ARTICLE 4. CONTRACT DOCUMENTS.** The Contract Documents consist of this Contractor's Agreement, the Conditions of the Contract (DFCM General Conditions, Supplementary and other Conditions), the Drawings, Specifications, Addenda and Modifications. The Contract Documents shall also include the bidding documents, including the Notice to Contractors, Instructions to Bidders/Proposers and the Bid/Proposal, to the extent not in conflict therewith and other documents and oral presentations that are documented as an attachment to the contract.

All such documents are hereby incorporated by reference herein. Any reference in this Contractor's Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

**ARTICLE 5. PAYMENT.** The DFCM agrees to pay the Contractor from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The Contractor agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the

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Contractor requests payment and agrees to safeguard and protect such equipment or materials and is responsible for safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the Contractor at the time of request for Certificate of Payment on account. Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. The retainage, including any additional retainage imposed and the release of any retainage, shall be in accordance with UCA 13-8-5 as amended. Contractor shall also comply with the requirements of UCA 13-8-5, including restrictions of retainage regarding subcontractors and the distribution of interest earned on the retention proceeds. The DFCM shall not be responsible for enforcing the Contractor's obligations under State law in fulfilling the retention law requirements with subcontractors at any tier.

**ARTICLE 6. INDEBTEDNESS.** Before final payment is made, the Contractor must submit evidence satisfactory to the DFCM that all payrolls, materials bills, subcontracts at any tier and outstanding indebtedness in connection with the Work have been properly paid. Final Payment will be made after receipt of said evidence, final acceptance of the Work by the DFCM as well as compliance with the applicable provisions of the General Conditions.

Contractor shall respond immediately to any inquiry in writing by DFCM as to any concern of financial responsibility and DFCM reserves the right to request any waivers, releases or bonds from Contractor in regard to any rights of Subcontractors (including suppliers) at any tier or any third parties prior to any payment by DFCM to Contractor.

**ARTICLE 7. ADDITIONAL WORK.** It is understood and agreed by the parties hereto that no money will be paid to the Contractor for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and the Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this Contractor's Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

**ARTICLE 8. INSPECTIONS.** The Work shall be inspected for acceptance in accordance with the General Conditions.

**ARTICLE 9. DISPUTES.** Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

**ARTICLE 10. TERMINATION, SUSPENSION OR ABANDONMENT.** This Contractor's Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

**ARTICLE 11. DFCM'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE USE THEREOF.** The DFCM may withhold from payment to the Contractor such amount as, in DFCM's judgment, may be necessary to pay just claims against the Contractor or Subcontractor at any tier for labor and services rendered and materials furnished in and about the Work. The DFCM may apply such withheld amounts for the payment of such claims in DFCM's discretion. In so doing, the DFCM shall be deemed the agent of Contractor and payment so made by the DFCM shall be considered as payment made under this Contractor's Agreement by the DFCM to the Contractor. DFCM shall not be liable to the Contractor for any such payment made in good faith. Such withholdings and payments may be made without prior approval of the Contractor and may be also be prior to any determination as a result of any dispute, PRE, Claim or litigation.

**ARTICLE 12. INDEMNIFICATION.** The Contractor shall comply with the indemnification provisions of the General Conditions.

**ARTICLE 13. SUCCESSORS AND ASSIGNMENT OF CONTRACT.** The DFCM and Contractor, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Contractor's Agreement. The Contractor shall not assign this Contractor's Agreement without the prior written consent of the DFCM, nor shall the Contractor assign any moneys due or to become due as well as any rights under this Contractor's Agreement, without prior written consent of the DFCM.

**ARTICLE 14. RELATIONSHIP OF THE PARTIES.** The Contractor accepts the relationship of trust and confidence established by this Contractor's Agreement and covenants with the DFCM to cooperate with the DFCM and A/E and use the Contractor's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

**ARTICLE 15. AUTHORITY TO EXECUTE AND PERFORM AGREEMENT.** Contractor and DFCM each represent that the execution of this Contractor's Agreement and the performance thereunder is within their respective duly authorized powers.

**ARTICLE 16. ATTORNEY FEES AND COSTS.** Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this Contractor's Agreement or recover damages or any other action as a result of a breach thereof.



**PERFORMANCE BOND**  
(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That \_\_\_\_\_ hereinafter referred to as the "Principal" and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ DOLLARS (\$\_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_, for the approximate sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_), which Contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**PRINCIPAL:**

\_\_\_\_\_

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

(Seal)

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

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**SURETY:**

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-in-Fact

(Seal)

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.  
My commission expires: \_\_\_\_\_  
Resides at: \_\_\_\_\_

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

<b>Agency:</b> _____
<b>Agent:</b> _____
<b>Address:</b> _____
<b>Phone:</b> _____

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

**PAYMENT BOND**

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

**KNOW ALL PERSONS BY THESE PRESENTS:**

That \_\_\_\_\_ hereinafter referred to as the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_ authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of \_\_\_\_\_, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_ for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, 1953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

(Seal)

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

**PRINCIPAL:**

\_\_\_\_\_

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

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

**SURETY:**

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-in-Fact (Seal)

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.  
My commission expires: \_\_\_\_\_  
Resides at: \_\_\_\_\_

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

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

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## **SECTION 02810 - IRRIGATION SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Provide all irrigation equipment and accessories complete, in place, as shown on the drawings, specified herein, and needed for a complete and proper installation.
  
- B. It will be the contractor's responsibility to report to the Engineer any deviations between the drawings, specifications and the site. Failure to do so prior to the installing of equipment, and resulting in replacing, and/or relocating, will be done at the contractor's expense.

#### **1.2 AS-BUILT IRRIGATION DRAWINGS**

- A. Prepare as-built drawings which show deviations from the contract documents made during construction affecting the main line pipe, controller locations, remote control valves, manual drain valves, and all drip distribution and collection line locations. The drawings shall also indicate and show approved substitutions of size, materials and manufacturer's name and catalog number. The Contractor will keep a record of all departures from the contract drawings that occur during construction. These shall be kept on a clean set of prints of the contract drawings. The Engineer will review the "as-built" to verify that changes are being recorded as construction occurs.

#### **1.3 PERMITS AND FEES**

- A. Obtain all permits and pay required fees to any governmental agency having jurisdiction over the work. Inspections required by local ordinances during the course of construction shall be arranged as required. On completion of the work, satisfactory evidence shall be furnished to the Owner's representative to show that all work has been installed in accordance with the ordinances and code requirements. See existing utilities paragraph below.

#### **1.4 QUALITY ASSURANCE**

- A. This contract work is to be conducted primarily by and coordinated by a licensed Landscape Irrigation Contractor specializing in landscape irrigation work. All work that is irrigation related work shall be conducted by employees who have each had a minimum of one year of experience constructing landscape irrigation systems. The on site supervisor must have a minimum of three years experience constructing landscape irrigation systems and one year experience in a supervisory role.

#### **1.5 COORDINATION**

- A. Coordinate and cooperate with other contractors to enable the work to proceed as rapidly and efficiently as possible.

## **1.6 INSPECTION OF SITE**

- A. The contractor shall acquaint him/herself with all site conditions. Should utilities not shown on the plans be found during excavations notify the Engineer. Failure to do so will make the contractor liable for any and all damage thereto arising from his/her operations subsequent to discovery of such utilities not shown on plans.

## **1.7 EXISTING UTILITIES**

- A. Before any trenching, excavation or digging below the surface for any reason is begun, the contractor shall have the area "Blue Staked" in order to determine as close as possible the location of all underground utilities. The contractor will conduct his/her work in such a manner to protect all utilities from damage. It is the responsibility of the contractor to repair or replace any damage incurred by the contractor or the contractor's employees at no expense to the owner.

## **1.8 PROTECTION OF EXISTING SITE CONDITIONS**

- A. The contractor shall take necessary precautions to protect site conditions to remain. Should damage be incurred, the contractor shall repair the damage to its original condition at the contractor's own expense. Contractor shall be responsible for the continued watering of all areas affected by construction. This can be completed by handwatering, the use of temporary irrigation systems or the continued operation of existing systems not disturbed by construction.

## **1.9 GUARANTEE**

- A. All work shall be guaranteed for compliance with the drawings and specifications for a period of one year after the date of substantial completion. The contractor shall make good any deficiencies at the time he/she is notified of any faults, and place in satisfactory condition any damage to the buildings or grounds without cost to the owner. All guarantees shall be in writing and approved by the Engineer before submitting to the Owner.

## **1.10 SUBMITTALS**

- A. Submit one copy of manufacturer's technical data and installation instructions for landscape irrigation system.

## **PART 2 - MATERIALS**

### **2.1 GENERAL**

- A. All materials throughout the system shall be new and in perfect condition. After award of the contract and prior to beginning work, the Contractor shall submit for approval three copies of the complete list of materials which he/she proposes to install. Quantities of materials and equipment need not be included. No

deviations from the specifications shall be allowed, except as provided for in these documents.

## **2.2 PIPING**

- A. All piping shall be free from cracks, holes, foreign material, blisters, inside bubbles, wrinkles and dents. Pipe ratings shall be printed on the pipe and no pipe shall be less than 3/4" diameter.
- B. Pipe Joints: All joints shall be solvent welded as per manufacturer's recommendations, using both the proper primer and glue. All joints must be allowed to set for a minimum of 24 hours prior to pressure testing.

## **2.3 FITTINGS**

- A. Fittings for main and lateral lines shall be Schedule 40, Polyvinyl Chloride (PVC). Do NOT use galvanized fittings of any kind.
- B. Fittings on flex swing risers shall be barbed insert ells made of THICK-WALLED POLY PIPE as manufactured by Rainbird.

## **2.4 RISERS**

- A. Flexible swing pipe shall be THICK-WALLED POLY PIPE (funny pipe) as manufactured by Rainbird. This pipe is to be used only between heads and lateral lines and shall not exceed a distance of 5 feet.

## **2.5 SOLVENT CEMENT**

- A. Compatible with PVC pipe and of proper consistency.

## **2.6 AUTOMATIC CONTROLLERS**

- A. The Contractor shall connect all new valves to the existing controller (as shown on the plan) using the station callouts shown on the plan to the satisfaction of the University.

## **2.7 VALVES**

- A. Ball Valves: Ball valves shall be solid bronze meeting Federal Specification WW-V-54, CLASS A, TYPE 1. Size shall be the same size as the electric valve it is installed next to. Valve shall be installed on the up-stream side of the electric remote control valve and in the same valve box.
- B. Manual Drain Valves: All drain valves shall be 3/4" Mueller Oriseal or approved equal and installed as per details on the drawings. This valve is to be installed on mainlines only.
  - 1. Drains: Drains shall be installed at all low points on the mainline only. Each drain shall be provided with a gravel sump of 18" x 18" x 18" filled with 1" diameter gravel. Install the mainline such that a minimum number of drains are required. Refer to the detail on the drawings for valve stem extensions where required and valve markers.

- C. Automatic Drain Valves: Automatic drains shall be 1/2" King Drains or approved equal and installed as per UVU requirements. Automatic drains are to be installed at low points of lateral lines only.
- D. Electric Remote Control Valve: All electric remote control valves shall be of the size and type as specified on the drawings,
  - 1. Rainbird 200 PESP Series, Automatic Remote Control Valves, or approved equal.

## **2.8 SLEEVES**

- A. All sleeves shall be PVC Schedule 40 sized 2 pipe sizes larger than the pipe or pipes being sleeved (6" diameter min.). Install sleeves in locations as shown on the drawings and at the depths specified for lateral and mainlines. Coordinate the installation of the sleeves with installation of all hard surfaces. Mark location of all sleeves with a 3/4" galvanized roofing nail at both sides of sidewalk or curb and gutter or asphalt in such a manner that future location will not require more than hand shovel excavation. Insure that adequate amounts of sleeving are installed for both water lines and electric control wires.

## **2.9 ELECTRIC CONTROL WIRE**

- A. Wires shall be UF DIRECT BURIAL type. No wire shall be smaller than #14. Ground or neutral wires shall be WHITE, grass areas shall be RED and shrubbery areas shall be BLUE. Spare wires shall be Green.
- B. No splices in electric control wires. All wires shall be 'homeruns' from the valve to the controller.
- C. Conduit: Standard Electrical Conduit. Size as needed.
- D. Rainbird maxicom communication wire

## **2.10 HEADS**

- A. All heads shall be as specified on the drawings. Nozzle patterns are indicated and shown, however, specific site conditions may require that different nozzle patterns be used. Contractor shall adjust patterns to provide adequate coverage.
  - 1. Rainbird 1800 Series pop up rotors. Rainbird standard angle Raincurtain Nozzles as called for on drawing.
  - 2. TORO 300 Stream rotors.
- B. All heads shown on the drawings shall be installed. Contractor shall consult with the Engineer prior to the deletion or addition of any heads.

## **2.11 VALVE BOXES**

- A. Valve boxes shall be of sufficient size to house 1 (one) electric remote control valve and still allow room for maintenance without having to excavate or perform similar operations. Boxes shall be as manufactured by Carson or Brooks Industries meeting ASTM D368 for tensile strength of 12" deep and furnish with a non-hinged cover. Each valve box is to have a 6" bottom extension minimum. The extension should allow for the installation of the valve cluster at the depth of the lateral line (12"). The contractor shall also allow for 4-6" of clear space between the valve cluster and the gravel below the valve.
- B. Valve boxes shall be set flush with the finished grade. Valves shall be set 12" below the top of the box including ball valves and quick couplers where called for. Do NOT install more than one (1) electric remote control valves in a single standard valve box. All valves must have ample room and access for repair.

#### **2.12 QUICK COUPLERS**

- A. All quick couplers shall be a Rainbird 1" 440 LRC quick coupler or approved equal.

### **PART 3 - EXECUTION**

#### **3.1 WORKMANSHIP**

- A. Lay Out work as accurately as possible to the drawings. The drawings, though carefully drawn, are generally diagrammatic to the extent that swing joints, offsets and all fittings are not shown. All irrigation lines shall be installed in common trenches where possible. Where possible, all trenching shall occur on soft spaces.
- B. If for any reason full and complete coverage of all irrigation areas does not cover, irrigation contractor shall be responsible to contact the Engineer before continuing with his work.
- C. All existing systems with lateral lines and heads running along existing curbs that are to be removed shall be replaced with new piping and heads. Existing heads are to be turned over to the University.
- D. Any Major Revisions to the irrigation system must be submitted and answered in written form, along with any change in contract price.

#### **3.2 EXCAVATION AND TRENCHING**

- A. Perform all excavations as required for the installation of the work included under this section, including shoring of earth banks to prevent cave-ins. Restore all surfaces, existing underground installations, etc., damaged or cut as a result of the excavations to their original condition.
- B. Trenches for lateral lines shall be dug a minimum of 12" deep and as wide as necessary to properly install pipes.
- C. Trenches for mainlines shall be dug a minimum of 18" deep. Run all electrical wires in mainline trench as shown in detail on

drawings. Where it becomes necessary for wires to leave the mainline trench, the trench for all electrical wires shall be treated as a mainline trench, as herein described.

- D. Trenches shall be made wide enough to allow a minimum of 6 inches between parallel pipe lines.
- E. All trenches are to be 12" away from all curbs, buildings and sidewalks.

### **3.3 PIPE LINE ASSEMBLY**

- A. Install automatic control valves where shown and group together where practical. Place no closer than 12 inches to walk edges, building, and walls. Install in valve box, arranged for easy adjustment and removal. Allow sufficient space around entire valve assembly. Each valve group (up to 4 valves) shall be connected to the main line through a ball valve.
- B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit. See schedule.
- C. Plastic pipe and fittings shall be solvent welded using solvents and methods as recommended by manufacturer of the pipe, except where screwed connections are required. Pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent with a non-synthetic bristle brush.
- D. Install pipe in dry weather when temperature is above 40 degrees F. in strict accordance with Manufacturers instructions.
- E. Pipe may be assembled and welded on the surface. Snake pipe from side to side of trench bottom to allow for expansion and contraction.

### **3.4 BACKFILLING OF TRENCHES**

- A. Backfill around and over the pipes in accordance with the details on the drawings. All material that is to come in contact with the pipes shall be less than 1/4 inch in diameter. This material shall be imported for this specific use if necessary. Upon the approval of the Engineer, the existing material on site may be used as backfill material above the pipes.

