

# SPECIAL TECHNICAL PROVISIONS

FOR

ZEPHYR COVE GID 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 Road and Bridge Construction – Nevada Department of Transportation (NDOT), current edition. These Special Technical Provisions are supplemental to the Standard Specifications.

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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 Road and Bridge Construction Nevada Department of Transportation (NDOT), current edition. These Special Technical Provisions are supplemental to the 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 Zephyr Cove GID 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 Zephyr Cove GID 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 US Forest Service, 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; however; all work on USFS Parcel 1318-10-000-002 must be completed by June 2, 2017 and so it is advised that the proposed basin and associated inlets and outlets are completed first.
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, US Forest Service, NDOT, NDSL, NDEP, Douglas County, and TRPA.
  - a. Development of project punchlist (by Engineer and Agencies).
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, USFS, 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). Additionally the project is being funded by the US Forest Service (USFS) and occurs on portions of USFS land and requires the issuance of a USFS Special Use Permit (SUP). The USFS SUP requires that work on USFS land (1318-10-000-002) be completed as early in the project schedule as possible and prior to June 2, 2017. Finally, a portion of the work is within the NDOT right-of-way, which requires the issuance of an encroachment permit by NDOT. Because of the small project size, an NDEP permit is not required.

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, revegetation and restoration requirements, and all other agency approval conditions.

In addition to TRPA 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, NDOT, Douglas County, 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, and TRPA 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 the United States Forest Service (USFS) and other 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 activities 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 pratense* (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 Engineer.

- Staging areas for equipment, materials, or crews shall not be sited in weed infested areas.
- Order of work shall proceed from non-invested areas to invested areas.

The Contractor will be required to meet all of the requirements shown on the Plans, as described in the Project Permit(s), these Special Technical Provisions. The Contractor is restricted from parking equipment, and storing materials within the Project limits, except as shown on the Plans or as directed by the Engineer. Soil and other materials shall not be stored, stockpiled, or otherwise placed within areas or on a surface that is not designated for such treatment on the drawings. Refueling of equipment will not be allowed within unpaved 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 – *Grading Permit*
- US Forest Service – *Special Use Permit*
- 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, the SWPPP, 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; 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 drainage inlets, sediment caps, 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. Attention is directed to Section 335, "Cleanup," of the Standard Specifications.

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. 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 (if necessary), 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 area as identified on the Project Plans is 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. The staging/storage area is controlled by various private (USFS) and public (Aramark) 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 Contractor's use of the designated staging/storage area 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.

All staging/storage areas shall comply with the 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, NTC, 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 (if any areas for Staging/Storage are used and not shown on the Revegetation Plans, the Contractor shall treat the area as directed by the Engineer) 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.

#### **140.02 Coordinating with Adjacent Business and Property Owners**

Contractor shall notify adjacent business (Zephyr Cove Resort) and property 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 NTC at the same time. Contractor shall maintain access to businesses and properties at all times and shall not materially interfere with businesses. Additionally, the Contractor shall not limit access to the existing TDS pump station at the Foothill Outfall without notifying TDS 10 days in advance.

#### **140.04 Measurement and Payment**

Staging and Storage shall be measured on a lump sum basis, accepted by the Engineer as conforming to all the requirements in the complete work. The contract price paid for Staging and Storage shall include set-up of all staging and storage areas and installation of any applicable temporary erosion control measures and BMPs (except where otherwise paid for) and furnishing all labor, materials, tools, equipment, and incidentals required for performance and completion of the work; including full compensation for operations required to remove and dispose of all materials, clean-up, and restore the site to its pre-construction condition, and re-pave and stripe the parking area as shown on Plans; 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.

The schedule for payment for Staging and Storage 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 Staging and Storage. Measurement of the percentage of work completed 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 Staging, Storage and Access 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 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 returned)

### **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
- 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
- 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 weir materials
- 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
- 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.

A traffic control plan was prepared by the Engineer and provided in the Design Plans as guidance for the Contractor in preparation of his/her Traffic Control Plan. **The Contractor shall submit the proposed traffic control plan, along with the proposed project construction schedule, to the Engineer for review and comments at least seven (7) 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.

