# DRAFT SPECIAL TECHNICAL PROVISIONS

**FOR**

## PITTMAN TERRACE WATER QUALITY IMPROVEMENT PROJECT

## DOUGLAS COUNTY, NEVADA

**FOR USE WITH:**

**Standard Specifications, as referred to in these Special Technical Provisions, are the Standard Specifications for Public Works Construction – Washoe County "Orange Book," current edition. These Special Technical Provisions are supplemental to the Standard Specifications.**

**PREPARED BY:**

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## SECTION 100 – GENERAL

**101.01 Description**
The work described herein shall conform to the Contract Documents, Project Plans, Standard Specifications, these Special Technical Provisions, and Project Permits. Standard Specifications, as referred to in these Special Technical Provisions, are the Standard Specifications for Public Works Construction – Douglas County "Orange Book," current edition. These Special Technical Provisions are supplemental to the Standard Specifications. Where applicable in the Nevada Department of Transportation (NDOT) right of way, the NDOT Standard Specifications for Road and Bridge Construction, current edition (NDOT Standard Specifications).

In case of conflict between the Standard Specifications and these Special Technical Provisions, the Special Technical Provisions shall govern, take precedence over, and be used in lieu of such conflicting portions.

## SECTION 102 – CONTRACTOR QUALIFICATIONS

**102.01 Description**
In addition to any bidder qualifications noted elsewhere in the Contract Documents, Project Plans, Standard Specifications, and these Special Technical Provisions, each bidder shall attach sufficient documentation to the bid forms to clearly demonstrate his/her ability to meet the minimum experience qualifications stated in this section. The following items shall be included in the bid submittal:

1. Project descriptions of similar projects to the Pittman Terrace Water Quality Improvement Project including:
    a. Location of projects
    b. Dates project was initiated and completed by the Contractor
    c. Description of size of restoration and any road crossings
    d. Total contract costs
    e. Client/agency contact in responsible charge (owner of the work)
2. Other references demonstrating Contractor qualifications on similar projects. These references shall only include regulatory, funding and/or local agency representatives or licensed Professional Engineers working on similar projects within the Lake Tahoe Basin.
3. Contractor's license number, classification, & status.

The above items shall clearly demonstrate the Contractor's qualifications to perform the work associated with the Pittman Terrace Water Quality Improvement Project and past similar experience on other projects. The experience to be demonstrated above is required to meet the following minimum requirements:

A. The Contractor and his/her designated Foreman is required to have successfully performed a minimum of one (1) project, within the past five (5) years, which included work components of a similar scope and nature as to that which is indicated herein consisting of minimum project total costs of $100,000 and contract times exceeding 15 days.

Failure of the Contractor to submit the information required or to demonstrate experience as required in this section shall warrant the Contractor's bid submittal incomplete. The determination of whether

the Contractor meets the qualifications is at the sole discretion of the Nevada Tahoe Conservation District.

**102.02 Measurement and Payment**
There will be no compensation for providing required bid documents and support materials for a complete bid package for this project. Incomplete bid packages or bid packages received after the submittal deadline will not be considered.

## SECTION 110 – ORDER OF WORK

**110.01 Description**
The construction of this project shall conform to the Contract Documents, Plans, Standard Specifications, and these Special Technical Provisions. Prior to commencing work, the Contractor shall submit to the Engineer a sequence and schedule of work for review and acceptance in accordance with the Standard Specifications and these Special Technical Provisions. The schedule shall include all work necessary for a full and complete project as shown on the 100% Design Plans and described in these Special Technical Provisions.

The project requires coordination with several different public entities (Douglas County, the Nevada Department of Transportation, the Nevada Tahoe Conservation District, and the Tahoe Regional Planning Agency). The Nevada Tahoe Conservation District will assist the contractor in coordinating with all entities public and private. The Contractor shall be solely responsible for coordinating with all contractors working in the area whether listed in these Special Technical Provisions or not.

The order of work shall be as follows:

1. Verification of all underground utilities within the project area.
2. Installation of Temporary Traffic Control Measures.
3. Construction of all temporary erosion control measures as shown on the project plans and as approved by the Engineer and Tahoe Regional Planning Agency (TRPA).
4. Construction of project as shown on the project plans and as described in these Special Technical Provisions. Contractor may select sequence for construction.
5. Restoration of entire project site:
    a. Restoration/revegetation of all disturbed areas.
    b. Road sweeping.
    c. Restoration of staging and access.
    d. Removal of temporary BMPs with approval of Engineer.
6. Pre-Final site walk with the Engineer, Contractor, Douglas County, NDOT, and TRPA.
    a. Development of project punchlist (by Engineer).
7. Completion of punchlist items.
8. Final site walk with Engineer and Contractor.

The Contractor may submit a revised order of work to the Engineer for review and approval. In the event the Engineer does not accept the Contractor's proposed order of work, the above order of work shall hold for the contract.

The Contractor will be responsible for meeting all the requirements of all the regulations and requirements set forth by TRPA, Douglas County, NDEP, NDOT, and all other permitting and funding agencies. In the event fines are levied by any of these agencies, the Contractor shall be solely

responsible for all costs associated with these fines. In the event the project receives a stop work order by any entity, the Contractor will not be granted any additional working days. The working days during which no work is performed will be counted as contract working days, even though the Contractor is unable to work due to the stop work order.

The Contractor shall submit a construction schedule in accordance with the provisions of this section, these Special Technical Provisions and the Standard Specifications for review and approval by the Engineer.

**110.02 Measurement and Payment**
Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with all work involved in provisions of this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; no additional compensation will be allowed.

## SECTION 120 – PROJECT PERMITS

**120.01 Description**
This project is located within Douglas County, Nevada and the Lake Tahoe Basin, which is regulated by Douglas County, the Tahoe Regional Planning Agency (TRPA), and the Nevada Division of Environmental Protection (NDEP). Finally, a portion of the work is within the NDOT right-of-way, which requires the issuance of an encroachment permit by NDOT.

The project permits have not been received for the project at the time of Bid, however the contractor will be responsible for all permit requirements upon receipt of the permits for the project and no additional compensation shall be allowed for. The project permit(s) will have specific requirements covering work to be performed under this contract. The Contractor shall meet the permit(s) requirements for grading season restrictions, stormwater discharges, Best Management Practices (BMPs), selection of staging and storage areas, dewatering and diversion practices, revegetation and restoration requirements, and all other agency approval conditions. The area of disturbance for this project is less than one acre and therefore is not expected require a NDEP approved Stormwater Pollution Prevention Plan (SWPPP). The Contractor is responsible for meeting all NDEP requirements.

In addition to TRPA and NDEP stormwater discharges and temporary erosion control and BMP requirements, the Contractor shall be responsible for complying with all Douglas County and NDOT permits and other agency requirements and responsibilities as provided in the project permit(s), Contract Documents, Plans, Standard Specifications, and these Special Technical Provisions. **The Contractor is required to procure a site improvement permit from Douglas County prior to initiating any work on the site.**

The Contractor shall maintain a copy of all permit(s) at the construction site and shall make the permit(s) available to operating personnel during construction activities; also upon request these permit(s) must be made available for public inspection.

The Contractor shall maintain a set of stamped plans and special provisions at the construction site and shall make them available to operating personnel during construction activities; also upon request, plans and special provisions must be made available for public inspection.

It shall be the Contractor's responsibility to completely inform him or herself of the conditions of all Project Permit(s) and conduct construction operations accordingly. Any requested change to an agency's permit conditions of approval, proposed by the Contractor, shall be submitted to the Engineer for transmittal to TRPA, NDEP, or other agency for their approval. The Contractor shall also be responsible for adhering to the requirements of the TRPA Code of Ordinances relating to this project. Should conflicts arise between the Standard Specifications and the TRPA Code of Ordinances, the TRPA Code of Ordinances shall supersede the Standard Specifications.

The **Contractor is responsible for coordinating the pre-grading meeting with TRPA** to allow for review of the project site and determination of the adequacy of temporary erosion control measures and BMPs deployed by the Contractor. The Contractor shall coordinate the meeting so that the Contractor, Engineer, TRPA, NDEP, and NTCD staff are present. The Contractor shall follow the requests of the reviewing environmental agencies as necessary to bring the construction site temporary erosion control devices and BMPs into compliance with the permit(s) requirements, regulations, and other provisions of these Special Technical Provisions. The Contractor shall maintain all temporary erosion control devices and BMPs until all work is complete and the project site is stabilized per acceptance of the Engineer and all relevant agencies in review of the project site at the "Final Walk Through". The Contractor can remove temporary erosion control devices and BMPs only upon approval by the Engineer, TRPA, and NDEP to do such. Attention is directed to the revegetation requirements found elsewhere in these Special Technical Provisions.

The Contractor shall comply with all noxious weed requirements per regulatory agencies. These requirements include but are not limited to the following:

- All tools, equipment and vehicles used for project implementation are required to be weed-free.
- All tools, equipment and vehicles will be cleaned of all attached mud, dirt, and plant parts. This will be done at a vehicle washing station or steam cleaning facility (power or high pressure cleaning) before the equipment and vehicles enter the project area, and before vehicles enter the Lake Tahoe Basin (if they originate from outside the Basin).
- All soil, fill, gravel, rock, mulch, seed, organic matter or other imported materials are required to be weed-free. Use onsite soils, gravel, rock, or organic matter when possible. Otherwise, obtain materials from pits, quarries, nurseries, and other sources that are certified or have been determined to be weed-free by the noxious weed coordinator of the USFS Lake Tahoe Basin Management Unit.
- Minimize the amount of ground and vegetation disturbance in the construction areas. Reestablish vegetation on all disturbed bare ground to minimize weed establishment and infestation.
- Use weed-free mulches, and seed sources. Salvage topsoil from project area for use in onsite revegetation, unless contaminated with noxious weeds. All activates that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent non-native such as Phleum pretense (cultivated timothy), Dactylis glomerata (orchard grass), or Lolium spp. (ryegrass) will not be used. This requirement is consistent with the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining "the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems." Seed mixes should be accepted by the Revegetation Specialist.
- Staging areas for equipment, materials, or crews shall not be sited in weed infested areas.

The Contractor shall meet all of the requirements of the project permit(s) as issued by the permitting agencies, and any provisions for rights-of-entries issued by land owners. The Contractor will be responsible for adhering to all requirements of the permit(s), and no additional compensation will be allowed for. The following project permits may be found as appendices to the Contract Documents:

- Tahoe Regional Planning Agency
- NDOT – *Right-of-way Occupancy*
- Douglas County – *Site Improvement Permit*

**120.02 Measurement and Payment**
Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

## SECTION 125 – STORM WATER POLLUTION PREVENTION COMPLIANCE

**125.01 Description**
The Contractor shall implement the requirements for erosion control due to storm water and construction related runoff from construction sites as established under Nevada Revised Statutes (NRS) and Nevada Administrative Code (NAC) 445A. It shall be the Contractor's responsibility to provide day-to-day operational control of activities and the implementation of Best Management Practices (BMPs) that are necessary to control and reduce the pollution of Waters of the US from stormwater discharges and other pollutants and runoff associated with construction activities, and to ensure compliance with the requirements of National Pollutant Discharge Elimination System (NPDES) permit coverage. Because the area of disturbance is less than one (1) acre, the creation of a SWPPP, under the NDEP stormwater general permit, will likely not be necessary. However the Contractor shall be responsible for the creation and implementation of a SWPPP if NDEP deems one necessary. Work shall include, but is not limited to:

- Furnishing all materials
- Implementing all practices and installing, constructing and maintaining all BMPs and temporary and/or permanent control measures for the duration of the project
- Adhering to NDEP and TRPA regulations and permits

**125.02 Measurement and Payment**
Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

## SECTION 130 – MOBILIZATION & DEMOBILIZATION

**130.01 Mobilization**

This item shall consist of mobilization of the Contractor's forces which shall include obtaining all bonds, insurance, and permits; purchasing, transportation, setup, staging and storage of equipment and materials; establishing a field office at the project site if necessary; plus furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work as shown on the Project Plans, and specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer. Mobilization shall also include but not be limited to the following items:

- Provide on-site sanitary facilities;
- Post all Occupational Safety and Health Administration (OSHA) required notices;
- Post all prevailing wage requirements;
- Prepare and transmit all submittals as noted on the Plans, and as specified in the Contract Documents, Standard Specifications, and these Special Technical Provisions;
- Wash and clean all tools and equipment prior bringing on site, as specified in the Project Permits, Contract Documents, Standard Specifications, these Special Technical Provisions, and as required by TRPA.

**130.02 Project Sign**

Mobilization shall include construction and erection of one project sign. The project sign shall be constructed in accordance with details provided within the Project Plans and located as directed by the Engineer. The project sign shall be constructed within ten (10) working days after notice to proceed. Maintenance of the project sign is the Contractor's responsibility until the sign is removed by the Contractor at the end of the construction contract. For this project, one (1) project sign will be erected.

**130.03 Demobilization**

Demobilization shall consist of the removal of all materials, equipment, signage, temporary pollution control materials, trash, debris, and all other items imported to or generated on-site as a result of the work completed by the Contractor and his/her operations. Furthermore, demobilization shall include cleaning the existing and installed drainage improvements including drainage inlets, sediment traps, pipes, and culverts within the project boundary. Furthermore, demobilization shall include repairing all pavements, walkways, infrastructure, signage, landscape, trails, or other public or private facilities damaged by construction activities to their pre-construction conditions using comparable materials as accepted and directed by the Engineer. All disturbed areas shall be returned, as nearly as possible, to the lines and grades which existed prior to construction except where modified as part of the work so designated on the Plans.

At the conclusion of work, final acceptance of the Project improvements must be in the form of a written “Notice of Completion.”

**130.04 Record Drawings**

The Contractor shall keep accurate records on a set of project black line prints (22 inches x 34 inches) of all additions and deletions to the work and of all changes in location, elevation, and character of the work not otherwise shown or noted on the Project Plans. NTCD will furnish up to six (6) sets of full size black line prints for use at no cost to the Contractor.

Record drawings plans shall be provided to the Engineer for acceptance within one (1) calendar month after project completion as defined by the Engineer. Release of retention monies will not occur prior to submittal and acceptance of the final record drawings, which shall be a comprehensive set of Record Drawings detailing all aspects of the Project. Two (2) sets of full sized (22x34) hard copy record drawings shall be provided with changes to the original Contract work shown in red color, including revision clouds. All redline changes and details to be shown on the record drawings shall include, but not be limited to, difference in quantities of the original plans vs. actual installation (as appropriate), modifications to the location and elevations of public utility and storm drainage facilities, any utility relocations, any signage or traffic control devices, and any other modifications, additions or adjustments to any other facilities not shown or as modified on the Project Plans.

Record drawings plans shall be signed and dated by the Contractor or the sub-contractor that actually constructed the facility. In addition, company names of the Contractor and sub-contractors shall be added to the Title Sheet of the record drawings. Should the Contractor not provide this information to the Engineer in the time specified in this section, or to the acceptance of the Engineer (record drawings do not note all changes to the project) the Engineer will not accept the record drawings, retention shall not be released on the project, the record plans will be returned to the Contractor and the Contractor shall resubmit the record drawings to meet the requirements of this section to the acceptance of the Engineer.

**130.05 Measurement and Payment**

Mobilization and Demobilization, as described above shall be considered one bid item. Project Sign, as described above shall be considered as included with Mobilization and Demobilization and no additional compensation shall be allowed for. Record Drawings, as described above shall be considered as included with Mobilization and Demobilization and no additional compensation shall be allowed for. Cleaning of existing and installed improvements shall be considered as included with Mobilization and Demobilization and no additional compensation shall be allowed for. Mobilization and Demobilization shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for Mobilization and Demobilization shall include full compensation for mobilizing the Contractor's forces which shall include but not be limited to: bonds, insurance, permits, record drawings, purchasing, transporting equipment, setup, temporary power source and installation, project signs, establishment of a field office, sanitation facilities, and furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work; including full compensation for operations required to demobilize the Contractor's forces which shall include but not be limited to: the removal of all equipment, materials, debris, project signs, field office, sanitation facilities, temporary BMPs, tree protection fencing, and project clean-up; for the contract lump sum price bid, as shown on the Plans, in accordance with the Contract Documents, Standard Specifications, these Special Technical Provisions, project permit(s), and to the satisfaction of the Engineer.

Partial payments paid for Mobilization and Demobilization shall be made as follows:

- When 5% of the total original contract amount is earned from other bid items, 50% of the amount bid for mobilization/demobilization will be paid.
- When 10% of the total original contract amount is earned from other bid items, 100% of the amount bid for mobilization will be paid.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 140 – STAGING AND STORAGE

**140.01 Staging and Storage Areas**

The staging and storage areas as identified on the Project Plans are allowed for use by the Contractor in accordance with the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and any easement provisions. These staging/storage areas are controlled by various private and public entities and shall be maintained at all times in a clean and safe environment, including any provisions for rights-of-entries issued by land owners. The Contractors use of the designated staging/storage areas shall be limited to and/or controlled by the time allowances and other restrictions as noted on the Project Plans, Project Permits, rights of entry, and elsewhere in these Special Technical Provisions.

Storage of construction materials, supplies, and equipment within the public right-of-way is prohibited. At no time shall materials, supplies, or equipment be stored or stockpiled within twenty (20) feet of a travel lane unless separated by guardrail or concrete barrier rail in accordance with NDOT requirements and the Standard Specifications.

If the Contractor wishes to make use of additional areas, for staging/storage activities, not identified on the Plans, it will be the Contractor's sole responsibility to secure use of these areas with agreements with the individual property owners; and file a copy of said authorization with the Engineer. The Contractor shall further be responsible for establishing all necessary and required temporary erosion control protections. The Contractor will be responsible for bearing all costs with securing these areas, and all efforts associated with the approvals, setup, maintenance, decommissioning and restoration, with no additional compensation allowed for.