### **3.5 FLUSHING AND TESTING**

- A. After installation of all new pipes, including laterals for a given circuit, the control valve shall be opened fully and a full head of water be used to flush out the system
- B. Testing will be performed after completion of each circuit and after completion of the entire system. At this time any necessary repair work will be done at the contractor's expense and the entire system will be in good working order prior to the issuance of the Certificate of Substantial Completion.

### 3.6 PIPING INSPECTIONS

- A. Before any pipes are covered, the Engineer shall inspect the system for compliance with specifications and drawings. Any required changes will be made at this time at the expense of the contractor.

### 3.7 SYSTEM OPERATION

- A. The entire system will be tested in the presence of the Engineer, in order to insure COMPLETE coverage of all areas to be watered and the automatic operation of the system using the automatic clock. Any changes required will be made at this time at the contractor's expense.
- B. All heads will be adjusted to their proper coverage and set to the proper depth at this time.

### 3.8 AUTOMATIC CLOCK

- A. All new valves shall be connected to a new Maxicom compatible controller furnished and installed by the contractor to the satisfaction of the University.

### 3.9 ELECTRICAL CONTROL WIRES

- A. Electrical control wires shall be installed in the same trench as the main line wherever possible. Wires shall be laid alongside the pipe by "snaking" into the trench to allow as much slack as possible for contraction and expansion of the wire. All wire connections at remote control valves will be left with two feet of wire so that the splice or the valve manifold can be brought to the surface for repairs without disconnecting the wires.
- B. It is important that the joint be absolutely waterproof so that there is no chance for leakage of water and corrosion build-up on the connection. All wiring shall be 'home-run from the valve to the controller.
- C. Conduit: Standard Electrical Conduit from mainline outside building to irrigation controller inside building. Size as needed for 26 wires.

### 3.10 SLEEVING

- A. All lines to be laid under hard surfaces shall be installed in a 6" minimum PVC Schedule 40 sleeve unless noted otherwise. Depth of sleeves to be determined by the type of line that is to be placed in sleeve. In the case of new construction, all sleeves are to be placed prior to laying of any hard surface. In the case of existing construction, the sleeves must be installed by boring under the existing hard surface.

### 3.11 QUICK COUPLERS

- A. Quick couplers shall be installed on a swing joint as detailed on the drawings.

- B. Install one (1) quick coupler at each remote control valve or valve cluster.

### **3.12 TESTING**

- A. Operation Testing: After finish grading, contouring and mulching, test the entire system for operation including electrically actuating the remote control valve. Run the system until water begins to puddle and/or run off to determine the initial controller run time to determine the number of irrigation cycles necessary to meet weekly evapotranspiration rates (E.T.) for the plant material installed.

### **3.13 ADJUSTMENT**

- A. After completion of grading, seeding, or sodding, and rolling of grass areas, carefully adjust lawn sprinkler heads so they will be flush with, or not more than 1/2" below finish grade.

### **3.14 CLEAN-UP**

- A. Remove from the site all debris resulting from work of this section.

**END OF SECTION 02810**

## **SECTION 02900 - LANDSCAPING**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. The Extent of the landscape development work is shown on the drawings and schedules and includes preparation of landscaped areas, restoration of areas disturbed by construction, and placement of all sod.

#### **1.2 AS-BUILT DRAWINGS**

- A. The Contractor will keep a record of all departures from the contract drawings that occur during construction. These shall be kept on a clean set of prints of the contract drawings. The Engineer will review the "as-built drawings" to verify that changes are being recorded as construction occurs.

#### **1.3 QUALITY ASSURANCE**

- A. The landscape work shall be done by a single licensed Landscape Contractor specializing in landscape work. The on site supervisor must have a minimum of three years experience in landscape construction and one year experience in a supervisory role.

#### **1.4 PLANT MATERIAL SOURCE QUALITY CONTROL**

- A. General: Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.
- B. The source or supplier for all sod materials shall be furnished to the University prior to the delivery of any sod materials on site or stored elsewhere.
- D. Plant materials and other landscape items will be evaluated according to compliance with drawings, schedules, and specifications; as well as overall aesthetic quality, grower or supplier reputation, physical inspection, and American Association of Nurseryman Standards (AANS).

#### **1.5 PLANT MATERIALS**

- A. Not Used.

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

- A. Not Used.

#### **1.7 GRADING AND TOPSOIL**

- A. Examine the subgrade, verify the elevations to be no more than 2" above or below subgrade elevation which should allow for 6" of topsoil in all sod areas. Observe the conditions under which work

is to be performed, and notify the University of unsatisfactory conditions.

B. Topsoil is to be placed at a 6" depth in all sodded areas.

#### **1.8 EXISTING UTILITIES**

A. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required, to minimize possibility of damage to underground utilities. The Contractor shall have the area "Blue Staked" prior to digging. It is the responsibility of the Contractor to repair or replace any damage incurred by the contractor or the contractor's employees at no expense to the owner.

#### **1.9 EXCAVATION**

A. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify the University before planting.

#### **1.10 PLANTING SCHEDULE**

A. Proceed with and complete the landscape work as rapidly as portions of the site become available, working within the seasonal limitations for each kind of landscape work required.

#### **1.11 GUARANTEE**

A. Guarantee lawns through the specified maintenance period.

### **PART 2 - MATERIALS:**

#### **2.1 TOPSOIL**

A. Topsoil: All topsoil is to be imported topsoil which shall consist of natural sandy loam and be of uniform quality, free from subsoil, hard clods, stiff clay, hard-pan, sod, partially disintegrated debris or any other undesirable material. Soil shall be free of plants roots or seeds that would be toxic or harmful to growth. Topsoil shall be obtained from naturally drained areas and shall have an acidity range from 5.5 to 7.7 inclusive.

C. Contractor shall furnish a certified report from an approved analytical chemist showing the analysis of the topsoil proposed for use. Furnish sample of topsoil to Engineer prior to delivery of topsoil on site.

1. Prior to the installation of any topsoil, contractor shall inspect the existing subgrade for compliance with the specifications with regards to the grade and cleanliness. Any discrepancy shall be brought to the attention of the Engineer for appropriate action.

2. Spread the topsoil to a minimum of 6" of topsoil in all lawn areas.

**2.2 PLANT MATERIALS:**

A. Not Used.

**2.3 GRASS MATERIALS**

A. Sod: All sod shall conform to the following seed mix:

Variety/Kind	Purity	Germination	Origin
Courtyard Kentucky Bluegrass	24.77%	85%	ID
Midnight II Kentucky Bluegrass	24.76%	85%	OR
Blue Max Kentucky Bluegrass	24.75%	85%	WA
Midnight Star Kentucky Bluegrass	24.72%	85%	WA

B. This sod shall be cut fresh within 24 hours of installation. Only sod that has been grown in a commercial sod farm shall be used, Do not use sod from any other source. All sod that has not been laid with 24 hours shall be deemed unacceptable and shall be removed from the site.

**2.4 MISCELLANEOUS MATERIALS**

A. Fertilizer for lawns and ground covers shall be 16-16-8 with guaranteed chemical analysis marked on container.

**PART 3 - EXECUTION**

**3.1 COORDINATION**

A. The contractor shall coordinate his work with that of other contractors on site, and shall cooperate to the fullest extent to see that the work is completed in a timely and workmanship like manner.

**3.2 INSTALLATION OF TOPSOIL**

A. Prior to the installation of any topsoil, contractor shall inspect the existing subgrade for compliance to the specifications with regards to the grade and cleanliness. Any discrepancy shall be brought to the attention of the Engineer for appropriate action.

B. When contract operations have been completed to a point where the areas will not be disturbed, subgrade shall be cleaned free of waste material of all kinds. Scarify and pulverize the subgrade to a depth of not less than 6" inches. Scarification shall be completed in all areas that are to be planted or sodded or are to receive topsoil.

D. Spread the topsoil mix to a minimum depth of 6" in all lawn areas. Do not place topsoil over subgrade that is frozen or damp.

### **3.3 PREPARATION FOR SOD**

- A. The surface on which the sod is to be installed shall be firm and free of footprints, depressions or undulations of any kind. The surface shall be free of all rocks larger than 1/2" in diameter and all sticks, roots, rubbish, and other extraneous materials. NO EXCEPTIONS.
- B. The finish grade of the topsoil adjacent to all sidewalks, etc., prior to sodding shall be 1" below the top surface of the concrete or hard surface.
- C. If a crust has formed on the topsoil, it shall be loosened by raking prior to sodding.

### **3.4 PREPARATION FOR PLANTING TREES AND SHRUBS**

- A. Not Used.

### **3.5 TREE, SHRUB AND PRENNIAL PLANTING**

- A. Not Used.

### **3.6 SOD**

- A. Prior to laying of sod, the entire surface to receive sod shall be uniformly covered with the specified fertilizer at the rate of 5 pounds per 1000 square feet.
- B. Upon completion of the laying operation, an inspection of the area shall be made. All voids and large cracks between individual pieces of sod shall be filled with topsoil, prior to watering. Upon completion of filling all voids in the newly laid sod areas, the sod is to be completely saturated with water.
- C. Watering of the sod shall be the complete responsibility of the contractor. Provide acceptable visual barriers by means of barricades set at appropriate distances and strings or tapes between the barriers as an indication of new work. Restore any damaged areas caused by others, erosion, or vehicular traffic until such a time as the lawn is accepted by the owner.

### **3.8 MAINTENANCE**

- A. Begin maintenance immediately after planting.
- B. Maintain lawns for not less than the period stated below, and longer as required to establish an acceptable lawn.
  - 1. Not less than four (4) growing months (April to September), and a minimum of two (2) mowings, after Substantial Completion.
  - 2. If installed in fall and not given full four months of maintenance, or if not considered acceptable at that time,

continue maintenance the following spring until acceptable lawn is established.

3. The contractor shall be responsible for the protection, watering and replacement of any damaged lawn until acceptance by the owner. This guarantee shall include repairing of any eroded places and maintaining the lawn by watering, mowing and controlling of insects as well as advising the owner of any maintenance or watering procedures necessary to care for and promote plant life. All lawn must be in satisfactory condition at the time of the final acceptance.

### **3.9 CLEANUP AND PROTECTION**

- A. During landscape work store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.
- B. Protect landscape areas, work and materials from damage due to operations by other contractors, trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.
- C. The contractor shall keep the site free from accumulation of waste material. At the time of completion, all areas must be swept or washed clean and all rubbish removed to the satisfaction of the Engineer.

### **3.10 INSPECTION AND ACCEPTANCE**

- A. Substantial Completion for landscape work.
  1. When the landscape work is completed, including maintenance, the Engineer will, upon request, make an inspection to determine acceptability.
  2. The landscape work may not be inspected for acceptance in parts.
  3. Where inspected landscape work does not comply with the requirement, replace rejected work and continue specified maintenance until re-inspected by the Engineer and found to be acceptable. Remove rejected plants and materials promptly from the project site.
  4. As-built Drawings shall be furnished to the Engineer at the time of the Substantial Completion Inspection before final acceptance.

**END OF SECTION 02900**

# UVU CAMPUS STANDARDS

## Irrigation and Landscaping

Contractors are responsible to use all information enclosed in this list of standards and specifications for use on UVU campus and properties owned by the university. Exceptions will only be considered or allowed when submitted in writing to the campus grounds department before project or projects are started. This is the standard for installation of irrigation and landscaping on UVU properties. Questions must be submitted before proceeding on any projects. If discrepancies arise between these standards and the plans and specifications these standards shall govern.

**\*CONTRACTOR IS RESPONSIBLE TO READ AND UNDERSTAND ALL INFORMATION BEFORE BEGINNING ANY PROJECT ON UVU PROPERTIES, NO EXCEPTION**

**CONTRACTOR MUST BE LICENSED, INSURED AND BONDABLE**

**CONTRACTOR MUST BE GLUE CERTIFIED**

### Primary Grounds Department Contacts:

Jack Boswell	Director of Grounds	801-863-8354	office
		801-376-5942	cell
Russell Clegg	Water master/Lead	801-863-7238	office
		801-362-9515	cell

## IRRIGATION

Controllers will be Rain Bird ESP-SAT- TWO WIRE or ESP-SITE -SAT controllers wall mount or stainless steel pedestals as per plans or specifications given on project  
Installation of controller must meet Rain Bird installation guidelines including surge suppression for 110 power as well as two wire maxi wire protection (surge pipe). All two wire paths must be in 2" conduit with pull boxes no more than 100' apart. Electrical runs will be in 1" conduit with pull boxes no more than 100' apart. Grounding grid as per Rain Bird specifications must also be included at controller location. Controller pads will be a minimum of 28" x 28" x 4" thick with a minimum of two conduit sweeps entering through the base of the pad. One for power appropriately sized and two for control and Maxicom wiring appropriately sized. One pull box must be installed outside next to controller pad to accommodate connections and grounding before entering controller. All wiring must meet current National Electrical Code.

Spray heads in lawn areas shall be Rain Bird 1804 prs series type  
Spray heads in shrub areas shall be Rain Bird 1812 prs series type

Rotors in lawn areas will be Hunter I-20 or I-25 gear driven heads as directed by plans or specifications of project

Spacing on all heads shall be a minimum of head x head coverage no exceptions

Funny pipe connections allowed on all heads that do not exceed rated flows of funny pipe(8 gpm)

Lateral Swing Joints on all 1" or larger inlets on heads must use o-ring pre manufactured swings joints only. (Spears Joint Riser Assemblies or equivalent)

Valves shall be Rain Bird PESB electric remote control scrubber valves 1", 1 1/2" or 2"  
2" valves not to exceed 50 gpm no exceptions

1 1/2" valves not to exceed 32 gpm no exceptions

1" valves not to exceed 14 gpm no exceptions

One Appropriate size isolation valve in all valve boxes, gate valves or ball valves ( example: 2" valves require 2" isolation)

No more than 2 valves in any valve box

Manifolds will be slip x threaded tee connections or slip x slip with toe nipples only. Sch 40 or sch 80 fittings only on manifolds.

Valve boxes shall be standard or jumbo boxes only, extension boxes can be used only to meet appropriate elevation when needed and approved by UVU grounds department.

All control wires shall be 14 ga. Wire ( red - hot, white-common , blue- spare)

Spare wire must be run through all valve boxes to the farthest point or points from the controller

All wire must travel with main lines when ever possible and be taped in a bundle at all times.

Wire must travel under hard surfaces in its own sleeve and not with any pipe. Sleeve must be

sized as two times wire bundle diameter minimum.

Maxicom wire will be 14-2 Rain bird maxi wire or PE-39 communication wire no exceptions

PVC pipe shall be sch 40 on 3/4" through 2" pressure rated pipe

PVC pipe 2 1/2" and up to 6" shall be gasket pressure rated pipe class 200 only

All fittings on 2 1/2" pipe or larger will have Harco or cast iron type fittings. No glued fittings on any pipe over 2"!

Glue shall be 711 medium base glue and used with p-70 primer. Contractor must be glue certified.

Pipe smaller than 2" will be sch 40 glued or threaded fittings only

Thrust blocks will be used on all fittings over 2" no exceptions. Thrust blocks must be of a size to handle high pressure situations as campus pressures are over 100 psi.

Main lines shall be buried a minimum of 24" to the top of pipe in a rock and debris free trench

Lateral lines shall be buried a minimum of 12" to the top of pipe in a rock and debris free trench

2" nut type isolation gate valve on any connection point off the 6", 4", 3" mains

Sleeves must be used anywhere that pipe travels under concrete or asphalt. They must be sized at least 3 times the diameter of pipe passing through sleeve up to 12" sleeves.

1" Rain Bird 44d quick couplers to be installed as noted on plans inside 10" round minimum valve box or larger. They must have purple covers on all covers for non-potable water.

Reduced pressure back flow systems (RPZ) check valves when needed are the only excepted back flow device allowed on UVU properties. These must be installed on an appropriate cement pads and with Hot Box stainless steel enclosures installed over check valves. Check valves must have isolation valves on both sides of valve for maintenance and testing purposes. Risers must place valve a minimum of 14" above pad and must be of rigid materials (galvanized or ductile iron).

King automatic drains (1/2") are required on lateral lines as needed for proper drainage.

Manual drains shall be 3/4" Muller stop and waste valve on all main lines and points of connections as needed for proper drainage with a 2" pvc sleeve and 6" round box for cover over sleeve

All lateral drains will have a gravel sump of at least 12" x 12" x 12" around drain

All main line drains will have 18" x 18" x 18" gravel sump or larger around drain no exceptions

All main lines will be pressure checked at a minimum of 150 psi for a period of no less than 24 hours. Line can not lose no more than 1 lb. in 24hrs.

