

## **APPENDIX O**

### **ROCK WEIR AND ASSOCIATED MATERIALS, NON-STANDARD**

**NOTE: The following Non-Standard Special Provisions (NSSP) have been used in previous rock weir construction projects, but will still require review and approval from HQ Hydraulics and possibly HQ Construction on a project-per-project basis. Also, each NSSP will require conversion to plain language style.**

## **O.1 ROCK WEIR (TYPE 1) NSSP**

**NOTE: See Appendix N Rock Weir Design, Section N.8 Rock Weir Types, for description.**

**10-1. \_\_ROCK WEIR (TYPE 1)**

This work shall consist of excavating the entire main channel, furnishing and placing two lifts of \_\_\_\_\_ Ton rock, as well as furnishing, placing, and compacting rock weir void filler in the voids between the individual rocks of each rock weir. The rock weirs shall be constructed in conformance with the plans, the Standard Specifications, these special provisions, and as directed by the Engineer.

**MATERIAL**

The \_\_\_\_\_ Ton rock shall conform to Section 72-2.02, “Materials,” of the Standard Specifications. This rock shall also conform to dimensions shown on details from the plans, and shall be verified by the Engineer prior to its placement.

Rock weir void filler shall consist of a coarse and fine aggregate mixture conforming to the gradation requirements shown in the following table:

**ROCK WEIR VOID FILLER GRADATION**

SIEVE SIZE	PERCENT PASSING
3”	95-100
2”	85-98
1 ½”	51-90
1”	27-60
¾”	18-45
½”	5-25
3/8”	2-18
No. 4	0-6

**PLACEMENT**

The \_\_\_\_\_ Ton rocks shall be placed individually in two lifts of equal thickness, and arranged so that each rock has a 3-point contact with adjacent rock. Placing \_\_\_\_\_ Ton rock by dumping will not be permitted.

After each lift of \_\_\_\_\_ Ton rock has been placed, rock weir void filler shall be dumped between the voids of each rock and compacted by a hand-tamping method until voids are full of rock weir void filler. The excess rock weir void filler on top of the \_\_\_\_\_ Ton rock shall be removed.

Rock weir void filler shall be delivered as a uniform mixture of coarse and fine aggregate, and shall be deposited in a manner to avoid segregation.

**MEASUREMENT**

The quantity of rock weir shall be measured by the cubic yard, and shall be determined from the plans or by dimensions directed by the Engineer. Rock weir quantities in excess of these dimensions will not be paid for.

**PAYMENT**

The contact price paid per cubic yard for rock weir shall include full compensation for furnishing all labor, materials, and performing all work associated with rock weir construction. The rock weir construction shall include performing main channel excavation, furnishing

\_\_\_\_\_ Ton rock and performing its placement, in addition to furnishing rock weir void filler and performing its placement and compaction.

Excess excavated material from the main channel shall be disposed if as directed by the Engineer and in conformance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. The disposal of this excess material will also be included in the contract price paid per cubic yard of rock weir, and no separate payment will be allowed.

## **O.2 ROCK WEIR (TYPE 2) NSSP**

**NOTE: See Appendix N Rock Weir Design, Section N.8 Rock Weir Types, for description. Also see Figure N-11 in Appendix N for required rock isometric construction detail that must be inserted into plans for use with Rock Weir (Type2).**

**10-1. \_\_ ROCK WEIR (TYPE 2)**

This work shall consist of excavating within the main channel, furnishing and placing \_\_\_\_\_-foot “rough” diameter rock, as well as furnishing, placing, and compacting rock weir void filler in the voids between the individual rocks of each rock weir. The rock weirs shall be constructed in conformance with the plans, the Standard Specifications, these special provisions, and as directed by the Engineer.