The Contractor shall be responsible for appropriate security and safety measures at all staging/storage areas to protect property and the public.

Set-up, use, and restoration of all staging/storage areas requires the Contractor to protect all existing facilities, equipment, vegetation, utilities (above and below ground/grade) and surface features (such as, but not limited to, fences, posts, signs, boulders, landscaping, slopes, etc.) in place. Should the Contractor's operations damage any of these items the Contractor shall replace, in kind, the damaged or destroyed item. The damage or destruction of any item will be determined by the Engineer during the course of construction or at the final punchlist development. In the event the Contractor needs to relocate any item (boulder, fence, etc.) the Contractor shall replace the item to its original location. If the relocated item is damaged, as determined by the Engineer, the Contractor will be required to replace the damaged item with an in-kind replacement. No additional compensation will be allowed for any relocation, or replacement of damaged items, this will be at the sole cost to the Contractor.

The Contractor shall not proceed with any construction until truck haul routes and temporary haul roads have been identified and accepted to the satisfaction of the Engineer, NTCD and TRPA. **The Contractor shall submit four (4) copies of a proposed truck haul route plan, along with the proposed project construction schedule and traffic control plan, to the Engineer for review and acceptance at**

**least seven (7) calendar days prior to the scheduled Pre-Construction Meeting.** Any days lost due to the lack of an accepted truck haul plan will be charged against the Contractor's allowable work days. The Contractor's truck haul route plan shall include, but not be limited to, the following:

- Proposed construction zone;
- Proposed storage areas;
- Location of flaggers (to control truck access, where applicable);
- Construction phasing (including phasing of intersection construction and detours, if any); and,
- Proposed truck route (including the location of other construction projects which impact, or may be impacted by, the proposed haul route.)

All staging/storage areas shall comply with TRPA's requirements for BMPs while storing or stockpiling materials. The Contractor shall be responsible for locating staging/storage areas and will need to install all temporary erosion controls and BMPs and maintain them at all times during construction and until project closeout. The limits of the staging/storage areas shall be reviewed and accepted by the Engineer, NTCD and TRPA prior to use. All necessary temporary BMPs shall be installed at the staging/storage areas prior to the TRPA Pre-Grade Meeting and will be inspected during said meeting to ensure proper installation and controls are in place.

At the completion of the work or when no longer required for use, all construction staging/storage areas shall be cleared of all equipment, tools, materials, trash, debris, etc to produce a clean area and returned, as nearly as possible, to the lines and grades which existed prior to construction.

The restored staging/storage areas, if areas exist as an unpaved condition, shall be treated with the final Revegetation Treatment Type as shown on the Plans and as described in these Special Technical Provisions. For storage and staging areas in paved areas, the areas shall be swept clean and returned to the existing condition, prior to use. The Engineer will inspect the paved areas, and if damage has occurred, whether by fault of the contractor's operations or not, the contractor will be required to make remedial action, including complete pavement restoration. No additional compensation shall be allowed for any remedial restoration work of paved areas, including complete replacement of the pavement areas.

Staging area located in the NDOT right of way will need the approval of NDOT before use.

**140.02 Coordinating with Adjacent Private Property**

Contractor shall coordinate work with the property owner so that work will minimize inconvenience to property owner. Contractor shall notify adjacent private property owners and business owners in writing 10 Days prior to the start of construction and at least 48 hours in advance of the interruption of utility service or the interruption of access, or the installation of bituminous material. A copy of the notice is to be submitted to the NTCD at the same time. Contractor shall maintain access to homes at all times. Private property shall not be used to store construction equipment or material unless permission is granted by the property owner.

**140.04 Measurement and Payment**

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard

Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

## SECTION 145 – SUBMITTALS

**145.01 General**

Where required by the Contract Documents, project permit(s), Project Plans, Standard Specifications, elsewhere in these Special Technical Provisions, and/or as indicted herein, the Contractor shall provide submittals, and furnish shop drawings and material certifications to the Engineer for review and acceptance. The required number of submittals, shop drawings and certificates shall be delivered within the specified time frames, including a transmittal letter in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions. The transmittal letter at a minimum shall include the following information:

A. Submittal number and item description
B. Scheduled date of submittal
C. Specification section/item number
D. Supplier and/or manufacturer, plus contact information
E. Contractor or sub-contractor name and point of contact information

The number of copies to be submitted will be according to the following, unless specified elsewhere:

Construction Schedule, Traffic Control Plan, and Truck Haul Routes – 4 copies
Submittals & Shop Drawings – 4 copies
Certifications – 3 copies (conforming certifications will not be retuned)

**145.02 Submittals Required**

The following items require a submittal, shop drawing, and/or material certification for review and acceptance by the Engineer (this list may not be complete; it is the Contractors responsibility to review and be knowledgeable with all portions of the project permits, Plans, Contract Documents, Standard Specifications, and these Special Technical Provisions for any additional requirements):

- Construction Schedule
- Traffic Control Plan, and Truck Haul Routes
- Equipment list for all equipment to be used, including the following minimum information:
    - Manufacturer and Model
    - Ground pressure rating (in psi)
    - Certification for washing/steam cleaning, including date
- Filter fence, sediment coir logs, and other BMP materials
- Construction limit fence
- Engineered fabrics
- Aggregates used in the work
- Chinking, cobble, boulders, and gravel used in the work
- Aggregate base (AB), imported fill, engineered fill, imported topsoil, and bedding materials
- Material testing reports and other data necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for use of any native soils, imported soils and aggregates requiring density testing
- Pipe and fittings

- Shop drawings and installation specifications for structures, including the culvert, headwalls, trench drain, drainage inlet, and structures
- Concrete mix design(s), admixtures, and curing agents
- Testing and QA/QC certifications for any precast concrete structures
- Asphalt mix design and other bituminous materials used in the work
- Utility boxes, manholes, grates, and other miscellaneous iron/steel products used in the work
- Loose aggregate samples as specified in Section 200 “Gravel, Cobble, Rock, Boulder & Other
- Aggregates”
- Revegetation items as specified in Section 260 “Revegetation”
- Record Drawings

**145.03 Measurement and Payment**
Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

## SECTION 150 – TRAFFIC CONTROL

**150.01 Traffic Control Plan**
Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to complete and maintain all traffic control provisions in accordance with the Plans, Contract Documents, Standard Specifications and these Special Technical Provisions, and as directed by the Engineer during the life of the Contract. All traffic control devices and plans shall conform to the latest editions of the Manual on Uniform Traffic Control Devices (MUTCD) and the State of Nevada Department of Transportation (NDOT) Standard Specifications and Plans for Road and Bridge Construction where applicable.
**The Contractor shall submit four (4) copies of a proposed traffic control plan, along with the proposed project construction schedule and truck haul route plan, to the Engineer for review and comments at least seven (5) calendar days prior to the scheduled Pre-Construction Meeting.**

- The Contractor's traffic control plans shall include, but not be limited to, the following:
- Designated construction site Traffic Control Supervisor (TCS) name and contact information
- Proposed construction zone and existing speed limits
- All construction signing
- Location of flaggers
- Types and location of traffic control devices
- Construction phasing (including phasing of intersection construction and detours, if any)
- Lane crossovers between construction phases
- Special events scheduling
- Detours
- 8 5"x 11" individual access plans for multi-access properties
- Accommodations for pedestrians and bicycles
- Intersection Control Strategy

The Engineer and NTCD personnel will provide written comments and/or corrections to the Traffic Control Plans. If necessary, the Contractor and Engineer will meet to consider the comments and/or corrections to the plan prior to the preconstruction conference to resolve any issue relative to the traffic control plans. Upon resolution of all issues or acceptance of the traffic control plans as submitted, the Engineer shall accept the plans in writing.

Acceptance by the Engineer of the submitted traffic control plans shall in no way relieve the Contractor of the responsibility for safety requirements. Acceptance of the traffic control plans by the Engineer indicates that the plans generally appear to conform to the contract requirements. Such acceptance shall in no way be construed as confirmation of the technical accuracy or adequacy of the contents of the plans and shall not relieve the Contractor of the obligation to institute traffic control measures in full compliance with contract requirements, and which function safely and correctly, and are in conformance with applicable statutes, ordinances, and regulations. Approvals will be required from Douglas County and NDOT.

Immediately after set up of new or modified traffic control plans, the Contractor shall have the TCS inspect the controls installed in the field to determine if all required controls have been installed and are operating as intended. The TCS shall submit to the Engineer a written inspection report on the traffic controls conformance with the accepted traffic control plans and contract requirements. If the TCS determines that the traffic controls are not in conformance with the accepted traffic control plans, contract requirements, or determines that the traffic controls are not functioning as intended, the report shall address such deficiencies and make recommendations for changes.

If at any time it is determined that traffic controls have been modified or are not functioning as intended, the Engineer's representative may request NDOT to evaluate the traffic controls installed by the Contractor. Additionally, if during construction, revisions to the accepted plans are necessary for safety or accommodation to traffic, the Engineer may require such revisions.

Any request by the Contractor to change the traffic control plans shall be submitted in writing at least five (5) working days prior to implementation. Such requests must be accepted in writing by the Engineer prior to implementation. Traffic control plans shall be maintained and must be current with the applicable phase of the work.

**150.02 Traffic Control Notification**

Upon acceptance of the traffic control plans, and at least 2 working days prior to beginning construction, the Contractor shall notify and submit a copy of the accepted traffic control plans to the Engineer, refuse collection agencies, and appropriate police and fire departments, REMSA, and any other emergency service as directed by the Engineer.

**150.03 Traffic Control General Requirements**

The Contractor shall designate a construction site TCS who shall be responsible for initializing, installing and maintaining all traffic control devices as shown on the traffic control plans, as specified in the MUTCD, the NDOT Standard Plans for Road and Bridge Construction, applicable Project Plan sheets, and these Special Technical Provisions. The construction TCS shall be under the direct supervision of the construction site Superintendent. The construction TCS shall be available to be contacted by the

Engineer's representative 24 hours a day, 7 days a week for the life of this contract, and shall be available to be present on the work site within sixty (60) minutes after notification by the Engineer's representative.

The Contractor shall submit the designated construction TCS's name, ATSSA certification number, and qualifications for the Engineer's acceptance at the preconstruction conference. The construction TCS shall:

- Understand the contract requirements
- Understand the MUTCD requirements
- During a work day, make at least 2 inspections of the condition and position of all traffic control devices in use each day
- Correct all traffic control deficiencies
- Report all corrective actions to maintain and protect traffic through the project
- Review work areas, equipment operation and storage, and material and handling and storage relative to traffic safety
- Furnish weekly written certification to the Engineer that inspections and reviews were conducted and that traffic control devices met or exceeded the contract requirements. Weekly certification shall include daily records of traffic control activities and reviews.

The Contractor shall not proceed with any construction until traffic control plans and the construction TCS have been accepted and the proper traffic control has been provided to the satisfaction of the Engineer. Any days lost due to improper traffic control or lack of a designated construction TCS, will be charged against the Contractor's allowable working days.

The Contractor shall maintain public traffic throughout the project in accordance with the accepted traffic control plan and perform work in a manner that assures the safety and convinces of the public and protect the people and property adjacent to the project site. During the course of construction, the Contractor shall be prepared to provide access through the construction zone for police, fire or emergency vehicles as necessary to reach their destination with a minimum delay.

Unless otherwise accepted by the Engineer, the Contractor shall maintain two-way traffic on all roads in and around the project area at all times for the duration of the project. The Contractor shall make special considerations for local access to and from properties adjacent to the construction zone. All efforts shall be made to minimize the inconveniences to the local residents and business owners. All driveways shall be opened and accessible at the end of a shift.

Type I or Type II barricades will not be permitted for use to prevent vehicle traffic from entering a closed portion of roadway. Only Type III barricades will be used in all such instances. Type III-B barricades used for this purpose will be placed a maximum 4 feet apart. Yellow warning lights may be necessary for some barricade or drum applications.

Traffic control devices shall be removed as soon as they no longer apply to the current construction activities, including daily operations.

**150.04 Existing Signs**

If existing traffic control device regulatory signage (i.e. stop, yield, speed limit, etc) is removed or damaged due to the Contractor's operations, the Contractor shall notify the appropriate jurisdiction

maintenance department and immediately install temporary signs of the same designation as close as possible to the original location.

All existing traffic control devices removed to facilitate construction of the project improvements, shall be salvaged and replaced to its original condition as part of the work. Any materials that are damaged or lost shall be replaced in like kind. All traffic control devices require acceptance of the Engineer.

**150.05 Measurement and Payment**
"Traffic Control" shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract price paid for "Traffic Control" shall include full compensation for preparation and submittal of a traffic control plan, and for furnishing all labor, materials, tools, equipment, and incidentals to perform all the work involved in provisions of this section, including but not limited to temporary construction signs and traffic control devices, flagging, flasher units, barricades, lights, electrical power, resetting of traffic signs and delineators, and all incidentals and materials necessary to provide these items for the duration of construction.

The schedule for payment for "Traffic Control" shall be in direct proportion to the percentage of work completed; i.e. if 20% of the project is completed, the Contractor may request payment for 20% of the lump sum total of the bid item for traffic control. Measurement of the percentage of work completed per each phase shall be based on the percentage of work billed by the Contractor based on the total dollar amount of the contract bid price. Increases in the total contract price for any reason do not justify an increase in the lump sum price paid for any of the traffic control bid items. The Engineer reserves the right to adjust the partial payment amounts of these said bid items based on any adjustments made to other pay items on the payment request by the Engineer.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 155 – CONSTRUCTION STAKING

**155.01 Description**
Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to complete construction staking in accordance with the Standard Plans and Specifications and these Special Technical Provisions.

NTCD shall furnish one set of stakes and/or marks to establish lines and grades required for the completion of the work as shown on the Plans and as specified in the Standard Specifications and these Special Technical Provisions. The Contractor is responsible for notifying the Engineer at least seven (7) days in advance of when staking is needed. The Contractor will be responsible for any and all additional construction staking necessary for the full and complete construction of the Project. The Contractor shall be solely responsible for maintenance and protection of the survey stakes or marks. Contractor's construction staking will be verified by the Engineer, at the Engineer's discretion.

NTCD shall furnish labor and surveying equipment necessary for staking the Project including the following:

- Control points,
- Limits of grading and grade breaks,
- Stream alignments and offsets,
- In stream structure locations and offsets,
- Stormwater infrastructure locations and offsets,
- Berm alignment and offsets, and
- Culvert alignment.

The contractor shall provide any survey in excess of the aforementioned items.

All stakes and survey markers will be conspicuously marked with flagging tape or paint. The Contractor shall inform the Subcontractors of the importance of the preservation of all survey markers. The Contractor shall be responsible for protecting and maintaining all stakes from destruction. In the event that one or more of the stakes are damaged or destroyed, the Contractor will replace the stakes at the expense of the Contractor.

The Contractor's surveyor will be provided with the northing, easting, and elevation of the control points existing in the field as shown on the Project Plans. Additionally, the Contractor's surveyor will be provided with an electronic copy (ASCI Format) of the control points depicted on the Project Plans to develop the construction staking as stated in these Special Technical Provisions.

If the Contractor's surveyor wishes to develop a different work plan it shall be the Contractor's responsibility to develop such a work plan and present to the Project Engineer for approval.

**155.02 Measurement and Payment**
Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with all work involved in provisions of this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, should be incidental to the other construction items; no additional compensation will be allowed.

## SECTION 160 – TEMPORARY EROSION CONTROL

**160.01 General**
This work shall consist of temporary erosion control measures, devices, and BMPs that may be shown on the Project Plans, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, or as directed by the Engineer during the life of the contract. Temporary erosion control measures will also be required at staging/storage areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and air pollution within the limits of the project and to minimize damage to the work, adjacent properties and Lake Tahoe, streams, or other bodies of water.

**The Contractor shall submit two (2) copies of any proposed revisions to the applicable Project Plan sheets for Temporary Erosion Control**. No work shall be started until the BMPs, applicable plan sheets, schedules and methods of operation for temporary pollution control are reviewed and accepted by the Engineer, NTCD, and TRPA. The Contractor is reminded that the project is located within the Lake Tahoe Basin and all pollution control measures and clean-up procedures must satisfy the requirements of

TRPA, NDEP and the permit(s) issued for the project. During the course of project construction, the Contractor shall cooperate with the Engineer, TRPA, NDEP and other regulatory officials and take immediate action as directed to protect water bodies and sensitive areas, and provide for erosion or other pollution control.

Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as stated within this section, the SWPPP, and the Nevada Contractors Field Guide for Construction Site BMPs (hard copies are available for purchase from the Truckee Meadows Watershed Committee 775-334-3314, or a free electronic copy "pdf" is available for download from the NDEP website http://ndep.nv.gov/bwqp/bmp05.htm).

*As Directed Placement*

Due to the nature of the project and expected field direction from the Engineer, NTCD, and permitting agencies, the Contractor shall make provisions to furnish all labor, tools, materials, and equipment as necessary to furnish and place additional temporary erosion control devices in the work (i.e. beyond or in addition to what is designated on the Project Plans) as directed by the Engineer, in conformance with the Contract Documents, Project Permits, Standard Specifications, and these Special Technical Provisions. Installation, maintenance, removal, and disposal of any additional as directed temporary erosion control device shall be considered as included in the applicable "as directed" bid item unit or lump sum price, and no additional compensation will be allowed. The installation and location of any as directed temporary erosion control device shall only occur as determined and marked in the field by the Engineer.

The intent of the as directed temporary erosion control device bid items, is to provide the Engineer and Contractor with a means and allowance for additional temporary erosion control devices to be incorporated in the work where modifications to the construction sequence, changing field conditions, temporary stockpiles, and other potential minor unknowns can be adequately addressed in order to maintain compliance with the SWPPP and Project permits.

The Contractor will not be compensated for the installation of any additional "as directed" temporary erosion control devices without prior direction and acceptance of the Engineer.