All wiring that is done on Maxicom system wiring will be Super Serviseal closures or equivalent their will be no exceptions. (Equivalent must be approved prior to use)

All field wiring will be done with waterproof 3m type connections on all splices at valves and in field. Wire connections must always be in valve boxes or pull boxes no exceptions.

All connections on Maxicom ground and grounding grid will be done with a Cadweld grounding "one shot" ground rod connectors used with #6 bare copper wire connections to and from controller.

Top soil shall be imported rock and debris free soil with a minimum of 10% organic material. Sand based field soils will be washed sand, free from rock and debris. It will have a maximum of 8% organic. Sand based fields will have a minimum of at least 12" of 1" gravel placed evenly on the sub grade before sand can be placed. Sand will be at a depth of 12" minimum. Drainage system shall be engineered for proper drainage as per project needs and specifications. The minimum drainage pipe shall be at least 4" diameter perforated pvc with cloth cover sock. (NDS or ADS type PVC)

Soil PH levels will be 7.00 and the soil will be 40% sand, 35% silts, and 25% clays plus or minus 5% in each category. Contractor is responsible to provide soil testing results from an independent source for results and certifications.

Trees in ball and burlap must have at least 50% of basket and burlap removed from tree. Trees in buckets must have the bucket removed from tree completely and soil scarified around root ball.

Shrubs must be removed from bucket, scarified and placed in hole.

Holes for trees and shrubs must be equivalent to two times the diameter of root ball of plant or tree. A preparation of 30% mulch and 70% clean soil must be filled into hole around plant or tree and compacted to stabilize plant or tree. Staking is necessary on trees 2" or larger. All trees and shrubs will have a minimum of 3" bark placed around tree ring and all shrub beds.

Any and All changes must be approved before preceding with any work related to project. Their will be no recourse action after change if no approval was given in writing prior to doing work!

UVU grounds department will inspect all pipe, head and valve layout before allowing any burial of system. This also includes controller locations as well as isolation valves and the complete MAXICOM installation!! UVU grounds will also inspect and approve the use of landscape soils, plants, trees and any other materials used in the landscape project. Contractor is responsible for soil testing and certifications.

Contacts: UVU GROUNDS

Jack Boswell 801-376-5942

Russell Clegg 801-362-9515

rc/2009

**SECTION 02539**

**TRACK & FIELD SURVEYING**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

- A. This section covers all labor and materials required to provide survey and certification of key construction elements and the final track & field facility. The Contractor is responsible for completing all survey work.

**1.02 CODES AND STANDARDS**

- A. The survey work must be completed by a licensed surveyor or engineer.
- B. Codes and standards follow the current guidelines set forth by the International Association of Athletics Federations (IAAF), the National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFSHSA). Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.

**1.03 RELATED WORK**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section. The following Sections are specifically related to this Section:
  - 1. 02540 – Track & Field Synthetic Surfacing
  - 2. 02541 – Track & Field Equipment
  - 3. 02542 – Track & Field Line Markings

**1.04 SUBMITTALS**

- A. The following information must be submitted by the Contractor:
  - 1. After installation of new precast channel drain:
    - a. Survey the new precast channel drain location with elevations at:
      - (1) 10 meter intervals starting at the common finish line
  - 2. After installation of the outside and infield border curbs:
    - a. Survey the outside border curbs location with elevations at:
      - (1) 10 meter intervals starting at the common finish line
      - (2) All sprint chute corners
      - (3) Elevations to show top of curb and top of notch
    - b. Survey the infield border curbs location, with elevations, at:
      - (1) 10 meter intervals
      - (2) Elevations to show top of curb and top of notch
  - 3. After installation of all field events:
    - a. Survey all field events with elevations as follows:
      - (1) 4 corners of all long/triple jump sand pits
      - (2) Center of all long/triple jump take-off boards
      - (3) 4 corners of steeplechase water jump pit

## UVU NCAA TRACK AND FIELD

- (4) Top flange of all pole vault boxes (center front & center back)
- (5) 4 corners of all throw circle pads
4. After installation of the asphalt/concrete base:
  - a. Survey the asphalt/concrete base locations, with elevations, at the inside edge of Lane 1, inside edge of Lane 5 and outside edge of outside lane, at:
    - (1) 10 meter intervals starting at the common finish line
    - (2) All sprint chute corners
  - b. Provide verification that the 400 meter oval fits on the asphalt as installed.
5. After installation of the track & Field synthetic surface and line markings
  - a. The Contractor shall submit the attached Track & Field Measurements Form, stating the completed facility meets requirements outlined in the NCAA Rulebook, Rule 1 – Section 1 – Article 3. The Engineer or Surveyor, selected by the Contractor, must survey the facility's as-built line markings.
  - b. NCAA Rulebook, Rule 1 – Section 1 – Article 3 includes:
    - (1) levels of the track, runways, approaches and landing surfaces;
    - (2) permanent track measurements;
    - (3) start and finish lines;
    - (4) track lanes;
    - (5) baton-passing zones;
    - (6) steeplechase water jump pit;
    - (7) hurdle placements; and
    - (8) throwing surfaces – the shot, hammer and discus circles and the javelin runway – and all sectors.

### PART 2 PRODUCTS

2.01 NONE

### PART 3 EXECUTION

3.01 NONE

END OF SECTION 02539

**SECTION 02540**

**TRACK & FIELD SYNTHETIC SURFACE**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

- A. This section covers all labor and materials required to install a first-class track & field surface. The Track & Field Synthetic Surfacing Contractor is responsible for installing all track & field synthetic surfacing materials and line markings (see section 02542) as designated in these specifications.

**1.02 CODES AND STANDARDS**

- A. Codes and standards follow the current guidelines set forth by the International Association of Athletics Federations (IAAF), the National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFSHSA). Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.

**1.03 RELATED WORK**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section. The following Sections are specifically related to this Section:
  - 1. 02539 – Track & Field Surveying
  - 2. 02541 – Track & Field Equipment
  - 3. 02542 – Track & Field Line Markings

**1.04 SUBMITTALS**

- A. The following information must be submitted by the Track & Field Synthetic Surfacing Contractor prior to installation.
  - 1. Test results, from an IAAF certified laboratory, verifying manufacturer's Track & Field Synthetic Surfacing product meets the IAAF Performance Specifications for Synthetic Surfaces.
    - a. The same components from the test sample must be used in the installed surface. No substitutions will be allowed.
  - 2. On-site Project Manager/Superintendent Qualifications:
    - a. The project manager/superintendent will be on-site during all surfacing operations. Substitution of project manager/superintendent shall not be permitted.
    - b. A list of completed facilities, minimum of 5, which are certified to meet NCAA or IAAF rules & regulations in the past 5 years utilizing the product specified in these specifications. The Track & Field Synthetic Surfacing Contractor's project manager/supervisor responsible for the completed facilities must supervise this project.
  - 3. Standard printed specifications of the track & field synthetic surfacing system that is being installed.

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4. Installation process and requirements for subbase (stone, asphalt and concrete) and any conditions that may limit the track & field synthetic surface installation or affect quality of installation.
  5. Temperature/climatic conditions limiting quality of installation.
  6. Standard specification and application for recommended subbase primers, crack filler, patching and leveling material.
  7. Three product samples, a minimum of 6" x 6" in size, the same color, texture, thickness, etc. of the same type of surfacing to be installed for this project. This must be a representative sample of the product. This sample must be submitted and approved by the Owner, prior to installation. At completion of the project this sample may be used as a comparison to judge the quality of the installed product. Separate samples are required for each color surface to be installed at the facility.
  8. Material safety data sheets on all individual components of the product being installed.
  9. Provide a letter stating the Track & Field Synthetic Surfacing Contractor reviewed the asphalt specification and are accepting the specification as correct. Upon completion of the Asphalt paving and prior to installation of the track & field synthetic surface, the Track & Field Synthetic Surfacing Contractor will provide a letter accepting the installed asphalt and stating it is suitable to receive the track & field synthetic surface.
  10. Letter from synthetic surfacing manufacturer approving the installer/applicator of the synthetic surface listed in these specifications.
  11. Written notice and acceptance that all inground field event equipment is installed as per the Contract Documents and the rules of the sport.
- B. The following information shall be submitted after completion of the specified work:
1. Provide an industry standard five (5) year manufacturer's warranty against workmanship and materials on the synthetic surface. The warranty period to begin at final completion or Owner occupancy.
  2. Provide a Care and Maintenance manual for the Owner's use in maintaining the synthetic surfacing.

### 1.05 QUALITY ASSURANCE

- A. All material shall be guaranteed to the extent that the surfacing:
1. Has been manufactured, applied and will perform in accordance with these and the manufacturer's specifications;
  2. Will hold fast and/or adhere to the primer, asphalt, concrete, edging, filler, patches or overlay materials;
  3. Is Ultra-Violet resistant, will not bubble, blister, fade, crack, or wear excessively during the warranty period.
- B. Prior to installation, or during installation or at completion of installation of the synthetic surfacing if the Owner has any question or doubt about the quality or formulation of the material, the Track & Field Synthetic Surfacing Contractor shall have the product tested. If the product meets these specifications, then the Owner shall pay for the cost of the testing; if the product does not meet these

specifications, then the Track & Field Synthetic Surfacing Contractor shall pay for the testing. Any material failing to meet specifications will be replaced with new material at the Track & Field Synthetic Surfacing Contractor's expense.

- C. The Track & Field Synthetic Surfacing Contractor shall, in the presence of the Owner, inspect the track and field synthetic surfacing each year until the end of the five (5) year warranty period, or at any time requested by the Owner. Any defects in workmanship or materials (at no fault of the Owner) shall be repaired at the expense of the Track & Field Synthetic Surfacing Contractor to the satisfaction of the Owner.
- D. Slopes & Tolerances
  - 1. Track Oval - Direction of running, maximum slope 1:1000 (0.1%); Cross / lateral slope (perpendicular to lane lines), Outermost lane down to Lane 1, 1:100 (1.0%) maximum and no less than 0.6%.
  - 2. High Jump - Maximum slope of the last 15m of the approach and take-off area in the direction of the crossbar, maximum 1:250 (0.4%) downward toward the center of the crossbar .
  - 3. Long / Triple Jump, Javelin, and Pole Vault Runways
    - a. Direction of running, maximum slope 1:1000 (0.1%) for the last 20 meters of the javelin runway and the last 40meters of other runways;
    - b. Maximum slope from take-off board to sand pit shall not exceed 1:1000 (0.1%) downward;
    - c. Cross / lateral slope (perpendicular to runway lines), 1:100 (1.0%) maximum and no less than 0.6%, except if runway is located in the High Jump Area, then follow High Jump slopes.
  - 4. Throwing Circles / Pads and Landing Areas - throwing circles shall be level; Direction of throwing in Landing Area, maximum slope 1:1000 (0.1%) downward, throwing up hill is allowed.
  - 5. Depressions can not exceed 3mm under a 1m straight edge or 6mm under a 4m straight edge.

#### 1.06 SPECIAL PROJECT CONDITIONS

- A. The Track & Field Synthetic Surfacing Contractor will provide a project manager/superintendent on-site daily through the completion of the Track & Field Synthetic Surfacing Contractor's portion of the contract.
  - 1. The on-site project manager/superintendent shall remain on site through the completion of the project. Substitution of project manager/superintendent shall not be permitted.
- B. The Track & Field Synthetic Surfacing Contractor will provide a technician that will serve as a consultant to the Owner and Contractor during the Asphalt Paving, first reviewing the asphalt specification, accepting the specification as correct, and then, providing daily review and guidance of the construction of the Asphalt Paving which will directly effect the tolerances and longevity of the eventual synthetic surfacing installation.

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- C. Prior to installing any concrete the Contractor must verify with the Track & Field Synthetic Surface manufacturer if any curing compounds or agents are allowed or acceptable.

### 1.07 SPECIFIC SCOPE OF WORK

- A. The Track & Field Synthetic Surfacing Contractor shall verify the entire track & field subbase and all events to determine that:
  - 1. The synthetic surface for the 400 meter track oval will accurately fit onto the Asphalt Paving base
  - 2. That slopes and elevations meet required tolerances
  - 3. No bird baths exceed the allowable limits as specified
  - 4. The track & field areas will meet or exceed the rules of the sport
- B. The Track & Field Synthetic Surfacing Contractor shall provide all labor, materials and equipment to perform the following work:
  - 1. The Track & Field Synthetic Surfacing Contractor is responsible for installing all track & field synthetic surfacing materials and line markings (see section 02542) as designated in these specifications.
  - 2. Review Bidding documents and specifications, provide technical assistance, and approve Asphalt Paving base work as required in the specifications.
  - 3. Review and approve installation of all field event inground equipment before any track & field synthetic surfacing is installed as specified and shown on the project drawings.
  - 4. Brush and wash down all areas to be surfaced, as often as necessary during the installation of the track and field synthetic surface.
  - 5. Repair all birdbaths as required in these specifications.
  - 6. Install removable track & field synthetic surfacing (full pour polyurethane) plugs in all pole vault boxes, long/triple jump take-off boards (1" x 1" corner notches in one short side) and throw circles (cut plugs in half); apply synthetic surfacing to the steeplechase water jump cover, sand pit covers and junction box covers.
  - 7. Install special material (i.e. foam, board, etc.) in slot drain opening to prevent polyurethane from entering the opening. The drainage slot opening shall be neatly trimmed out (vertical cuts), after polyurethane installation, to allow proper drainage to occur. No polyurethane is allowed on the inside of the drainage slot opening. This shall apply only if the precast slot drain is installed.
  - 8. Repair all damaged areas, clean-up all glue, and remove excess polyurethane, primers and similar products. All trim cuts shall be neat and clean; on all curves the trim-out shall follow a radius line for accuracy and neatness.

## PART 2 PRODUCTS

### 2.01 TRACK & FIELD SYNTHETIC SURFACE

- A. The track and field synthetic surface shall be as per the manufacturer's

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specifications, plus the following requirements and where discrepancies exist, they shall be brought to the attention of the Owner or Owner's representative prior to Bidding or Installation.

- B. Color
  - 1. Red
- C. The following Products are approved for bidding:
  - 1. Tartan-APS,
    - a. Contact:
      - (1) Dick Railsback @ (402) 770-2523
    - b. Product:
      - (1) Full depth polyurethane: Tartan Endurance
  - 2. Or approved equal
- D. Two component full depth polyurethane with an EPDM embedded wearing layer.
  - 1. Materials
    - a. Primers – Polyurethane based primers specifically formulated to be compatible with the base and track surfacing material.
    - b. Rubber Granules (Base Layer) - Styrene Butadiene Rubber (SBR). The rubber granules shall be recycled SBR rubber, cryogenically processed, chopped, and graded to match product specifications. Granules containing any traces of fiber or steel are unacceptable.
    - c. Polyurethane - This consists of a two-component polyurethane which is self leveling and compounded from a proprietary, pigmented polyol and MDI based, "TDI Free", isocyanate. The liquid polyurethane shall contain no more than 60% polyol and no less than 40% isocyanate by volume with no mercury, lead, or any other heavy metals added by design.
    - d. EPDM Granulate - The EPDM granules shall be manmade, a minimum of 20% peroxide cured EPDM, chopped, processed and having a specific density of 1.6 plus or minus 0.08 and a Shore-A hardness of 60. Sulphur-cured rubber is not acceptable. The granules shall be graded to match product specifications. The EPDM granules must match the Polyurethane in color.
- E. Primers: All concrete areas to be surfaced shall receive manufacturer's approved primer.
- F. Patching Material: All materials must be approved materials and compatible with the synthetic surface.

## PART 3 EXECUTION

### 3.01 INSPECTION AND ACCEPTANCE

- A. Examine all surfaces and contiguous elements to receive work of this section and

correct, as part of the Work of this Contract, any defects affecting installation.

- B. Commencement of work will be construed as complete acceptability of surfaces and contiguous elements.

