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PREFACE

Delete all but the first paragraph and add the following:

The Forest Service, US Department of Agriculture has adopted FP-24 for construction of National Forest System Roads. The Forest Service Supplemental Specifications (FSSS) shall be incorporated in the FP-24. The applicable specifications for the project will be the FP-24 as modified by the FSSS.

Section 101. – TERMS, FORMAT, AND DEFINITIONS

Add the following paragraph to Subsection 101.01 Meaning of Terms:

Delete all references to the TAR (Transportation Acquisition Regulations) in the specifications.

Section 101. – TERMS, FORMAT, AND DEFINITIONS

Add the following paragraph to Subsection 101.01 Meaning of Terms:

Delete all references to the FAR (Federal Acquisition Regulations) in the specifications when incorporating into 2400-6(T) Timber Sale or 2400-13(T) Stewardship contracts.

Section 101. – TERMS, FORMAT, AND DEFINITIONS

Add the following to Subsection 101.03 Abbreviations:

(a) Acronyms.

AGAR — Agriculture Acquisition Regulations

AFPA — American Forest and Paper Association

FSSS – Forest Service Supplemental Specifications

MSHA — Mine Safety and Health Administration

NESC — National Electrical Safety Code

WCLIB — West Coast Lumber Inspection Bureau

MP - milepost	location
ppm - parts per million	volume
STA – station	location
MFBM - thousand feet board measure	volume

Section 101. – TERMS, FORMAT, AND DEFINITIONS

Make the following changes to Subsection 101.04 Definitions:

Delete these definitions and replace with the following:

Bid Schedule — The Schedule of Items.

Bridge — A structure, including supports, erected over a depression or an obstruction such as water along a road, a trail, or a railway and having a deck for carrying traffic or other loads.

Contractor — The individual or legal entity contracting with the Government for performance of prescribed work. In a timber sale contract, the contractor is the “Purchaser”.

Culvert — Any structure with a bottom, regardless of fill depth, depth of invert burial, or presence of horizontal driving surface, or any bottomless (natural channel) structure with footings that will not have wheel loads in direct contact with the top of the structure.

Drawings — Design sheets or fabrication, erection, or construction details submitted to the CO by the Contractor.

Neat Line — A line defining the proposed or specified limits of an excavation or structure.

Notice to Proceed — (Public Works Contracts) Written notice to the Contractor to begin the contract work. (Timber Contracts) does not apply, replace NTP with Contract Award.

Right-of-Way — A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private lands), or (2) Real property necessary for the project, including roadway, buffer areas, access, and drainage areas.

Add the following definitions:

Adjustment in Contract Price — “Equitable adjustment,” as used in the Federal Acquisition Regulations, or “construction cost adjustment,” as used in the Timber Sale Contract, as applicable.

Change — “Change” means “change order” as used in the Federal Acquisition Regulations, or “design change” as used in the Timber Sale Contract.

Forest Service — The United States of America, acting through the Forest Service, U.S. Department of Agriculture.

Forest Service Supplemental Specifications – The Forest Service uses supplemental specifications to modify the FP-24 to meet the agency needs and intents. FSSS revise the FP-24 by adding, deleting, replacing, revising, replacing part of entire sections or subsections or adding new sections to the FP..

Pioneer Road — Temporary construction access built along the route of the project.

Purchaser — The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through agents, employees, or subcontractors.