*Temporary Soil Stabilization*

The Contractor shall install temporary soil stabilization materials for water pollution control in all disturbed work areas that are considered inactive (i.e. excess of 14 days) or before forecast storm events. Should any temporary erosion control of this nature be required elsewhere as directed by the Engineer and/or regulatory agencies, the Contractor shall install within 48 hours of notification. Where applicable and upon acceptance of the Engineer, the Contractor shall furnish and apply/install temporary mulch, temporary hydraulic mulch, temporary erosion control blankets, or temporary covers in conformance with the Standard Specifications and these Special Provisions. Materials and construction methods shall comply with the Standard Specifications and these Special Provisions.
The Contractor shall maintain a temporary cover on all stockpiles at all times. Whenever a temporary cover is removed to perform other work, the temporary cover shall be replaced and secured within one (1) hour of stopping work.

Compensation for the requirements of this section, not otherwise provided for in a specified bid item, shall be considered included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

**160.02 Gravel Construction Entrance/Exit**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, SWPPP, Project Permit(s), and TRPA Best Management Practices.

Work under this item shall consist of clearing and grubbing, excavation, furnishing and placing reinforcement mat, furnishing and placing rock at each entrance/exit access road, maintenance (i.e. removal of large quantities of captured sediment, and/or placement of additional rock during course of construction), removal, disposal of excess materials, and restoration of disturbed area.

Fabric to be used for the reinforcement mat shall be manufactured from polyester, nylon, or polypropylene material, or any combination thereof. Fabric shall be manufactured from virgin, or recycled or a combination of virgin and recycled, polymer materials. No virgin or recycled materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The fabric shall be a non-woven, needle-punched fabric. The fabric shall be permeable, not act as a wicking agent, and shall conform to the following:

| **Test** | **Test Method** | **Requirement** |
|---|---|---|
| Weight, grams per square meter | D 3776 | 135 min. |
| Grab Tensile Strength, Newton, (25 millimeter grip, in each direction) | D 4623 | 0.40 min. |
| Elongation at Break, percent | D 4632 | 30 min. |
| Toughness, kilonewtons<br>(percent elongation x grab tensile strength) | | 26 min. |
| Permittivity, 1/sec. | D 4491 | 0.5 min. |
| Ultraviolet Resistance, percent strength retention | D 4355 | 70 min. |

Rocks shall be angular to sub-angular in shape and shall conform to the material quality requirements in Section 200.07, Riprap, of the Standard Specifications for resistance to wear, absorption, apparent specific gravity, and durability. Rocks used for the gravel construction entrance/exit shall conform to the following sizes:

| Square Screen Size | Percent Passing |
|---|---|
| 6 inches | 100 |
| 3 inches | 0-20 |

Each gravel construction entrance/exit shall be of adequate size to prevent the tracking of sediment and materials onto any paved public right-of-way. At a minimum the size of each gravel construction entrance/exit shall be as shown on the Project Plans.

While the gravel construction entrance/exit is in use, pavement shall be cleaned and sediment removed at least once a day and as often as necessary when directed by the Engineer. Soil and sediment or other extraneous material tracked onto existing pavement shall not be allowed to enter any existing or proposed drainage facilities.

In the event the Contractor's operations are causing excessive tracking of materials the Engineer may direct the Contractor to replace the gravel construction entrance/exit, expand the size (area – length

and/or width) of the gravel construction entrance/exit, and/or expand the depth of the gravel construction entrance/exit. In the event this is required, the Contractor will not be entitled to any additional payment.

When no longer required as shown on the Project Plans or as determined by the Engineer, each gravel construction entrance/exit shall become the property of the Contractor and be removed and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions. Under no circumstance shall any of the materials used for gravel construction entrance/exit be re-used on the project. All areas disturbed by the placement and use of each gravel construction entrance/exit shall be graded and restored to its pre-existing condition, including any provisions for revegetation found elsewhere in these Special Technical Provisions.

Gravel construction entrance/exit is considered a temporary erosion control measure or BMP. A fine of $100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

**160.03 Construction Limit Fence.** Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this BMP as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices.

The Contractor shall perform all construction activities that are outside the road right-of-way within the construction limits (and/or grading limits) as shown on the Project Plans and staked by the Contractor's surveyor, and as delineated with construction limit fence installed by the Contractor. Where directed by the Engineer and/or shown on the plans, construction limit fence shall be placed around individual trees or groups of trees that are to remain, in accordance with the Tree Protection and Construction Limit Fence depicted on the project plans.

The area within which the Contractor will be allowed to conduct his/her construction operations will be the area within the limits of the construction limit fencing and/or grading limits as shown on the Project Plans. Where located within the immediate vicinity of any trees (or dripline), the width of the work area will be reduced in order to protect the trees. The Contractor shall review each such location to determine what equipment can be used to install the improvements at these locations or if hand work will be necessary. The costs associated with working within these reduced widths shall be included in the unit price bid for the applicable item of work with no additional compensation therefore.

Contractor's attention is directed to the applicable bid item descriptions in these Special Technical Provisions regarding the type of equipment that can be used in construction on sensitive land areas. Where tree protection fencing cannot be placed at the dripline of the tree, as determined by the Engineer in coordination with TRPA, wood batten (as shown on the Project Plans) with bottom set approximately 3 feet above ground surface shall be strapped to the tree trunk (space between wood batten shall be no more than 6"). The unit price bid for construction limit and tree protection fence shall also apply to this condition (i.e. linear foot measurement of tree circumference where wood batten is attached). Construction limit and tree protection fencing shall be inspected daily and repaired, secured, and/or replaced as necessary to maintain and preserve its intended purpose. All construction limit and tree protection fencing shall remain in place during any construction activities unless directed by the

Engineer. Tree protection and construction limit fencing is considered a temporary erosion control measure or BMP.

A fine of $100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

**160.04 Filter Fence.** Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, SWPPP, Project Permit(s), and TRPA Best Management Practices.

Filter (silt) fence shall be manufactured from polyester or polypropylene material. The fabric shall be woven and shall conform to the following:

| Test | Test Method | Requirement |
|---|---|---|
| Grab Tensile Strength, Newton, (25 millimeter grip, in each direction) | 4623 | 400 min. |
| Elongation at Break, percent | 4632 | 20 min. |
| Apparent Opening Size, Micrometers (um) | D 4751 | 850 min. |
| Coefficient of Permeability, cm/sec. | D 4491 | 0.01 min. |
| Ultraviolet Resistance, percent strength retention | D 4355 | 90 min. |

- Filter fence fabric shall be handled and placed in accordance with the manufacturer's recommendations. The fabric shall be aligned and placed in a wrinkle-free manner.
- When joints are necessary, filter fence fabric shall be spliced together only at a support post, with a minimum twelve (12) inches overlap and securely sealed or stitched. See manufacturer's recommendations. Should the filter fence fabric be damaged, the torn or punctured section shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement.
- Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer if less than ten (10) feet and driven securely into the ground (minimum of 1 foot). The posts and fence shall be angled ten (10) degrees off vertical up-slope for stability.
- A trench shall be excavated approximately four (4) inches wide and six (6) inches deep along the line of posts and upslope from the barrier in accordance with manufacturer's recommendations.
- A wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire mesh shall extend into the trench a minimum of two (2) inches and shall not extend more than three (3) feet above the original ground surface.
- The filter fence fabric shall be installed on the upslope side of the wire mesh fence and shall be stapled, wired, or tied to the wire fence and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than three (3) feet above the original ground surface.
- Filter fence fabric shall not be stapled to existing trees.
- The trench shall be backfilled and the soil compacted over the filter fence fabric.

- For installations on slopes less than 20%, slope lengths of 200 feet or less and around drainage inlets, the Contractor has the option to use fiber rolls in lieu of filter fence.
- Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Filter fence shall remain in place for the complete duration of the project (all Phases of work) as necessary to conform to the Project Permit(s) and SWPPP. All filter fence shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project, and is expected to be in good condition at the time the Notice of Completion is issued. Repair and or replacement of any damaged filter fence, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the project or as directed by the Engineer, TRPA and NDEP, all filter fence shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions.

Sediment log (fiber roll) shall not be used in place of filter fence without prior acceptance and written consent of the Engineer. Filter fencing is considered a temporary erosion control measure or BMP. A fine of $100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

**160.05 Sediment Log (Coir Log).** Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices. **The Contractor shall submit a material specification for the sediment log, for acceptance of the Engineer, prior to placement in the work.**

Sediment logs shall be provided in standard lengths of 10 or 20 feet long per the size diameter as shown on the Plans, and shall be prefabricated fiber roll logs or wattles filled with a rice straw, wood excelsior fiber, coconut fiber or other similar filler material, and covered with a biodegradable jute, sisal, or coir fiber netting or open weave containment fabric secured tightly at each end. The use of plastic/photodegradable netting shall not be allowed. All materials shall be certified weed free.

Sediment logs with a diameter of 8 to 10 inches shall have a density of at least 1.1 lb/ft, and sediment logs with a diameter of 12-inches shall have a density of at least 3 lb/ft. Its basic purpose is to provide a flexible, lightweight, porous sediment control device demonstrating the ability to conform to terrain details, dissipate water velocity, and capture loose sediment. All fiber rolls shall be properly staked in place, except where its use is intended to be short term (daily operations) or reposition of the fiber roll will occur on a regular basis (i.e. active construction areas, trenching operations and windrows, temporary or active stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) as determined by the Engineer. In such instances where a fiber roll is not staked, it shall be weighted or secured in place using a sufficient number of gravel bags to control the flow of storm water and capture sediment.

The Contractor shall furnish, install, maintain, and remove when no longer required, all sediment logs per the Manufacturer's directions, as shown on the Project Plans and as directed by the Engineer (where applicable to each Phase of the work), including but not limited to the following general requirements:

- Prior to fiber roll installation; the Contractor shall excavate a concave trench along the contour line, three (3) inches to five (5) inches deep. Soil excavated from the trench shall be placed on the uphill or flow side of the roll to prevent water from undercutting the roll.
- The Contractor shall place the fiber roll in the trench and stake on both sides of the fiber roll within eight (8) inches of each end and then at a maximum spacing of four (4) feet, using one (1) by two (2) inch stakes.
- When more than one fiber roll is placed in a row or check dam, the fiber rolls shall be overlapped in a horizontal configuration to provide a tight joint.

Sediment log shall remain in place, where directed by the Engineer, for the complete duration of the project (all Phases of work) as necessary to conform to the Project Permit(s) and SWPPP. All sediment logs shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project. Repair and or replacement of any damaged sediment log, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for this bid item of work, and no additional compensation will be allowed. At the conclusion of the revegetation "maintenance and bonding period" or where accepted to occur at an earlier date as directed by the Engineer, TRPA and NDEP, all sediment log shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions.

Any sediment logs required or used in the work on a short term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

Sediment logs are considered a temporary erosion control measure or BMP. A fine of $100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

**160.06 Drainage Inlet Protection.** Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to install, maintain, remove, and dispose of this temporary erosion control measure as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices.

The gravel bag material for drainage inlet protection should be woven polypropylene, polyethylene or polyamide geotextile fabric, with a minimum unit weight of 4 oz/sq/yd, Mullen burst strength exceeding 300 psi (ASTM D3786), and ultraviolet stability exceeding 70% (ASTM D4355). The gravel bag fill material should be 3/8 to 3/4 inch open graded, non-cohesive, porous gravel, and washed clean and free from clay, organic matter and other deleterious materials.

Gravel bags shall remain in place, where directed by the Engineer, as necessary to conform to the Project Permit(s) and SWPPP. All gravel bags shall be routinely inspected and maintained at all times and on a continual basis for the duration of the Project. Repair and or replacement of any damaged gravel bag, upon discovery or as directed by the Engineer, shall be considered as included in the prices paid for the applicable bid item of work, and no additional compensation will be allowed. At the conclusion of the project or where accepted to occur at an earlier date as directed by the Engineer, TRPA, and NDEP, all gravel bags shall become the property of the Contractor and be completely removed from the project site and disposed of in conformance with the Contract Documents, Standard Specifications, and these Special Technical Provisions.

Drainage inlet protection considered a temporary erosion control measure or BMP. A fine of $100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

**160.07 Temporary Concrete Washout Facility.** Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct, maintain and later remove when no longer required, including all waste materials, a temporary concrete washout facility in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s) and TRPA Best Management Practices.

When a temporary concrete washout facility is no longer required for the work, as determined by the Engineer, all materials including the hardened concrete and liquid residue are considered the property of the Contractor and shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Provisions, and the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary concrete washout facility shall be backfilled and repaired in conformance with the provisions found elsewhere in these Special Technical Provisions, and the Standard Specifications. Details for an alternative temporary concrete washout facility shall be submitted to the Engineer for acceptance at least seven (7) days prior to installation.

*Materials*

A. Plastic Liner
   Plastic liner shall be single ply, new polyethylene sheeting, a minimum of ½ inch thick, and shall be free of holes, punctures, tears, or other defects that compromise the impermeability of the material. Plastic liner shall not have seams or overlapping joints.
B. Permeable Material
   Permeable material shall be as specified in Section 200.03.05, "Class D Backfill" of the Standard Specifications.
C. Sediment Log
   Sediment Log shall be as specified in Section 160 of these Special Technical Provisions.
D. Gravel Bags
   Gravel bags shall as specified in Section 160 of these Special Technical Provisions.
E. Stakes
   Stakes shall be wood or metal. Wood stakes shall be untreated fir, redwood, cedar, or pine; shall be cut from sound timber; and shall be straight and free from loose or unsound knots and other

defects which would render them unfit for the purpose intended. Wood stakes shall be minimum one (1) inch x two (2) inches in size. Metal stakes may be used as an alternative and shall be a minimum 1/2 inch in diameter. Stakes shall be a minimum four (4) feet in length. The tops of the metal stakes shall be bent at a 90-degree angle or capped with an orange or red plastic safety cap that fits snugly to the metal stake. The Contractor shall submit a sample of the metal stake and plastic cap, if used, for the Engineer's acceptance prior to installation.

*Installation*

The temporary concrete washout facility shall be installed as shown in the Plans and as follows:

A. The temporary concrete washout facility shall be installed prior to beginning placement of concrete and located a minimum of 50 (fifty) feet away from storm drain inlets, open drainage facilities, and water courses unless determined infeasible by the Engineer. The facility shall be located away from construction traffic or direct access to the staging and storage area.
B. The temporary concrete washout facility shall be constructed in sufficient size to contain liquid and concrete waste generated by washout operations for concrete wastes. The facility shall be constructed to contain liquid and concrete waste without seepage, spillage, or overflow.
C. The depressed area or pit shall be covered with a plastic liner in order to protect the underlying soils from contamination.
D. The plastic liner may be held in place using sediment logs, gravel bags, or berms constructed from compacted native materials.

*Maintenance*

The temporary concrete washout facility shall be maintained to provide adequate holding capacity with a minimum freeboard of twelve (12) inches. Maintaining the temporary concrete washout facility shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Provisions, and the Standard Specifications. Holes, rips, and voids in the plastic liner shall be patched and repaired by taping, or the plastic liner shall be replaced. Plastic liner shall be replaced when patches or repairs compromise the impermeability of the material as determined by the Engineer.

The temporary concrete washout facility shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary concrete washout facility resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

**160.08 Watering/Dust Control**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to provide construction water for the control of dust generated by the Contractors activities as required by the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices.

The Contractor shall be responsible for dust control throughout all phases of construction. All federal, state, regional and local ordinances regarding dust control shall be complied with. The responsibility of obtaining the regulations and requirements and full compliance with such ordinances is solely that of the Contractor.

No chemical additives shall be permitted for any watering/dust controls operations.

If the Contractor desires to use water from fire hydrant(s) during construction, permission for the use of hydrant(s) shall be obtained from the proper agency or private owner. The Contractor shall use said hydrant(s) in accordance with any rules, regulations, and procedures as established by the agency.

No water is expected to be available onsite. A water truck will be necessary for dust control and revegetation purposes.

**160.09 Sweeping**

Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to sweep all paved areas within the project site, and streets adjacent to the project site, and dispose of the swept materials in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and TRPA Best Management Practices. Tracking of sediment onto public streets shall be minimized by a combination of road sweeping and use of gravel construction entrance/exit areas designated on the Plans during soil hauling operations, during equipment transporting from one work area to another, and as necessary to keep the streets and other paved areas clear of soil and debris. Tracking control applies to streets within the project area as well streets adjacent to the project area that have the potential to be impacted by tracking from the Contractor's operations.

The Contractor shall provide sweeping equipment that conforms to the following minimum requirements: **The sweeper, provided by the Contractor, shall be a chassis-mounted vehicle capable of vacuuming the roadways such that the swept material is placed into a hopper, from which the swept material can be removed and disposed of. Broom sweepers that are attachments to other equipment are not acceptable sweepers.**

Affected streets shall be swept a minimum of three times daily (e.g. mid-morning, mid-afternoon, and at the end of the day) during soil hauling operations, during equipment transporting from one work area to another, and as necessary to keep the streets clear of soil and debris. The swept material shall be disposed of in accordance with the standard specifications, project permits and these Special Technical Provisions.

Sweeping is considered a temporary erosion control measure or BMP. A fine of $100 per day will be levied against the Contractor for each day the Contractor delays in responding to the Engineer's request to install new temporary erosion control devices and/or maintain existing temporary erosion control devices, in addition to any other fines levied by any other regulatory agency with no additional compensation allowed for.

**160.10 Maintenance**

The Contractor shall maintain all temporary erosion control measures, devices, and/or BMPs placed in the work, for the duration of the project. Maintenance includes all Manufacture's recommendations, and includes but is not limited to the following:

- Damage to any temporary erosion control devices and/or BMPs during the course of the project shall be repaired by the Contractor immediately upon discovery and at his expense.
- Temporary erosion control devices and/or BMPs shall be inspected routinely and immediately after each rainfall event and at least daily during prolonged rainfall events. Any required repairs shall be made immediately.
- Construction limit and tree protection fencing shall be inspected daily and repaired, secured, and/or replaced as necessary to maintain and preserve its intended purpose.