### 3.02 INSTALLATION REQUIREMENTS

- A. The following installation requirements must be met by the Track & Field Synthetic Surfacing Contractor:
  - 1. Installation by synthetic surface manufacturer approved project manager/superintendent applicators and technicians. Local laborers may be hired for non-technical work, only.
  - 2. Priming - The primer shall be spray-applied in accordance with the manufacturer's specifications. Only those areas which can be installed the same day should be primed.
- B. Installation of two component full depth polyurethane with an EPDM embedded wearing layer (full pour system)
  - 1. Thickness to match sample submitted to IAAF certified testing laboratory. (See Item 1.4 – A.1. of this section)
  - 2. Equipment
    - a. The components shall be processed and installed by specially designed machinery with automatic electronic portioning, which provides continuous mixing, feeding and finishing for accurate quality controlled installation.
  - 3. Base Layers
    - a. After the primer and any detail applications have cured to tack-free, but no longer than 24 hours, flow apply the two component polyurethane using a notched trowel or squeegee.
    - b. Broadcast to excess with SBR granules, ensuring all of the coating is covered. Ensure the rubber is totally dry.
    - c. After the first layer is cured, but no longer than 24 hours remove any rubber that is not bonded to the coating using a mechanical sweeper or vacuum/blower and flow apply a second layer of the two component polyurethane by using notched trowel or squeegee.
    - d. Broadcast to excess with SBR granules, ensuring all of the coating is covered.
  - 4. Wearing layer (minimum 5mm)
    - a. After the second layer is cured, but no longer than 24 hours, remove any rubber that is not bonded to the coating using a sweeper or vacuum/blower. Flow apply the two component polyurethane by using a notched trowel or squeegee.
    - b. Broadcast to excess with colored EPDM rubber ensuring all of the coating is covered. After initial cure the excess rubber granules are removed by means of mechanical sweeper.

### 3.03 TIMING, LIMITATIONS, AND CONDITIONS AFFECTING INSTALLATION

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- A. Weather and Climate: If in the opinion of the synthetic track surfacing manufacturer or the Owner, weather and climatic conditions are having or will have an adverse effect on installation; work shall be delayed until the adverse condition has passed.
- B. Adjacent and Concurrent Construction: Installation shall not take place until the completion of the adjacent or concurrent construction operations which generate dust, airborne abrasives, or any other by-product that, in the opinion of the Owner or synthetic track surfacing manufacturer, would be harmful to the track material. Under specific direction of the Owner, the Track & Field Synthetic Surfacing Contractor may be allowed to cover the track material with an approved covering if such harmful construction operations must occur after the track material has been installed.

END OF SECTION 02540

**SECTION 02541**

**TRACK & FIELD EQUIPMENT**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

- A. This section covers all labor and materials required to install the sports equipment.
- B. The Contractor is responsible for the purchase and installation of all sports equipment. The Track & Field Synthetic Surfacing Contractor is responsible for installation of synthetic surface in, around and on-top-of the specified sports equipment.

**1.02 CODES AND STANDARDS**

- A. Codes and standards follow the current guidelines set forth by the International Association of Athletics Federations (IAAF), the National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFSHSA). Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.

**1.03 RELATED WORK**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section. The following Sections are specifically related to this Section:
  - 1. 02540 – Track & Field Synthetic Surfacing
  - 2. 02542 – Track & Field Line Markings
  - 3. 02543 – Field Event Special Materials

**1.04 SUBMITTALS**

- A. The following information must be submitted by the Contractor:
  - 1. Standard printed specifications and diagrams or drawings depicting installation directions and dimensions for all in-ground sports equipment.
  - 2. Installation process and requirements for subbase (stone and asphalt) and any conditions that may limit the installation or affect quality of installation.
  - 3. Material safety data sheets on all products, as necessary.

**1.05 QUALITY ASSURANCE**

- A. The Contractor shall only accept bids from those vendors or manufacturers that have been pre-approved or identified as approved equal.

**PART 2 PRODUCTS**

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### 2.01 IN-GROUND TRACK & FIELD EQUIPMENT

- A. The Contractor is responsible to provide and install all permanent, in-ground track & field event equipment as specified by these specifications and shown on the project drawings. The products must meet NCAA regulations.
- B. The inground track & field equipment is available from the following:
  - 1. M-F Athletic Company, Attn: Mark Strawderman, Tel.: 800-556-7464
  - 2. UCS, Attn: Mike Chappell, Tel.: 800-526-4856
  - 3. Gill Athletics, Attn: Karl Geissler, Tel.: 800-637-3090
  - 4. Sportsfield Specialties, Contact: Dave Moxely @ (888) 975-3343
- C. Inground Equipment (UCS Product Number)
  - 1. Four (4) cast aluminum pole vault box without the cover. Model #711-1100.
  - 2. Twelve (12) take-off boards for the long & triple jump runway. This product is the 8 inch wide board, with 4 inch plasticine foul board and blanking lids are required. Model #519-2100.
  - 3. Four (4) mesh covers for sand pits. Model #519-1230.
  - 4. One (1) adjustable barrier with seal for the steeplechase water jump. Model #s 506-5413 & 506-5409.
  - 5. One (1) aluminum cover for the steeplechase water jump. Model #506-5240.
  - 6. One (1) white powder coated aluminum curb for the 400 meter oval. Model #792-9413.
    - a. The sections shall be numbered.
    - b. The curb will break at javelin runway crossings.
    - c. The steeplechase water jump run-up will not have a curb.
  - 7. Nine (9) junction boxes with aluminum cover manufactured to receive track & field synthetic surfacing. Model #712-1100.
  - 8. One (1) tall circle hammer/discus cage with ground sleeves. Model 570-3600R.
  - 9. One (1) web style discus circles. Model #725-2530.
  - 10. One (1) web style shot put circles. Model #725-2540.
  - 11. One (1) toe board for depressed circle. Model #716-1630.
  - 12. One (1) conversion ring. Model #725-2535.

## PART 3 EXECUTION

### 3.01 INSTALLATION OF SPORTS EQUIPMENT

- A. The installation of the in-ground sports equipment shall follow the directions of the manufacturer and/or vendor. Shop drawings must be submitted and approved prior to installation of equipment.

END OF SECTION 02541

**SECTION 02542**

**TRACK & FIELD LINE MARKINGS**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

- A. This section covers all labor and materials required to install the track & field line markings.
- B. The Synthetic Surface Contractor is responsible for the purchase and installation of all paints and line markings.

**1.02 CODES AND STANDARDS**

- A. Codes and standards follow the current guidelines set forth by the International Association of Athletics Federations (IAAF), the National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFSHSA). Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.

**1.03 RELATED WORK**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section. The following Sections are specifically related to this Section:
  - 1. 02539 – Track & Field Surveying
  - 2. 02540 – Track & Field Synthetic Surfacing
  - 3. 02541 – Track & Field Equipment

**1.04 SUBMITTALS**

- A. The following information shall be submitted prior to installation of specified work:
  - 1. A list depicting the colors of all line markings and labels of the events to be included for approval prior to installation. Also, all symbols and markings clearly identified, illustrated, and their colors stated. The recommended NCAA colors shall be used.
  - 2. Installation process and requirements for line markings and any conditions that may limit the installation or affect quality of installation.
  - 3. Material safety data sheets on all products, as necessary.
- B. The following information shall be submitted at the completion of the specified work:
  - 1. Upon completion of all line markings, the Track & Field Synthetic Surfacing Contractor shall submit to the Owner a five (5) diagram/drawing depicting and identifying all line markings: 1) a key to the color codes, 2) a chart for all symbols, and 3) labels for all events.

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### PART 2 PRODUCTS

#### 2.01 PAINT

- A. The paint is a polyurethane based paint used on Track & Field Synthetic Surface.

#### 2.02 TEMPORARY REFERENCE MARKINGS

- A. These markings shall be removed at the completion of the project.

### PART 3 EXECUTION

#### 3.01 SUMMARY

- A. General line markings of the 400 meter track and field events, shall be spray applied, using only paint, primers and finishes supplied and guaranteed by the approved manufacturer and/or supplier.
- B. All markings shall be in accordance with the rules of the NCAA and shall be certified for accuracy. The color code of the NCAA shall be followed.
- C. No line markings shall be installed if the weather conditions are not proper; i.e. too windy.

#### 3.02 LINE MARKINGS

- A. Paint
  - 1. All line markings to receive two (2) coats of paint
- B. Measure Line (Theoretical – not painted)
  - 1. Track oval will utilize a regulation curb
  - 2. Distance to right hand edge of the inside lane line of Lane 1 to be 30 cm from the measure line
- C. Line Precedence
  - 1. Lane lines to take precedence over other markings
  - 2. Numbers and letters to be broken at all lane line intersections
  - 3. Waterfall starting lines take precedence over straight starting lines
  - 4. Straight starting lines to taper at waterfall starting lines – maintain a ½" gap
- D. Chute Extensions
  - 1. Chute extension lines to be solid not dashed
  - 2. Break chute extension lies 2" either side of track oval lines
- E. 100 Meters
  - 1. One direction – main straight a way

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2. ALTERNATE BID: One direction – back straight a way
  3. Event label
    - a. 100
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in the outside lane and is above the starting line
  4. Color of starting line is white
- F. 100 Meter Hurdles
1. One direction – main straight a way
  2. ALTERNATE BID: One direction – back straight a way
  3. Event label
    - a. 100
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in the outside lane and is above the starting line
  4. Color of the starting line is white
  5. The hurdle tic marks are yellow
    - a. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line
    - b. ALTERNATE BID: Reverse hurdle marks to be at the left hand side of Lane 1 and the right hand side of the outside lane
- G. 110 Meter Hurdles
1. One direction – main straight a way
  2. ALTERNATE BID: One direction – back straight a way
  3. Event label
    - a. 100
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in the outside lane and is above the starting line
  4. Color of the starting line is white
  5. The hurdle tic marks are blue.
    - a. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line
    - b. ALTERNATE BID: Reverse hurdle marks to be at the left hand side of Lane 1 and the right hand side of the outside lane
- H. 200 Meters
1. All in lanes
  2. ALTERNATE BID: Both curves (reverse)
  3. Event label
    - a. 200
    - b. 4" high

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- c. The color of the label to be white
- d. Located in lane 2, and is above the starting line
4. Color of the starting line is white
5. ALTERNATE BID: Color of the reverse starting line is black

### I. 300 Meter Hurdles

1. Event label
  - a. 300
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in lane 2, and is above the starting line
2. Color of the starting line is white
3. The hurdle tic marks are red
  - a. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line

### J. 400 Meters

1. All in lanes
2. Event label
  - a. 400
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in lane 2, and is above the starting line
3. Color of the starting line is white

### K. 400 Meter Hurdles

1. All in lanes
2. Event label
  - a. 400
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in lane 2, and is above the starting line
3. Color of the starting line is white
4. The hurdle tic marks are green
  - a. Hurdle tic marks are a 2.5" wide by 3" high triangle, the triangle is pointing in the direction of running – Each lane shall have 2 tic marks with each tic mark adjacent to the lane line, but not touching the lane line

### L. 800 Meters

1. Waterfall start and 1 turn stagger
2. Event label
  - a. 800
  - b. 4" high
  - c. The color of the label to be white

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- d. The 1 turn stagger starting line is located in lane 2, the waterfall starting line is located in the outside lane, and the labels are above the starting line
  3. Color of the 1 turn stagger starting line is white with a green insert
  4. The color of the waterfall starting line is white
- M. 1500 Meters
1. Waterfall start
    - a. Event label
    - b. 1500
    - c. 4" high
    - d. The color of the label to be white
    - e. Located in the outside lane and is above the starting line
  2. The starting line is white in color and located on the track oval (not in chute)
- N. 1600 Meters
1. Waterfall start
  2. Event label
    - a. 1600
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in the outside lane and is above the starting line
  3. Color of the starting line is white
- O. 1-Mile Run
1. Waterfall start
  2. Event label
    - a. 1 MILE
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in the outside lane and is above the starting line
  3. Color of the starting line is white
- P. 3000 Meter Steeplechase
1. Waterfall start
  2. Event label
    - a. 3000 ST
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in the outside lane and is above the starting line
  3. Color of the starting line is white
  4. Barrier marks are black
  5. Paint 2" white line at the inside and outside of the water jump approach and exit as depicted on the drawings
  6. Radius to the measure line of the steeplechase approach and exit is 50.984' with a regulation curb

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7. Distance to right hand edge of the inside lane line to be 30 cm from the measure line

Q. 3200 Meters

1. Waterfall start
2. Event label
  - a. 3200
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in the outside lane and is above the starting line
3. Color of the starting line is white

R. 5000 Meters

1. Waterfall start
2. Event label
  - a. 5000
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in the outside lane and is above the starting line
3. Color of the starting line is white

S. 10000 Meters

1. Waterfall start
2. Event label
  - a. 10000
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in the outside lane and is above the starting line
3. Color of the starting line is white

T. 400 Meter Relay

1. All in lanes
2. Event label
  - a. 400
  - b. 4" high
  - c. The color of the label to be white
  - d. Located in lane 2, and is above the starting line.
3. Color of the starting line is white, same starting line as the staggered starting line for the 400 meters
4. The relay exchange zone markers are yellow and the acceleration zone marker is yellow
  - a. Exchange zone markers are 36" wide by 18" high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 20-meter zone
  - b. Acceleration zone mark is 6" wide by 6" high triangle; one triangle per lane, 10 meters before the exchange zone marker, and the triangle is included in the 10-meter acceleration zone

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- U. 1600 Meter Relay
  - 1. Three turn stagger
  - 2. Event label
    - a. 1600R
    - b. 4" high
    - c. The color of the label to be white
    - d. Located in lane 2, and is above the starting line.
  - 3. Color of the starting line is white with a blue insert
  - 4. The relay exchange zone markers are blue
    - a. Exchange zone markers are 36" wide by 18" high triangles, the two triangles point into the relay exchange zone, and the triangles are included in the 20-meter zone
  
- V. Break Lines
  - 1. Color of the 1 turn break line is white when it is also a finish line, otherwise it is a solid green line
  - 2. Provide green dashes on the inside lane line of Lane 5 from box alley 2 start to break lines (both turns)
  
- W. Finish Lines
  - 1. Locations:
    - a. Common: Located at the southwest point of curvature (PC)
    - b. ALTERNATE BID: Located at the northeast PC
  - 2. 2" wide, and white in color
  - 3. The intersection of the finish line with the lane lines shall be alternating: inside of lane 1 - 2" x 2" black square, inside of lane 2 - a black line-white line-black line (total size is 2" x 2" and the black lines are parallel to the lane lines), inside of lane 3 - 2" x 2" black square, etc
  - 4. No lean line is to be provided
  
- X. Box Alleys
  - 1. Provide 1 turn box alley starts for the following events:
    - a. 800
    - b. 1600
    - c. 3000
    - d. 3200
    - e. 5000
    - f. 10000
  - 2. Box 1 to be lanes 1-4
  - 3. Box 2 to be lanes 5-8
  
- Y. Long/Triple Jump
  - 1. Runway lines
    - a. 2" wide lines
    - b. White in color

## UVU NCAA TRACK AND FIELD

- c. 48" wide runways (inside edge to inside edge of line)
2. Distance marks
  - a. Provide 1.5" long by 1" wide white lines outside the runway on the right hand (direction of running) side every foot beginning at 20 feet from the long jump foul line and extending the length of the runway or 150' whichever is shorter
  - b. Every 5 and 10 foot line to be 3" long by 1" wide
  - c. Every 10 foot line to be labeled below the line facing the athlete
3. Polyurethane plugs
  - a. 4" nearest the sand pit to be painted black
  - b. Remaining 8" to be painted white

### Z. Pole Vault

1. Runway lines
  - a. 2" wide lines
  - b. White in color
  - c. 48" wide runways (inside edge to inside edge of line)
  - d. Terminate runway lines at zero line
2. Zero line
  - a. ½" wide line
  - b. White in color
  - c. 24' long centered on back edge of box (not flange)
3. NCAA Marks
  - a. Provide 90cm long by 5cm wide white line with label beside the line in the center of the runway at 3.70m from the back of the plant box
  - b. Provide 30cm long by 5cm wide white lines with label beside the line in the center of the runway at 2.80m, 3.10m, 3.40m, 4.00m, 4.30m and 4.60m feet from the back of the plant box
4. Distance marks
  - a. Provide 1.5" long by 1" wide white lines outside the runway on the right hand side (direction of running) every foot beginning at 15 feet from the plant box and extending the length of the runway or 150' whichever is shorter
  - b. Every 5 and 10 foot line to be 3" long by 1" wide
  - c. Every 10 foot line to be labeled below the line facing the athlete