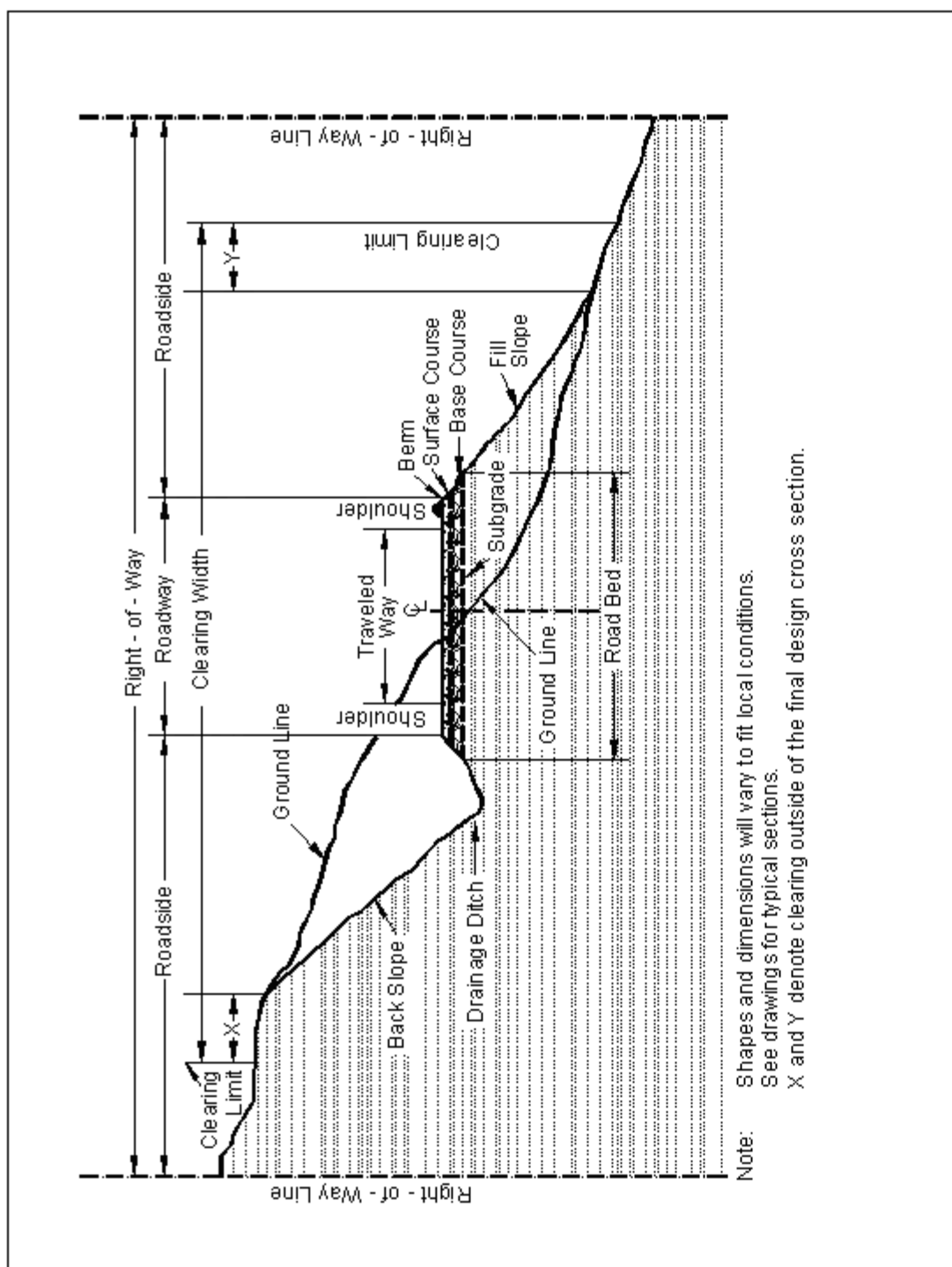
Protected Streamcourse — A drainage shown on the plans or timber sale area map that requires designated mitigation measures.

Road Order — An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

Utilization Standards — The minimum size and percent soundness of trees described in Public Works contract specifications or Timber Sale and stewardship contract provisions to determine merchantable timber.

Add Figure 101-1—Illustration of road structure terms:

Figure 101-1—Illustration of road structure terms



Section 102. - BID, AWARD, AND EXECUTION OF CONTRACT

Delete Section 102 Bid, Award, and Execution of Contract in its entirety.

Section 103. – SCOPE OF WORK

Delete all of Section 103 Scope of Work except Subsection 103.01 Intent of Contract.

Section 104. – CONTROL OF WORK

Delete Subsections 104.01 Authority of Contracting Officer, 104.02 Authority of Contracting Officer's Representative, 104.03 Authority of Inspectors.

Section 104. – CONTROL OF WORK

Delete Subsection 104.06 Specifications and Drawings and replace with the following:

Refer to B(T) 5.211 in the 2400-6(T)) or the 2400-13(T) contracts for requirements under this subsection.

Section 104. – CONTROL OF WORK

Delete Subsection 104.07 Coordination of Contract Documents.

Section 104. – CONTROL OF WORK

Add the following Subsection 104.12 Use of Roads by Contractor:

The Contractor is authorized to use roads under the jurisdiction of the Forest Service for all activities necessary to complete this contract, subject to the limitations and authorizations designated in the Road Order(s) or described in the contract, when such use will not damage the roads or national forest resources, and when traffic can be accommodated safely.

Section 105. – CONTROL OF MATERIAL

Delete second paragraph and subparagraphs (a) and (b) in Subsection 105.05 Use of Material Found in the Work and replace it with the following:

The right to use and process material found in the work excludes the use and processing of material for nongovernment contract work, except for the disposal of waste material. Materials produced or processed from Government lands in excess of the quantities required for performance of this contract are the property of the Government. Place excess material at government-approved agreed to location(s), at no additional cost to government.

Section 106. – ACCEPTANCE OF WORK

Delete the 3rd and 4th paragraphs in Subsection 106.01 Conformity with Contract Requirements.

Section 106. – ACCEPTANCE OF WORK

Delete Subsection 106.06 Partial and Final Acceptance.

Section 107. - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Delete Subsection 107.05 Responsibility for Damage Claims.

Section 107. - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Delete Subsection 107.08 Sanitation, Health, and Safety and replace with the following:

Refer to specific provisions under B(T) 6.0 in the 2400-6(T) or the 2400-13(T) contracts for requirements under this subsection.

Section 108. - PROSECUTION AND PROGRESS

Delete Section 108 Prosecution and Progress in its entirety.

Section 109. - MEASUREMENT AND PAYMENT

Delete Subsections 109.06 Pricing and Adjustments, 109.07 Estimated Work, 109.08 Progress Payments, and 109.09 Final Payment.

