



**INVITATION FOR
*INFORMAL BID***

This is a grant funded Project

BID # B15-157 IP

Note: GRANT FUNDED PROJECT

**Parks Flood Damage Trail Repair
Projects**

FOR
CITY OF COLORADO SPRINGS

**PARKS, RECREATION AND CULTURAL
SERVICES**

PRE-BID CONFERENCE

Friday, December 18th 2015 at 1:30 PM

OFFERS DUE: FRIDAY, JANUARY 15 2016 AT 2:30 PM

POINT OF CONTACT:
Izabela Podlecki
Contracts Specialist
ipodlecki@springsgov.com



PROJECT: **BID # B15-157 IP**

BID DUE: Friday, January 15, 2016 at 2:30 PM

DEPT: Parks, Recreation and Cultural Services Date: December 11, 2015

CONTACT: Izabela Podlecki

PHONE: (719) 385-5287 **E-MAIL BIDS ACCEPTED: ipodlecki@springsgov.com**

BID FORM

The undersigned declares that it has carefully examined the bid information and the complete Solicitation, (The term solicitation means the complete invitation for bid) in submitting a bid for **“Parks Flood Damage Trail Repair Projects”**. The Offeror’s signature will be considered the offeror’s acknowledgment of understanding and ability to comply with all items in this solicitation.

The Offeror’s signature will be considered the offerors acknowledgment of understanding and ability to comply with all items in this solicitation. If an offeror makes any changes or corrections to the bid documents (such as white out, or writing over a figure, etc.) such changes or corrections must be initialed and dated by the person signing the offer prior to its submittal.

TOTAL BID will be evaluated and awarded as follows: The City of Colorado Springs intends to award a contract to the lowest responsible and responsive bidder as specified in SP.9. Each bidder will provide pricing for each area listed in the following documentation.

OFFER

Item Number	Description	Estimated Quantity	Unit	UNIT PRICE	Extended Price
	<i>FURNISH ALL LABOR, MATERIAL, EQUIPMENT AND SUPPLIES REQUIRED TO INSTALL THE FOLLOWING IN ACCORDANCE WITH THIS INFORMAL BID AND ALL CITY, STATE AND FEDERAL RULES AND REGULATIONS (SEE ATTACHMENT 3):</i>				
	<u>CS001 FEMA Project Worksheet</u>				
1	<u>Pikes Peak Greenway at El Pomar Youth Sports Complex – South Trail Erosion</u>				
	Purchase, haul, place and compact fill material in four (4) site specific washouts	208.2	CY	\$ _____	\$ _____
	Purchase, haul, place, grade and compact minimum 4” depth x 10’ width Red Breeze to	28.3	CY	\$ _____	\$ _____

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	repair trail				\$ _____
	Total Lump Sum				
2	<u>Sinton Trail at Rail Road Overpass</u>				
	Purchase, haul, place and compact Grade A top soil	2.8	CY	\$ _____	\$ _____
	Sawcut, remove and disposed of damaged asphalt estimated at 27 LF of cut and 4 SY of asphalt	1	LS	\$ _____	\$ _____
	Pour in place new asphalt trail estimated at 24' L x 1.5' W x 4" D	1	LS	\$ _____	\$ _____
	Total Lump Sum				\$ _____
3	<u>Sinton Trail near Holland Park Blvd</u>				
	Purchase, haul and place Rip Rap 36" D50	35.6	CY	\$ _____	\$ _____
	Purchase, haul, place and compact eroded trail shoulder with Grade A Topsoil	462.2	CY	\$ _____	\$ _____
	Reseed area of disturbance with Foothills Mix and add Erosion control blankets (per Spec's) on slopes 3:1 and greater	1	LS	\$ _____	\$ _____
	Total Lump Sum				\$ _____
4	<u>Midland Trail West Bridge at Vermijo Park</u>				
	Purchase, haul, place and compact fill in eroded slopes	22.4	CY	\$ _____	\$ _____
	Purchase haul and place/install rip rap D50=36" at bridge abutments	103	CY	\$ _____	\$ _____
	Grout in place replaced rip rap	1	LS	\$ _____	\$ _____
	Total Lump Sum				\$ _____
	<u>CS003 FEMA project Worksheet</u>				
5	<u>South Cañon Trail – North Cheyenne Cañon Park</u>				
	Purchase, haul, place and compact Breeze Gravel on eroded sections on south Canon Trail	161.5	CY	\$ _____	\$ _____
		77.7	CY	\$ _____	\$ _____

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	<p>Washout A (Roadway): Repair/Replace damaged slopes at South Cheyenne Cañon Rd. Reset loose boulder at toe of slope. Purchase, haul and place new 36" D50 Rip Rap</p> <p>Washout A: Install geotextile material along the length of the washout. Remove and existing damaged fabric.</p> <p>Washout A: Purchase, haul, place and compact soil rip rap to reestablish slope below roadway. Broadcast Foothill Seed Mix and cover with Erosion Control per specifications</p> <p>Washout B (Trail): Repair/Replace damaged slopes at South Cheyenne Cañon Rd. Reset loose boulder at toe of slope. Purchase, haul and place new 36" D50 Rip Rap</p> <p>Washout B: Install geotextile material along the length of the washout. Remove and dispose of existing damaged fabric.</p> <p>Washout B: Purchase, haul, place and compact soil rip rap to reestablish slope below trail. Broadcast Foothill Seed Mix and cover with Erosion Control per specifications</p> <p align="right">Total Lump Sum</p>	<p>58.33</p> <p>58.33</p> <p>22.2</p> <p>22.2</p> <p>10</p>	<p>SY</p> <p>CY</p> <p>CY</p> <p>SY</p> <p>CY</p>	<p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p>	<p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p>
6	<p><u>Sondermann Park Mesa Valley Trail</u></p> <p>Purchase, haul, place and compact Red Breeze along damaged sections of the Mesa Valley Trail.</p> <p align="right">Total Lump Sum</p>	<p>98</p>	<p>CY</p>	<p>\$ _____</p> <p>\$ _____</p>	<p>\$ _____</p> <p>\$ _____</p>
7	<p><u>Foothills Trail at Rock Ledge Ranch</u></p> <p>Purchase, haul, place and compact Red Breeze along damaged sections of the Foothills Trail.</p> <p align="right">Total Lump Sum</p>	<p>19.2</p>	<p>CY</p>	<p>\$ _____</p> <p>\$ _____</p>	<p>\$ _____</p> <p>\$ _____</p>

Overall Project Bid Total: \$ _____

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Supplemental Bid Notes: (if applicable)

1. A public bid opening will not be held for this informal bid. However results will be made available to all interested parties after the due date.
2. A voluntary pre-bid meeting is scheduled for Thursday, December 18, 2015 at 1:30 PM at 1401 Recreation Way, Colorado Springs, CO 80905.
3. Reference the attached drawings (Attachment 2) for project site plans and locations. Note the quantities listed above were derived from FEMA Project Specialists and are Estimates Only. Please refer to each site and scope of work to complete the job per City of Colorado Springs Parks and Recreation Specifications.
4. The Contractor will be responsible for site restoration due to construction activity and access outside of the scope of work. This will include, but not limited to, soil de-compaction, erosion control, re-seeding and re-vegetation, and replacement of newly damaged concrete from construction along the trails
5. The City reserves the right to reject any or all bids, to waive formalities or irregularities, and to award bid in whole or in part, if it deems it to be in the best interest of the City of Colorado Springs.
6. Bidders are expected to examine the drawings, specifications, bid documents, proposed contract forms, terms and conditions, and all other instructions and solicitation documents. Bidders are expected to visit the job-site to determine all requirements and conditions that will affect the work. Failure to do so will not relieve a bidder from responsibility to know what is contained in this invitation for bid, or site conditions affecting the work.
7. The bidder certifies that it has checked all of its figures, and understands that the Owner will not be responsible for any errors or omissions on the part of the bidder in preparing its bid.
8. THE contractor/vendor hereby certifies that at the time of this certification, it does not knowingly employ or contract with an illegal alien and that the contractor has participated or attempted to participate in the basic pilot program in order to verify that the Contractor does not employ any illegal aliens. "Basic pilot program" means the basic pilot employment verification program created in Public Law 208, 104th Congress, as amended, and expanded in Public Law 156, 108th Congress, as amended, that is administered by the United States department of homeland security.
9. All bids solicited by the City of Colorado Springs are solicited in accordance with the City's Procurement Rules and Regulations. The City's Procurement Rules and Regulations can be reviewed and/or downloaded from the City Contracting website: www.coloradosprings.gov.
10. Period of Performance: **60** Calendar Days.
11. Davis-Bacon Wage Rates do not apply to this solicitation.

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BID FORM
SIGNATURE PAGE

By signing in this space, the contractor hereby certifies that this company is not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from bidding/proposing on any federal, state, county or municipal Invitations for Bids or Requests for Proposals.

Signature Date

Title

THE CONTRACTOR hereby Certifies that at the time of this certification, the Contractor does not knowingly employ or contract with an illegal alien and that the contractor has participated or attempted to participate in the basic pilot program in order to verify that the Contractor does not employ any illegal aliens. "Basic pilot program" means the basic pilot employment verification program created in Public Law 208, 104th Congress, as amended, and expanded in Public Law 156, 108th Congress, as amended, that is administered by the United States department of homeland security.

If awarded the contract, the undersigned hereby agrees to sign said Contract, and furnish the necessary bonds within ten (10) days of receipt of the "Notice of Award", of said contract, and to begin work within ten (10) days from the date of receipt of the "Notice to Proceed" and to complete the as specified in the bidding documents.

The undersigned acknowledges and understands the terms, conditions, Specifications and all Requirements contained and/or referenced and are legally authorized by the bidder to make the above bid statements or representations.

(Name of Company) (Signature) (Date)

(Address)

(City, State and Zip) (Telephone Number)

(Name typed/Printed) (Title) (Facsimile Number)

FEDERAL TAX ID # _____
This Company Is: Corporation ___ Individual ___ Partnership ___
LLC ___

Offeror hereby acknowledges receipt of the following amendments, if applicable (Offeror agrees that it is bound by all Amendments identified herein)

AMENDMENT #1 _____ DATED: _____
AMENDMENT #2 _____ DATED: _____
AMENDMENT #3 _____ DATED: _____

SPECIAL PROVISIONS

SMALL CONSTRUCTION TYPE PROJECTS UNDER \$199,999.00

It is the intent of these Special Provisions to establish minimum Terms and Conditions for small construction type projects under \$199,999.00.

SP.1 TERMS & CONDITIONS

The Standard Specifications for this project shall be the “CITY OF COLORADO SPRINGS ENGINEERING DIVISIONS STANDARD SPECIFICATIONS”, AND GENERAL PROVISIONS, latest revisions, except as modified hereinafter, which are incorporated in the contract documents by reference as though embodied herein in their entirety. The City of Colorado Springs Engineering Divisions Standards contains all of the Terms and Conditions that are applicable. It is the responsibility of the each bidder/contractor to insure they have a copy of the above mentioned standard specifications and understand the requirements therein. Copies are available for purchase at the cost of \$25.00 from the City of Colorado Springs, Office Services Unit, Suite L01, 30 S. Nevada, Colorado Springs, during regular business hours. The document may also be downloaded at www.coloradosprings.gov/cityengineering. Listed below are the special provisions of the aforementioned specifications. These terms and conditions shall be part of the resultant contract.

SP.2 CONFIDENTIAL MATTERS

All data and information gathered by the Contractor and its subcontractors, and all reports, recommendations, drawings, documents, and data shall be treated by the Contractor and its subcontractors as confidential. The Contractor and its subcontractors must agree not to communicate and disclose the aforesaid matters to a third party or use them in advertising, publicity, or propaganda and/or in another job or jobs, unless prior written consent is obtained from the City.

SP.3 INDEMNIFICATION

The Contractor agrees to indemnify and hold harmless the City, its employees, directors or agents, from and against all claims, damages, losses, and expenses, including attorney's fees arising from deaths or accidents or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, resulting to employees of the Contractor, or its subcontractors, in the work contemplated and done under the Contract, and to indemnify and hold harmless City, its employees, directors, or agents, from and against all claims, damages, losses, and expenses, including attorney's fees, decrees or judgments whatsoever arising from any and all injuries, including death or damages or destruction of property resulting to any third person or persons, corporation, partnerships or associations caused by any act, omission, failure, or neglect of the Contractor, its subcontractors, or agents, servants and employees, or other persons under its supervision or direction in the performance of any work under the terms of the Contract. This indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable for or by the Contractor or any subcontractor, manufacturer, or supplier under the Workmen's Compensation Act, disability benefit acts, or other employee benefit acts.

SP.4 FISCAL OBLIGATIONS OF CITY

This Agreement is expressly made subject to the limitations of the Colorado Constitution and Section 7-60 of the Charter of the City of Colorado Springs. Nothing herein shall constitute, nor be deemed to constitute, the creation of a debt or multi-year fiscal obligation or an obligation of future appropriations by the City Council of Colorado Springs, contrary to Article X, § 20, Colo. Const., or any other constitutional, statutory, or charter debt limitation. Notwithstanding any other provision of this Agreement, with

respect to any financial obligation of the City which may arise under this Agreement in any fiscal year after the year of execution, in the event the budget or other means of appropriation for any such year fails to provide funds in sufficient amounts to discharge such obligation, such failure (i) shall act to terminate this Agreement at such time as the then-existing and available appropriations are depleted, and (ii) neither such failure nor termination shall constitute a default or breach of this Agreement, including any sub-agreement, attachment, schedule, or exhibit thereto, by the City. As used herein, the term “appropriation” shall mean and include the due adoption of an appropriation ordinance and budget and the approval of a Budget Detail Report (Resource Allocations) which contains an allocation of sufficient funds for the performance of fiscal obligations arising under this Agreement.

SP.5 LAW

This contract is subject to and shall be interpreted under the law of the State of Colorado, and the charter, City Code, Ordinances, Rules and Regulations of the City of Colorado Springs, a home rule city. Court venue and jurisdiction shall exclusively be in the Colorado District Court of El Paso County Colorado. The contractor shall insure that the contractor and the contractor’s employees, agents and officers are familiar with, and comply with, applicable Federal, State and Local laws and Regulations as now written or hereafter amended.

SP.6 PROVISIONS AND SPECIFICATIONS

This document may contain additional General Provision, Special Provisions, Standard Specifications and Drawings which are attached and/or included as part of this solicitation and are incorporated by reference.

SP.7 PERIOD OF PERFORMANCE & LIQUIDATED DAMAGES

As time is an essential element of the Contract, all work shall be completed within the Contract period of 60 Calendar Days. For each calendar day that any work shall remain incomplete after the end of the Contract period, the amounts designated in Section 110.02 of the General Provisions will be assessed, not as a penalty but as a predetermined and agreed liquidated damage. The Contractor shall not be assessed with liquidated damages nor the cost of Engineering and Inspection during any delay in the completion of the work caused by acts of God or of the public enemy, acts of the City, fire, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes; provided that the Contractor shall within ten (10) days from the beginning of any such delay notify the Engineer in writing of the causes of such delay, who shall ascertain the facts and the extent of delay, and his findings of the facts thereon shall be final and conclusive.

Amount of Liquidated Original Contract Amount	Damages Per Day
Less than \$50,000	\$300.00
\$50,000 to \$100,000	\$500.00
\$100,000 to \$500,000	\$700.00

SP.8 LICENSES & PERMITS

Bidders must qualify for all licenses and permits required before commencing work.

SP.9 CONTRACT DOCUMENT

Attachment 1 is a copy of the City's standard contract, which will be used for this solicitation. The City Contracting Office will execute a contract with the lowest, responsive, responsible bidder, whose offer conforming to the solicitation, will be most

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advantageous to and in the best interest of the City of Colorado Springs, cost or price and other factors considered.

SP.10 INSURANCE REQUIREMENTS

All interested bidders are required to sign and return Appendix 6 certifying that it will carry the Minimum Insurance Requirements specified.

SP.11 SALES TAX

The contractor shall apply with the Colorado Department of Revenue for a tax-exempt certificate for this project. The certificate does not apply to City of Colorado Springs Sales and Use Tax (3.12% after 01/01/2016) which shall be applicable and included in your bid or proposal in all cases. The tax exempt project number and the exemption certificate only applies to County, PPRTA (Pikes Peak Rural Transportation Authority), and State taxes when purchasing construction and building materials **to be incorporated in this project.**

Furthermore, the exemption **does not** include or apply to the purchase or rental of equipment, supplies or materials that **do not become a part of the completed project or structure.** In these instances, the purchase or rental is subject to full taxation of 7.63% (City-3.12%, County-1.23%, PPRTA-1%, and State-2.9%).

The Contractor and all subcontractors shall include in their bid City of Colorado Springs Sales and Use Tax (3.12%) on the work covered by the Contract, and other taxes as applicable.

Note: For all equipment, materials and supplies incorporated into the work purchased from vendors or suppliers not licensed to collect City Sales Tax (i.e. out of state suppliers, etc), City Use Tax (3.12%) is due and payable to the City. The contractor shall execute and deliver, and shall cause the Contractor's subcontractors to execute and deliver to the City Sales Tax Office, ST 16 forms listing all said equipment, materials and supplies and the corresponding use tax due, along with payment for said taxes unless already included in the bid price. Any outstanding taxes due may be withheld from the final payment due the contractor and may result in suspension from bidding on City projects.

Forms and instructions can be downloaded at www.coloradosprings.gov/salestax. Questions can be directed to the City Sales Tax Division at (719) 385-5903.

Our Registration Numbers are as follows:

City of Colorado Springs

Federal I.D.: 84-6000573

Federal Excise: A-138557

State Sales Tax: 98-03479

SP.12 BOND REQUIREMENTS

If informal Bid exceeds \$100,000 the following listed bonds are required.

Performance, Labor and Materials Payment, and Maintenance Bonds

The Contractor shall furnish to the City of Colorado Springs one copy of each; Performance Bond, Labor and Materials Payment Bond, and a Maintenance Bond in the amount of 100% of the total contract within ten (10) calendar days after notification of award of a contract. The cost of all bonds shall be included in Contractor's bid offer.

Bonds shall:

- a) Be for the full amount of the contract price.
- b) Guarantee the Contractor's faithful performance of the work under

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this contract, and the prompt and full payment for all labor and materials involved therein.

- c) Guarantee protection to the City of Colorado Springs against liens of any kind.
- d) Be, when a surety bond is furnished, from a surety company operating lawfully in the state of Colorado and shall be accompanied with an acceptable "Power-of-Attorney" form attached to each bond copy.
- e) Be issued from a surety company that is acceptable to the City of Colorado Springs.
- f) Be submitted using the forms provided by the City Contracting Office..

SCHEDULE A

GRANT PROCUREMENT LANGUAGE

Clauses for Contracts Subject to Federal Requirements

1. DISPUTES

- a. All administrative and contractual disputes arising from or related to this Contract, which are not resolved by mutual agreement, may be decided by recourse to an action at law or in equity in accordance with subparagraph b) of this provision. Until final resolution of any dispute hereunder, the Contractor shall diligently proceed with the performance of this Contract as directed by the City of Colorado Springs Procurement Services Representative. For purposes of this Contract, termination for convenience shall not be deemed a dispute.
- b. The City of Colorado Springs and the Contractor agree to notify each other in a timely manner of any claim, dispute, or cause of action arising from or related to this Contract, and to negotiate in good faith to resolve any such claim, dispute, or cause of action. To the extent that such negotiations fail, the City of Colorado Springs and the Contractor agree that any lawsuit or cause of action that arises from or is related to this Contract shall be filed with and litigated only by the Colorado District Court for El Paso County, CO.

2. TERMINATION

- a. The City may terminate this Contract in whole or, from time to time, in part, for the City's convenience or because of the failure of the Contractor to fulfill the contract obligations.

The City shall terminate by delivering to the Contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the Contractor shall:

- i). Immediately discontinue all services affected (unless the notice directs otherwise), and
- ii). Deliver to the City all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process.
- b. If the termination is for the convenience of the City, the City's delegated representative shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services. In the event of such termination, Seller shall immediately stop all work hereunder, and shall immediately cause any of its suppliers or subcontractors to cease such work. Seller shall be paid a reasonable termination charge consisting of a percentage of the order price reflecting the percentage of the work performed prior to the notice of termination. Seller shall not be paid for any work done after receipt of the notice of termination, nor for any costs incurred by Seller's suppliers or subcontractors which Seller could reasonably have avoided.
- c. If the termination is for failure of the Contractor to fulfill the contract obligations, the City may complete the work by contract or otherwise, and the Contractor shall be liable for any additional cost incurred by the City. Prior to issuing a Termination for failure to fulfill the contract obligations, the City will issue a Notice

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to Cure allowing the Contractor ten (10) calendar days to prepare a plan to correct whatever failures are causing the contract obligation failure (s).