### AA. Javelin

1. Runway lines
  - a. 2" wide lines
  - b. White in color
  - c. 13.123 feet wide (inside edge to inside edge of line)
2. Foul line
  - a. Foul line to be 5' from edge of synthetic surface
  - b. 2.76" (7cm) wide line
  - c. White in color
  - d. Extend foul line at a right angle to the runway lines at the intersection of the foul line arc and runway lines 2.46' (75cm)
3. Radius Mark

## UVU NCAA TRACK AND FIELD

- a. 6" tall triangle
- b. White in color
- c. Angle to match sector lines

### BB. Shot Put

1. Dividing lines
  - a. 2" wide lines
  - b. White in color
  - c. Back edge of line to be on centerline of throw circle
  - d. Extend 2.46' (75cm) from edge of throw circle
2. Sector lines (34.92 degrees)
  - a. 2" wide white lines
  - b. White in color
  - c. Outside the recessed throwing circle
  - d. Install 2" wide sector lines at the end of the landing area

### CC. Hammer/Discus

1. Dividing lines
  - a. 2" wide lines
  - b. White in color
  - c. Back edge of line to be on centerline of throw circle
  - d. Extend 2.46' (75cm) from edge of throw circle
2. Sector lines (34.92 degrees)
  - a. 2" wide white lines
  - b. White in color
  - c. Outside the recessed throwing circle

### DD. Lane numbers

1. The numbers are a script style or block style, 24" or a maximum of 30" high, and the numbers will not have a color shadow
2. The color of the numbers will be white
3. There are 4 sets of numbers:
  - a. There is 1 set of numbers 5 feet before the 110M starting line
  - b. There is 1 set of numbers 1 foot after the common finish line, facing to the outside of the track oval
  - c. There is 1 set of numbers staggered in the first turn, above the 400M staggers
  - d. There is 1 set of numbers staggered at the 200M, above the starting line
4. ALTERNATE BID: 1 set of numbers
  - a. There is 1 set of numbers 5 feet before the reverse 110M starting line

### EE. Letters & Logos

1. The Letters are a script style or block style, 24" or a maximum of 30" high, and the letters will have a color shadow
2. The color of the letters will be white without a color shadow

*UVU NCAA TRACK AND FIELD*

3. There is 1 set of letters:
  - a. Place letters set in the main straight showing the words "UTAH VALLEY UNIVERSITY" in Lane 5 centered on the straight
4. Provide a school logo for the facility, stencil to be provided by Contractor. Size to be 10' square and location to be determined by the Owner

FF. Interval Marks

1. Provide a 2" wide white line on the inside of the track oval extending from the inside edge of the inside Lane 1 line approximately 4" long
2. These lines are to be at 50 meter intervals starting at the common finish line and running the entire length of the track oval

GG. All line markings shall be installed according to the recommended colors as outlined by the National Collegiate Athletic Association (NCAA) and the National Federation of State High School Associations (NFSHSA). All color markings listed above must be reviewed and verified as correct, as per the rules and regulations of the governing body.

**3.03 ALL LINE MARKINGS MUST BE REVIEWED AND VERIFIED WITH THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.**

END OF SECTION 02542

**SECTION 02543**

**FIELD EVENT MATERIALS**

**PART 1 GENERAL**

**1.01 WORK INCLUDED**

A. This section covers all labor and materials required to install the special field event materials:

1. Sand - for the long and triple jump sand pits
2. Decomposed Granite (DG) - for the shot put landing area.

B. The Contractor is responsible for the purchase and installation of all materials.

**1.02 CODES AND STANDARDS**

A. Codes and standards follow the current guidelines set forth by the International Association of Athletics Federations (IAAF), the National Collegiate Athletic Association (NCAA) and National Federation of State High School Associations (NFSHSA). Where discrepancies are noted between these various governing bodies, the rules of the NCAA shall be enforced.

**1.03 RELATED WORK**

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section. The following Sections are specifically related to this Section:

1. 02540 – Track & Field Synthetic Surfacing
2. 02541 – Track & Field Equipment
3. 02542 – Track & Field Line Markings

**1.04 SUBMITTALS**

A. The following information shall be submitted by the Contractors as requested by the Owner after the Contractor has been selected, but prior to installation of specified work:

1. Installation process and requirements for the special materials and any conditions that may limit the installation or affect quality of installation.
2. Material safety data sheets on all products, as necessary.
3. Contractor to supply Owner with a one (1) gallon sample of product for visual inspection and testing, if necessary.

**1.05 QUALITY ASSURANCE**

A. The physical make-up of these products vary across the country; therefore the Contractor shall use its best efforts to supply the Owner with a product that best meets the performance specifications listed below.

PART 2 PRODUCTS

2.01 SAND

- A. All sand for the long/triple jumps sand pits shall follow the specifications outlined by the United States Golf Association (USGA) guidelines for Bunker Sand. The website for this information is: <http://turf.lib.msu.edu/1990s/1998/980109.pdf> .
- B. The sand shall be washed and sized as follows:

Screen No.	Size in MM	Range % Within
18	1.00	75%
35	0.50	75%
60	0.25	75%
140	0.10	25%

- C. Sand shall be free of trash, organic matter, clay, silt and rocks.
- D. Sand shall have the following technical data:
  - 1. Water permeability or filtration rate with a minimum of 20 inches/hour
  - 2. Bulk density of 1.55 grams per cubic centimeter
  - 3. Penetrometer Reading of 1.8 to 2.2 kg/cm<sup>2</sup>
  - 4. Sand shape of high sphericity and rounded
- E. Sand varies around the United States; therefore, prior to installation the Contractor shall provide the Owner or Owner's representative with a one (1) gallon sample for review and approval

2.02 ROCK DUST

- A. The shot-put landing area shall consist of a Decomposed Granite (DG) material or similar material that is firmly compacted, yet porous to allow vertical drainage. The Contractor shall provide a one gallon sample of the proposed material for approval by the Owner prior to installation. The material shall be compacted to at least ninety (90%) percent of Standard AASHTO Density with discing, sprinkling, and rolling as necessary. All material aggregate larger than one-quarter (¼") inch in diameter that comes to the surface during discing shall be removed prior to compacting operations. The color should be gray or similar.
  - 1. The product shall be sized as follows:

Screen No.	% Passing
3/8	100
4	100
8	86
16	65
30	45
50	35
100	25
200	15

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrates and adjoining construction, and conditions under which work is to be installed. Do not proceed with work until satisfactory conditions are corrected.

3.02 INSTALLATION

- A. Sand - The sand should be one of the last items installed on the facility to maintain the physical properties.
  - 1. Do not install the sand until drain pipe is installed and connected to drainage system.

3.03 ADJUSTING AND CLEANING

- A. Upon completion of installation, test operation to demonstrate satisfactory operation acceptable to Owner.
- B. Clean or replace unsuitable materials.

END OF SECTION 02543

## Track & Field Measurements

### I. Facility Information

Owner: \_\_\_\_\_

Facility Name: \_\_\_\_\_

Location: \_\_\_\_\_

### II. Surveyor/Engineer Information

Firm Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Phone #: \_\_\_\_\_

Registration #: \_\_\_\_\_

### III. General Information

Date of Survey \_\_\_\_\_

Weather Conditions \_\_\_\_\_

### IV. Track Oval Measurements

All measurements to 0.005'

All calculations to 0.001m

A. Raised aluminum curb: \_\_\_\_\_ (Y/N)

Note: Measure line to be measured at 30 cm for raised curb and at 20 cm for no curb.

B. Radius to measure line: \_\_\_\_\_ ft

C. Distance between radius points: \_\_\_\_\_ ft

D. Lane width: \_\_\_\_\_ ft

V. Line Markings

All entries to be in meters unless otherwise noted

A. Races starting in lanes - Measured distance from start to finish

Event	Lane							
	1	2	3	4	5	6	7	8
100m								
100m (Reverse)								
110m								
110m (Reverse)								
200m								
200m (Reverse)								
300m								
400m								
800m								
4 x 400m								

Notes: 4 x 100 start line is the same as the 400m start line.

Sprint medley relay start line is the same as the 4 x 400m start line

B. Waterfall starting lines - Measured distance to finish first lap

Event	Lane							
	1	2	3	4	5	6	7	8
800m								
1500m								
1600m								
Mile								
3000m Steeplechase								
3200m								
5000m								
10000m								
800m	<b>Box Alley Starts</b>							
1600m								
3200m								
5000m								
10000m								

Note: Box Alley for lanes 1-4 is the same as the main waterfall starting line.

C. Relay races - Measured distance to finish line

	Lane								
4 x 100m	1	2	3	4	5	6	7	8	
End (a)									Exchange Zone 3
Center (b)									
Start (c)									
Zone Length (c-a)									
Acceleration (d)									
Zone Length (d-c)									
End (a)									Exchange Zone 2
Center (b)									
Start (c)									
Zone Length (c-a)									
Acceleration (d)									
Zone Length (d-c)									
End (a)									Exchange Zone 1
Center (b)									
Start (c)									
Zone Length (c-a)									
Acceleration (d)									
Zone Length (d-c)									

	Lane								
4 x 400m	1	2	3	4	5	6	7	8	
End (a)									Exchange Zone 2
Center (b)									
Start (c)									
Zone Length (c-a)									
End (a)									Exchange Zone 1
Center (b)									
Start (c)									
Zone Length (c-a)									

D. Hurdle events

Hurdle 1 - distance from start line

Hurdles 2-9 - offset distance

Hurdle 10 - distance to finish line

		Lane							
100m	Hurdle	1	2	3	4	5	6	7	8
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								

		Lane							
100m (Reverse)	Hurdle	1	2	3	4	5	6	7	8
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								

		Lane							
110m	Hurdle	1	2	3	4	5	6	7	8
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								

		Lane							
110m (Reverse)	Hurdle	1	2	3	4	5	6	7	8
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								

		Lane							
300m	Hurdle	1	2	3	4	5	6	7	8
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								

400m	Hurdle	Lane							
		1	2	3	4	5	6	7	8
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								

E. Steeplechase

Water Jump Location: \_\_\_\_\_

Curb/cones at water jump: \_\_\_\_\_

Length of lap with water jump: \_\_\_\_\_ m

Barrier offsets:

1 - 2 \_\_\_\_\_ m

2 - 3 \_\_\_\_\_ m

3 - 4 \_\_\_\_\_ m

4 - 5 \_\_\_\_\_ m

F. Pole Vault

Runway 1 Runway width: \_\_\_\_\_ ft

Runway length: \_\_\_\_\_ ft

Runway 2 Runway width: \_\_\_\_\_ ft

Runway length: \_\_\_\_\_ ft

Runway 3 Runway width: \_\_\_\_\_ ft

Runway length: \_\_\_\_\_ ft

Runway 4 Runway width: \_\_\_\_\_ ft

Runway length: \_\_\_\_\_ ft

G. Long/Triple Jump

Runway 1 Runway width: \_\_\_\_\_ ft

Runway length: \_\_\_\_\_ ft

Long jump board to edge of sand: \_\_\_\_\_ ft

Women's triple jump board to edge of sand: \_\_\_\_\_ ft

Men's triple jump board to edge of sand: \_\_\_\_\_ ft

Runway 2 Runway width: \_\_\_\_\_ ft

Runway length: \_\_\_\_\_ ft

Long jump board to edge of sand: \_\_\_\_\_ ft

Women's triple jump board to edge of sand: \_\_\_\_\_ ft

Men's triple jump board to edge of sand: \_\_\_\_\_ ft

Runway 3                      Runway width: \_\_\_\_\_ ft  
Runway length: \_\_\_\_\_ ft  
Long jump board to edge of sand: \_\_\_\_\_ ft  
Women's triple jump board to edge of sand: \_\_\_\_\_ ft  
Men's triple jump board to edge of sand: \_\_\_\_\_ ft

Runway 4                      Runway width: \_\_\_\_\_ ft  
Runway length: \_\_\_\_\_ ft  
Long jump board to edge of sand: \_\_\_\_\_ ft  
Women's triple jump board to edge of sand: \_\_\_\_\_ ft  
Men's triple jump board to edge of sand: \_\_\_\_\_ ft

H. Javelin

Runway 1                      Runway width: \_\_\_\_\_ ft  
Runway length: \_\_\_\_\_ ft  
Sector line angle: \_\_\_\_\_ Degrees

I. Shot Put

Area 1                      Sector line angle: \_\_\_\_\_ Degrees  
Dividing lines provided: \_\_\_\_\_ (Y/N)

J. Hammer / Discus

Area 1                      Sector line angle: \_\_\_\_\_ Degrees  
Dividing lines provided: \_\_\_\_\_ (Y/N)

VI. Slopes

A. Lateral incline: Oval

NCAA Rule 1 Section 1 Article 1a: *Maximum lateral inclination across the full width of the track oval shall not exceed 1%*

Incline towards lane 1: \_\_\_\_\_ (Y/N)

Elevation shots to be taken at:

Inside line of lane 1: C

Center of track oval: B

Outside line of outer lane: A

Location	Incline (%)		
	A-B	B-C	A-C
Common finish line			
Center of turn 1			
End of turn 1			
Center of back straight			
Beginning of turn 2			
Center of turn 2			
End of turn 2			
Center of main straight			

B. Lateral incline: Runways

NCAA Rule 1 Section 1 Article 1a: *Maximum lateral inclination across the full width of runways shall not exceed 1%*

Provide levels at 10m intervals at the inside, center and outside of each runway; include level of all take-off boards and pole vault boxes

Runway		Runway 1	Runway 2	Runway 3	Runway 4
Long/Triple jump	0				
	10m				
	20m				
	30m				
	40m				
	50m				
	LJ Board				
	W-TJ Board				
	M-TJ Board				

Runway		Runway 1	Runway 2	Runway 3	Runway 4
Pole Vault	0				
	10m				
	20m				
	30m				
	40m				
	50m				
	Box				

C. Overall Incline - Running Events

NCAA Rule 1 Section 1 Article 1b: *Maximum downward inclination in the direction of running shall not exceed 0.1% over the entire length of the event*

Event	Incline %							
	Lane 1	Lane 2	Lane 3	Lane 4	Lane 5	Lane 6	Lane 7	Lane 8
100m								
100m (Reverse)								
110m								
110m (Reverse)								
200m								
200m (Reverse)								
300m								
400m								

D. Overall Incline - Runways

NCAA Rule 1 Section 1 Article 1b: *Maximum downward inclination in the direction of running shall not exceed 0.1% over the entire length of the event*

Runway		Runway 1	Runway 2	Runway 3	Runway 4
Long/Triple jump	Overall Inclination	0			
		10m			
		20m			
		30m			
		40m			
		50m			
		LJ Board			
		W-TJ Board			
	M-TJ Board				

Runway		Runway 1	Runway 2	Runway 3	Runway 4
Pole Vault	Lateral Inclination	0			
		10m			
		20m			
		30m			
		40m			
		50m			
		Box			

F. Long/Triple Jump Landing Areas

Incline to be measured from center of take-off board to center of sand pit

Event	Incline %			
	Runway 1	Runway 2	Runway 3	Runway 4
Long Jump				
Women's Triple Jump				
Men's Triple Jump				

G. Shot Put

NCAA Rule 1 Section 1 Article 1b: *Maximum downward inclination in the direction of throwing shall not exceed 0.1% over the entire length of the event*

NCAA Rule 1 Section 1 Article 1d: *Throwing circles to be level*

NCAA Rule 1 Section 7 Article 1: *The interior of the throw circles to be 19 (+/-6) millimeters lower than the surface outside the circle*

NCAA Rule 1 Section 7 Article 3: *The diameter of the throw circle to be 2.135 (+/-0.005) meters*

See attached diagram

Throw circles			Circle 1
Interior of throw circle level (Y/N)			
Shot Put	D1	Diameter	
		Depth	
		Depth	
	D2	Diameter	
		Depth	
		Depth	
	D3	Diameter	
		Depth	
		Depth	
	D4	Diameter	
		Depth	
		Depth	
Circle depth at center		Depth	

Landing Area			Circle 1
Shot Put	0-6m	%	
	0-12m	%	
	0-18m	%	
	0-24m	%	

H. Hammer / Discus

Note: The hammer can be thrown from the discus circle provided the diameter of the circle is reduced with an insert

NCAA Rule 1 Section 1 Article 1b: *Maximum downward inclination in the direction of throwing shall not exceed 0.1% over the entire length of the event*

NCAA Rule 1 Section 1 Article 1d: *Throwing circles to be level*

NCAA Rule 1 Section 7 Article 1: *The interior of the throw circles to be 19 (+/-6) millimeters lower than the surface outside the circle*

NCAA Rule 1 Section 7 Article 3: *The diameter of the throw circle to be 2.500 (+/-0.005) meters*

See attached diagram

Throw circles			Circle 1
Interior of throw circle level (Y/N)			
Discus	D1	Diameter	
		Depth	
		Depth	
	D2	Diameter	
		Depth	
		Depth	
	D3	Diameter	
		Depth	
		Depth	
	D4	Diameter	
		Depth	
		Depth	
Circle depth at center		Depth	

Landing Area			Circle 1
Discus	0-30m	%	
	0-50m	%	
	0-70m	%	
	0-80m	%	

I. Javelin

NCAA Rule 1 Section 1 Article 1a: *Maximum lateral inclination across the full width of runways shall not exceed 1%*

NCAA Rule 1 Section 1 Article 1b: *Maximum downward inclination in the direction of running or throwing shall not exceed 0.1% over the entire length of the event*

NCAA Rule 1 Section 11 Article 1: *The javelin runway shall have a minimum length of 33.5m and a maximum length of 36.5m*

NCAA Rule 1 Section 11 Article 1: *The javelin runway shall be 4m wide*

Runway		Runway 1	
Javelin	Length		
	Lateral Inclination	0	
		10m	
		20m	
		33.5m	
		36.5m	
	Overall Inclination	10m-0	
		20m-0	
		33.5m-0	
		36.5m-0	

Landing Area		Runway 1
javelin	0-30m	%
	0-50m	%
	0-70m	%
	0-90m	%



Applied Geotechnical Engineering Consultants, Inc.