Section 109. - MEASUREMENT AND PAYMENT

Delete Table 109-1 of Subsection 109.01 Measurement of Work and replace with the following:

Table 109-1

Decimal Accuracy of Quantities for Payment

Pay Item	Level of Precision
Acre	0.01
Cubic Foot	1
Cubic Yard	1
Cubic Yard Exception - Structure Excavation; Sheathing; Materials; Bedding, Bed Course, and Backfill, Materials; Gabions;	0.1
Cubic Yard Exception – Concrete; Masonry	0.01
Day	1
Each	1
Gallon	1
Hour	0.1
Linear Foot	1
Linear Foot Exception - Timber, Steel, and Concrete Piles	0.1
M-Gallon	0.1
Mile	0.01
Month	0.1
Pound	1
Square Foot	0.1
Square Yard	0.1
Station	0.1
Thousand Board Feet Measure	0.01
Ton	0.1
Ton Exception - Calcium Chloride; Sodium Chloride; Hydrated Lime; Bituminous Materials; Pavements; Bed Course Materials	0.01
Week	0.1

Section 109. - MEASUREMENT AND PAYMENT

Delete Subsection 109.02(c) Measurement Terms and Definitions, Contract quantity and replace with:

(c) Contract quantity. The quantity to be paid is the quantity listed in the bid schedule. The contract quantity will be adjusted for authorized changes that affect the quantity or for errors made in computing this quantity when that error exceeds 15% or more. If there is evidence that a quantity specific as a contract quantity is incorrect by 15% or more, submit calculations, drawings, or other evidence indicating why the quantity is in error and request in writing that the quantity be adjusted.

Section 153. – CONTRACTOR QUALITY CONTROL

Delete Subsection 153.02 Qualifications and replace with the following:

153.02 Qualifications. Submit the following for approval with the quality control plan:

(a) Quality control manager (QCM). Furnish a QCM who has experience in construction, inspection, quality control and material testing on construction projects of similar type and scope.

(b) Testers. Provide testers with at least 1 years' experience in the type of sampling and testing required, and with one of the following for the type of sampling and testing performed:

- (1) National Institute for Certification in Engineering Technologies (NICET) Level II certification in construction materials testing for similar material types or equivalent state or industry certification;
- (2) Certification by a state or regional certification program, such as Western Alliance for Quality Transportation Construction or Northeast Transportation Technician Certification Program; or
- (3) At least 1 year of employment by an AASHTO accredited laboratory performing equivalent sampling and testing with competence according to AASHTO R 18.

Section 153. – CONTRACTOR QUALITY CONTROL

Add the following paragraph to the end of Subsection 153.03(b) Quality Control Plan, QC procedures:

Submit written proposals for approval of alternate AASHTO or State approved test methods. Alternate methods may be allowed based on documented equivalence to the specified method.

Section 153. – CONTRACTOR QUALITY CONTROL

Delete Subsection 153.08 Records and Control Charts and replace with the following:

Maintain complete testing and inspection records by pay item number and make them accessible to the CO.

Section 155. – SCHEDULES FOR CONSTRUCTION CONTRACTS

Delete Section 155 Schedules for Construction Contracts in its entirety.

Section 201. – CLEARING AND GRUBBING

Delete the last sentence in the second paragraph of Subsection 201.03.

201.03 General.

Delete paragraph (c) and (d) of Subsection 201.04 and replace with the following:

201.04 Clearing.

(c) In areas outside the excavation, embankment, and slope rounding limits, cut stumps to within **12** inches or one-third of the stump diameter of the ground, whichever is higher, measured on the side adjacent to the highest ground. For timber sales, stump heights will meet the requirements of the Timber Sale contract; and

(d) Trim tree branches that extend over the road surface and shoulders to attain a clear height of **14'**. If required, remove other branches to present a balanced appearance. Trim according to accepted tree surgery practices. Treat wounds with tree wound dressing.

Section 201. - CLEARING AND GRUBBING

Delete Subsection 201.06 Disposal and replace with the following:

201.06 Disposal. Dispose of merchantable timber designated for removal according to the provisions of the timber sale contract.

Section 202. – ADDITIONAL CLEARING AND GRUBBING

Add the following to Subsection 202.02:

- (a)
- (1) **Selective Clearing, Type Roadside.** Cut all brush and small trees, **10** inches in diameter or less at the point of cut, inside the roadside clearing limits and outside the roadway no higher than **12** inches above ground level. If rocks or other obstructions are encountered, cut no higher than 6 inches above the obstruction. Limb live trees with a diameter larger than **10** inches to a height of **14** feet above the road surface.
- (c)
- (1) **Special Clearing and Grubbing, Type Roadway.** Clear Within the roadside clearing limits. Grub the roadway and horizontally **0** feet beyond each shoulder. Dispose of merchantable timber according to Subsection 201.06

Replace the third paragraph of Subsection 202.03 with the following:

Cut trees to within **12** inches of the existing ground. Remove and dispose of designated trees or stumps according to Subsections 203.05 and 203.07.

Section 203. - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Add the following to Subsection 203.07 Disposing of Material:

Dispose of unsuitable and excess material according to the specified method(s) as follows:

- (a) **Windrowing Construction Slash.** Place construction slash outside the roadway in neat, compacted windrows approximately parallel to and along the toe line of embankment slopes. Do not permit the top of the windrows to extend above subgrade. Use construction equipment to matt down all material in a windrow to form a compact and uniform pile. Construct breaks of at least 15 feet at least every 200 feet in a windrow. Do not place windrows against trees.
- (b) **Scattering.** Scatter construction slash in designated areas without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations. When scattering for erosion control, place construction slash as flat as practicable on the completed slope.
- (c) **Chipping.** Use an approved chipping machine to chip slash longer than 3 feet. Deposit chips on embankment slopes or outside the roadway to a loose depth less than 6 inches. Minor amounts of

chips or ground woody material may be permitted within the roadway if they are thoroughly mixed with soil and do not form a layer.