- d. If, after termination for failure to fulfill contract obligations, it is determined that the Contractor had not failed, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the City.
- e. Disputes under this clause shall be governed by the provisions of the Disputes Clause of this Contract, under Article 1 of this Exhibit. The parties agree that termination for convenience is not a dispute for purposes of this Contract.
- f. The rights and remedies of the City provided in this clause are in addition to any other rights and remedies provided by law or under this Contract.

3. EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this Contract, the Contractor agrees as follows:

- (1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- (2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
- (3) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (6) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (7) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take

such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however*, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

- (8) *Subcontracts*. Each nonexempt prime contractor or subcontractor shall include the equal opportunity clause in each of its nonexempt subcontracts.
 - (9) *Incorporation by reference*. The equal opportunity clause may be incorporated by reference in all Government contracts and subcontracts, including Government bills of lading, transportation requests, contracts for deposit of Government funds, and contracts for issuing and paying U.S. savings bonds and notes, and such other contracts and subcontracts as the Deputy Assistant Secretary may designate.
 - (10) *Incorporation by operation of the order*. By operation of the order, the equal opportunity clause shall be considered to be a part of every contract and subcontract required by the order and the regulations in this part to include such a clause whether or not it is physically incorporated in such contracts and whether or not the contract between the agency and the contractor is written.
 - (11) *Adaptation of language*. Such necessary changes in language may be made in the equal opportunity clause as shall be appropriate to identify properly the parties and their undertakings. [43 FR 49240, Oct. 20, 1978, as amended at [62 FR 66971](#), Dec. 22, 1997]
4. EQUAL EMPLOYMENT OPPORTUNITY REPORTS AND OTHER REQUIRED INFORMATION

(a) Requirements for prime contractors and subcontractors.

- (1) Each prime contractor and subcontractor shall file annually, on or before the September 30, complete and accurate reports on Standard Form 100 (EEO-1) promulgated jointly by the Office of Federal Contract Compliance Programs, the Equal Employment Opportunity Commission and Plans for Progress or such form as may hereafter be promulgated in its place if such prime contractor or subcontractor (i) is not exempt from the provisions of these regulations in accordance with § [60-1.5](#); (ii) has 50 or more employees; (iii) is a prime contractor or first tier subcontractor; and (iv) has a contract, subcontract or purchase order amounting to \$50,000 or more or serves as a depository of Government funds in any amount, or is a financial institution which is an issuing and paying agent for U.S. savings bonds and savings notes: *Provided*, That any subcontractor below the first tier which performs construction work at the site of construction shall be required to file such a report if it meets requirements of paragraphs (a)(1) (i), (ii), and (iv) of this section.
- (2) Each person required by § [60-1.7\(a\)\(1\)](#) to submit reports shall file such a report with the contracting or administering agency within 30 days after the award to him of a contract or subcontract, unless such person has submitted such a report within 12 months preceding the date of the award. Subsequent reports shall be submitted annually in accordance with § [60-1.7\(a\)\(1\)](#), or at such other intervals as the Deputy Assistant Secretary may require. The Deputy Assistant Secretary may extend the time for filing any report.
- (3) The Deputy Assistant Secretary or the applicant, on their own motions, may require a contractor to keep employment or other records and to furnish, in the form requested, within reasonable limits, such information as the Deputy Assistant Secretary or the applicant deems necessary for the administration of the order.
- (4) Failure to file timely, complete and accurate reports as required constitutes noncompliance with the prime contractor's or subcontractor's obligations under the equal opportunity clause and is ground for the imposition by the Deputy Assistant Secretary, an applicant, prime contractor or subcontractor, of any sanctions as authorized by the order and the regulations in this part.

(b) Requirements for bidders or prospective contractors—

(1) **Certification of compliance with Part 60-2: Affirmative Action Programs.** Each agency shall require each bidder or prospective prime contractor and proposed subcontractor, where appropriate, to state in the bid or in writing at the outset of negotiations for the contract: (i) Whether it has developed and has on file at each establishment affirmative action programs pursuant to Part [60-2 of this chapter](#); (ii) whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; (iii) whether it has filed with the Joint Reporting Committee, the Deputy Assistant Secretary or the Equal Employment Opportunity Commission all reports due under the applicable filing requirements.

(2) **Additional information.** A bidder or prospective prime contractor or proposed subcontractor shall be required to submit such information as the Deputy Assistant Secretary requests prior to the award of the contract or subcontract. When a determination has been made to award the contract or subcontract to a specific contractor, such contractor shall be required, prior to award, or after the award, or both, to furnish such other information as the applicant or the Deputy Assistant Secretary requests.

(c) **Use of reports.** Reports filed pursuant to this section shall be used only in connection with the administration of the order, the Civil Rights Act of 1964, or in furtherance of the purposes of the order and said Act.[43 FR 49240, Oct. 20, 1978, as amended at [62 FR 66971](#), Dec. 22, 1997]

5. CONTRACT WORK HOURS AND SAFETY STANDARDS (from FAR 52.222-4)

The term "Contracting Officer" herein shall refer to the City of Colorado Springs Contracting Specialist assigned to this contract.

The term "Government" herein shall refer to the City of Colorado Springs and any interested federal or state entity.

(a) **Overtime requirements.** No Contractor or subcontractor employing laborers or mechanics (see Federal Acquisition Regulation [22.300](#)) shall require or permit them to work over 40 hours in any workweek unless they are paid at least 1 and 1/2 times the basic rate of pay for each hour worked over 40 hours.

(b) **Violation; liability for unpaid wages; liquidated damages.** The responsible Contractor and subcontractor are liable for unpaid wages if they violate the terms in paragraph (a) of this clause. In addition, the Contractor and subcontractor are liable for liquidated damages payable to the Government. The Contracting Officer will assess liquidated damages at the rate of \$10 per affected employee for each calendar day on which the employer required or permitted the employee to work in excess of the standard workweek of 40 hours without paying overtime wages required by the Contract Work Hours and Safety Standards statute (found at [40 U.S.C. chapter 37](#)).

(c) **Withholding for unpaid wages and liquidated damages.** The Contracting Officer will withhold from payments due under the contract sufficient funds required to satisfy any Contractor or subcontractor liabilities for unpaid wages and liquidated damages. If amounts withheld under the contract are insufficient to satisfy Contractor or subcontractor liabilities, the Contracting Officer will withhold payments from other Federal or federally assisted contracts held by the same Contractor that are subject to the Contract Work Hours and Safety Standards statute

(d) Payrolls and basic records.

(1) The Contractor and its subcontractors shall maintain payrolls and basic payroll records for all laborers and mechanics working on the contract during the contract and shall make them available to the Government until 3 years after contract completion. The records shall contain the

CITY OF COLORADO SPRINGS

name and address of each employee, social security number, labor classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. The records need not duplicate those required for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Construction Wage Rate Requirements statute.

(2) The Contractor and its subcontractors shall allow authorized representatives of the Contracting Officer or the Department of Labor to inspect, copy, or transcribe records maintained under paragraph (d)(1) of this clause. The Contractor or subcontractor also shall allow authorized representatives of the Contracting Officer or Department of Labor to interview employees in the workplace during working hours.

(e) *Subcontracts*. The Contractor shall insert the provisions set forth in paragraphs (a) through (d) of this clause in subcontracts that may require or involve the employment of laborers and mechanics and require subcontractors to include these provisions in any such lower tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the provisions set forth in paragraphs (a) through (d) of this clause.

(End of clause)

6. CLEAN AIR ACT

By signing this Contract, the Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). Further, the Contractor agrees to include this clause in all subcontracts in excess of \$150,000.

7. DEBARMENT AND SUSPENSION

By signing this Contract, the Contractor certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
- (d) Have not within a three-year period preceding this application/proposal had one or more public transactions(Federal, State, or local) terminated for cause or default.

8. BYRD ANTI-LOBBYING AMENDMENT

By signing this Contract, the Contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Further, the Contractor certifies that it has not engaged in lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. The Contractor must require the same certification from all subcontractors with subcontracts valued in excess of \$100,000 under this Contract.

9. SMALL BUSINESS REQUIREMENTS

The Contractor must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

Affirmative steps must include:

- (1) Placing qualified small and minority businesses and women's business enterprises on subcontract solicitation lists;
- (2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources for subcontracting;
- (3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
- (4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
- (5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

10. PROCUREMENT OF RECOVERED MATERIALS

The Contractor must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

SCHEDULE B

TECHNICAL SPECIFICATIONS

The Standard Specifications for this project shall be the **latest version** of the “**CITY OF COLORADO SPRINGS ENGINEERING DIVISIONS STANDARD SPECIFICATIONS**”, (revised Feb. 1995, General Provisions revised January 2008 and Sections 400, 410 and 420 Revised January 2007), except as modified hereinafter, which are incorporated in the contract documents by reference as though embodied herein in their entirety.

All Contractors on this project are required to have on the job site and utilize the current updated copy of the City of Colorado Springs Engineering Divisions Standard Specifications.

Copies are available for purchase at the cost of \$25.00 from the City of Colorado Springs, City Engineering Division, Suite 403, 30 South Nevada Avenue, Colorado Springs, during regular business hours.

02920- SEEDING AND SODDING (REVISED 213)

PART 1 - GENERAL

1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. Please refer to Arkansas Valley Seed “Foothills Mix” or approved equal- Attachment 4.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Seeding.
 - 2. Sodding.
 - 3. Plugging.
 - 4. Meadow grasses and wildflowers.
 - 5. Sod renovation.
- B. Related Sections include the following:
 - 1. Division 2 Section “Site Clearing” for topsoil stripping and stockpiling.
 - 2. Division 2 Section “Earthwork” for excavation, filling and backfilling, and rough grading.
 - 3. Division 2 Section “Subdrainage” for subsurface drainage.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
- D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turf grass sod, identifying source, including name and telephone number of supplier.
- C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.
- D. Qualification Data: For landscape installer.
- E. Material Test Reports: For existing surface soil and imported topsoil
- F. Maintenance Instructions: Upon completion of all sodding operations, the Contractor shall notify the Owner’s Representative to inspect the work. Upon inspection, if all work is acceptable, the Owner’s Representative shall record that date and shall issue a “Conditional Acceptance” letter

which shall state that the Contractor shall maintain all sodded areas as specified according to the following length of time. As indicated in section 1.8.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: All work specified herein shall be performed under the direct supervision of a Superintendent thoroughly familiar with the work of this section who shall be at the project site for the duration of the work in this section.
 - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Installer Qualifications: All work specified herein shall be performed under the direct supervision of a Superintendent thoroughly familiar with the work of this section who shall be at the project site for the duration of the work in this section.
 - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- C. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- D. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 - 1. Report suitability of topsoil for Sod growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.6 DELIVER, STORAGE, AND HANDLING

- A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.7 SCHEDULING

- A. Planting Restrictions: Plant during one of the following periods unless otherwise approved by Owner's Representative. Coordinate plating periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Sodding: April 15th-October 15th.
 - 2. Seeding: March 1st-September 15th.
 - 3. Irrigated Native Seeding: March 1st-September 15th.
 - 4. Non Irrigated Native Seeding: November 1st-May 15th.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit. No sodding shall take place when the site is wet or during freezing temperatures.

1.8 TURF MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continue until acceptable Sod is established, but for not less than the following periods:
 - 1. Seeded Turf: 60 days from date of Substantial Completion.
 - 2. Native Seeding: 60 days from date of Substantial Completion.
 - 3. Sodded Turf: 30 days from date of Substantial Completion.
- B. A period of 30 calendar days minimum, which shall be referred to as the "Sod Maintenance Period." At the end of this period, the sodded areas shall be given "Final Acceptance" if the sod is in a healthy condition and of a normal green color, with no bare areas larger than six (6) square inches. Mowing of sod should occur (3) days before "Final Acceptance." If sod is installed in late October, a "Final Acceptance" for sod will not be issued, until the following spring.
- C. At the end of the maintenance period, the Owner's Representative shall, within five (5) calendar days, inspect the work, and if the work is acceptable, he shall issue a Final Acceptance Sod Work" letter which shall relieve the Contractor from further obligations for Sod work only. Final acceptance of Sod work may be given independently of final acceptance of all work under this contract.
- D. The maintenance period for this work shall begin immediately after each area is sodded and shall continue in accordance with the following requirements:

B15-157 IF PAVED OR DAMAGED TRAIL REPAIR SUBJECTS
Minor conditions or other damage to the sodded areas shall be the responsibility of the

- Contractor until all work receives Final Acceptance by the Owner's Representative. Major vandalism or damage caused by others through no fault of the Contractor or his subcontractor shall be brought to the attention of the Owner's Representative who will be the sole judge as to the extent of such damage. If such damage is deemed to be major by the Owner's Representative, any work necessary to repair the seeded or sodded area to an acceptable condition shall be paid for by the Owner under the provisions of "extra work" stated in the General Conditions, if such work is authorized by the Owner's Representative.
2. Acts of God: Minor damage to the sodded areas shall be the responsibility of the Contractor until all work receives Final Acceptance by the Owner's Representative. Major damage caused by flood, hail, storm, wind, or large rain storm, and through no fault of the Contractor to protect his work, shall immediately be brought to the attention of the Owner's Representative who will be the sole judge as to the extent of such damage. Major damage shall be repaired by the Contractor and paid for by the Owner, if such work is authorized by the Owner's Representative.
 - a. When full maintenance period has not elapsed before end of planting season, or is Sod is not fully established, continue maintenance during next planting season.
- E. Maintain and establish Sod by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Rolls, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf.
1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.
- F. Watering: Provide and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep Sod uniformly moist.
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay our temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water Sod at a minimum rate of 1 1/2" to 2" per week.
- G. The Contractor shall be responsible for watering and mowing of the sodded areas only until Final Acceptance. The bluegrass sod shall be maintained at a height of three inches (3") and of four inches (4"). If grass exceeds four inches (4") in height before mowing, no more than (1/3) of top growth shall be cut off at anyone time. All clippings shall be removed from site. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing to maintain consistent grass height. Sufficient water shall be applied during the maintenance period to maintain the sod in a healthy condition, allowing it to knit together and develop a deep root system. Care should be given to avoid standing surface water, or erosion from over watering. Failure of the irrigation system shall not relieve the Contractor from applying water required during this period.

1.9 NATIVE SEEDING MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continue until acceptable meadow is established, but for not less than 60 days from date of Substantial Completion. The maintenance period for this work shall begin immediately after all areas are seeded and shall continue in accordance with the following requirements:
 1. All seeded areas shall have suitable signs erected at important points, notifying the public to keep off.
- B. Minor vandalism or other damage to the seeded areas shall be the responsibility of the Contractor until all work receives Final Acceptance by the Owner's Representative. Major vandalism or damage caused by others through no fault of the Contractor or his subcontractor shall be brought to the attention of the Owner's Representative who will be the sole judge as to the extent of such damage. If such damage is deemed to be major by the Owner's Representative, any y work necessary to repair the seeded area to an acceptable condition shall be paid for by the Owner under the provision of "extra work" stated in the General Conditions, if such work is authorized by the Owner's Representative.
- C. Acts of God: Minor damage to the seeded areas shall be the responsibility of the Contractor until all work receives Final Acceptance by the Owner's Representative. Major damage caused by flood, hail storm, wind or large rain storm, and through no fault of the Contractor to protect his work, shall immediately be brought to the attention of the Owner's Representative who will be the site judge as to the extent of such damage. Major damage shall be repaired by the Contractor and paid for by the Owner under the provisions of City of Colorado Springs Engineering Division

Standard Specifications Section 100.23 "Changed Conditions", if such work is authorized by the Owner's Representative.

- D. The Contractor shall be responsible for watering and mowing the seeded areas only until final Acceptance. Mowing shall be conducted at a maximum of six inches (6"), and mowed down to four inches (4").
- E. Upon completion of all seeding operations, the Contractor will notify the Owner's Representative to inspect the work. Upon inspection, if all work is acceptable, the Owner's Representative shall record that date and shall issue a "Conditional Acceptance" letter which shall state that the Contractor shall maintain all seeded areas as specified according to the following length of time.
- F. Period of 60 calendar days minimum, which shall be referred to as the "Seeded Area Maintenance Period". AT the end of this period, the seeded areas shall be given "Final Acceptance" if the seed has germinated and there are no bare areas larger than six (6) square inches in diameter shall be re-seeded. AT the end of the maintenance period, the Owner's Representative shall, within five (5) calendar days, inspect the work, and if the work is acceptable, he shall relieve the Contractor from further obligations for seeding work only. Final acceptance of seeding work may be given independently of final acceptance of all work under this contract.
- G. Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and other operations. Roll, regrade and replant bare or eroded areas and remulch.
- H. Watering: Provide and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep meadow uniformly moist.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water meadow at a minimum rate of 1/2 inch per week for 8 weeks after planting

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species, as follows:
- C. Seed Species: As specified on drawings.

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Blended Kentucky Bluegrass.

2.3 NATIVE GRASSES AND WILDFLOWERS

- A. Wildflower Seed: Fresh, clean, dry, new seed, mixed species as follows:
- B. Native Grass Seed: Fresh, clean, dry, new seed, mixed species as follows:
- C. Wildflower and Native Grass Seed: Fresh, clean, dry, new seed, mixed species as follows:
- D. Seed Carrier: Inert material, sharp clean sand or perlite, mixed with seed at a ratio of not less than two parts seed carrier to one part seed.

2.4 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4-percent organic material content; free of stones 3/4 inch or larger in any dimension and other extraneous materials harmful to plant growth.
 - 1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - 2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

2.5 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through **1-inch** sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 1. Organic Matter Content: 50 percent of dry weight.
 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated compostable mixed solid waste.
- B. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.
- C. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil or toxic materials.
 1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb. of ammonium nitrate or 0.25 lb. of ammonium sulfate per cubic foot of loose sawdust or ground bark.
- E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.6 PLANTING ACCESSORIES

- A. Selective herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.7 FERTILIZER

- A. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- B. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea, formaldehyde, phosphorous, and potassium in the following composition:
 1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- C. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 30 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 1. Composition: 25 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.8 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Peat Mulch: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

- C. Peat Mulch: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not to exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: **50** percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
- G. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.9 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb./sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

2.10 PLANTING SOIL MIX

- A. Planting Soil Mix: As specified on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive Turf and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations. Reference tree planting schematic for exclusion of sod within tree planting well.
 - 1. Protect adjacent and adjoining areas from hydroseeding overspray.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Stop all sod at the edge of the tree well.

3.3 SOD PREPARATION

- A. Limit Sod subgrade preparation to areas to be planted within forty eight hours. Installation of sod shall not be undertaken until adjacent site improvements and pavement is complete. No trucking or moving of equipment or materials will be permitted upon completed sod.
- B. All irrigation heads, valve boxers, drain valves and quick couplers shall be flagged prior to sodding operations.
- C. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than $\frac{3}{4}$ inch in any dimension and sticks, roots, rubbish, and other extraneous matter and

legally dispose of them off Owner's property.

1. Apply fertilizer directly to finish grade, prior to sodding.
 2. Thoroughly blend planting soil mix before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within three days.
 3. Spread planting soil mix to a depth of 4 inches, but not less than required to meet finish grades natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil mix.
- D. Unchanged Subgrades: If Turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 2. Loosen surface soil to a depth of at least of 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply fertilizer directly to finish grade, prior to sodding.
 3. Remove stones larger than ¾ inches in any dimension and sticks, roots, trash, and other extraneous matter.
 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- E. Finish Grading: Finished grading and preparation of the entire sodded or seeded bed areas shall be achieved by disc-harrow or other approved method to a depth of six-inches (6"), or determined by Owner's Representative), fine ranking and/or light dragging until the surface is smooth, friable, and or uniform fine texture and compaction, having no lumps or stones over ¾" inch. No sod shall be laid on any area which has not been so prepared. Obtain the Owner's Representative's approval of prepared areas prior to sodding. A depth of one-inch (1") shall be maintained along sidewalk, before sod is installed.
- F. Finish grades shall be as indicated on the drawing, subject to minor adjustments, as may be directed by the Owner's Representative. Tops and toes of slopes shall be rounded, and the necessary swales for the run-off of surface water shall be carefully maintained with sufficient slope.
- G. Moisten prepared Sod areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- H. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 1. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Sow seed at the rate: As specified on drawings.
- C. Rake seed lightly into top 1/4 inch topsoil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 3:1 or greater with erosion-control blankets installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with slopes not exceeding 3:1 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.
 1. Anchor straw mulch by crimping into topsoil with suitable mechanical equipment.
 2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal. /1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or strained areas.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with non-asphaltic tackifier.
 - 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at a minimum rate of 1500-lb/acre dry weight but not less than the rate required to obtain specified seed-sowing rate.
 - 3. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry application at a minimum rate of 500-lb/acre dry weight but not less than the rate required to obtain specified seed-sowing rate. Apply slurry cover coat of fiber mulch at a rate of 1000 lb./acre.