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 (Douglas County or NDOT) 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 and benchmarks,
- Outfall alignments
- Limits of grading and grade breaks, and
- Stormwater infrastructure locations and offsets.

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.

At the completion of staking, the Contractor will be provided with survey information upon request, electronic or hard copy. 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 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.

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) and 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 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 temporary erosion control measure as required by the Project Plans, the Standard Specifications, these Special Technical Provisions, The Project Permits and the TRPA Best Management Practices.

The Contractor shall perform all construction activities that are within the road right-of-way within the construction limits staked by the Contractor’s surveyor and 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 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 work will be the area within the limits of the construction limit fence. All construction limit fencing shall remain in place until equipment access is no longer necessary in the area and TRPA approval is obtained.

**160.03 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, 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 as necessary to conform to the Project Permit(s). All filter fence 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 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.

**160.04 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). 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.

**160.05 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). 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.

**160.06 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 washed 1 inch drain rock or approved equal.
- 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.

#### **160.07 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 Contractor's 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 (Douglas County). The Contractor shall use said hydrant(s) in accordance with any rules, regulations, and procedures as established by the agency.

#### **160.08 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 tracking prevention devices at 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.

#### **160.09 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.

**160.10 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 AND TREE REMOVAL**

### **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. Attention is directed to section 201 of the Standard Specifications. 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. 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.

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.

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.

#### 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 Engineer. Topsoil shall be re-applied within the project area in accordance with Section 260, "Revegetation," of these Special Technical Provisions. 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 as identified by the Contractor or the Engineer. This may include weed infestation areas. All unsuitable vegetation or other debris shall be removed from the job site by the end of each working day.

#### **170.03 Tree Removal**

Work under these bid items shall consist of furnishing all labor, tools, equipment and materials necessary for the removal of trees equal to or larger than 6-inches in diameter, measured at an elevation of 4.5-feet above the prevailing existing ground surface on uphill side of tree (a.k.a diameter at breast height - DBH). Trees equal to or larger than 6-inches DBH to be removed are schematically shown on the Project Plans and will be conspicuously marked in the field by the Engineer and TRPA forester (**no tree shall be removed unless marked in the field**). Tree removal shall include the removal of associated stumps and roots necessary for a complete removal of the tree and its appurtenances, and backfilling the remaining hole with native material, as directed by the Engineer.

The quantity (contract value) of trees to be removed, as shown on the Project Plans, may be more or less than the contract amount, as determined by the Engineer. Final quantities may fluctuate based on field conditions and actual construction staking, layout, and grading limits at the time of construction. All

trees necessary for removal, as determined by the Engineer and TRPA staff forester, will be identified and conspicuously marked in the field for removal.

Prior to timber removal operations all associated temporary erosion control measures and BMPs, and traffic control must be in place, in accordance with the SWPPP, Project Permit(s), Standard Specifications and these Special Technical Provisions.

Trees shall be felled to minimize disturbance to surrounding facilities, structures, vegetation and traffic flow on roadways. The Contractor shall make all efforts to minimize any damage to trees and/or root systems that are to remain in place. The Contractor shall be liable for damage to utility service lines, fences or other structures. Contractor is responsible for complete site cleanup, including slash disposal. No slash may be stored or burned on site. All wood products must be removed from the site prior to resale. 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, NDSL, or applicable property owners in association with the removal.

#### **170.04 Stump Removal**

Work under this item shall be considered part of the clearing and grubbing work and shall consist of furnishing all labor, tools, equipment and materials necessary for the removal and disposal of stumps depicted on the project plans, or as directed by the Engineer. Stump removal as described herein will only consist of stumps to be removed that are not directly associated with the removal of a tree (as defined herein - tree removal bid items and prices include the cost of removing the associated stump).

Trees and stumps designated for removal shall be removed to at least three (3) feet below finished grade. Ground trees and stumps intended for use as wood chip mulch shall conform to the requirements of these Special Technical Provisions. Trees and stumps not suited as wood chip mulch or for use in project improvements shall be removed and appropriately disposed of outside the project limits. The Engineer will determine which trees and stumps are suited for use as wood chip mulch and for use in project improvements. The Contractor shall schedule an inspection of stumps and trees with the Engineer, at least 10 days prior to the Contractor scheduling wood chipping operations, for a determination of what can be used as mulch.