**MATERIAL**

The \_\_\_\_\_-foot “rough” diameter rock is an approximate dimension of an irregularly shaped object. Both rounded and angled rocks may be used. Apparent specific gravity, absorption, and durability index properties of the \_\_\_\_\_-foot “rough” diameter shall conform to Section 72-2.02, “Materials,” of the Standard Specifications. This rock shall also conform to dimensions shown on details from the plans, and shall be verified by the Engineer prior to its placement.

Rock weir void filler shall consist of a coarse and fine aggregate mixture conforming to the gradation requirements shown in the following table:

**ROCK WEIR VOID FILLER GRADATION**

SEIVE SIZE	PERCENT PASSING
3”	95-100
2”	85-98
1 ½”	51-90
1”	27-60
¾”	18-45
½”	5-25
3/8”	2-18
No. 4	0-6

**PLACEMENT**

The \_\_\_\_\_-foot “rough” diameter rocks shall be placed individually in two rows, in one or two layers, as shown on the plans, and arranged so that each rock has a 3-point contact with adjacent rock. The range of dimensions for individual rocks and their orientation to the placement surface, as shown on the plans, shall be followed and verified by the Engineer. Stagger rows of rocks by placing a back row rock between two front row rocks in order to reduce voids. Placing \_\_\_\_\_-foot “rough” diameter rock by dumping will not be permitted.

After the \_\_\_\_\_-foot “rough” diameter rocks are placed, rock weir void filler shall be dumped between the voids of each rock and compacted by a hand-tamping method until voids are full of rock weir void filler.

Rock weir void filler shall be delivered as a uniform mixture of coarse and fine aggregate, and shall be deposited in a manner to avoid segregation.

**MEASUREMENT**

The quantity of rock weir shall be measured by the cubic yard, and shall be determined from the plans or by dimensions directed by the Engineer. Rock weir quantities in excess of these dimensions will not be paid for.

**PAYMENT**

The contract price paid per cubic yard for rock weir shall include full compensation for furnishing all labor, materials, and performing all work associated with rock weir construction. The rock weir construction shall include performing main channel excavation, furnishing \_\_\_\_\_-foot “rough” diameter rock and performing its placement, in addition to furnishing rock weir void filler and performing its placement and compaction.

Excess excavated material from the main channel shall be disposed of as directed by the Engineer and in conformance with Section 7-1.13, “Disposal of Material Outside the Highway Right of Way,” of the Standard Specifications. The disposal of this excess material will also be included in the contract price paid per cubic yard of rock weir, and no separate payment will be allowed.

**O.3 ROCK WEIR BACKFILL NSSP**

## **10-1. \_\_ROCK WEIR BACKFILL**

This work shall consist of furnishing, placing, and compacting rock weir backfill conforming to the plans, the Standard Specifications, these special provisions, and as directed by the Engineer.

### **MATERIAL**

Rock weir backfill shall conform to the properties below:

#### **Rock Weir Backfill Properties**

Maximum Sand Equivalent = 50  
Maximum Aggregate Size = 3-inches  
Maximum Plasticity Index = 20  
Minimum Plasticity Index = 12

Excess excavated material from the main channel may be used for rock weir backfill if the above properties are met. The process of using the alternative material shall be in conformance with Section 4-1.05, "Use of Material Found on the Work," of the Standard Specifications.

### **PLACEMENT**

The rock weir backfill shall be placed in uniform layers, and shall be brought up uniformly on all appropriate sides of the rock weirs. The thickness of each layer of backfill shall not exceed 8 inches before compaction. Rock weir backfill shall be compacted to a relative compaction of not less than 90 percent.

### **MEASUREMENT**

The quantity of rock weir backfill shall be measured by the cubic yard, and shall be determined from the plans or by dimensions directed by the Engineer. Rock weir backfill quantities in excess of these dimensions will not be paid for.

### **PAYMENT**

The contract price paid per cubic yard for rock weir backfill shall include full compensation for furnishing all labor, materials, incidentals, and performing all work associated with hauling, placing, and compacting the rock weir backfill. All work must be complete in place as shown on the plans, specified in these special provisions, and as directed by the Engineer.