(d) Debris Mat. Use tree limbs, tops, cull logs, split stumps, wood chunks, and other debris to form a mat upon which construction equipment is operated. Place stumps upside down and blend stumps into the mat.

(e) Decking. Remove brush from designated log deck areas. Limb and top logs.

Logs not meeting the Utilization Standards described in Subsection 201.04(c) shall be cut to lengths less than (See Utilization Standard in Timber Contract) feet and decked in designated log deck location.

Merchantable timber not associated with an existing timber sale shall be cut to length meeting the Utilization Standards described in Subsection 201.04(c).

Deck logs so that logs are piled parallel to one another; can be removed by standard log loading equipment; will not damage standing trees; will not interfere with drainage, and will not roll. Keep logs in log decks free of brush and soil.

(f) Removal to designated locations. Remove construction slash to designated locations.

(g) Piling. Pile construction slash in designated areas. Place and construct piles so that if the piles are burned, the burning will not damage remaining trees. Keep piles free of dirt from stumps.

Section 204. – EXCAVATION AND EMBANKMENT

Delete Subsection 204.06 Roadway Excavation and replace with the following:

204.06 Roadway Excavation. Excavate as follows:

(a) Rock cuts. Verify the top portion of the rock cuts during pioneer access or initial excavation. Construct the final soil cut before starting drilling for rock blasting or other rock excavation methods unless approved. Blast rock according to Forest Service Supplemental Specification Section 205 if approved by the CO. Excavate rock cuts to 6 inches below subgrade within the roadbed limits. Backfill to subgrade with select borrow. Compact the material according to Subsection 204.11.

(b) Earth cuts. Scarify earth cuts to 6 inches below subgrade within the roadbed limits. Compact the scarified material according to Subsection 204.11.

(c) Drainage Feature. Drainage feature includes construction of all ditches, minor channel changes, drainage dips, catch basins, surface water deflectors, and other minor drainage structures. Compact the material according to Subsection 204.11. Excavate on a uniform grade between control points.

Remove snow or ice in advance of the work and deposit beyond the roadway limits in a manner to prevent resource damage.

Conserve 6-inch minus material from the roadway excavation to use for finishing the roadbed. Dispose of unsuitable or excess excavation material according to Subsection 204.14. Replace shortage of suitable material caused by premature disposal of roadway excavation.

At the end of each day's operations, shape to drain and compact the work area to a uniform cross-section.

Section 204. – EXCAVATION AND EMBANKMENT

Delete and replace the first paragraph in Subsection 204.11 Compaction with the following:

When determining the quantity of material retained on a No. 4 sieve for compaction, use AASHTO T27. Compact each lift of material to a firm and stable condition and until there is no visible evidence of further consolidation or deflection. Compact using one of the following as specified:

Add the following to Subsection 204.11 Compaction:

(d) Adjust the moisture content of the material to a moisture content suitable for compaction. Fill the interstices around rock with earth or other fine material as practical. Operate roller compaction equipment over the full width of each layer until there is no visible evidence of further consolidation or, if when a sheepsfoot roller is used, the roller “walks out” of the layer. Make at least three complete passes. Use compression-type rollers at speeds less than 6 feet per second and vibratory rollers at speeds less than 3 feet per second. Ensure rollers meet the following requirements:

- (1) Steel wheeled rollers, other than vibratory, capable of exerting a force of not less than 250 pounds per inch of width of the compression roll or rolls.
- (2) Vibratory steel wheeled rollers equipped with amplitude and frequency controls with a minimum dynamic force of 30,000 pounds impact per vibration, specifically designed to compact the material on which it is used.
- (3) Pneumatic-tired rollers with smooth tread tires of equal size that will provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 psi.
- (4) Sheepsfoot, tamping, or grid rollers capable of exerting a force of 250 pounds per inch of width of roller drum

(e) Adjust the moisture content of the material to a moisture content suitable for compaction. Fill the interstices around rock with earth or other fine material as practical. Operate hauling and spreading equipment uniformly over the full width of each layer until there is no visible evidence of further consolidation. Make at least three complete passes.

(f). Adjust the moisture content of the material to a moisture content suitable for compaction. Fill the interstices around rock with earth or other fine material as practical. Operate hauling and spreading equipment uniformly over the full width of each layer.

(g) Adjust the moisture content of the material to a moisture content suitable for compaction. Compact the complete surface with a bucket of an excavator larger than 39,000 pounds Gross Vehicle Weight using a minimum of three blows. Overlap compaction by ½ width of bucket.

(h) Adjust the moisture content of the material to a moisture content suitable for compaction. Compact using an approved mechanical tamper for a minimum of three complete passes.

When compacting with rollers or hauling and spreading equipment is not practical, use approved mechanical tampers for a minimum of three complete passes.

Section 204. – EXCAVATION AND EMBANKMENT

Replace the first paragraph of Subsection 204.13 replace with the following.

