Section 400

Construction Specifications

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401. Clearing and Grubbing

401.01. All stormwater and sediment control measures shall be in place and reviewed by the Highway District or their representative prior to any ground-disturbing activity.

401.02. Clearing and grubbing shall consist of the removal and disposal of all organic and other deleterious material from the road section. All material removed under clearing and grubbing shall be disposed of off the right-of-way and in compliance with the State and Local permits. All denuded areas shall be hydroseeded at the end of the project.

402. Subgrade

402.01. The subgrade shall consist of 6-inch minus natural materials remaining after all topsoil and duff (organic material) has been removed and good construction material is remaining. The determination of the extent to which topsoil shall be removed shall be left to the discretion of the Highway District Director or his designated representative for the Highway District, who may require soil and compaction test results to document the acceptability for construction.

402.02. In solid rock excavation, the solid rock shall be excavated 6 inches below the finished subgrade elevation and backfilled with approved granular material.

402.03. Unstable subgrade conditions shall be remedied by subexcavation and backfilling with approved granular material under the direction of the Highway District Director or his designated representative. Geotextile fabric or additional drainage may be required by the Highway District Director or his designated representative if unstable subgrade conditions cannot be remedied to their satisfaction. The subexcavated surface shall be observed by the Highway District Director or his designated representative prior to the placement of any embankment material. The Supervisor must have at least 24-hour notice prior to the need for observation. Such 24-hour notice shall be given so that the observation can be made during the appropriate Highway District's normal working hours and workweek.

402.04. All construction shall be controlled by slope stakes or grade stakes that have been placed by a Professional Engineer or Surveyor licensed in the State of Idaho prior to the construction operations. Said slope stakes shall conform to the Typical Slope Stake Installation Method shown in the **Appendix**.

402.05. Subgrade shall be compacted to a density no less than 95 percent of an AASHTO T-99 Proctor Density. All utility work within the road prism in fine grained soils (ML, CL, MH, CH, SM, GM, SC, GC) require fill to be placed in 12-inch maximum lifts only, tested at the time of placing and compacting, placement of material and compaction within 2 percentage points of optimum moisture and observed and tested with a full-time technician or engineer.

402.06. The subgrade shall be observed and approved by the Highway District Director or his designated representative prior to placing any ballast on the subgrade. The Supervisor must have at least 24-hour notice prior to the need for observation. Such 24-hour notice shall be given so that the observation can be made during the appropriate Highway District's normal working hours and workweek.

Prior to requesting observation of the finished subgrade, grade stakes set to finished subgrade elevation shall be in place on 50-foot stationing at centerline and shoulders unless a variance is granted and all compaction test reports submitted to the Highway District.

402.07. Fill material used to bring the road structure up to subgrade shall be 6-inch minus from Highway District approved sources. Material shall be granular aggregate or soil material free of organic or deleterious material capable of being compacted to subgrade density without pumping or rutting.

403. Ballast

403.01. The ballast material shall be run through a crushing plant. Material that has only been screened will not be accepted. The ballast shall be placed to a minimum of 12-inches in thickness. The material shall be durable, have a sand equivalent not less than 30, and shall meet the following gradations:

Sieve Size	% Passing
4"	100
3"	98-100
2"	90-100
3/4"	70-90
#4	25-40
#200	5-9

Ballast material shall be quarry crushed stone or crushed prairie gravel with one or more fractured faces or natural angular faces on 50 percent of the particles retained on the #4 sieve or above as determined by Idaho T-71 test.

403.02. The ballast material shall be constructed in layers not to exceed 8-inches in thickness and shall be compacted using mechanical methods to at least 95 percent of the AASHTO T-99 Proctor Density.

403.03. Observation of the ballast is necessary by the Highway District Director or his designated representative prior to the placing of base material. The Supervisor must have at least a 24-hour notice prior to the need for the observation. Such 24-hour notice shall be given so that the observation can be made during the appropriate Highway District's normal working hours and workweek. Prior to requesting observation of the finished ballast,

red top stakes set to finished ballast elevation shall be in place on 50-foot stationing at centerline and shoulders.

404. Base

404.01. The crushed aggregate for the base course shall be 4-inches in depth after it has been compacted and shall comply with the following gradations:

Sieve Size	% Passing
1"	100
¾"	90-100
#4	40-65
#8	30-50
#200	3-9

The crushed aggregate base shall not show more than a loss of 35 percent under the Los Angeles Abrasion Test, and the Sand Equivalent shall not be less than 30 percent. Sixty percent of aggregate retained on the No. 4 Sieve shall have at least one fractured face, as determined by Idaho T-71.

404.02. The material shall be laid in one or more layers to develop the compacted depth of 4 inches minimum. Material shall be mechanically compacted by rolling to 95 percent of the AASHTO T-99 Proctor Density. Care shall be taken to place the aggregate material in such a manner that it will have a uniform mixture throughout.