Compensation for the removal of trees and stumps less than six (6) inch diameter and stumps greater than six (6) inch diameter, as necessary for construction of the various items of work as staked by the Engineer, shall be included in the clearing and grubbing bid item and no additional compensation shall be made therefore.

#### **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, 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. 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 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.

"Tree Removal" shall be measured on a per each basis, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The unit price for "Tree Removal" shall include furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing each tree and associated stump and chipping 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 materials not to be used in the project 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 – REMOVAL OF 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 202, "Removal of Structures and Obstructions", 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, 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**

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 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.

#### **175.02 Remove Fencing**

Work under this section shall include removal of fence 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 fencing including wood and rope and chain link. 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.

#### **175.03 Remove and Replace Wood Decking**

Work under this section shall include removal of wood decking and stairs 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 preservation of any and all wood including decking and stairs. The decking and stairs must be replaced per existing or as approved by Engineer. Existing material may be reused for replacement. Any broken or defective materials shall not be used in replacement. 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.

#### **175.04 Remove Storm Drainage Structures**

Work under this section shall include the complete removal and disposal of storm drainage structures, 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. Storm drain structures include but are not limited to existing storm drain and existing trench drains.

#### **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 207, "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 207 "Backfill" 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, and no additional compensation will be allowed.

"Remove 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 "Remove Existing Improvements" 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, fencing, trench drain and the storm drain pipe, including associated surface improvements (asphalt concrete, aggregate base), 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 known sanitary sewer force main or potable water main prior to contacting TDS&D (sewer) and Douglas County (water) at least ten(10) working days in advance. Additionally, the Contractor shall not limit access to the existing TDS&D pump station at the Foothill Outfall without notifying TDS&D 10 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.

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.

#### **180.03 Protect In Place Existing Facilities and Utilities**

All utilities that are not to be relocated or removed shall be protected in place from injury or damage. Any damage to 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 purveyor. Unless cleared by the utility purveyor, the Contractor shall be responsible for reimbursing said utility for any and all work required to repair or replace damaged facilities.

#### **180.04 Measurement and Payment**

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 195 – TRENCH EXCAVATION AND BACKFILL**

### **195.01 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 207, "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. Attention is directed to section 704 "Base Aggregates" of 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.

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 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, ROCK, & 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, rock, and other aggregates in the work, including but not limited to, channel rock lined channel, rock bowls, rock dissipator, aggregate base courses, bituminous courses, bedding and backfill, mortar and grout, and Portland cement 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 gravel, rock, and other loose aggregate used in the work at the outfalls, including imported and reused rock, shall be thoroughly washed off site or 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 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 gravel, rock, 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.

	<u>Requirement</u>	<u>Test Method</u>
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. 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.

**200.04 Rock Dissipator**

Rock size shall be as shown on Project Plans. Rock shall be angular and a color that matches native granite material found in the Lake Tahoe Basin. All rock used for the rock dissipator shall be uniform in color and shape.

**200.05 Rock Bowl & Rock Lined Channel Repair**

Rock size shall be as shown on Project Plans. Rock shall be angular and a color that matches native granite material found in the Lake Tahoe Basin. All rock used for the rock lined channel shall be uniform in color and shape. A sample of the proposed rock shall be submitted to the Engineer ten (10) working days prior to constructing any of the proposed improvements in this section. Rock color and shape shall be approved by the Engineer.

**200.06 Flat Top Rock Channel Repair**

Flat Top Rock Channel will maintain a channel shape as indicated on the Project Plans. The channel bottom will be lined with smooth-topped rocks (i.e. granite flagstones) with a minimum weight of 50 lbs each and a minimum thickness of 1.5 inches creating an improved and protected access to the beach while protecting the outfall. The rocks on site shall be reused. The Contractor shall work with the Engineer in the field to ensure the desired aesthetic of the features.

**200.07 Repair Eroded Sand Channels**

Repair of Eroded Sand Channels will maintain grade as indicated on the Project Plans. Sand excavated from the repair of the Flat Top Rock Channel, Rock Bowl, and/or Rock Lined Channel may be used as fill for the eroded channels. Channels shall be filled in to match beach grade to the extent possible with available materials on site. No sand shall be imported.