- All signage as required for the project shall be routinely inspected and repaired or replaced upon discovery of damage, vandalism, and/or missing parts.
- Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
- Should a sediment log decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the sediment log shall be replaced promptly.
- Any single or group of gravel bag(s) shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.
- Any stakes and/or rope used to secure a sediment log in place shall be routinely inspected and repaired as necessary if found to be loose or ineffective.
- Sediment deposits and other debris shall be removed when they reach approximately one-half the height of the sediment barrier (or as recommended by the Manufacture) and disposed of in a manner acceptable to the Engineer, NDEP, and TRPA.
- Any sediment deposits remaining in place after the temporary erosion control measure and/or BMPs is no longer required shall be removed and disposed of in a manner acceptable to the Engineer, NDEP, and TRPA.

**160.11 Dewatering and/or Diversion**

Groundwater is not expected to be encountered during project excavation and ditches are anticipated to be dry. If significant groundwater is encountered that requires dewatering, Contractor shall notify Engineer immediately.

The excavation and general work area shall be sufficiently dry to allow for the proper construction and inspection of the culvert and headwalls for a complete in place culvert structure, as shown on the Project Plans and described in these Special Technical Provisions. If dewatering does become necessary, the location and depth of sumps and/or well points for pumping of ground water or surface water is at the discretion of the Contractor but shall be reviewed and accepted by the Engineer prior to initiating the work involved. The dewatering operations shall also be sufficient to produce a stable sub-grade within the excavation or general work area as necessary for access of equipment and personnel to complete the work.

In the event there is a storm event that creates flow in the drainage ditches that cannot be controlled with the standard temporary BMPs, the Contractor shall make provisions for and have equipment (i.e. pumps, piping, gravel bags, plastic sheeting, temporary dams, etc.) on standby; to provide adequate protection of the work area, avoid flooding and inundation of the excavation, prevent erosion and discharge of sediment or other pollutants, and divert the increase in flows to stabilized downstream areas, away from any active work site(s).

**160.12 Measurement and Payment.**

Temporary BMPs including filter fence, construction limit fence, drainage inlet protection, coir logs, gravel construction entrances, dust control, concrete washout, and sweeping shall be measured as a lump sum bid price for “Temporary Erosion Control.” Payment for Temporary BMPs shall be made at the contract lump sum bid price which shall be deemed full compensation for all labor, materials, equipment and incidentals necessary to complete and maintain the work as specified and making any required modifications due to field conditions.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 170 – CLEARING AND GRUBBING

**170.01 Description**
This section covers the construction methods involved in all clearing and grubbing, and tree removal operations as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. Work under this item shall consist of furnishing all labor, tools, equipment, and materials as necessary to perform operations, including but not limited to, clearing and grubbing, topsoil salvage, tree removal, stump removal, and disposal of waste and other miscellaneous debris in accordance with the Project Plans, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer.

**170.02 Clearing and Grubbing**
Clearing and grubbing shall consist of removing all objectionable and unacceptable natural or artificial materials from within the construction area project limits, and disposal of said material off the job site, in order to construct the project in a proper manner, in accordance with the Project Plans, Project Permits, Standard Specifications, these Special Technical Provisions, as directed by the Engineer, and other applicable Local, Regional, State, and Federal requirements. This work includes but is not limited to any earthen material, organic growth, willow and alder clumps, trees and stumps (less than 6-inches diameter at breast height – DBH will be measured at 4.5-ft above the existing ground surface on uphill side of tree), man-made deposits, industrial waste, sludge or landfill, and other materials as designated by the Engineer. Existing structures, to be preserved, shall be protected and restored upon completion of the work.

Clearing and grubbing shall extend to the outer limits of excavation and fill slope lines, except where slopes are to be rounded in which case the areas shall extend to the outside limits of slope rounding. Within the limits of clearing, all stumps and roots 1-1/2 inches in diameter or larger, buried logs, and all other objectionable material shall be removed up to three (3) feet below the existing ground surface or subgrade, whichever is deeper. All existing vegetation, outside the areas to be cleared and grubbed, shall be protected from injury or damage resulting from the Contractor's operations. For typical protection of trees and other vegetation, see the Project Plans and SWPPP.

No live trees or downed logs or wood (equal to or greater than 6-inches diameter) shall be removed from the project site that are not identified and marked by the Engineer. In the event the Contractor removes any live trees or downed logs or wood (equal to or greater than 6-inches diameter) not marked by the Engineer, the Contractor shall be solely responsible for any and all fines and/or penalties levied to the Contractor, Engineer, NTCD, or applicable property owners in association with the removal.

**For the purposes of this Project, willow and alder clump vegetation shall not be considered singular trees as part of the tree removal bid item work.** Any willow/alder material shall be removed and disposed of within the project limits/areas of disturbance (clearing and grubbing limits as shown on the Project Plans), unless specifically directed to be protected in place of as part of the work. Any removal and disposal of existing willow/alder vegetation shall be considered as part of the clearing and grubbing efforts, and no additional compensation shall be allowed for.

Existing signs, fences and other facilities within the construction limits shall be removed, salvaged and reinstalled as shown on the Project Plans and as directed by the Engineer. If existing traffic control signs are removed (i.e. stop, yield signs) the Contractor shall install temporary signs of the same designation as close as possible to the original position, immediately upon completion of the clearing and grubbing work. Upon completion of the project these temporary signs shall be replaced with permanent signs of the same type and condition as prior to the Contractor's operations on the project site.

Existing aggregate and asphalt roadway materials may be reused for embankments after being reduced in size to particles of three inches (3") maximum diameter. Pulverizing and replacement of this material is part of this work. All embankment and fill, and areas over excavated shall be compacted to a relative density of ninety five percent (95%) within the roadway and shoulder prism, and ninety (90%) in ditch and slope areas. This work shall be performed in advance of grading and trenching operations and in accordance with the requirements herein specified, subject to all erosion control requirements.

*Topsoil and Organic Materials*

During clearing and grubbing, the Contractor shall salvage and stockpile topsoil for reuse in the project area in accordance with Section 260, "Revegetation," of these Special Technical Provisions. Topsoil shall not be stockpiled for a period greater than two (2) weeks or greater than three (3) feet in height unless accepted by the Revegetation Specialist (RS) and Engineer. Topsoil shall be re-applied within the project area in accordance with Section 260, "Revegetation," of these Special Technical Provisions.
All suitable organic materials removed during the clearing and grubbing operation including, but not limited to, pine needles, leaves, duff, trees smaller than six (6) inches DBH, stumps, and suitable roots shall be stockpiled and used for revegetation/restoration treatments. The Contractor shall make allowances for chipping larger organic materials such as trees, suitable roots, branches, and stumps so that these materials can be used for project revegetation/restoration efforts.

The Contractor shall not stockpile any vegetation or other debris generated as a result of the clearing and grubbing or tree removal operations that is not suitable for use in revegetation efforts. All unsuitable vegetation or other debris shall be removed from the job site by the end of each working day.

No trees (equal to or greater than 6-inches diameter) shall be removed from the project site that are not identified and marked by the Engineer. In the event the Contractor removes any trees (equal to or greater than 6-inches diameter) not marked by the Engineer, the Contractor shall be solely responsible for any and all fines and/or penalties levied to the Contractor, Engineer, NTCD, or applicable property owners in association with the removal.

**170.05 Work Outside of Stated Limits**

The Contractor shall not, and no payment will be made to the Contractor, for clearing and grubbing outside the stated limits as shown on the Project Plans, or as described in these Special Technical Provisions, unless such work is authorized by the Engineer.

**170.06 Existing Signs**

Existing signs, snow markers and the like within the construction limits, which interfere with the work, shall be removed, salvaged and reinstalled as directed by the Engineer. If existing traffic control regulatory signs are removed (i.e. stop, yield signs, etc.) the Contractor shall install temporary signs of the same designation as close as possible to the original position immediately. Existing mailboxes within the construction limits, which interfere with the work, shall be removed, salvaged and reinstalled as

close to the original position as possible after construction in the area is completed. Mail service shall not be interrupted at any time due to construction activities. Any materials that are damaged or lost shall be replaced in like kind of equal or better quality.

**170.07 Protection of Plants**
Trees and plants that are not to be removed shall be fully protected from injury by the Contractor at his/her expense. Trees shall be removed in such a manner as not to injure standing trees, plants, and improvements which are to be preserved. The Contractor shall remove tree branches under the direction of the Engineer and Revegetation Specialist, in such a manner that the tree will present a balanced appearance.

Scars resulting from the removal of branches shall be treated with a heavy coat of a tree sealant accepted by the Engineer and Revegetation Specialist. Construction limit fence shall be installed around all trees to be protected near excavation limits at the dripline of the tree as shown on the Project Plans. If large roots of protected trees are encountered during excavation activities, work shall cease in this area and the Engineer shall be notified. Work shall commence as directed by the Engineer, Revegetation Specialist, and TRPA.

**170.08 Removal and Disposal of Materials**
All materials scheduled or specified for removal and disposal shall be removed and hauled from the site at the Contractor's expense, unless otherwise specified, and disposed of outside of the Lake Tahoe Basin in accordance with TRPA ordinances and NAC 444.8565. The construction area shall be left with a neat and finished appearance.

**170.09 Measurement and Payment**
"Clearing and Grubbing" (including trees under 6-inch DBH) shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The lump sum price for "Clearing and Grubbing" (including trees under 6-inch DBH) shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the clearing and grubbing of the project site as shown on the plans and as specified in the Project Plans, Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer including the removal and disposal of all the resulting materials from the Tahoe Basin.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 175 – DEMOLISH AND EXISTING IMPROVEMENTS

**175.01 General.** Work under this section shall conform to the project permits, Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, and TRPA Best Management Practices. The Contractor's attention is directed to Section 301, "Protection and Restoration", of the Standard Specifications.

Work under this section shall consist of the removal and disposal of existing improvements and facilities, which interfere with construction or as required to properly construct the project and protecting in place existing trees and infrastructure, as shown on the Project Plans, described in the Standard

Specifications, these Special Provisions, and as directed by the Engineer. Any materials removed, including excavated earthen material, in conformance with this section shall become the property of the Contractor and shall be removed and disposed of by the Contractor in accordance with all federal, state, and local ordinances and permit conditions. All materials scheduled or specified for removal shall be removed from the project area and disposed of outside of the Lake Tahoe basin in accordance with TRPA ordinances and NAC 444.8565.

Where any pipes, fittings, valves, drainage inlets, frames and covers, or other devices are removed from any manhole, structure, junction box, joint, valve, fitting, valve, etc. and the remaining facility is to be protected in place; all repairs, seals, plugs, caps, and other modifications as necessary to make the structure or device sound and complete shall be constructed by the Contractor as shown on the Project Plans, and in conformance with the Standard Specifications and these Special Provisions, or as directed by the Engineer. All repairs, plugs, caps and other modifications as noted above shall be considered as included in the prices paid for each associated bid item of work, not otherwise provided for, and no additional compensation shall be allowed for.

**175.02 Remove Asphalt/Concrete Pavements and Structures**

Work under this section shall include removal of asphalt concrete pavement and other concrete surface improvements as required to properly construct the project, as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. This includes removal and disposal of any and all asphalt/concrete structural section associated with the removal of any existing facility or installation of all proposed improvements shown on the Project Plans including curb and gutter, asphalt, and any other miscellaneous structures. Where no joint exists in the pavement on the line at which pavement is to be removed, a straight, neat cut with a power driven saw shall be made along the line to a minimum depth of 6-inches before removing pavement. If saw cut pavement is damaged prior to paving, it shall be the Contractor's responsibility to re-cut any damaged, broken, or uneven portion prior to paving at his own expense. Under no circumstance shall the Contractor be allowed to "jack-hammer" the existing pavement instead of cutting with a power driven saw.

Any materials removed in conformance with this provision shall become the property of the Contractor and shall be removed and disposed of by the Contractor in conformance with the Standard Specifications and these Special Technical Provisions. AC pavement removed from the work area may NOT be ground up and re-used as base material for roadway reconstruction.

Sawcutting of all roadways required for the proper construction of the Project in accordance with the Project Plans, these Special Technical Provisions, the Project permits and as directed by the engineer shall be included in costs of various other items of work and no additional compensation shall be allowed for.

**175.03 Remove Storm Drainage Structures**

Work under this section shall include the complete removal and disposal of storm drainage structures and pipe, the backfill, and compaction, and restoration of the disturbed area as shown on the Project Plans, described in the Standard Specifications, these Special Technical Provisions, and/or as directed by the Engineer. Any areas where storm drainage structures are removed shall be backfilled, graded, and restored to match the surrounding area, unless otherwise noted on the plans, or directed by the Engineer. The resulting waste materials and debris shall become the property of the Contractor and disposed of by the Contractor in conformance with the Standard Specifications, Project Permits, and

these Special Technical Provisions. Under no circumstances shall any segment of storm drainage pipe designated for removal be abandoned in place, unless otherwise noted on the plans and/or acceptance of the Engineer.

**175.04 Protect Existing Trees and infrastructure In Place**
All existing trees greater that 6 inches Diameter Breast Height (DBH) shall be protected in place as shown in the project plans. If any trees cannot be protected as detailed, it shall be brought to attention of the Engineer immediately.

The Contractor shall protect in place and existing column adjacent to Douglas Blvd that comes within feet of project grading limits. Any damage to the structure will be repaired at the expenses of the Contractor.

**175.05 Backfill and Compaction**
All disturbed areas where pipe, structures, surface pavements, and other miscellaneous improvements are removed, shall be restored in like kind to match the pre-existing lines and grades and surrounding adjacent area, unless otherwise noted on the Plans, or as directed by the Engineer. The Contractor is required to backfill and compact excavated trenches to sub-grade using accepted native material and/or local borrow or imported borrow as determined by the Engineer if import is required; replace the sidewalk, landscaping, and other surface improvements as applicable; and/or replace the topsoil and pre-existing landscape features or revegetate the disturbed area. **Any native, local borrow, or imported borrow soils used for backfill shall be accepted by the Engineer prior to placement**.

Trenches, holes, depressions and pits caused by the removal of existing improvements shall be backfilled with materials equal to or better in quality and to the same thicknesses as the surrounding materials, and in conformance with Section 304, "Fill and Backfill", of the Standard Specifications. **No broken concrete, asphalt concrete, or other debris shall be left in excavated trenches or be included as part of the backfill.** All backfill materials at a minimum shall not exceed optimum moisture content, and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. In surfaced areas (i.e. pavement, concrete) that are otherwise to remain undisturbed, the structural section shall be replaced with materials equal to or better in quality and to the same thicknesses as the surrounding materials.

Fill to be placed beneath concrete slabs and all other components subject to structural loading shall conform to the requirements of Section 200.01.09 "Structural Fill" of the Standard Specifications. If a new structure is specified to replace the old structure, unsuitable materials shall be removed as directed by the Engineer. Unless otherwise specified, remaining material and fill material shall be compacted to ninety percent (90%) in ditch and slope areas, and brought up to the bottom grade of aggregate structural section of the new structure, unless otherwise specified on the Project Plans (compaction requirements on the Project Plans shall govern).

Restoration of an area and/or replacement of all other surface improvements in conformance with this section shall be considered as included in the prices paid for each associated bid item removed, except components of the work for which payment is made under separate contract items, and no additional compensation shall be allowed for.

**175.06 Measurement and Payment**

Full compensation for saw cutting, removal, and disposal of existing asphalt/concrete and associated backfills in conformance with this section and other sections of the Standard Specifications, and these Special Technical Provisions is included in the prices paid for various Contract items of work involved including block channel, rock lined channel, and the Pittman Terrace infiltration feature. No additional compensation will be allowed.

"Demolition and Existing Improvements" shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The lump sum price for "Demolition" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in the removal and disposal of the existing asphalt, curb and gutter, and 15" corrugated metal pipe, including associated surface improvements (asphalt concrete, aggregate base) and protecting existing infrastructure and trees, as shown on the project Plans and as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation shall be allowed for. This work also includes the removal and disposal of all the resulting materials from the Tahoe Basin; and any backfill and compaction of the remnant trench, including aggregate base, for a complete restoration of the area as shown on the Plans, described elsewhere in these Special Technical Provisions, and/or as directed by the Engineer.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 180 – EXISTING UTILITIES AND UNDERGROUND FACILITIES

**180.01 General**

The Contractor shall inform him or herself of the exact location of all conduits, ducts, cables, pipe systems, or other above ground and/or underground facilities and shall protect all utilities encountered in the process of construction. The Contractor shall contact Underground Service Alert (USA) at least 48 hours prior to any construction activity. Any damages to above or underground facilities shall be immediately repaired by the Contractor at his own expense, except for damage to utilities, in which case the Contractor shall immediately notify the proper Utility Company. Unless cleared by the Utility Company, the Contractor shall be responsible for reimbursing said Utility Company for any and all work required to repair or replace damaged utility facilities with no additional compensation allowed for.

The Contractor shall not begin excavation work within the immediate vicinity of any know sanitary sewer force main or potable water main prior to contacting the sewer and water purveyors at least 10 working days in advance.

**180.02 Potholing of Existing Utilities**

The Contractor shall be responsible for verifying the location of all existing underground facilities within the project area, which may have potential to conflict with the location of proposed improvements, as shown on the Project Plans and as indicated by USA markings. Actual field conditions and locations can vary considerably from those shown on the Project Plans; therefore the Engineer and/or Owner cannot, and does not, assume responsibility for the existence or location of any underground structures such as, but not limited to, pipelines, laterals, conduits, valves, meters, vaults, manholes, junction boxes, and other components of a typical utility, drainage, or irrigation system. The Contractor shall be responsible

for contacting all utilities, agencies and/or public and private owners to verify such information prior to and during construction of any of the proposed improvements.