204.13 Sloping, Shaping, and Finishing. Complete slopes, ditches, culverts, riprap, and other underground minor structures before placing aggregate courses. Slope, shape, and finish to the designated tolerance class as defined in Table 204-2 as follows:

Add the following table to Section 204.

Table 204-2						
Construction Tolerances						
Dimension	Tolerance Class					
	A	B	C	D	E	F
Roadbed width (ft)	+0.5	+1.5	+2.0	+2.0	<FILL IN>	<FILL IN>
Subgrade elevation ¹ (ft)	+0.1	+1.0	+3.0	+5.0	<FILL IN>	<FILL IN>
Horizontal alignment (ft)	+0.2	+1.5	+5.0	+10.0	<FILL IN>	<FILL IN>
Vertical alignment (%)	+1	+1	+2	+2	<FILL IN>	<FILL IN>
Slopes, excavation and embankment (%)	+3	+3	+3	+3	<FILL IN>	<FILL IN>

¹ Subgrade elevation tolerance applies to the cut or fill shown in the staking information unless otherwise agreed to.

Section 204. – EXCAVATION AND EMBANKMENT

Delete 204.16(a)(1)(a) Measurement, Roadway Excavation and replace with the following:

(a) Roadway prism excavation;

Add the following to Subsection 204.16(g) Measurement:

(g) Drainage features. Measurement includes all excavation, embankment, shaping, and grading necessary for a completed drainage feature.

Section 205. - ROCK BLASTING

Add the following to Subsection 205.03 Regulations:

(e) Forest Service. For projects in National Forest Service lands, comply with Forest Service Manual (FSM) 7190, *Explosives and Blasting Materials*.

Delete second sentence of Subsection 205.05 Blasting Plans and replace with the following:

Blasting plans may be required for boulder reduction blasts (mudcapping or blockholing) as determined by the CO.

Add the following to Subsection 205.05(a) Blasting Plans, General blasting plan:

Notify the owners of nearby utilities at least 24 hours before blasting.

Change the following in Subsection 205.05(b) Blasting Plans - Site-specific blasting plans and general plan revisions and updates.

“days” to “business days”

Add the following to Subsection 205.05(b)(11) Blasting Plans, Site-specific blasting plans and general plan revisions and updates.

Optional as determined by the CO.

Add the following to Subsection 205.06(h) Preblast condition survey and vibration monitoring and control.

(h) Limit blasting induced vibrations in saturated soils or on steep slopes as designated or as directed by the CO.

Add the following to Subsection 205.07 Test Blasting:

Test blast at all new sources, when rock type changes, and when blast layout changes due to slope or other changes.

Delete the first sentence from Subsection 205.08 Blasting and replace with the following:

Use explosives and detonators within the manufacturer's recommended shelf life.

Delete the seventh paragraph from Subsection 205.08 Blasting and replace with the following:

Mitigate uncontrolled gas pressure loss during blasting and excessive blast noise by using appropriate (as determined by CO) stemming materials and practices.

Add the following to Subsection 205.08(c) Blasting, Revising blasting plans:

- (11) Precipitation exceeds 1 inch in any 24 hour period.
- (12) Precipitation exceeds 3 inches in any 96 hour period.
- (13) Precipitation exceeds 4 inches in any 144 hour period.
- (14) A landslide occurs within 300 feet of a blast site under any precipitation conditions.

Delete all in Subsection 205.09 Reporting except (c) Close-out.

Section 209. – STRUCTURE EXCAVATION AND BACKFILL

Add the following to subsection 209.08.

For pipe culverts less than 96 inches in diameter. Unless otherwise shown on the plans provide material for bedding consisting of selected 3 inch minus mineral soil that is readily compactible and free of frozen lumps, chunks of highly plastic clay (with a PI greater than

10), or other objectionable material. Bed the pipe according to subsection 209.08(b).

Material for bedding shall be evaluated according to Subsection 106.02.

Add the following to subsection 209.09(b).

Pipe culverts less than 96 inches in diameter. Unless otherwise shown on the plans provide material for backfill consisting of selected 3 inch minus mineral soil that is readily compactible and free of frozen lumps, chunks of highly plastic clay (with a PI greater than 10), or other objectionable material. Backfill according to subsection 209.09(b)(1). Material for backfill shall be evaluated according to Subsection 106.02.

Section 209. - STRUCTURE EXCAVATION AND BACKFILL

Add the following to Subsection 209.09(a) Backfill, General:

Backfill without damaging or displacing the culvert or structural plate structure. Replace any pipe that is distorted by more than 5 percent of nominal dimensions, or that is ruptured or broken.

Do not place or backfill pipe that meets any of the following conditions until the excavation and foundation have been approved by the CO:

- Installation in a protected stream course.
- Round pipe with a diameter of 48 inches or greater.
- Pipe arches with a span of 50 inches or greater.
- Any box culvert or structure other than pipe culverts.

Section 209. - STRUCTURE EXCAVATION AND BACKFILL

Delete and replace Subsection 209.10 Compacting with the following:

Compact per Subsection 204.11.

Section 212. – LINEAR AND SITE GRADING

212.01 This work consists of performing linear and site grading at designated locations within specified tolerances.

212.02 Definitions.

(a) Linear grading. Consists of constructing and grading roadways on a designated alignment.

(b) Site grading. Consists of constructing and grading designated areas outside the roadway prism.

