Make the following Section a part of the Standard Specifications:

"SECTION 212 – SLOPE SCALING

212.01 Description. This section is for slope scaling, which consists of removing loose rock and other materials from the face of the slopes by the use of hand scaling methods in accordance with the Contract Documents. During the scaling process, the Contractor shall provide for the safe conduct of the work, careful removal, securing of, and disposition of material to be removed, protection of property that is to remain undisturbed, and coordination with other work involved.

212.02 Contractor's Qualifications and Work Plan. The Contractor performing the slope scaling work must have performed satisfactory slope scaling for a minimum of five years or employ the services of a specialty subcontractor with a minimum of five years of satisfactory slope scaling experience. The Contractor shall submit a project reference list containing at least five projects in which similar work has been conducted and successfully completed within the past five years. Include a brief description of each project including the typical heights of the slopes scaled or trimmed, duration of the slope scaling, working hours on the slope, methods employed to scale the slopes, and the Owner's name and current telephone number for reference.

The minimum slope scaling crew shall consist of one scaling supervisor and three slope scalers. The number of slope scalers to be employed on this project shall be determined by the Contractor or specialty subcontractor performing the slope scaling. The slope scaling activity for the project will be limited to two (2) weeks, as specified in the Contract Documents. The slope scaling operations shall be conducted within the times and duration specified in the Contract Documents.

Prior to the start of the slope scaling work, the Contractor must submit a list identifying the scaling supervisor and slope scalers assigned to this project. In this list, the Contractor shall summarize the individual's experience for the Engineer to determine whether the qualifications of each individual meet the minimum requirements of the scaling supervisor and/or slope scalers as described in the following paragraphs. The Engineer will utilize the following definition of each category to determine the qualifications of each individual proposed by the Contractor.

(A) Scaling Supervisor. The Contractor's designated representative responsible for the prosecution and coordination of slope scaling activities on this project. The scaling supervisor shall be in charge of and responsible for the safety and work performed by the slope scaling crews. The scaling supervisor shall have a minimum of five (5) years of high slope scaling experience with a minimum of 2,000 hours of

demonstrated experience supervising slope scaling. The scaling supervisor shall have completed the American Red Cross "basic first aid course" or equivalent, and shall have experience or training in the use of emergency remote rescue techniques.

(B) Slope Scaler. An individual who is engaged in accessing the slope face and removing loose rock and materials from the slope face using a variety of hand tools at locations that require modified rock climbing techniques for the safe prosecution of the work. Slope scalers shall have a minimum of two (2) years experience with a minimum of 500 hours of demonstrated experience performing similar slope scaling work.

Approval or denial of the Contractor's qualifications and personnel will be made within 10 working days after receipt of the submittal. Slope scaling work shall not commence until approval of the Contractor's qualifications and work plan has been obtained in writing from the Engineer. The Engineer will suspend the work if the Contractor substitutes unqualified personnel for approved personnel during construction.

The Contractor shall provide a detailed work plan of the slope scaling work, prior to any such activity, which includes the following items, as a minimum, for review by the Engineer. The Engineer shall be provided a minimum of 10 working days after receipt of the submittal to review and provide comments to the submittal. The work plan shall be approved by the Engineer prior to commencement of the slope scaling work.

1. The proposed construction sequence for slope scaling work.

2. The types of equipment and hand tools to be used for the slope scaling activities.

3. The number of slope scaling supervisor(s) and slope scalers to be employed on the project.

4. Provisions to protect the open travel lanes, highway pavements, guardrails, any adjacent structures, and personnel below the scaling area including the public in or around the project site.

5. Removal and disposal plan for debris generated from the slope scaling work at the end of each shift.

The Contractor shall perform the slope scaling work according to the approved work plan and as directed by the Engineer. Maintain the minimum crew size specified and the number of slope scaling members described in the work plan at all times. Any member of the slope scaling crew who must leave for any reason shall be replaced immediately by a qualified replacement. Do not perform slope scaling when the scaling supervisor is absent, unless an alternate

supervisor meeting all the requirements of the scaling supervisor has been designated for the slope scaling work to continue.

212.03 Construction Requirements.

(A) Cutting and Removal of Vegetation. Cut and remove all vegetation including branches and trees from the slope face and within 10 feet beyond the top of slope. Cut all vegetation to within 6 inches of the ground surface and remove the cut materials from the site. Dispose of all materials in a satisfactory manner off the site. Cutting and removal of vegetation shall be completed before initiating the slope scaling activities.