The Contractor shall notify the Engineer in advance of all potholing activities. Any delays that may result from failure of the Contractor to locate and/or pothole a potential utility conflict shall be at the Contractor's expense. Any costs incurred due to relocations, shutoff, startup, or any other costs related to utility relocations due to the construction of the project, not otherwise provided for in a specific Contract item, shall be the responsibility of the Contractor.

As part of the Contract work the Contractor will be installing improvements in the vicinity of existing utility systems and other various public improvements. Where conflicts are known to and appear to exist with underground utilities (locations indicated on Project Plans) the Contractor is hereby advised that he/she will be required to pothole each location prior to any work in the vicinity of the subject utility, in order to properly identify and locate its position. The Contractor is responsible to schedule the Contractor's surveyor to be onsite during potholing of conflicts for utility elevation verification (surveying of the horizontal and vertical location of the top of the pipe is required). Upon verification such utilities will require relocation by the Contractor or utility agency or its agents in accordance with these Special Technical Provisions, Project Plans, Standard Specifications, and associated utility standards. **Any potholing shall be completed where conflicts are known to and appear to exist with underground utilities a minimum of five (5) working days before beginning construction on the proposed improvements which appear to cause conflict.**

All potholing, as identified in the paragraph above, shall be performed by the Contractor and considered as included in prices paid for the various Contract items of work involved and no additional compensation will be allowed for.

If any existing utilities that are not shown by USA or on the Plans as indicated to be relocated by others are found to be in conflict with the proposed location of the improvements shown on the Plans, the Contractor shall contact the Engineer. The Engineer will either provide the Contractor with new grades/elevations to eliminate such conflicts or shall contact the utility agency to arrange for relocation of the conflicting utility. The Contractor shall coordinate all necessary activities with the utility agency in order to complete or facilitate the subject relocation(s). Such work shall be considered change order work.

All utilities that are not to be relocated or removed shall be protected in place from injury or damage per the Standard Specifications section 301.

**180.03 Protect Existing Utilities – Potable Water**

A 2-inch diameter active private water line runs adjacent to and directly under the existing ditch and culverts along Douglas Blvd as shown in the plans. The private owner has indicated there may also be two inactive lines in the area but exact locations are unkown. The private water lines are owned by Rory Keeney of Buckeye Excavation. The Contractor shall provide 48-hour notification to water line purveyor of construction schedule prior to commencing construction, as well as for any changes to that schedule, to allow the water purveyor the opportunity to inspect construction in the vicinity of their infrastructure prior to it being covered.

There will likely be two areas of conflict between the private waterline and the proposed ditch adjacent to the dirt portion of Douglas Blvd. If necessary, the Contractor shall work with the water purveyor to adjust or relocated the line as necessary to allow for proposed ditch construction.

Should the Contractors operations be delayed, for whatever reason, as a result of the water line, no additional contract time, or compensation will be allowed for.

**180.04 Protect In Place Existing Utilities – Electric**

Two utility poles and associated guy wires are close to the limits of grading as shown on the project plans. Temporary protections may be necessary to complete project work. Any and all underground or overhead electric line protection, as required to facilitate construction of the proposed project improvements, shall be coordinated with NV Energy at least four (4) weeks prior to commencement of work in that area. Any costs incurred due to relocation, shutoff, or any other costs due to the construction of the project shall be the responsibility of the Contractor, not otherwise provided for in a specified bid item of work.

Should the Contractors operations be delayed, for whatever reason, as a result of the relocation of electrical lines or utility boxes, no additional contract time, or compensation will be allowed for.

**180.05 Protect In Place Existing Utilities - Sanitary Sewer**

The work covered under this specification consists of furnishing all the labor, materials, tools, and equipment necessary for the protection of an existing 12-inch diameter gravity sewer pipe owned and operated by Tahoe Douglas Sewer District (TDD).

The contractor shall provide 48-hour notification to TDD of construction schedule prior to commencing construction, as well as for any changes to that schedule, to allow TDD the opportunity to inspect construction in the vicinity of their infrastructure prior to it being covered.

In the event of a pipe failure during construction, the contractor shall be responsible for all resulting costs including but not limited to emergency containment, environmental cleanup, bypass pumping, repair, fines, and fees. TDD shall be notified immediately of any damage to or issues with their infrastructure. The contractor shall repair any damage to TDD infrastructure to the satisfaction of TDD and in accordance with TDD approved methodology.

Should the Contractors operations be delayed, for whatever reason, as a result of the sewer line, no additional contract time, or compensation will be allowed for.

**180.06 Measurement and Payment**

"Protect Existing Utilities" shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "Protect in Place Existing Utilities" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in protecting existing utility lines as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer and utility purveyor; and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 190 – REMOVE AND RESTORE EXISTING HISTORIC FENCE

**190.01 Description:**
Contractor shall remove the historic fence shown on the plans as necessary to complete work. All fence material shall be salvaged and stored for restoration after improvements are constructed. The fence shall be restored to the original location except for 50 linear feet as shown on the plans, which is to be relocated. Relocation shall avoid the rock lined channel improvement while maintaining the fence line as symmetrical as possible.

**190.02 Execution.** All materials shall be handled and stored in a manner that will not damage or depreciate the integrity and quality of the material. At a minimum, the fence pickets shall be salvaged and reused for the restored fence. If the posts and horizontal rails are not in good enough condition to reuse, new material may be used as detailed in the project plans. If necessary, new fence materials shall be treated wood. Both salvaged and new fence posts must be set with concrete.

**190.03 Measurement and Payment**
"REMOVE AND RESTORE EXISTING HISTORIC FENCE" shall be measured on the unit price established per linear foot, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "REMOVE AND RESTORE EXISTING HISTORIC FENCE" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in removing and restoring or relocating the historic fence, complete in place, including any excavation, bedding, backfill, concrete, wood, off-haul and disposal of excess materials and waste debris as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Specifications, and as directed by the Engineer: and no additional compensation will be allowed.

## SECTION 195 – TRENCH EXCAVATION AND BACKFILL

**220.01 General**
Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for all excavation, trenching, bedding, and backfilling for all the contract work items involved or delineated as trench work as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Provisions. All excavations shall be made true to the lines and grades as shown on the Project Plans, staked by the Contractor, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits. Attention is directed to Section 303, "Excavating" and Section 304 "Fill and Backfill", of the Standard Specifications.

All excavation, bedding, fill, structural backfill, materials, and compaction associated with the work shall be in accordance with the Project Plans, Contract Documents, Project Permit(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer.

Trench excavations shall include the removal and disposal of all water and unsuitable materials of any nature which interfere with completion of the construction work. Removal of ground water to a level below the pipe or structure subgrade shall be accomplished as necessary.

The Contractor shall follow the applicable rules, orders and regulations of the United States Department of Labor Occupational Safety and Health Administration (OSHA - 29 CFR, Part 1926, Subpart P, Excavations) for sloping the sides of excavations, using shoring and bracing, and for using other safety features. When sides of excavations are sloped for safety considerations the Contractor shall provide, for informational purposes, one copy of the design that demonstrates conformity with OSHA regulations to the Engineer. Where support systems, shield systems, or other protective systems are to be used, the Contractor shall submit to the Engineer, design calculations along with detailed drawings that demonstrate conformity with OSHA regulations. Such drawings shall be stamped with a seal and signed by an Engineer who is registered as a Civil Engineer in the State of Nevada.

The Contractor is advised of the possibility of encountering large boulders, rock, and other similar materials while excavating. There shall be no additional compensation or payment made to the Contractor for encountering or excavating such materials.

**195.02 Work in the NDOT Right of Way**
For all trenches and excavation in the NDOT right of way. Materials and methods shall be as specified in the most current version of the NDOT Standard Specification for Road and Bridge Construction (NDOT Standard Specifications). All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Provisions and NDOT Standard Specifications. Attention is directed to section 704 “Base Aggregates” of the NDOT Standard Specifications. Full compensation shall be considered as included in the price bid for construction for the installation of the items to which such structural fill is required and will be considered incidental or appurtenant.

**195.03 Measurement and Payment**
Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work associated with performing all the work involved in provisions of this section, complete in place as shown on the Project Plans, as specified in the Contract Documents, Project Permits(s), Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for. There shall be no additional compensation for protective systems required by the OSHA regulations.

## SECTION 200 – GRAVEL, COBBLE, ROCK, BOULDER & OTHER AGGREGATES

**200.01 General.** Work under this item shall consist of furnishing all labor, tools, materials, and equipment necessary to furnish and place gravel, cobble, rock, boulder, sand aggregate, and other aggregates in the work, including but not limited to, channel material, rock drop structures, aggregate base courses, bituminous courses, bedding and backfill, mortar and grout, Portland cement, and general rip-rap as indicated on the Project Plans, described in these Special Technical Provisions, and directed by the Engineer, in conformance with the Contract Documents, Project Permits, Standard Specifications, and these Special Technical Provisions.

The limits of loose aggregate and aggregate base course placement as indicated on the Project Plans are approximate, and the exact limits of placement shall be determined in the field by the Engineer. All aggregates used in the work for aggregate base courses, bituminous courses, bedding and backfill, mortar and grout, Portland cement, and general rip-rap shall be in strict conformance with the Standard Specifications, and other applicable provisions found elsewhere in these Special Technical Provisions.

All chinking, gravel, cobble, rock, boulders, sand aggregate, and other loose aggregate used in the work for proposed channel, rock drop structures, and all other areas requiring said materials shall be in conformance with these Special Technical Provisions, and other applicable provisions of the Standard Specifications. **All chinking, gravel, cobble, rock, boulders, sand aggregate, and other loose aggregate used in the work for proposed channel and rock drop structures, including imported and reused rock, shall be thoroughly washed outside of the confines of the proposed channel and drainage in a location approved by the engineer so that each material runs clear when water is applied.**

All stone, aggregate materials, and soils imported to the site shall be from a certified "Weed Free" source approved by the Nevada Department of Agriculture and/or TRPA.

All loading, transport, temporary stockpiling, on-site hauling, excavation, preparation of sub-grade, placement, embedment, backfill, compaction, clean-up, and off-haul and disposal of excess materials needed to install all gravel, cobble, rock, boulder, sand aggregate, and other aggregates where incorporated in the work shall be considered as included in the applicable bid item unit price, and no additional compensation will be allowed.

All aggregate materials generated on-site and meeting the quality requirements as stated in Section 200, "Gravel, Cobble, Rock, Boulder & Other Aggregates" of these Special Technical Provisions may be incorporated in the work upon acceptance of the Engineer prior to placement; any such material that is rejected for placement in the work shall be removed and disposed of in conformance with the provisions found elsewhere in these Special Technical Provisions, and the Standard Specifications. Use of said aggregate material in the work shall be considered as included in prices paid for the various contract items of work involved; and no additional compensation will be allowed for.

**200.02 Submittals**

The Contractor shall submit certificate(s) and other material testing data as necessary to validate the source of the chinking, gravel, cobble, rock, boulder, sand aggregate, and other aggregate materials and its conformance with the Standard Specifications and these Special Technical Provisions. Include all applicable test results for specific gravity, resistance to degradation, absorption, durability index, and soundness (as described elsewhere in these Special Technical Provisions). Samples of loose stone aggregates shall be submitted to the Engineer a minimum of ten (10) working days prior to large-scale delivery to the project site or placement in the work, for review and acceptance of color and material.

All aggregate materials generated on site shall be reviewed and accepted by the Engineer, prior to placement in the work. Visual evaluation of the source, samples, suitable certificates and material testing data sheets, and service records may be used to determine the acceptability of any aggregate materials imported or generated on-site. The Engineer reserves to the right to reject said materials.

**200.03 Quality Requirements for Loose Stone Aggregates.**

The Contractor shall use stone (i.e. gravel, cobble, rock, boulder, etc.) that is sound and durable against disintegration under conditions to be met in handling and placing, and is hard and tenacious and

otherwise of a suitable quality to ensure permanency in the specified kind of work. All applicable stone materials shall meet the requirements stated herein and conform to the following test requirements.

| | Requirement | Test Method |
|---|---|---|
| Apparent specific gravity, minimum | 2.5 | ASTM C-127-59 |
| Abrasion, maximum percent | 45 | ASTM C-535-65 |
| Freeze-thaw loss, maximum percent After 12 cycles | 10 | AASHTO 103 Procedure A |

Stone shall be of such shape to form a stable protection structure for the required section or feature. Flat or elongated shapes will not be accepted unless the thickness of the individual pieces is at least 1/3 of the length. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not readily disintegrate from the action of air, water, or the typical conditions experienced during handling and placing. All aggregate material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings.

Boulders identified for use in the rock drop structures shall be smooth and rounded in shape, as is typical of river run cobblestone, fieldstone, or that from a former stream deposited source. Angular rock, quarried, split rock, crushed rock or shot rock shall not be used (except where specified or allowed as shown on the Plans). In addition the aforementioned stone materials shall be of a native nature to the Tahoe Basin (i.e. of similar color and texture to that generally found within the Tahoe Basin and in particular the project area Stateline, NV and vicinity). All boulders shall be smooth and rounded in shape as noted above and of a natural earth tone color/hue that blends with the surrounding environment (or generally described as “round and brown”). Attention is directed to the submittal requirements as noted in this section.

The stone used for “chinking” material, creek channel sub bed material (only where defined/shown on the Plans), shall be angular, fractured or crushed stone and be in conformance with these Special Technical Provisions, and the Standard Specifications.

**200.04 Sand Requirements and Standards**

Sand shall be medium to coarse sand, and shall be free of organic debris and other deleterious substances. The sand shall have a minimum specific gravity of 2.5 and shall be sub-rounded to rounded. Volcanic cinder material shall not be acceptable. Samples of the proposed sand shall be submitted to the Engineer for approval 10 days prior to placement. Placement of sand will be as-directed by Engineer only.

**200.07 Chinking Mix**

Chinking Mix shall be a well graded coarse aggregate with a nominal size of 1 to 3 inches and conform to the gradation requirements of the table, below:

| **Size** | **Percent finer than by Weight** |
|---|---|
| 3” | 100 |
| 2.5” | 90-100 |
| 2” | 35-70 |
| 1” | 5-15 |

| | |
|---|---|
| ¾” | 0-5 |

**200.08 Placement**

In general, larger rock and boulders shall be placed with their longitudinal axis normal to the slope face, fully seated on a stable sub-grade or foundation course, and arranged so that each large rock or boulder above the foundation course has a minimum 3 point bearing on any underlying rocks. A full bearing load only on cobble and smaller rock, such as chinking rock for voids, shall not be acceptable.

The placement of any chinking, gravel, cobble, rock, or boulder strictly by dumping shall not be permitted. Hand and/or mechanical adjustments/placement of the stone materials are expected in order to meet the requirements stated herein. Larger rock and boulders shall not be dropped during placement operations, in a manner that will cause significant scaring of the surface, or fracture to minimize its roundness. All larger rock and boulder shall generally be placed with the smoothest side up; care shall be taken to place a rough or coarse textured side of a large rock or boulder to its underside.

All stone products shall be placed to follow the lines and grades shown on the Project Plans. Prevent the contamination of stone features, channel bed material, chinking mix, and other designated rock fills by soil and other earthen materials during excavation, placement, and/or backfill. All stone features shall be blended with adjacent rock areas and grades, by tapering margins, mixing rock color, and keying into and around existing bedrock, rock, soils, and vegetation. The Engineer will direct the Contractor in placement of chinking mix and boulders for construction of designated stone features and proposed creek channel, to attain a natural appearance and complete job in place as shown on the Project Plans and described in these Special Technical Provisions. Exact elevations and horizontal locations of the stone materials and features as shown on the Project Plans may be slightly adjusted in the field by the Engineer, with no additional compensation allowed for.

All channel material shall be placed in the locations as shown on the Project Plans in such a manner to produce a relatively uniform graded mass. Place material to thicknesses shown on the Project Plans and uniformly distribute stone and sand materials to produce the required gradation of rock and wheel-roll into place (or compact by other methods) to create a firm and stable structure, and meet finished grade as shown on the Project Plans. Placement of channel material and chinking mix shall be conducted in a manner as not to produce a downstream turbidity or other pollutant discharge in violation of the project permit(s) or other water quality standards.

The segregation of mixed stone materials may occur during transport, dumping, on-site hauling, etc. The Contractor shall distribute all stone materials to produce the required gradation of rock. Routine control of gradation will be by visual inspection.

“Chinking” – All larger rock and boulders used in construction of the proposed channel, rock step structures, and culvert outfalls shall have chinking material (specified in Section 200.05) placed immediately adjacent to (minimum 9-inches) and into all void spaces. All said larger rock and boulders will be placed in succession and/or in combination with the chinking material in order to effectively reduce void spaces and produce a solid matrix of rock, which will help to control piping of waters and reduce the chances for failure of the structure. The Contractor is expected to hand place and tamp (using hand tools, feet, etc.) all chinking material to form a tight, firm, well compacted, and cohesive structure. Detailed inspection and/or direction from the Engineer shall occur in the field. The finished height or position of any chinking material shall be left below the top (1-3 inches +/-) of any exposed larger rock and boulders to where it is not readily visible and/or will be covered by suitable backfill. The

associated cost to furnish and place all chinking material in the work shall be considered as included in the unit bid price of the various items of work requiring said material, and no additional compensation will be allowed.

**200.09 RipRap**. In addition to the requirements of Section 200.07 of the Standard Specifications, riprap stone shall be of such shape to form a stable protection structure for the required section. Stones shall be sound, durable, hard, resistant to abrasion and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not disintegrate from the action of air, water, or the conditions experienced during handling and placing. Stone shall additionally be of native nature to the Tahoe Basin, of similar color and texture to that found within the Tahoe Basin and in particular the project area, and samples shall be provided to the Engineer for review and approval for use, prior to placement of any stone. All material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings. Visual evaluation of the source, suitable tests and service records may be used to determine the acceptability of the stone. Routine control of gradation will be by visual inspection.