Construction Requirements

212.03 Roadway and Site Preparation. Clear the area of vegetation and obstructions according to Sections 201 and 203.

212.04 Excavation and Embankment. Construct the roadbeds and sites according to the applicable requirements of Section 204, except as modified in this Section.

Adjust the moisture content of embankment material to a moisture content suitable for compaction. Place embankment material in 12-inch lifts and compact each lift according to Subsection 204.11. If compacting with rollers is not practical, use approved mechanical or vibratory compaction equipment.

Construct approach connections to existing roads, parking areas, and trails as directed.

Do not make alignment or profile grade adjustments that adversely affect drainage.

Obtain material from borrow sources and place excess material at sites identified in the plans. Additional sites may be agreed to.

212.05 Grading Tolerance. Construct roadbeds and sites within the following grading tolerances:

(a) Linear grading.

(1) Alignment (centerline). Alignment may be shifted a maximum of **10** feet left or right of the planned centerline unless otherwise agreed to. Do not construct curves with radii less than **50 feet**.

(2) Profile grade. Connect revised forward and back grade tangents with a uniform vertical curve consistent with the design. If a profile grade is specified do not vary more than 2 percent from the plan grade tangent. Do not construct grades greater than **12%** for planned uphill loaded truck haul and **15%** for planned downhill loaded truck haul.

(3) Roadbed width. Roadbed width shall not be less than the specified dimensions but may exceed specified dimensions by up to **2 feet**. **Add curve widening and slough widening as shown in the plans.**

(4) Slopes. Fill slopes and cut slopes shall not deviate from the specified slopes by more than 5%.

(b) Site grading. The footprint may be shifted a maximum of 10 feet in any direction. The profile of the site may be adjusted a maximum of 2 feet from the plan elevation.

212.06 Acceptance. Linear and site grading work will be evaluated under Subsections 106.02 and 106.04.

Clearing will be evaluated under Section 201.

Removal of obstructions will be evaluated under Section 203.

Measurement

212.07 Measure the Section 212 pay items listed in the bid schedule according to Subsection 109.02

Payment

212.08 The accepted quantities will be paid at the contract price per unit of measurement for the Section 212 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Section 301. - UNTREATED AGGREGATE COURSES

Section 301. — UNTREATED AGGREGATE COURSES

Description

301.01 This work consists of constructing aggregate courses on a prepared surface. **Material**

301.02 Conform to the following Subsections: Subbase, base, and surface course aggregate

703.05

Water for construction

725.01(c)

Screened aggregate

703.05(d)

Construction Requirements

301.03 General. Prepare the surface according to Section 204 or 303 as applicable.

Written approval of the roadbed is required before placing aggregate.

For pit run material, furnish material smaller than the maximum size identified in the plans, no gradation will be required otherwise. After processing on the road, remove all oversize material from the road and dispose as directed by the CO.

Provide additives or binder, if required, at the proportions specified.

Develop and use Government furnished sources according to Section 105.

If the aggregate is produced and stockpiled before placement, handle and stockpile according to Section 314.

After a representative quantity of aggregate is produced, submit target values within the required gradation range along with a representative 300-pound sample at least 14 days before incorporating the aggregate into the work.

301.04 Mixing and Spreading. Obtain moisture content in accordance with the compaction method specified. If moisture content is not specified by the compaction method adjust the moisture content to a level suitable for compaction. Mix the aggregate and adjust the moisture content to obtain a uniform mixture. Spread and shape the mixture on the prepared surface in a uniform layer.

Do not place the mixture in a layer exceeding 6 inches (150 millimeters) in compacted thickness. When more than one layer is necessary, compact each layer according to Subsection 301.05 before placing the next layer. Route hauling equipment uniformly over the full width of the surface to minimize rutting or uneven compaction.

301.05 Compacting. Compact each layer full width. Roll from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and all places not accessible to the roller, compact the material with approved tampers or compactors.

Compact the aggregate using one of the following methods as specified:

(a) Compaction A. Operating spreading and hauling equipment over the full width of the travelway.

(b) Compaction B. Operate rollers and compact as specified in Subsection 204.11(a)(4)(a).

(c) Compaction C. Moisten or dry the aggregate to a uniform moisture content between 5 and 7 percent based on total dry weight of the mixture. Operate rollers and compact as specified in Subsection 204.11(a)(4)(a).

(d) Compaction D. Compact to a density of at least 95.0 percent of the maximum density, as determined by AASHTO T 99, method C or D.

(e) Compaction E. Compact to a density of at least 95.0 percent of the maximum density, as determined by AASHTO T 180, method C or D.

For all compaction methods, blade the surface of each layer during the compaction operations to remove irregularities and produce a smooth, even surface. When a density requirement is specified, determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

301.06 Surface Tolerance. Remove irregularities and shape to a uniform surface. Ensure that the thickness and width of the compacted aggregate conform to the dimensions SHOWN ON THE DRAWINGS, and that measurements on the compacted aggregate meet the following criteria:

(a) The maximum variation from the specified thickness is 1 inch.

(b) The compacted thickness is not consistently above or below the specified thickness, and the average thickness of measurements for any one mile of road segment is within $\pm \frac{1}{4}$ inch of the specified thickness.

301.07 Maintenance. Maintain the aggregate course to the correct line, grade, and cross-section by blading, watering, rolling, or combination thereof until placement of the next course. Correct defects according to Subsection 301.06.