### **200.08 Placement**

Hand and/or mechanical adjustments/placement of the stone materials are expected in order to meet the requirements stated herein. All stone products shall be placed to follow the lines and grades shown on the Project Plans. Prevent the contamination of stone features 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. 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.

### **200.09 Measurement and Payment.**

“Rock Dissipator” shall be measured as per each with dimensions shown on the project plans. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to construct the Rock Dissipator, including, but not limited to, excavation, backfill, rock, placement, labor, and incidentals is included in the contract unit price per each for Rock Dissipator and no additional compensation will be allowed.

“Rock Bowl and Rock Lined Channel Repair” shall be measured by the square foot of exposed rock measured in the field. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to construct the Rock Bowl and Rock Lined Channel Repair, including, but not limited to, excavation, backfill, rock, placement, labor, and incidentals is included in the contract unit price per square foot for Rock Bowl and no additional compensation will be allowed.

“Flat Top Rock Channel” shall be measured by the square foot as determined from the dimension shown on the Project Plans or dimensions directed by the Engineer. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to construct the Flat Top Rock Channel, including, but not limited to, excavation, backfill, rock, placement, labor, and incidentals is included in the contract unit price per square foot for Flat Top Rock Channel and no additional compensation will be allowed.

“Repair Eroded Sand Channels” shall be measured by the square foot as determined from the dimension shown on the Project Plans or dimensions directed by the Engineer. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to repair the Eroded Sand Channels, including, but not limited to, excavation, backfill, sand, placement, labor, and incidentals is included in the contract unit price per square foot for Repair Eroded Sand Channels and no additional compensation will be allowed.

## **SECTION 210 – BASIN EARTHWORK**

### **210.01 General**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials necessary for basin excavation, berm construction, local borrow native soils, import, structural fill, salvage topsoil, imported topsoil, amended fill, 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. Excavation and fill for the any storm drain pipes is not considered a part of "Basin Earthwork" and is covered in Section 220 "Storm Drain Structures." Attention is directed to Section 203, "Excavation and Embankment", of the Standard Specifications.

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 Engineer. 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 170.02, "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 berm or other fill areas. If these oversize particles conform to the description of 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.

#### **210.02 Miscellaneous and Temporary Grading and Excavation**

Work under this item shall consist of providing all labor, tools, materials, and equipment necessary to perform minor excavation, temporary excavation and finish grading as directed by the Engineer. Miscellaneous and temporary excavation and grading includes excavation, grading, fill, compaction, and disposal of excess materials as necessary to construct the project improvements, 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.

#### **210.03 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, 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.

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. Materials Testing shall be per Standard Specifications.

#### **210.04 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.

#### **210.05 Basin Berm**

Backfill, grading, and compaction of the proposed berm 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.

#### Site Preparation

All debris, pavement, and concrete shall be removed from the berm site. A stripping depth of 0.2 to 0.3 feet is anticipated. Trees and associated roots greater than one-half inch in diameter shall be removed, where necessary, to a minimum depth of 12 inches below finished grade or in the footprint of the berm. Recycled materials shall not be used within the earthen berm fills. The Contractor shall exercise care during grading to locate and identify any existing buried improvements that require removal and replacement. Aggregate base or bedding sand encountered during the removal of improvements may be sufficiently blended with the native silty sands and stockpiled for re-use provided it meets the requirements for berm fill. The Contractor shall have fill materials, including those generated on site, sampled, tested, and approved by the Geotechnical Engineer prior to placement and compaction.

#### Grading and Filling

Once the debris and vegetation are removed from areas to receive berm fill, the existing subgrade shall be scarified to a depth of 12" minimum, moisture content within 3 percent of optimum, and compacted to at least 88 percent relative compaction (ASTM D1557). Any soft or wet zones shall be stabilized by

methods such as excavation or dewatering prior to final grading. Berm fill materials shall not be placed on surfaces that are muddy, frozen, or contain frost or ice.