**RIPRAP SIZE SPECIFICATION TABLE**

| **% PASSING** | **SIZE (diameter inches)** |
|---|---|
| ***CLASS 150 ROCK RIPRAP*** | |
| 100 | 10 |
| 70-85 | 9 |
| 30-50 | 6 |
| 5-15 | 2 |
| 0-5 | 1 |
| $D_{50}$ | 6 |

**200.10 Work in the NDOT Right of Way**

For all trenches and excavation in the NDOT right of way. Materials and methods shall be as specified in the most current version of the NDOT Standard Specification for Road and Bridge Construction (NDOT Standard Specifications). All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Provisions and NDOT Standard Specifications. Attention is directed to section 704 "Base Aggregates" of the NDOT Standard Specifications. Full compensation shall be considered as included in the price bid for construction for the installation of the items to which such structural fill is required and will be considered incidental or appurtenant.

**200.11 Measurement and Payment.** Full compensation for furnishing all labor, materials, tools, equipment, and incidentals for the materials in this section, complete in place as shown on the Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, should be incidental to the other construction items; no additional compensation will be allowed.

## SECTION 205 – EARTHWORK

**205.01 General**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for channel excavations, microbasin construction, fill of existing channel, and access road construction, local borrow native soils, import, structural fill, engineered fill, salvage topsoil, imported topsoil, amended fill, existing sub-grade scarification and preparation, rough grading, compaction, finish grading, loading, transport, onsite hauling, off-site hauling, temporary stockpile, off-site stockpile, processing/conditioning, screening, placement, and disposal/salvage of unsuitable or surplus materials, for all the contract work items involved or delineated as excavation, earthwork, or grading as shown on the Project Plans, and as described in the Standard Specifications and these Special Technical Provisions. All excavations, fill, earthwork, and associated grading shall be made true to the lines and grades as shown on the Project Plans, staked by the Contractor, and verified by the Engineer, and shall be so constructed as to avoid removing or loosening any material outside the required slopes and grading limits.

Attention is directed to Section 303, "Excavating", of the Standard Specifications and Section 304, "Fill and Backfill", of the Standard Specifications.

Because of the nature of the project, careful excavation, backfill, and grading are mandatory. The proposed contours, representative cross sections, and applicable typical cross section as shown on the Project Plans represent the intended shape of the land but the Contractor shall take into account that the proposed channel, structures, grading areas, existing channel backfill, slopes, grade breaks, etc., shall be constructed and graded to natural shapes that transition smoothly to adjacent features and grades. As part of the scope of this item of work, the Contractor shall work under the direction of the Engineer to create a natural-looking finished grade surface. The Contractor may be directed in the field to make minor modifications to the depth of cuts, heights of fills, angle of slopes, and other contour grading to achieve a natural appearance, and the desired functioning of the system and proposed improvements. Additionally, the Contractor may be field directed, by the Engineer, to slightly modify the alignment or elevation of the proposed improvements to account for variations in substrate or topography, and true field conditions present at the time of construction. Compensation for these potential directives and minor field modifications, as noted above, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

All finished areas with cut and/or fill slopes shall be graded as indicated on the Project Plans, staked in the field, and directed by the Engineer. The Contractor shall employ excavation and/or placement methods that does not disturb or damage other work. Areas that are shown to not have any excavation or grading shall be protected and remain undisturbed to protect the existing soil profile and vegetation cover. The surface - top four to six inches (4"-6") of on-site soils (topsoil) - shall be segregated from the underlying soils and salvaged, stockpiled, disposed of, or reused as designated elsewhere in these Special Technical Provisions as directed by the Revegetation Specialist. These organic rich surface soils shall not be used in, or blended to incorporate with, the native fill, engineered fill, structural fill or other designated fill material. The Contractors attention is directed to Sections 195.02, "Clearing and Grubbing" and 260, "Revegetation," of these Special Technical Provisions.

Cobbles and boulders will likely be encountered during grading and should not be incorporated within the floodplain grading or other fill areas. If these oversize particles conform to the description of Channel Materials as described in Section 200 of these Special Technical Provisions, they should be set aside for other applications on the project site as accepted and allowed per direction of the Engineer.

During the course of the project any damage to previously installed and accepted work including but not limited to any channel, structures, and trees shall be repaired/replaced at the Contractor's expense. Furthermore, the Contractor shall protect all previously installed revegetation treatments and irrigation equipment; and repair/replace all areas that are damaged as a result of the Contractors operations. The Contractor shall reshape, grade, and re-compact (where applicable) any areas subjected to displacement from vehicular traffic. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

**205.02 Miscellaneous and Temporary Grading and Excavation**

Miscellaneous and temporary excavation and grading includes excavation, grading, fill, compaction, and disposal of excess materials as necessary to construct the project improvements (including the installation of the culvert structure), maintain prevailing grades, and create minor drainage swales to ensure correct flow paths and positive drainage is maintained within the finished project site. In addition, miscellaneous grading and excavation shall include finish/contour grading within the project area to create natural shapes that transition smoothly to adjacent features, grades and slopes and generally provide for a natural appearance, in accordance with the Project Plans, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer. All such miscellaneous excavation and grading, including detailed finish grading as directed by the Engineer in the field to produce a natural finish, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

**205.03 Grading on Douglas County Property and Right of Way**

All grading fill on Douglas County property or within the Douglas County right of way shall be compacted to 90% relative compaction. This work includes grading for the access road, rolling dip, existing channel fill, and fill outside of the channel cross sections and shall produce a finished grade surface to the lines and grades as shown on the Project Plans. All work shall be in conformance with the applicable sections of these Special Technical Provisions, and as directed by the Engineer. Placement of topsoil and associated finish grading, and revegetation treatments shall be as specified elsewhere in these Special Technical Provisions, or as directed by the Engineer.

**205.04 Local Borrow (Native Fill)**

Selected material and other local borrow native earthen material encountered and/or generated on-site in excavation within the project limits may be used as backfill where shown on the Plans for construction of the proposed channels and access road, as specified for backfill of existing channel, and/or placed in designated fill areas within the limits of excavation, where shown on the Project Plans, as specified in the Special Technical Provisions, the Standard Specifications, or as directed by the Engineer.

All fill materials used in the work shall be in conformance with the Standard Specifications, these Special Technical Specifications, and at a minimum shall not exceed optimum moisture content, and be free of stones or lumps exceeding 3 inches in greatest dimension, organic matter, or other unsatisfactory material that may restrict compaction requirements. **Any native, local borrow, or imported borrow soils used for backfill shall be accepted by the Engineer prior to placement**. Any screening operations and processing of soils as required for conformance with this section shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

Local borrow (topsoil, and underlying native earthen soils) generated on-site in excavation within the project limits may be placed in the fill only in locations as specified on the Project Plans and described in these Special Technical Provisions. Topsoil excavated and properly salvaged within the grading limits may be considered as a select material or local borrow only for the purpose of placement in areas to be planted or revegetated as specified elsewhere in these Special Technical Provisions, or as directed by the Engineer.

The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any local borrow native fill requiring density testing.

**205.05 Import**

Importing of earthwork fill material, if necessary or required to meet the grades and elevations shown on the plans, shall be considered included in the Contractor's bid for the various items of work involved and no additional compensation will be made therefore. Should such imported material be required, the Contractor shall notify the Engineer of the borrow site location at least 72 hours in advance, and provide an adequate sample size (~ 1 cubic foot) so the Engineer can verify the suitability of the material. All imported materials shall be proposed by the Contractor in writing in accordance with the submittal requirements of these Special Provisions and the Standard Specifications.

The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any imported material requiring density testing.

**205.06 Fill and Compact Existing Ditch**

Backfill, grading, and compaction of the existing stormwater channel adjacent to the unpaved portion of Douglas Blvd shall produce a finished grade surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Provisions, and as directed by the Engineer. Placement of topsoil and associated finish grading, and revegetation treatments shall be as specified elsewhere in these Special Technical Provisions, or as directed by the Engineer.

Earthen materials used for native fill and import fill shall be in conformance with the requirements stated herein. Placement, layering, compaction, and locations of the fill materials to create a distinct soil profile to produce a finished grade surface shall be as shown on the Project Plans, described herein, and as directed by the Engineer.

*Execution of Work*

Prior to the placement of fill materials the exposed channel sub-grade should be cleared of excessively loose or disturbed soil and stone materials, large woody debris, vegetation, organic matter, and other waste materials (i.e. clearing and grubbing). No fill should be placed on frozen ground; and placement of fill on or in standing water will not be allowed. If soft, wet, or pumping subgrade soils are present, the required minimum level of compaction for the initial fill lift shall be eighty-five percent (85%) of the soil's maximum dry density as determined in accordance with ASTM D 1557. Construction traffic on soft, wet, or pumping subgrade soils shall be reduced to a minimum. The intent of the reduction is to limit the amount of construction traffic that could lead to further deterioration and destabilization of the exposed subgrade and to build a more stable pad upon which to place subsequent fill lifts.

Fills shall be placed in loose lifts not to exceed eight (8) inches and shall be compacted to not less than ninety percent (90%) of the soil's maximum dry density as determined in accordance with ASTM D 1557. Pumping or deflection within fill lifts is acceptable as long as the required level of compaction is being met and does not preclude achieving adequate density in subsequent lifts. No frozen fill should be placed. Placement and compaction of the channel fills should be accomplished under full-time observation from the Engineer. Testing of compaction will be conducted throughout the process. Fill shall be benched into existing channel sidewalls where sidewall slopes exceed 4:1 (V:H).

*Materials*

Soils used as Native Fill should consist of native materials generated during construction operations for the new channel area or general grading, following associated clearing and grubbing and topsoil salvage. Native fill generated on site should be relatively free (i.e. less than 5 percent) of organics. Import fill, if required or desired for use, shall be free of organics and other perishable material and meet the requirements as noted below. For placement in the work, all native fill or import shall be free of construction debris and shall meet the following requirements:

| **Channel Fill Requirements** | |
|---|---|
| **Sieve Size** | **Percent Passing (by dry weight)** |
| 6" | 100 |
| 4" | 90 - 100 |
| ¾" | 70-100 |
| No. 40 | 10-85 |
| No. 200 | 8-45 |
| Liquid Limit | 60 max. |
| Plasticity Index | 30 max. |

**205.07 Topsoil Placement**

Placement of topsoil (salvage, import, or amended fill) to the required thickness, including any associated finish grading and compaction, shall produce a finished surface to the lines and grades as shown on the Project Plans, and all work shall be in conformance with the applicable sections of these Special Technical Provisions. The topsoil (salvage, import, or amended fill) shall be placed to blend with the adjacent project improvements and floodplain areas to create a generally smooth, natural appearance (including minor variations) as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Provisions.

Prior to any topsoil placement the underlying subgrade shall be left rough as directed by the Engineer. Topsoil shall be placed to uniform depths as indicated on the Project Plans.

Following completion of excavations, fills, grading, compaction, placement of aggregates, and construction of all proposed improvements as shown on the Project Plans as required prior to placement of any topsoil (salvage, import, or amended fill), the Contractor shall schedule for a site

inspection by the Engineer and Revegetation Specialist (minimum of 4 working days notice required) in order to inspect the subject work area for conformance with the contract documents, plans, and specifications. **Placement of topsoil shall not commence until the Engineer and Revegetation Specialist have inspected and accepted the subject work area**. In addition the base soils will be inspected (using a soil probe or penetrometer) for any areas of excessive compaction. Upon discovery the Engineer will mark all areas/items required for corrective measures, and mark the limits of areas where soils shall be loosened/decompacted in order to commence placement of topsoil (salvage, import, or amended fill) and subsequent installation of the revegetation treatments in accordance with the applicable provisions of Section 260, "Revegetation" of these Special Technical Provisions.

Salvaged topsoil shall only be generated from the project site (within the limits of grading) as specified in Sections 170 "Clearing and Grubbing" and 260 "Revegetation" of these Special Technical Provisions.

Earthen materials used for imported topsoil shall be imported to the project site and/or produced on-site, and all construction and materials shall be in conformance with the Plans and applicable portions of these Special Technical Provisions and Standard Specifications. Attention is directed to Section 260 "Revegetation" of these Special Technical Provisions for specific material requirements for the imported topsoil and amended fill.

**205.09 Unsuitable Soils, Surplus Earthen Material, and Stockpiles**
Unsuitable soils, surplus soils, and other excess earthen materials shall be removed and disposed of in accordance with all local, state, and federal regulations from the project site as a part of this item of work. No unsuitable or surplus material may be disposed of within the rights-of-way or project limits. The Contractor shall make all arrangements for disposal of the materials at off-site locations (including disposal outside of Tahoe basin) and at the Contractor's expense.

All surplus materials generated from the project site during construction operations, including but not limited to, clearing and grubbing, topsoil salvage, organic matter salvage, the culvert structure, proposed channel, grading, and other operations, shall be off-hauled and salvaged/disposed of outside the project limits and Tahoe basin (unless a specific off-site area is authorized for use by the Engineer and applicable regulatory agencies). Any shortage of material caused by premature disposal of the surplus or salvaged materials, by the Contractor, shall be replaced by him/her and no additional compensation will be allowed for such replacement.

**205.10 Measurement and Payment.** "Grading Cut" and "Grading Fill" shall both be measured on a lump sum basin, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contractor shall bid based on the cut and fill quantities provided on the Project Plans. If the contractor disputes the quantities provided on the plans, the contractor shall pay for and provide a survey, at his/her own expense and prepare the necessary figures and calculations to support the claim. Excess quantities will be paid for as a percent increase based on the original lump sum bid. Any associated contour grading and other general earthwork movement as required to complete the work shall be considered as included in the lump sum price.

The lump sum price paid for "Grading Cut" and "Grading Fill" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the earthwork involved, including but not limited to, excavation, loading, transport, onsite hauling, local borrow, import, screening, conditioning, backfill, rough grading, scarifying, compacting, finish grading, disposal of unsuitable or surplus materials, and otherwise manipulating the existing ground surface and soils, and placing additional local borrow or

import soils as required for the grading and construction of the designated channel, microbasin, and access road for a complete job in place to the lines and grades as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 210 – RIENFORCED CONCRETE PIPE (RCP) CULVERT

**210.01 General**

Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for the furnishing and installation of a reinforce concrete pipe (RCP) culvert in accordance with the Contract Documents, Standard Specifications, and these Special Technical Provisions, and in conformity with the lines, grades, dimensions, and general design parameters as shown on the Project Plans, and as established and directed by the Engineer. Where used in these Special Technical Provisions 'RCP culvert' shall mean to include all components necessary to provide for a complete and fully functional RCP culvert as shown on the Project Plans. In situations where two or more specifications or standards apply to this work, the most stringent requirements shall govern.

Attention is directed to the Standard Specification, Section 305.10, RC Pipe. In addition, the RCP culvert shall conform to the current/applicable AASHTO and ASTM standards.

Excavation depths and cover heights for the RCP culvert is expected to be in close proximity to that which is depicted on the Project Plans.

Any trench shoring/protective systems as necessary for protection of existing utilities and/or to facilitate completion of the work for the RCP culvert is the sole responsibility of the Contractor, including engineering design, and shall be considered as included in the prices paid for construction of the RCP culvert. The Contractors attention is directed to the applicable provisions of Section 195 "Trench Excavation and Backfill of these Special Technical Provisions and Section 303, "Excavating," and Section 305, "Fill and Backfill" of the Standard Specifications. The Contractor is advised of the possibility of encountering ground water, large boulders, rock, and other similar materials while excavating. There shall be no additional compensation or payment made to the Contractor for encountering or excavating such materials.

All liability associated with the RCP culvert will be borne by the Contractor and the Contractor shall hold the NTCD and Douglas County harmless for any claims associated with the RCP culvert or any RCP culvert failure. The liability duration/timeframe shall be two (2) years from the date of completion and final acceptance of the project work (or Notice of Completion). Should any failure, as determined by the NTCD, occur during this time frame the Contractor will be liable for all costs associated with the repair and any other damages.

**210.02 Installation**

All materials and construction methods shall conform to the applicable provisions of these Special Technical Provisions, the Standard Specifications, and as directed by Engineer.

Any saw-cutting and removal of existing pavements shall be in conformance with Section 302, "Subgrade Preparation" of the Standard Specifications. Material and structures scheduled for removal shall be removed entirely and disposed in appropriate disposal facilities outside the Lake Tahoe Basin. All waste material shall be disposed of in accordance with Tahoe Regional Planning Agency (TRPA) ordinances.

The RCP culvert shall be laid to the lines and grade shown on the Plans. The Contractor shall clean the interior of the RCP culvert as work progresses, and the RCP culvert shall be clear and free of all debris and sediment before acceptance by the Engineer and the introduction of channel flow to the proposed channel and culvert.

The bottom of the trench shall be graded and prepared so as to provide a firm and uniform bearing for the RCP culvert along its entire length (or applicable segment for portion of the work) and prepared as indicated in the submitted and accepted installation specifications. Where the trench bottom is unsuitable (i.e. soft muck/refuse or bedrock/unyielding material unable to provide long-term support), the Contractor shall excavate to a depth required by the Engineer and replace with suitable material as specified or directed by the Engineer and geotechnical engineer. Sub-base and/or bedding materials shall be placed so as to provide a firm and uniform foundation and bedding for the RCP culvert along its entire length, well consolidated and compacted in conformance with the submitted and accepted installation specifications (bedding material shall be of no less quality and thickness as designated on the Plans). All backfill within the roadway prism and roadway structural section, including aggregate base, shall be as depicted on the Project Plans and conform to these Special Technical Provisions and the Standard Specifications. Full compensation shall be considered as included in the price bid for construction for the installation of the items to which such structural fill is required and will be considered incidental or appurtenant.