(B) Slope Scaling Activity. Perform the slope scaling work to the limits specified on the Contract drawings and/or as directed by the Engineer. The Engineer will determine the final locations and the limits of the area to be scaled in the field during construction after a review and/or inspection of the site conditions with the scaling supervisor.

The Contractor shall erect a movable temporary rockfall barrier (minimum 120 feet long by 15'-6" feet high) within the active scaling in an attempt to contain the rocks and debris generated from the slope scaling work from going over the open travel lanes. The movable temporary rockfall barrier shall be fabricated from a ring net or cable net system capable of handling 74-foot tons of impact energy.

General work hours during slope scaling will be approved by the Engineer. The Contractor shall furnish police officers to provide for traffic control during the specified working hours. Two lanes of the roadway shall be opened to allow traffic to traverse during slope scaling work. The Contractor shall maintain equipment on-site at all times to remove debris from the highway to allow the passage of emergency vehicles in the event that emergency vehicles require passage through the project area along the highway. The Contractor shall maintain the highway in a manner suitable for traffic to traverse the highway (two lanes open to traffic) beyond the working hours.

Slope scalers are defined as persons performing the slope scaling activity directly on the slope face. Slope scaling activity may include slope scalers hanging from ropes attached to the top of the slope face (rappelling), using a man-lift bucket to allow the slope scalers to reach the slope face, or by any other means that can place slope scalers directly on the slope face. Slope scaling is performed by using hand tools, such as small power tools, crowbars, prybars, shovels, etc., and rolling or pushing scaled materials down toward the highway below the slope. Each slope scaler shall be equipped with communications equipment to enable direct communication with the scaling supervisor and/or a designated person on

the ground. Excavation using heavy equipment to scrape the slope face by the use of a backhoe or etc. is prohibited, except for the areas accepted by the Engineer in writing.

The Contractor shall provide all the necessary equipment and hand tools, which is to be of high quality and in good working condition, for each member of the slope scaling crew. The Contractor shall replace the equipment and hand tools when, in the opinion of the Engineer, the condition is below normal for efficient output and production. The Contractor shall also be responsible for providing a safe working environment on the project site.

The use of a ground person will be required to enable the Engineer to communicate with the scaling supervisor and slope scalers and for safety considerations. The scaling supervisor may serve as the ground person. No additional payment will be made to the Contractor for the use of a ground person or for the communications equipment required. Use of a ground person for communication and provision of communications equipment for the slope scalers will be considered incidental to the contract unit price for slope scaling.

The Contractor shall be responsible for protecting the highway and all appurtenances from damage resulting from the Contractor's activities. The highway shall be protected from damage by laying protection mats over the road surface. In addition, the Contractor shall provide and place a temporary rockfall barrier during slope scaling to reduce the potential for errant boulders from going over to the other side of the highway. The Contractor shall be solely responsible for repairing any damage resulting from the scaling or other construction activities.

Start all slope scaling at the top of the slope and proceed down slope, removing loose rock and other debris as the work progresses. All material on the slope face that is loose, hanging or creates a safety hazard to the public must be removed or stabilized, to the Engineer's satisfaction, during or on completion of the section of slope and at the end of each work day. Slopes that have been scaled shall be relatively clean of debris and loose materials for traffic to traverse the highway on a daily basis after the specified work hours. The Contractor shall exercise extra care in the slope scaling work and shall avoid over-steepening the slope face that may cause instability of the slope face. If during the slope scaling work, the Contractor encounters unstable slope conditions that may constitute a potential slide, immediately notify the Engineer.

Blocks of rock or debris that hang up on the slope during the slope scaling operations shall be removed upon completion of the first pass of slope scaling. The Contractor shall continue scaling of the slopes until the

slope scaling has been completed to the satisfaction of the Engineer. The Engineer will inspect the slope faces to determine whether or not scaling of the slope faces has been completed. The Contractor shall assist and provide a 'life line' for the State's personnel or consultants during inspection of the work. Assistance to the Engineer and provision of a "life line" for the State's personnel or consultants to inspect the slopes shall be considered incidental to the contract unit price for slope scaling.

(C) Debris Removal. All debris generated from the slope scaling operations shall be the property of the Contractor and shall be removed from the project site for disposal in a proper manner. The Contractor shall sweep the highway clean of all debris on a daily basis. The Engineer will inspect the "cleaned up" highway on a daily basis.