**GEOTECHNICAL INVESTIGATION**

**PROPOSED TRACK  
UTAH VALLEY UNIVERSITY**

**COLLEGE DRIVE AND I-15 FRONTAGE ROAD**

**OREM, UTAH**

**PREPARED FOR:**

**STATE OF UTAH, DFCM  
4110 STATE OFFICE BUILDING  
SALT LAKE CITY, UTAH 84114**

**ATTENTION: MIKE AMBRE**

**PROJECT NO. 1090212**

**MAY 5, 2009**

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## EXECUTIVE SUMMARY

1. The subsurface soils encountered at the site consist of topsoil and fill overlying sand and clay. In Borings B-1 and B-3, approximately 6 inches of topsoil was encountered overlying lean clay that extends the maximum depth of the borings, approximately 10½ feet. In Borings B-2 and B-4, approximately 2½ to 5 feet of fill was encountered overlying sand. The sand extends to depths of approximately 10 to 11 feet. Lean clay was encountered below the sand and extends to the maximum depth of the borings, approximately 20½ and 10½ feet.
2. Subsurface water was encountered in Borings B-1, B-2 and B-4 at depths ranging from 9½ to 11½ feet below the ground surface when measured 9 days after drilling. No groundwater was encountered in Boring B-3 that extended to a depth of approximately 5½ feet.
3. Based on the conditions encountered in the borings, the site is suitable for the proposed construction. Slopes may be constructed at 3 horizontal to 1 vertical or flatter.
4. It is our understanding that up to approximately 6 feet of fill will be placed for construction of the track. It is anticipated that settlements of up to 2 inches may occur due to the load of the fill. Additional settlement can be expected if the fill is not properly compacted. The fill should be properly compacted. Settlement of the fill due to the load of the fill should be monitored to determine when construction of the track may begin in order to minimize the settlement of the completed track. It is anticipated that approximately 2 to 3 months will be required for the majority of the settlement due to the load of the fill to occur.
5. Geotechnical information related to subgrade preparation, materials and compaction is included in the report.

## SCOPE

This report presents the results of a geotechnical investigation for the proposed track to be constructed at Utah Valley University located at the corner of College Drive and I-15 frontage road in Orem, Utah. The report presents the subsurface conditions encountered, laboratory test results and recommendations for the proposed construction. The study was conducted in general accordance with our proposal dated March 31, 2009.

Field exploration was conducted to obtain information on the subsurface conditions. Samples obtained from the field investigation were tested in the laboratory to determine physical and engineering characteristics of the on-site soil. Information obtained from the field and laboratory was used to define conditions at the site for our engineering analysis and to develop recommendations for the proposed construction.

This report has been prepared to summarize the data obtained during the study and to present our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. Design parameters and a discussion of geotechnical engineering considerations related to construction are included in the report.

## SITE CONDITIONS

At the time of our field investigation, the site consisted of a storm water detention basin and sport playing fields. No permanent structures or pavement were observed at the site.

The ground surface in the base of the basin generally grades down to the west. Slopes up and out of the basin exist along the north, east and west sides. The topography of the site is shown on Figure 1.

At the time of our site visit, the slopes and the northeast portion of the site contained vegetation consisting of grass with small to medium trees along the edges of the site. The southwest portion of the site contained small to medium trees and a crew was in the process of installing sod.

The site is bordered on the north by College Drive, a two-lane, asphalt-paved road beyond which is trailer-type, temporary classroom buildings. The site is bordered on the east by a two-lane, asphalt-paved road beyond which is asphalt-paved parking lots. The site is bordered to the south by an undeveloped wetlands area. The site is bordered to the west by the frontage road to I-15 beyond which is I-15.

## **FIELD STUDY**

The field study was conducted on April 13, 2009. Four borings were drilled at the approximate locations indicated on Figure 1 using 8-inch diameter, hollow-stem auger powered by an all-terrain drill rig. The borings were logged and soil samples obtained by a representative of AGECE. Logs of the subsurface conditions encountered in the borings are graphically shown on Figure 2.

## **SUBSURFACE CONDITIONS**

The subsurface soils encountered at the site consist of topsoil and fill overlying clay and sand. In Borings B-1 and B-3, approximately 6 inches of topsoil was encountered overlying lean clay that extends the maximum depth of the borings, approximately 10½ feet. In Borings B-2 and B-4, approximately 2½ to 5 feet of fill was encountered overlying sand. The sand extends to depths of approximately 10 to 11 feet. Lean clay was encountered below the sand and extends to the maximum depth of the borings, approximately 20½ and 10½ feet.

A description of the various soils encountered in the borings follows:

Fill - The fill consists of silty sand to poorly-graded sand with gravel. It is moist, brown and contains occasional slag.

Laboratory tests performed on samples of the fill indicate that it has moisture contents ranging from 8 to 10 percent and dry densities ranging from 109 to 110 pounds per cubic foot (pcf).

Topsoil - The topsoil consists of sandy lean clay that is moist, dark brown and contains roots and organics.

Lean Clay - The clay contains a small to moderate amount of sand and occasional thin layers of silty sand. It is medium stiff to stiff, moist to wet and brown.

Laboratory tests performed on samples of the clay indicate that it has natural moisture contents ranging from 24 to 33 percent and natural dry densities ranging from 89 to 101 pcf.

Consolidation tests performed on samples of the clay indicate that it will compress a small to moderate amount with the addition of light to moderate loads. Results of the consolidation tests are presented on Figures 5 and 6.

Poorly-Graded Sand with Silt - The sand is loose to medium dense, moist to wet and brown.

Laboratory tests conducted on a sample of the sand indicate that it has a natural moisture content of 6 percent and a natural dry density of 90 pcf.

A summary of the laboratory test results is presented on Table I and is included on the logs of the borings.

## **SUBSURFACE WATER**

Subsurface water was encountered in Borings B-1, B-2 and B-4 at depths ranging from 9½ to 11½ feet below the ground surface when measured 9 days after drilling. No groundwater was encountered in Boring B-3 which extended to a depth of approximately 5½ feet. Slotted PVC pipe was installed in each of the borings to facilitate future measurement of the water level. Fluctuations in the water level can be expected over time. An evaluation of such fluctuations is beyond the scope of this report. Typically, water levels are expected to be highest in the spring and summer and lowest in the fall and winter.

## **PROPOSED CONSTRUCTION**

We understand that the proposed track is to be constructed in the center of the existing detention basin. In order to construct the track, it is our understanding that embankments will be constructed with up to 6 feet of fill required to reach the proposed grade of the track. It is planned that the area inside the track will continue to serve as a storm water detention basin.

If the proposed construction is different from what is described above, we should be notified so that we can reevaluate the recommendations given.

## RECOMMENDATIONS

Based on the subsurface conditions encountered, laboratory test results and the proposed construction, the following recommendations are given:

### A. Slopes

Slopes constructed using the on-site soil or imported fill may be constructed at 3 horizontal to 1 vertical or flatter. Slopes should be protected from erosion by revegetation or other methods.

### B. Excavation

Excavation at the site can be accomplished with typical excavation equipment.

### C. Subgrade Preparation

Prior to placing site grading fill, the existing fill, topsoil, organics and other deleterious material should be removed.

### D. Compaction

Fill placed to support the track should be compacted to at least 95 percent of the maximum dry density as determined by ASTM D-1557.

To facilitate the compaction process, the fill should be compacted at a moisture content within 2 percent of optimum. Depending on the moisture content of the fill at the time of construction, wetting or drying of the soil may be required. Drying of the soil may not be practical during cold or wet times of the year.

To facilitate proper compaction of the fill and to minimize potential settlements, the fill should be placed in loose lifts not to exceed 6 inches where small compaction equipment is used and 8 inches where moderate to large compaction equipment is used. The fill should be placed in relatively horizontal layers. The fill should be

frequently tested for compaction during placement and compaction.

**E. Materials**

Materials placed as fill to support the track should be nonexpansive granular soil with less than 35 percent passing the No. 200 sieve. Much of the existing fill satisfies this requirement. The natural clay is not recommended for use as fill below the proposed track but may be used in landscape areas or as a lining on the interior slopes of the basin in order to minimize flow of water into the embankment. Use of base course consistent with the Utah Department of Transportation Specifications may be considered for support directly below the track surface.

**F. Seepage**

Seepage of the storm water in the basin into properly compacted fill below the track is not a concern for settlement. However, if other concerns require the restriction of water flow into the embankment soils below the track, the seepage could be reduced by providing a relatively low permeable material lining the interior slopes of the basin. The quantity of seepage would depend on the thickness and permeability of the liner and the depth of water to be contained in the basin. A 1 to 2-foot layer of compacted, low-permeable soil having at least 35 percent passing the No. 200 sieve would significantly reduce the seepage from the basin. Alternatives to a compacted, low-permeable soil liner would include a geosynthetic membrane, geosynthetic composite liner or a bentonite-enriched soil layer. If fine-grained soils are used to construct a low-permeable liner, filter criteria between the proposed embankment materials and liner materials should be met to prevent particle migration. Intermediate material or geotextile fabric may be needed.

**G. Settlement**

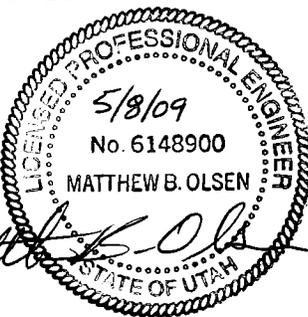
Settlements of up to approximately 2 inches are anticipated due to the load of up to 6 feet of fill required to build the track. Settlement of the fill if not properly compacted would be in addition to the this settlement. Thus is important to properly compact the fill placed below the track. The settlement due to the load of the fill should be monitored by settlement plates in order to determine when a majority of the settlement due to the load of the fill has occurred and when the construction of the track may begin.

Based on our experience in the area and results of testing done for construction of the nearby University Parkway and I-15 Interchange, it is anticipated that approximately 2 to 3 months will be required for most of this settlement due to the load of the fill to occur. The amount of time needed for the settlement of the fill to occur could be decreased by the placement of a surcharge fill or possibly by installation of wick drains. The effectiveness of the wick drains would depend on the amount and frequency of sand layers in the clay below the proposed track. The more and closer spaced sand layers, the faster the settlement and the less effective wick drains would be for decreasing the placement time. It is anticipated that a surcharge fill equal to the thickness of the embankment fill below the track will cut the amount of time for settlement to occur by one-half.

**LIMITATIONS**

This report has been prepared in accordance with generally accepted soil and foundation engineering practices in the area for the use of the client for design purposes. The conclusions and recommendations included within the report are based on the information obtained from the borings drilled at the approximate locations indicate on Figure 1 and the results of laboratory testing and research of nearby subsurface information for the I-15 construction. Variations in the subsurface conditions may not become evident until additional exploration or excavation is conducted. If the subsurface conditions or groundwater level is found to be significantly different from what is described above, we should be notified to reevaluate our recommendations.

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.



5/8/09  
No. 6148900  
MATTHEW B. OLSEN  
STATE OF UTAH

*Matthew B. Olsen*

Matthew B. Olsen, P.E.

*Douglas R. Hawkes*  
Reviewed by Douglas R. Hawkes, P.E., P.G.

MBO/dc



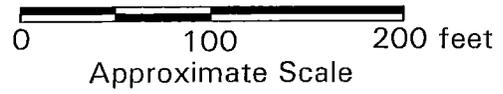
I-15

FRONTAGE ROAD

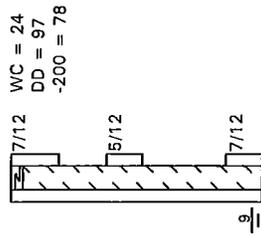
COLLEGE DRIVE

LOCATION OF FUTURE TRACK

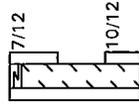
UVU TRACK  
COLLEGE DRIVE AND I-15 FRONTAGE ROAD  
OREM, UTAH



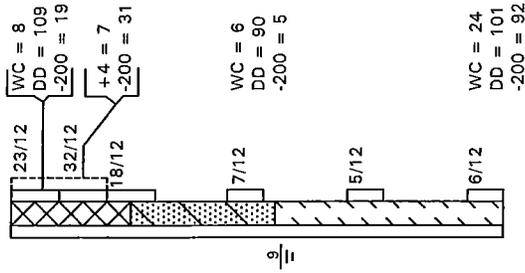
B-1  
Elev. 4569'



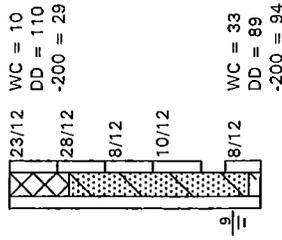
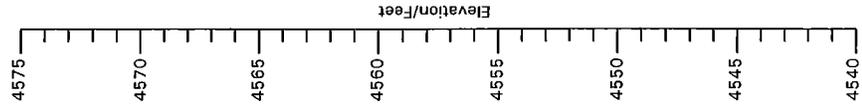
B-2  
Elev. 4565'



B-3  
Elev. 4571'



B-4  
Elev. 4567'



Approximate Vertical Scale 1" = 8'

1090212

Logs of Exploratory Borings



See Figure 3 for Legend and Notes

Figure 2

LEGEND:



Fill; silty sand to poorly graded sand with gravel, moist, brown, occasional slag.



Topsoil; sandy lean clay, moist, dark brown, roots, organics.



Lean Clay (CL); small to moderate amount of sand, occasional thin layers of silty sand, medium stiff to stiff, moist to wet, brown.



Poorly Graded Sand with Silt (SP-SM); loose to medium dense, moist to wet, brown.



10/12 California Drive sample taken. The symbol 10/12 indicates that 10 blows from a 140 pound automatic hammer falling 30 inches were required to drive the sampler 12 inches.



Indicates disturbed sample taken.



Indicates slotted 1 1/2 inch PVC pipe installed in the boring to the depth shown.