Any resultant disturbed areas, bare soils, etc., that remain following the construction of the RCP culvert and completion of any applicable revegetation treatments, shall be stabilized and maintained in conformance with Section 160 "Temporary Erosion Control" of these Special Technical Provisions.

Culvert may be repaired, if appropriate, because of handling damage and will be acceptable if, in the opinion of the Engineer, the repairs are sound and properly finished, and the repaired section conforms to the requirements of these Special Technical Provisions, the Standard Specifications, and any manufacturer's requirements.

Prior to acceptance of the RCP culvert, any damage, defects, and/or associated repairs are subject to review by an applicable pipe manufacturer. Any associated costs shall be the responsibility of the Contractor, and no additional compensation shall be allowed for.

**210.03 AC Paving**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for the complete construction of an asphalt concrete structural pavement section to replace the pavement removed for installation of the RCP culvert crossing. This work shall include excavation, subgrade preparation, and aggregate base course, as shown on the Project Plans and in accordance with the Contract Documents, Standard Specifications, Special Technical Provisions, Project Permits, or as directed by the Engineer.

Aggregate base shall be produced from commercial quality aggregates and be Type 2, Class B conforming to Tables 200.01.03-I and 200.01.03-II, of the Standard Specifications. Existing asphalt concrete (AC) pavement may be crushed or pulverized and mixed with virgin aggregate or used solely as aggregate base, provided the resulting processed material complies with the requirements of the Standard Specifications (Section 200.01.03 for Type 2, Class B Crushed Aggregate Base) or where accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 200.01.04 for Type 1 or Type 2 Recycled Aggregate Base). The Contractor is responsible to perform and furnish all material testing as necessary to ensure compliance with the provisions in the Standard Specifications and these Special Technical Provisions. No existing AC is to be recycled and used on the Project on-site.

The construction including placement, spreading, and compaction of one or more courses of aggregate base on a prepared sub-grade shall be in accordance with Section 308, "Untreated Base Courses" of the Standard Specifications. Aggregate base shall be a minimum or 8" thick or match existing, whichever is greater.

Asphalt concrete shall be Type 3 (4% Marshal Voids) and shall conform to the provisions of the applicable sections of the Standard Specifications and these Special Technical Provisions. Asphalt concrete shall be a minimum of 3" thick or match existing, whichever is greater. Asphalt concrete shall be placed to the lines, dimensions, and grades shown on the Plans or as directed by the Engineer. Asphalt concrete shall be produced from commercial quality asphalt and aggregates at a central mixing plant and conform to the following requirements:

A. Asphalt binder (cement) shall be performance graded PG 64-28NV conforming to Table 201.02-IV, of the Standard Specifications.
B. Aggregate shall be Type 3 conforming to Tables 200.02.03-I and 200.02.03-II, of the Standard Specifications.
C. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work, in accordance with Section 337, "Composition of Mixtures" of the Standard Specifications.

The Contractor shall make all provisions to saw cut the edges of existing asphalt to expose the full depth of the section and form a clean edge at any transverse joint, for the freshly laid mixture. As directed by the Engineer in the field, a twelve inch (12") "T" cap key-in joint shall be created at all transverse joints with existing asphalt structural sections.

A tack coat of liquid asphalt shall be applied in accordance with the provisions in Section 318, "Prime and Tack Coat" of the Standard Specifications, to all contact surfaces of existing pavement, curbing, manholes, and other surfaces as designated by the Engineer prior to any asphalt concrete pavement being placed against them.

**210.05 Measurement and Payment**
"15-inch RCP CULVERT" shall be measured on unit price established per linear foot, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work.

The contract unit price paid for "15-inch RCP CULVERT" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the RCP culvert, complete in place, including but not limited to saw-cutting and removal of existing pavements and curb and gutter, trench excavation, shoring, sub-grade preparation, bedding,

furnishing, inspecting, compaction, replacement of curb and gutter, pavement, and striping, transport, and disposal of excess materials and waste debris as shown on the Plans, as specified in these Special Technical Provisions, the Standard Specifications, and as directed by the Engineer; and no additional compensation will be allowed.

Full compensation for all labor, material, tools, equipment, and incidentals necessary to perform specified design tasks, provide temporary soil stabilization and BMPs, and conform to all other applicable provisions as identified in this section or as required in the Standard Specifications, and as directed by the Engineer shall be considered as included in the contract unit price paid for "15-inch RCP CULVERT" and no additional compensation will be allowed.

## SECTION 215 – CULVERT HEADWALL

**215.01 General**
Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for the construction and installation of a concrete headwall in accordance with the Contract Documents, NDOT Standard Plans and Specifications, and these Special Technical Provisions, and in conformity with the lines, grades, dimensions, and general design parameters as shown on the Project Plans, and as established and directed by the Engineer.

**215.02 Mix Design**
A mix design shall be performed and submitted to the Engineer in accordance with Subsections 337.01 "Mix Design" and 337.10 – "General Structural Use Portland Cement Concrete" to determine the composition of the mixture. Unless otherwise specified, Portland Cement for concrete shall be Type II, low alkali. All concrete mixes shall meet the requirements of Section 337.10.01.01, Portland Cement Concrete Exposed to Freeze-Thaw Cycles of the Standard Specifications. No concrete shall be placed without approval by the Engineer of a mix design.

**215.03 Construction**
The headwall shall be constructed in accordance to the NDOT Standard Plans, sheet B-20.1.1 and R-20.1.4.1.

**215.04 Measurement and Payment**
"NDOT Type 1 Headwall" shall be measured on a per each basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. Mortar, grout, finishing, all equipment, labor, and materials shall be included in the unit price established for concrete structures and masonry construction.

This unit price shall include full compensation for excavation, removal of excavated material, concrete, rebar, frame work, associated hardware, backfill, drain rock, pipe connection, and furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in installing the headwalls as shown on the plans, as specified in the Special Provisions, and as directed by the NTCD.

## SECTION 216 – MICROBASIN

**215.01 General**

Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for the construction and installation of a micro basin in accordance with the Contract Documents, and these Special Technical Provisions, and in conformity with the lines, grades, dimensions, and general design parameters as shown on the Project Plans, and as established and directed by the Engineer. See Section 260, "Revegetation" of these Special Technical Provisions for microbasin revegetation details

**215.04 Measurement and Payment**
"Microbasin and Overflow Structure" shall be measured on a lump sum basis, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. Pre-cast drainage inlet, mortar, grout, finishing, rock, soil treatment, all equipment, labor, and materials shall be included in the unit price established for concrete structures and masonry construction.

This unit price shall include full compensation for excavation, removal of excavated material, concrete, rebar, frame work, associated hardware, backfill, drain rock, pipe connection, and furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in installing the microbasin as shown on the plans, as specified in the Special Provisions, and as directed by the NTCD.

## SECTION 220 – INFILTRATION FEATURES

**220.01 General**
Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for the construction and installation of stormdrain structures including curb and gutter, combination drop inlet, double sediment trap, trench drain, and all appurtenances in accordance with the Contract Documents, NDOT Standard Specifications where applicable, and these Special Technical Provisions, and in conformity with the lines, grades, dimensions, and general design parameters as shown on the Project Plans, and as established and directed by the Engineer.

**220.02 Retrofit NDOT Infiltration System**
Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for retrofitting the NDOT infiltration system as shown on the plans. The retrofitted system is within the in the NDOT right of way on the Highway 50 road shoulder and shall be constructed in conformance the NDOT Standard Specifications for Road and Bridge Construction (latest version). Backfill materials shall be in conformance with section 704 "Base Aggregates" of the NDOT Standard Specifications.

**220.03 Friedhoff Infiltration Feature**
Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the Friedhoff Infiltration system as shown on the plans. Grate elevations shall be field fit with proposed improvements and as directed by Engineer.

**220.04 Pittman Terrace Infiltration Feature**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the Pittman Terrace Infiltration Feature as shown on the plans. The existing system is a drainage inlet with a French drain. The existing feature shall be demolished and disposed of prior to new system construction. Contractor shall protect in place an existing underground electric box behind the curb adjacent to the existing feature.

**220.05 Measurement and Payment**

"Retrofit NDOT Infiltration System" shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "Retrofit NDOT Infiltration System" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the feature, complete in place, including any demolition, excavation, bedding, drain rock, structural backfill, concrete, saw cutting, roadway paving, aggregate base, perforated CMP, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the NDOT Standard Specifications, these Special Technical Provisions, and as directed by the Engineer; and no additional compensation will be allowed.

"Friedhoff Infiltration Feature" construction shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "Friedhoff Infiltration Feature" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the feature, complete in place, including any excavation, bedding, structural backfill, concrete, precast drainage inlet, grate and frame, perforated HDPE, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer; and no additional compensation will be allowed.

"Pittman Terrace Infiltration Feature" construction shall be measured on a lump sum basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "Pittman Terrace Infiltration Feature" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the feature, complete in place, including any demolition, excavation, bedding, structural backfill, concrete, roadway paving, precast drainage inlet, grate and frame, perforated HDPE, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer; and no additional compensation will be allowed.

These lump sum price paid for shall include full compensation for excavation, removal of excavated material, concrete, rebar, frame work, associated hardware, backfill, drain rock, pipe connection, pipe, roadway paving and compaction, and furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in installing the all infiltration features as shown on the plans, as specified in the Special Provisions, and as directed by the NTCD.

Full compensation for conforming to the provisions of this Section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.

## SECTION 225 – TRENCH DRAIN

**225.01 General**

The trench drain is to be constructed on Douglas County Property in accordance with the plans, these special provisions and in conformance with the Standard Specifications. Item includes construction of the trench drain, conforming the concrete drain outlet to meet the proposed rock line channel, and paving additional roadway of Douglas Blvd to create a smooth transition between the existing roadway and the proposed drain. Existing pavement shall be sawcut.

**225.02 AC Paving**

Along rock lined and block channel on Friedhoff Drive, the existing pavement shall be sawcut to create a clean edge between the pavement and the channels. The sawcut shall not be in the wheel path. Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for the complete construction of an asphalt concrete structural pavement. This work shall include excavation, subgrade preparation, aggregate base course, and striping as shown on the Project Plans and in accordance with the Contract Documents, Standard Specifications, Special Technical Provisions, Project Permits, or as directed by the Engineer.

Aggregate base shall be produced from commercial quality aggregates and be Type 2, Class B conforming to Tables 200.01.03-I and 200.01.03-II, of the Standard Specifications. Existing asphalt concrete (AC) pavement may be crushed or pulverized and mixed with virgin aggregate or used solely as aggregate base, provided the resulting processed material complies with the requirements of the Standard Specifications (Section 200.01.03 for Type 1, Class A or Type 2, Class B Crushed Aggregate Base) or where accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 200.01.04 for Type 1 or Type 2 Recycled Aggregate Base). The Contractor is responsible to perform and furnish all material testing as necessary to ensure compliance with the provisions in the Standard Specifications and these Special Technical Provisions. No existing AC is to be recycled and used on the Project on-site.

The construction including placement, spreading, and compaction of one or more courses of aggregate base on a prepared sub-grade shall be in accordance with Section 308, “Untreated Base Courses” of the Standard Specifications. Aggregate base shall be a minimum or 8” thick or match existing, whichever is greater.

Asphalt concrete shall be Type 3 (4% Marshal Voids) and shall conform to the provisions of the applicable sections of the Standard Specifications and these Special Technical Provisions. Asphalt concrete shall be a minimum of 3” thick or match existing, whichever is greater. Asphalt concrete shall be placed to the lines, dimensions, and grades shown on the Plans or as directed by the Engineer. Asphalt concrete shall be produced from commercial quality asphalt and aggregates at a central mixing plant and conform to the following requirements:

A. Asphalt binder (cement) shall be performance graded PG 64-28NV conforming to Table 201.02-IV, of the Standard Specifications.
B. Aggregate shall be Type 3 conforming to Tables 200.02.03-I and 200.02.03-II, of the Standard Specifications.
C. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work, in accordance with Section 337, “Composition of Mixtures” of the Standard Specifications.

The Contractor shall make all provisions to saw cut the edges of existing asphalt to expose the full depth of the section and form a clean edge at any transverse joint, for the freshly laid mixture. As directed by the Engineer in the field, a twelve inch (12") "T" cap key-in joint shall be created at all transverse joints with existing asphalt structural sections.

A tack coat of liquid asphalt shall be applied in accordance with the provisions in Section 316, "Tack Coat" of the Standard Specifications, to all contact surfaces of existing pavement, curbing, manholes, and other surfaces as designated by the Engineer prior to any asphalt concrete pavement being placed against them.

**225.02 Measurement and Payment**
"Trench Drain" shall be measured on the unit price established per linear foot, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "Trench Drain" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing trench drain, complete in place, including any excavation, bedding, structural backfill, concrete, trench forms, frame and grate, roadway paving, off-haul and disposal of excess materials and waste debris, and performance of conformance testing as shown on the Project Plans, as specified in the Standard Specifications, these Special Technical Provisions, and as directed by the Engineer; and no additional compensation will be allowed.

## SECTION 230 – PROPOSED CHANNELS

**230.01 General**
Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary to construct the proposed creek channel to the limits shown and in accordance with the Project Plans, Contract Documents, Standard Specifications, these Special Technical Provisions, Project Permit(s), and as directed by the Engineer and Revegetation Specialist.

The alignment, elevations, grades, slopes, dimensions, etc. of the proposed channels are shown on the Project Plans to provide a basis for construction and bidding purposes. The Engineer is expected to make minor revisions and provide direction in the field to fit any varying field conditions. The Contractor shall include all costs for working under the direction of the Engineer in his/her bid for this work, as no additional compensation will be allow therefore. Removal and disposal of all excess materials and waste debris shall be as specified elsewhere in these Special Technical Provisions.

**230.02 Proposed Rock Lined Channel**
The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described in these Specifications) and compact, the channel bed of the channel section as shown on the Plans, and all stone materials, sand, and aggregate shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 200, "Gravel, Cobble, Rock, Boulder & Other Aggregates," of these Special Technical Provisions). Before the placement of the channel bed the Contractor shall place the filter fabric, as shown on the Project Plans. The filter fabric shall be keyed in on all sided of the channel. The bed materials shall be filled and

compacted around all edges of the rock rip rap to fill all the voids around the rock rip rap. The Contractor shall uniformly distribute stone materials to produce the required gradation of rock and to meet finished grades as shown on the Project Plans. As the work progresses the Contractor shall backfill and compact around the sides and edges of all stone materials to produce a stable channel bed.

Following the placement of all stone materials, aggregate, and chinking, for the sub-grade and bed, as accepted by the Engineer, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed channel and produce a firm and stable channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent existing ground to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Provisions. If directed by the Engineer, the Contractor shall place sand and or "Chinking Material" to fill voids in both the channel bed and banks. Where rock lined channel is directly adjacent to the pave road surface, saw-cutting and paving necessary to make a smooth transition from the roadway to the channel shall be included in this item.

**240.04 Rock Drop Structure**

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. The sub-grade shall be prepared and compacted as shown on the Plans, and channel bed material and chinking mix shall be placed to the lines, grades, and dimensions as shown on the Project Plans, and as directed by the Engineer (in accordance with Section 200, "Cobble, Rock, Boulder & Other Aggregates", of these Special Technical Provisions). Following the placement of the channel bed and chinking materials, the Contractor shall properly place the boulders as shown on the Project Plans and as directed by the Engineer. Following the placement of boulders and necessary chinking material, the Contractor shall then properly place and compact all designated fill (as specified on the plans) to create the banks of the proposed channel and grading in order to produce a firm and stable channel to the lines, grades, and dimensions as shown on the Project Plans and as directed by the Engineer. All fill including topsoil shall be placed to the required thickness, and finish graded to blend with the adjacent grading areas to create a smooth, natural appearance as directed by the Engineer; and to create a stable area to receive all proposed revegetation treatments as specified elsewhere in these Special Technical Provisions. If directed by the Engineer, the Contractor shall place additional "Chinking Material" and/or Channel Bed Material to fill additional voids in both the channel bed and structure. Any seeding and planting shall be incorporated with the work as necessary in order to meet the revegetation treatment requirements (see Section 260, "Revegetation").

**230.03 Proposed Block Channel**

The designated area shall be cleared and grubbed, and excavated/fill to the lines and grades as shown on the Project Plans. A concrete edge shall be installed around all sides of the block channel. The sub-grade shall be graded and compacted as shown on the Project Plans. Upon acceptance of the sub-grade by the Engineer the Contractor shall prepare (mixed thoroughly and uniformly as described in these Specifications) and compact, the sand channel bedding before placing the Engineer approved block. Block may be Turfstone© or approved equal. Saw-cutting and paving necessary to make a smooth transition from the roadway to the channel shall be included in this item.

**230.04 AC Paving**

Along rock lined and block channel on Friedhoff Drive, the existing pavement shall be sawcut to create a clean edge between the pavement and the channels. The sawcut shall not be in the wheel path. Work

under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for the complete construction of an asphalt concrete structural pavement. This work shall include excavation, subgrade preparation, aggregate base course, and striping as shown on the Project Plans and in accordance with the Contract Documents, Standard Specifications, Special Technical Provisions, Project Permits, or as directed by the Engineer.

Aggregate base shall be produced from commercial quality aggregates and be Type 2, Class B conforming to Tables 200.01.03-I and 200.01.03-II, of the Standard Specifications. Existing asphalt concrete (AC) pavement may be crushed or pulverized and mixed with virgin aggregate or used solely as aggregate base, provided the resulting processed material complies with the requirements of the Standard Specifications (Section 200.01.03 for Type 1, Class A or Type 2, Class B Crushed Aggregate Base) or where accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 200.01.04 for Type 1 or Type 2 Recycled Aggregate Base). The Contractor is responsible to perform and furnish all material testing as necessary to ensure compliance with the provisions in the Standard Specifications and these Special Technical Provisions. No existing AC is to be recycled and used on the Project on-site.