3.6 SODDING

- A. Laying Sod: Lay sod within 24 hours of harvesting. Sod shall be laid on a firm moist bed with tight joints so that no voids occur under or between strips. All ends should be tucked and unrolled. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Any depressions or mounds occurring after sodding shall be corrected prior to acceptance of work. No sod shall be laid on a frozen bed or installed on Fridays. No sod shall be laid within the tree planting well.
- B. Sod shall be blended Kentucky Bluegrass turf, approved by owner and supplied from a single approved source. Sod shall be one inch (1") minimum thick dense and free of weeds and stones. All sod shall be inspected and approved by the Owner's Representative at the time of delivery. Sod shall be sufficiently moist so that the soil will adhere to the roots when handled. Delivered sod shall contain no more than five (5) percent broken rolls. Sod that has become moldy, withered, or yellow from storage or drying, or does not meet minimum thickness requirements may be rejected at the time of planting. Sod out for more than 24 hours from the time of cutting shall not be used.
- C. As soon as sod has been laid, it shall be watered and rolled using a Jackson Sod Roller, True Temper Model 12LR with 240# of water approved equals, so that the sod makes a tight bond to the sod bed. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across angle of slopes exceeding 3:1.
 - 2. Anchor sod on slopes exceeding 4:1 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.
- D. Saturate sod with fine water spray within two hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.7 SOD RENOVATION

- A. Renovate existing sod damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - 1. Re-establish sod where settlement or washouts occur or where minor regrading is required.
- B. Remove sod and vegetation from diseased or unsatisfactory sod areas: do not bury in soil.
- C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.
- D. Mow, dethatch, core aerate, and rake existing turf.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- G. Till ripped, bare and compacted areas thoroughly to a soil depth of 6 inches.

- H. Apply soil amendments and initial fertilizers required for establishing new Turf and mix thoroughly into top 4 inches of existing soil. Provide new planting soil to fill low spots and meet finish grades.
- I. Apply sod as required for new Turf.
- J. Water newly planted areas and keep moist until new sod is established.

3.8 SATISFACTORY TURF

- A. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities. The maintenance period for this work shall begin immediately after all areas are seeded and shall continue in accordance with the following requirements.
- B. All seeded areas shall have suitable signs erected at important points, notifying the public to keep off. Minor vandalism or other damage to the seeded areas shall be the responsibility of the Contractor until all work receives Final Acceptance by the Owner's Representative. Major vandalism or damage caused by others through no fault of the Contractor or his subcontractor shall be brought to the attention of the Owner's Representative who will be the sole judge as the extent of such damage. If such damage is deemed to be major by the Owner's Representative, any work necessary to repair the seeded area to an acceptable condition shall be paid for by the Owner under the provision of "extra work" stated in the General Conditions, if such work is authorized by the Owner's Representative.
- C. Acts of God: Minor damage to the seeded areas shall be the responsibility of the Contractor until all work receives Final Acceptance by the Owner's Representative. Major damage caused by flood, hail storm, wind or large rain storm, and through no fault of the Contractor to protect his work, shall immediately be brought to the attention of the Owner's Representative who will be the sole judge as to the extent of such damage. Major damage shall be repaired by the Contractor and paid for by the Owner, if such work is authorized by the Owner's Representative.
- D. The Contractor shall be responsible for watering and mowing the seeded areas only until Final Acceptance. Mowing shall be maintained at a height of three inches (3") and mowed only by equipment with sharp blades. Sod shall be mowed before grass reaches a height of four inches (4"). If grass exceeds four inches (4") in height before mowing, no more than (1/3) of top growth shall be cut off at any one time.
- E. Upon completion of all seeding operations, the Contractor will notify the Owner's Representative to inspect the work. Upon inspection, if all work is acceptable, the Owner's Representative shall record that date and shall issue a "Conditional Acceptance" letter which shall state that the Contractor shall maintain all seeded areas as specified according to the following length of time.
- F. Period of 60 calendar days minimum, which shall be referred to as the "Seeded Area Maintenance Period". At the end of this period, the seeded areas shall be given "Final Acceptance" if the seed has germinated and there are no bare areas larger than six (6) square inches. All bare areas larger than (6) square inches in diameter shall be re-seeded.
 - 1. At the end of the maintenance period, the Owner's Representative shall, within five (5) calendar days, inspect the work, and if the work is acceptable, he shall relieve the Contract from further obligations for seeding work only. Final acceptance of seeding work may be given independently of final acceptance of all work under this contract.
- G. Satisfactory Sodded Turf: At the end of maintenance period, a healthy, well-rooted, even-colored, viable Sod has been established, free of weeds, open joints, bare areas, and surface irregularities.
- H. Re-establish Turf that does not comply with requirements and continue maintenance until Turf are satisfactory.

3.9 NATIVE SEEDING

- A. Method of Application: Refer to Detail Supplement or drawings.
- B. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.

- C. Sowing rates vary with mix of species but are usually much lighter than turfgrass seed application rates. Revise to suit Project.
- D. Sow seed at the net rate of 6 oz. /1000 sq. ft.
- E. Brush seed into top 1/16 inch of topsoil, roll lightly, and water with fine spray.
- F. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak and scatter uniformly to a depth of 3/16 inch and roll to a smooth surface.
- G. Water newly planted areas and keep moist until meadow is established.

3.10 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by Sod work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after Sod is established. Remove Erosion-control measures after grass establishment period.

END OF SECTION 02920 – SEEDING AND SODDING (REVISED 2013)

02751- CEMENT CONCRETE PAVEMENT (REVISED 2013)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following;
 - 1. Driveways and roadways.
 - 2. Parking lots.
 - 3. Curbs and gutters.
 - 4. Walkways and all other flatwork.
- B. Related Sections include the following;
 - 1. Division 2 Section “Earthwork” for subgrade preparation, grading, and subbase course.
 - 2. Division 2 Section “Pavement for Joint Sealants” for joint sealants within concrete pavement and at isolation joints of concrete pavement with adjacent construction.

1.3 DEFINITIONS

- A. Cementitious Materials; Portland Cement shall conform to the specifications for Portland Cement (ASTM C-150) and specifications for air-entrained Portland Cement (ASTM C-175 or C-595) and shall be Type IIA (Air-Entraining) cement, unless sulfate conditions allow otherwise. Table 2.2.3 in Chapter 2.2 of ACI 201 presents cement recommendations for sulfate resistances. In addition to the standard chemical requirements for Portland cement in ASTM C-150, the maximum percent of alkalis shall be as specified in Table 2 of ASTM C-150 for low alkali cement. Other types of cement or admixtures are only to be used upon approval by the Owner’s Representative.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Samples: 10-lb sample of exposed aggregate.
- D. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
- E. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements;
 - 1. Cementitious materials and aggregates.

mechanical finishing without springing or settling. Wood forms shall be two inch (2") (nominal) surfaced plant; metal forms shall be approved section and shall have a flat surface on the top of not less than one and three-quarter inches (1-3/4"). Forms shall be thoroughly cleaned of all dirt, mortar, and foreign matter before being used. Unit lengths of forms shall be jointed in advance of the point of placing concrete. Flexible, curbed or wood forms of the proper radii shall be used for curbs having a radius of less than One hundred feet (100'). All forms shall have dimensions of the City of Colorado Springs specified curb and gutter sections.

- D. Forms shall be equipped with not less than three (3) staking points per each ten feet (10') of length with means for securely locking the form to each stake. Flange braces and staking pockets shall extend outward on the base not less than two-thirds (2/3) of the height of the form. Forms that are bent, twisted, warped, broken, or forms that have battered or splintered top faces shall be removed from the job. Repaired forms shall not be used until they have been inspected and approved by the owner's Representative. The top and face of a form shall not vary from a true plane by more than one-fourth inch (1/4") in ten feet (10'). Forms shall be cleaned and oiled before concrete is placed against them. The alignment and grade of forms shall be checked and approved immediately before placing the concrete.

2.2 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Deformed-Steel Welded Wire Fabric: ASTM A 497, flat sheet.
- C. Epoxy-Coated Welded Wire Fabric: ASTM A 884/A 884M, Class A, plain steel.
- D. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed.
- E. Epoxy-Coated Reinforcement Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60, deformed bars.
- F. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
- G. Plain Steel Wire: ASTM A 82, as drawn.
- H. Epoxy-Coated Wire: ASTM A 884/A 884M, Class A coated, plain steel.
- I. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
- J. Epoxy-Coated Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60, plain steel bars.
- K. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- L. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- M. Bar Supports: Bolsters, chairs spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base materials will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer coated wire bar supports.
- N. Epoxy Repair Coating: Liquid two-part epoxy repair coating, compatible with epoxy coating on reinforcement.

2.3 CONCRETE MATERIALS

- A. The amounts and proportions of fine and coarse aggregates shall be such as to produce a plastic, workable mix which can be readily placed into the corners and angles of the forms and around reinforcement and other embedded fixtures without undue accumulation of water or laitance on the surface, and such that there will be no honeycombing in the structure. Proportions of fine and coarse aggregates shall be such that the ratio of the coarse to the fine aggregate shall not be less than one (1) nor more than two (2).
- B. If in the judgment of the Owner's Representative, based on laboratory tests, concrete aggregates from a given source are detrimentally reactive with alkalis in Portland Cement, they shall be used in concrete in combination with low-alkali cement only.
- C. Concrete aggregates shall consist of sand-gravel, gravel, crushed stone, or limestone; the particles shall be clean, hard, tough, durable, of uniform quality, free of any soft, thin, or elongated pieces, disintegrated stone, dirt, organic or other injurious materials occurring either

free or as a coating. All aggregate must be supplied from a source approved by the Owner's Representative. Aggregate shall be made of the following sub sections:

- D. Fine Aggregate: Fine aggregate shall conform to ASTM C-33. Fine aggregate shall consist of sand or other inert materials, or combinations thereof approved by the Owner's Representative, and having hard, strong, durable particles, free from adherent coating. Fine aggregate shall be thoroughly washed to remove shale, coal, mica, clay, loam, alkali, organic matter or other deleterious matter.
1. Deleterious Substances. The amount of deleterious substances in the washed aggregate shall not exceed the following values:
 - a. Clay Lumps & Friable Particles, % by weight 3.0 MAX.
 - b. Coal & Lignite, % by weight 1.0 MAX.
 - c. Friable Particles, % by weight 1.0 MAX.
 - d. Sand Equivalent 75 MIN.
 - e. Fineness Modulus 2.3-3.1 MAX.
 - f. Sodium Sulfate Soundness, % by weight 10 MAX.
 2. Grading. Fine aggregate shall be regularly graded from coarse to fine in two (2) sizes and when tested by means of the U.S. Standard, sieves shall conform to the following requirements expressed as percentages by weight:

Sieve Size or Test Procedure	Percent Passing or Test Requirement *(Concrete Sand)
3/8"	100
No. 4	95-00
No. 8	80-00
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10
No. 200	**0-3

**The fine aggregate shall have not more than 45% passing any sieve and retained on the next consecutive sieve.

- E. Coarse Aggregate. Gravel and crushed stone shall conform to ASTM C-33. Coarse aggregate shall consist of gravel, crushed stone, or other inert material or combinations thereof approved by the Owner's Representative, and having hard, strong, durable pieces free from adherent coating. Coarse aggregate shall be thoroughly washed of clay, loam, bark, sticks, alkali, organic matter, shale, coal, mica, or other deleterious material.

1. Deleterious Substances. The amount of deleterious substances shall not exceed the following values:
 - a. Clay Lumps & Friable Particles, % by weight 3.0 MAX
 - b. Coal & Lignites, % by weight .5 MAX
 - c. Sum of Clay Lumps, Friable Particles and 5.0 MAX
 - d. Chert, % by weight 50 MAX
 - e. Abrasion, % by weight 50 MAX
 - f. Sodium Sulfate Soundness, % by weight 12 MAX

Wood waste is defined as all material which, after drying to constant weight, has a specific gravity less than 1.0.

2. Grading. Coarse aggregate, when tested in conformity with ASTM C-136 shall conform to one or more of the following gradings as called for elsewhere in the specifications, special provisions or on the plans.

Sieve size or Test Procedure	Percent Passing or Test Requirement

	No. 357	No. 467	No. 57
2 1/2"	100	---	---
2"	95-100	100	---
1 1/2"	---	95-100	100
1"	35-70	---	95-100
3/4	---	35-70	---
1/2"	10-30	---	25-60
3/8"	---	10-30	---
No. 4	0-5	0-5	0-10
No. 8	---	---	0-5
No. 200	*1.0 MAX	*1.0 MAX	*1.0 MAX

*1.5 MAX for crusher fines

NOTE: Size No. 67 may also be used on a case-by-case basis when approved by the Owner's Representative. The above values are in percentages by weight from AASHTO M-80 No. 357 and 467. Other gradations may be used when specified by the Owner's Representative.

- F. Concrete Strength. Concrete made from the coarse aggregate, graded to comply with the requirements of these specifications, combined with the specified proportions of cement and the fine aggregate proposed for use with the coarse aggregate shall develop a compressive strength at the age of 28 days of not less than 4000 psi.
- G. Water. Water used in concrete shall be potable, clean, and free from deleterious amounts of acids, alkalis, or any organic materials.
- H. Exposed Aggregate. Selected, hard, and durable; washed; free of material that reacts with cementitious material or causes staining; from a single source, with gap graded coarse aggregate as follows:
 1. Aggregate Sizes: 3/4 to 1 inch nominal.
 2. Aggregate Sizes: 1/2 to 3/4 inch nominal.
 3. Aggregate Sizes: 3/8 to 5/8 inch nominal.

2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures. Calcium Chloride shall not be used as an antifreeze agent. Calcium Chloride as an accelerating agent in amounts not to exceed 1.5% by weight of cement may be used upon the approval of the Owner's Representative.
- B. Air-Entraining Admixture: ASTM C260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.5 FIBER REINFORCEMENT

- A. Synthetic Fiber: Fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III 1/2 to 1-1/2 inches long.
- B. Synthetic Fiber: Fibrillated or monofilament polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.
- C. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
- D. Products: Subject to compliance with requirements, provide one of the following:
 1. Fibrillated Fibers:
 - a. Fibrasol F; Axim Concrete Technologies.
 - b. Fibermesh; Fibermesh, Div. Of Synthetic Technologies.
 - c. Forta; Forta Corporation.

- d. Grace Fibers; W.R. Grace & Co., Construction Products Div.
- 2. Monofilament Fibers:
 - a. Fibrasol IIP; Axim Concrete Technologies.
 - b. Fiberstrand 100; Euelid Chemical Co.
 - c. Fibermix Stealth; Fibermesh, Div. Of Synthetic Industries.
 - d. Forta Mono; Forta Corporation.
 - d. Grace MicroFiber; W.R. Grace & Co., Construction Products Div.
 - f. Polystrand 1000; Metalcrete Industries.

2.6 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. Dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.
- D. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type2, Class B.

2.7 RELATED MATERIALS

- A. Expansion- and Isolation-Joint Filler Strips: ASTM D 1751, asphalt-saturated cellulose fiber.
- B. Coloring Agent: ASTM C979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.
 - 1. Color: As indicated by manufacturer's designation.
 - 2. Color: Match Architect's sample.
 - 3. Color: As selected by Architect from manufacturer's full range.
- C. Pavement-Marking Paint: Latex, water-base emulsion; ready mixed; complying with FS TT-P-1952.
 - 1. Color: As indicated.
 - 2. Color: Blue for handicapped requirements, white elsewhere.
 - 3. Color: Blue for handicapped requirements, yellow for fire lanes, white elsewhere.
- D. Wheel Stops: Precast, air-entrained concrete; 2500-psi minimum compressive strength; approximately 6 inches high, 9 inches wide, and 84 inches long. Provide chamfered corners and drainage slots on underside, and provide holes for dowel-anchoring to substrate.
 - 1. Dowels: #4 rebar steel, minimum length 24 inches.
- E. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.
- F. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- G. Chemical Surface Retarder: Water-soluble, liquid set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch.

2.8 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI211.1 and ACI301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
 - 1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide concrete with the following properties:
 - 1. Compressive Strength (28 days): 4000 psi.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3. Slump Limit: 4 inches.
- D. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at a point of placement having an air content of 4 to 6 percent.
- E. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1.5 percent..

- F. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.5 lb./cu. Yd.
- G. Coloring Agent: Add coloring agent to mix according to manufacturer's written instructions.

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C94.

Specified Compressive Strength at 28 Days 4000 psi	Maximum Water/Cement Ratio by Weight 0.45
Minimum Cement Content per Cubic Yard of Concrete 564 lbs.	

The proportioning of aggregate to cement shall be such as to produce a good workable mix and the slump shall be a maximum of four inches (4") as per ASTM C-143. The equipment for batching of the aggregates, cement, water, and air-entraining agent shall be such that accurate control can be held over the various constituents.

- B. Ready-mixed concrete shall comply with ASTM C-94 for ready-mixed concrete and the following specifications:
- C. Time of Haul: Concrete transportation in truck mixers or truck agitators shall be delivered to the site of work and completely discharged within a period of ninety (90) minutes after the cement comes in contact with the mixing water or with the combined aggregates when the combined aggregates contain free moisture in excess of 2% by weight. If hot weather exists causing the temperature of the concrete to rise above 90 degrees Fahrenheit, then the time of haul shall be within a period of sixty (60) minutes.
- D. Production and Delivery: The production and the delivery of ready-mixed concrete shall be such that placing and finishing shall be continuous in so far as the operations require.
- E. Testing of Concrete: Samples for test cylinders should be taken not less than once each day or not less than each 50 cubic yards of concrete placed. This requirement applies to both reinforced and reinforced concrete work unless otherwise directed by the Owner's Representative. For structural elements, the Owner's Representative may call for additional samples for strength testing.
- F. A minimum of four cylinders shall be prepared for each sample of concrete. Once cylinder shall be strength tested after 7 days of curing time. Two cylinders shall be strength tested after 28 days of curing time.
- G. In the event the initial 28 day cylinder should fail, the remaining two cylinders should be strength tested after 45 days of curing time.
- H. Samples for slump and air-content testing should be taken for each truck delivery or not less than each 12 cubic yards where site batching is performed. The Owner's Representative may vary the frequency of sampling and testing depending on site conditions. The preparation, handling, storage and testing procedures of all samples shall be in conformance with the applicable ASTM and AASHTO standards.
 - 1. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

- B. Remove loose material from compacted subbase subbase surface immediately before placing concrete.
- C. Before any concrete is placed, all equipment for mixing and transporting the concrete shall be cleaned. All debris and ice shall be removed from the places to be occupied by the concrete. Forms shall be thoroughly oiled. Water shall be removed from the place of deposit before concrete is placed. Newly placed concrete shall be protected from any water damage. The top six (6) inches of the bedding or subgrade shall be graded and compacted to a minimum density of 90% ASTM D-1557 prior to placement of the concrete.
- D. When concrete placed on earth surfaces is necessary, the surfaces shall be free from frost, ice, mud and water. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials. Concrete shall not be free dropped from more than four (4) feet.
- E. Equipment for tremming, chuting, pumping, and pneumatically conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery end without separation of materials.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap to adjacent mats.

3.4 JOINTS

- A. General: Construct construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
 - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
 - 1. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
 - 2. Provide tie bars at sides of pavement strips where indicated.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 50 feet, unless otherwise indicated.
 - 2. Extend joint fillers full width and depth of joint.

3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Install dowel bars and support assemblies at joints where indicated. Use 5/8 inch cardboard tube or PVC. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
- E. Contraction Control Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to a least one fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
 - a. Radius: 1/2 inch
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8 inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks. Within 24 hours of initial pour.
- F. Edging: Tool edges of pavement, gutters, curbs and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.
1. Radius: 1/2 inch

3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work. Owner's Representative needs to be notified 24 hours to inspect forms prior to pouring concrete.
- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery, at Project site, or during placement.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI309R.
 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- H. Expansion joints shall be 1/2 inch premolded felt expansion joint material and shall be placed every 50 feet both ways unless otherwise indicated on drawings.
- I. Control joints shall 1 1/2" in depth and shall be placed every five feet (5') each way unless otherwise indicated on drawings.
- J. Base course is to be placed if indicated on drawings and is to be 3/8 +/- crusher waste or gravel to Standard Class 6.
- K. All sleeving under concrete surfaces shall be stamped into surfaced with an "S" on each end of the sleeve.

- L. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surfaces treatments.
- M. Curbs and Gutters. When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.
- N. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finishes, and jointing as required for formed pavement.
 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.
- O. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.
- P. Cold-Weather Placement: Comply with ACI306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. Concrete shall not be placed in cold weather unless the ambient temperature has reached 40 degrees Fahrenheit at 9:00 a.m., and the temperature is rising. Cold weather protection blankets, etc. will be required for five days after concrete has been placed. Uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 deg F at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- Q. Hot-Weather Placement: Place concrete according to recommendations in ACI305R and as follows when hot-weather conditions exist:
 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.6 CONCRETE FINISHING

- A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.
 1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture. Or as otherwise indicated on drawings.