404.03. The finished base material must be observed and approved by the Highway District Director or his designated representative prior to placing the surface course. The notification for the observation must be 24 hours prior to the observation and must be requested for observation during the appropriate Highway District's normal working hours and workweek.

Prior to requesting observation of the finished base material, blue top stakes will be set to finished base elevations at 25-foot stationing on curves and 50-foot stationing on tangents at centerline and shoulders.

The surface of any base course, when finished, shall be such that when tested with a 10-foot template placed on the surface with its centerline parallel to or perpendicular to the centerline of the street, the maximum deviation from the surface of the edge of the straightedge shall nowhere exceed 1/3 of an inch. In addition, the finished grade shall not deviate more than 1/2 of an inch at any point from the staked elevation, and provided further, the algebraic sum of the deviations from two points not more than 30 feet apart shall not exceed 1-1/2 inches.

If asphalt concrete surfacing is to be placed on the base course no portion of the complete surface of the base course shall be more than 1/2 of an inch below the edge of a straightedge 10-foot in length laid parallel to or perpendicular to the centerline of the roadway. In addition, the finished grade shall not deviate more than 1/4 of an inch at any point from the staked elevation, and provided further, the sum of the deviations from two points not more than 30 feet apart shall not exceed 1/4 of an inch.

Should patching of the base course be necessary in order to meet the above tolerances, it shall be performed using methods and aggregates approved by the Highway District Director or his designated representative.

405. Surfacing

405.01. The surface type and mix design shall be approved by the applicable Highway District and shall be hot mix asphalt concrete. A separate bond for 150 percent of the cost for surfacing may be required by the Highway District. The bond will be held until all costs incurred by the Highway District are paid or resolved and the quality of the completed surface is accepted, or the necessary financing adjustments are resolved to the satisfaction of the Highway District.

405.02. Equipment used for asphalt construction regardless of the type of surface treatment shall meet the following criteria for each type of equipment.

405.02.a. The bituminous mixture hauling trucks shall be pneumatic-tired and equipped with a smooth-lined tight dump body free from cracks, holes or deep dents capable of hauling material without loss during transit. Dump body and gate shall be capable of control discharge onto the roadbed or into approved spreaders or pavers when required. The dump body shall be constructed or equipped to retain the heat of the mixture above the minimum specified for laydown.

405.02.b. Motor graders shall be a pneumatic-tired, self-propelled machine with sufficient power and traction and adequate wheelbase to efficiently perform the work.

405.02.c. Bituminous pavers shall be self-contained, power propelled units provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in lane widths applicable to the specified typical section in thickness as shown on the plans. The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture. Paver shall be capable of being

operated when laying mixtures at forward speeds consistent with satisfactory laying of the mixture. The paver shall be in good working order and subject to the review of the applicable Highway District Supervisor.

405.02.d. Rollers to be of the steel wheel, vibratory or pneumatic-tire type. Rollers to be in good condition and capable of reversing direction without backlash. Operate rollers at speeds low enough to avoid displacement of the mixture and provide sufficient rollers and compactive force to achieve compaction as required in Section 405.04.g. Equipment that produces excessive crushing of the aggregate is not allowed. Rollers producing pickup, washboard, uneven compaction of the surface or other undesirable results are not allowed. Roller Requirements. Do not use fuel oil or other petroleum based oil as a release agent. Use only release agents consisting of mild lime water (1 part lime to 3 parts water), soap or detergent solution or an approved commercial product.

405.02.d.1. Vibratory Rollers

a. Variable amplitude with at least two settings.
b. Variable frequency with minimum of 2000 VPM.
c. Maximum rate of travel under vibration to be 2.5 mph – 220 feet/minute.
d. Vibratory rollers with pneumatic-tired drive wheels to have smooth tires that leave no visible tracks.

405.02.d.2. Pneumatic-tired Rollers

a. Maximum rate of travel to be 5 mph.
b. Rollers to be equipped with smooth compactor tires.
c. Pneumatic-tire rollers to be equipped with skirts enclosing the tires on the top and sides and extending within 6 inches of the pavement surface.

405.02.d.3. Steel Wheel Rollers, maximum rate of travel to be 4 mph.

405.02.e. The asphalt distributor must be in good working order and shall be designed and operated so a uniform application of asphalt can be applied. It must include a tachometer showing the feet per minute and the number of feet covered, a tank thermometer, and a gauge to measure the quantity of the asphalt in the distributor.

405.02.f. The aggregate spreader shall be a self-propelled machine independent of the truck, supported by at least two axles and four wheels with pneumatic-tires and equipped with a means of applying cover material with positive controls

so material will be uniformly deposited over the full width of the asphalt application.