With the exception of asphalt, debris, and vegetation, the soils removed from beneath the parking lot are generally suitable as berm fill materials. All materials used for the berm fill shall be approved by the Geotechnical Engineer prior to placement. Contractor shall take due care to protect the resulting native material stockpiles from being compromised with coarse particles such as cobbles or asphalt. Oversized particles (greater than 4" diameter) shall be removed from berm fill material or import fill will be required. Berm fill shall meet the following requirements:

<b>Berm Fill Requirements</b>	
<b>Sieve Size</b>	<b>Percent Passing (by dry weight)</b>
4"	100
¾"	70-100
No. 40	15-80
No. 200	5-40
Liquid Limit	40 max.
Plasticity Index	10 max.

Berm fill shall be placed in a maximum of 12 inch loose lifts and densified to at least 92 percent relative compaction except (ASTM D1557). Berm fill shall have a moisture content within 3 percent of optimum. Higher moisture contents may be acceptable if the soil lift is stable, required compaction is attained, and approval is given by Geotechnical Engineer. Field density testing shall be performed on each lift of fill.

A Geotechnical Engineer, employed by NTCD, will be on site to identify native fill suitable for berm construction and perform compaction testing. The Contractor shall inform NTCD at least 48 hours in advance if the Geotechnical Engineer is needed on site. The Contractor shall perform and submit material testing reports and other data as necessary to validate the source and makeup of import fill selected for placement in the work, and to provide the Engineer with established laboratory values for optimum moisture and maximum dry density, for any fill material requiring density testing. Any proposed import fill that deviates from the criteria stated herein, shall have written acceptance from the Engineer and geotechnical engineer prior to import or placement in the work.

The Contractor is hereby advised that some of the on-site soils may be saturated and will require drying prior to placement in order to achieve the specified degree of compaction.

#### **210.06 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.

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 (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 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 195 "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.

#### **210.07 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, storm drain excavation, and basin grading, 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.

**210.08 Measurement and Payment.** Basin Earthwork 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. 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 "Basin Earthwork" 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 basin and berm 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 220 – STORM DRAIN STRUCTURES**

**220.01 General**

Work covered under this specification consists of furnishing all of the labor, materials, tools, and equipment necessary for the installation, cleaning, and retrofit of storm drain structures including the basin outlet, storm drain pipe, drainage inlet weirs, existing vault retrofits, and all pipe connections in accordance with the Contract Documents, NDOT 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.

**220.02 Basin Outlet**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the basin outlet as shown on the plans. Basin Outlet material shall be constructed in conformance with Sections 506 “Steel Structures” and 604 “Corrugated Metal Pipe and Metal Arch Pipe” of the Standard Specifications. The Basin’s Corrugated Metal Pipe (CMP) outlet shall be 18” and constructed in conformance with section 601 “Pipe Culverts - General” of the Standard Specifications. Backfill materials shall be in conformance with section 704 “Base Aggregates” of the Standard Specifications.

**220.03 Plastic Pipe**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for installation of the plastic storm drain pipe as shown on the plans. This includes the bedding, backfill, and replacement AC paving.

14” HDPE Pipe

14” High Density Polyethylene Pipe (HDPE) specified for storm drain use in the US Highway 50 Right of Way shall be smooth on the exterior with a smooth interior (ISCO Snaptite® or equivalent).

1. High density polyethylene pipe and fittings shall meet the requirements in the AASHTO M326-08 Specification.
2. Raw Materials. The pipes and the fittings shall be manufactured from PE resin compounds, which have a minimum cell class 345464C as defined and described in ASTM D3350.
3. HDPE Resin Specifications

Property	Specifications	Unit	Nominal Value
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Material Designation	PPI/ASTM		PE3408/PE3608
Cell Classification	ASTM D3350		345464C
1. Density (3)	ASTM D1505	Gm/cm <sup>3</sup>	0.955
2. Melt Index (4)	ASTM D1238	gm/10 min.	0.11
3. Flexural Modulus (5)	ASTM D790	psi	135,000
4. Tensile Strength (4)	ASTM D638	psi	3,200
5. Slow Crack Growth			
a. ESCR	ASTM D1693	hours in 100% igepal	>5,000
b. PENT (6)	ASTM F1473	hours	>100
6. HDB @ 73 deg. F (4)	ASTM D2837	psi	1,600
7. UV Stabilizer (C)	ASTM D1603	%C	2.5%