301.08 Acceptance. See Table 301-1 for sampling, testing, and acceptance requirements. Screened aggregate will be evaluated Under 106.02 Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.05. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.04.

(a) Aggregate gradation. The upper and lower specification limits are equal to the calculated mean of all test results plus or minus the allowable deviations shown in Tables 703-1 and 703-2, except as follows:

(1) If the calculated mean value for a tested sieve exceeds the maximum gradation range value shown in Table 703-1, then the upper specification is equal to the maximum gradation value in Table 703-1 plus or minus the allowable deviation in Table 703-2.

(2) If the calculated mean value for a tested sieve is less than the minimum gradation range value shown in Table 703-1, then the lower specification is equal to the minimum gradation value in Table 703-1 plus or minus the allowable deviation in Table 703-2.

(b) Plasticity index. The upper and lower specification limits for surface courses are shown in Subsection 703.05(c)(3).

Construction of untreated aggregate courses will be evaluated under Subsections 106.02 and 106.04.

Measurement

301.09 Measure the Section 301 pay items listed in the bid schedule according to Subsection 109.02 and the following as applicable:

When measuring aggregate by the cubic yard, measure in place.

When measuring aggregate by the square yard, measure the length horizontally along the centerline of the roadway. Measure the width horizontally to include the top of aggregate width, including designed widenings.

Payment

301.10 The accepted quantities will be paid at the contract price per unit of measurement adjusted according to Subsection 106.05 for the Section 301 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Table 301-1
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Source									
Aggregate quality (703.05(a), (b), & (c))	Measured & tested for conformance (106.04 & 105)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes	Before using in work	Not required if using Government -furnished sources
		Soundness using sodium sulfate (coarse & fine)	—	AASHTO T 104	"	"	"	"	"
		Fractured faces	—	AASHTO T 335	"	"	"	"	"
		Liquid limit	—	AASHTO R58 & T 89, Method A	"	"	"	"	"
Surface course aggregate (703.05(c))	Measured & tested for conformance (106.04 & 105)	Plasticity index	—	AASHTO R 58, T 89, & T 90	1 per type & source of material	Crusher belt or after processing	Yes	Before using in work	Not required if using Government -furnished sources

Table 301-1 (continued)
Sampling, Testing, and Acceptance Requirements

[illegible]

Table 301-1 (continued)
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Production (continued)									
Base course Grading C, D, & E	Statistical (106.05)	Gradation		AASHTO T 27 & T 11	1 per 1000 tons	From windrow or roadbed after processing	Yes	24 hours	—
		¾ in	II						
		No. 4	II						
		No. 200	II						
		Other specified sieves	II						
Subbase & base course Grading A, B, C, D, & E	Measured & tested for conformance (106.04)	Liquid limit	—	AASHTO R 58 & T 89, Method A	1 per 1000 tons	From windrow or roadbed after processing	Yes	4 hours	—
		Moisture- density (maximum density)	—	AASHTO T 180, Method D ⁽¹⁾	1 per type & source of material	Stockpile or production output	"	"	—
		Density	—	AASHTO T 310 or other approved procedures	1 per 500 tons	In-place after compaction	No	End of shift	—
		Moisture content (in-place)	—	"	"	"	"	"	—

Table 301-1 (continued)
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Production (continued)									
Surface course aggregate	Statistical (106.05)	Gradation		AASHTO T 27 & T 11	1 per 1000 tons	From windrow or roadbed after processing	Yes	24 hours	—
		No. 4	II						
		No. 40	II						
		No. 200	II						
		Other specified sieves	II						
		Plasticity index	II	AASHTO R 58, T 89, & T 90	"	"	"	"	—
	Measured & tested for conformance (106.04)	Moisture-density (maximum density)	—	AASHTO T 180, Method D ⁽¹⁾	1 per type & source of material	Stockpile or production output	Yes	"	—
		Density	—	AASHTO T 310 or other approved procedures	1 per 500 tons	In-place after compaction	No	End of shift	—
		Moisture content (in-place)	—	"	"	"	"	"	—
		Fractured faces	—	AASHTO T 335	1 per 1000 tons	From windrow on roadbed after processing	Yes	4 hours	—

Table 301-1 (continued)
Sampling, Testing, and Acceptance Requirements

Material or Product (Subsection)	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	Remarks
Finished Product									
Subbase, base, & surface course	Measured & tested for conformance (106.04)	Surface tolerance & grade	—	Subsection 301.06	As directed	Surface of final course	No	Before placement of next lift or as requested	—

(1) At least 5 points per proctor.

Section 302. - CRUSHED AGGREGATE

Add the following to Subsection 302.02 Material:

Soil 704

Section 302. - CRUSHED AGGREGATE

Add the following to Subsection 302.04 Mixing and Spreading:

Written approval of the surface is required before placing aggregate.

Section 302. - CRUSHED AGGREGATE

Add the following to Subsection 302.04(a) Mixing and Spreading, Roadway Aggregate:

For pit run material, furnish material smaller than the maximum size identified in the plans, no gradation will be required otherwise. After processing on the road, remove all oversize material from the road and dispose as directed by the CO.