3.7 SPECIAL FINISHES

- A. Monolithic Exposed Aggregate Finish: Expose coarse aggregate to pavement surfaces as follows:
 1. Immediately after floating, spray-apply chemical surface retarder to pavement according to manufacturer's written instructions.
 2. Cover with plastic sheeting, scaling laps with tape, and remove when ready to continue finishing operations.

3. Without dislodging aggregate, remove excess mortar by lightly brushing surface with a stiff, nylon bristle broom.
 4. Fine-spray surface with water and brush. Repeat water flushing and brushing cycle until cement film is removed from aggregate surfaces to depth required.
- B. Slip-Resistant Aggregate Finish: Before final floating, apply slip-resistant aggregate finish to pavement surfaces according to manufacturer's written instructions and as follows.
1. Uniformly spread 25 lb/100 sq. ft. of dampened non slip aggregate over the surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface.
 2. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose non slip aggregate.
- C. Colored Dry-Shake Hardener Finish: After initial floating, apply colored dry-shake materials to pavement surfaces according to manufacturer's written instructions and as follows:
1. Uniformly apply colored dry-shake materials at a rate of 100 lb/100 sq. ft. unless greater amount is recommended by manufacturer to match pavement color required.
 2. Uniformly distribute approximately two-thirds of colored dry-shake material over the concrete surface with mechanical spreader, and embed by power floating. Follow power floating with a second shake application, uniformly distributing remainder of dry-shake material to ensure uniform color, and embed by power floating.
 3. After final floating, apply a hand-trowel finish followed by a broom finish to concrete. Cure concrete with curing compound recommended by dry-shake material manufacturer. Apply curing compound immediately after final finishing.

3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI306.1 for cold-weather protection and follow recommendations in ACI305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb./sq. ft x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination to these as follows:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.9 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
1. Elevation: 1/4 inch
 2. Thickness: Plus 3/8 inch minus 1/4 inch.
 3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/4 inch.

4. Lateral Alignment and Spacing of Tie Bars and Dowels; 1 inch.
5. Vertical Alignment of Tie-Bars and Dowels: 1/4 inch.
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
8. Joint Spacing: 3 inches.
9. Contraction Joint Dept: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Owner's Representative.
- B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.11 WHEEL STOPS

- A. Securely attach wheel stops into pavement with #4 rebar steel, minimum length 24 inches.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.
- B. Testing Services: Testing shall be performed according to the following requirements:
 1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C172, except modified for slump to comply with ASTM C94.
 2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
 3. Air Content: ASTM C231, pressure method; one test for each compressive-strength test, but not less than one test for each day's pour of each type of air-entrained concrete.
 4. Concrete Temperature: ASTM C1064; one test hourly when air temperature is 40 degrees F and below and 80 degrees F and above, and one test for each set of compressive-strength specimens.
 5. Compression Test Specimens: ASTM C31/C 31M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
 6. Compressive-Strength Tests: ASTM C39; one set for each day's pour of each concrete class exceeding 5 cu. Yd, but less than 25 cu. Yd., plus one set for each additional 50 cu. Yd. One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required.
 7. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 8. When total quantity of a given class of concrete is less than 50 cu. yd. Owner's Representative may waive compressive-strength testing if adequate evidence of satisfactory strength is provided.
 9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.
 10. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive-strength by more than 500 psi.

- C. Test results shall be reported in writing to Owner's Representative, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 14- day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Owner's Representative but will not be used as the sole basis for approval or rejection.
- E. Additional Tests: Testing agency shall make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Owner's Representative. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

3.13 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section. Contractor is required to repair or replace any defects that occur during the contract period as set forth in the contract documents. To include but not limited to the following:
- B. Work showing, a patch, chips or other cracking appearance or other finish blemishes or apparent "lap" marks of improper troweling will be rejected, removed and replaced at the Contractor's expense.
- C. The Contractor shall erect barricades, snow fencing, or take appropriate measures to totally protect concrete until it has thoroughly hardened. Any area marked or defaced in any manner shall be removed to the nearest expansion or contraction joint and be replaced at no additional costs to the Owner.
- D. No patched or cover materials will be accepted on a new pour, to hide any defects in original surface. Only with prior approval from Owner's Representative.
 - 1. Spauling.
 - 2. Cracking over 1/8" wide.
 - 3. Any settling greater than 3/4", that would cause uneven surfaces will be replaced.
- E. Drill test cores where directed by Owner's Representative when necessary to determine magnitude of cracks of defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- F. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- G. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 02751 – CEMENT CONCRETE PAVEMENT (REVISED 2013)

02300 EARTHWORK (REVISED 2013)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes the following:
 - 1. Surveying and grade staking.
 - 2. Preparing subgrades for slabs-on-grade, walks, pavements, turfs, and plantings.
 - 3. Excavating and backfilling for building and structures.
 - 4. Drainage course of slabs-on-grade.
 - 5. Subbase course for concrete walks and pavements. If indicated on drawings.

6. Base course for asphalt paving.
 7. Subsurface drainage backfill for walls and trenches.
 8. Excavating and backfilling trenches within building lines.
 9. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.
 10. Rough Grading
 11. Finish Grading
 12. Site clean up
 13. Specialty subgrade preparations for pond liners, artificial turf fields, and courts.
- B. Related Sections include the following:
1. Division 1 Section "Construction Facilities and Temporary Controls."
 2. Division 2 Section "Site Clearing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.
 3. Division 2 Section "Tree Protection and Trimming" for protecting and trimming trees to remain.
 4. Division 2 Section "Landscaping" for finish grading, including placing and preparing topsoil for Turfs and plantings.

1.3 UNIT PRICES

- A. Rock Measurement: Volume of rock actually removed, measured in original position, but not to exceed the following:
1. 24 inches outside of concrete forms other than at footings.
 2. 12 inches outside of concrete forms at footings.
 3. 6 inches outside of minimum required dimensions of concrete cast against grade.
 4. Outside dimensions of concrete walls indicated to be cast against rock with out forms or exterior waterproofing treatments.
 5. 6 inches beneath bottom of concrete slabs on grade.
 6. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.
- B. Unit prices for rock excavation include replacement with approved materials.

1.4 DEFINITIONS

- A. Backfill: Soil materials used to fill and excavation.
1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the subbase course and asphalt paving.
- C. Bedding Course: Layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations.
1. Additional Excavation: Excavation below subgrade elevations as directed by Owner's Representative. Additional excavations and replacement material will be paid for according to Contract provisions for changes in the Work.
 2. Bulk Excavation: Excavations more than 10 feet in width and pits more than 30 feet in either length or width.
 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by Owner's Representative. Unauthorized excavation, as well as remedial work directed by Owner's Representative, shall be with out additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Rock: Rock Material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material exceeding 1 cu. yd. for bulk excavation or ¾ cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
1. Excavation of Footing, Trenches, and Pits: Late-model, track-mounted hydraulic excavator, equipped with a 42-inch wide, short-tip-radius rock bucket; rated at not less than 120-hp flywheel power with bucket-curling force of not less than 25,000 lbf and stick-crowd force of not less than 18,700 lbf; measured according to SAE J-1179.

- 2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 45,000-lbf breakout force; measured according to SAE J-732.
- I. Rock: Rock material in beds, ledges, unstratified masses, and conglomerate deposits and boulders of rock material $\frac{3}{4}$ cu. yd. or more in volume that when tested by an independent geotechnical testing agency, according to ASTM D 1586, exceeds a standard penetration resistance of 100 blows/2 inches.
- J. Scarify: Preparation of an existing grade or subgrade by uniformly and mechanically breaking up the soils to a predetermined depth.
- K. Structures: Buildings, footings, foundation, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, other man-made stationary features constructed above or below the ground surface.
- L. Subbase Course: Layer placed between the subgrade and base course for asphalt paving, or layer placed between the subgrade and a concrete pavement or walk.
- M. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- N. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Each type of plastic warning tape.
 - 2. Drainage fabric.
 - 3. Separation fabric.
- B. Samples: For the following:
 - 4. 30-lb samples, sealed in airtight containers, of each proposed soil material from on-site or borrow sources.
 - 5. 12-by-12-inch sample of drainage fabric.
 - 6. 12-by-12-inch sample of separation fabric.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D 698 for each on-site or borrow soil material proposed for fill and backfill.
 - 3. Laboratory compaction curve according to ASTM D 1557 for each on-site or borrow soil material proposed for fill and backfill.
- D. Blasting plan approved by authorities having jurisdiction, for record purposes.

QUALITY ASSURANCE

- A. Comply with applicable requirements of NFPA 495, "Explosive Materials Code."
- B. Seismic Survey Agency: An independent testing agency, acceptable to authorities having jurisdiction, experienced in seismic surveys and blasting procedures to perform the following services:
 - 1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 - 2. Seismographic monitoring services during blasting operations.
- C. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.
- D. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.6 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Owner's Representative and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Owner's Representative not less than two working days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without written permission from Owner's Representative.

3. Contact utility-locator services for area where Project is located, at least 48 hours prior to commencing excavating. Call 1-800-922-1987 for all utility locations, including TV cable.
- B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: ASTM D 2487 soil classification groups, MH, CH, OL, OH, and PT, or a combination of these group symbols.
- D. Backfill and Fill: Satisfactory soil materials.
- E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 3/4 inch sieve and not more than 8 percent passing a No. 200 sieve.
- G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- I. Drainage Fill: Washed, uniformly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- J. Filter Material: Uniformly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

2.2 ACCESSORIES

- A. Warning Tape: Acid-and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
- B. Detectable Warning Tape: Acid-and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.
- C. Drainage Fabric: Nonwoven geotextile, specifically manufactured as a drainage geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D4759 and referenced standard test methods:
 1. Grab Tensile Strength: 120 lbf; ASTM D 4632.
 2. Tear Strength: 50 lbf; ASTM D 4533
 3. Puncture Resistance: 70 lbf; ASTM D4833
 4. Water Flow Rate: 135 gpm per sq. ft.; ASTM D 4491.
 5. Apparent Opening Size: No. 70; ASTM D4751
- D. Separation Fabric: Woven geotextile, specifically manufactured for use as a separation geotextile; made from polyolefins, polyesters, or polyamides; and with the following minimum properties determined according to ASTM D4759 and referenced standard test methods.

2. Tear Strength: 75 lbf; ASTM D 4533.
3. Puncture Resistance: 90 lbf; ASTM D 4833.
4. Water Flow Rate: 4 gpm per sq. ft.; ASTM D 4491.
5. Apparent Opening Size: No. 30; ASTM D 4751.

PART 3 - EXECUTION

3.1 PREPARTION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DE-WATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 1. Obtain de-watering permit if required.
 2. Reroute surface water runoff away from excavation areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
 3. Install a de-watering system to keep subgrades dry and convey ground water away from excavations. Maintain until de-watering is no longer required.

3.3 EXPLOSIVES

- A. Explosives: Obtain written permission from authorities having jurisdiction before bringing explosives to Project site or using explosives on Project site.
 1. Do not damage adjacent structures, property, or site improvements or weaken the bearing capacity of rock subgrade when using explosives.

3.4 SURVEYING AND GRADE STAKING

- A. Before earthwork operations are started, the site shall be completely staked out by the Contractor for the work of this section for the approval of the Owner's Representative. Surveying and staking is to be done by a City approved licensed surveyor.
- B. Grade stakes shall be set where spot elevations are shown on drawings as well as breaks in grade, along drainage swales and as otherwise required, to complete the work of this section to the elevations shown on the drawings or as modified in the field by the Owner's Representative.
- C. Maintain all benchmarks and other reference points; if disturbed or destroyed, notify the Owner's Representative and replace as directed.
- D. All surveys to consist of (50') foot grids with spot elevations unless otherwise specified.
- E. Rough Grade: Refer to Section 3.17 Rough Grading.
- F. Blue Tops: Refer to Section 3.19 Blue Topping.

3.5 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.
 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Classified Excavation: Excavation to subgrade elevations classified as earth and rock. Rock excavation will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.
 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
 2. Rock excavation includes removal and disposal of rock.

Representative.

C. Protection, Shoring and Bracing.

1. In the event that existing utilities, structures, or underground water is encountered or exposed during the execution of this work, the Contractor shall notify the Owner's Representative immediately for procedures to follow.
2. Install and maintain shoring, bracing and safety fencing or safety tape as required to keep structures, sidewalks, drives and streets safe to life, limb and property at all time. Provide shoring and bracing as required to stabilize earth slopes.
3. Provide necessary decking, guards, fences, or planking to maintain safe pedestrian and vehicular traffic on and adjacent to the site.
4. Keep public streets and existing paved areas clean at all times.

3.6 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete form work, for installing services and other construction, and for inspections.
1. Excavations for footing and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 2. Pile Foundations: Stop excavations from 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.
 4. Compliance with City of Colorado Springs grading and erosion control plan as per drainage criteria manual, (manual can be obtained from the City of Colorado Springs Engineering Division).

3.7 EXCAVATION FOR POND LINERS, COURTS, ARTIFICIAL TURF FIELDS, WALKS AND PAVEMENTS

- A. Excavate surfaces under pond liners, courts, artificial turf fields, walks and pavements to indicated cross sections, elevations, and grades.

3.8 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
1. Beyond building perimeter, excavate trenches to allow installation of tops of pipe in accordance with local requirements.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
1. Clearance: 12 inches on each side of pipe or conduit.
 2. Clearance: As indicated.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
1. For pipes and conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.
 3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.9 APPROVAL OF SUBGRADE

- A. Notify Owner's Representative when excavations have reached required subgrade.
- B. If Owner's Representative determines that unsatisfactory soil is present, continue excavation and

1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulator water, or construction activities, as directed by Owner's Representative.

3.10 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footings by extending bottom, without altering top elevation. Lean concrete fill may be used when approved by Owner's Representative.
 1. Fill unauthorized excavations under other construction or utility pipe as directed by Owner's Representative.

3.11 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Conform to fugitive dust permit.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.12 BACKFILL

- A. Place and compact backfill excavations promptly, but not before completing the following:
 1. Construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 2. Surveying locations of underground utilities for record documents.
 3. Inspecting and testing underground utilities.
 4. Removing concrete formwork.
 5. Removing trash and debris.
 6. Removing temporary shoring and bracing, and sheeting.
 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.13 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.
- C. Place compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.
 1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- D. Coordinate backfilling with utilities testing.
- E. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.
- F. Place and compact final backfill of satisfactory soil material to final subgrade.
- G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.14 FILL

- A. Preparation: In areas requiring fill, all stripping operations shall be completed before backfilling has begun. Place fill and backfill on reasonably dry soil. No fill shall be placed on wet ground. Fill shall be laced in eight inch (8") lifts in compacted depth under pavements or concrete and ten inch (10") lifts compacted depth under planted, turfed or other areas. Each layer shall be compacted to a firm surface by sheepfoot rollers or pneumatic rollers. Fill and backfill shall be compacted to 85% density under areas to be turned or planted and 95% density under all pavements and improvements. Density tests shall be modified Proctor Test taken at optimum moisture content.
- B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

- C. Place and compact fill material in layers to required elevations as follows:
 1. Under grass and planted areas, use satisfactory soil material, in no more than 10" lifts.
 2. Under walks and pavements, use satisfactory soil material, in no more than 8" lifts.
 3. Under steps and ramps, use engineered fill.
 4. Under building slabs, use engineered fill.
 5. Under footing and foundations, use engineered fill.
- D. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

3.15 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 1. Do not place backfill of fill material on surfaces that are muddy, frozen, or contain frost or ice.
 2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percents and is too wet to compact to specified dry unit weight.

3.16 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil to not less than the following percentages of maximum dry unit weight according ASTM D 1557:
- D. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.
 3. Under Turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.17 ROUGH GRADING

- A. General: Uniformly grade all areas covered by the project, including excavated and fill sections. The finished surface shall be smooth, within a 1/10 of a foot compacted and free from irregular surface changes. The degree of finish shall be that ordinarily obtainable from blade grade operations. The final surface shall be not more than (.1) feet above or below the established grade or approved cross section.
 1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 1. Turf or Unpaved Areas: Plus or minus 1/10 of an inch.
 2. Walks: Plus or minus 1/10 of an inch.
 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.
- D. Contractor to provide survey to verify grades, to include swales, to satisfaction of Owner's Representative.
- E. The Owner's Representative shall approve final rough grade, prior to Contractor proceeding with any permanent site improvements.

3.18 FINISH GRADING

- A. Upon completion of construction, all areas which have been excavated, filled, or otherwise disturbed shall be covered with earth to a depth required to bring finished grade to the elevation indicated on drawings. This shall include the depth of topsoil.
- B. Topsoil shall be placed to provide a minimum depth of four inches (4") in all areas to receive, sod or as otherwise indicated.
- C. Topsoil shall be graded and dragged to prevent irregularities and depressions in which water will be retained.

3.19 BLUE TOPPING

- A. Provide blue top staking at 50 foot grids in all disturbed areas to receive imported topsoil and sodded turfgrass, to be done for all areas 5% or less, as well as under all areas to receive asphalt pavement.

3.20 SUBSURFACE DRAINAGE

- A. Drainage Piping: Drainage pipe is specified in Division 2 Section "Foundation Drainage Systems."
- B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench as indicated. Place a 6-inch course of filter material on drainage fabric to support drainage pipe. Encase drainage pipe in a minimum of 12 inches of filter material and wrap in drainage fabric, overlapping sides and ends at least 6 inches.
 - 1. Compact each course of filter material to 95 percent of maximum dry unit weight according to ASTM D 698.
- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.
 - 1. Compact each course of filter material to 95 percent of maximum dry density according to ASTM D 698.
 - 2. Place and compact impervious fill material over drainage backfill to final subgrade.

3.21 SUBBASE AND BASE COURSES

- A. Under pavements and walks, place subbase course on prepared subgrade and as follows: If indicated on drawings.
 - 1. Place base course material over subbase.
 - 2. Compact sub base and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
 - 3. Shape subbase and base to required crown elevations and cross-slope grades.
 - 4. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.
 - 5. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- B. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.22 DRAINAGE COURSE

- A. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:
 - 1. Compact drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
 - 2. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.
 - 3. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more that 6 inches thick or less than 3 inches thick when compacted.

3.23 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. A sufficient number of density tests of the backfill and subgrade may be ordered by the Owner's Representative to determine that the backfill and subgrade complies with the appropriate Subsection of this Section.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Owner's Representative.
- D. Testing agency with test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2992, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.
 - 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained. These tests shall be made by an approved testing laboratory and paid for by the City on a first time basis only.
- F. Owner's Representative shall approve final rough grade.

3.24 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Owner's Representative; reshape and re-compact.
- C. Where settling occurs before contract period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.25 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property. All associated costs and fees will be the responsibility of the contractor.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner's Representative.

3.26 SCARIFY EXISTING GRADE AND SUBGRADE

- A. Prepare an existing grade or subgrade by uniformly and mechanically breaking up the soils to the depth shown on the construction plans, geotechnical report, or as directed by the owner's representative.
- B. Testing of the subgrade moisture content will be at the discretion and direction of the owner's representative. The moisture content will be adjusted to 2% of the optimum prior to final grade and compaction.

- C. The subgrade will be compacted to compliance with the recommendations of the geotechnical report, construction plans, and City of Colorado Springs Engineering Standards.
- D. Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property. All associated costs and fees will be the responsibility of the contractor.
- E. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner's Representative.

END OF SECITON 02300

02230 SITE CLEARING (REVISED 2013)

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 1. Examination of the site.
 2. Marshalling and access.
 3. Protecting existing trees and vegetation to remain.
 4. Removing trees and other vegetation.
 5. Clearing and grubbing.
 6. Topsoil stripping.
 7. Removing above-grade site improvements.
 8. Disconnecting, capping or sealing, and abandoning site utilities in place.
 9. Disconnecting, capping or sealing, and removing site utilities.
- B. Related Sections include the following:
 1. Division 1 Section "Field Engineering" for verifying utility locations and for recording field measurements.
 2. Division 1 Section "Construction Facilities and Temporary Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities and environmental protection measures during site operations.
 3. Division 2 Section "Tree Protection and Trimming" for protecting trees remaining on-site that are affected by site operations.
 4. Division 2 Section "Earthwork" for soil materials, excavating, backfilling, and site grading.
 5. Division 2 Section "Landscaping" for finish grading, including placing and preparing topsoil for lawns and planting.

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than ¾ inches in diameter; and free of weeds, roots and other deleterious materials.

1.4 MATERIALS OWNERSHIP

- A. Except for materials to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.5 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings according to Division 1 Section "Contract Close-out."
 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, and mechanical conditions.

- C. An approved traffic control plan and all environmental permits as required by local and state agencies.