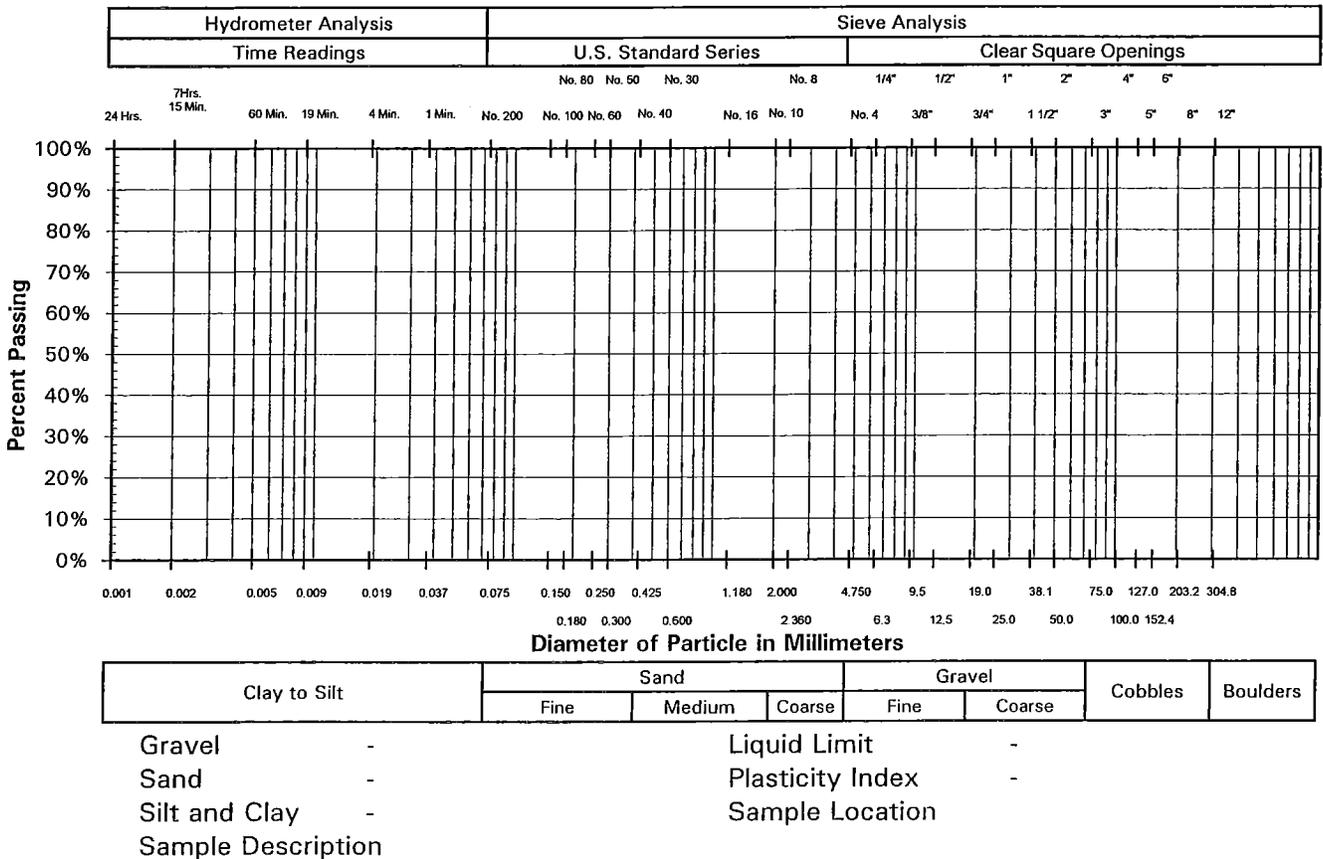
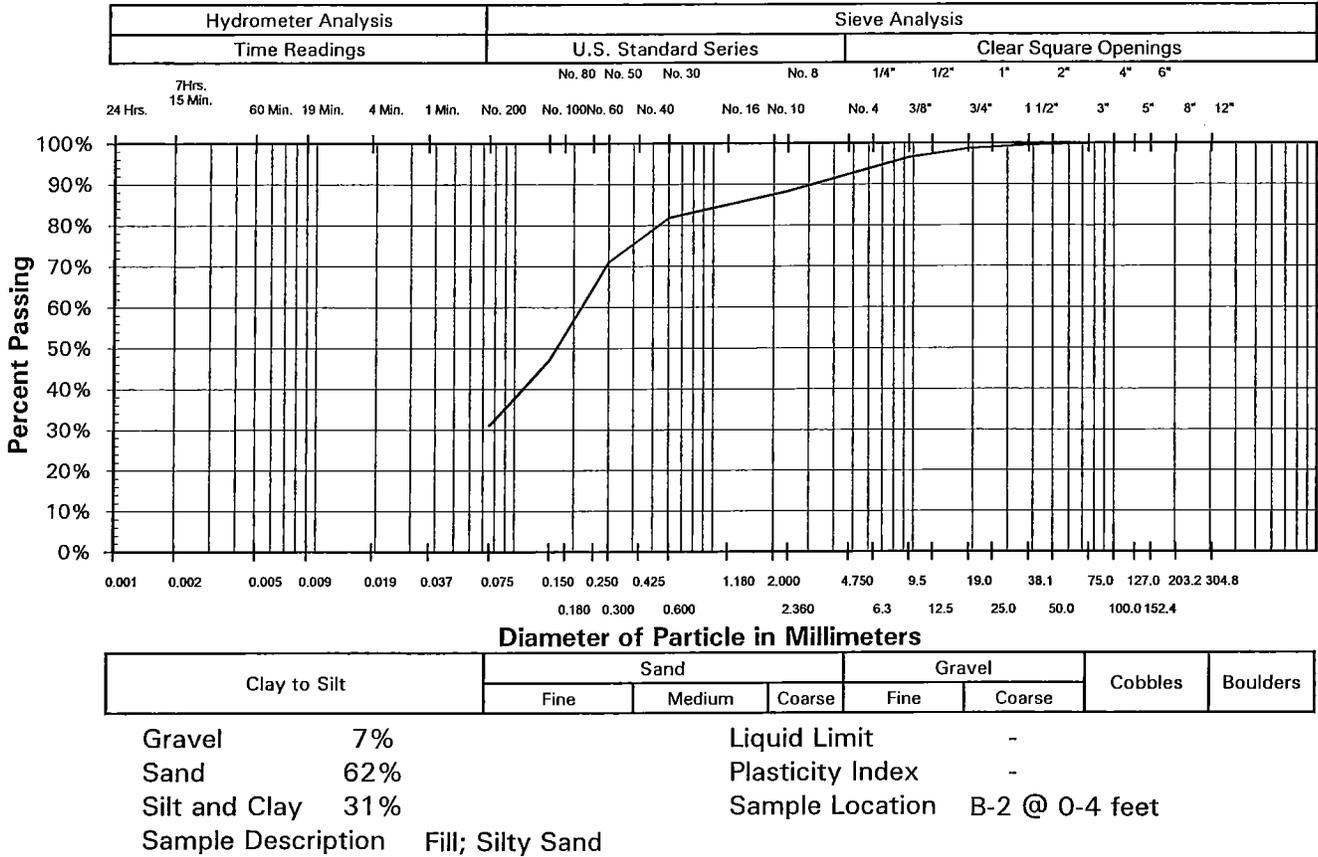
Indicates the depth to free water and the number of days after drilling the measurement was taken.

NOTES:

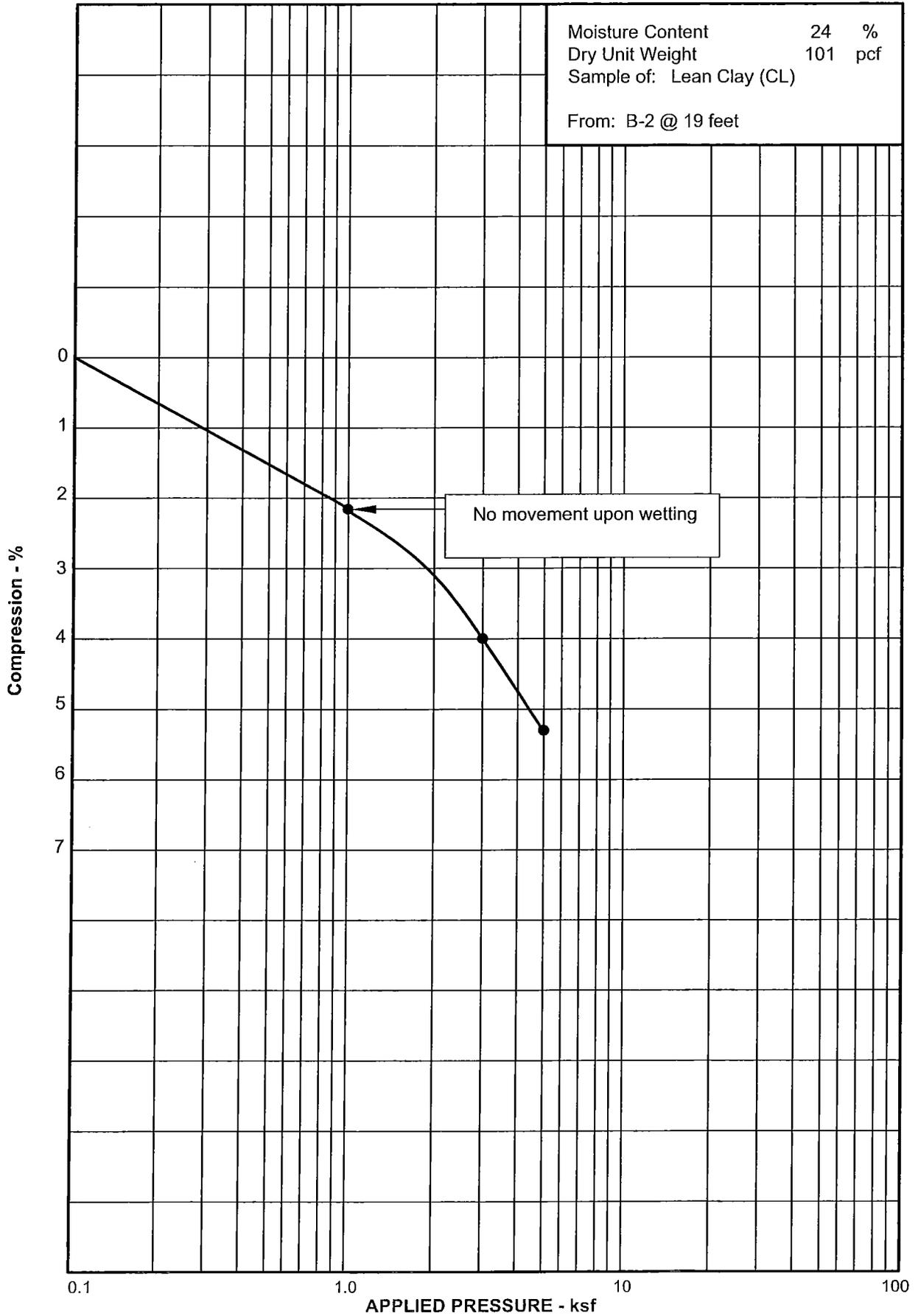
1. Borings were drilled on April 13, 2009 with 8-inch diameter hollowstem auger.
2. Locations of borings were measured approximately by pacing from features shown on the site plan provided.
3. Elevations of borings were determined by interpolating between contours shown on the site plan provided.
4. The boring locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between the materials shown on the boring logs represent the approximate boundaries between material types and the transitions may be gradual.
6. Water level readings shown on the logs were made at the time and under the conditions indicated. Fluctuations in the water level may occur with time.
7. WC = Water Content (%);  
DD = Dry Density (pcf);  
+4 = Percent Retained on No. 4 Sieve;  
-200 = Percent Passing No. 200 Sieve;  
WSS = Water Soluble Sulfates (ppm).



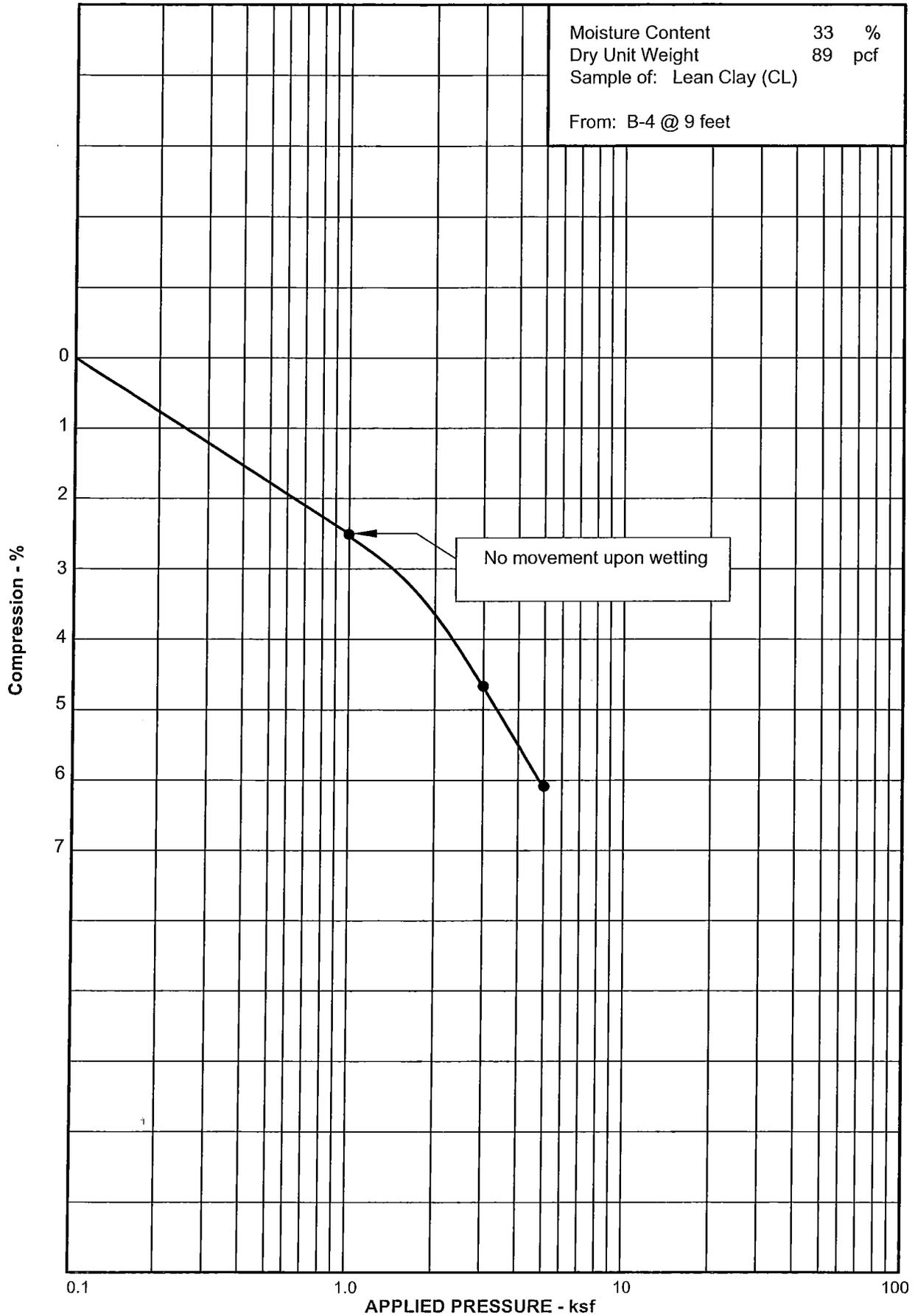
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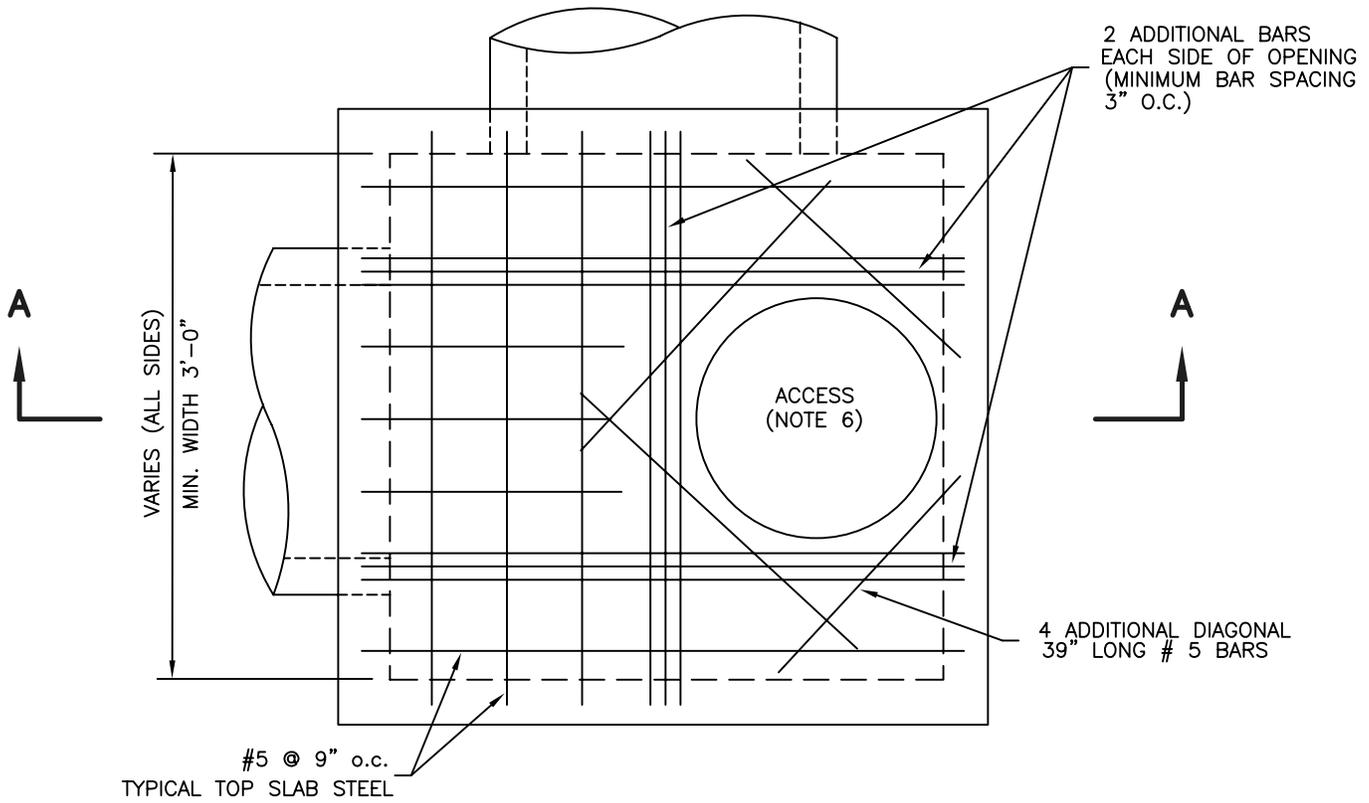


**Cleanout box**

1. **UNTREATED BASE COURSE:** Provide material specified in APWA Section 32 11 23.
  - A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
  - B. Place material per APWA Section 31 23 23.
  - C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.
  