**O.4 CLEAN SAND AND GRAVEL NSSP**

**10-1. \_\_ CLEAN SAND AND GRAVEL**

This work shall consist of excavating the low-flow channel, in addition to furnishing, placing, and grading the clean sand and gravel placed on the rock weir backfill layer. The placement and grading of the clean sand and gravel shall include both the low-flow and main channels, and shall conform to the plans, these special provisions, and as directed by the Engineer.

**MATERIAL**

The sand and gravel shall be clean and free of organic matter and other deleterious substances. The clean sand and gravel shall conform to the gradation requirements shown in the following table:

Clean Sand and Gravel Gradation

SIEVE SIZE	PERCENT PASSING
1"	100
¾"	60-90
No. 4	25-60
No. 30	0-20

**PLACEMENT**

The sand and gravel mixture shall be delivered as a uniform mixture, and shall be deposited in a manner to avoid segregation. The material shall be spread and graded to conform to the required thickness, grade, and details shown on the plans. Compaction of the clean sand and gravel is not required.

**MEASUREMENT**

The clean sand and gravel quantity will be measured by the cubic yard, and shall be determined from the plans or by dimensions directed by the Engineer. Clean sand and gravel quantities in excess of these dimensions will not be paid for.

**PAYMENT**

The contract price paid per cubic yard for clean sand and gravel shall include full compensation for furnishing all labor, materials, incidentals, and performing all work associated with creek bed material construction. This construction process shall include furnishing, hauling, placing, and grading clean sand and gravel, in addition to performing excavation of the low-flow channel. All work must be complete in place as shown on the plans, specified in these special provisions, and as directed by the Engineer.

The excavated material from the low-flow channel shall be disposed of as directed by the Engineer, and shall be included in the contract price paid per cubic yard of clean sand and gravel.

**O.5 PLACE NATIVE CREEK BED MATERIAL NSSP**

### **10-1. \_\_ PLACE NATIVE CREEK BED MATERIAL**

This work shall consist of stockpiling the top \_\_\_\_\_ feet of the main channel (station limits shown on plans), as well as placing and grading the stockpiled native creek bed material. The placement and grading of the native creek bed material shall conform to the plans, these special provisions, and as directed by the engineer.

#### **MATERIAL**

Native creek bed material is comprised of the top \_\_\_\_\_ feet of the main channel, excavated from station limits shown on the plans, which includes but not limited to rock, cobble, gravel, and fine aggregate. The excavated material is to be stockpiled on a plastic liner at a location designated by the Engineer.

The plastic liner shall be single ply, new polyethylene sheeting, a minimum of 0.1-inch thick and shall be free of holes, punctures, tears or other defects that compromises the impermeability of the material. Plastic liner shall not have seams or loose joints. All joints between the edges shall be lapped or joined with commercial quality waterproof tape.

#### **PLACEMENT**

From the stockpile location, the native creek bed material shall be hauled to its final position, spread, and graded to conform to the required thickness, grade, and details shown on the plans. Compaction of the native creek bed material is not required.

#### **MEASUREMENT**

The quantity of place native place creek bed material shall be measured by the cubic yard of native creek bed material placed into its final position, and shall be determined from the plans or by dimensions directed by the Engineer. Place native creek bed material quantities in excess of these dimensions will not be paid for.

#### **PAYMENT**

The contract price paid per cubic yard for place native creek bed material shall include full compensation for furnishing all labor, materials (including plastic liner), incidentals, and performing all work associated with hauling, stockpiling, and placing native creek bed material. All work must be complete in place as shown on the plans, specified in these special provisions, and as directed by the Engineer.

The excess material excavated from the main channel and stockpiled shall be disposed of as directed by the Engineer, and shall be included in the contract price paid per cubic yard of place native creek bed material, and therefore no additional payment will be allowed.