1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.7 PROJECT CONDITIONS

- A. The Contractor shall visit, inspect and thoroughly become familiar with the site and the scope of work. The Contractor will judge conditions that will exist when carrying out the contract. The Contractor shall meet with the Owner's Representative to determine the point of access and marshaling area to be utilized to perform this work. No gasoline, oil concrete or other material shall be dumped anywhere on site.
- B. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
 - 3. When working in the City Right of Way, submit an approved traffic control plan to Owner's Representative.
- C. Improvements on Adjoining Property: Authority for performing indicated removal and alteration work on property adjoining Owner's property will be obtained by owner before award of Contract.
- D. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- E. Notify utility locator service for area where Project is located before site clearing.

PART 2-PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3-EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Submit a storm water control plan and fugitive dust permit as required by local and state agencies.
- C. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Locate and clearly flag trees and vegetation to remain or to be relocated.
- E. Refer to City of Colorado Springs stormwater management manual.
- F. Protect existing site improvements both in and outside of construction zone.
 - 1. Restore damaged improvements both on and off the site to their original condition, as acceptable to Owner.

3.2 TREE PROTECTION

- A. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
 - 2. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Refer to the related plans as indicated, and/or consult with the City Forester or the Designee assigned to the project.
- D. Furnish all labor, material, tools, and equipment necessary to complete the work indicated on

- E. Existing trees to remain shall be protected at all times during the Contract period, by using fencing (i.e., snow fencing, or chain link fencing with metal staking). Tree protection fencing shall be maintained by the Contractor during construction. The Protection area to be fenced (2') outside the dripline of the tree unless otherwise required by the Owner's Representative. No equipment shall be parked, driven or material stockpiled within the dripline area of the existing trees to remain. No gasoline, oil, chemicals, concrete or other material shall be dumped anywhere on site. Where vehicle or equipment traffic is necessary in the protection area of a tree, the soil shall be protected from compaction by (6"-10") layer of wood chip mulch.
- F. Any trees damaged during construction shall be promptly reported to the Owner's Representative, who shall contact the City Forester or the Designee for an assessment of damages. The contractor will be responsible for repair or replacement to the satisfaction of the City Forester or the Designee.
- G. Tree roots are to be clean cut when necessary using proper equipment, i.e. loppers or concrete saw. The Contractor shall submit with the Bid the cost to implement proper boring under roots.
- H. The City Forester or the Designee will be informed of all construction projects, especially when trees are involved.
- I. The City Forester or the Designee will survey the site to set and determine what the contractor needs to do before construction begins. The Contractor shall set up tree protection devices.
- J. The City Forester or the Designee shall be informed of:
 1. Soil grade changes adjacent to trees.
 2. Probable trenching through roots.
 3. Location of stored heavy equipment.
 4. Paths heavy equipment will take during construction project, to avoid root compaction and root breakage.
- K. The City Forester or the Designee shall be notified during the project design phase, to aid in tree protection during the primary phase.
 1. When equipment must be used in close proximity of the trunk, the entire tree trunk shall be protected by banding large 2"x4" wooden boards to avoid direct contact. The soil shall be protected from compaction with a 6-10" layer of wood chip mulch.
 2. The Forestry Division will conduct all pruning if limb elevation is needed to avoid equipment contact.
- L. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 1. Cover exposed roots with burlap and water regularly.
 2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
 3. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.
- M. Rehabilitate or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.
 1. Employ a qualified arborist, as approved by the City Forester or the Designee, to submit details of proposed rehabilitation for the damage to trees and shrubs.
 2. The Contractor will replace trees that cannot be rehabilitated and restored to full-growth status, as determined by the qualified arborist and the City Forester or the Designee

3.3 UTILITIES

- A. Contractor will coordinate for disconnecting and sealing indicated utilities that serve existing structures before site clearing with Owner's Representative.
 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 2. Arrange to shut off indicated utilities with utility companies.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or other unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner's Representative not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's Representative written permission. D. Excavate for and remove underground utilities indicated to be removed.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 3. Completely remove or grind stumps, roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 4. Use only hand methods for grubbing within drip line of remaining trees.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
 1. Place fill material in horizontal layers not exceeding 8-inch loose depth, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 1. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil.

Grade and shape stockpiles to drain surface water. Comply with fugitive dust permit.

 1. Do not stockpile topsoil within drip line of remaining trees.
 2. Dispose of excess topsoil as specified for waste material disposal.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

3.7 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property. All associated costs and fees are the responsibility of the contractor.

END OF SECTION 02230 SITE CLEARING (REVISED 2013)

02231 TREE PROTECTION AND PRUNING (REVISED 2013)

PART 1-GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the protection and pruning of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary of Work" for limits placed on Contractor's use of the site.
 - 2. Division 1 Section "Construction Facilities and temporary Controls" for temporary tree protection.
 - 3. Division 2 Section "Site Clearing" for removal limits of trees, shrubs, and other plantings affected by new construction.
 - 4. Division 2 Section "Landscaping: for tree and shrub planting and transplanting, tree support systems, and soil materials.
- C. The Contractor shall visit, inspect and become thoroughly familiar with the site and the scope of work. The Contractor will judge the conditions that will exist when he carries out his contract.
- D. The Contractor shall meet with the Owner's Representative to determine the point of access and marshaling area to be utilized to perform this work.
- E. Refer to the related guidelines as indicated, and/or consult with the City Forester or the Designee assigned to the project.
- F. Furnish all labor, materials, tools, and equipment necessary to complete the work indicated on drawings and as required herein. This shall include:
 - 1. Proper root cutting.
 - 2. Erecting the required fencing when needed.
 - 3. Installing the correct and necessary tree barrier devices.
 - 4. Protecting the soil around trees from compaction.
- G. The City Forester or the designee will be informed of all construction projects, especially when trees are involved.
- H. The City Forester or the designee will survey the site to set up tree protection devices and determine what the Contractor needs to do, before construction begins.
- I. The City Forester or the designee shall be informed of:
 - 1. Soil grade changes adjacent to trees.
 - 2. Probable trenching through roots.
 - 3. Location of stored heavy equipment.
- J. Paths heavy equipment will take during construction project, to avoid root compaction and root breakage.
- K. The City Forester shall be notified during the project design phase, to aid in tree protection during the primary phase.
- L. When equipment must be used in close proximity of the trunk, the entire tree trunk shall be protected by banding large 2"x4" wooden boards to avoid direct contact. The soil shall be protected from compaction with a 6-10" layer of wood chip mulch.

1.3 SUBMITTALS

- A. Maintenance Recommendations: From a qualified arborist for acre and protection of trees affected by construction during and after completing the Work.

1.4 QUALITY ASSURANCE

- A. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."
 - 1. Before starting tree protection and pruning, meet with representatives of authorities having jurisdiction, Owner, Architect, consultants, and other concerned entities. Review tree protection and pruning procedures and responsibilities. Notify participants at least three working days before convening conference. Record discussions and agreements and furnish a copy to each participant.

PART 2-PRODUCTS

2.1 MATERIALS

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
- B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with ASTM D 5268.

Provide topsoil, that is free of stones larger than 1 inch in any dimension and free of other extraneous or toxic matter harmful to plant growth. Obtain topsoil only from well-drained sites where soil occurs in depth of 4 inches or more; do not obtain from bogs or marshes.
- C. Filter Fabric: Manufacturer's standard, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.
- D. Construction fence with T-posts.

PART 3-EXECUTION

3.1 PREPARATION

- A. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.
 - 1. Install construction fencing.
- B. Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by de-watering operations.
- C. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
- D. Existing trees to remain shall be protected at all times during the Contract period, by using fencing (i.e., snow fencing, construction fencing with metal staking). Tree protection fencing shall be maintained by the Contractor during construction. The protection area to be fenced (2') outside the drip line of the tree unless otherwise required by the Owner's Representative. No equipment shall be parked, driven or material stockpiled within the drip line area of the existing trees to remain. No gasoline, oil, chemicals, concrete or other material shall be dumped anywhere on site. Where vehicle or equipment traffic is necessary in the protection area of a tree, the soil shall be protected from compaction by (6"-10") layer of wood chip mulch.

3.2 EXCAVATION

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems.

3.2 EXCAVATION

- D. Where utility trenches are required within drip line of trees, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
 - 1. Root Pruning: Prior approval is needed from the City Forester or Designee to cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; i.e. chain saw, reciprocating saw or pruning saw. Stump grinding equipment allowed so long as the final cut is clean, not ragged. Do not break, chop, rip or otherwise mangle roots.

3.3 RE-GRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond drip line of trees. Maintain existing grades within drip line of trees.

3.4 TREE PRUNING

- A. The Forestry Division will conduct all pruning if limb elevation is needed to avoid equipment contact.

3.5 TREE REPAIR AND REPLACEMENT

- A. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and sand. Aeration of the surface soil may be required due to compaction during construction.
- B. Any trees damaged during construction shall be promptly reported to the Owner's Representative, who shall contact the City Forester or designee for an assessment of damages. The Contractor will be responsible for repair or replacement to the satisfaction of the City Forester or designee.

3.6 DISPOSAL OF WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, and excess chips from Owner's property. Burning is not permitted, dispose off site legally.

**END OF SECTION 02231 – TREE PROTECTION AND PRUNING
(REVISED 2013)**

SCHEDULE C

EXHIBITS

This section includes the examples of the forms used for submitting the required bonds as well as Federal Forms (Appendix 4), Representations and Certifications (Appendix 5) and Minimum Insurance Requirements (Appendix 6) which are due with your bid submission.

Appendix 1 -- Performance Bond

Appendix 2 -- Labor and Material Payment Bond

Appendix 3 -- Maintenance Bond

Appendix 4 -- Federal Forms

Appendix 5 -- Representations and Certifications

Appendix 6 -- Minimum Insurance Requirements

Appendix 7 -- Change Order Form

ATTACHMENT 1

Sample Contract

ATTACHMENT 2

Site Maps and Drawings

ATTACHMENT 3

FEMA prepared damage description and scope of work – FOR INFORMATION ONLY

ATTACHMENT 4

Arkansas Valley Seed "Foothills Mix" Specifications

APPENDIX 1

**PERFORMANCE BOND
CITY OF COLORADO SPRINGS PERFORMANCE BOND**

1. KNOW ALL MEN BY THESE PRESENTS, THAT:

(Name) _____ As Principal, hereinafter called Principal, and

(Address) _____

(SURETY Name) _____ a corporation organized and existing under
the laws of the State of:

(SURETY Address)

and AUTHORIZED TO DO BUSINESS IN THE STATE OF COLORADO, as Surety, hereinafter called Surety, are held firmly bound to the CITY OF COLORADO SPRINGS, COLORADO, as Obligee, hereinafter called the Obligee, in the sum of: (Insert Proposal Amount in Words)

(\$ DOLLARS),

lawful money of the United States of America, for payment of which sum well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS, the Principal and the Obligee have entered into,

a contract dated the _____ day of _____ For the following project:

Contract # _____ which contract is by reference made a part hereof, and referred to as the Contract.

3. NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT if the Principal shall promptly and faithfully perform all terms, conditions and other obligations of the Contract, and any modifications or extensions thereof granted by the Obligee, then this obligation shall be null and void: otherwise this obligation shall remain in full force and effect.

4. The Surety for value received agrees that no extension of time, change in, addition to, or other alteration modification of the terms, conditions or obligations of the Contract or work to be performed thereunder, or any forbearance on the part of either the Obligee or the Principal to the other shall in any way release or affect the liability or obligation of this Bond, and the Surety hereby waives notice of any such extension of time, change, addition, modification, alteration or forbearance.

Signed and sealed on the dates set forth below:

(Witness) FOR: _____
(Principals Name)

BY: _____

ITS: _____

(Seal) This _____ Day of _____

(Witness) FOR: _____
(Surety's Name)

BY: _____

ITS: _____

(Seal) This _____ Day of _____

Bond # _____ This Bond __ (is) __ (is not) a SBA Guaranteed Bond.

APPENDIX 2

CITY OF COLORADO SPRINGS LABOR & MATERIAL PAYMENT BOND

1. KNOW ALL MEN BY THESE PRESENTS, THAT:

(Name) As Principal, hereinafter called Principal, and

(Address)

(SURETY Name) a corporation organized and existing under the laws of the State of:

(SURETY Address)

and AUTHORIZED TO DO BUSINESS IN THE STATE OF COLORADO, as Surety, hereinafter called Surety, are held firmly bound to the CITY OF COLORADO SPRINGS, COLORADO, as Oblige, hereinafter called the Oblige, in the sum of: (Insert Proposal Amount in Words)

(\$ ██████████ DOLLARS),

lawful money of the United States of America, for payment of which sum well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS, the Principal and the Oblige have entered into,

a contract dated the _____ day of _____ For the following project:

Contract # _____ which contract is by reference made a part hereof, and referred to as the Contract.

3. NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the Principal shall promptly make payments of all amounts lawfully due to all persons supplying or furnishing the Principal or the Principals subcontractors with labor, materials, rental machinery, tools or equipment used or performed in the prosecution of the work provided for in the Contract; and if the Principal shall indemnify and save harmless the Oblige to the extent of any payments in connection with the carrying out of the Contract which the Oblige may be required to pay under the law, all in accord with Colorado State Law, Section 38-26-105 C.R.S., then this obligation shall be null and void; otherwise this obligation shall remain in full force and effect.

AND FURTHER, should the Principal or the Principals subcontractors fail to duly pay for any labor, materials, team hire, sustenance, provisions, provender, or other supplies used or consumed by the Principal or the Principals subcontractors in the performance of the work contracted to be done or fails to pay any person who supplies rental machinery, tools or equipment, all amounts due as the result of the use of such machinery, tools, or equipment, in the prosecution of the work under the Contract, the Surety shall pay the same in an amount not exceeding the sum specified in this Bond together with interest at the rate of eight percent per annum, in accord with Colorado State Law, Section 38-26-106 C.R.S.

In accord with Colorado State Law, Section 38-26-105 C.R.S., actions against the Principal and Surety under this Bond shall be brought within six months after the final completion of the Contract as defined by the ordinances, rules and regulations of the City of Colorado Springs, Colorado, a home rule City, and not afterwards.

4. The Surety for value received agrees that no extension of time, change in, addition to, or other alteration or modification of the terms, conditions or obligations of the Contract or work to be performed thereunder, or any forbearance on the part of either the Oblige or the Principal to the other shall in any way release or affect the Surety's liability or obligation on this Bond, and the surety hereby waives notice of any such extension of time, change, addition, modification, alteration or forbearance.

Signed and sealed on the dates set forth below:

(Witness) FOR: _____
(Principals Name)

Page Two (2) of Labor & Material Payment Bond

(Seal) _____
BY: _____
ITS: _____
This _____ day of _____
FOR: _____
(Witness) _____
(Surety's Name)
BY: _____
ITS: _____
(Seal) _____
This _____ day of _____
Bond # _____
This Bond ___ (is) ___ (is not) a SBA Guaranteed Bond.

APPENDIX 3

CITY OF COLORADO SPRINGS MAINTENANCE BOND

1. KNOW ALL MEN BY THESE PRESENTS, THAT:

(Name)

As Principal, hereinafter called Principal, and

(Address)

(SURETY Name)

a corporation organized and existing under the laws of the State of:

(SURETY Address)

and AUTHORIZED TO DO BUSINESS IN THE STATE OF COLORADO, as Surety, hereinafter called Surety, are held firmly bound to the CITY OF COLORADO SPRINGS, COLORADO, as Oblige, hereinafter called the Oblige, for the use and benefit of claimants as herein below defined, in the amount of: (Insert Proposal Amount in Words)

_____ (\$ _____ DOLLARS),

lawful money of the United States of America, together with interest as may be provided by law, for the maintenance and guarantee obligations of the Contract, for the payment whereof Principal and Surety bind themselves, their heirs, executors, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS, the Principal and the Oblige have entered into,

a contract dated the _____ day of _____ For the following project:

Contract # _____ which contract is by reference made a part hereof, and referred to as the Contract.

3. NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the Principal shall promptly, properly and without cost to Oblige perform all maintenance and other guarantee obligations under the terms of the Contract, including any modifications or extensions thereof granted by the Oblige, for a period of TWO (2) year(s) from the date of final payment upon the Contract by the Oblige, and in the case of each correction or repair, during a period of one year after the date of said correction or repair or for the remaining period of years set forth herein, whichever is longer, then this obligation shall be null and void; otherwise this obligation shall remain in full force and effect.

4. The Surety for value received agrees that no extension of time, change in, addition to, or other alteration or modification of the terms, conditions or obligations of the Contract or work to be performed thereunder, or any forbearance on the part of either the Oblige or the Principal to the other shall in anyway release affect the Surety's liability or obligation on this Bond, and the surety hereby waives notice of any such extension of time, change, addition, modification, alteration or forbearance.

Signed and sealed on the dates set forth below:

(Witness) FOR: _____
(Principals Name)

BY: _____

(Seal) ITS: _____

This _____ day of _____

(Witness) FOR: _____
(Surety's Name)

BY: _____

(Seal) ITS: _____

This _____ day of _____

Bond # _____ This Bond __ (is) __ (is not) a SBA Guaranteed Bond.

**APPENDIX 4
CERTIFICATION REGARDING DEBARMENT, SUSPENSION
AND OTHER RESPONSIBILITY MATTERS**

The undersigned duly authorized official of the proposer certifies to the best of its knowledge and belief, that it and its principals:

- A. Are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any Federal department or agency.
- B. Have not within a three-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification, or destruction of records, making false statements or receiving stolen property.
- C. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (B) of this certification; and
- D. Have not within a three-year period preceding this application/proposal had one or more public transaction (federal, state or local) terminated for cause or default.
- E. Are not on the Comptroller General's List of Ineligible Bidders or any similar list maintained by any other governmental entity.

Where the proposer is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

(Check One)

I DO CERTIFY (____)

I DO NOT CERTIFY (____)

Date: _____

Signature: _____

Title: _____

RESTRICTIONS ON LOBBYING CERTIFICATION

Pursuant to United States Public Law 101-121, Section 319, the undersigned duly authorized official of the proposer hereby certifies, to the best of her/his knowledge and belief, that:

1. No Federal appropriated funds have paid or will be paid, by or on behalf of the undersigned, to any person for the purpose of influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person or agency for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit a Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.
3. The undersigned duly authorized official shall require and ensure that the language of this certification be included in any award documents for subcontracts, grants, loans, and cooperative agreements, and that all subcontractors shall so certify and disclose accordingly.

This Certification is a material representation of fact, upon which reliance was placed when this transaction was made or entered into. The submission of this Certification is a prerequisite for making or entering into this transaction, imposed by Title 31 USC Section 1352. Any proposer (person) who fails to file the required certification shall be subject to civil penalty of not less than ten thousand dollars (\$10,000) and not more than one hundred thousand dollars (\$100,000) for each such failure to file.

Proposer: _____

Signature: _____

Title: _____

Date: _____

NON-COLLUSION AFFIDAVIT

The undersigned duly authorized official of the proposer hereby certifies, to the best of her/his knowledge and belief, that:

1. That I am an officer or employee of the _____ (proposing entity) having the authority to sign on behalf of the corporation, and,
2. That the prices in the attached proposal were arrived at independently by _____ (proposing entity) without collusion, consultation, communication, or any agreement, for the purpose of restricting competition as to any matter relating to such prices with any other proposer or with any other competitor regarding an understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or service described in the RFP/IFB designed to limit independent proposals or competition; and
3. That unless otherwise required by law, the contents and prices contained in the proposal have not been communicated by _____ (proposing entity) or its employees or agents to any person not an employee or agent of _____ (proposing entity), or its surety on any bond furnished with the proposal, and will not be communicated to any such person prior to the official opening of the proposal; and,
4. That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Proposer: _____

Signature: _____

Title: _____

Date: _____

CITY OF COLORADO SPRINGS
EQUAL OPPORTUNITY CLAUSE

During the performance of this contract, the Contractor agrees that:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin. The Contractor will take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, age or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, or national origin.
3. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or applicants, a notice to be provided by the City's contract compliance officer advising the labor union or worker's representative of the Contractor's commitments under this contract and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Contractor will comply with the rules of the City Manager and applicable to this contract and the Federal Rules and Regulation relevant to equal employment opportunity should those rules and regulations become applicable during the duration of this contract.
5. The Contractor will furnish all information and reports required by the Rules of the City Manager, and if applicable Executive Order 11246 of September 24, 1965, and the Rules, Regulations and Orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts, by the contract compliance officer for purposes of investigation to ascertain compliance with such Rules, Regulations, and Orders.
6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such Rules, Regulations, or Orders, this contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further City of Colorado Springs contracts in accordance with Executive Order 11246 of September 24, 1965, and such other sanctions authorized by that Order.
7. The Contractor will include the portion of the sentence immediately preceding Paragraph one above and the provisions of Paragraphs one through seven in every subcontract or purchase order unless exempted by Rules of the City Manager so that such provisions will be binding upon each sub-contractor or vendor. The Contractor will take such actions with respect to any subcontract or purchase order as the contract compliance officer may direct as a means of enforcing such provisions, including in, or is threatened with, litigation with a sub-contractor or vendor as a result of such direction by the contract compliance officer, the Contractor may request the City of Colorado Springs to enter into such litigation to protect the interest of the City.