The Contractor shall maintain equipment on-site at all times to remove debris from the highway to allow the passage of emergency vehicles in the event that emergency vehicles require passage through the project area along the highway during the designated temporary closure times. The slope scaling activities shall be temporarily suspended to allow the passage of the emergency vehicles through the project area along the highway.

(D) Protection of Existing Facilities. Protection of the highway and all appurtenances from damage resulting from the Contractor's activities shall be the Contractor's responsibility and will be considered incidental to the contract unit price for slope scaling. All costs or other compensation for the mitigation of damage to the highway and appurtenances (including re-paving of damaged areas) shall be the responsibility of the Contractor.

A pre-construction condition survey of the existing highway, rock masonry walls, guardrails, and all appurtenances shall be conducted by the Contractor prior to commencement of the slope scaling activities. As a minimum, the pre-construction condition survey shall include photographs of the highway and appurtenances and the installation of crack gauges to document the existing cracks and other damages already existing within the highway and appurtenances prior to commencement of the slope scaling and related activities. A copy of the pre-construction condition survey shall be submitted to the Engineer for information only.

Slope scaling work shall begin only after the highway protection measures as described in the work plan are put in place at the beginning of each slope scaling work. The Contractor shall protect the traffic on the highway from any rockfall hazards at all times during the Contractor's activities. The slope scaling work shall be performed and completed before installation of the rockfall protection, such as placement of the ring net system and erosion control matting, may commence.

212.04 Measurement. Cutting and removal of vegetation will be paid under Section 201.0100 Clearing and Grubbing.

The Engineer will measure slope scaling by regular (8-hour work day) man-hours for the slope scaling supervisor and each slope scaler in performing the described work. Work time shall begin at the time each scaler reaches the access point for the work including preparation for start of the work and clean up at the end of the shift, or as directed by the Engineer. Slope scaling man-hours will be measured to the nearest 0.50 hours.

Movable temporary rockfall barrier will be paid on a lump sum basis. Measurement for payment will not apply.

The Engineer will measure the front-end loader with a minimum 3 cubic yard capacity bucket (with a "four-in-one" type bucket) used for clean up work and removal of debris generated from slope scaling on a daily cost basis for each daily work shift and for each piece of equipment.

The Engineer will measure additional mechanized equipment, such as backhoes, hoe-rams, etc., used for removal of debris generated from slope scaling when approved by the Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

The Engineer will measure the removal of debris generated from the slope scaling by the cubic yards removed from the highway and hauled off for disposal from the project site. Removal of debris generated from the slope scaling includes existing debris on the highway and debris generated from rock/boulder demolition designated for removal by the Engineer.

The Engineer will measure the police officers and advertisement for road closure notices, when approved by the Engineer, on a force account basis, in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

212.05 Payment. The Engineer will pay for the accepted slope scaling man-hours at the contract unit price for each man-hour of completed slope scaling. The contract unit price includes full compensation for furnishing labor, materials, hand tools, equipment (including communications equipment) and incidentals necessary for scaling the slope face and completing the work.

The Engineer will pay for accepted movable temporary rockfall barrier for slope scaling (and for erosion control) on a contract lump sum basis. Payment will be full compensation for fabricating a temporary rockfall barrier for use during slope scaling based on approved shop drawings.

The Engineer will pay for the additional items required in the demolition using the expansive stress method, hydraulic rock splitters, or hydraulic jacks on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

The Engineer will pay for two (2) front-end loader per daily work shift for clean up and removal of debris generated from slope scaling. The daily cost includes operator, fuel, oil, lubricants, supplies, necessary attachments, repairs, maintenance, tire wear, depreciation, storage, and other incidentals including idle or standby time.

The Engineer will pay for additional mechanized equipment used for removal of debris generated from slope scaling on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

The Engineer will pay for the removal of debris generated from slope scaling by the cubic yards removed from the highway and hauled off for disposal from the project site. The contract unit price includes full compensation for removing debris from the highway for each slope scaling shift, stockpiling the debris (as necessary), loading the materials onto haul trucks, hauling the materials to suitable disposal sites for disposal, and furnishing, labor, materials, tools, equipment and incidentals necessary to complete the work.

The Engineer will make payment under:

Pay Item	**Pay Unit**
Slope Scaling Supervisor	Man-Hour
Slope Scaler	Man-Hour
Front-End Loader (Each)	Daily
Additional Mechanized Equipment	Force Account
Removal of Debris Generated from Slope Scaling	Cubic Yards

END OF SECTION 212