1. Pipe shall be solid-wall construction with mechanical end connectors, male and female, consisting of 2 machined-groove landing points, to prevent the pipe from pulling apart during installation.
2. Individual section lengths shall be a minimum of 6 ft. but shall not exceed 50 ft. unless pre-approved.
3. Pipe joints shall comply with ASTM D3212 Standard Specification for joint tightness.
  - i. Extrusion welded joints shall not be allowed to join the liner pipe together to keep grout from leaking out during the grouting stage.
  - ii. Neoprene Cement shall not be allowed to create a seal at the joint to prevent grout from leaking out during the grouting stage.
4. Hydraulic flow characteristics for the pipe shall provide a Manning's coefficient of n = 0.00914. Pipe Manufacturer shall submit 3rd party test data verifying the Manning's coefficient has been achieved.
5. HDPE Pipe with male and female mechanical end connectors must be supplied by one manufacturer that has a certified quality management system registered to ISO 9001:2008

18" HDPE Pipe

18" High Density Polyethylene Pipe (HDPE) specified for storm drain use shall be corrugated on the exterior with a smooth interior. HDPE at a minimum shall meet the requirements of Section 605 of the Standard Specifications inclusive.

**220.05 Drainage Inlet Weir Retrofit**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the install the Drainage Inlet Weir Retrofit as shown on the Project Plans. The drainage inlet must be completely cleaned prior to weir installation. Once Engineer approves the cleaning, the Contractor shall measure for the weir and construct the channels as indicated on the plans. Weir dimensions may be modified up to 15 percent in length and height during project staking and no additional compensation is allowed for these modifications. Additional modification would activate the change order process. The channels shall be straight and uniform and constructed without jeopardizing the structure of the drainage inlet. Prior to the installation of the weir, the Engineer must approve the final weir structure. A minimum difference of 0.1' shall be provided between the inlet and outlet pipe invert elevations in a manhole or drop inlet. A minimum of six inches separation between pipe penetrations in manholes shall be provided.

#### **220.06 Protect Existing Trench Drains**

Work under this item shall consist of protecting the existing trench drains on Highway 50 as shown on the project plans. Trench drains may be protected in place or removed and reinstalled to match existing conditions.

#### **220.07 NDOT Type 1 Modified Manholes**

Work under this item shall consist of installation of NDOT type 1 modified manholes as shown on the project plans. Pipe connections and pipe invert elevations shall be confirmed with Engineer prior to installation. Manholes shall conform to section 609 of the Standard Specifications. A minimum difference of 0.1' shall be provided between the inlet and outlet pipe invert elevations in a manhole or drop inlet. A minimum of six inches separation between pipe penetrations in manholes shall be provided.

#### **220.08 Church Street Manhole**

Work under this item shall consist of installation of the manhole adjacent to Church Street as shown on the project plans. Pipe connections and pipe invert elevations shall be confirmed with Engineer prior to installation. Manholes shall conform to section 609 of the Standard Specifications. A minimum difference of 0.1' shall be provided between the inlet and outlet pipe invert elevations in a manhole or drop inlet. A minimum of six inches separation between pipe penetrations in manholes shall be provided.

#### **220.09 Measurement and Payment**

"Basin Outlet Structure" construction shall be measured and compensated for the unit price established per each structure, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for "Basin Outlet Structure" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the structure and its 18" CMP outlet complete in place 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.

"14" HDPE Storm Drain Pipe" 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 "14" HDPE Storm Drain Pipe" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved installing 14" pipe, complete in place, including any excavation, bedding, structural backfill, concrete, 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 NDOT Standard Specifications, these Special Technical Provisions, and as directed by the Engineer; and no additional compensation will be allowed.

“18” HDPE Pipe” 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 “18” HDPE Pipe” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved installing 18” HDPE Pipe, complete in place, including any excavation, bedding, structural backfill, connection to drainage structures, concrete, 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 NDOT Standard Specifications, these Special Technical Provisions, and as directed by the Engineer; and no additional compensation will be allowed.