2. **BACKFILL:** Provide and place per APWA Section 31 23 23. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction.
  
3. **REINFORCEMENT:** ASTM A 615, grade 60, deformed steel. See APWA Section 03 20 00 requirements. Center steel in walls and slabs with a minimum cover of 2 inches. Keep steel 2 inches clear around pipe and lid opening. A1 bars required at all corners, vertical and horizontal. A1 bars connecting two walls must match wall bar size and spacing. A1 bars connecting walls to top and bottom slabs must match slab steel size and spacing.
  
4. **CONCRETE:** Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.
  
5. **PIPE LATERALS:** Refer to Drawings for connection locations.
  
6. **ACCESS:** Eccentric access is shown. Prior to construction, verify if concentric access is required. Adjust reinforcement accordingly.
  
7. **LADDER RUNGS:** Plastic. Required in boxes greater than 6 feet deep with eccentric access. Align rungs with location of access opening. Rungs not required in boxes with concentric access.

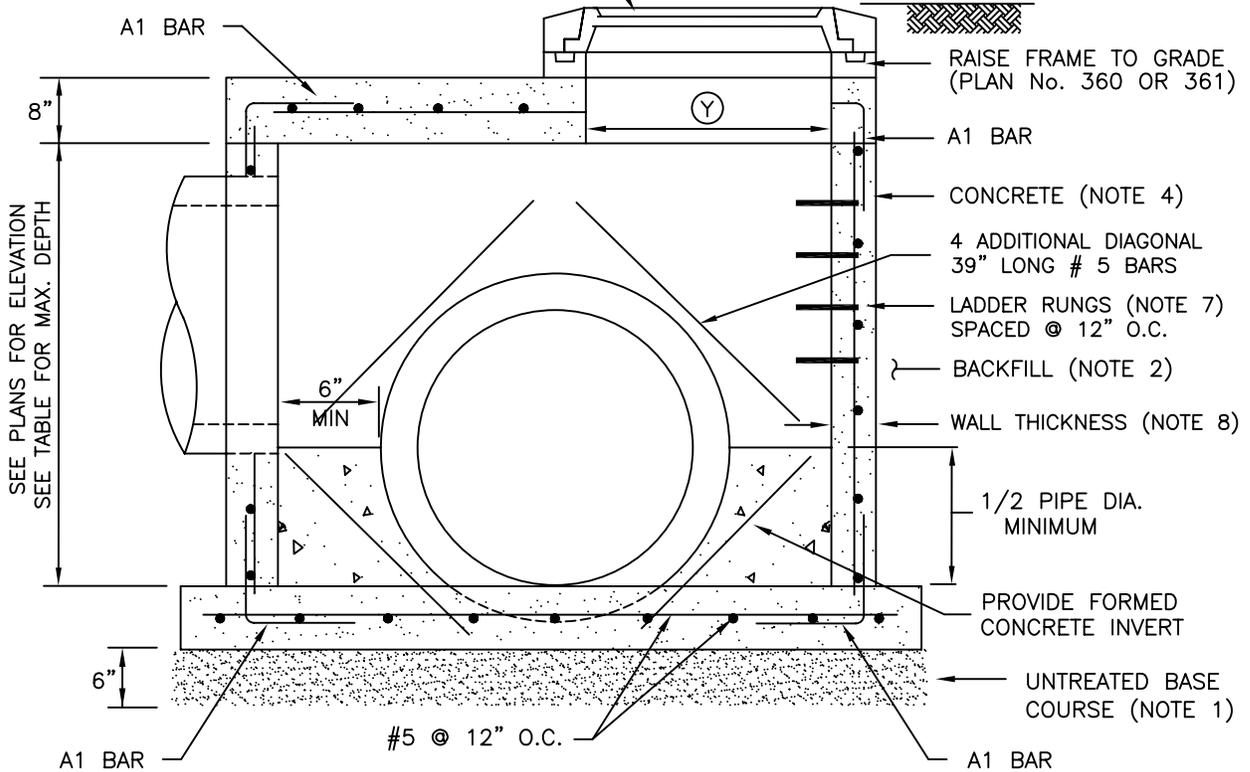
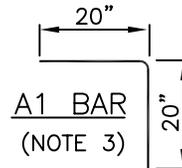
8. **WALL THICKNESS AND WALL STEEL**

Low Water Table				
Max. Box Width	6 feet	8 feet	8 feet	9 feet
Max. Box Depth	6 feet	8 feet	12 feet	12 feet
Wall Thickness	8 inches	8 inches	12 inches	12 inches
Wall Curtain Steel	#5 @ 12"	#5 @ 6"	#5 @ 6"	#7 @ 9"
Modifications for High Water Table				
Wall Thickness	8 inches	10 inches	16 inches	12 inches
Wall Curtain Steel	#5 @ 9"	#5 @ 6"	#5 @ 6"	#6 @ 6"



**BASE WITHOUT SUMP**

DIMENSION	LARGEST PIPE DIAMETER	SEE PLAN No.
Y = 30"	< 24"	302
Y = 44"	24"+	303



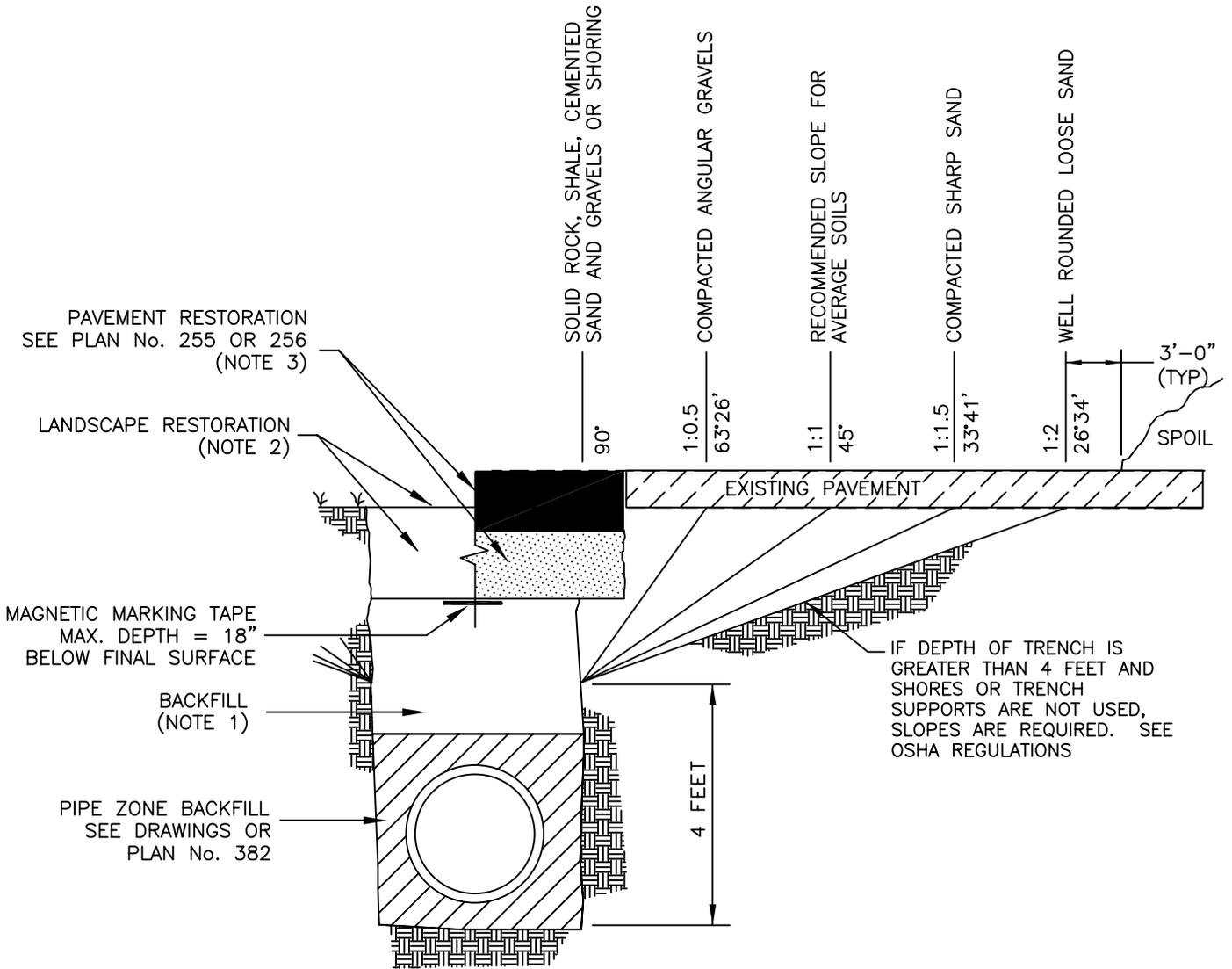
**SECTION A-A**

***Cleanout box***

Plan No.  
**330**

### ***Trench backfill***

1. BACKFILL: Above the pipe zone.
  - A. Granular Fill. Limit maximum particle size to 6 inches. Place fill per APWA Section 33 05 20. Compact to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction. Do not use clay without ENGINEER's review and acceptance. Water jetting is NOT allowed in backfilling operation.
  - B. Flowable Fill. Provide and place controlled low strength material per APWA Section 31 05 15. Cure the fill before placing surface restorations.
2. LANDSCAPED RESTORATION: Provide landscaped surfaces with topsoil. Rake to match existing grade. Replace vegetation to match pre-construction conditions. See APWA Section 32 92 00 or APWA Section 32 93 13 requirements.
3. PAVEMENT RESTORATION: Do not install asphalt or concrete surfacing until trench compaction is accepted by ENGINEER.
4. PEA GRAVEL: Pea gravel is not allowed in any part of the trench.



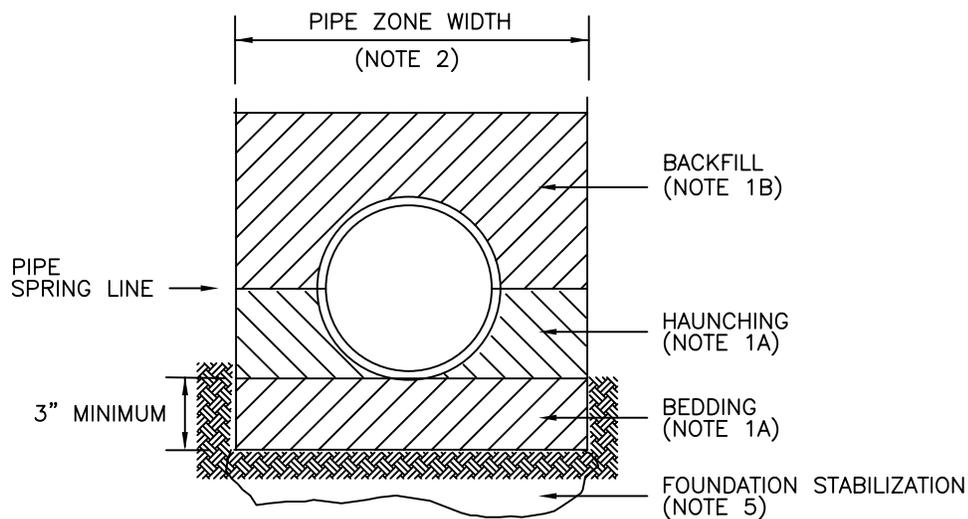
**SECTION**

**Trench backfill**

Plan No.  
**381**

### ***Pipe zone backfill***

1. **BACKFILL:** Do not use sewer rock or recycled RAP aggregate in the pipe zone without ENGINEER's written approval.
  - A. Granular Fill Below Pipe Spring Line.
    - 1) Furnish 3/4 inch crushed aggregate base material, unless specified otherwise by pipe manufacturer. When using concrete, provide at least Class 2,000 per APWA Section 03 30 04.
    - 2) Install and compact backfill material per pipe manufacturer' recommendations.
    - 3) Water jetting is not allowed in backfilling operation.
    - 4) Submission of quality control compaction test result data developed for haunching areas may be requested by ENGINEER at any time.  
CONTRACTOR is to provide results of tests immediately upon request.
  - B. Granular Fill Above Pipe Spring Line.
    - 1) Furnish 3/4 inch crushed aggregate base material, unless specified otherwise by pipe manufacturer. Place in lifts not exceeding 8 inches before compaction.
    - 2) Water jetting is not allowed in backfilling operation.
    - 3) Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater unless pipe manufacturer requires more stringent installation.
  - C. Flowable Fill.
    - 1) Provide and place controlled low strength material per APWA Section 31 05 15 if allowed by pipe manufacturer.
    - 2) Prevent pipe flotation by installing in lifts and providing pipe restraints as required by pipe manufacturer.
    - 3) Reset pipe to line and grade if pipe "floats" out of position.
2. **PIPE ZONE WIDTH:** Provide width recommended by pipe manufacturer. Width of pipe zone is measured at the pipe spring line and includes any necessary sheathing. In trench box applications, follow manufacturer's recommendations.
3. **PIPE LOCATION:** Install pipe in center of trench or no closer than 6 inches from wall of pipe to wall of trench.
4. **PEA GRAVEL:** Pea gravel is not allowed in any part of the pipe zone.
5. **FOUNDATION STABILIZATION:** Use sewer rock of APWA Section 31 05 13. Installation of stabilization-separation geotextile per APWA Section 31 05 19 will be required to separate backfill material and native subgrade materials if sewer rock cannot provide a working surface or to prevent soils migration.



## INSTALLATION

CONCRETE PIPE: FOLLOW ASTM C 1479

"STANDARD PRACTICE FOR INSTALLATION OF PRECAST CONCRETE SEWER, STORM DRAIN, AND CULVERT PIPE USING STANDARD INSTALLATIONS.

PVC AND HDPE PIPE: FOLLOW ASTM D 2321

"STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS"

CORRUGATED METAL PIPE: FOLLOW ASTM A 798

"STANDARD PRACTICE FOR INSTALLING FACOTRY-MADE CORRUGATED STEEL PIPE FOR SEWERS AND OTHER APPLICATIONS.

VITRIFIED CLAY PIPE: FOLLOW ASTM C 12.

"STANDARD RECOMMENDED PRACTICE FOR INSTALLING VITRIFIED CLAY PIPE LINES.