Contracts with the City for purposes of construction work (as defined in 41 CFR 60-1.3) shall include the following term: "Contractor will cooperate with the City in using his best efforts to insure that minority business enterprise shall have the maximum practical opportunity to compete for subcontract work under this contract."

EQUAL EMPLOYMENT STATUS REPORT

Contractor's Name _____

Street Address _____

City _____ State _____ Zip _____

This firm is:

_____ Independently owned and operated

_____ An Affiliate Parent Company _____
or

_____ A Subsidiary of Address _____

_____ or
_____ A Division City and State _____

Zip _____

Contractor HAS HAS NOT (1) developed and has on file an affirmative action program in conformance with the Rules of the City or 41 CFR 60-2; (2) participated in any previous contract or subcontract subject to the equal opportunity clause either the City or Federal _____ Contract Compliance requirement;

(3) Filed with the City, or where applicable, joint Reporting Committee, or other Federal Agency, all reports due under the applicable. _____ previous contract or subcontract.

Contractor's Equal Employment Opportunity Program _____ has _____ has not been subject to a Federal Equal Opportunity Compliance Review. If so, then when _____

Signature _____ Date _____

Title _____

Return to: City of Colorado Springs Affirmative Action Officer

APPENDIX 5 REPRESENTATIONS AND CERTIFICATIONS

1. INSURANCE REQUIREMENTS

This firm shall comply with all insurance requirements and will submit the Insurance Certificates prior to performance start date. If limits are different from the stated amounts, Contractor shall explain variance. Certain endorsements and “additionally insured” statements may require further clarification and specific statements on a project specific basis and should have been described in the Contractor’s proposal.

Initials for 1

2. ETHICS VIOLATIONS

- a) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in this clause in its own operations and direct business relationships.
- b) When the Contractor has reasonable grounds to believe that a violation described in this clause may have occurred, the Contractor shall promptly report the possible violation to the City Contracts Specialist in writing.
- c) The Contractor must disclose with the signing of this Contract, the name of any officer, director, or agent who is also an employee of the City and any City employee who owns, directly or indirectly, an interest of five percent (5%) or more in the Contractor’s firm or any of its branches.
- d) In addition, the Contractor must report any conflict or apparent conflict, current or discovered during the performance of the Contract, to the City Contracts Specialist.
- e) The Contractor shall not engage in providing gifts, meals or other amenities to City employees. The right of the Contractor to proceed may be terminated by written notice issued by City Contracts Specialist if Contractor offered or gave a gratuity to an officer, official, or employee of the City and intended by the gratuity to obtain a contract or favorable treatment under a contract.
- f) The Contractor shall cooperate fully with the City or any agency investigating a possible violation on behalf of the City. If any violation is determined, the contractor will properly compensate the City.
- g) The Contractor agrees to incorporate the substance of this clause in all subcontracts under this contract.

Initials for 2

3. ILLEGAL ALIENS

If Provider has any employees or subcontractors, Provider shall comply with § 8-17.5, C.R.S. regarding Illegal Aliens – Public Contracts for Services, and this section of this Agreement. 8-17.5-102 includes, in part, that:

1. Provider shall not:
 - a. Knowingly employ or contract with an illegal alien to perform work under this Agreement; or
 - b. Enter into a contract with a subcontractor that fails to certify to Provider that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Agreement.
2. Provider has verified or attempted to verify that Provider does not employ any illegal aliens and, will participate in the E-Verify Program or State Department program in order to confirm eligibility of all employees who are newly hired to perform work under public contract for services.
3. Provider will not use E-Verify Program or State Department program procedures to undertake pre-employment screening of job applicants while the public contract for services is being performed.
4. If Provider obtains actual knowledge that a subcontractor performing work under this Agreement knowingly employs or contracts with an illegal alien, Provider shall:
 - a. Notify the subcontractor and the City within three days that Provider has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and
 - b. Terminate the subcontract with the subcontractor if within three days of receiving the notice under 4.a., the subcontractor does not stop employing or contracting with the illegal alien. However, the Provider shall not terminate the contract with the subcontractor if during this three day period:
 - i. The subcontractor provides information which establishes that the subcontractor has not knowingly employed or contracted with an illegal alien, and
 - ii. The Provider will not employ the illegal aliens in the performance of any City contract.
5. Provider shall comply with any reasonable request by the Department of Labor and Employment made in the course of an investigation that the Department is undertaking pursuant to the authority established in §8-17.5-102(5), C.R.S.
6. If Provider violates this provision, the City may terminate the Agreement for a breach of contract. If the Agreement is terminated, the Provider shall be liable for actual and consequential damages.

Initials for 3

4. COOPERATION WITH OTHER CONTRACTORS

Other City activities/contracts may be in progress or start during the performance of this contract. The Contractor shall coordinate the work harmoniously with the other contractors or City personnel.

Initials for 4

5. INTERNET USE

Should the Contractor require access to City Internet resources in the performance of this requirement, a "Contractor's Internet Use Agreement" form must be separately signed by each individual having access to the City Network. The completed Contractor's Internet Use Agreement will be maintained with this agreement. Inappropriate use of the City Network will be grounds for immediate termination of this Contact.

Initials for 5

6. LITIGATION

If awarded the contract, Contractor shall notify the City within five (5) calendar days after being served with a summons, complaint, or other pleading in any matter which has been filed in any federal or state court or administrative agency. The Contractor shall deliver copies of such document(s) to the City's Procurement Services Manager. The term "litigation" includes an assignment for the benefit of creditors, and filings of bankruptcy, reorganization and/or foreclosure.

Initials for 6

7. CONTRACTOR'S REGISTRATION INFORMATION

Offeror's firm verifies and states that they are (check all that apply):

- Small Business
- Minority Owned Business/Small Disadvantaged Business
- Woman Owned Business
- Veteran Owned Business
- Service-Disabled Veteran Owned Business

_____ HUBZone Business

Note: The City accepts self-certification for these categories in accordance with Small Business Administration (SBA) standards. The SBA size standards are found on the SBA website <https://www.sba.gov/content/am-i-small-business-concern>.

Initials for 7

8. CONTRACTOR PERSONNEL

- a) The Contractor shall appoint one of its key personnel as the “Authorized Representative” who shall have the power and authority to interface with the City and represent the Contractor in all administrative matters concerning this Contract, including without limitation such administrative matters as correction of problems modifications, and reduction of costs.
- b) The Authorized Representative shall be the person identified in the Contractor’s Proposal, unless the Contractor provides written notice to the City naming another person to serve as its Authorized Representative. Communications received by the City Contracts Specialist from the Authorized Representative shall be deemed to have been received from the Contractor.
- c) The Contractor shall appoint a “Point of Contact” (POC) who shall be responsible for the day-to-day management and supervision of the contract performance. Before commencing the contract, the Contractor shall provide the City in writing with information regarding how to contact the POC including, for example, his or her name, telephone number, facsimile number, pager number, if any, address, and information relating to other means of communication.

The individual, _____ (Name)
with position, _____ (Title)
Can be reached at _____
Work telephone number: _____
Home telephone number: _____
Cellular telephone number: _____
E-mail address: _____

Initials for 8

9. CONTRACTOR’S ACCEPTANCE OF CREDIT CARD PAYMENT METHOD

The Contractor hereby accepts payment using the City’s VISA card program. Contractor must submit any necessary paperwork that the City Contracts Specialist needs to complete and return.

Initials for 9

10. CONTRACTOR’S CERTIFICATION

The undersigned hereby affirms that:

- a) He/She is a duly authorized agent of the Contractor;
- b) He/She has read and agrees to the City’s standard terms and conditions attached.
- c) The offer is presented in full compliance with the collusive prohibitions of the State of Colorado. The Contractor certifies that no employee of its firm has discussed, or compared the offer with any other offeror or City employee and has not colluded with any other offeror or City employee.
- d) The Contractor certifies that it has checked all of its figures, and understands that the City will not be responsible for any errors or omissions on the part of the Contractor in preparing its bid.
- e) By submitting an offer the Contractor certifies that it has complied and will comply with all requirements of local, state, and federal laws, and that no legal requirements have been or will be violated in making or accepting this solicitation.

I hereby certify that I am submitting the proposal based on my company's capabilities to provide quality products and/or services on time.

Initials for 10

11. CONTRACTOR CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS:

- 1. The offeror certifies to the best of its knowledge and belief, that (i) the Offeror and/or any of its Principals
 - a. Are (), Are not () presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;
 - b. Have (), Have not (), within a three year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, local) contract or subcontract; violation of Federal or state antitrust statutes relation to the

submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statement, tax evasion, or receiving stolen property; and

- c. Are (), Are not () presently indicated for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in any paragraphs above.
2. The Offeror shall provide immediate written notice to the City Contracts Specialist if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reasons of changed circumstances.
3. The certification in paragraph 1. above, is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the City, the City Contracts Specialist may terminate the contract resulting from this solicitation for default. Termination for default may result in additional charges being levied for the costs incurred by the City to initiate activities to replace The awarded Contractor.

Initials for 11

12. ACCEPTANCE OF CITY CONTRACTS SPECIALIST'S SOLE AUTHORITY FOR CHANGES

The Contractor hereby agrees (if awarded a contract for this effort), that any changes to the scope of work, subsequent to the original contract signing, shall be generated in writing and an approval signature shall be obtained from the City Contracts Specialist prior to additional work performance.

Initials for 12

APPENDIX 6

MINIMUM INSURANCE REQUIREMENTS

The following listed minimum insurance requirements shall be carried by all contractors and consultants unless otherwise specified in the City’s solicitation package, Special Provisions or Standard Specifications.

1. Workers’ Compensation and Employers Liability as required by statute. Employer’s liability insurance shall be provided in amounts not less than \$100,000 each accident for bodily injury by accident, \$500,000 policy limit for bodily injury by disease, and \$500,000 each employee for bodily injury by disease.

2. Automobile Liability for limits not less than \$1,000,000 combined single limit for bodily injury and property damage for each occurrence. Coverage shall include owned, non-owned and hired automobiles.

3. Commercial General Liability for limits not less than \$1,000,000 combined single limit for bodily injury and property damage for each occurrence and not less than \$2,000,000 aggregate. Coverage shall include premises and operations liability, blanket contractual, broad form property damage, products and completed operations and personal injury endorsements.

4. Builders Risk or Installation Floater Insurance will be provided by the Owner (excluding earthquake or flood). This insurance shall insure and protect from all insurable risks of physical loss or damage. Contractors and subcontractors will be covered, excluding their own machinery, tools and equipment. The deductible under The Builders Risk or Installation Floater shall be sustained and borne by the Contractor. Losses will be adjusted with and made payable to the Owner and others as their interests may appear.

5. Professional Liability Insurance providing coverage for acts, errors or omissions committed or alleged to have been committed by architects and engineers arising out of the conduct of their professional practice in an amount not less than \$1,000,000 per occurrence or claims made and \$2,000,000 aggregate. Coverage shall apply for three (3) years after project is complete.

6. Pollution Legal Liability Insurance for limits not less than \$1,000,000 per occurrence (or claims made) and not less than \$1,000,000 aggregate for bodily Injury, Personal Injury and Property Damage. This coverage must include any losses arising from transit exposures and also include all costs associated with clean-up, containment, and disposal of any hazardous liquids or materials.

7. Medical Malpractice Liability Insurance for limits not less than \$1,000,000 per occurrence.

8. Except for workers compensation and employer’s liability insurance, the City of Colorado Springs must be named as an additional insured. Certificates of Insurance must be submitted before commencing the work and provide 30 days notice prior to any cancellation.

The undersigned certifies and agrees to carry and maintain the insurance requirements indicated above throughout the contract Period of Performance. All coverage furnished by contractor is primary; any insurance held by the City of Colorado Springs is excess and non-contributory.

(Name of Company)

(Signature)

(Date)

APPENDIX 7

CITY CHANGE ORDER FORM

Change Order No: _____ Contract No: _____
Project Title: _____
Firm: _____
New Expiration Date: _____ Cancel Contract: _____
Time Extension allowed: _____ Days _____
Amount of this Change Order: _____
Amount of Previous Change Orders: _____
Total of Change Orders: _____
Original / Amended Contract Amount: _____
New Contract Amount: _____
Percentage Above / Below Original / Amended Amount: _____
Account Code for Change Order: _____

- 1. By signing below, the Contractor accepts this change order as full and complete compensation for the above specified amendments and/or additional services.
- 2. Unless specifically addressed and changed in this change order, all terms and conditions of the contract remain in full effect including applicability to any items that have been added or incorporated by this change order.

Description of Amendments and/or Additional Services:

Firm/Contractor Approval: _____ Date: _____
Requestor/Dept: _____ Date: _____
Manager Approval: _____ Date: _____

This Box to be used only by City Contracts Staff

Contracting Analyst Signoff: _____
Vendor/Contractor: _____
Dept: _____
Peoplesoft: _____
Acct Pay: _____

ATTACHMENT 1

**SAMPLE CONTRACT
CONSTRUCTION CONTRACT**

Contract Number:		Project Name/Title	
Vendor/Contractor			
Contact Name:		Telephone	Fax
Address:			
Federal Tax ID #		Please check one:	<input type="checkbox"/> Corporation <input type="checkbox"/> Individual <input type="checkbox"/> Partnership
City Contracting Specialist	Name & Phone#	City Dept Rep	Name & Phone# & Department Name
NOT TO EXCEED Contract Amount:		City Account #	Acct Code (5) Fund (3) Dept (4) Project (7)

THIS CONTRACT, in the Not to Exceed amount of \$_____made and entered into this ____ day of _____2015 by and between the City of Colorado Springs, Colorado, a municipal corporation, in the County of El Paso, State of Colorado, party to the first part hereinafter in the Contract Documents referred to as the "City", and _____, and trading as an individual or acting as partners consisting of or a corporation organized and existing under the laws of the State of Colorado, hereinafter in the Contract Documents called the "Contractor"; party of the second part.

WITNESSETH:

Whereas the City has heretofore prepared the necessary Contract Documents for: _____, in the City of Colorado Springs; and whereas the party of the second part did on the ____ day of _____ 2015, submit to the City their written offer and proposal to do the work therein described under the terms and conditions therein set forth and furnish all labor, materials, tools, equipment, transportation and services for said work in strict conformity with the accompanying Contract Documents which include: Bid Proposal, Notice of Award, Contract, Notice to Proceed and General Conditions.

NOW, THEREFORE, it is hereby agreed that for the considerations and amounts specified in the Bid Proposal and the total contract amount designated above and in the Notice of Award, to be paid by the City to the Contractor, Contractor agrees to furnish all materials and to perform all work as set forth in his proposal and as required by the Contract Documents, which are attached hereto and incorporated herein by this reference.

Contractor agrees that the Contractor shall indemnify, defend and hold harmless the City, its officers, employees and agents, from and against any and all loss, damage, injuries, claims, cause or causes of action, or any liability whatsoever resulting from, or arising out of, or in connection with the Contractor's obligations or negligent actions under this Contract.

It is further agreed that the Contractor will start work promptly and continue to work diligently until completed. The contractor shall complete all work on an as ordered basis throughout the contract period ____ **Calendar Days** after the Notice-to-Proceed as per the specifications and drawings. The Contractor shall provide a two-year guarantee on all works performed under this contract after the job has been completed and accepted.

FISCAL OBLIGATIONS OF CITY

This Agreement is expressly made subject to the limitations of the Colorado Constitution and Section 7-60 of the Charter of the City of Colorado Springs. Nothing herein shall constitute, nor be deemed to constitute, the

CITY OF COLORADO SPRINGS

creation of a debt or multi-year fiscal obligation or an obligation of future appropriations by the City Council of Colorado Springs, contrary to Article X, § 20, Colo. Const., or any other constitutional, statutory, or charter debt limitation. Notwithstanding any other provision of this Agreement, with respect to any financial obligation of the City which may arise under this Agreement in any fiscal year after the year of execution, in the event the budget or other means of appropriation for any such year fails to provide funds in sufficient amounts to discharge such obligation, such failure (i) shall act to terminate this Agreement at such time as the then-existing and available appropriations are depleted, and (ii) neither such failure nor termination shall constitute a default or breach of this Agreement, including any sub-agreement, attachment, schedule, or exhibit thereto, by the City. As used herein, the term "appropriation" shall mean and include the due adoption of an appropriation ordinance and budget and the approval of a Budget Detail Report (Resource Allocations) which contains an allocation of sufficient funds for the performance of fiscal obligations arising under this Agreement.

The Contractor and the City agree and acknowledge as a part of this contract, that no Change Order or other form or order or directive may be issued by the City which requires additional compensable work to be performed, which work causes the aggregate amount payable under the contract to exceed the amount appropriated for this contract as listed above, unless the Contractor has been given a written assurance by the City that lawful appropriations to cover the costs of the additional work have been made

The Contractor and the City further agree and acknowledge as a part of this contract that no Change Order or other form or order or directive which requires additional compensable work to be performed under this contract shall be issued by the City unless funds are available to pay such additional compensable work performed under this contract, and expressly waives any rights to additional compensation, whether by law or equity, unless, prior to commencing the additional work, the contractor was given a written Change Order describing the additional compensable work to be performed, and setting forth the amount of compensation to be paid, which Change Order was signed by the authorized City Representative. It is the Contractor's sole responsibility to know, determine, and ascertain the authority of the City representative signing any Change Order under this contract.

Books of Account and Auditing. The Contractor shall make available to the City if requested, true and complete records, which support billing statements, reports, performance indices, and all other related documentation. The City's authorized representatives shall have access during reasonable hours to all records, which are deemed appropriate to auditing billing statements, reports, performance indices, and all other related documentation. The Contractor agrees that it will keep and preserve for at least seven years all documents related to the Contract, which are routinely prepared, collected or compiled by the Contractor during the performance of this contract.

The City's Auditor and the Auditor's authorized representatives shall have the right at any time to audit all of the related documentation. The Contractor shall make all documentation available for examination at the Auditor's request at either the Auditor or Contractor's office and without expense to the City.

GRATUITIES

- 1) The right of the Contractor to proceed or otherwise perform this Contract, and this Contract may be terminated if the City Manager and/or the City Contracting Manager determine, in their sole discretion, that the Contractor or any officer, employee, agent, or other representative whatsoever, of the Contractor offered or gave a gift or hospitality to a City officer, employee, agent or contractor for the purpose of influencing any decision to grant a City Contract or to obtain favorable treatment under any City Contract.
- 2) The terms "hospitality" and "gift" include, but are not limited to, any payment, subscription, advance, forbearance, acceptance, rendering or deposit of money, services, or anything of value given or offered, including but not limited to food, lodging, transportation, recreation or entertainment, token or award.
- 3) Contract termination under this provision shall constitute an breach of contract by the Contractor, and the Contractor shall be liable to the city for all costs of reletting the contract or completion of the contract. Further, if the Contractor is terminated under this provision, or violates this provision but is not terminated, the Contractor shall be subject to debarment under the City's Procurement Regulations. The

CITY OF COLORADO SPRINGS

rights and remedies of the City provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract."

CONTRACT SIGNATURE PAGE

The Contractor certifies in accord with Section 8-17.5-102(1) C.R.S. that, on the date the Contractor signs this contract, the Contractor does not knowingly employ or contract with an illegal alien who will perform work under this contract and that the Contractor shall participate in the e-verify program or Colorado Department of Labor and Employment program in order to confirm the employment eligibility of all employees who are newly hired for employment or to perform work under this contract. The contractor is expressly prohibited from using basic pilot program procedures to undertake pre-employment screening of job applicants while this Contract and any services under this Contract is being performed.

IN WITNESS WHEREOF, the parties have caused these presents to be executed on the day and the year first above written.

This contract is executed in one (1) original copy.