“Drainage Inlet Weir Retrofit” shall be measured and compensated for the unit price established per each structure, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for “Drainage Inlet Weir Retrofit” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in constructing the retrofit, complete in place 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.

“Protect Existing Trench Drains” shall be measured and compensated for 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 “Protect Existing Trench Drains” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in protecting the existing trench drains or removing and reinstalling the structures, complete in place 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.

This unit prices 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 all storm drain structures 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.

“NDOT Type 1 Modified Manhole” shall be measured and compensated for the unit price established per each structure, completed and accepted by the Engineer as conforming to all the requirements in the complete work. The contract unit price paid for “NDOT Type 1 Modified Manhole” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in installing the manhole, complete in place 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.

“Church Street Manhole” shall be measured and compensated for the unit price established per each structure, completed and accepted by the Engineer as conforming to all the requirements in the

complete work. The contract unit price paid for “NDOT Type 1 Modified Manhole” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved in installing the manhole, complete in place 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 225 – AC PAVING**

### **225.01 AC Paving within NDOT Right of Way**

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 pipe within the NDOT Right of Way. 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 section 704.03.05 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 704.03.05) or where accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 402). 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 302, “Aggregate Base Courses” of the Standard Specifications.

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 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 64-22 conforming to section 704 “Bituminous Materials”, of the Standard Specifications.
- B. Aggregate shall be Type 3 conforming to Section 705.03.01, of the Standard Specifications.
- C. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work.

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 405, "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. Shoulder and Traffic Striping shall occur as dictated by the Standard Specifications.

#### **225.02 Douglas County and Zephyr Cove GID 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 outside of the NDOT Right-Of-Way (Church and Foothill Outfalls). Paving may also be necessary to repair any damages to the staging area or where pipes are installed outside of the NDOT Right of Way. 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 section 704.03.05 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 704.03.05) or where accepted and as directed by the Engineer comply with the requirements of the Standard Specifications for recycled asphalt concrete base (Section 402). 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 302, "Aggregate Base Courses" of the Standard Specifications.

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 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 64-22 conforming to section 704 "Bituminous Materials", of the Standard Specifications.
- B. Aggregate shall be Type 3 conforming to Section 705.03.01, of the Standard Specifications.
- C. A mix design shall be completed and submitted by the Contractor prior to incorporation in the work.

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 405, "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.

### **225.03 Measurement and Payment**

AC Paving not specifically called out on the Project Plans and installed as part of a pipe installation shall be considered incidental to other work and no compensation shall be allowed. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to construct the AC Pavement, including, but not limited to, aggregate base, grading, placement, and incidentals is included the bid for pipe installation, trench drain protection, or storm drain structure installation and no additional compensation will be allowed.

## **SECTION 230 – VERTICAL CURB**

### **230.01 General**

Vertical curb is to be constructed in accordance with the plans, these special provisions and in conformance with the Standard Specifications. Attention is directed to section 613 “Concrete Curbs, Gutters, and Sidewalks” of the Standard Specifications. Contractor shall make transitions uniform.

### **230.02 Measurement and Payment**

“Vertical Curb” 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 “Vertical Curb” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for performing all the work involved installing vertical curb, complete in place, including any excavation, bedding, structural backfill, concrete, 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 240 – FENCING**

### **240.01 General**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the wooden fence and split rail fence as shown on the plans.

### **240.02 Wooden Fence Installation and Repair**

The fence shall be constructed as shown on the Project Plans and to match the existing six foot high wooden fence on the north side of Church Street. Sections of the fence at the Church Outfall that have fallen should be reinstalled to the end of the rock lined channel. No work shall occur past the TRPA Backshore Boundary. Fencing shall be installed prior to completion of the Revegetation, unless otherwise directed by the Engineer.

### **240.03 Split Rail Fence**

The fence shall be constructed as shown on the Project Plans. Fence shall be made completely of cedar. Fencing shall be installed prior to completion of the Revegetation, unless otherwise directed by the Engineer.

### **240.05 Measurement and Payment**

“Wooden Fence” shall be measured by the linear foot as determined from the dimension shown on the Project Plans or dimensions directed by the Engineer and subsequently measured in the field. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to construct the “Wooden Fence”, including, but not limited to, excavation, backfill, rock, placement, labor, and incidentals is included in the contract unit price per linear foot for “Wooden Fence” and no additional compensation will be allowed.