The construction including placement, spreading, and compaction of one or more courses of aggregate base on a prepared sub-grade shall be in accordance with Section 308, "Untreated Base Courses" of the Standard Specifications. Aggregate base shall be a minimum or 8" thick or match existing, whichever is greater.

Asphalt concrete shall be Type 3 (4% Marshal Voids) and shall conform to the provisions of the applicable sections of the Standard Specifications and these Special Technical Provisions. Asphalt concrete shall be a minimum of 3" thick or match existing, whichever is greater. Asphalt concrete shall be placed to the lines, dimensions, and grades shown on the Plans or as directed by the Engineer. Asphalt concrete shall be produced from commercial quality asphalt and aggregates at a central mixing plant and conform to the following requirements:

D. Asphalt binder (cement) shall be performance graded PG 64-28NV conforming to Table 201.02-IV, of the Standard Specifications.
E. Aggregate shall be Type 3 conforming to Tables 200.02.03-I and 200.02.03-II, of the Standard Specifications.
F. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work, in accordance with Section 337, "Composition of Mixtures" of the Standard Specifications.

The Contractor shall make all provisions to saw cut the edges of existing asphalt to expose the full depth of the section and form a clean edge at any transverse joint, for the freshly laid mixture. As directed by the Engineer in the field, a twelve inch (12") "T" cap key-in joint shall be created at all transverse joints with existing asphalt structural sections.

A tack coat of liquid asphalt shall be applied in accordance with the provisions in Section 316, "Tack Coat" of the Standard Specifications, to all contact surfaces of existing pavement, curbing, manholes, and other surfaces as designated by the Engineer prior to any asphalt concrete pavement being placed against them.

**230.05 Measurement and Payment**

"Rock Lined Channel" shall be measured on a per linear foot basis along the centerline of the facility (i.e. alignments as shown on the Project Plans), complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The linear foot price for "Rock Lined Channel" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the proposed channel, including but not limited to, excavation, sub-grade preparation, grading, stone materials, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

Payment for "Rock Drop Structures" shall be made at the contract unit price per each, complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price for "Rock Drop Structures" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the each drop structure, including but not limited to, excavation, sub-grade preparation, grading, stone materials, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

"Block Channel" shall be measured on a per linear foot basis along the centerline of the facility (i.e. alignments as shown on the Project Plans), complete in place and accepted by the Engineer as conforming to all the requirements in the complete work. The linear foot price for "Block Channel" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the proposed channel, including but not limited to, excavation, sub-grade preparation, grading, stone materials, block, backfill, local borrow, import, compaction, and off-haul and disposal of excess materials, for a complete job in place to the lines, grades, and dimensions as shown on the Project Plans, and specified in the Contract Documents, Project Permits, Standard Specifications, these Special Technical Provisions, and as directed by the Engineer, and no additional compensation will be allowed.

## SECTION 260 – REVEGETATION

**260.01 General.** Work shall be conducted and/or overseen by a licensed Landscape Contractor (C-10) and will be inspected by the Engineer. The Contractor shall perform all revegetation work as specified herein and in accordance with the provisions of these Special Technical Provisions, the Project Plans, and the Standard Specifications. The revegetation work shall consist of all site preparations associated with the revegetation treatments and shall include temporary erosion control, seedbed preparation, seeding, applying tackifier, mulching, and hydroseeding in accordance with the requirements as shown on the Project Plans, and as directed by the Engineer.

Revegetation work shall be conducted during non-windy conditions. Windy conditions are defined as a sustained wind of 8 mph or more; gusts where the difference between the ambient and the increased velocity is more than 4 mph; or any conditions that may make the dispersal of revegetation and erosion control material difficult or inaccurate. The Contractor is responsible for providing certified instruments or data from certified instruments in case of a claim or conflict. There shall be no pay item, payment or claim for instruments or data from measuring instruments.

The Contractor shall notify the Engineer no less than three (3) working days in advance of revegetation work and shall not begin work until prepared revegetation treatment areas have been accepted by the Engineer. The Contractor shall request that treatment types and boundaries are located by the Engineer prior to progressing with the work.

Soil disturbance shall be minimized and limited to those areas that require treatment. All existing vegetation within the project limits not designated for removal shall be protected. Delineate project boundaries with fencing per the requirements in Construction Limit Fencing and in these Special Technical Provisions. Traffic outside of project area is prohibited. Any existing or previously installed vegetation damaged shall be replaced by the Contractor. Areas to receive revegetation treatments shall include all areas disturbed during construction, as indicated on the Project Plans and as directed by the Engineer.

All compacted soils in the project area shall be loosened as needed to a depth of 12" unless otherwise specified or directed by the Engineer and/or RS. Soils shall be loosened so that no soil clods are larger than an average of 1 inch in diameter. Final surfaces shall be left rough unless erosion control blankets are specified, in which case soils shall be raked smooth. No wheeled or other mechanical equipment shall be permitted to travel on the prepared seedbed.

No substitutions or alterations to these Special Technical Provisions shall be accepted without the prior written approval of the Engineer and the Revegetation Specialist. No further disturbance of any treatment area shall be allowed once seeding or installation of cuttings and plant materials has been initiated.

**260.02. Materials**
Revegetation shall progress in an order submitted by the Contractor and as approved by the Engineer.

*Seed*
All Seed Mix shall be supplied by the NTCD to the Contractor 3 days prior to seeding. NTCD will supply the contractor with enough seed for applying to disturbed areas plus an additional 20%. Contractor will supply at their expense any additional seed necessary to adequately seed the revegetation areas. The proposed seed mix to be provided by NTCD is as follows:

| **SPECIES** | **Percent Seed Mix (%)** |
|---|---:|
| Streambank Wheatgrass 'Sodar' | 9.40 |
| Big Bluegrass | 5.73 |
| Fescue Idaho | 12.01 |
| Hard Fescue Durar | 14.56 |
| Squirreltail | 4.80 |
| Creeping Wildrye | 4.96 |
| Slender Wheatgrass | 12.27 |
| California Sierra Brome | 6.77 |
| Blue Flax | 2.60 |
| California Poppy | 2.72 |

| | |
|---|---|
| Sulfur-flower Buckwheat | 2.79 |
| Yarrow | 2.48 |
| Lupin Agenteus | 2.54 |
| Woods Rose | 1.55 |
| Mountain Big Sagebrush | 1.23 |
| Antelope Bitterbrush | 2.54 |
| Penstemon Eatonii | 4.80 |

*Topsoil*

Topsoil shall be properly stored and protected, and shall be free of roots, hard clay and stones which shall not pass through a 1-inch square opening. It shall be a loam to a silt loam mixture having at least 90 percent passing No. 10 sieve. Imported topsoil shall comply with the following requirements:

- Contain no less than 2 percent nor more than 13 percent organic matter, as determined by the test for organic matter in accordance with ASTM D2974.
- Contain no less than 25 percent or more than 40 percent clay, as determined in accordance with ASTM D422.
- Sand content shall not exceed 55 percent, as determined in accordance with ASTM D422.
- Silt Content shall be between 30 and 50 percent, as determined in accordance with ASTM D422.
- The pH shall not be lower than 5.0 or higher than 8.0. The pH shall be determined with an acceptable pH meter on that portion of the sample passing the No. 10 sieve, in accordance with the "Suggested Methods of Tests for Hydrogen Ion Concentration (pH) of Soils," included in the ASTM Procedures for Testing Soils issued December 1964.
- Topsoil shall meet the following mechanical criteria: 100 percent shall pass the 1-inch screen;
- 97-100 percent shall pass the 1.5-inch screen; and 40-60 percent shall pass the No. 100 mesh sieve.
- Topsoil shall be free of clods, gravel, and other inert material. **Topsoil shall be certified to be free of non-native noxious vegetation and seed documented in writing from the Vendor**. Should such regenerative material be present in the soil, the Contractor shall remove, at his expense and in a manner satisfactory to the Engineer, all such growth, both surface and root, which may appear in the imported topsoil within 1 (one) year following acceptance of the work.

Topsoil may, with Engineer's permission, substitute a soil amendment for the topsoil. Amendment and substitution must be approved by Engineer.

*Mulch*

Mulch material includes mulch and bonding fibers, and shall meet the following minimum specifications:

- Contains a nutrient ratio of 6-4-1 N-P-K, which is time released by combining ingredients with distinctly different degradation rates.
- Contains at least 12% composted layer poultry manure analyzing not less than 2-5-3 N-P-K nutrient ratio.
- Contains not less than 3.5% N derived from natural proteins.
- Contains not more than 3.0% N derived from non-protein sources.
- Contains a minimum of 85% organic substances (derived from plant or animal material).
- Contains not less than 2.5% Calcium.
- Contains not less than 14%, nor more than 18% Crude Fiber.

- Contains not less than 5% OMRI-certified granular humic shale ore, itself comprising a minimum 45% humic acid, 4.5% fulvic acid,1.5% sulfur, 2.25% iron, and 10% plant-derived mineral trace elements.
- Contains Sarsaponin.
- Biodegradable, non-polluting, non-volatile, non-toxic, free of weed seed, and contains no heavy metals.
- Contains not more than 13% moisture.
- Pelletized and bagged for handling ease.

*Bonding Fibers*

Bonding fibers are the pure fibers produced from Yucca schidigera and are designed to promote water infiltration into the soil, while enhancing the holding performance of the hydraulic seeding slurry by providing mechanical cross bonding upon the soil surface. Other products meeting the following salient characteristics will also be acceptable:

- Consist of pure fibers produced from the Yucca plant Yucca schidigera.
- Particle size, through 40 mesh >20%, between passing 16 and 40 mesh minimum 45%.
- Bark particles minimum 20%.
- Fibers 1/2" – 1" >25%.
- Remain functional through one growing season.
- Product is organic and fully biodegradable.

*Tackifier*

Tackifier material includes soil stabilizing compound and soil binder reinforcement, and shall meet the following minimum specifications:

The soil stabilizing compound shall be a polymer dispersion, (e.g. Quattro Environmental "ATLAS SoilLok™" or equivalent) designed to form a flexible, water-insoluble, porous membrane (distinctive lattice-like structure) in the topmost soil layer. Land-Grab™ (Cognis) and Henkel 56-8379™ (Henkel) are also acceptable products and may be applied at the same rate as specified herein. Other products meeting the following salient characteristics will also be acceptable:

- Consists of a polyvinyl-acetate compound containing not less than 55% active solids.
- Contains no poly-acrylates or polyvinyl-acrylics.
- Readily miscible in water.
- Flexible and retains its flexibility after curing.
- Does not inhibit water and oxygen infiltration.
- Organic, biodegradable, non-polluting, non-volatile, non-toxic, and leaves no undesirable residues in the soil.
- Does not impair existing vegetative growth.
- Does not re-emulsify once dry.
- Non-injurious to seeds, human and animal life.
- Non-flammable.
- Effective with either acid or alkaline soils.

*Soil Binder (Tackifier) Reinforcement*

To enhance the performance and structural integrity of the hydraulically-applied nutritious bonded fiber membrane slurry, 1/2" polypropylene fibers (e.g. Quattro Environmental "Tackifibers" or equivalent) formulated to provide mechanical cross bonding within the membrane and between soil. The product shall have the following characteristics:

- Consists of polypropylene fibers.
- Minimum 12 millimeters long (ASTM D-4101, Group 1/Class 1/Grade 2).
- Tensile strength – 20,000 psi (ASTM D-2256).
- Specific gravity – 0.91 (ASTM D-792).
- Photo-degradable.
- Remain functional for one growing season.

*Application Rates for Mulch and Tackifier*

| ***Mulch & Tackifiers*** | ***Application Rate*** |
|---|---|
| Mulch (Fertil Fibers or equivalent) | 0.25 tons/acre |
| Stronghold Fibers or equivalent (Bonding Fibers) | 30 lbs/acre |
| Soil Binder (ATLAS SoilLok™ or equivalent) | 25 lbs/acre |
| Soil Binder Reinforcement (Tackifibers or equivalent) | 17.5 lbs/acre |

**260.03 Installation of Treatments**

The Contractor shall notify the Engineer no less than three working days in advance of revegetation work and shall not begin the work until prepared treatment areas have been approved. The Engineer shall verify labeling of soil amendments, mulch and tackifier materials upon delivery to the site and prior to mixing for application. Seed, soil amendments, mulch and tackifier shall be mixed and applied simultaneously in hydraulic slurry. Slurry materials shall be mixed and applied in accordance with the manufacturer's specifications.

Preparation of Seed Beds.

Compacted soils for project access and at the basin bottom shall be thoroughly loosened to a depth of 12 inches with hand tools, an agricultural disc, rippers, or other equipment approved by the Engineer. Compacted soils for the basin sides and berm shall be loosened to a depth of 3 inches with hand tools, an agricultural disc, rippers, or other equipment approved by the Engineer. Topsoil shall be incorporated into the top 3 inches of all areas to be revegetated so that grades on plans are still met.

Equipment

The hydraulic application of the seed, amendment, mulch and tackifier slurry shall be accomplished using a hydroseeding unit that must be capable of providing a uniform application using water as the carrying agent. Use of a hydroseeding unit equipped with gear driven pumps will not be permitted as it may result in damage to the seed. The hydroseeding unit must be equipped with a centrifugal pump with a minimum discharge capacity of 275 GPM, 105 PSI, with 3/4 inch solid clearance. Tanks shall be equipped with a paddle type agitator designed for maximum mixing extending the full length of the tank and supported on each end. The agitator should be variable from 10 to 120 RPM, reversible, and should provide valved by-pass back to the tank to allow for liquid recirculation to implement mixing and allow for remote valve operation.

Mixing of Slurry

While loading the hydroseeder tank with water and with agitator in operation, add bonding fibers to tank by vigorously shaking and dispersing handfuls of fibers into the slurry. The contractor shall take care to prevent clumping of fibers which has the potential to plug

equipment. The hydroseeding unit must be flushed and washed out to eliminate any contamination from previous use. Seed shall be added to the slurry mixture just prior to beginning application. Slurry shall be applied within 15 minutes of adding the seed to the slurry mixture.

Slurry Application

During application of soil amendment/seed, mulch, and tackifier, extreme care shall be taken to avoid puddling, runoff, and over-spray of the slurry. The slurry shall be applied under but **not on the foliage of existing vegetation**. Burlap bags or other materials approved by the Engineer shall be used to cover plant canopies in areas where the slurry cannot be applied without over-spray onto adjacent vegetation. The burlap coverings shall be removed immediately after completion of tackifier application with extreme care to minimize disturbance to where slurry has been completed. Completed areas subsequently disturbed by the Contractor shall be repaired at the Contractor's expense and no additional compensation shall be allowed for. The Engineer shall determine the appropriate method to repair the area, which may include combinations of seeding, soil amending, mulching, and tackifier applications. Treatment areas shall be evaluated on a continual basis during the project for needed repairs.

**260.04. Temporary Irrigation**

Temporary irrigation shall be used to encourage rapid plant establishment. Irrigation is intended solely as an initial assistance for germination and establishment and is not intended to continue past the initial vegetation establishment period. All areas to be revegetated as shown on the plans, or as directed by the Engineer shall receive temporary irrigation.

Temporary irrigation shall be performed with a low-pressure impact system in order to establish vegetation to conditions described in these Special Provisions. Irrigation shall be performed such that water is applied evenly throughout all revegetation treatment areas and shall penetrate to at least six (6) inches below the ground surface within twelve (12) hours of irrigation and allows the surface soil to dry out while maintaining adequate moisture levels at depth. Exact irrigation scheduling for all areas shall depend on air and soil temperatures and will require adjusting during the course of the growing season. Irrigation schedules shall be as described in these Special Provisions and submitted to the Revegetation Specialist for acceptance to ensure proper timing, frequency and duration. Above-ground irrigation shall take place early in the morning or late in the evening whenever possible in order to minimize water loss due to high air temperatures and wind. A suitable timer/controller device shall be part of the temporary irrigation system in order to program an irrigation schedule an apply water to the revegetation treatments areas as specified herein.

The temporary irrigation system shall consist of above-ground piping that is flexible, highly burst resistant and suitable for use in a pressure piping system (Certa-Lok Yelomine ™ or accepted equal), and the piping shall be capable of connecting to full circle heads (low precipitation rate, < 2.5 gallons per minute [gpm]) each with a radius of 20 feet stream rotor or equivalent spray heads capable of delivering water to the areas where the applicable revegetation treatments are applied as shown on the Plans. Previously used piping and spray heads may be used in the project work as long as the materials are in good working condition and meet the standards as noted herein. Above-ground irrigation shall be constructed in a manner that the reach of sprinklers shall overlap thirty (30) percent in order to cover the entire surface of the revegetated area. The Contractor shall be responsible to provide for any underground crossings and pipe sleeves as may be necessary to avoid surface conflicts with roads, trails,

and other public use areas. Restoration of any paved/concrete surface shall be considered included with this item of work, and no additional compensation will be allowed.

It is the responsibility of the Contractor to identify and provide an irrigation source. The irrigation water may to be supplied by Douglas County Water Utility at the expense of the Contractor. The Contractor is responsible for coordination with the Douglas County for the allowable connection points to the system. The contractor is further responsible for the connection to the existing system, disconnection of the existing system and the necessary repairs to the existing system when complete to assure a properly function system during and after the contractors irrigation period. Irrigation methods proposed by the Contractor shall be submitted to the Engineer for review and acceptance prior to commencement of irrigation activities. A water meter shall be installed at each water supply tie-in to monitor and report the volume of water used to the Engineer.

**260.05 Measurement and payment**

Measurement and payment for Revegetation shall be made on the lump sum basis as delineated in the Bid Schedule and shall be considered complete payment for furnishing all labor, materials, equipment, tools, and incidentals necessary to complete revegetation and irrigation as shown on the plans and as specified in these Special Provisions, and as directed by the Engineer and RS. All costs in connection with this work will be considered incidental to the contract price per lump sum for “Revegetation.”