Section 302. - CRUSHED AGGREGATE

Delete and replace 302.05(a)(1) Compacting and Finishing Crushed Aggregate, Roadway aggregate, Method 1 with the following:

(1) Method 1. Compact each lift according to Subsection 204.11.

Section 303. – ROAD RECONDITIONING

Replace subsection 303.06 with the following.

303.06 Roadbed Reconditioning. Remove organic, deleterious, and material larger than 6 inches brought to the surface during reconditioning. Scarify potholes, ruts, and areas shown in

the plans to a 6-inch depth or the bottom of the pothole, whichever is less. Dispose of waste at designated sites or according to Subsection 204.14. Repair soft and unstable areas according to Subsection 204.07. Remove irregularities and shape to a uniform surface. Perform the work, including mixing or spreading, when the moisture content is suitable for the specified compaction method. Compact the surface according to Subsection 204.11. Shape the surface according to 204.13(c).

Replace subsection 303.07 with the following.

303.07 Aggregate Surface Reconditioning. Repair soft and unstable areas to the full aggregate surface depth and according to Subsection 204.07. Scarify potholes, ruts, and areas shown in the plans to a 6-inch depth or the bottom of the pothole, whichever is less. Remove irregularities and shape to a uniform surface. Perform the work, including mixing or spreading, when the moisture content is suitable for the specified compaction method. Compact the surface according to Subsection 204.11. Shape the surface according to 204.13(c).

Section 602. – CULVERTS AND DRAINS

Replace the sixth paragraph of subsection 602.03 with the following.

602.03 General. When Shown in the plans construct a piping plug. Unless the culvert inlet is protected with a full-height headwall, slope paving, or an embankment consisting of AASHTO M 145 classification A-6 or A-7 material. Construct the piping plug with AASHTO M 145 classification A-6, A-7, or other approved material with a permeability not exceeding 0.004 inches (0.1 millimeters) per second.

Section 703. - AGGREGATE

Delete Subsection 703.05(c)(3) Subbase, Base, and Surface Course aggregate, Surface course aggregate and replace with the following:

(3) Plastic Index, AASHTO T 90

(a) If the percent passing the No. 200 sieve is less than or equal to 12% - 2 to 9

(b) If the percent passing the No. 200 sieve is greater than 12% - Less than 2

Section 703. - AGGREGATE

Delete Surface Columns F, G, and H in Table 703-1 in Subsection 703.05 Subbase, Base, and Surface Course Aggregate and replace with the following F, G, H, S, T, and U columns:

Table 703-1
Target Value Ranges for Surface Gradation

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)					
	Grading Designation					
	Surface					
	F	G	H	S	T	U
1 1/2 inch	100			100		
1 inch	97-100	100		72 – 92	100	
3/4 inch	76-89	97 - 100	97 - 100			100
1/2 inch					71 – 91	
3/8 inch	56-68	70 – 80	80 – 92	51 – 71		71 – 90
No. 4	43-53	51 – 63	58 – 70	36 – 53	43 – 60	50 – 68
No. 8				26 – 40	30 – 46	34 – 51
No. 16	23-32	28 – 39	28 – 40			
No. 40	15-23	19 – 27	16 – 26	14 – 25	16 – 28	19 – 30
No. 200	10.0-16.0	10.0 – 16.0	9.0 – 14.0	8.0 – 15.0	8.0 – 15.0	8.0 – 15.0

If the plasticity index (PI) is greater than 0, the TV range for the No. 200 sieve size is 8-12 (4).

Section 703. – AGGREGATE

Add the following to 703.05

(d) Screened aggregate – All other requirements of Subsection 703.05 do not apply to screened aggregate. Furnish hard, durable particles or fragments of stone, slag, or gravel conforming the following:

- | | |
|---|-------------|
| (1) Gradation | Table 703-3 |
| (2) Plastic Index, AASHTO T 90 | Less than 9 |
| (3) Los Angeles abrasion, AASHTO T 96 | 55% max. |
| (4) Free from organic matter and lumps or balls of clay. | |

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary.

Table 703-3
Gradation Requirements for Screened Aggregate

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)						
	Grading Designation						
	L	M	N	O	P	Q	R
6 inch	100	100					
4 inch			100	100			
3 inch					100	100	
2 inch							100
No. 4		15-45		15-45		15-45	

Section 703. – AGGREGATE

Replace subsection 703.06 with the following.

703.06 Crushed Aggregate. Provide hard, durable particles or fragments of crushed stone or gravel conforming to the size and quality requirements for crushed aggregate material normally used locally in the construction and maintenance of highways by Federal or state agencies. Provide crushed aggregate with a maximum size of 1 inch, unless otherwise specified by the pay item, as determined by AASHTO T 27 and AASHTO T 11. Provide well-graded crushed aggregate, free of organic matter, lumps or balls of clay, and other deleterious material.

Section 705. - ROCK

Add the following Class to Table 705-1 in Subsection 705.02 Rock for Riprap:

Table 705-1

Gradation Requirements for Riprap⁽¹⁾

Class	Percent of Rock Equal or Smaller by Count, DX	Range of Intermediate Dimensions, ⁽²⁾ inches	Range of Rock Mass, ⁽³⁾ pounds
0	100	6 – 8	17 – 41
	85	5 – 6	10 – 17
	50	2 – 5	0.6 – 10
	15	0 – 2	0 – 0.6