405.03. Hot Mix Asphalt Concrete

405.03.a. The hot mix asphalt concrete surfacing shall be one or more courses of Superpave Hot Mix Asphalt (HMA) in accordance with these Standards and in reasonably close conformity with the lines, grades, thicknesses, and typical cross sections shown on the project plans. The mix used for the HMA must be an approved asphalt mix design. Mix design characteristics must be submitted and approved by the applicable Highway District prior to its use. HMA shall meet the following requirements and shall be subject to the review of the applicable Highway District.

405.03.b. References

1. ITD Current Standard Specifications for Highway Construction – Current version
2. AASHTO Standard Specifications for Transportation and Methods of Sampling and Testing
3. WAQTC TM 8 – In-Place Density of Bituminous Mixes Using the Nuclear Moisture-Density Gauge

405.03.c. Materials

1. HMA shall be ITD SP3, ½-inch, designed in accordance with ITD Standard Specifications for Highway Construction, current edition.
2. Mix Design:
   a. The Contractor shall provide mix designs to the Highway District for review.
   b. The Contractor's mix design shall develop the job mix formula for the project using an ITD-qualified laboratory and shall be stamped by a Professional Engineer licensed in the State of Idaho.
   c. Mix designs shall be developed by an individual holding an ITD Superpave Mix Design Technician qualification and shall be submitted to the Highway District for review.
   d. Mix designs may also have to be approved by ITD and/or an independent materials testing lab.
   e. Recycled Asphalt Pavement (RAP) shall be as defined by ITD Standard Specifications. A maximum of 30 percent RAP content per weight of the mix may be included as part of the job mix formula provided the mix meets all other requirements for plant mix.

f. If RAP is used in the job mix formula, it shall conform to ITD's Category 1 RAP classification requirements, Section 720.07.

3. Asphalt Cement shall be PG 58-28 with binder adjustments meeting current ITD Standard Specifications for RAP content exceeding 17 percent.
4. Aggregate for Plant Mix shall meet Section 703 of the ITD Standard Specifications, current edition.
5. Anti-Stripping Additive shall meet Section 702 of the ITD Standard Specifications, current edition.
6. Tack Coat for AC Pavement shall be applied in accordance with ITD Standard Specifications Section 401, current edition.

405.03.d. Workmanship

1. Verify that the areas to be paved are graded, compacted, and ready for paving.
2. Protect saw cut edges so the new pavement is placed against a straight, vertical surface.
3. Apply a thin, uniform asphalt tack coat to the surfaces of curbing, gutters, manholes, asphalt cement pavement, portland cement pavement, and other structures that will abut the new pavement.

405.03.e. Hauling and Placing Asphalt Pavement

1. Apply tack coat in accordance with ITD Specification Section 405.03, current edition.
2. When necessary, each truck shall have a cover to protect the plant mix from weather in accordance with ITD Section 405.03, current edition.
3. Install work in accordance with ITD Section 405, current edition.
4. The Contractor shall overlap the joint edge 1 to 1.5 inches and bump back or trim the joint line overlap by raking to create a tight, smooth joint.
5. Place asphalt within eight hours of applying primer or tack coat.
6. The Contractor shall hand compact areas inaccessible to rolling equipment.

405.03.f. Pavement Surface Smoothness

1. Place pavement in accordance with the current ITD Standard Specifications for Highway Construction Section 405.03. Surface smoothness shall comply with ITD Specification for a Schedule II project.

405.03.g. Field Quality Control

1. The Contractor shall submit a paving plan in accordance with ITD Specifications 72 hours prior to the pre-paving meeting for review.
2. Forty eight hours prior to placing plant mix, the Highway District, Contractor, Asphalt Supplier, and Quality Control/Quality Assurance personnel involved with the project shall hold a pre-operational paving meeting to discuss the means by which to achieve the highest quality surface.
3. Production Paving shall be in accordance with the current ITD Standard Specification and Supplements for Highway Construction.
4. Field review and testing will be performed in accordance with ITD and these standards.
5. Pavement Density and depth verification testing shall be completed using asphalt cores. A minimum of three (3) cores per paving day shall be tested. Completed density shall correspond to a range between 92.0 percent and 95.0 percent of maximum Theoretical Density for SP-2 to SP-6 asphalt mixes.
6. Pay Factor calculations in accordance with ITD Quality Assurance procedures shall be submitted to the District for consideration of paving acceptance.

405.03.h. Weather Limitation and Cutoff Dates

1. Conform to the following minimum temperatures for all plant mix pavement operations.

Air and Surface Temperature Limitations

Compacted Thickness of Individual Courses	Top Course	Leveling and Courses Below the Top Course
Less than 0.1 foot	60° F	50° F
0.1 foot to 0.18 foot	50° F	50° F
Over 0.18 foot	40° F	40° F

2. Hot mix asphalt pavement shall not be placed between October 15 and April 15.