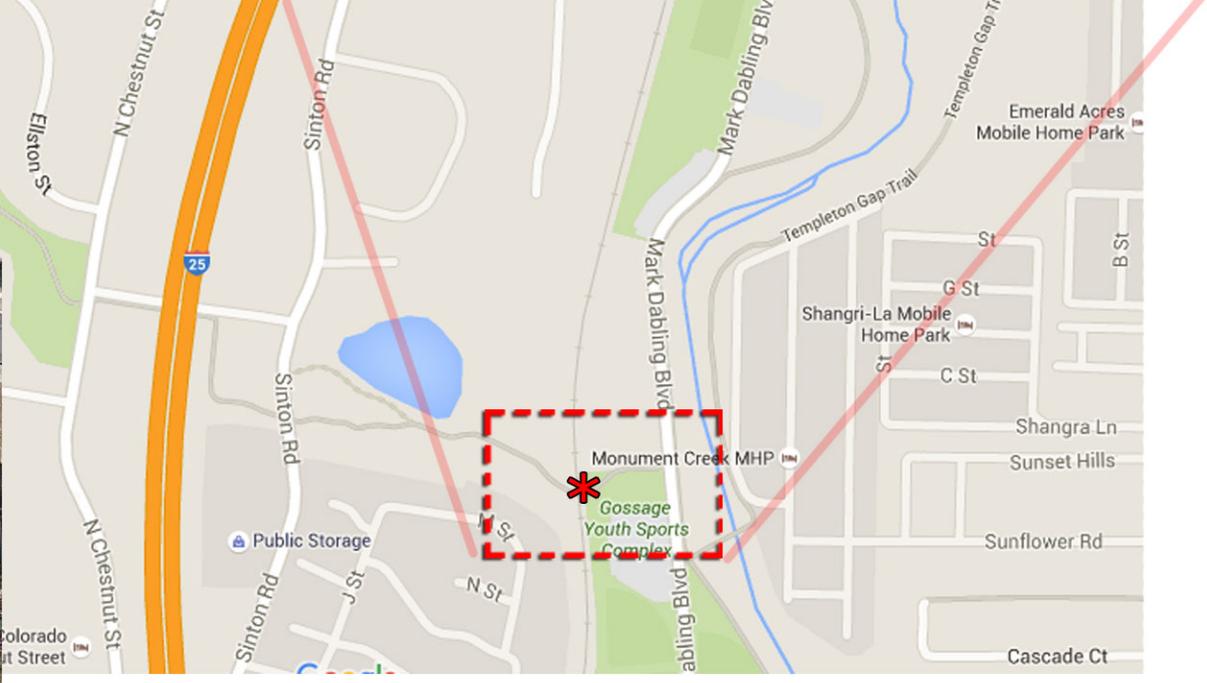
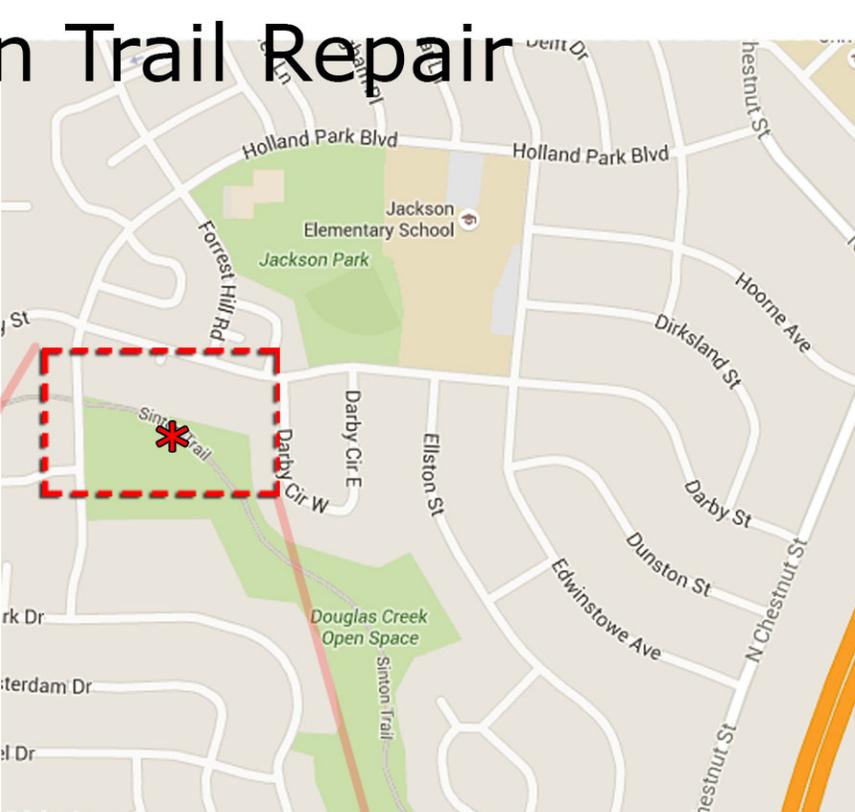
THE CITY OF COLORADO SPRINGS, COLORADO:

SECOND PARTY:	
Corporate Name	
Signature	Date
Title	
Witness	

ATTACHMENT 2 Pikes Peak Greenway At El Pomar



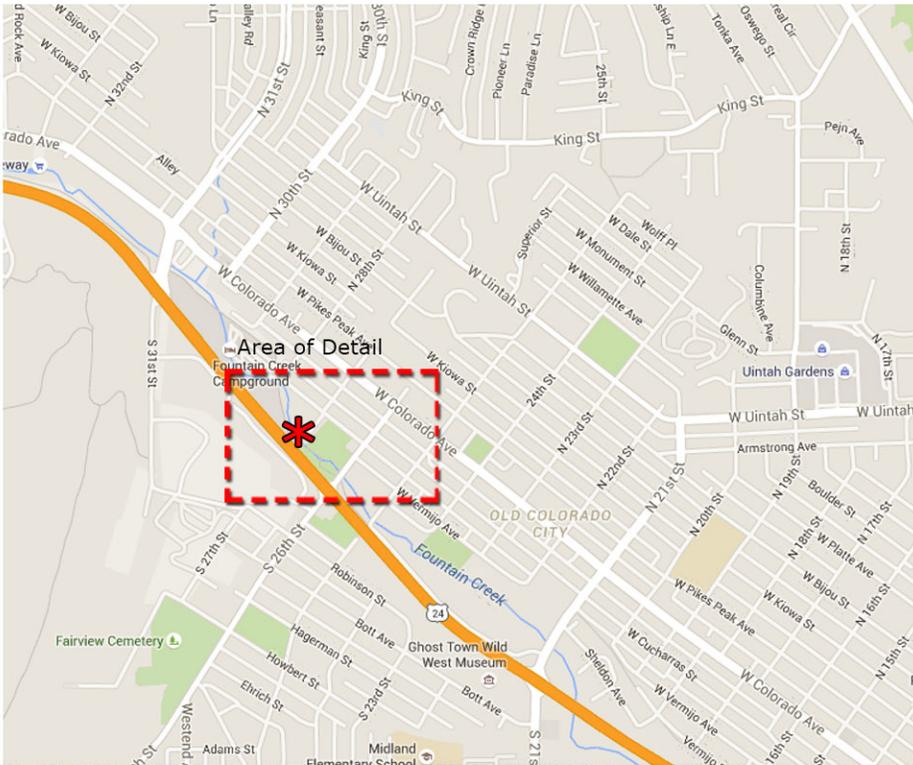
Sinton Trail Repair



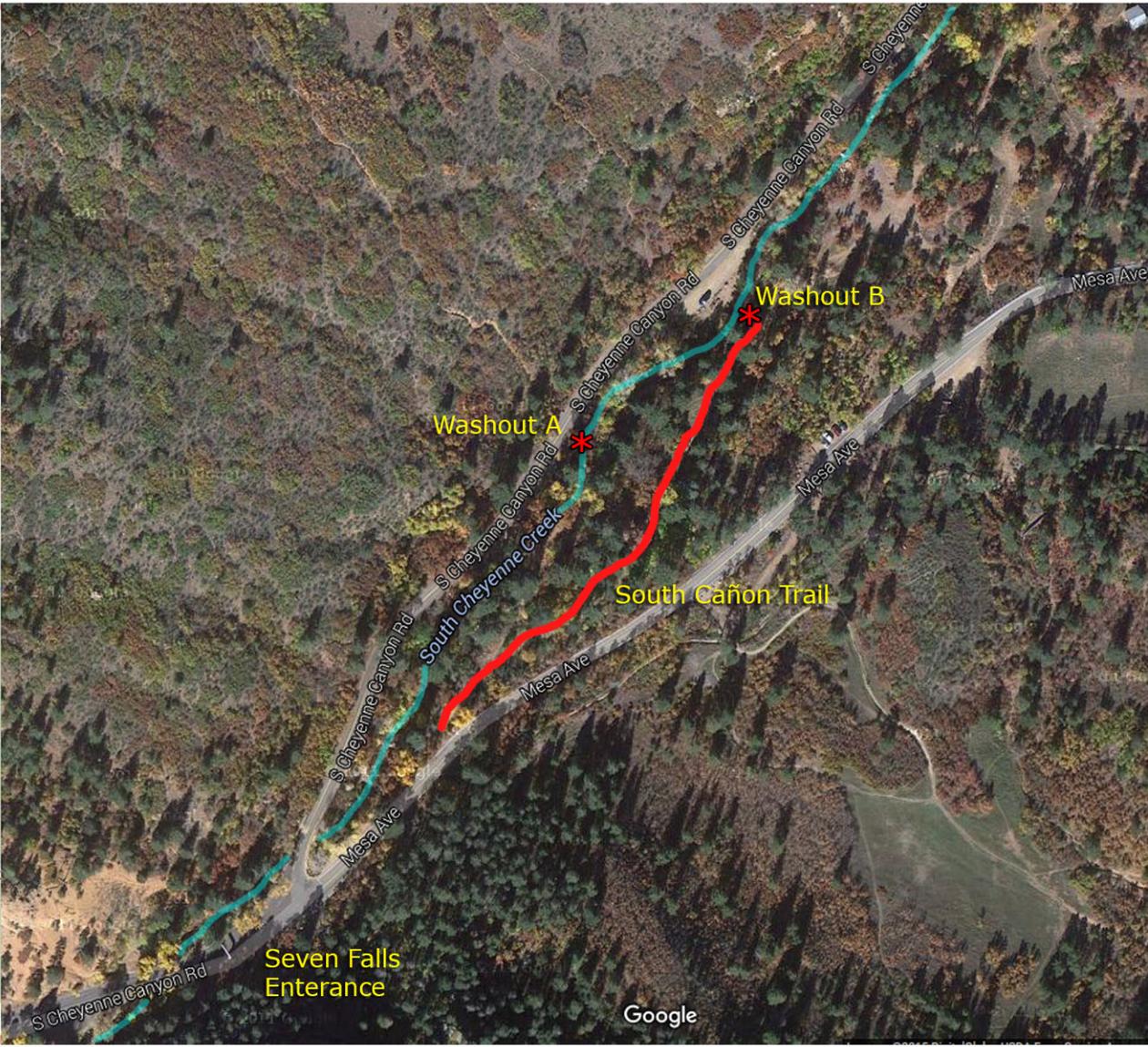
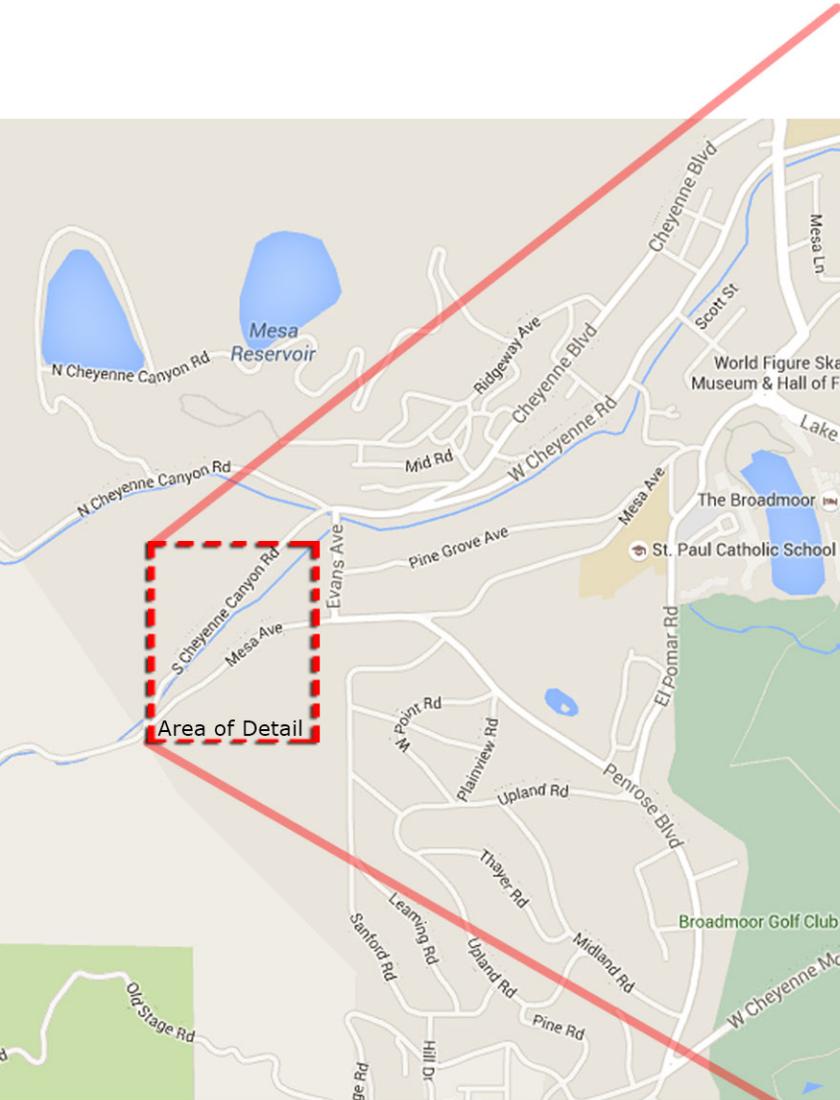
At Holland Park Blvd

At Railroad Overpass

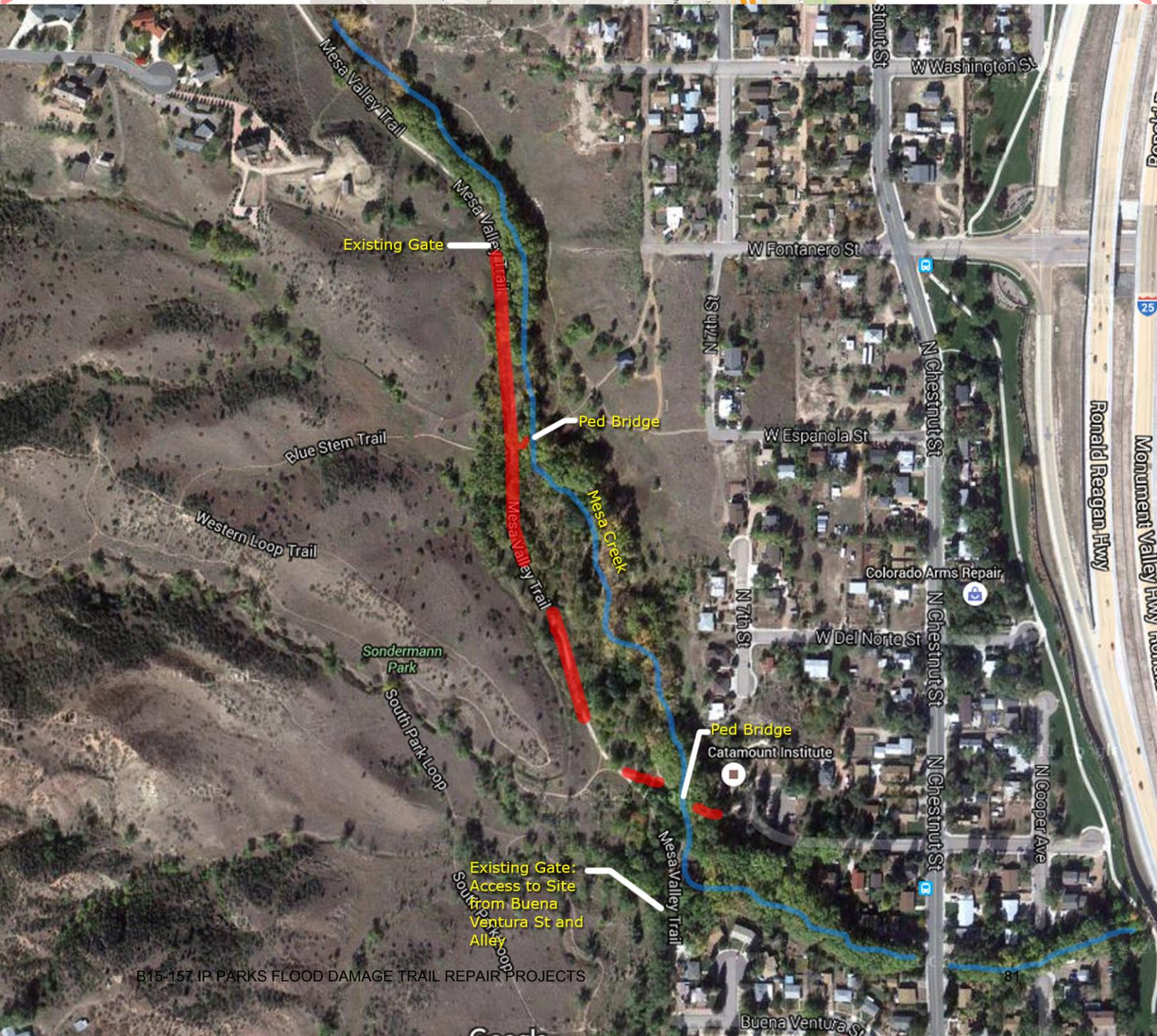
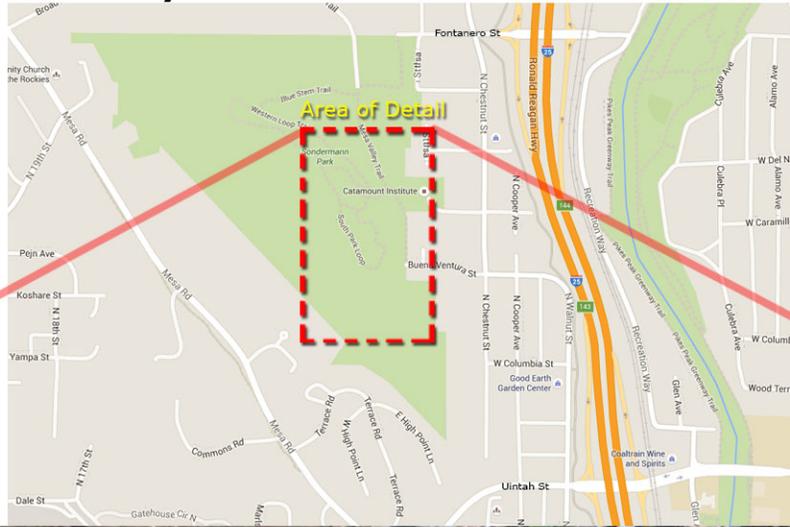
Midland Trail at Vermijo Park