“Split Rail Fence” shall be measured by the linear foot as determined from the dimension shown on the Project Plans or dimensions directed by the Engineer and subsequently measured in the field. Full compensation for furnishing all labor, material, equipment, and incidentals necessary to construct the “Split Rail Fence”, including, but not limited to, excavation, backfill, rock, placement, labor, and incidentals is included in the contract unit price per linear foot for “Split Rail Fence” and no additional compensation will be allowed.

## **SECTION 250 – PAVER REPAIR**

### **250.01 General**

Work under this item shall consist of furnishing all labor, tools, equipment, and materials, and incidentals necessary for construction of the paver repair.

### **250.02 Materials**

The pervious pavers are present on site and should be handled with care. Upon removing the pavers, they should be organized so that they can be replaced in their exact previous location. If pavers are broken, NTCD will provide up to 5 pavers at no cost. Each additional paver must be purchased at the cost of \$10 per paver from NTCD.

Concrete work shall be constructed in accordance with the plans, these special provisions and in conformance with the Standard Specifications. Attention is directed to section 611 “Concrete Slope Paving” of the Standard Specifications.

### **250.03 Installation**

Do not install pavers in heavy rain or snowfall or over frozen subgrade or base materials. All sub-base, base, and bedding material shall be free of fines, and will be washed to remove dust and foreign material per Section 200 of these special provisions.

#### Execution

1. Verify that sub-grade preparation including compacted density conform to the specifications.
2. Verify that aggregate base materials, thickness, compaction and elevations conform to specifications.
3. Verify location, type, installation, and elevation of concrete work required for the installation.
4. Verify that base is dry, uniform, even and ready to support concrete work and imposed or anticipated vehicular loads. No joint sand or joint aggregate is required. Sand is not an acceptable base or bedding layer.
5. Install concrete work.
6. Wait at least 48 hours for installation of paver sub-grade. Confirm readiness with Engineer.
7. Install paver sub-grade.
8. Install Pervious Pavers starting from the lowest point of slope and working toward highest.

9. Ensure that pavers are free of foreign materials before installation.
10. Lay pavers from permanent edge restraint in the pattern as shown in the drawings. Use string lines to keep paving joints straight.
11. Use masonry saw fitted with a continuous rim diamond blade and continuous water feed to cut pavers, if necessary.
12. Lay pavers on prepared surface fitting tightly adjacent to each paver by using the “click and drop method”.
13. Set pavers hand tight, but do not use hammer to adjust pavers. Secure and level pavers using appropriate plate vibrator (cover plate with rubber mat or place a thin (min  $\frac{3}{8}$ ”) sheet of Plywood on surface to avoid damage to pavers). Trafficable areas should receive enough passes to adequately bed pavers.

#### **250.04 Measurement and Payment**

“Paver Repair” including previous paver protection, sub-grade preparation, concrete work, paver sub-grade placement, and paver placement, shall be measured as a lump sum bid price for “Paver Repair”. Payment for “Paver Repair” 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 the “Paver Repair” as specified. 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 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 and/or the RS.

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 and Revegetation Specialist 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 and Revegetation Specialist. The Contractor shall request that treatment types and boundaries are located by the Engineer and/or RS 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 and/or the Revegetation Specialist.

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.

### **376.02. Materials**

Revegetation shall progress in an order submitted by the Contractor and as approved by the Engineer and RS.

#### *Seed*

All Seed Mix shall be supplied by the NTCDD to the Contractor 3 days prior to seeding. NTCDD will supply the contractor with enough seed for applying to disturbed areas plus an additional 10%. Contractor will supply at their expense any additional seed necessary to adequately seed the revegetation areas.

#### *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*

<b>Mulch &amp; Tackifiers</b>	<b>Application Rate</b>
Mulch (Fertil Fibers or equivalent)	0.75 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 RS 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 Revegetation Specialist 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 RS. 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 RS. 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 Revegetation Specialist 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 and Revegetation Specialist 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 and/or Revegetation Specialist 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 and apply water to the revegetation treatment 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 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 contractor's 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."