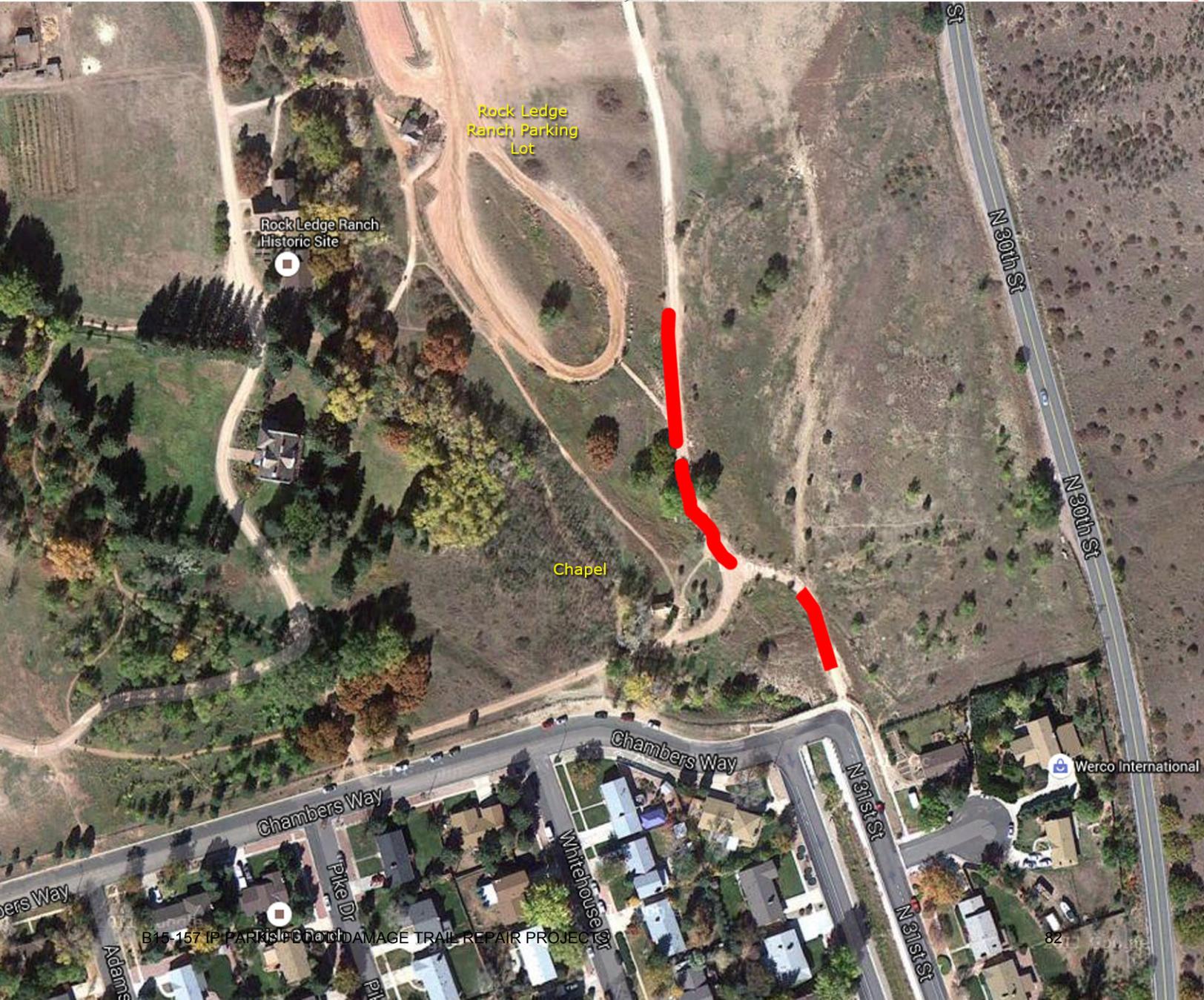
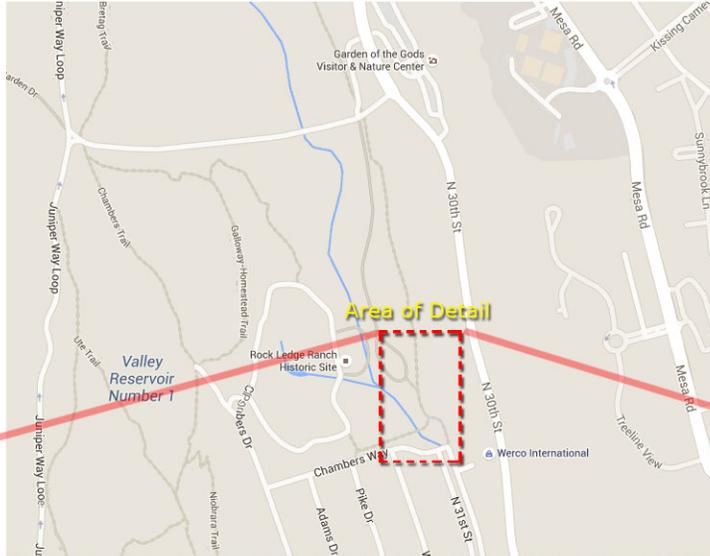
South Cañon Trail - North Cheyenne Cañon Park



Mesa Valley Trail - Sondermann Park



Foothills Trail at Rock Ledge Ranch



ATTACHEMENT 3

FEMA Damage Description and Scope of Work: For Information and Reference Only

DAMAGED FACILITY: Site 4, PKD-16 Sinton Trail @ Railroad Track	COUNTY: El Paso		
LOCATION: Current Version: Site 4, PKD-16 Sinton Trail @ Railroad Track	LATITUDE: 38.8825	LONGITUDE: -104.83029	
DAMAGE DESCRIPTION AND DIMENSIONS: Current Version: Site 4 PKD-16 During the incident period of May 4 to June 16, 2015, Severe Storms and Flooding, the sub-grantee sustained a 5 FT wide x 5 FT length x 3 FT = 75 CF/27 = 2.8 CY, deep fill washout next to the trail and lost/damaged the edge of the asphalt urban trail a total of 24 FT long x 1.5 FT wide x 3 Inches Thick = 36/9 x 3 Inches = 4 SY x 3 Inches = 12 SY-In (previous damage was not related to DR 4145)			
SCOPE OF WORK: Current Version: Site 4 PKD-16 WORK TO BE COMPLETED The sub-grantee will: * Backfill – (5 FT wide x 5 FT length x 3 FT)/27 = 2.8 CY of fill into the washout @ * Sawcut 24 LF + 1.5 LF + 1.5 LF = 27 LF of Bituminous Concrete (Concrete Pavement) overlay * Remove 24 FT x 1.5 FT /9 = 4 SY of damaged Bituminous Concrete (Concrete Pavement) overlay * Replace 24 FT long x 1.5 FT wide x 3 Inches Thick = 36/9 x 3 Inches = 4 SY x 3 Inches = 12 SY-IN of Concrete Pavement			

DAMAGED FACILITY: Site 3, PKD-15 Sinton Trail @ Holland Park	COUNTY: El Paso		
LOCATION: Current Version: Site 3, PKD-15 Sinton Trail @ Holland Park	LATITUDE: 38.89022	LONGITUDE: -104.8431	
DAMAGE DESCRIPTION AND DIMENSIONS: Current Version: Site 3, PKD-15 During the incident period of May 4 to June 16, 2015, Severe Storms and Flooding, the sub-grantee sustained 2 washouts of the Trail's integral ground, specifically the trail's stream-side 7ft wide graveled shoulder and downward side slope, extending at an average 1:1 ratio from the shoulder's edge to the stream (the downward side slope also represented an improved and maintained stream bank). The washouts are 60 LF and 20 LF respectively, and are considered contiguous as they are less than 20 LF separation, for a total length of 80 LF. The eroded shoulder was (7ft W x 12ft D x 80ft L)/27 = 248.9 CY. The eroded side slope had a triangular cross section, with height of 12ft, base of 12ft and length of 80ft [(12ft H x 12ft B)/2] x 80ft L /27 = 213.3 CY. The 80lf side slope was covered by 1.5ft depth rip rap at an average W of 8ft (80ft x 8ft x 1.5ft)/27 = 35.6 CY of lost rip rap. Lost shoulder and side slope fill totals 248.9 CY + 213.3 CY = 462.2 CY. 35.6 CY of lost rip rap cannot be recovered from the stream. There was no indication of pre-disaster geotech fabric in the stream or in discussion with subgrantee.			
SCOPE OF WORK: Current Version: Site 3, PKD-15 WORK TO BE COMPLETED * Replace 462.2 CY of Shoulder and Slope fill * Replace 35.6 CY of Rip Rap			

FEMA Damage Description and Scope of Work: For Information and Reference Only

<p>DAMAGED FACILITY:</p> <p>Site 5, PKD-30 Pikes Peak Greenway @ El Pomar Sports Complex</p>	<p>COUNTY: El Paso</p>										
<p>LOCATION:</p> <p>Current Version: Site 5, PKD-30 Pikes Peak Greenway @ El Pomar Sports Complex, adjacent to Fountain Creek</p>	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">LATITUDE:</th> <th style="text-align: left; border-bottom: 1px solid black;">LONGITUDE:</th> </tr> </thead> <tbody> <tr> <td>38.79195</td> <td>-104.78184</td> </tr> <tr> <td>38.79224</td> <td>-104.78193</td> </tr> <tr> <td>38.79233</td> <td>-104.782</td> </tr> <tr> <td>38.79292</td> <td>-104.78206</td> </tr> </tbody> </table>	LATITUDE:	LONGITUDE:	38.79195	-104.78184	38.79224	-104.78193	38.79233	-104.782	38.79292	-104.78206
LATITUDE:	LONGITUDE:										
38.79195	-104.78184										
38.79224	-104.78193										
38.79233	-104.782										
38.79292	-104.78206										
<p>DAMAGE DESCRIPTION AND DIMENSIONS:</p> <p>Current Version: Site 5, PKD-30 During the incident period of May 4 to June 16, 2015, Severe Storms and Flooding, the sub-grantee sustained washouts of 4 portions of the Pikes Peak Greenway @ El Pomar Sports Complex, adjacent to Fountain Creek. The locations were separated due to the amount of damage to each, but they are adjacent and contiguous to each other. All work is above the High Water Mark.</p> <p>Location 30A - (38.79292, -104.78206) Loss of an average of (60 LF x 10 FT x 4 Inches)/27 = 7.4 CY of fill material and the loss of an average of (60 LF x 10 FT x 4 Inches)/27 = 7.4 CY of trail surface material (Red Breeze Gravel).</p> <p>Location 30B - (38.79233, -104.78200) Loss of (30 LF x 13 FT wide x 3 FT deep)/27 = 43.3 CY fill with a 3 FT 1:1 slope, 30 LF x ((3 FT x 3 FT)/2) /27 = 5 CY for a total of 43.3 CY + 5 CY = 48.3 CY. In addition, there was an area immediately adjacent to the trail washout, behind a concrete headwall that was washed out, (15 FT x 30 FT x 3 FT)/27 = 50 CY. Total Fill loss at this area was 48.3 CY + 50 CY = 98.3 CY. This location is at the intersection of 2 trails and is wider than the normal 10 FT wide, there was a loss of trail surface (Red Breeze Gravel) (30 LF x 13 FT wide x 4 IN deep)/27 = 4.8 CY.</p> <p>Location 30C - (38.79224, -104.78193) Loss of (45 LF x 15 FT x 4 FT) /27 = 100 CY of fill loss. In addition there was a loss of trail surface (Red Breeze Gravel) (45 LF x 10 FT x 4 IN)/27 = 5.6 CY.</p> <p>Location 30D - (38.79195, -104.78184) Loss of (85 LF x 10 Ft x 4 Inches)/27 = 10.5 CY of trail surface (Red Breeze Gravel). In addition, adjacent to the trail they had a loss of approx. 15 LF x 3 Ft x 3 Ft slope /27 = 5 CY/2 (Slope) = 2.5 CY of fill</p>											
<p>SCOPE OF WORK:</p> <p>Current Version: Site 5, PKD-30 WORK TO BE COMPLETED</p> <p>Location 30A</p> <ul style="list-style-type: none"> * Replace (60 LF x 10 FT x 4 Inches)/27 = 7.4 CY of fill * Replace (60 LF x 10 FT x 4 Inches)/27 = 7.4 CY of trail surface (Red Breeze Gravel) * Grade (60 LF x 10 FT)/9 = 66.7 SY <p>Location 30B</p> <ul style="list-style-type: none"> * Replace - (30 LF x 13 FT wide x 3 FT deep) /27 = 43.3 CY + 30 LF x ((3 FT x 3 FT)/2) /27 = 5 CY + 15 FT x 30 FT x 3 FT /27 = 50 CY. Total Fill loss at this area was 43.3 CY + 5 CY + 50 CY = 98.3 CY of fill * Replace - (30 LF x 13 FT wide x 4 IN deep)/27 = 4.8 CY of trail surface (Red Breeze Gravel) * Grade (30 LF x 13 FT) /9 = 43.3 SY <p>Location 30C</p> <ul style="list-style-type: none"> * Replace (45 LF x 15 FT x 4 FT) /27 = 100 CY of fill * Replace (45 LF x 10 FT x 4 IN)/27 = 5.6 CY of trail surface (Red Breeze Gravel) * Grade (45 LF x 10 Ft)/9 = 50 SY <p>Location 30D</p> <ul style="list-style-type: none"> * Replace (15 LF x 3 Ft x 3 Ft slope) /27 = 5 CY/2 (Slope) = 2.5 CY of fill * Replace (85 LF x 10 Ft x 4 Inches)/27 = 10.5 CY of trail surface (Red Breeze Gravel) * Grade (85 LF x 10 Ft)/9 = 94.4 SY <p>Site 5, PKD-30 Location 30A - D Totals</p> <ul style="list-style-type: none"> * Replace - 7.4 CY + 98.3 CY + 100 CY + 2.5 CY = 208.2 CY of fill * Replace - 7.4 CY + 4.8 CY + 5.6 CY + 10.5 CY = 28.3 CY of trail surface (Red Breeze Gravel) * Grade - 66.7 SY + 43.3 SY + 50 SY + 94.4 SY = 254.4 SY of trail surface to get a smooth surface for this urban trail. X 											

FEMA Damage Description and Scope of Work: For Information and Reference Only

DAMAGED FACILITY: Site 6, PKD-11 Midland Trail@Vermijo Park	COUNTY: El Paso		
LOCATION: Current Version: Site 6, PKD-11 Midland Trail@Vermijo Park	LATITUDE: 38.84733	LONGITUDE: -104.86788	
DAMAGE DESCRIPTION AND DIMENSIONS: Current Version: Site 6, PKD-11 During the incident period of May 4 to June 16, 2015, Severe Storms and Flooding, the sub-grantee sustained washout at the Midland Trail Bridge at Vermijo Park. The NE side lost a section of rip rap (31 FT x 12 FT x 5 FT)/27 = 68.9 CY and a section of fill (3 Ft x 3 FT x 5 FT)/27 = 1.7 CY. The SW side lost a section of rip rap (23 FT x 10 FT x 4 FT)/27 = 34.1 CY and a section of fill (20 Ft x 7 FT x 4 FT)/27 = 20.7 CY. No geotex fabric was installed previously. Was damaged previously in 4145.			
SCOPE OF WORK: Current Version: Site 6, PKD-11 WORK TO BE COMPLETED NE Side * Replace (31 FT x 12 FT x 5 FT)/27 = 68.9 CY of rip rap * Replace (3 Ft x 3 FT x 5 FT)/27 = 1.7 CY of fill SW Side * Replace (23 FT x 10 FT x 4 FT)/27 = 34.1 CY of rip rap * Replace (20 Ft x 7 FT x 4 FT)/27 = 20.7 CY of fill Site 6, PKD-11 totals 68.9 CY + 34.1 CY = 103 CY of Rip rap 1.7 CY + 20.7 CY = 22.4 CY of fill			

DAMAGED FACILITY: Foothills Trail at Rock Ledge Ranch	COUNTY: El Paso		
LOCATION: Current Version: GPS Reading taken at site. 38.87177 -104.86944.	LATITUDE: 38.87177	LONGITUDE: -104.86944	
DAMAGE DESCRIPTION AND DIMENSIONS: Current Version: Site# 3 Applicants site# Applicant does not have site# 38.87177 -104.86944 Flood waters washed out breeze gravel surface course material 50ft L X 2ft W X .667ft D/27 = 2.47CY, 100ft L X 6ft W X .5ft D/27 = 11.11CY and 150ft L X 2ft W X .5ft D/27 = 5.55CY = 19.13CY total.			
SCOPE OF WORK: Current Version: WORK TO BE COMPLETED Site# 3 Applicants does not have assigned site number for this project. Replace breeze gravel surface course material 50ft L X 2ft W X .667ft D/27 = 2.47CY + 100ft L X 6ft W X .5ft D/27 = 11.11CY + 150ft L X 2ft W X .5ft D/27 = 5.55CY = 19.13CY			

FEMA Damage Description and Scope of Work: For Information and Reference Only

DAMAGED FACILITY: Sonderman Park	COUNTY: El Paso		
LOCATION: Current Version: GPS Reading taken at site Start Point 38.85711 -104.83752 End Point 38.86051 -104.83949	LATITUDE: 38.86051	LONGITUDE: -104.83949	
DAMAGE DESCRIPTION AND DIMENSIONS: Current Version: Site# 4 Applicants site# PKD 35 Flood waters washed out several sections of breeze gravel surface course material on section of trail 1,314ft L with various widths, area 35ft L X 2ft W X 1ft D/27 = 2.59CY, 100ft L X 3ft W X .667ft D/27 = 7.41CY, 20ft L X 2ft W X .25ft D/27 = .37CY, 150ft L X 2ft W X .75ft D/27 = 8.33CY, 100ft L X 2ft W X 1ft D/27 = 7.41CY, 60ft L X 8ft W X 1ft D/27 = 17.78CY, 65ft L X 4ft W X 1ft D/27 = 9.63CY and 100ft L X 12ft W X 1ft D/27 = 44.44CY = 97.96CY.			
SCOPE OF WORK: Current Version: WORK TO BE COMPLETED Replace breeze gravel surface course 35ft L X 2ft W X 1ft D/27 = 2.59CY + 100ft L X 3ft W X .667ft D/27 = 7.41CY + 20ft L X 2ft W X .25ft D/27 = .37CY + 150ft L X 2ft W X .75ft D/27 = 8.33CY + 100ft L X 2ft W X 1ft D/27 = 7.41CY + 60ft L X 8ft W X 1ft D/27 = 17.78CY + 65ft L X 4ft W X 1ft D/27 = 9.63CY + 100ft L X 12ft W X 1ft D/27 = 44.44CY = 97.96			

DAMAGED FACILITY: South Canon Trail	COUNTY: El Paso		
LOCATION: Current Version: GPS Reading taken at site location. 38.78671 -104.86860.	LATITUDE: 38.78671	LONGITUDE: -104.8686	
DAMAGE DESCRIPTION AND DIMENSIONS: Current Version: Site# 2 Applicants site# PKD08 Starting point 38.78671 -104.86860 Ending point 38.78816 -104.86716 Flood waters washed out breeze gravel surface course on trail 646ft L X 4.5ft W X 1.5ft D/27 = 161.5CY. Flood waters washed out section of boulder size rip rap wall used for slope protection with geotextile cloth located in stream that curves into Cheyenne Canon Road 75ftL X 7ft H X 4ft D/27 = 77.77CY area of geotextile cloth 75ft L X 7ft H/9 = 58.33SY and earthen material area 75ft L X 7ft H X 3ft D/27 = 58.33CY. Flood waters washed second area of boulder size rip rap wall for slope protection downstream from first one, area 40ft L X 5ft H X 3ft D/27 = 22.22CY and geotextile area 40ft L X 5ft H/9 = 22.22SY Soil erosion was minimal and poses no threat to trail or road way.			
SCOPE OF WORK: Current Version: WORK TO BE COMPLETED Site# 2 Applicants site# PKD 08 Starting 38.78671 -104.86860 Ending 38.78816 -104.86716 a. Replace breeze gravel surface course on trail 646ft L X 4.5ft W X 1.5ft D/27 = 161.5CY b. Replace washed out earthen fill area 75ft L X 7ft H X 3ft D/27 = 58.33CY b. Compact 58.33CY earthen fill b. Replace geotextile material 75ft L X 7ft H/9 = 58.33SY b. Replace D50 = 24inch rip rap on first washed out area 75ft L X 7ft H X 4ft D/27 = 77.77CY c. Replace geotextile material on second wash out 40ft L X 5ft H/9 = 22.22SY c. Replace D50 = 24inch rip rap on second washed downstream area 40ft L X 5ft H X 3ft D/27 = 22.22CY			



Foothills Mix

A mixture developed for elevations of 3,000 to 8,000 feet to provide natural cover under dryland conditions. Contains both cool and warm season grasses adapted to the Western Great Plains and Southwest region. Has excellent cold and drought tolerance. Good for soil stabilization on poor soils.



Characteristics:

- Grows 36-60 inches at full potential
- Excellent natural cover for dryland areas

Seeding Rate:

New Seeding

Broadcast: 20-25 lbs/acre

Drilled: 15-20 lbs/acre

Overseeding

Broadcast: 10-15 lbs/acre

Drilled: 5-10 lbs/acre

Mix contains:

20% **Annual Ryegrass**

Cool Season bunchgrass with germination in 5-10 days

Noted for quick germination. Provides fast green up and root structure to stabilize soil.

15% **Slender Wheatgrass**

Cool season bunchgrass with germination in 21-28 days.

A native species to the mountain and intermountain areas of the western United States and the northern Great Plains. It establishes quickly, and thus is frequently used for reclamation.

10% **Mountain Brome**

A cool-season bunchgrass with germination in 10-14 days.

Survives on thin, dry or coarse soils, and displays strong winter hardiness. Mountain brome will produce best in moist deep fertile soils.

10% **Pubescent Wheatgrass**

Cool season sod-forming grass with germination in 21-28 days.

Stays green into the summer with adequate moisture and adapted to a wide range of environmental conditions.

10% **Hard Fescue**

Cool season bunchgrass with germination in 7-10 days.

Well adapted to many soil types and often used for erosion control.

10% **Canada Bluegrass**

Cool season bunchgrass with germination in 14-21 days.

Similar to Kentucky bluegrass and often used for soil stabilization.

8% **Indiangrass**

Warm season bunchgrass with germination in 21-28 days.

Native western grass adapted to a wide variety of soil conditions.

7% **Sideoats Grama**

Warm season bunchgrass/sod-former with germination in 14-21 days.

Grows on a wide variety of soils and is one of the most important range grasses.

5% **Blue Grama**

Warm season bunchgrass with germination in 7-10 days.

This grass demonstrates good drought, fair salinity, and moderate alkalinity tolerances.

5% **Switchgrass**

Warm season bunchgrass with germination in 21-28 days

Very tolerant of poor soils, flooding and drought. Often used in reclamation of sand dunes and dikes.

Formulations & varieties are subject to change without notice!